STAFF REPORT FOR PLANNING COMMISSION MEETING OF NOVEMBER 28, 2018

FILE: ZMA-18-156 **AGENDA ITEM:** E-9

STAFF CONTACT: Hope Sullivan, Planning Manager

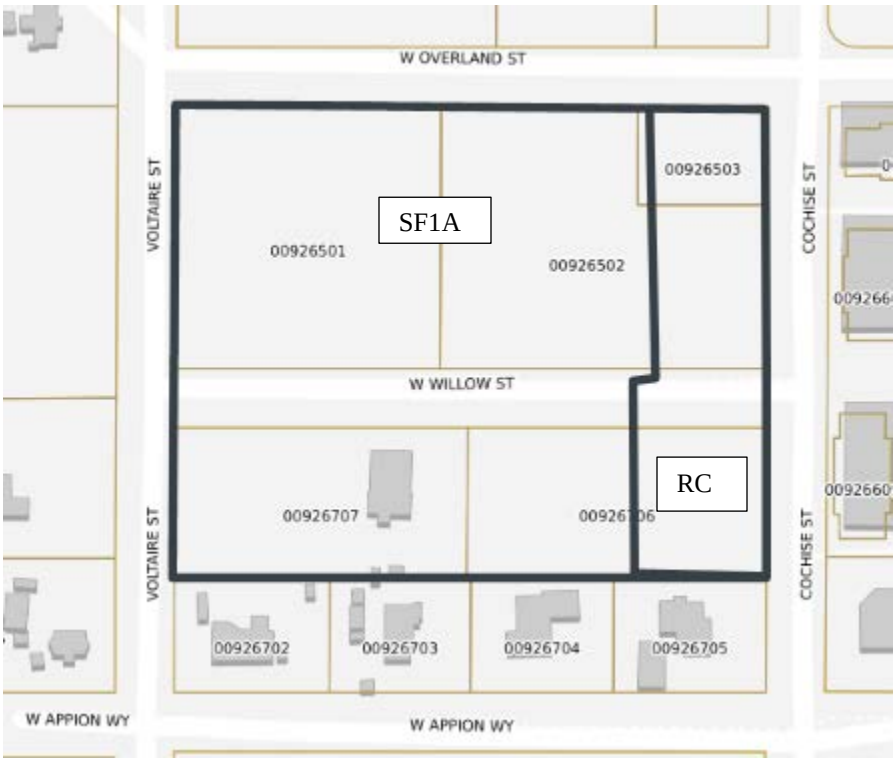
AGENDA TITLE: For Possible Action: To consider a request for a Zoning Map Amendment to change the zoning of five properties, three that are split zoned Retail Commercial (RC) and Single Family 1 Acre (SF1A) and two that are zoned Single Family 1 Acre (SF1A) to Retail Commercial (RC), located at 4530 and 4580 Cochise Street, APNs 009-265-01, -02, -03 and 009-267-06, -07. (Hope Sullivan, hsullivan@carson.org)

STAFF SUMMARY: The applicant is seeking to amend the Zoning Map so that the zoning on the subject property is Retail Commercial. Per Carson City Municipal Code, the Planning Commission reviews requests for zoning map amendments, and makes a recommendation to the Board of Supervisors. The Board of Supervisors is authorized to amend the zoning map.

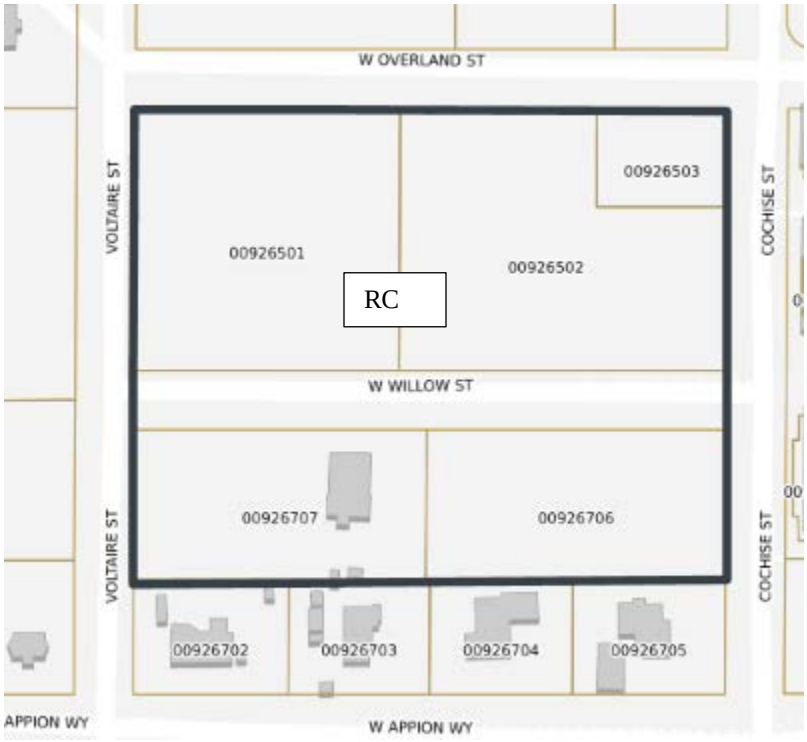
RECOMMENDED MOTION: "I move to recommend to the Board of Supervisors approval of ZMA-18-156, a Zoning Map Amendment to change the zoning from split zoned Single Family 1 Acre and Retail Commercial and from Single Family 1 Acre to Retail Commercial, on property located at 4530 and 4580 Cochise Street, APNs 009-265-01, -02, -03 and 009-267-06, -07, based on the findings contained in the staff report."

VICINITY MAP:

EXISTING ZONING



PROPOSED ZONING



Key
SF1A: Single Family – 1 Acre
RC: Retail Commercial

LEGAL REQUIREMENTS: CCMC 18.02.050 (Review); 18.02.075 (Zoning Map Amendments).

MASTER PLAN DESIGNATION: Community / Regional Commercial (C/RC)

ZONING DESIGNATION: Single Family 1 Acre (SF1A) and Retail Commercial (RC)

PROPOSED ZONING DESIGNATION: Retail Commercial (RC)

BACKGROUND:
The subject properties have a combination of Single Family 1 Acre and Retail Commercial zoning. The request is to amend the zoning map so that the entire property is zoned for Retail Commercial. The current zoning designation of the property is not consistent with the Master Plan designation. The requested zoning map amendment would create consistency between the Master Plan designation and the zoning map.

DISCUSSION:
The Master Plan is a policy document that outlines the City's vision and goals for the future, and provides guidance for making choices regarding the long-range needs of the community. The Zoning Map is a tool to implement the Master Plan. Given the function of the two documents, the zoning map designation should be consistent with the Master Plan designation.

The subject property is currently improved with a house on one parcel, and the balance is vacant. A single family home is a conditional use in the Retail Commercial zoning district. As the home is lawfully established, its use may continue.

The subject properties are designated Community / Regional Commercial on the Master Plan map. Per the Master Plan, the characteristics of the Community / Regional Commercial designation is to provide a mix of retail services in a concentrated setting that serves the local community, but may also include larger retail centers with unique stores or characteristics that provide a regional draw. Properties to the south and east are all designated on the Master Plan as Community / Regional Commercial. Properties to the west of Voltaire Street are designated for low density residential, and property to the north is designated as Mixed Use Residential.

The applicant has indicated an intent to construct a 143 unit multi-family development on the subject property. The Multi-family Dwelling use is a conditional use in the Retail Commercial zoning district. So, if the property were rezoned, such a use would be allowed only upon approval of a Special Use Permit. No application for a Special Use Permit for Multi-Family Dwelling has been submitted to the City.

PUBLIC COMMENTS: Public notices were mailed to 36 property owners within 600 feet of the subject parcel in accordance with the provisions of NRS and CCMC 18.02.045 on November 9, 2018. As of the writing of this report, two letters opposing the application has been received. Any additional comments that are received after this report is completed will be submitted prior to or at the Planning Commission meeting, depending on their submittal date to the Planning Division.

OTHER CITY DEPARTMENT OR OUTSIDE AGENCY COMMENTS

Engineering Division:
The Engineering Division has no preference or objection to the zoning change requested. Information submitted with the application has demonstrated that infrastructure can support the request within standard development practices and is not in conflict with any engineering related master plans.

DISCUSSION:
The Engineering Division has reviewed the request within our areas of purview relative to adopted standards and practices and to the provisions of CCMC 18.02.075 Zoning map amendments and zoning code amendments. The following discussion is offered.

CCMC 18.02.075 (5.b.1) – Compliance with Master Plan
The zoning map amendment is not in conflict with the intent of master plan elements for water, sewer, transportation, or storm water. Any project will need to meet Carson City Development Standards which will include extension of mains and street improvements and/or abandonment. It should be noted that the transportation master plan includes a signalized intersection at Snyder Avenue and S. Carson Street and may be required for any development, and is dependent on the findings of a traffic impact study.

CCMC 18.02.075 (5.b.2&3) – Compatible Land Use
Development Engineering has no comment on these findings.

CCMC 18.02.075 (5.b.4) – Impact on Public Services, Facilities, Health and Welfare
The capacities of the City sewer, water, storm drain, and transportation systems appear to be sufficient to meet the demand that may potentially be imposed by a project allowed by the proposed zoning. Any new project, however, must complete project impact reports to show that existing facilities can meet demands within the standards set by municipal code. Any given traffic impact study will need to include traffic projections that take into account entitled and permitted projects in the area. Any water main analysis will need to include demands from surrounding entitled and/or permitted developments at full build out, analysis of the water supply pump and installation of PRV's separating the different water pressure zones. Any project approved in the new zoning area that would cause impacts beyond those allowed by municipal code, would be required by municipal code to mitigate those impacts as part of the design of the new development. The applicant must coordinate with public works for the scope of impact analysis reports for sewer, water, and traffic, for any site improvement permit.

Fire Department: No comments

Environmental Control: No comments

Assessor's Office: No comments

FINDINGS: Per the provisions of CCMC Section 18.02.075.5.b, the Commission, in forwarding a recommendation to the Board for approval of a Zoning Map Amendment, shall make the following findings of fact:

1. *The proposed amendment is in substantial compliance with the goals, policies and action programs of the Master Plan.*

Chapter 3 of the Master Plan addresses a balanced land use pattern. As part of the effort to achieve a balanced land use pattern, the Master Plan includes a Land Use Map. The Land Use Map identifies locations within the City where various land uses may occur during the next 10 to 20 years and where the City would support the development of these uses.

The Land Use Map designates the subject properties as Community / Regional Commercial. The zoning districts that correspond to that land use designation are General Commercial, Retail Commercial, Neighborhood Business, and Tourist Commercial. Therefore, the proposed zoning map amendment to Retail Commercial will create consistency with the Master Plan, and allow for implementation of the Master Plan.

2. *The proposed amendment will provide for land uses compatible with existing adjacent land uses and will not have detrimental impacts to other properties in the vicinity.*

The area of the community where the rezoning is proposed has been partially developed with single family residential uses, but also includes a considerable amount of vacant land. Staff has analyzed the land uses bounded to the north by Clearview Drive, to the east by Cochise Street, to the west by Voltaire Street, and to the south by Highway 50 and found the following.

- 38 percent of the land is allocated to residential uses.
- 15 percent of the land is allocated to commercial uses.
- 47 percent of the land is vacant.

The area is undergoing a transition, particularly with the recent connection of Interstate 580 with Highway 395 just to the south. Property on the east of Cochise has submitted for building permit for commercial development, property to the north has site improvement permits pending for a seventy five unit zero lot line residential development, and property two blocks to the north is currently under construction with a 370 unit apartment complex.

Staff finds that this is an area that has been developed with low intensity development that can be served by septic. With the completion of the interchange, this area is more attractive, and developers are interested in extending sewer to allow for more intensive uses.

Staff finds that the proposed zoning map amendment will allow for commercial services to establish that will support this developing portion of the City.

Currently, adjacent land uses are as follows:

North: Vacant (approved Clearview Ridge PUD for 75 units)
South: Single Family Residential
East: Commercial
West: Single Family Residential

To the extent the proposed commercial zoning will be adjacent to the residential zoning districts to the south and west, increased setbacks will be required at the time of development consistent with Section 18.04.195 of the Municipal Code.

Given the location of the freeway vis-à-vis this property, particularly access to the freeway at South Carson Street, staff finds the single family residential uses currently in the Community / Regional Commercial land use designation will transition over time to more intensive uses.

3. *The proposed amendment will not negatively impact existing or planned public services or facilities and will not adversely impact the public health, safety and welfare.*

The proposed zoning map amendment will not allow for land uses that will negatively impact existing or planned public services or facilities. Any future project will constitute an infill project. The Engineering staff has reviewed the request, and found "the capacities of the City sewer, water, storm drain, and transportation systems appear to be sufficient to meet the demand that may potentially be imposed by a project allowed by the proposed zoning."

Attachments:

- Public Correspondence
- Draft Ordinance
- Application ZMA-18-156

Hope Sullivan

From: Perry Stoa <tram-law@att.net>
Sent: Monday, November 12, 2018 12:29 PM
To: Hope Sullivan
Subject: FIle No. ZMA-18-156 changing zoning from single family to Retail Commercial

Dear Hope,

I just received the notice for a request in the zoning laws concerning the property on Cochise. I am not in favor of this change for the following reasons:
1) This area has been single family, and the impact of retail commercial would alter the neighborhood, impact traffice, increase traffice, altar the air pollution, and parking on or near the streets.

2) There are already several retail commercial spaces across the street from this property, which have been vacant for years. Thus, a retail access is not a good idea, the location is not good for retail, and the infrastructure would need to be altared thereby more construction, delays, traffic, noise, etc.

3) There needs to be sidewalks, improved streets such as Clearview Drive all the way up, drainage from the flooding, a few cisterns available on Clearview. My neighbor and I are willing to have those put in by the city so the **Fire Department has immediate access. Two fires in one year already!**

4) A small neighborhood park is needed in this area. If a Retail /Commercial zoning law is accepted, we believe there needs to be a traffic study, lights, sidewalks, drainage, widen the streets around the area, add a little park for the neighborhood kids. Swing set, slide, grass, drinking fountain, bench shade, trees, lights ,skate ramp, and fencing. In addition a small dog park adjacent would help. Our area is being altered already by the apartments!!!. The children will need a park! In addition, we need speed limit signs in Voltaire Canyon at the base, 25mph. Slow. There are a lot of drugs being delivered and used in this area as well as shots fired frequently! **Our kids need a safe space! It isn't all about their ability to make a profit. We need to maintain a quality of life, less condensed, and safe for our families. There is a give and take here, and I believe the developers should give a park/and dog park to the residents in exchange for their opportunity to make a profit and change our environment.**

5) I don't understand why the city has allowed these owners to continue to have a variance? NO improvements have been made to the area signage is lacking, , the fencing in the area is in need of repair, the "caretaker's house" is full of junk on the corner! (It is an eye sore), the bushes on Voltaire need to come out, due to traffic line of sight at the corner of Voltaire and Clearview, and the next corner. Please make it safe! Please contact Public Works.

I will be in attendance on the 28th of November at the Community Center for this meeting. We the neighbors believe you have already made your decisions, and this is just a process, whereby we really don't have any input. Thanks for the notice.

Appreciatively,

Darlynn Branton-Stoa, resident

18.0 acres; General Commercial for approximately 13.9 acres; and Public Regional for approximately 18.9 acres, for property located southeast of US Highway 50 and north east of Deer Run Road, within the V&T Specific Plan Area, APN's 008-521-54, -55, 89, 90, 008-522-16, -17, -18, 008-531-59, and -60. (Heather Ferris, hferris@carson.org)

Summary: On March 15, 2018 the Board of Supervisors approved a Master Plan Amendment changing the Master Plan designation of the subject site from Industrial to Mixed-Use Residential. The requested zoning map amendment will make the zoning consistent with the Master Plan of Mixed-Use Residential. This zoning map amendment is sought in conjunction with a Tentative Subdivision Map (TSM-18-154).

Agenda Title: TSM-18-154 For Possible Action: To make a recommendation to the Board of Supervisors regarding a Tentative Subdivision Map application to create 270 single family residential lots, 9 common area parcels, 3 remainder parcels, and approximately 13.36 acres of right-of-way within a 119.1 acre project area; located southeast of US Highway 50 and north east of Deer Run Road, within the V&T Specific Plan Area, APN's 008-521-54, -55, 89, 90, 005-522-16, -17, -18, 008-531-59, and -60. (Heather Ferris, hferris@carson.org)

Summary: On March 15, 2018 the Board of Supervisors approved a Master Plan Amendment changing the Master Plan designation of the subject site from Industrial to Mixed-Use Residential. This tentative subdivision map has been applied for in conjunction with a zoning map amendment (ZMA-18-155).

Agenda Title: MPA-18-161 For Possible Action: To make recommendations to the Board of Supervisors regarding the 2018 Annual Master Plan Report. (Lee Plemel, lplemel@carson.org)

Summary: State law (NRS 278.190) requires the Planning Commission to annually make recommendations to the Board of Supervisors regarding the implementation of the Master Plan. Staff will provide the Planning Commission with information regarding past, current and future Master Plan implementation actions for the Commission's consideration.

*****THE PUBLIC HEARINGS FOR THE FOLLOWING ITEMS WILL NOT BE CONDUCTED BEFORE 5:00PM*****

Agenda Title: ZMA-18-156 For Possible Action: To consider a request for a Zoning Map Amendment to change the zoning of five properties, three that are split zoned Retail Commercial (RC) and Single Family 1 Acre (SF1A) and two that are zoned Single Family 1 Acre (SF1A) to Retail Commercial (RC), located at 4530 and 4580 Cochise Street, APNs 009-265-01, -02, -03 and 009-267-06, -07. (Hope Sullivan, hsullivan@carson.org)

Summary: The applicant is seeking to amend the Zoning Map so that the zoning on the subject property is Retail Commercial. Per Carson City Municipal Code, the Planning Commission reviews requests for zoning map amendments, and makes a recommendation to the Board of Supervisors. The Board of Supervisors is authorized to amend the zoning map.

Public Comment 2 →

Agenda Title: ZMA-18-156
Rezone APNs 009-265-01,-02
Public Comment
11/12/2018

As you know both of the subject properties are located on Cochise Street south of Clearview Street, which as a result of the I-580 is experiencing a period of rapid commercial development.

At this point in time there are four major projects that border Cochise / South Curry Street, these being:

A. Carson Hills Apartments aka the Fandango Apartments Approx. 475 units.
B. Clearview Ridge – Approx. 75 homes
C. Willow Street Apartments Approx. 145 units
D. Appion Hotel – 110 rooms
E. Chick Fil A
D. Starbucks

At full build out these project have the potential of adding 700 additional apartments and residences to an area that currently has less than 26, some of which date back to the early 1960s. Assuming that each unit would have at least one vehicle, at minimum 700 additional private and commercial vehicle would be added to the the project areas that can now only be accessed by the intersections at the north by Cochise / Clearview and the south through Cochise / Appion. Both of these intersections are short distances from the intersection to South Carson Street. Appion is only 370 feet in length between Cochise and South Carson Street and it is the first entrance onto Cochise for northbound traffic on South Carson Street. From Appion to the Carson Station there are currently only three stop signs. An increase in traffic may be assumes when the South Carson Street Project reduces the number of lanes on South Carson Street, lowers its speed limit and adds cross walks and round-abouts. In essence Cochise and Curry will become the alternate, less obstructed route to Carson City's downtown. I understand that this is a rezoning issue,

but it is the necessary initial step to open the door to 700 additional cars on Curry and Cochise. Thank you for your time.

Mark Beutner

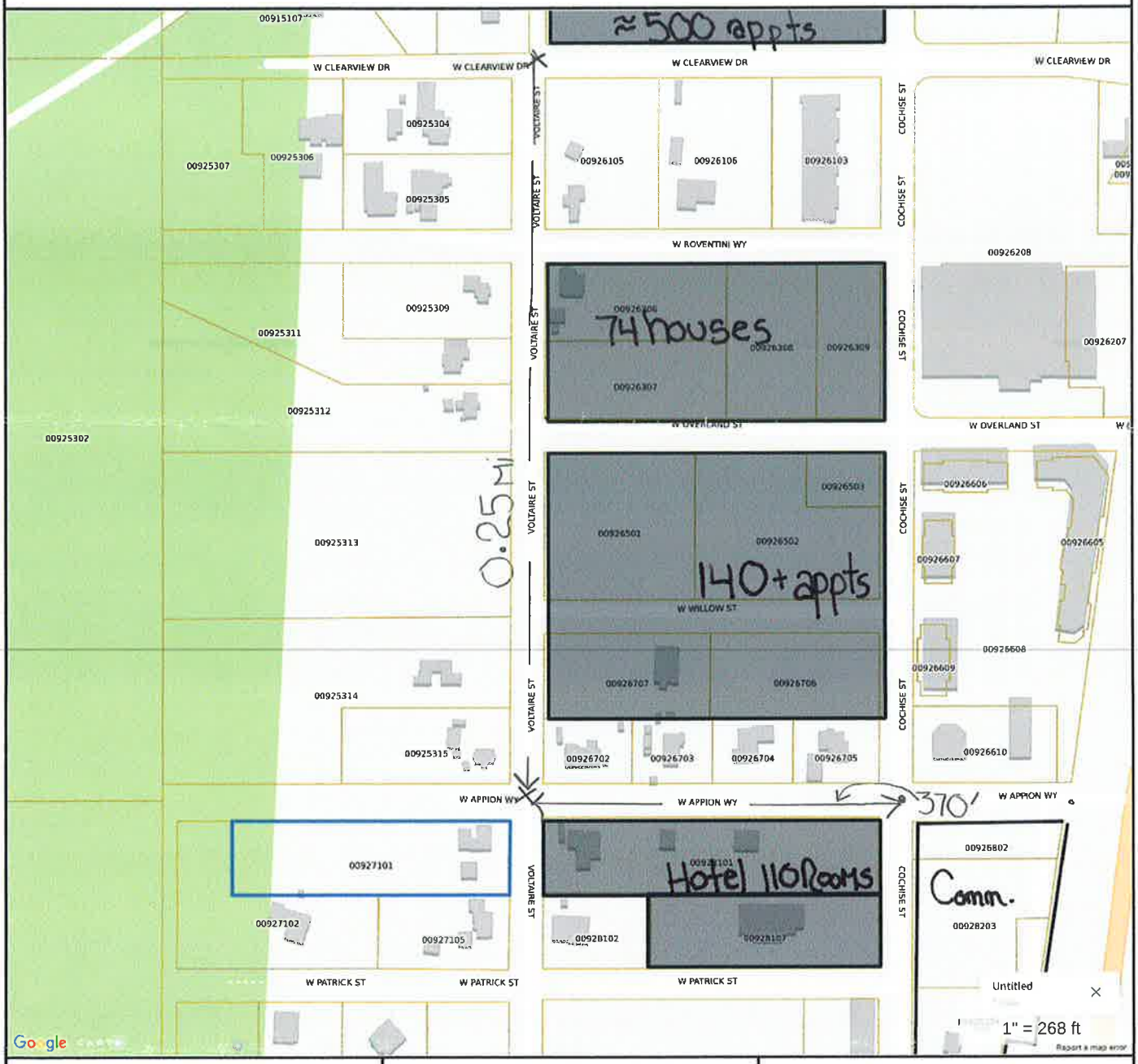
470 West Patrick Street (25 years)

Carson City

775-220-3119

776-684-2821 (w)

froghare420@gamil.com



Property Information

Property ID	00927101
Location	4740 VOLTAIRE ST
Owner	WILL, JESSE

CLICK LOGO FOR TUTORIAL

MAP FOR REFERENCE ONLY
NOT A LEGAL DOCUMENT

Carson City , NV makes no claims and no warranties, expressed or implied, concerning the validity or accuracy of the GIS data presented on this map.

Parcels updated 11/13/2018
Properties updated 11/13/2018

700 new homes / appts
110 room Hotel
Comm ?
Appion - Cochise to ≈ 370' South Cavar

SUMMARY – An ordinance amending the Carson City zoning map.

BILL NO. ____
ORDINANCE NO. 2018-__

AN ORDINANCE TO CHANGE THE ZONING FROM SINGLE FAMILY – 1 ACRE AND RETAIL COMMERCIAL TO RETAIL COMMERCIAL ON PROPERTIES LOCATED AT 4530 and 4580 COCHISE STREET, APNs 009-265-01, -02, -03 and 009-267-06, -07.

The Board of Supervisors of Carson City do ordain:

SECTION I:

An application for a Zoning Map Amendment on Assessor's Parcel Number 009-265-01, -02, -03 and 009-267-06, -07, property located at 4530 AND 4580 Cochise Street, Carson City, Nevada, was duly submitted by the Carson City Planning Division in accordance with Section 18.02.075, et seq. of the Carson City Municipal Code (CCMC). The request will result in the zoning designation of the subject parcels APN 009-265-01, -02, -03 and 009-267-06, -07 changing from Single Family – 1 Acre and Retail Commercial to Retail Commercial. After proper noticing pursuant to NRS 278 and CCMC Title 18, on November 28, 2018, the Planning Commission, during a public hearing, reviewed the Planning Division staff report, took public comment and voted __ ayes, __ nays to recommend to the Board of Supervisors approval of the Zoning Map Amendment.

SECTION II:

Based on the findings that the Zoning Map Amendment would be in substantial compliance with the goals, policies and action programs of the Master Plan, that the Amendment will provide for land uses compatible with existing adjacent land uses and will not have detrimental impacts to other properties in the vicinity; that the Amendment will not negatively impact existing or planned public services or facilities and will not adversely impact the public health, safety and welfare; and that the request satisfied all other requirements for findings of fact enumerated in CCMC Section 18.02.075(5), the zoning map of Carson City is amended changing the zoning of APNs 009-265-01, -02, -03 and 009-267-06, -07 from Single Family – 1 Acre and Retail Commercial to Retail Commercial as shown on Attachment A.

PROPOSED this ____ day of _____, 2018.

PROPOSED BY Supervisor _____

PASSED on the _____ day of _____, 2018.

VOTE: AYES: _____

_____

_____

_____

_____

NAYS: _____

_____

ABSENT: _____

_____
ROBERT L. CROWELL, Mayor

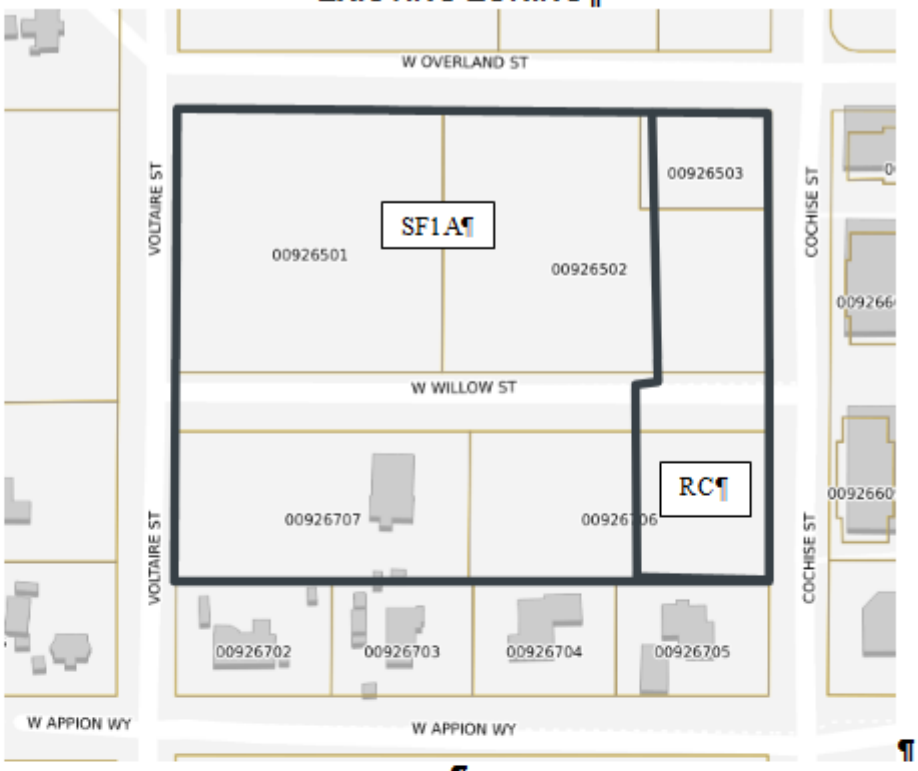
ATTEST:

_____
SUSAN MERRIWETHER, Clerk-Recorder

This ordinance shall be in force and effect from and after the ____ of _____, 2018.

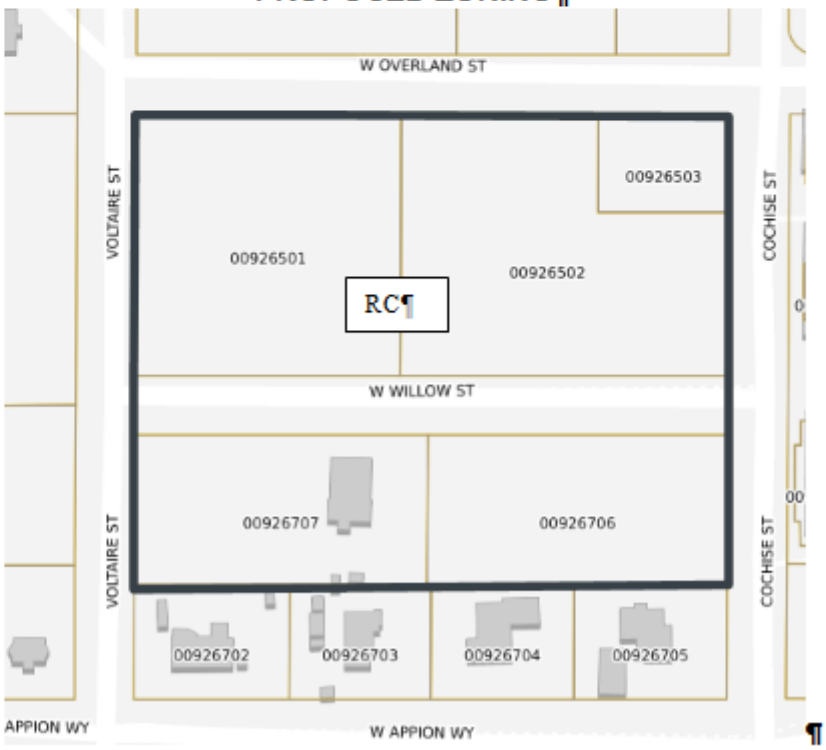
ATTACHMENT A

EXISTING·ZONING¶



¶

PROPOSED·ZONING¶



¶

Key¶
SF1A:·Single·Family·–·1·Acre¶
RC:·Retail·Commercial¶

COCHISE STREET MULTI-FAMILY COMMUNITY

Zoning Map Amendment

Carson City, Nevada

Prepared for:

Robert French & Steve Dontcho

Submittal Date October, 2018

Job Number 24232-01

PLACES Consulting Services, Inc.
PLANNING LANDSCAPE ARCHITECTURE CIVIL ENGINEERING SURVEYING

TABLE OF CONTENTS

Table of Contents

PROJECT DESCRIPTION 1

Application

Zoning Map Amendment
Acknowledgement of Application
Documentation of Taxes Paid

Cochise Street Multi Family Summary Description

List of APN Numbers

General Vicinity Map

Location Map

Adjacent Land Uses

PLACES Consulting Services, Inc.
PLANNING LANDSCAPE ARCHITECTURE CIVIL ENGINEERING SERVICES

Carson City Planning Division
108 E. Proctor Street- Carson City NV 89701
Phone: (775) 887-2180 • E-mail: planning@carson.org

FOR OFFICE USE ONLY:

FILE # ZMA – 18 -

ZONING MAP AMENDMENT

FEE: $2,450.00 + noticing fee

SUBMITTAL PACKET

- Application Form
- Written Project Description
- Site Plan
- Proposal Questionnaire With Both Questions and Answers Given, Supporting Documentation
- Applicant's Acknowledgment Statement
- 6 Completed Application Packets (1 Original + 5 Copies)
- Documentation of Taxes Paid-to-Date (1 copy)
- Project Impact Reports (Engineering-4 copies)
- CD containing application data (all to be submitted once application is deemed complete by staff)

Application Reviewed and Received By:

Submittal Deadline: See attached PC application submittal schedule.
Note: Submittals must be of sufficient clarity and detail such that all departments are able to determine if they can support the request. Additional information may be required.

APPLICANT	**PHONE #**
Steve Dontcho &Bob French	818-590-7716
MAILING ADDRESS, CITY, STATE, ZIP	
3429 Ocean View Blvd. E Glendale CA 91208	
EMAIL ADDRESS	
sdontcho@gmail.com	
PROPERTY OWNER	**PHONE #**
Same	
MAILING ADDRESS, CITY, STATE, ZIP	
EMAIL ADDRESS	
APPLICANT AGENT/REPRESENTATIVE	**PHONE #**
Randy Walter, PLACES CSI	775-355-7721
MAILING ADDRESS, CITY, STATE, ZIP	
7225 Lingfield Dr. Reno, NV 89502	
EMAIL ADDRESS	
rwalter@places-csi.com	

Project's Assessor Parcel Number(s)	Street Address	ZIP Code
See Attached	4530/4580 Cochise St.	

Project's Master Plan Designation	Project's Current Zoning	Nearest Major Cross Street(s)
Commercial	RC and SF1A	West Overland St.

Briefly describe the components of the proposed project: in accordance with Carson City Municipal Code (CCMC), Section 18.02.075. In addition to the brief description of your project and proposed use, provide additional page(s) to show a more detailed summary of your project and proposal.

143 Unit Multi-Family Res. project, Refer to attached Project Description, Tab 1

PROPERTY OWNER'S AFFIDAVIT

I, Steven Dontcho, being duly deposed, do hereby affirm that I am the record owner of the subject property, and that I have knowledge of, and I agree to, the filing of this application.

Signature — 769 Ways Blvd. #5 Address — 10/18/18 Date

Use additional page(s) if necessary for other names.

On October 8th, 2018, (Steven Dontcho), personally appeared before me, a notary public, personally known (or proved) to me to be the person whose name is subscribed to the foregoing document and who acknowledged to me that he/she executed the foregoing document.

Dana Lynn Herlihy
Notary Public

DANA LYNN HERLIHY
Notary Public - State of Nevada
Appointment Recorded in Washoe County
No: 17-2620-2 - Expires June 30, 2021

4. That sufficient consideration has been exercised by the applicant in adapting the project to existing improvements in the area. Be sure to indicate the source of the information that you are providing (private engineer, development engineering, title report, or other sources). Describe how your proposed Zoning Map Amendment will not adversely impact drainage, sewer, water, traffic, schools, emergency services, roadways and other city services.

   A. Is drainage adequate in the area to support the density that may occur with the rezoning? How will drainage be accommodated? How have you arrived at this conclusion?

   B. Are the water supplies in the area of your project adequate to meet your needs without degrading supply and quality to others? Is there adequate water pressure? Are the lines in need of replacement? Talk to the Utilities Department for the required information.

   C. Are roadways sufficient in the area to serve the density that may occur from the rezoning? How have you arrived at this conclusion?

   D. Will the school district be able to serve the student population that may occur from the rezoning? How have you arrived at this conclusion?

   E. Are adequate means of access available for emergency vehicles to serve the site? What is the approximate response time for emergency vehicles? If your application is approved to rezone the property, will additional means of access be required for increased density? Or will existing access ways be adequate? How have you arrived at this conclusion?

ACKNOWLEDGMENT OF APPLICATION

Please type the following signed statement at the end of your application questionnaire:

I certify that the foregoing statements are true and correct to the best of my knowledge and belief.

Applicant	Steve Dawkins	10/5/18
	Print Name	Date

Carson City Planning Division
108 E. Proctor Street· Carson City NV 89701
Phone: (775) 887-2180 • E-mail: planning@carson.org

FILE # ZMA – 18 -

APPLICANT	PHONE #
Robert French	
MAILING ADDRESS, CITY, STATE, ZIP	
P.O. Box 6315 Incline Village NV 89450	
EMAIL ADDRESS	
bfrenchconstruction@gmail.com	
PROPERTY OWNER	PHONE #
Robert French and Steve Dontcho	
MAILING ADDRESS, CITY, STATE, ZIP	
Same	
EMAIL ADDRESS	
Same	
APPLICANT AGENT/REPRESENTATIVE	PHONE #
RANDY WALTER AICP PLACES CS	(775) 745-9094
MAILING ADDRESS, CITY, STATE, ZIP	
7225 LINGFILED DR. RENO, NV 89502	
EMAIL ADDRESS	
rwalter@places-csi.com	

FOR OFFICE USE ONLY:

ZONING MAP AMENDMENT

FEE: **$2,450.00 + noticing fee**

SUBMITTAL PACKET

- Application Form
- Written Project Description
- Site Plan
- Proposal Questionnaire With Both Questions and Answers Given, Supporting Documentation
- Applicant's Acknowledgment Statement
- 6 Completed Application Packets (1 Original + 5 Copies)
- Documentation of Taxes Paid-to-Date (1 copy)
- Project Impact Reports (Engineering-4 copies)
- CD containing application data (all to be submitted once application is deemed complete by staff)

Application Reviewed and Received By:

Submittal Deadline: See attached PC application submittal schedule.
Note: Submittals must be of sufficient clarity and detail such that all departments are able to determine if they can support the request. Additional information may be required.

Project's Assessor Parcel Number(s)	Street Address	ZIP Code
009-265-01, 02 7 009-267-06, 07	4580 Cochise St.	

Project's Master Plan Designation	Project's Current Zoning	Nearest Major Cross Street(s)
COPMMERCIAL	RC & SF1A	WEST OVERLAND ST.

Briefly describe the components of the proposed project: in accordance with Carson City Municipal Code (CCMC), Section 18.02.075. In addition to the brief description of your project and proposed use, provide additional page(s) to show a more detailed summary of your project and proposal.

143 UNIT MNULTI-FAMILY RESIDENTIAL PROJECT, REFER TO ATTQACHED PROJECT DESCRITION TAB

PROPERTY OWNER'S AFFIDAVIT

I, ROBERT FRENCH, being duly deposed, do hereby affirm that I am the record owner of the subject property, and that I have knowledge of, and I agree to, the filing of this application.

Robert French
Signature

P.O. BOX 6315, INCLINE VILLAGE, NV 89450
Address

10/26/18
Date

Use additional page(s) if necessary for other names.

On October 26, 2018, Robert French, personally appeared before me, a notary public, personally known (or proved) to me to be the person whose name is subscribed to the foregoing document and who acknowledged to me that he/she executed the foregoing document.

Notary Public

Please See Attached Ack.

CALIFORNIA ALL-PURPOSE ACKNOWLEDGMENT **CIVIL CODE § 1189**

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

State of California)
County of LOS ANGELES)

On 10/26/2018 (Date) before me, RUBY MARIDUENA, NOTARY PUBLIC (Here Insert Name and Title of the Officer),

personally appeared Robert French (Name(s) of Signer(s)),

who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

RUBY MARIDUENA
Commission # 2143854
Notary Public - California
Los Angeles County
My Comm. Expires Feb 22, 2020

Signature _____ (Signature of Notary Public)

Place Notary Seal Above

OPTIONAL

Though this section is optional, completing this information can deter alteration of the document or fraudulent reattachment of this form to an unintended document.

Description of Attached Document

Title or Type of Document: _____ Document Date: _____

Number of Pages: _____ Signer(s) Other Than Named Above: _____

Capacity(ies) Claimed by Signer(s)

Signer's Name: _____	Signer's Name: _____
☐ Corporate Officer — Title(s): _____	☐ Corporate Officer — Title(s): _____
☐ Partner — ☐ Limited ☐ General	☐ Partner — ☐ Limited ☐ General
☐ Individual ☐ Attorney in Fact	☐ Individual ☐ Attorney in Fact
☐ Trustee ☐ Guardian or Conservator	☐ Trustee ☐ Guardian or Conservator
☐ Other: _____	☐ Other: _____
Signer Is Representing: _____	Signer Is Representing: _____

4. That sufficient consideration has been exercised by the applicant in adapting the project to existing improvements in the area. Be sure to indicate the source of the information that you are providing (private engineer, development engineering, title report, or other sources). Describe how your proposed Zoning Map Amendment will not adversely impact drainage, sewer, water, traffic, schools, emergency services, roadways and other city services.

   A. Is drainage adequate in the area to support the density that may occur with the rezoning? How will drainage be accommodated? How have you arrived at this conclusion?

   B. Are the water supplies in the area of your project adequate to meet your needs without degrading supply and quality to others? Is there adequate water pressure? Are the lines in need of replacement? Talk to the Utilities Department for the required information.

   C. Are roadways sufficient in the area to serve the density that may occur from the rezoning? How have you arrived at this conclusion?

   D. Will the school district be able to serve the student population that may occur from the rezoning? How have you arrived at this conclusion?

   E. Are adequate means of access available for emergency vehicles to serve the site? What is the approximate response time for emergency vehicles? If your application is approved to rezone the property, will additional means of access be required for increased density? Or will existing access ways be adequate? How have you arrived at this conclusion?

ACKNOWLEDGMENT OF APPLICATION

Please type the following signed statement at the end of your application questionnaire:

I certify that the foregoing statements are true and correct to the best of my knowledge and belief.

Applicant | Robert French (Print Name) | 10/26/18 (Date)

Assessor Data Inquiry | Back to Last Page

Secured Tax Inquiry Detail for Parcel # 009-265-01

Property Location: 4539 VOLTAIRE ST
Billed to: FRENCH, ROBERT & DONTCHO, STEVE
P O BOX 6315
INCLINE VILLAGE, NV 89450-0000

Tax Year: 2018-19
Roll #: 006211
District: 1.7
Tax Service:
Land Use Code: 120

Code Table

Outstanding Taxes:

Prior Year	Tax	Penalty/Interest	Total	Amount Paid	Total Due	
No Prior Year Taxes						
Current Year						
08/20/18	172.23		172.23	172.23	.00	
10/01/18	171.00		171.00	171.00	.00	
01/07/19	171.00		171.00	.00	171.00	<--Pay
03/04/19	171.00		171.00	.00	342.00	<--Pay
Totals:	**685.23**	**.00**	**685.23**	**343.23**		

Payment Cart | History

Additional Information

	2018-19	2017-18	2016-17	2015-16	2014-15
Tax Rate	3.5700	3.5700	3.5200	3.5200	3.5400
Tax Cap Percent	4.2	2.6	.2	3.2	3.0
Abatement Amount	514.64	542.26	308.02	192.28	

Assessor Data Inquiry | Back to Last Page

Secured Tax Inquiry Detail for Parcel # 009-265-02

Property Location: 4580 COCHISE ST
Billed to: FRENCH, ROBERT & DONTCHO, STEVE
P O BOX 6315
INCLINE VILLAGE, NV 89450-0000

Tax Year: 2018-19
Roll #: 006212
District: 1.7
Tax Service:
Land Use Code: 120

Code Table

Outstanding Taxes:

Prior Year	Tax	Penalty/Interest	Total	Amount Paid	Total Due	
No Prior Year Taxes						
Current Year						
08/20/18	172.23		172.23	172.23	.00	
10/01/18	171.00		171.00	171.00	.00	
01/07/19	171.00		171.00	.00	171.00	<--Pay
03/04/19	171.00		171.00	.00	342.00	<--Pay
Totals:	**685.23**	**.00**	**685.23**	**343.23**		

Payment Cart | History

Additional Information

	2018-19	2017-18	2016-17	2015-16	2014-15
Tax Rate	3.5700	3.5700	3.5200	3.5200	3.5400
Tax Cap Percent	4.2	2.6	.2	3.2	3.0
Abatement Amount	514.64	542.26	308.02	192.28	

Assessor Data Inquiry | Back to Last Page

Secured Tax Inquiry Detail for Parcel # 009-265-03

Property Location: 4530 COCHISE ST
Billed to: FRENCH, ROBERT & DONTCHO, STEVE
P O BOX 6315
INCLINE VILLAGE, NV 89450-0000

Tax Year: 2018-19
Roll #: 006213
District: 1.7
Tax Service:
Land Use Code: 140

Code Table

Outstanding Taxes:

Prior Year	Tax	Penalty/Interest	Total	Amount Paid	Total Due	
No Prior Year Taxes						
Current Year						
08/20/18	90.57		90.57	90.57	.00	
10/01/18	88.00		88.00	88.00	.00	
01/07/19	88.00		88.00	.00	88.00	<--Pay
03/04/19	88.00		88.00	.00	176.00	<--Pay
Totals:	**354.57**	**.00**	**354.57**	**178.57**		

Payment Cart | History

Additional Information

	2018-19	2017-18	2016-17	2015-16	2014-15
Tax Rate	3.5700	3.5700	3.5200	3.5200	3.5400
Tax Cap Percent	4.2	2.6	.2	3.2	3.0
Abatement Amount	860.62	874.89	554.16	554.83	570.12

CARSON CITY
Capital of Nevada

Treasurer Home | Assessor Data Inquiry | Back to Last Page

Secured Tax Inquiry Detail for Parcel # 009-267-06

Property Location: W WILLOW ST / COCHISE ST
Billed to: FRENCH, ROBERT & DONTCHO, STEVE
P O BOX 6315
INCLINE VILLAGE, NV 89450-0000

Tax Year: 2018-19
Roll #: 006214
District: 1.7
Tax Service:
Land Use Code: 120

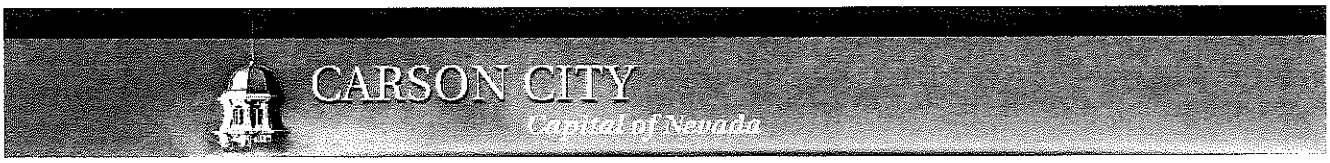
Code Table

Outstanding Taxes:

Prior Year	Tax	Penalty/Interest	Total	Amount Paid	Total Due	
No Prior Year Taxes						
Current Year						
08/20/18	158.78		158.78	158.78	.00	
10/01/18	158.00		158.00	158.00	.00	
01/07/19	158.00		158.00	.00	158.00	<--Pay
03/04/19	158.00		158.00	.00	316.00	<--Pay
Totals:	**632.78**	**.00**	**632.78**	**316.78**		

Payment Cart | History

Additional Information					
	2018-19	2017-18	2016-17	2015-16	2014-15
Tax Rate	3.5700	3.5700	3.5200	3.5200	3.5400
Tax Cap Percent	4.2	2.6	.2	3.2	3.0
Abatement Amount	567.09	592.60	357.09	241.23	47.44



Treasurer Home | Assessor Data Inquiry | Back to Last Page

Secured Tax Inquiry Detail for Parcel # 009-267-07

Property Location: 449 W WILLOW ST
Billed to: FRENCH, ROBERT & DONTCHO, STEVE
P O BOX 6315
INCLINE VILLAGE, NV 89450-0000

Tax Year: 2018-19
Roll #: 006215
District: 1.7
Tax Service:
Land Use Code: 200

Code Table

Outstanding Taxes:

Prior Year	Tax	Penalty/Interest	Total	Amount Paid	Total Due	
No Prior Year Taxes						
Current Year						
08/20/18	534.03		534.03	534.03	.00	
10/01/18	530.00		530.00	530.00	.00	
01/07/19	530.00		530.00	.00	530.00	<--Pay
03/04/19	530.00		530.00	.00	1,060.00	<--Pay
Totals:	**2,124.03**	**.00**	**2,124.03**	**1,064.03**		

Payment Cart | History

Additional Information					
	2018-19	2017-18	2016-17	2015-16	2014-15
Tax Rate	3.5700	3.5700	3.5200	3.5200	3.5400
Tax Cap Percent	4.2	2.6	.2	3.2	3.0
Abatement Amount	482.03	482.32	311.78	152.67	12.34

COCHISE STREET MULTI-FAMILY SUMMARY DESCRIPTION

Market Need

This proposed project is intended to serve the growing need for more affordable work force housing in the Carson City area. It is located in an area with significant employment opportunities within walking distance of the site. (Figure 1A, 1B and 1C) The proposed community also has direct connections to transportation corridors that provide access to employment throughout Carson City, Lake Tahoe, Minden Gardnerville and the larger region.

Based on this need, it is not surprising the property owners have had continued interest from multi-family builders willing to purchasing their property for Multi-family development. This Zoning Map Amendment submittal is the sdcond step by the owners to help address this community need.

Development Program

This proposal is for 143 Apartment Units, 27 One Bedroom, 100 Two Bedroom and 16 Three Bedroom units. Refer to Section 6 for floor plans. Nine buildings are proposed, stepping up the slope in a hillside adaptive manner, with garages on the lower level and two floors of units above. Refer to elevations in Section 6. There are 76 garages and 196 surface parking spaces proposed, in a stepping, hillside adaptive fashion, up the slope. Refer to Preliminary Site Plan in Section 4 for details.

Opportunities and Constraints

Section 2 of this package provides data, analysis and illustrations of how this project's existing Master Plan and proposed Zoning designations can permit the proposed project; refer to Figure 2A, 2B and Section 2, Master Plan Policy Checklist and Application Questionnaire.

Section 3 of the application illustrates how the site mapping can be modified to provide a single parcel for development, and abandons an existing ROW that would have no purpose after development of the site. Refer to proposed Parcel Map.

Abandonment Justification Statement

The Abandonment of the W. Willow St. is necessary to allow a well planned development of the adjoining properties at the density proposed and encouraged in the Master Plan. Providing for a density to support affordable by design workforce housing on this site would not be possible without the abandonment of the ROW of W. Willow St.

From the government perspective, this ROW would not provide any level of vehicular circulation as it is only one block long, with no potential to be extended east (existing development) or west (steep terrain). No public utilities exist in the ROW and only an unimproved storm drain outfall exists as an eroded ditch in the ROW.

Section 3 also provides data and analysis of existing site topography and how it is suited to accommodate the proposed project.

Section 4 contains the Preliminary Site Plan, noting the proposed setbacks, drive isle and parking dimensions, sidewalks, landscaping and open space areas.

Section 5 contains the Project Impact Report which describes how the site can be served from existing and preliminarily proposed sanitary sewer, water and storm drain. It also provides a preliminary estimate of demand for sewer and water service.

Section 6 contains the preliminary floor plans, building plans and elevations for the project. It also provides a preliminary description of Building Type and Occupancy, and a concept of what building materials could be used.

Section 7 is a Detailed Traffic Study that demonstrates the proposed project can be served effectively while maintain a level of service of "A or B" on adjoining streets.

LIST OF APN NUMBERS

APN 09-265-01

APN 09-265-02

APN 09-265-03

APN 09-265-06

APN 09-265-07

ROW OF W. WILLOW ST.

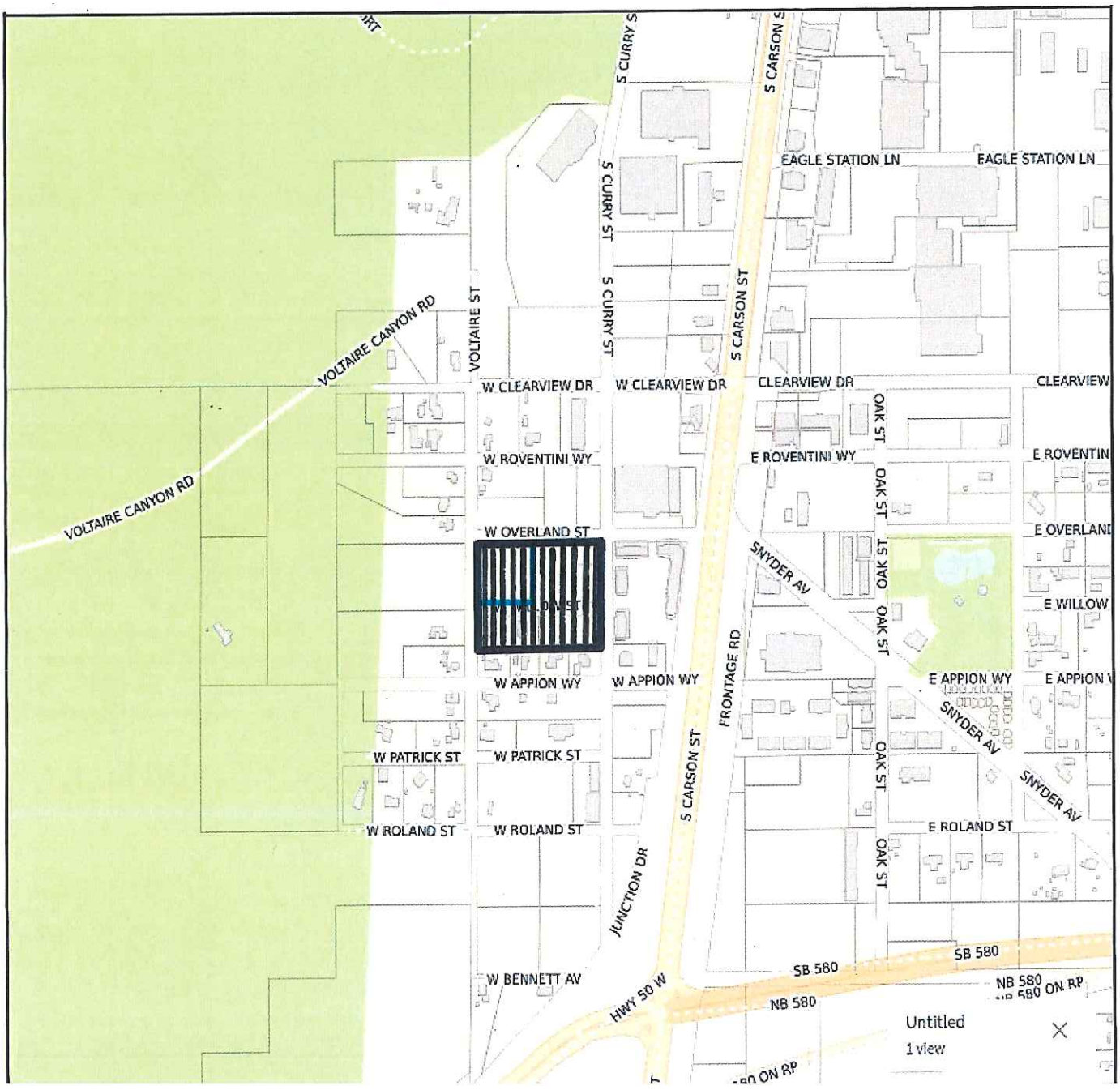


FIGURE 1-A
GENERAL VICINITY MAP

Cochise Street Multi-Family Community
Zoning Map Amendment
24232-01
October, 2018

PLACES Consulting Services, Inc.
PLANNING LANDSCAPE ARCHITECTURE CIVIL ENGINEERING SERVICES

FIGURE 1-B
LOCATION MAP

Cochise Street Multi-Family Community
Zoning Map Amendment
24232-01
October, 2018

PLACES Consulting Services, Inc.
PLANNING LANDSCAPE ARCHITECTURE CIVIL ENGINEERING SERVICES

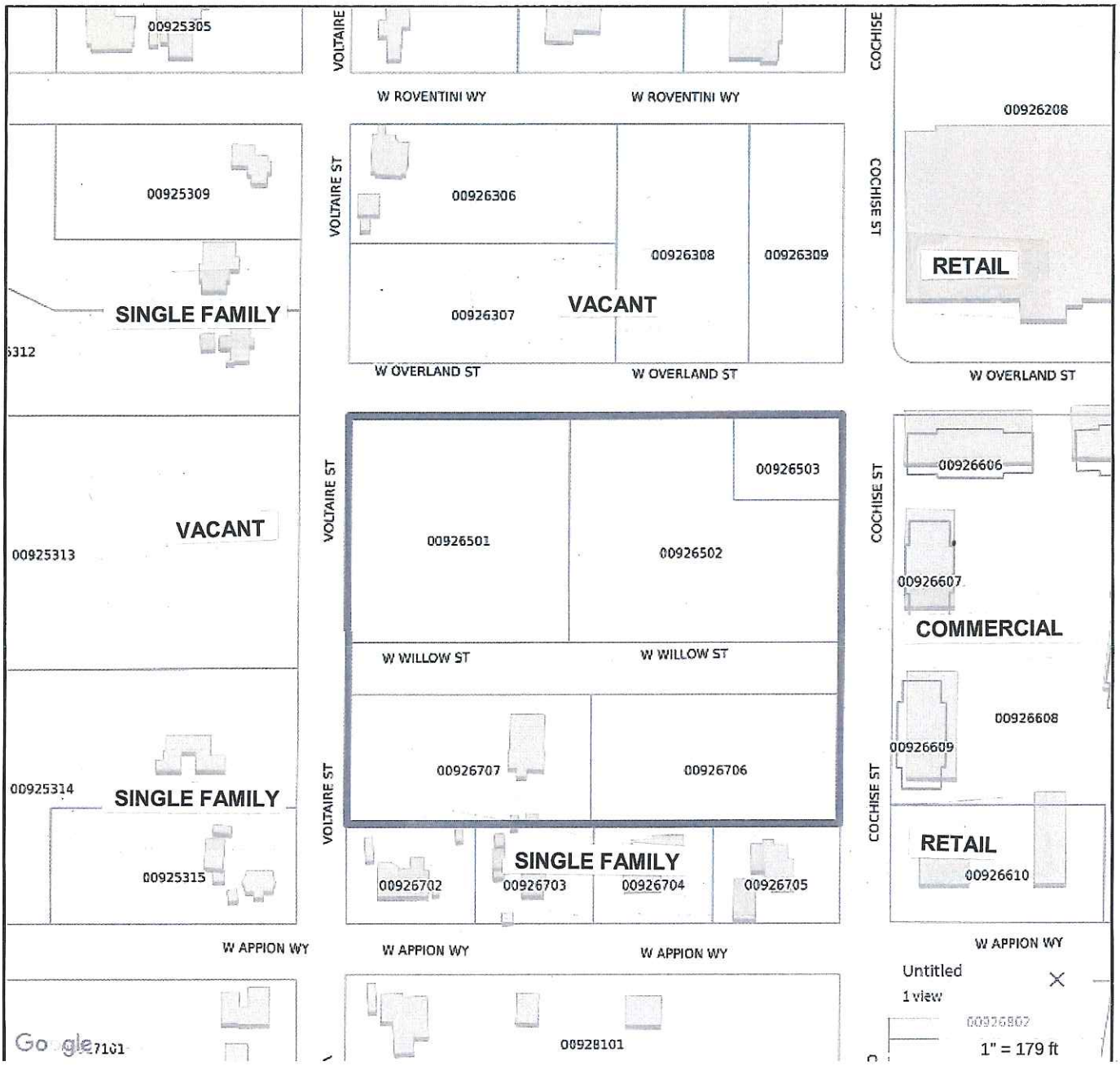


FIGURE 1C
ADJACENT LAND USES

Cochise Street Multi-Family Community
Zoning Map Amendment
24232-01
October, 2018

PLACES Consulting Services, Inc.
PLANNING LANDSCAPE ARCHITECTURE CIVIL ENGINEERING SERVICES

PLANNING, ZONIMG, DEVELOPMENT REVIEW 2

Existing Master Plan

Existing Zoning

Zoning Map Amendment Proposal Questionnaire

Master Plan Policy Checklist

SUP Suggested Conformance with Findings

Cochise Street Multi-Family Community
Zoning Map Amendment
24232-01
October, 2018

PLACES Consulting Services, Inc.
PLANNING LANDSCAPE ARCHITECTURE CIVIL ENGINEERING SERVICES

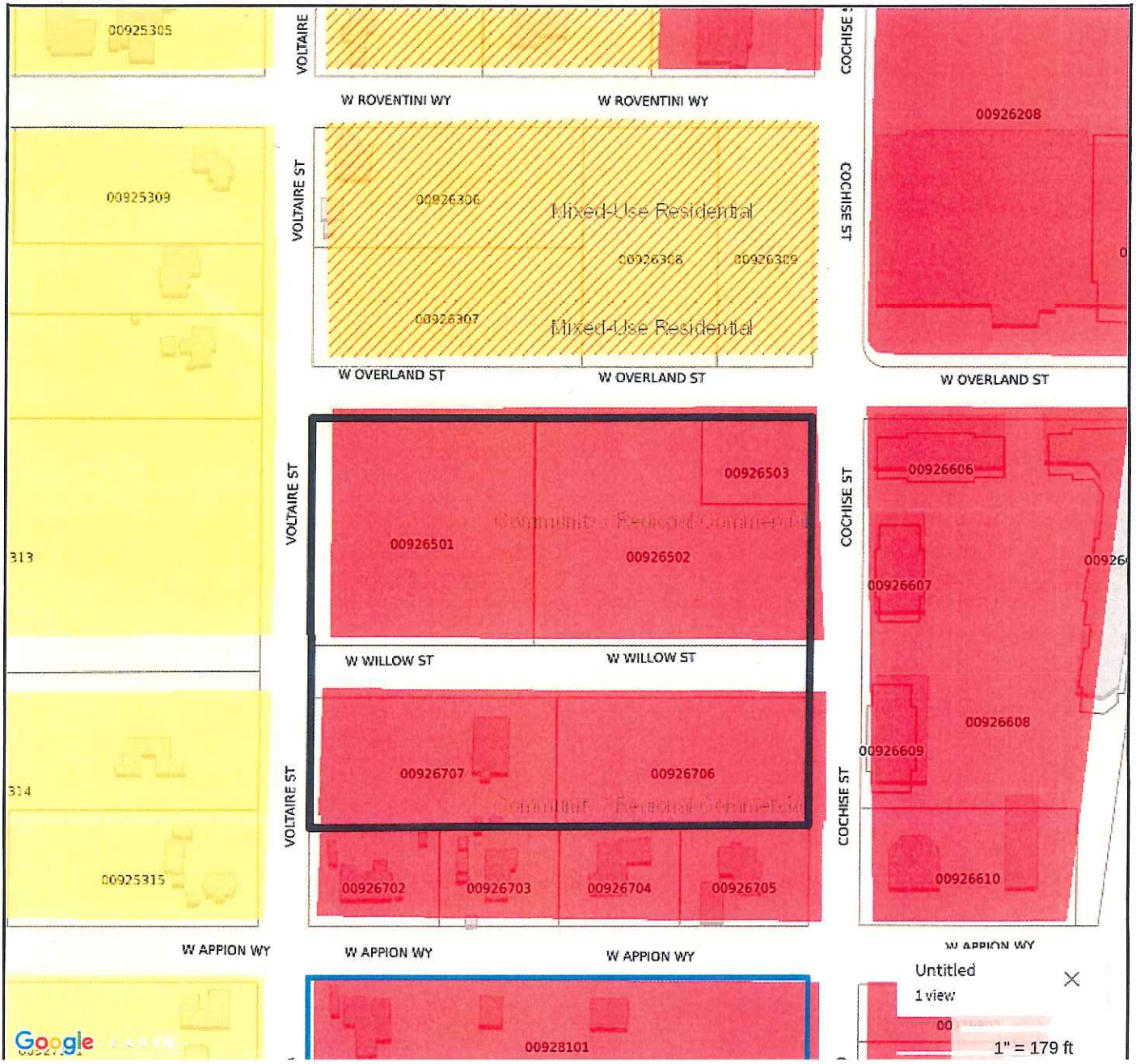


FIGURE 2-A
EXISTUNG MASTER PLAN

Cochise Street Multi-Family Community
Zoning Map Amendment
24232-01
October, 2018

PLACES Consulting Services, Inc.
PLANNING LANDSCAPE ARCHITECTURE CIVIL ENGINEERING SERVICES

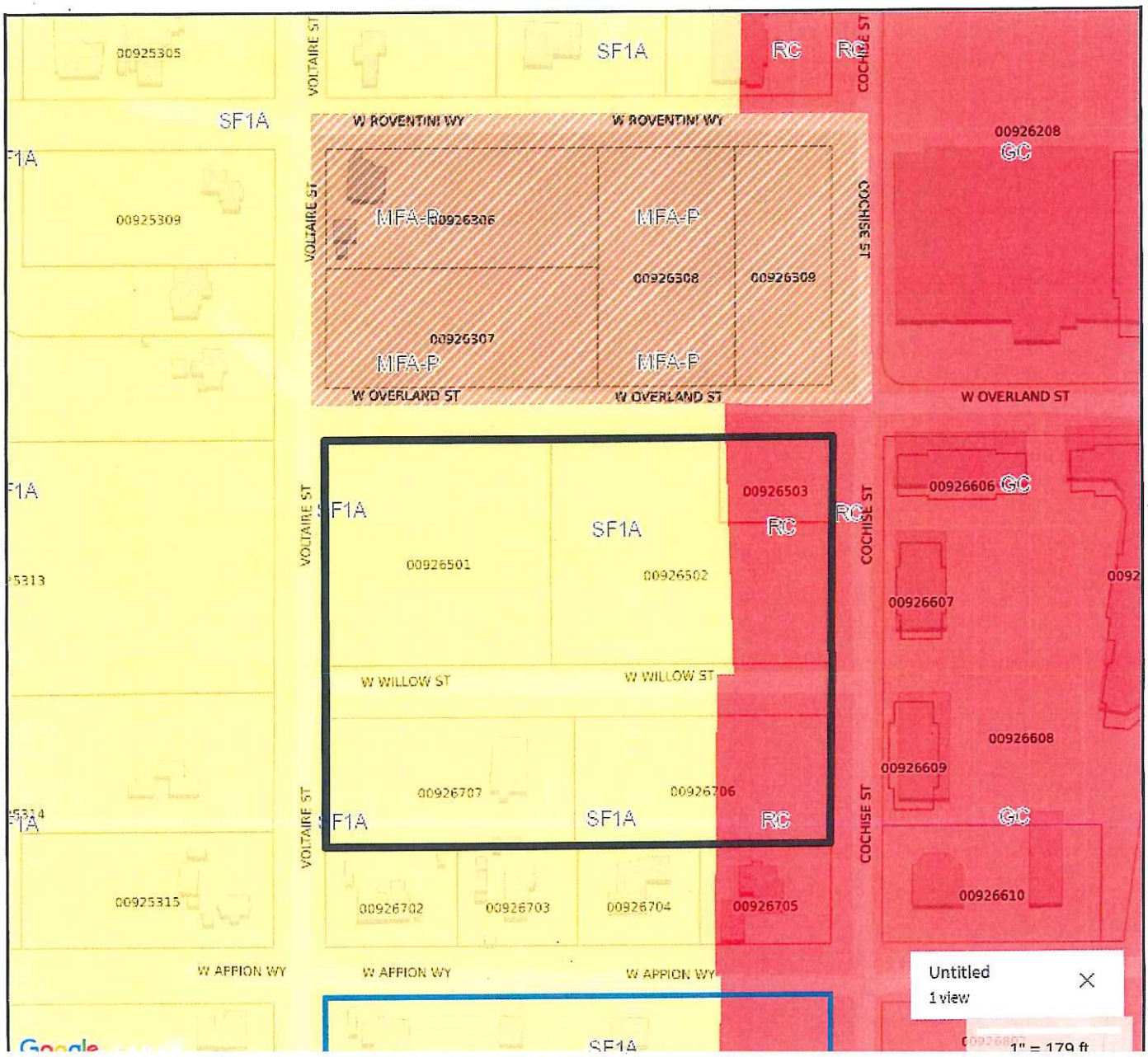


FIGURE 2-B
EXISTING ZONING

Cochise Street Multi-Family Community
Zoning Map Amendment
24232-01
October, 2018

PLACES Consulting Services, Inc.
PLANNING LANDSCAPE ARCHITECTURE CIVIL ENGINEERING SERVICES

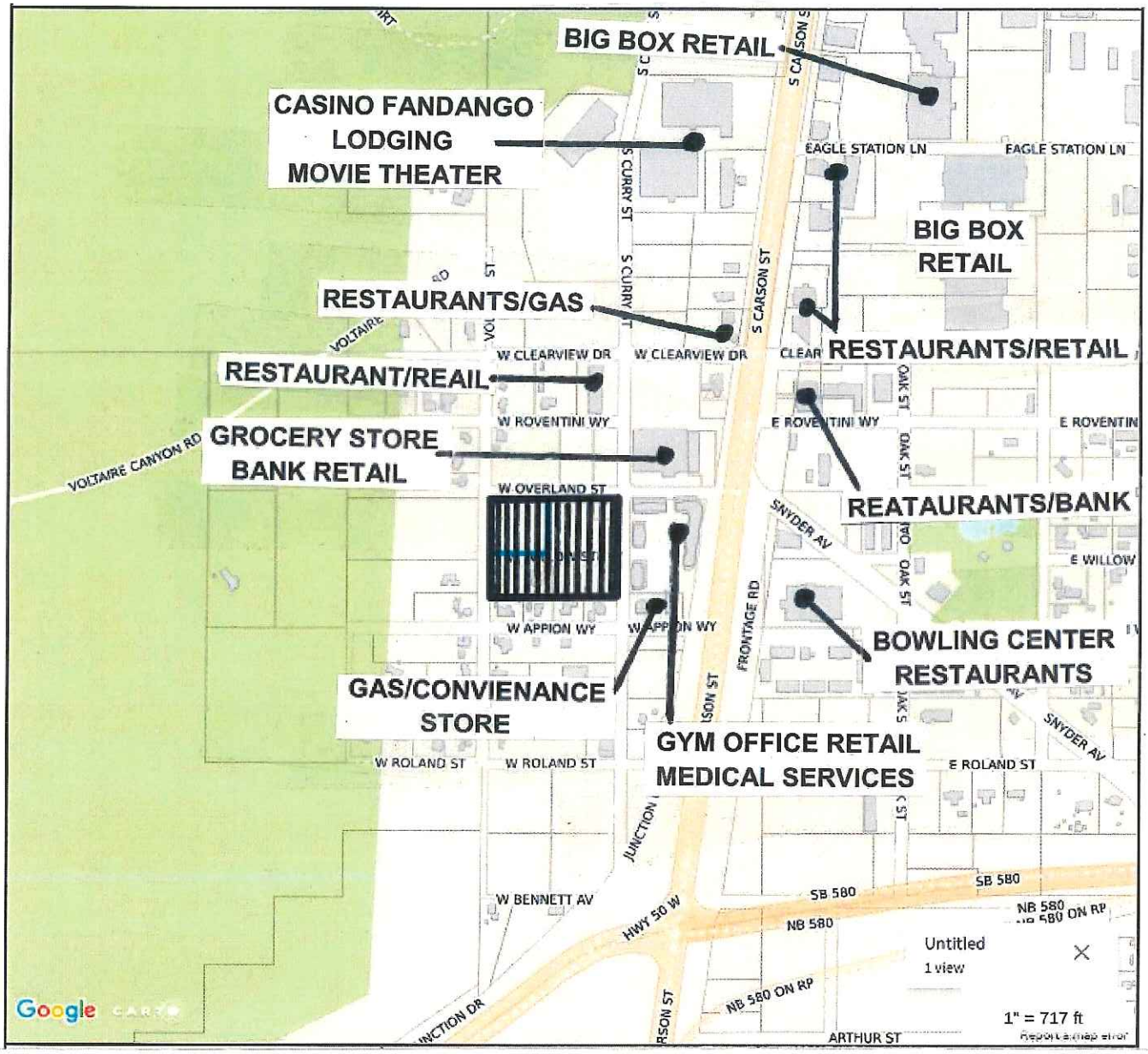


FIGURE 2-C
POTENTIAL EMPLOYMENT, SERVICES & ENTERTAINMENT

Cochise Street Multi-Family Community
Zoning Map Amendment
24232-01
October, 2018

PLACES Consulting Services, Inc.
PLANNING LANDSCAPE ARCHITECTURE CIVIL ENGINEERING SERVICES

APPLICATION QUESTIONAIRE

ZONING AMENDMENT TO RETAIL COMMERCIAL (RC)

COCHISE MULTI-FAMILY

Findings per CCMC 18.02.050 and 18.02.075

1. **That the proposed amendment is in substantial compliance with and supports the goals and policies of the Master Plan.**

   The proposed re-zoning of the property to Retail Commercial (RC) is in compliance with the existing Master Plan designation on the property of Commercial (refer to existing Master Plan map Figure 2A). It is compatible with the surrounding zoning of RC on the eastern portion of the property (refer to existing zoning map Figure 2B), It is also compatible with the MFA zoning to the north, GC zoning to the northeast and east, and RC zoning to the east and southeast.
   The Master Plan Policy Checklist (attached) notes the goals and policies that are addressed by this proposed project. They include:

   - ***A Balanced Land Use Pattern*** *by providing a higher density housing opportunity to address the need for work force housing in an area with a variety of employment opportunities within walking distance of the project. Refer to Figure 2C.*
   - ***Equitable Distribution Of Recreational Opportunities*** *by providing a recreational facility to serve the residents of the project, providing swimming, picnic, playground, walking/jogging facilities, indoor workout area, etc.*
   - ***Economic Vitality*** *by providing a portion of the housing mix that offers an affordable by design housing option for the workforce of Carson City.*
   - ***Livable Neighborhoods*** *by providing a compatible land use that provides workforce housing to serve the employment opportunities in the surrounding neighborhood, while at the same time, proving a customer base for the goods and services offered in the neighborhood within walking distance of the project.*
   - ***Connected City*** *by providing workforce housing with a density capable of supporting future transit opportunities. Also provides enhanced roadway*

and sidewalk connections within the project connected to existing vehicular and pedestrian systems in the surrounding neighborhood.

2. **That the proposed amendment will provide for land uses compatible with existing adjacent land uses and will not have detrimental impacts to other properties in the vicinity**.

The proposed re-zoning to Retail Commercial (RC), extends this existing zoning to the remaining properties in the project, implementing the existing Master Plan designation on the properties. This proposed re-zoning provides compatible zoning to the Mixed Use Residential Zoning to the north, Commercial and Retail Commercial to the east and south. The existing Single Family Zoning to the south is Master Planned to be converted to Commercial in the future. The Single Family zoning to the west is vertically separated from the proposed project limiting any negative impacts in the future.
The project is in an area of mixed use, with a variety of commercial, retail, office, lodging, entertainment and multi-family uses. Refer to Figure 2-C. The projects proximity to this wide range of commercial usesw provides for employment, services and entertainment opportunities that are within walking distance of the project, creating g a compatible mix of uses.
The existing single family adjacent to the site on the south and west will not be negatively impacted by the project. The roadway improvements adjacent to the project will provide levels of service A for traffic in the neighborhood. (Refer to Traffic Impact Report in Section 7). Access and circulation for the project will be segregated away from the existing single family housing and not pact existing access. Proposed buildings will be separated from existing residences by landscaping setbacks, public roadways and internal driveways.

3. **That the proposed amendment will not negatively impact existing or planned public services or facilities and will not adversely impact the public health, safety, and welfare.**

- *The proposed amendment will allow a project that will provide adequate public improvements that will limit potential impacts. The attached Traffic Impact Study (Section 7) notes that with the proposed half street improvements, the project, traffic levels of service will remain at level of service "A" or "B" for all roadways in the neighborhood.*

- *Adequate water, sewer services and capacity exist adjacent to the project, with a water pressure regulating valve (PRV) proposed to be installed by the project. (Refer to Project Impact Report Section 5).*
- *Existing storm drain facilities will be improved by the project with the extension of the proposed storm drain interceptor from the NDOT drainage facility, up Appion Way to Cochise St.*
- *Recreational facilities will be provided with the project, including outdoor swimming, picnic, playground, open play areas, indoor workout facilities, meeting, gaming and party facilities. These private recreational opportunities will reduce the demand on existing and proposed public parks and recreation.*
- *Emergency access to and within the project has been reviewed with of the Fire Dept. to insure adequate emergency access throughout the site, with a fire sprinkler system to be installed throughout the project, to insure adequate fire protection and limit any additional emergency services to serve the project.*
- *According to Mark Korinek with the Carson City School District, it is difficult to determine how many children and what age will likely live in the proposed apartments. This is also likely to change over time. Currently, the middle school serving this area is at capacity, with plans for future expansions and re-zoning possible, to reduce this capacity problem. This will also likely change over time. As the plans for this project are developed over time, the district will review and make recommendations as necessary.*

4. **That sufficient consideration has been exercised by the applicant in adapting the project to existing improvements in the area.**

Existing improvements adjacent to the site provide for adequate access, sewer, water and storm drain services to the site. Proposed street improvements are within existing ROW, providing adequate traffic level of service "A and B" with the project in place. The proposed water PRV will connect two existing water pressure zones providing additional system capacity to serve the surrounding neighborhood as well as the project. The proposed extension of a regional storm drain system from the NDOT drainage system along Carson St. up Appion Way to Cochise St. will provide additional drainage capacity to the surrounding neighborhood as well as the proposed project. Refer to the Project Impact Report in Section 5 and the Traffic Report in Section 7 for additional details.

Master Plan Policy Checklist

Conceptual & Tentative Subdivisions, PUD's & Parcel Maps

PURPOSE

The purpose of a development checklist is to provide a list of questions that address whether a development proposal is in conformance with the goals and objectives of the 2006 Carson City Master Plan that are related to subdivisions of property. This checklist is designed for developers, staff, and decision-makers and is intended to be used as a guide only.

Development Name: COCHISE STREET MULT-FAMILY COMMUNITY

Reviewed By: _____

Date of Review: _____

DEVELOPMENT CHECKLIST

The following five themes are those themes that appear in the Carson City Master Plan and which reflect the community's vision at a broad policy level. Each theme looks at how a proposed development can help achieve the goals of the Carson City Master Plan. A check mark indicates that the proposed development meets the applicable Master Plan policy. The Policy Number is indicated at the end of each policy statement summary. Refer to the Comprehensive Master Plan for complete policy language.

CHAPTER 3: A BALANCED LAND USE PATTERN

The Carson City Master Plan seeks to establish a balance of land uses within the community by providing employment opportunities, a diverse choice of housing, recreational opportunities, and retail services.

Is or does the proposed development:

- ☑ Consistent with the Master Plan Land Use Map in location and density?
- ☑ Meet the provisions of the Growth Management Ordinance (1.1d, Municipal Code 18.12)?
- ☐ Encourage the use of sustainable building materials and construction techniques to promote water and energy conservation (1.1e, f)?
- ☑ Located in a priority infill development area (1.2a)?
- ☐ Provide pathway connections and easements consistent with the adopted Unified Pathways Master Plan and maintain access to adjacent public lands (1.4a)?

NA ☐ Encourage cluster development techniques, particularly at the urban interface with surrounding public lands, as appropriate, and protect distinctive site features (1.4b, c, 3.2a)?

NA ☐ At adjacent county boundaries, coordinated with adjacent existing or planned development with regards to compatibility, access and amenities (1.5a)?

☑ Located to be adequately served by city services including fire and sheriff services, and coordinated with the School District to ensure the adequate provision of schools (1.5d)?

☑ In identified Mixed-Use areas, promote mixed-use development patterns as appropriate for the surrounding context consistent with the land use descriptions of the applicable Mixed-Use designation, and meet the intent of the Mixed-Use Evaluation Criteria (2.1b, 2.2b, 2.3b, Land Use Districts, Appendix C)?

☑ Provide a variety of housing models and densities within the urbanized area appropriate to the development size, location and surrounding neighborhood context (2.2a, 9.1a)?

☐ Protect environmentally sensitive areas through proper setbacks, dedication, or other mechanisms (3.1b)?

NA ☐ If at the urban interface, provide multiple access points, maintain defensible space (for fires) and are constructed of fire resistant materials (3.3b)?

☑ Sited outside the primary floodplain and away from geologic hazard areas or follow the required setbacks or other mitigation measures (3.3d, e)?

☑ Provide for levels of services (i.e. water, sewer, road improvements, sidewalks, etc.) consistent with the Land Use designation and adequate for the proposed development (Land Use table descriptions)?

NA ☐ If located within an identified Specific Plan Area (SPA), meet the applicable policies of that SPA (Land Use Map, Chapter 8)?

CHAPTER 4: EQUITABLE DISTRIBUTION OF RECREATIONAL OPPORTUNITIES

The Carson City Master Plan seeks to continue providing a diverse range of park and recreational opportunities to include facilities and programming for all ages and varying interests to serve both existing and future neighborhoods.

Is or does the proposed development:

☑ Provide park facilities commensurate with the demand created and consistent with the City's adopted standards (4.1b, c)?

☑ Consistent with the Open Space Master Plan and Carson River Master Plan (4.3a)?

CHAPTER 5: ECONOMIC VITALITY

The Carson City Master Plan seeks to maintain its strong diversified economic base by promoting principles which focus on retaining and enhancing the strong employment base, include a broader range of retail services in targeted areas, and include the roles of technology, tourism, recreational amenities, and other economic strengths vital to a successful community.

Is or does the proposed development:

- ☑ Incorporating public facilities and amenities that will improve residents' quality of life (5.5e)?
- ☐ Promote revitalization of the Downtown core (5.6a)?
- ☑ Incorporate additional housing in and around Downtown, including lofts, condominiums, duplexes, live-work units (5.6c)?

CHAPTER 6: LIVABLE NEIGHBORHOODS AND ACTIVITY CENTERS

The Carson City Master Plan seeks to promote safe, attractive and diverse neighborhoods, compact mixed-use activity centers, and a vibrant, pedestrian-friendly Downtown.

Is or does the proposed development:

- ☐ Promote variety and visual interest through the incorporation of varied lot sizes, building styles and colors, garage orientation and other features (6.1b)?
- ☑ Provide variety and visual interest through the incorporation of well-articulated building facades, clearly identified entrances and pedestrian connections, landscaping and other features consistent with the Development Standards (6.1c)?
- ☑ Provide appropriate height, density and setback transitions and connectivity to surrounding development to ensure compatibility with surrounding development for infill projects or adjacent to existing rural neighborhoods (6.2a, 9.3b 9.4a)?
- ☑ If located in an identified Mixed-Use Activity Center area, contain the appropriate mix, size and density of land uses consistent with the Mixed-Use district policies (7.1a, b)?
- ☐ If located Downtown:
  - Integrate an appropriate mix and density of uses (8.1a, e)?
  - Include buildings at the appropriate scale for the applicable Downtown Character Area (8.1b)?
  - Incorporate appropriate public spaces, plazas and other amenities (8.1d)?

CHAPTER 7: A CONNECTED CITY

The Carson City Master Plan seeks promote a sense of community by linking its many neighborhoods, employment areas, activity centers, parks, recreational amenities and schools with an extensive system of interconnected roadways, multi-use pathways, bicycle facilities, and sidewalks.

Is or does the proposed development:

- ☑ Promote transit-supportive development patterns (e.g. mixed-use, pedestrian-oriented, higher density) along major travel corridors to facilitate future transit (11.2b)?
- ☑ Maintain and enhance roadway connections and networks consistent with the Transportation Master Plan (11.2c)?
- ☑ Provide appropriate pathways through the development and to surrounding lands, including parks and public lands, consistent with the Unified Pathways Master Plan (12.1a, c)?

CONFORMANCE REVIEW WITH SUP FINDINGS

Special Use Permit Review Standards – Suggested Conformance With Findings
The Planning Commission shall make 2 of the following findings in the affirmative in the review of a Special Use Permit in addition to the required findings of Section 18.02.080 of the Carson City Municipal Code.

a. The development is not situated on a primary commercial arterial street frontage.

The property is not located on a primary commercial arterial. It is located on minor streets with only half street improvements currently existing. .

b. The development is integrated into a mixed use development that includes commercial development.

The property is in an area of mixed use, with a variety of commercial, retail, office, lodging and entertainment uses. Refer to Figure 2-C. Its proximity to this wide range of commercial uses provides for employment, services and entertainment opportunities that are within walking distance of the proposed housing. This proximity provides a convenient live-work opportunity, encouraging alternative modes of travel such as walking and biking.

c. The applicant has provided evidence that the site is not a viable location for commercial uses.

The property is situated several hundred feet away from Carson Street, the primary arterial in this area. It sits behind other existing commercial development, prohibiting any visual connection to the traffic on Carson Street. The opening of the bypass has significantly reduced the amount of traffic on this section of Carson Street. The property has no direct visible driveway or street access to Carson Street. Access to Carson Street is circuitous, with limited turning movements, further limiting the viability of the site to be used for commercial purposes.
The impact of the above physical constraints can be seen in the lack of leasing activity in the adjacent commercial center to the east with frontage and visibility on Carson Street. This center was built over 10 years ago, and the westerly 2 buildings have been vacant the entire time and remain vacant today, with the exception of a small space rented to an office use. A third westerly building, closer to Carson Street, has just recently been leased to a medical office use.

d. The site is designated Mixed Use Commercial, Mixed Use Residential or Mixed Use Employment on the Master Plan Land Use Map

The site is not in conformance with this finding. However, the adjacent vacant property to the north is designated Mixed Use Residential, so the Master Plan anticipated this type of use adjacent to this property.

MAPPING & TOPOGRAPHY-3

Proposed Parcel Map

Granting of ROW to Cochise St., Overland St. and Voltaire St.

Abandoning W. Willow St. ROW

Topographic and Boundary Survey

Slope Map and Slope Analysis

Faults

Cochise Street Multi-Family Community
Zoning Map Amendment
24232-01
October, 2018

PLACES Consulting Services, Inc.
PLANNING LANDSCAPE ARCHITECTURE CIVIL ENGINEERING SERVICES

MAPPING AND TOPOGRAPHY

Proposed Parcel Map - Reversion to Acreage

The attached draft map is intended to accomplish three things:

Eliminate existing parcel lines that currently will not allow the proposed development, establishing a single parcel to support the planned project. (Refer to Section1 Legal Description).

Dedicates ROW to Cochise, Overland and Voltaire Streets. Document # 2007-373515 noted that the existing parcels of record included roadway right of way to the center line of adjacent Cochise, Overland and Voltaire streets. This Reversion Map is proposed to resolve that discrepancy in Title.

Abandon the existing ROW for W. Willow St. This ROW was originally plotted as W. Willow Street and was granted as public ROW with Parcel Map 610. It has historically been used for access to the home on Parcel B, pm 610. The only other current use of this ROW is an outfall for public storm drainage coming from a catch basin and 12" pipe in Voltaire St. This storm drain pipe will be connected to the future storm drain system for the project. There are no other public utilities within this ROW. (Refer to Utility Company Statements Section 1)

Boundary Survey.

The attached boundary survey identifies the parcel as containing 6.67 net acres of land. It establishes the property lines based on research, field verification and field located property corners, if found.

Topographic Survey and Slope Map.

The topographic survey was performed in the field. It located existing utilities, paving and private improvements as they currently exist. Refer to Section 5 for more details on existing utilities

Slope Map and Analysis

The slope map illustrates that approximately 81% of the site has slopes less than 16%. Only 4% of the site has slopes in excess of 33%, and most of those slopes are from previous grading of pads for houses or were created by erosion from the outfall of the 12" storm drain pipe from Voltaire St. Calculation of "average slope" across the entire site is approximately 8%.

Existing Tree Inventory

There are approximately 11 trees around the building site in the southwesterly portion of the site. These trees rang in size from 6" to 12" trunk diameter. Most are ornamental, some are fruit barring. Given the grading that needs to done in this area, it is not likely that they can be incorporated into the site and retained. Those that are on the southern edge of the site, may be able to be incorporated into the project landscape. Additional detailed grading analysis will be required.

There are 6 trees, 6' to 12" diameter, along the ROW of Voltaire Street, that are in poor condition and may be within the ROW. The proposed grading in this area will not allow them to be retained.

Faults

There are no identified faults on site. There is one to the west, identified by USGS as a linear fault, approximately 500 to 1000 feet west of the site. see Figure 3-A

UTILITY COMPANIES CERTIFICATE

THE UTILITY EASEMENTS SHOWN ON THIS PLAT HAVE BEEN REVIEWED, ACCEPTED AND APPROVED BY THE UNDERSIGNED PUBLIC UTILITY AND CABLE TV COMPANIES AND THE CARSON CITY UTILITY DEPARTMENT, AND ALL PUBLIC UTILITY AND PRIVATE DRAINAGE EASEMENTS COMMON TO THE PARCEL LINES BEING REVERTED BY THIS PLAT ARE HEREBY RELINQUISHED.

SIERRA PACIFIC POWER CO. D/B/A NV ENERGY DATE

NAME / TITLE (PRINT)

STATE OF NEVADA)
)SS
COUNTY OF WASHOE)

THIS INSTRUMENT WAS ACKNOWLEDGED BEFORE ME ON_____, BY _____ OF SIERRA PACIFIC POWER CO. D/B/A NV ENERGY.

WITNESS MY HAND AND OFFICIAL SEAL:

NOTARY PUBLIC

MY COMMISSION EXPIRES_____,

NEVADA BELL TELEPHONE CO. D/B/A/ AT&T NEVADA DATE

NAME / TITLE (PRINT)

STATE OF NEVADA)
)SS
COUNTY OF WASHOE)

THIS INSTRUMENT WAS ACKNOWLEDGED BEFORE ME ON_____, BY _____ OF NEVADA BELL TELEPHONE CO. D/B/A/ AT&T NEVADA.

WITNESS MY HAND AND OFFICIAL SEAL:

NOTARY PUBLIC

MY COMMISSION EXPIRES_____,

CHARTER COMMUNICATIONS DATE

NAME / TITLE (PRINT)

STATE OF NEVADA)
)SS
COUNTY OF WASHOE)

THIS INSTRUMENT WAS ACKNOWLEDGED BEFORE ME ON_____, BY _____ OF CHARTER COMMUNICATIONS.

WITNESS MY HAND AND OFFICIAL SEAL:

NOTARY PUBLIC

MY COMMISSION EXPIRES_____,

SOUTHWEST GAS CORPORATION DATE

NAME / TITLE (PRINT)

STATE OF NEVADA)
)SS
CARSON CITY)

THIS INSTRUMENT WAS ACKNOWLEDGED BEFORE ME ON_____, BY _____ OF SOUTHWEST GAS CORPORATION.

WITNESS MY HAND AND OFFICIAL SEAL:

NOTARY PUBLIC

MY COMMISSION EXPIRES_____,

CARSON CITY UTILITY DEPARTMENT DATE

NAME / TITLE (PRINT)

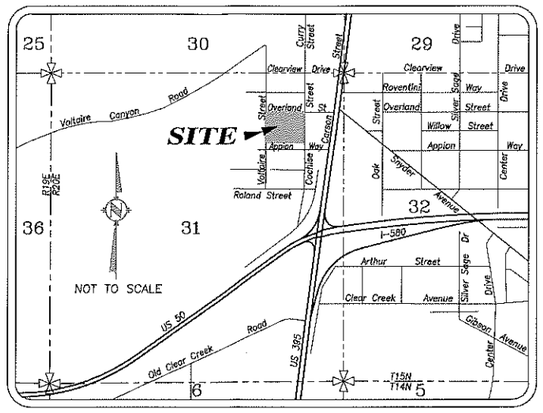
STATE OF NEVADA)
)SS
CARSON CITY)

THIS INSTRUMENT WAS ACKNOWLEDGED BEFORE ME ON_____, BY _____ OF CARSON CITY UTILITY DEPARTMENT.

WITNESS MY HAND AND OFFICIAL SEAL:

NOTARY PUBLIC

MY COMMISSION EXPIRES_____,



VICINITY MAP

SURVEYOR'S CERTIFICATE

I, EDWARD A. FULLER, A PROFESSIONAL LAND SURVEYOR LICENSED IN THE STATE OF NEVADA, HEREBY CERTIFY THAT:

1. THIS PLAT REPRESENTS THE RESULTS OF A SURVEY CONDUCTED UNDER MY SUPERVISION AT THE INSTANCE OF ROBERT FRENCH AND STEVE DONTCHO.

2. THE LANDS REPRESENTED ON THIS PLAT LIE WITHIN A PORTION OF THE SOUTHWEST QUARTER, OF THE NORTHEAST QUARTER, OF THE NORTHEAST QUARTER, OF SECTION 31, TOWNSHIP 15 NORTH, RANGE 20 EAST, MOUNT DIABLO MERIDIAN, CARSON CITY, STATE OF NEVADA, AND THE SURVEY WAS COMPLETED ON _____,

3. THIS PLAT COMPLIES WITH THE APPLICABLE STATUTES OF THIS STATE AND ANY LOCAL ORDINANCES IN EFFECT ON THE DATE THE SURVEY WAS COMPLETED, AND THE SURVEY WAS CONDUCTED IN ACCORDANCE WITH CHAPTER 625 OF THE NEVADA ADMINISTRATIVE CODE.

4. THE MONUMENTS DEPICTED ON THIS PLAT ARE OF THE CHARACTER SHOWN, OCCUPY THE POSITIONS INDICATED, AND ARE OF SUFFICIENT DURABILITY.

5. THIS PLAT IS NOT IN CONFLICT WITH THE PROVISIONS OF NRS 278.010 THROUGH NRS 278.630 INCLUSIVE, AND NO ADDITIONAL PARCELS HAVE BEEN CREATED.

PROFESSIONAL LAND SURVEYOR STATE OF NEVADA EDWARD A. FULLER EXP. 6/30/19 No. 11827

EDWARD A. FULLER
NEVADA PLS 11827

CITY ENGINEER'S CERTIFICATE

THE UNDERSIGNED HEREBY CERTIFIES THAT HE IS THE DULY APPOINTED CARSON CITY ENGINEER AND THAT HE HAS EXAMINED THE REVERSION TO ACREAGE PARCEL MAP SHOWN HEREON AND FINDS THAT ALL PROVISIONS OF THE LAWS OF THE STATE OF NEVADA AND CARSON CITY PERTAINING TO PARCEL MAP PROCEDURES HAVE BEEN COMPLIED WITH AND IS SATISFIED THAT THIS MAP IS TECHNICALLY CORRECT.

DANIEL STUCKY, PE, CITY ENGINEER DATE

PARCEL MAP REVIEW COMMITTEE

THIS REVERSION TO ACREAGE PARCEL MAP CONFORMS TO THE TENTATIVE REVERSION TO ACREAGE PARCEL MAP REVIEWED AND CONDITIONALLY APPROVED ON_____, 2017 AND ALL CONDITIONS IMPOSED ON SUCH APPROVAL HAVE BEEN SATISFIED.

LEE PLEMEL, AICP DATE
COMMUNITY DEVELOPMENT DIRECTOR

TREASURER'S CERTIFICATE

THE UNDERSIGNED HEREBY CERTIFIES THAT ALL PROPERTY TAXES ON THE LAND FOR FISCAL YEAR 2018 HAVE BEEN PAID AND THAT THE FULL AMOUNT OF ANY DEFERRED PROPERTY TAXES FOR THE CONVERSION OF THE PROPERTY FROM AGRICULTERAL USE HAVE BEEN PAID PURSUANT TO N.R.S. 361A.265.
APN'S 09-265-01, 02, 03 & 09-267-06, 07.

TREASURER DATE

OWNER'S CERTIFICATE

THIS IS TO CERTIFY THAT THE UNDERSIGNED, ROBERT FRENCH, AN UNMARRIED MAN, AND STEVE DONTCHO, A MARRIED MAN AS HIS SOLE AND SEPERATE PROPERTY, TOGETHER AS JOINT TENANTS ARE THE OWNERS OF THE TRACT OF LAND REPRESENTED ON THIS PLAT AND HAVE CONSENTED TO THE PREPERATION AND RECORDATION OF THIS REVERSION TO ACREAGE PARCEL MAP, AND THAT THE SAME IS EXECUTED IN COMPLIANCE WITH AND SUBJECT TO THE PROVISIONS OF N.R.S. CHAPTER 278, AND THAT THOSE PORTIONS OF VOLTAIRE STREET, WEST OVERLAND STREET AND COCHISE STREET DEPICTED HEREON INCLUDING ALL APPURTENANCES THERETO ARE HEREBY DEDICATED TO CARSON CITY AS PUBLIC THOROUGHFARES FOREVER; AND HEREBY GRANTS TO ALL PUBLIC UTILITIES AND CARSON CITY THOSE PERMANENT EASEMENTS SHOWN HEREON FOR THE CONSTRUCTION AND MAINTENANCE OF DRAINAGE AND UTILITY SYSTEMS TOGETHER WITH THE RIGHT OF ACCESS THERETO FOREVER.

ROBERT FRENCH DATE

STEVE DONTCHO DATE

NOTARY'S CERTIFICATE

STATE OF_____
SS
COUNTY OF_____

THIS INSTRUMENT WAS ACKNOWLEDGED BEFORE ME ON_____, BY ROBERT FRENCH.

WITNESS MY HAND AND OFFICIAL SEAL:

NOTARY PUBLIC

MY COMMISSION EXPIRES_____,

NOTARY'S CERTIFICATE

STATE OF_____
SS
COUNTY OF_____

THIS INSTRUMENT WAS ACKNOWLEDGED BEFORE ME ON_____, BY ROBERT FRENCH.

WITNESS MY HAND AND OFFICIAL SEAL:

NOTARY PUBLIC

MY COMMISSION EXPIRES_____,

TITLE COMPANY CERTIFICATE

THE UNDERSIGNED HEREBY CERTIFIES THAT THIS REVERSION TO ACREAGE PARCEL MAP HAS BEEN EXAMINED AND THAT ROBERT FRENCH, AN UNMARRIED MAN, AND STEVE DONTCHO, A MARRIED MAN AS HIS SOLE AND SEPERATE PROPERTY, ARE THE LAST TITLE HOLDERS OF RECORD FOR ALL THE LANDS DELINEATED HEREON AND THAT NO ONE HOLDS OF RECORD A SECURITY INTEREST IN THE LANDS AND THAT THERE ARE NO LIENS OF RECORD AGAINST THE OWNERS FOR DELINQUENT STATE, COUNTY, MUNICIPAL, FEDERAL OR LOCAL TAXES COLLECTED AS TAXES OR SPECIAL ASSESSMENTS, EXCEPT:_____,

FIRST AMERICAN TITLE INSURACNE COMPANY, A NEBRASKA CORPORATION.

BY: VICKIE A. TAYLOR, COMMERCIAL TITLE OFFICER DATE

NOTES:

1. DOC. NO. 2007-373515 PARCEL 11A INCLUDES PARCEL 11 AND THOSE PORTIONS OF PARCELS IV & V LYING NORTHERLY OF THE NORTH LINE OF PARCEL 11B TO THE CENTERLINES OF VOLTAIRE, OVERLAND AND COCHISE STREETS, EXCEPTING THOSE PORTIONS OF VOLTAIRE AND COCHISE STREETS & WILLOW STREET DEDICATED PER PARCEL MAP 610.
2. PARCEL 11B EXCLUDES THOSE PORTIONS OF VOLTAIRE STREET AND COCHISE STREET DEDICATED PER PARCEL MAP 610.
3. ALL PUBLIC UTILITY EASEMENTS GRANTED HEREON INCLUDE CABLE TV.
4. PUBLIC UTILITY AND DRAINAGE EASEMENTS ARE HEREBY GRANTED 10 FEET IN WIDTH ADJACENT TO THOSE STREET RIGHTS-OF-WAY DEDICATED HEREON.
5. THE REVERTED PARCEL SHOWN HEREON IS SUBJECT TO CARSON CITY'S GROWTH MANAGEMENT ORDINANCE AND ALL PROPERTY OWNERS SHALL COMPLY WITH THE PROVISIONS OF SAID ORDINACE.

BASIS OF BEARINGS

NEVADA STATE PLANE COORDINATE SYSTEM, WEST ZONE, NAD 83/94 (HARN), PER OBSERVED 2010 CARSON CITY CONTROL NETWORK GPS MONUMENTS SHOWN HEREON. THE COORDINATES AND SURVEY DIMENSIONS SHOWN HEREON ARE GROUND VALUES. TO OBTAIN GRID VALUES DIVIDE GROUND VALUES BY A COMBINED FACTOR OF 1.0002000001.

TOTAL AREA = 7.47± ACRES GROSS - 6.67± ACRES NET

COUNTY RECORDER'S CERTIFICATE

FILE NO. _____
FILED FOR RECORD AT THE REQUEST OF

_____

ON THIS _____ DAY OF _____, 2018, AT

____ MINUTES PAST _____ O'CLOCK, ___M
OFFICIAL RECORDS OF CARSON CITY, NV
SUSAN MERRIWETHER
CARSON CITY CLERK - RECORDER

BY:_____
DEPUTY

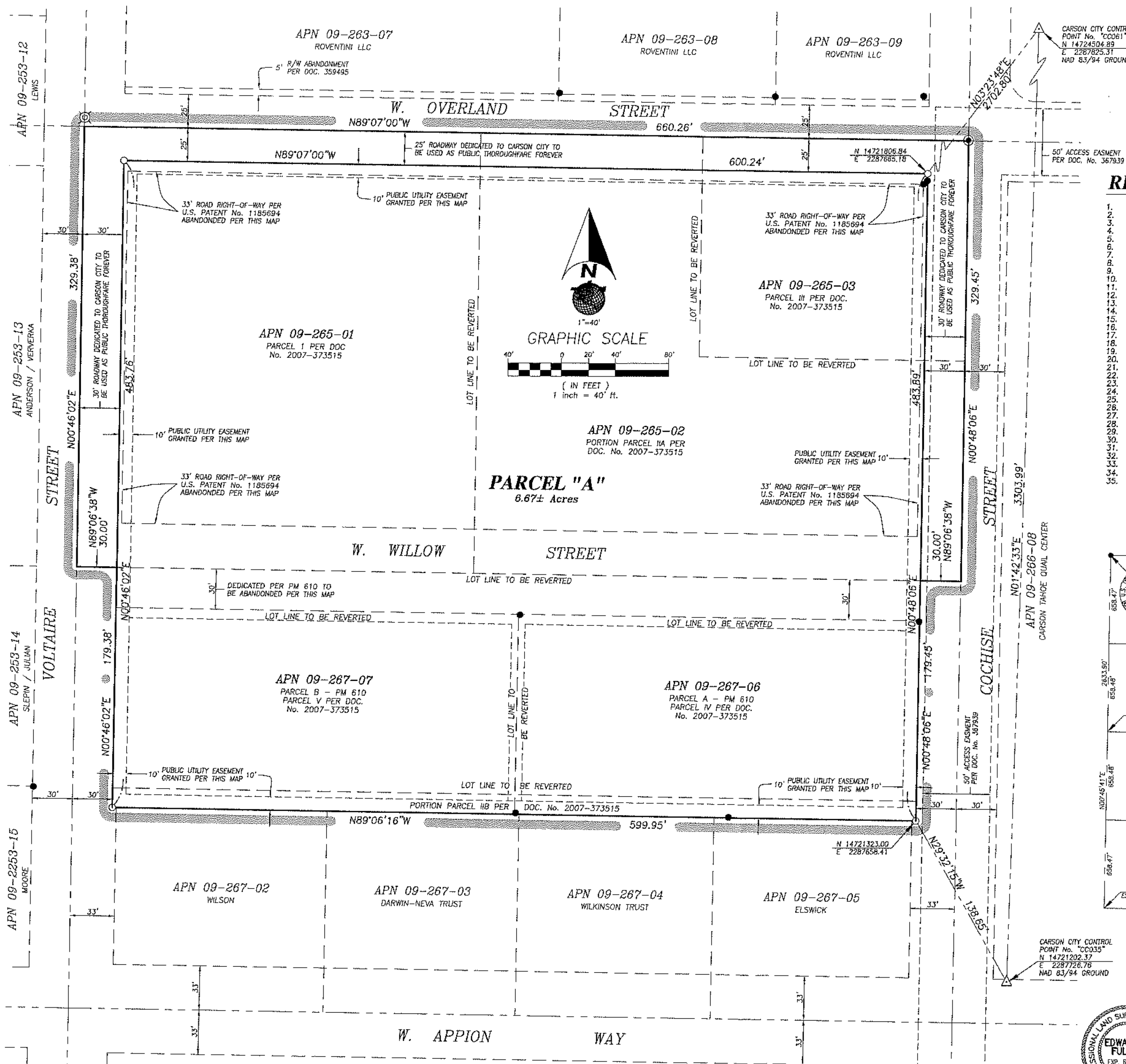
REVERSION TO ACREAGE PARCEL MAP
FOR
SOUTH CARSON TOWN CENTER

BEING A PORTION OF UNITED STATES PATENT No. 1185694 AND UNITED STATES PATENT No. 1199581

LOCATED WITHIN A PORTION OF THE SW 1/4, OF THE NE 1/4, OF THE NE 1/4, OF SECTION 31, T15N, R20E, MOUNT DIABLO MERIDIAN
CARSON CITY NEVADA

Meridian Surveying & Mapping, Inc.
Land, Construction and Boundary Surveys
8725 Technology Way C2, Reno, NV 89521 - (775) 690-4194

DRAWN BY: EAF
DATE: OCT 2017
SHEET 1/2 OF SHEETS



BASIS OF BEARINGS

NEVADA STATE PLANE COORDINATE SYSTEM, WEST ZONE, NAD 83/94 (HARN), PER OBSERVED 2010 CARSON CITY CONTROL NETWORK GPS MONUMENTS SHOWN HEREON. THE COORDINATES AND SURVEY DIMENSIONS SHOWN HEREON ARE GROUND VALUES, TO OBTAIN GRID VALUES DIVIDE GROUND VALUES BY A COMBINED FACTOR OF 1.0002000001.

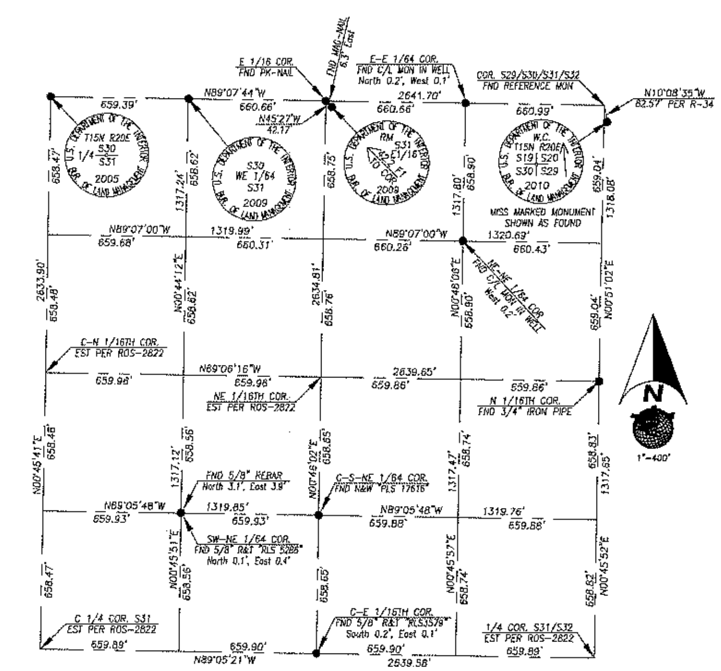
TOTAL AREA = 7.47± ACRES GROSS – 6.67± ACRES NET

LEGEND

- △ FOUND CARSON CITY CONTROL POINT
- ◉ FOUND CENTERLINE MONUMENT IN WELL
- FOUND "PK" NAIL
- ● FOUND POINT AS NOTED
- ○ SET 5/8" REBAR WITH CAP "PLS 11827"
- (R1) RECORD PER REFERENCE No. 1
- (M) MEASURED
- PUE PUBLIC UTILITY EASEMENT

REFERENCE DOCUMENTS

1. RECORD OF SURVEY No. 66, DOCUMENT No. 04531, RECORDED SEPTEMBER 21, 1955.
2. U.S. PATENT No. 1185694, DOCUMENT No. 021450, RECORDED OCTOBER 7, 1958.
3. U.S. PATENT No. 1199581, DOCUMENT No. 028128, RECORDED OCTOBER 9, 1959.
4. JOINT TENANCY DEED, DOCUMENT No. 028129, RECORDED OCTOBER 9, 1959.
5. JOINT TENANCY DEED, DOCUMENT No. 028130, RECORDED OCTOBER 9, 1959.
6. DEED, DOCUMENT No. 028131, RECORDED OCTOBER 9, 1959.
7. GRANT, BARGAIN AND SALE DEED, DOCUMENT No. 040130, RECORDED JUNE 14, 1961.
8. QUITCLAIM DEED, DOCUMENT No. 76502, RECORDED JUNE 10, 1964.
9. QUITCLAIM DEED, DOCUMENT No. 76503, RECORDED JUNE 10, 1964.
10. QUITCLAIM DEED, DOCUMENT No. 76504, RECORDED JUNE 10, 1964.
11. GRANT DEED, DOCUMENT No. 77143, RECORDED JUNE 26, 1964.
12. RECORD OF SURVEY No. 221, DOCUMENT No. 77144, RECORDED JUNE 26, 1964.
13. QUITCLAIM DEED, DOCUMENT No. 85497, RECORDED DECEMBER 23, 1964.
14. QUITCLAIM DEED, DOCUMENT No. 85498, RECORDED DECEMBER 23, 1964.
15. QUITCLAIM DEED, DOCUMENT No. 85498, RECORDED DECEMBER 23, 1964.
16. QUITCLAIM DEED, DOCUMENT No. 85500, RECORDED DECEMBER 23, 1964.
17. DECREE OF DISTRIBUTION, DOCUMENT No. 89889, RECORDED APRIL 29,1965.
18. ORDINANCE No. 1965-11, PASSED AND ADOPTTED AUGUST 20, 1965.
19. QUITCLAIM DEED, DOCUMENT No. 72258, RECORDED JUNE 26, 1970.
20. RECORD OF SURVEY No. 415, DOCUMENT No. 33722, RECORDED MARCH 22, 1974.
21. RECORD OF SURVEY No. 481, DOCUMENT No. 58213, RECORDED OCTOBER 27, 1975.
22. DECREE OF DISTRIBUTION, DOCUMENT No. 72091, RECORDED JULY 13, 1977.
23. GRANT BARGAIN AND SALE DEED, DOCUMENT No. 73539, RECORDED SEPTEMBER 9, 1977.
24. PARCEL MAP No. 610, DOCUMENT No. 74563, RECORDED OCTOBER 27, 1977.
25. GRANT, BARGAIN, SALE DEED, DOCUMENT No. 72959, RECORDED JUNE 30, 1988.
26. PARCEL MAP No. 1954, DOCUMENT No. 134300, RECORDED SEPTEMBER 15, 1992.
27. AMENDED PARCEL MAP No. 2128, DOCUMENT No. 180895, RECORDED OCTOBER 12, 1995.
28. ORDER VACATING & ABANDONING PUBLIC R/W, DOCUMENT No. 183076, RECORDED DECEMBER 14, 1995.
29. ORDER ABANDONING PUBLIC RIGHT-OF-WAY, DOCUMENT No. 359495, RECORDED OCTOBER 6, 2006.
30. RECORD OF SURVEY No. 2671, DOCUMENT No. 373144, RECORDED OCTOBER 23, 2007.
31. GRANT, BARGAIN AND SALE DEED, DOCUMENT No. 373515, RECORDED NOVEMBER 1, 2007.
32. ORDER ABANDONING PUBLIC RIGHT-OF-WAY, DOCUMENT No. 390422, RECORDED JUNE 8, 2009.
33. RECORD OF SURVEY No. 2749, DOCUMENT No. 403435, RECORDED AUGUST 11, 2010.
34. BLM PLAT & FIELD NOTES, DEP. RESURVEY SEC'S 30 & 33, T15N, R20E, MDM, AUGUST 31, 2010.
35. RECORD OF SURVEY No. 2822, DOCUMENT No. 446606, RECORDED AUGUST 15, 2014.



NE 1/4 SECTION 31
T15N, R20E, MDM

PROFESSIONAL LAND SURVEYOR - STATE OF NEVADA
EDWARD A. FULLER
EXP. 6/30/19
No. 11827

REVERSION TO ACREAGE PARCEL MAP

FOR

SOUTH CARSON TOWN CENTER

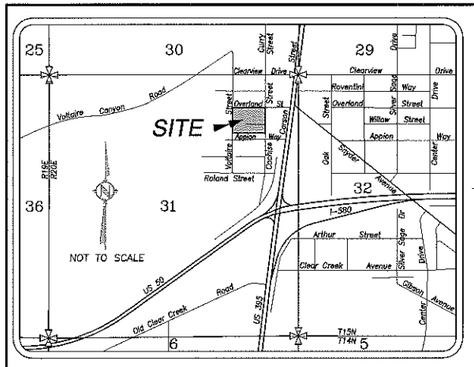
BEING A PORTION OF UNITED STATES PATENT No. 1185694 AND UNITED STATES PATENT No. 1199581

LOCATED WITHIN A PORTION OF THE SW 1/4, OF THE NE 1/4, OF THE NE 1/4, OF SECTION 31, T15N, R20E, MOUNT DIABLO MERIDIAN

CARSON CITY **NEVADA**

Meridian Surveying & Mapping, Inc.
Land, Construction and Boundary Surveys
8725 Technology Way C2, Reno, NV 89521 - (775) 690-4194

DRAWN BY: EAF
DATE: OCT 2017
SHEET 2 / 2 OF SHEETS



VICINITY MAP

9/12/2017

JAMES D. BAILEY, JR.
NEVADA PROFESSIONAL LAND SURVEYOR NO. 18368

LEGEND

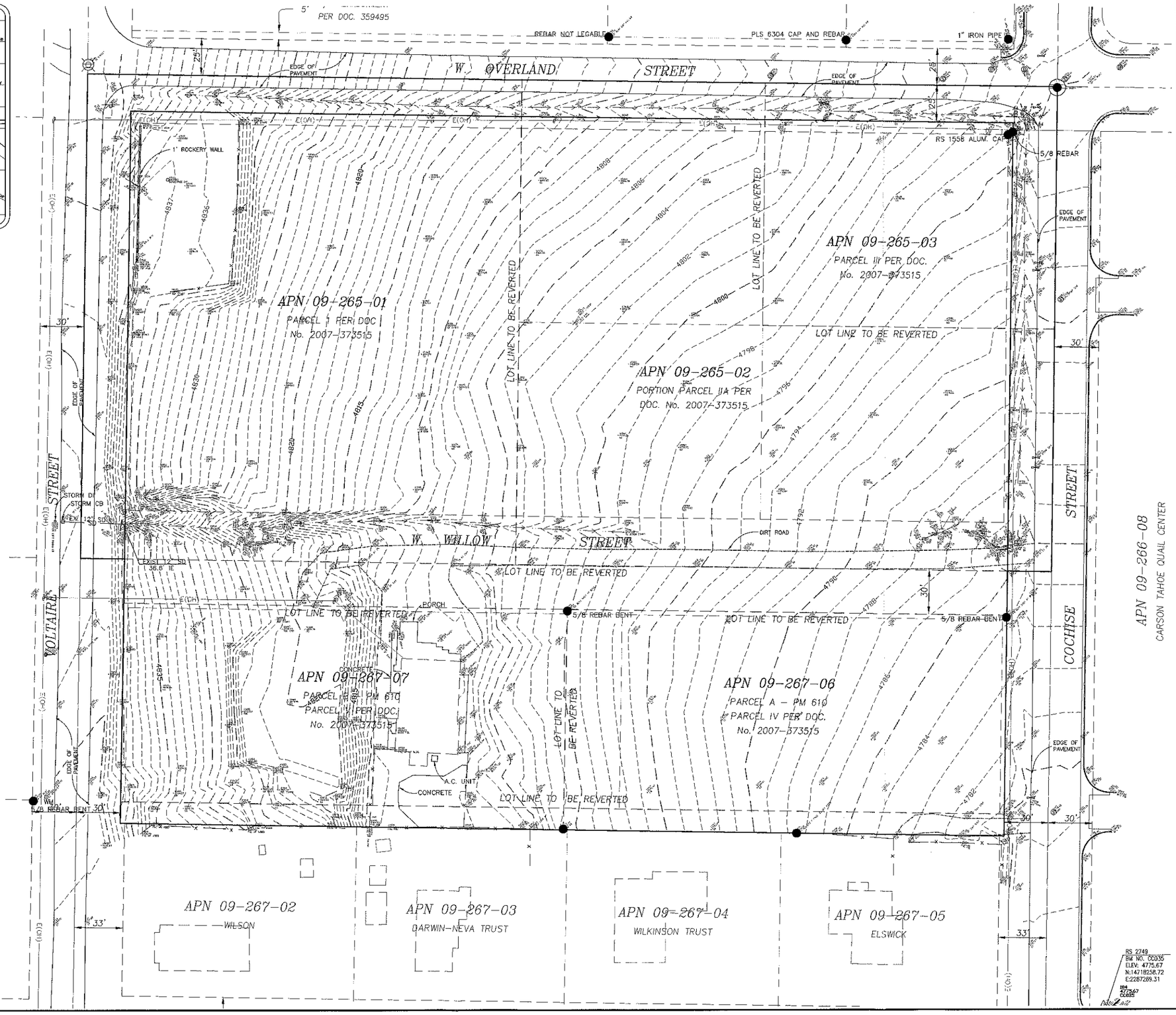
- ● FOUND PROPERTY CORNER AS NOTED
- WM WATER METER
- FIRE HYDRANT
- WATER VALVE
- UTILITY POLE
- STORMDRAIN MANHOLE
- SEWER MANHOLE
- GAS VALVE
- ELECTRIC BOX
- SIGNAGE
- BENCH MARK
- ———OHE——— ELECTRIC LINE (OVERHEAD)
- — X——— X — FENCE

BENCHMARK

1. BENCH MARK: 2010 CARSON CITY CONTROL NETWORK, BEING THE TOP 1.5" STEEL CAP IN THE TOP OF CURB AT NE CORNER OF COCHISE AND APION WAYWITH A PUBLISHED ELEVATION OF 4775.67 FEET, NAVD 88 DATUM.
2. DATE OF SURVEY: SEPTEMBER 7, 2017.

BASIS OF BEARINGS

NEVADA STATE PLANE COORDINATE SYSTEM, WEST ZONE GRID, NAD 83/94, PER SURVEY MONUMENTS AS SHOWN.



No.	REVISIONS	DATE	BY

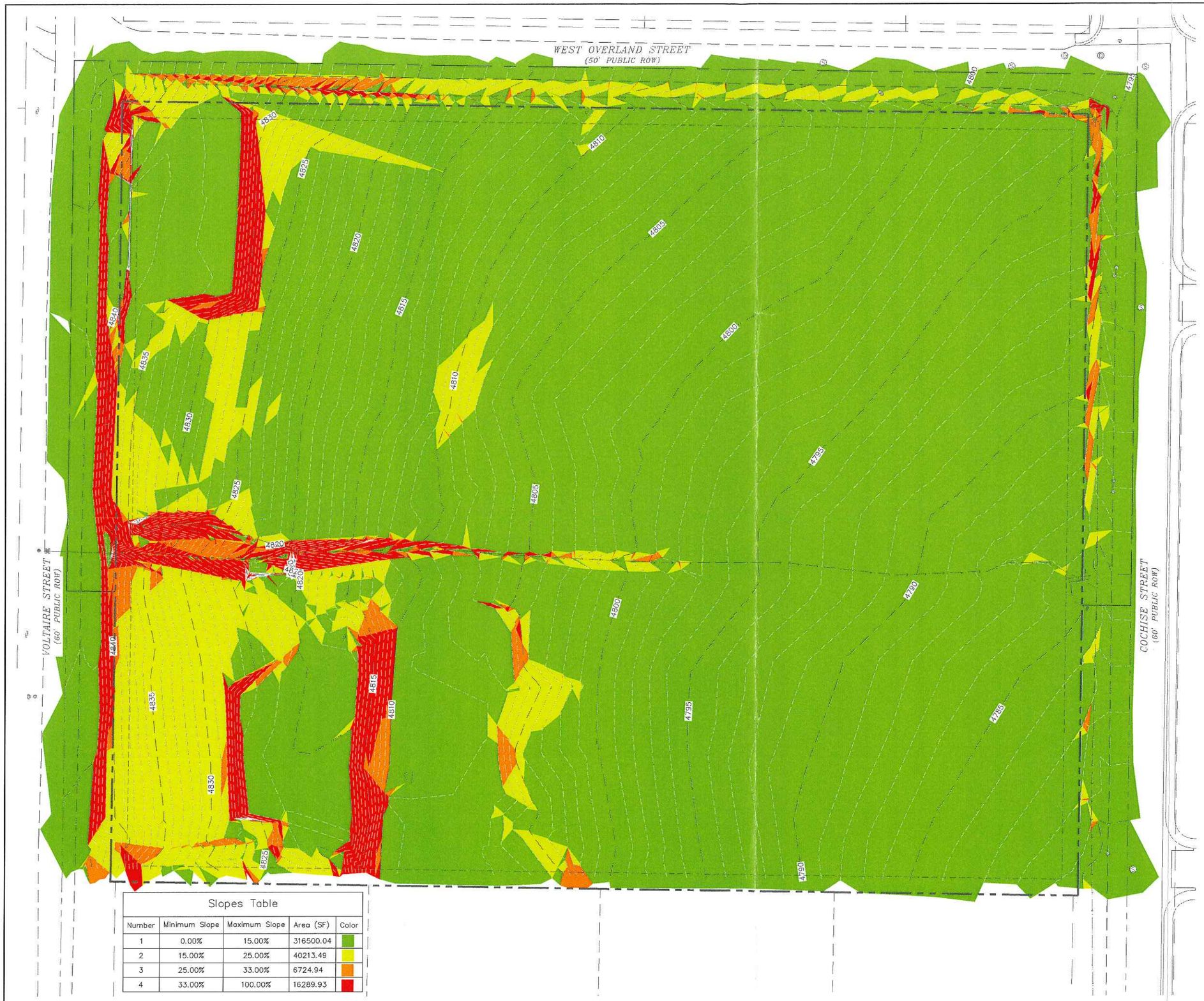
DATE: SEPTEMBER 12, 2017
SCALE: 1"=30'
DRAWN BY: TDM
CHECKED BY: JDB

Meridian Surveying & Mapping, Inc.
Land Construction and Boundary Surveys
9725 Technology Way, Reno, NV 89521 - (775) 850-4194

TOPOGRAPHIC & BOUNDARY SURVEY
FOR
SOUTH CARSON TOWN CENTER
CARSON CITY CARSON COUNTY NEVADA

SHEET 1 OF 1

TOPOGRAPHIC SURVEY
SOUTH CARSON



Slopes Table				
Number	Minimum Slope	Maximum Slope	Area (SF)	Color
1	0.00%	15.00%	316500.04	
2	15.00%	25.00%	40213.49	
3	25.00%	33.00%	6724.94	
4	33.00%	100.00%	16289.93	

GRAPHIC SCALE

30 0 15 30 60

1 inch = 30 ft.

CALL BEFORE YOU DIG
USA North
UNDERGROUND SERVICE ALERT
800-227-2600

CAUTION – NOTICE TO CONTRACTOR

1. THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES AND FEATURES AS SHOWN ON THESE PLANS IS BASED ON THE BEST INFORMATION AVAILABLE TO THE ENGINEER. THE INFORMATION IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE.

2. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THESE LOCATIONS AND/OR ELEVATIONS AT THE PROPOSED POINTS OF CONNECTION AND IN AREAS OF POSSIBLE CONFLICT PRIOR TO BEGINNING CONSTRUCTION. SHOULD THE CONTRACTOR FIND ANY DISCREPANCIES BETWEEN THE CONDITIONS EXISTING IN THE FIELD AND THE INFORMATION SHOWN ON THESE DRAWINGS, HE SHALL NOTIFY THE ENGINEER BEFORE PROCEEDING WITH CONSTRUCTION.

3. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO REMOVE OR RELOCATE ALL EXISTING UTILITIES AND FEATURES WHICH CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THE PLANS. CONTRACTOR SHALL OBTAIN APPROVALS FROM THE GOVERNING AGENCIES, THE ENGINEER, AND THE UTILITY COMPANIES PRIOR TO SUCH REMOVAL AND/OR RELOCATION.

4. THE CONTRACTOR ASSUMES ALL RISK FOR ANY CONSTRUCTION PERFORMED WITH PRELIMINARY OR NONAPPROVED PLANS.

5. CONTRACTOR TO PROVIDE TRAFFIC CONTROL IN CONFORMANCE WITH THE LATEST EDITION OF MUTCD WHENEVER CONSTRUCTION IS IN PROGRESS WITHIN THE PUBLIC TRAVEL WAY.

DYER ENGINEERING CONSULTANTS
9160 Double Diamond Pkwy, Ste. A
Reno, Nevada 89521 Phone: 1-775-852-1440

PROFESSIONAL SEAL:

PRELIMINARY
FOR REVIEW ONLY
NOT FOR CONSTRUCTION
DYER ENGINEERING CONSULTANTS
ENGINEER _____
PE NO._____ DATE_____

REVISIONS

NO.	DATE	DESCRIPTION	INITIALS

COCHISE ST
MULTIFAMILY MPR

SLOPE MAP

COCHISE STREET
CARSON CITY, NV
NEVADA
CARSON CITY

DESIGNED BY:	AE
DRAWN BY:	AE
CHECKED BY:	LI
DATE:	02-02-2018
JOB NO.	PCS-CMF18

SHEET NO.
C2

V:\Projects\PLACES\01-Cochise MPR\04-CAD\Plan Sheets\C2.0-PCS-CMF18-SLOPE.dwg AELSON 2/5/2018 4:13 PM

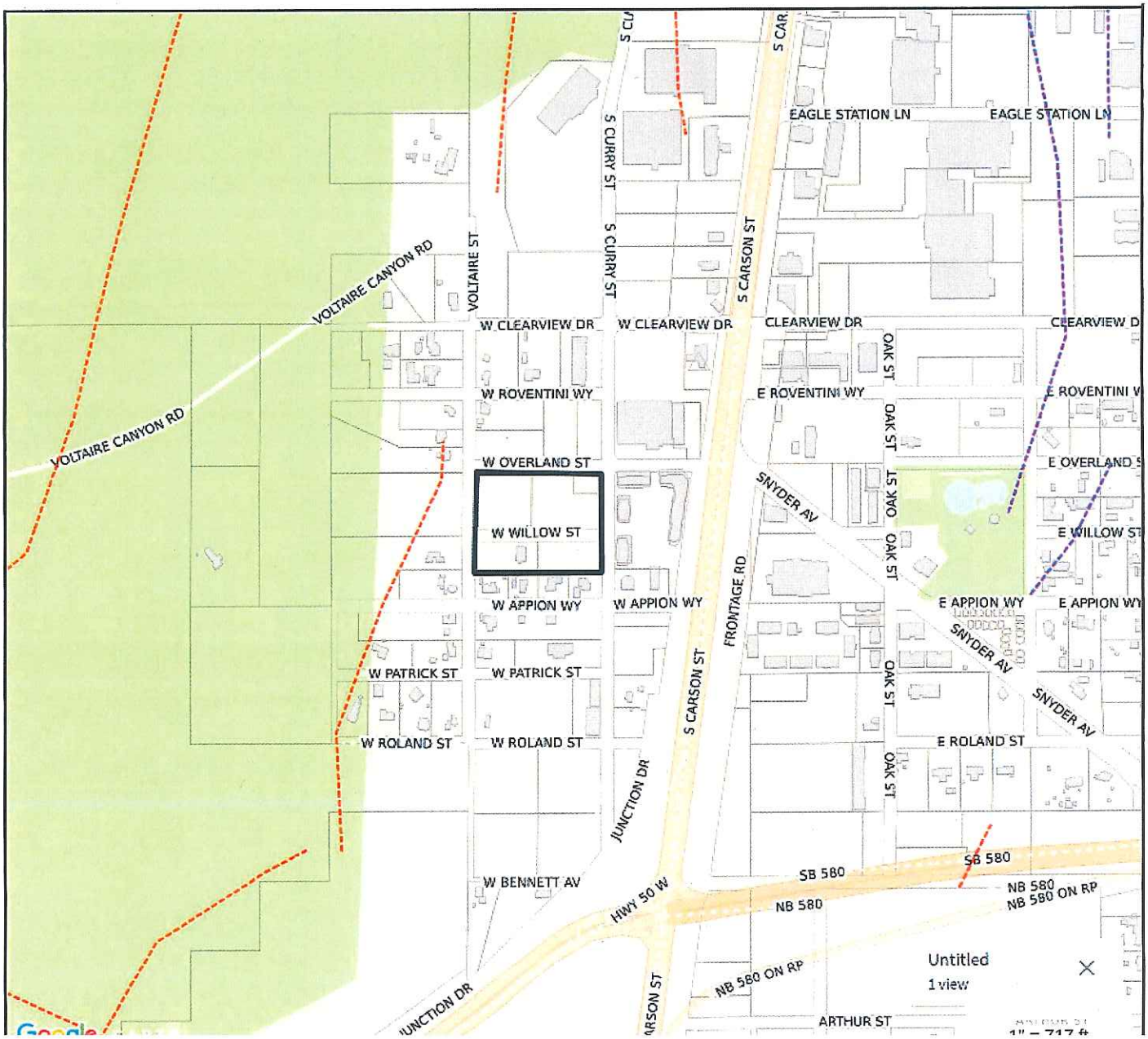


FIGURE 3-A
EXISTING FAULTS

Cochise Street Multi-Family Community
Zoning Map Amendment
24232-01
October, 2018

PLACES Consulting Services, Inc.
PLANNING LANDSCAPE ARCHITECTURE CIVIL ENGINEERING SERVICES

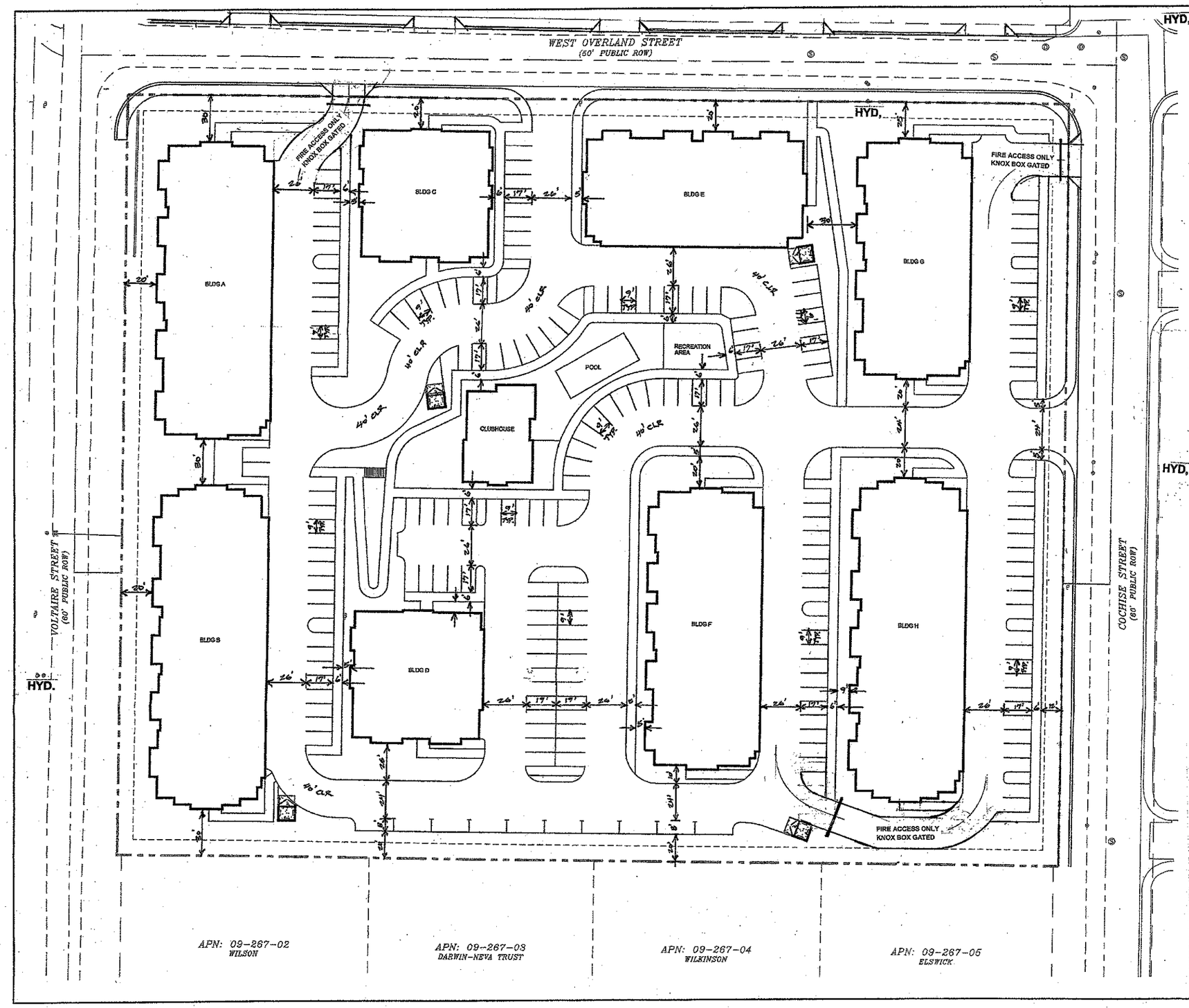
Development Plan - 4

Site Plan

Existing Conditions, Existing Structures.

Cochise Street Multi-Family Community
Zoning Map Amendment
24232-01
October, 2018

PLACES Consulting Services, Inc.
PLANNING LANDSCAPE ARCHITECTURE CIVIL ENGINEERING SERVICES



GRAPHIC SCALE

1 inch = 30 ft.

COCHISE STREET MULTI-FAMILY COMMUNITY

PRELIMINARY SITE PLAN

76 GARAGE PARKING SPACES

196 SURFACE PARKING SPACES

17,700 SQ.FT. PUBLIC STREET PAVING

72,500 SQ.FT. PRIVATE DRIVE ISLE PAVING

31,400 SQ. FT. PARKING SPACE PAVING

ZONING MAP AMEND.

4530 / 4580 COCHISE ST.

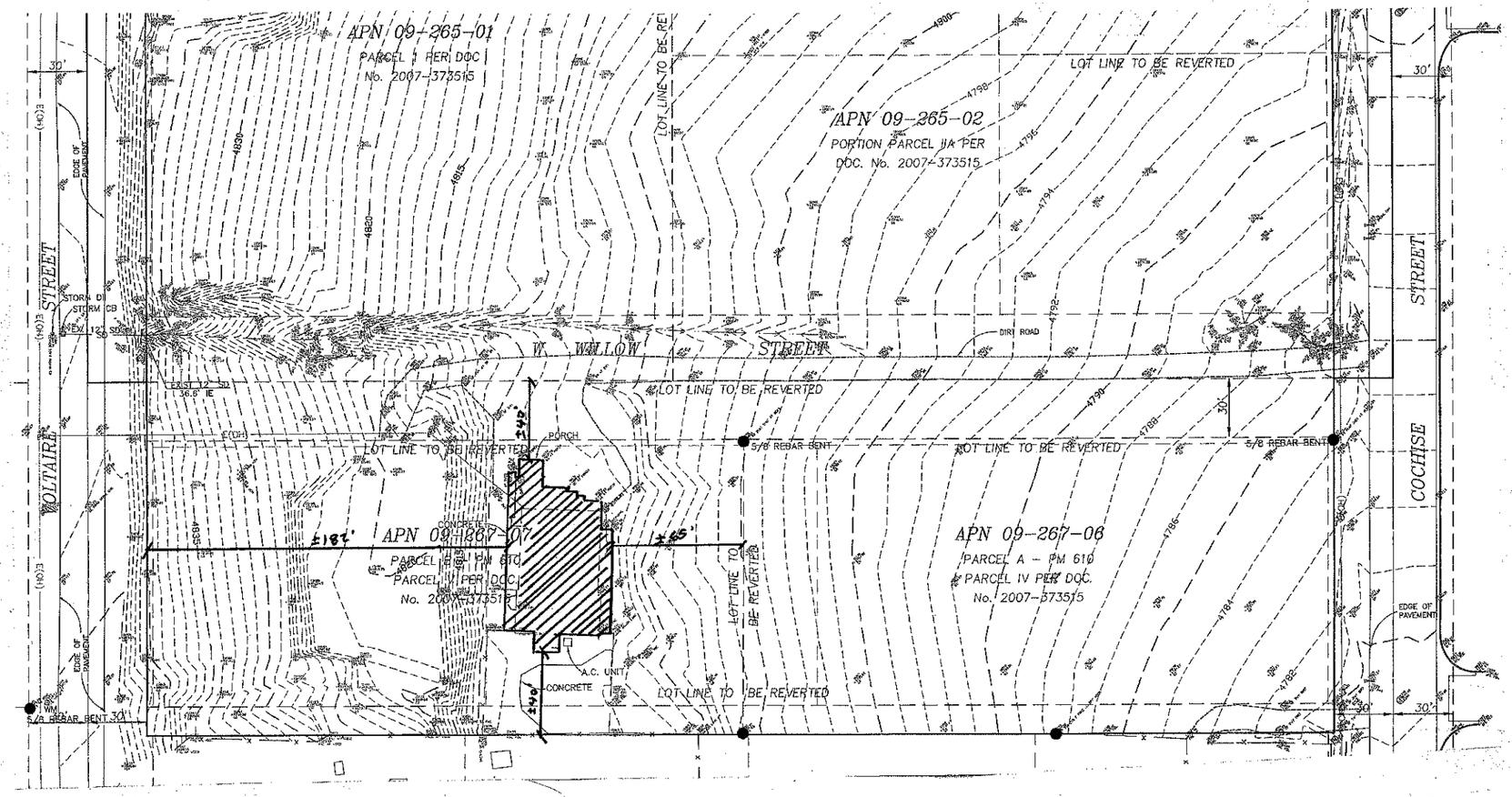
APN 009-265-01, 02, 03; 009-267-06, 07

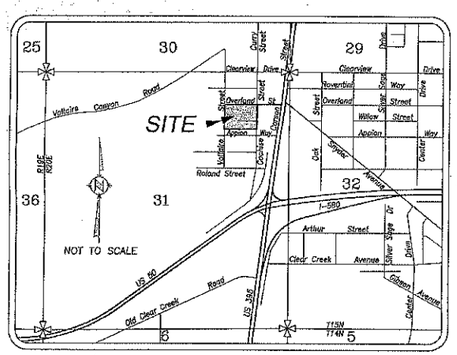
APPLICANT AND RECORD OWNERS

STEVE DONTCHO & BOB FRENCH
3429 Ocean View Blvd.
E. Glendale CA 91208
(818) 590-7716

REPRESENTATIVE

Randy Walter AICP
PLACES Consulting Services Inc.
7225 Lingfield Dr., Reno NV 89502
(775) 745-9094 or (775) 355-7721





COCHISE STREET MULTI-FAMILY COMMUNITY

– ZONING MAP AMEND.

4530 / 4580 COCHISE ST.

APN 009-265-01, 02, 03, 009-267-06, 07

APPLICANT AND RECORD OWNERS
STEVE DONTCHO & BOB FRENCH
3429 Ocean View Blvd.
E. Glendale CA 91208
(818) 590-7716

REPRESENTATIVE
Randy Walter AICP
PLACES Consulting Services Inc.
7225 Lingfield Dr., Reno NV 89502
(775) 745-9094 or (775) 355-7721

PLACES Consulting Services, Inc.
PLANNING LANDSCAPE ARCHITECTURE CIVIL ENGINEERING SURVEYING
Reno, Nevada
Ph. (775) 355-7721 Fax. (775) 355-7795

project no.: of
sheet
date:
drawn by:
designed by:

NEVADA

EXISTING CONDITIONS
EXISTING STRUCTURES

PRELIMINAEY PROJECT IMPACT REPORT 5

Project Impact Report

Cochise Street Multi-Family Community
Zoning Map Amendment
24232-01
October, 2018

PLACES Consulting Services, Inc.
PLANNING LANDSCAPE ARCHITECTURE CIVIL ENGINEERING SERVICES

DYER ENGINEERING CONSULTANTS

P. (775) 852-1440
F. (775) 852-1441
@ dyerengineering.com

10-18-2018

RE: ZONE CHANGE APPLICATION
ADDRESS: #4 – A & B

4. That sufficient consideration has been exercised by the applicant in adapting the project to existing improvements in the area. Be sure to indicate the source of the information that you are providing (private engineer, development engineering, title report or other source). Describe how your proposed Zoning Map Amendment will not adversely impact drainage, sewer, water, traffic, emergency services, roadways and other city services.

    A. Is drainage adequate in the area to support the density that may occur with the rezoning? How will drainage be accommodated? How have you arrived at this conclusion?

Response: Currently the proposed site to be rezoned does not have any drainage infrastructure. With the development of the site a storm drain system will be installed that will connect the site through Public Right of Way (ROW) to the Nevada Department of Transportation (NDoT) detention basin located approximately 900 feet to the south east at the intersection of W. Appion Way and Lincoln Hyw. This storm drain system will be sized to convey both development and offsite storm water runoff flows. The offsite NDoT detention basin has been deemed to have ample storage capacity. Storm drain extension recommendations were provided by Carson City Engineering & Utilities Project Manager Stephen Pottey during issuance of the Final MPR Letter dated March 27, 2018.

    B. Are the water supplies in the area of your project adequate to meet your needs without degrading supply and quality to others? Is there adequate water pressure? Are the lines in need of replacement? Talk to the Utilities Department for required information.

Response: Currently, there are water mains located within the Cochise St. and Voltaire St. ROW. A portion of water main exists on the southwestern corner of the intersection at W. Overland St. and Cochise St. that serves an existing fire hydrant. Existing fire hydrants are also located mid-block in both Cochise St and Voltaire St. A water main will be constructed in W. Overland St. to connect the existing water mains in Voltaire St. and Cochise St. this connection will require the installation of a Pressure Reducing Valve (PRV) in W. Overland St. PRV recommendations and Fire flow data was provided by Carson City Engineering & Utilities Project Manager Stephen Pottey during the issuance of the Final MPR Letter dated March 27, 2018.

Sewer

Currently, the property is undeveloped. Prior development of a sanitary sewage system for this site has not been recorded nor found through preliminary investigations. An existing 8-inch diameter sewer main is in Cochise St. A portion sewer main exists in W. Overland St. running westerly approximately 200 feet to a manhole structure, with an 8-inch stub out to the west. An extension of this sewer main is required to be installed to Voltaire St. The sewage from the proposed development of this project will discharge to the public 8-inch sanitary sewer mainline in Cochise St. Notwithstanding the impacts of new developments upstream or downstream of this project, the existing sanitary sewer system currently has adequate capacity to serve this project. Sanitary Sewer extension requirements were provided by Carson City Engineering & Utilities Project Manager Stephen Pottey during the issuance of the Final MPR Letter dated March 27, 2018.

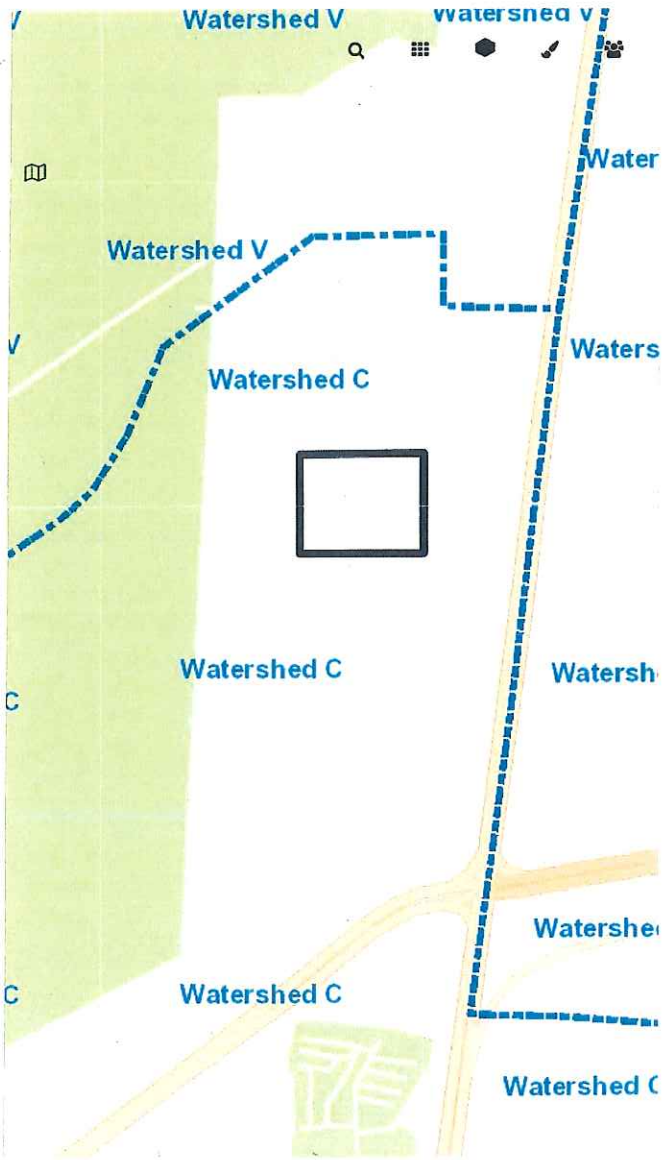


FIGURE 5-A
CARSON CITY WATERSHED C

Cochise Street Multi-Family Community
Zoning Map Amendment
24232-01
October, 2018

PLACES Consulting Services, Inc.
PLANNING LANDSCAPE ARCHITECTURE CIVIL ENGINEERING SERVICES

PRELIMINARY ARCHITECTURE– 6

Construction Type and Occupancy

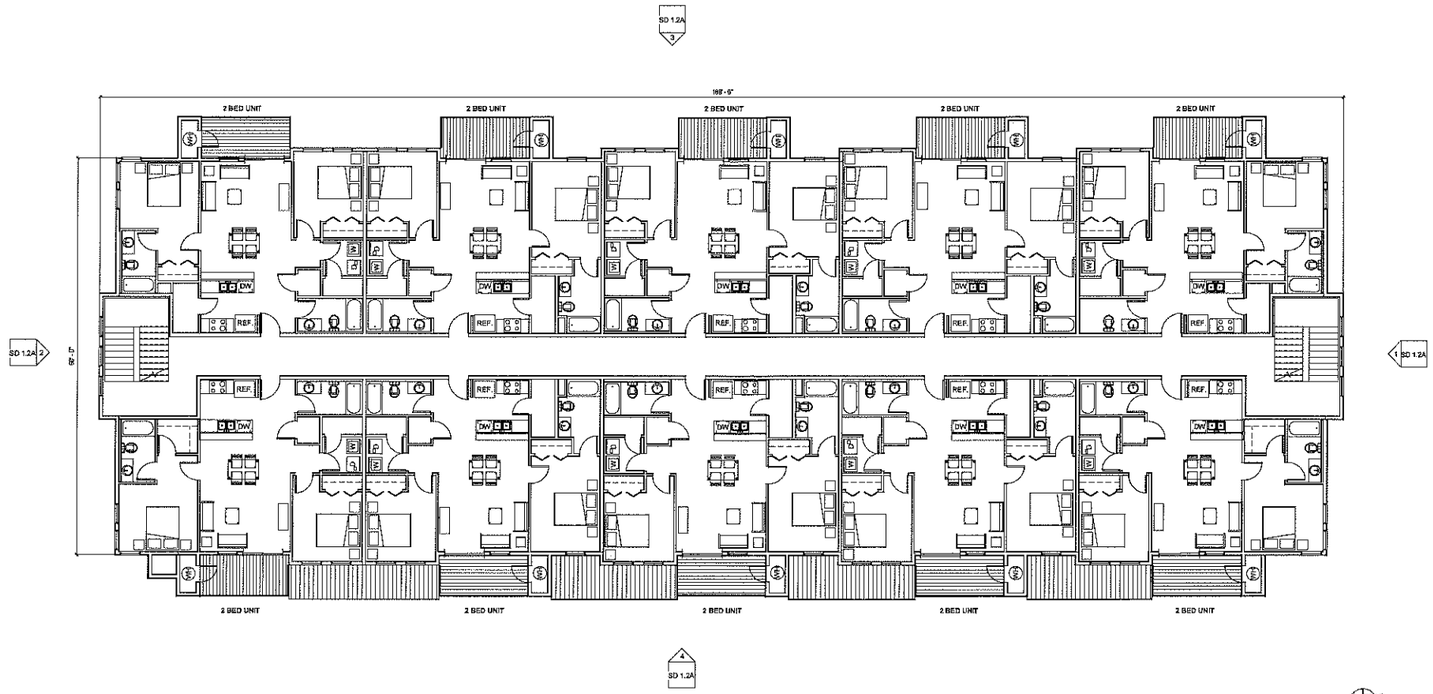
Floor Plans

Building Plans

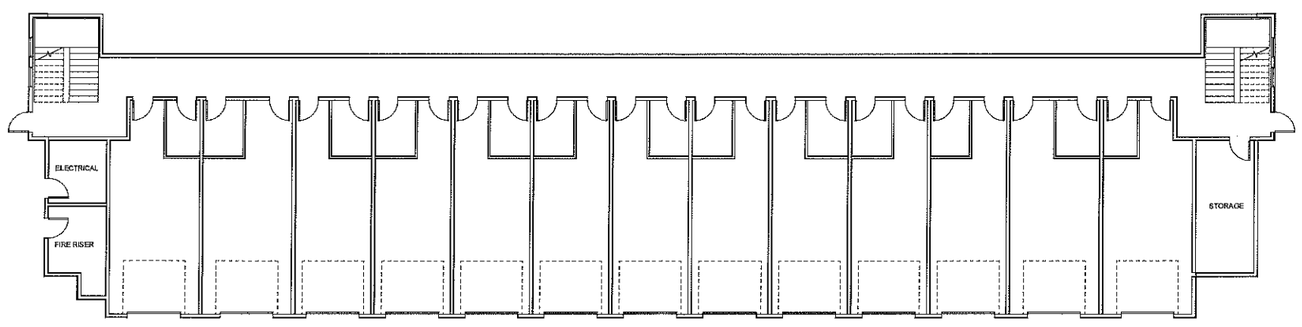
Elevations

Cochise Street Multi-Family Community
Zoning Map Amendment
24232-01
October, 2018

PLACES Consulting Services, Inc.
PLANNING LANDSCAPE ARCHITECTURE CIVIL ENGINEERING SERVICES



2 SD 1.2A / SD 1.1A BLDG A - TYPICAL FIRST AND SECOND FLOORS 1/8" = 1'-0"



1 SD 1.2A / SD 1.1A BLDG A - GROUND FLOOR 1/8" = 1'-0"

BUILDING A INFORMATION

1 BED UNITS: 0
2 BED UNITS: 20
3 BED UNITS: 0
GARAGE SPACES: 13

TOTAL NUMBER OF UNITS: 20

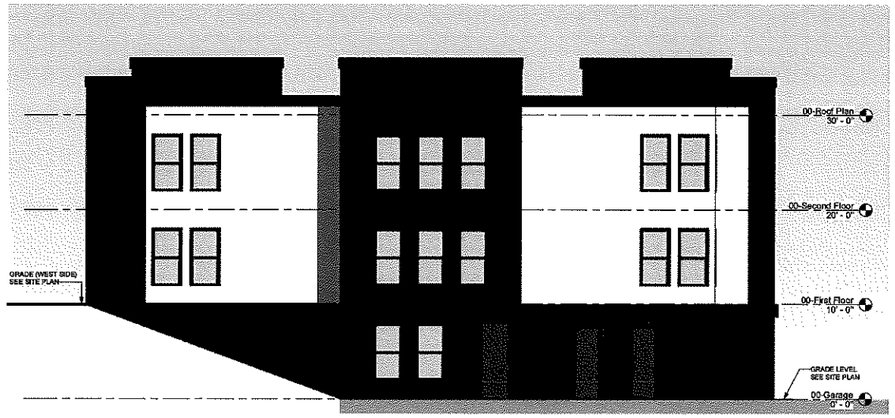
GENERAL INFORMATION:
TYPICAL 1 BEDROOM: 800 SQFT
TYPICAL 2 BEDROOM: 1,000 SQFT
TYPICAL 3 BEDROOM: 1,200 SQFT
(EXCLUDES EXTERIOR SPACE)

Frame
ARCHITECTURE, INC
4080 South McCarran Blvd, Unit E
Reno, NV 89502 (775) 827-9977

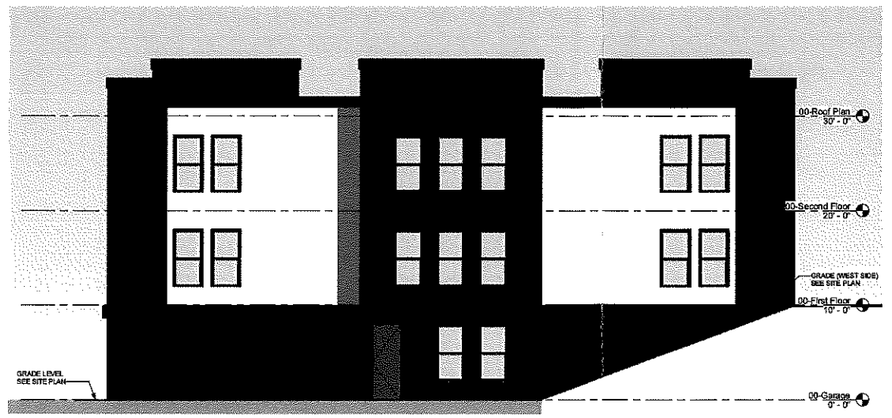
Z:\2017\17-59 Cochise Street MPR\17-59 Cochise Street_BLDG A.rvt
1/11/2018 10:29:28 AM

BUILDING A FLOOR PLANS
COCHISE ST MULTIFAMILY MPR
17-59 1/11/2018

SD 1.1A

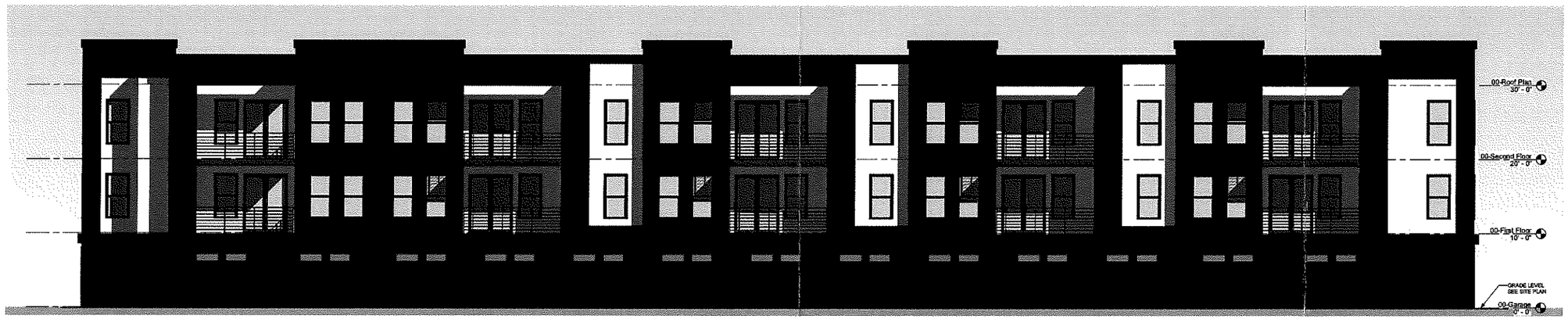


2 SOUTH ELEVATION
3/16" = 1'-0"



1 NORTH ELEVATION
3/16" = 1'-0"

3 WEST ELEVATION
3/16" = 1'-0"



4 EAST ELEVATION
3/16" = 1'-0"

Frame
ARCHITECTURE, INC
4000 South McCarran Blvd, Unit E
Reno, NV 89502 (775) 827-9977

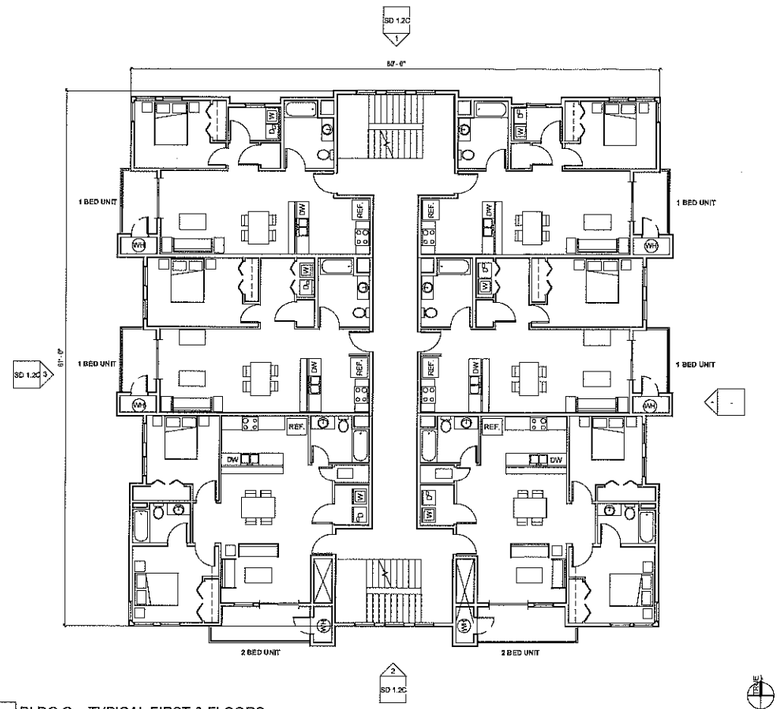
Z:\2017\17-59 Cochise Street MPR\17-59 Cochise Street_BLDG A.rvt
2/14/2018 10:31:37 AM

BUILDING A EXTERIOR ELEVATIONS

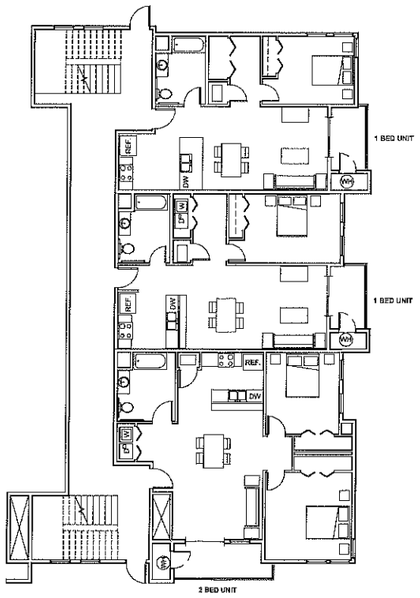
COCHISE ST MULTIFAMILY MPR

17-59 1/11/2018

SD 1.2A



2 SD 1.2C / SD 1.4C — BLDG C - TYPICAL FIRST & FLOORS
1/8" = 1'-0"



1 SD 1.2C / SD 1.4C — BLDG C - GROUND FLOOR
1/8" = 1'-0"

BUILDING C INFORMATION

1 BED UNITS: 10
2 BED UNITS: 5
3 BED UNITS: 0
GARAGE SPACES: 0

TOTAL NUMBER OF UNITS: 15

GENERAL INFORMATION:
TYPICAL 1 BEDROOM: 800 SQFT
TYPICAL 2 BEDROOM: 1,000 SQFT
TYPICAL 3 BEDROOM: 1,200 SQFT
(EXCLUDES EXTERIOR SPACE)

Frame
ARCHITECTURE, INC
4090 South McCarran Blvd, Unit E
Reno, NV 89502 (775) 827-9977

Z:\2017\17-59 Cochise Street MPR\17-59 Cochise Street_BLDG C.rvt
1/11/2018 10:51:20 AM

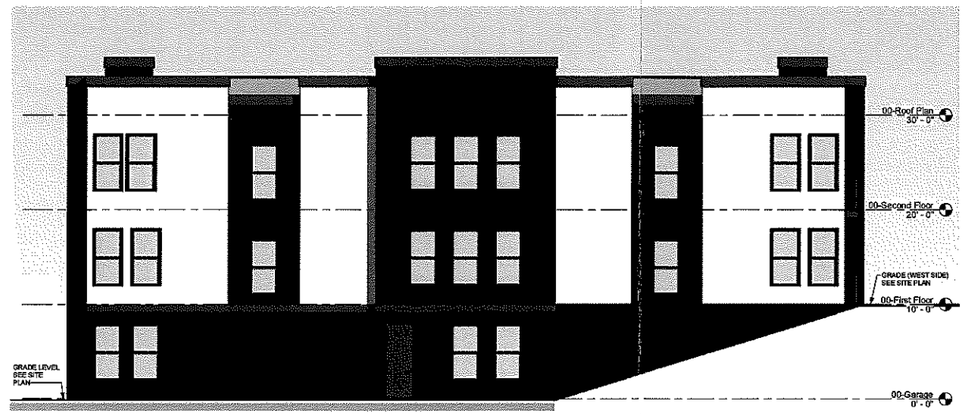
BUILDING C FLOOR PLANS

COCHISE ST MULTIFAMILY MPR

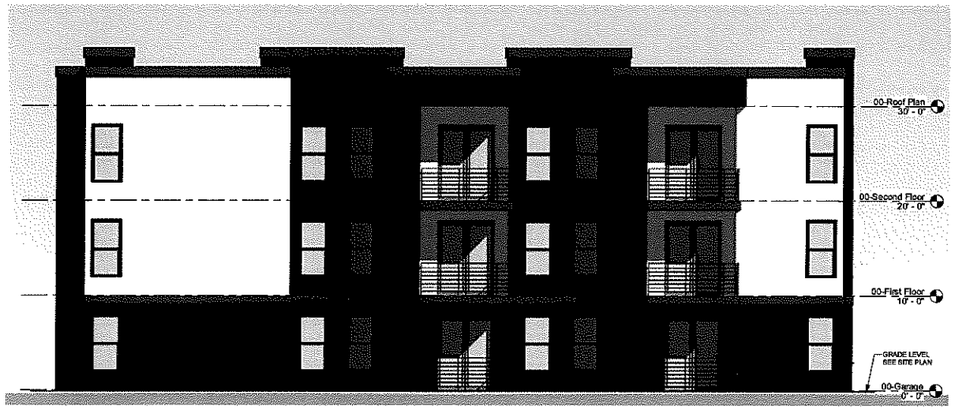
17-59 1/11/2018

SD 1.1C

3 WEST ELEVATION
3/16" = 1'-0"



1 NORTH ELEVATION
3/16" = 1'-0"



4 East Elevation
3/16" = 1'-0"

2 SOUTH ELEVATION
3/16" = 1'-0"

Frame
ARCHITECTURE, INC
4690 South McCarran Blvd, Unit E
Reno, NV 89502 (775) 827-9977

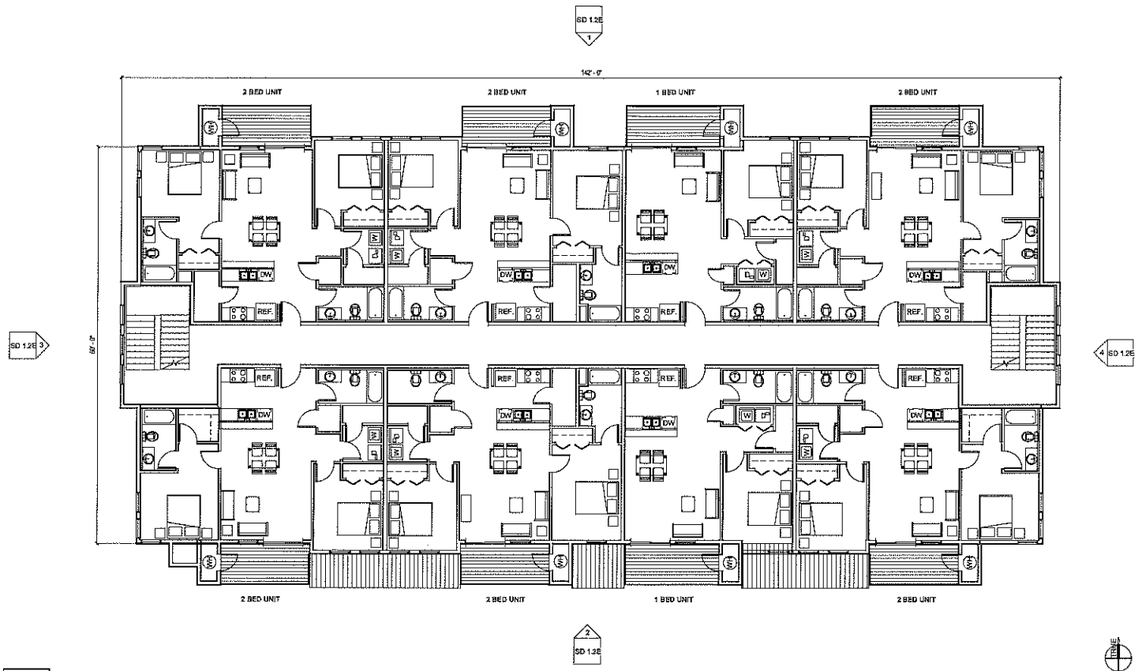
Z:\2017\17-59 Cochise Street MPR\17-59 Cochise Street_BLDG C.rvt
2/14/2018 10:32:47 AM

BUILDING C EXTERIOR ELEVATIONS

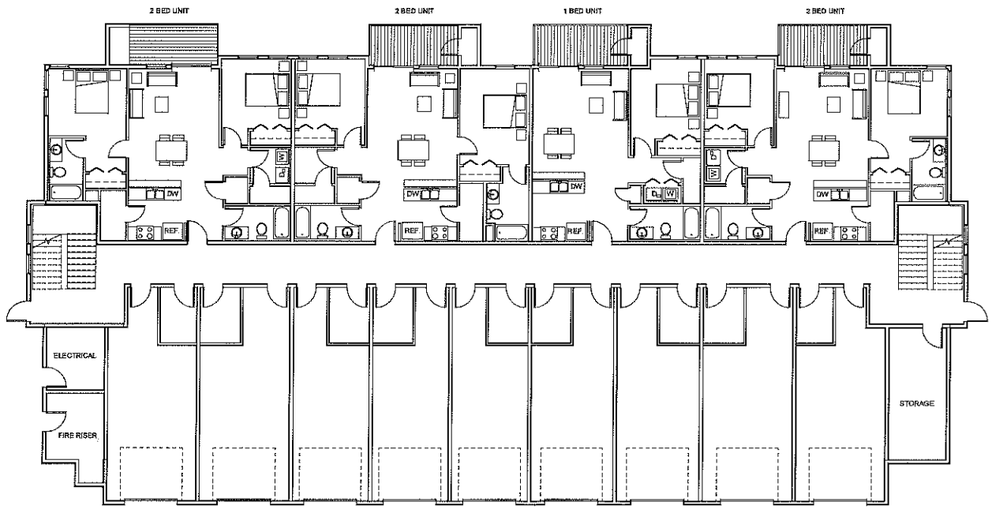
COCHISE ST MULTIFAMILY MPR

17-59 1/11/2018

SD 1.2C



2 BLDG E - TYPICAL FIRST & SECOND FLOORS
SD 1.2E 1.1E 3/8" = 1'-0"



1 BLDG E - GROUND FLOOR
SD 1.2E 1.1E 3/8" = 1'-0"

BUILDING E INFORMATION

1 BED UNITS: 5
2 BED UNITS: 15
3 BED UNITS: 0
GARAGE SPACES: 9

TOTAL NUMBER OF UNITS: 20

GENERAL INFORMATION:
TYPICAL 1 BEDROOM: 800 SQFT
TYPICAL 2 BEDROOM: 1,000 SQFT
TYPICAL 3 BEDROOM: 1,200 SQFT
(EXCLUDES EXTERIOR SPACE)

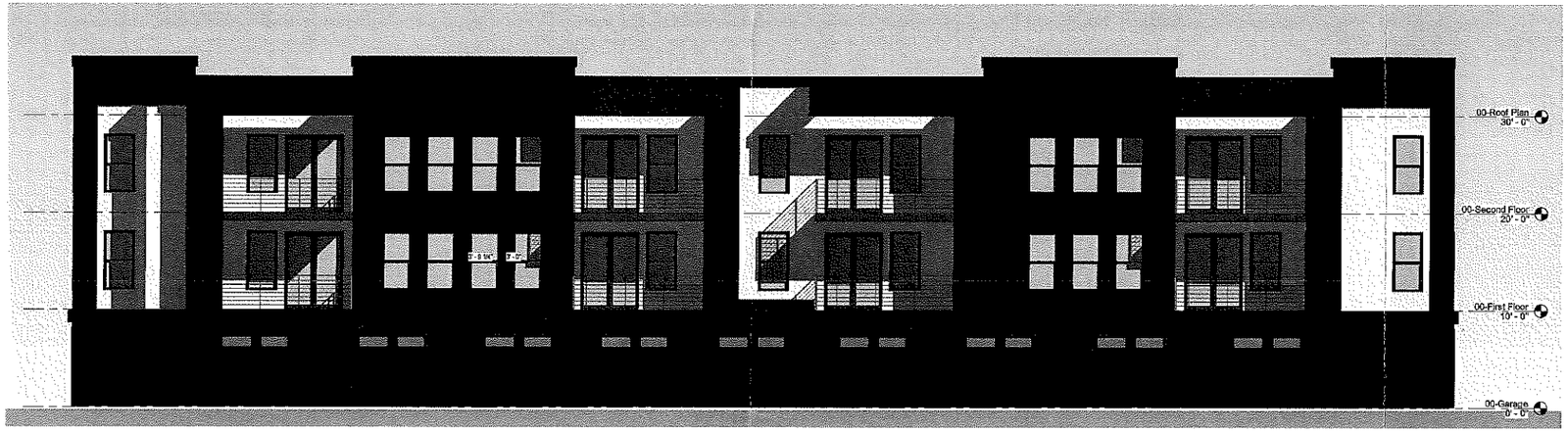
Frame
ARCHITECTURE, INC
4090 South McCarran Blvd, Unit E
Reno, NV 89502 (775) 827-9577

Z:\2017\17-59 Cochise Street MPR\17-59 Cochise Street_BLDG E.rvt
1/11/2018 11:04:31 AM

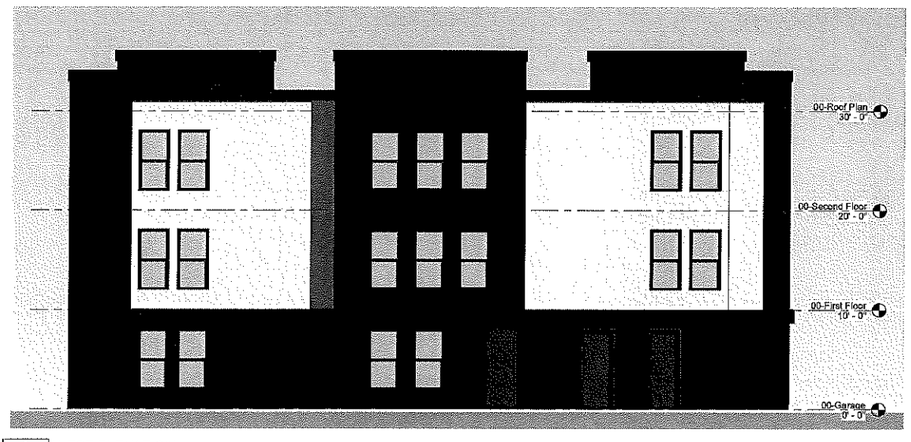
BUILDING E FLOOR PLANS
COCHISE ST MULTIFAMILY MPR
17-59 1/11/2018

SD 1.1E

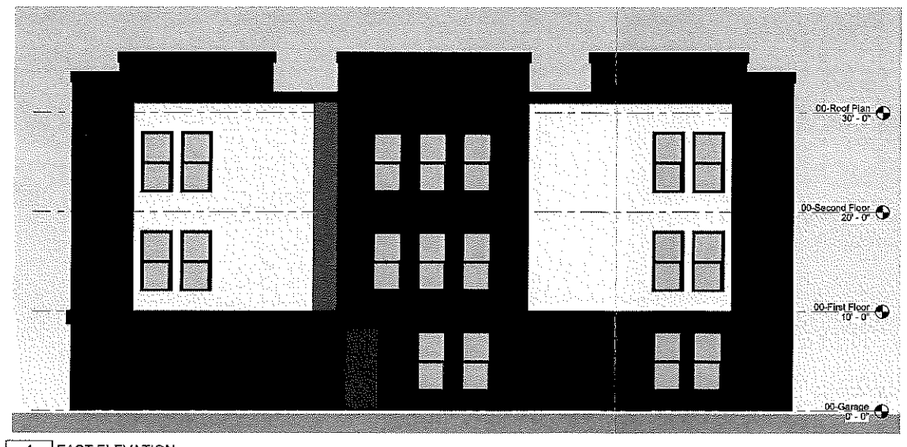
1 NORTH ELEVATION
3/16" = 1'-0"



2 SOUTH ELEVATION
3/16" = 1'-0"



3 WEST ELEVATION
3/16" = 1'-0"



4 EAST ELEVATION
3/16" = 1'-0"

Frame
ARCHITECTURE, INC
4080 South McCarran Blvd, Unit E
Reno, NV 89502 (775) 827-9977

Z:\2017\17-59 Cochise Street MPR\17-59 Cochise Street_BLDG E.rvt
1/11/2018 11:05:04 AM

BUILDING E EXTERIOR ELEVATIONS

COCHISE ST MULTIFAMILY MPR

17-59 1/11/2018

SD 1.2E

TRAFFIC - 7

Cochise Street Multi-Family Community
Zoning Map Amendment
24232-01
October, 2018

PLACES Consulting Services, Inc.
PLANNING LANDSCAPE ARCHITECTURE CIVIL ENGINEERING SERVICES

TRAFFIC IMPACT STUDY

FOR

Cochise St Multifamily

October 24, 2018

PREPARED FOR:

Bob French Construction

PREPARED BY:

TRAFFIC WORKS LLC

TRAFFIC WORKS, LLC
5482 Longley Lane, Suite B, Reno, Nevada 89511
775.322.4300
www.Traffic-Works.com

YOUR QUESTIONS ANSWERED QUICKLY

Why did you perform this study?

This Traffic Impact Study evaluates the potential traffic impacts associated with the proposed Cochise Street Multifamily project in Carson City, Nevada. This study of potential transportation impacts was undertaken for planning purposes and to determine whether any roadway improvements would be necessary to accommodate the proposed development.

What does the project consist of?

The project consists of 143 multi-family apartment units.

How much traffic will the project generate?

The project is anticipated to generate approximately 902 Daily, 56 AM peak hour, and 74 PM peak hour trips.

Are there any traffic impacts?

Under Future Year (2040) Plus Project conditions all the studied intersections and movements operate at LOS C or better, with most operating at LOS A or B in both the AM and PM peak periods. Therefore, no significant traffic impacts are anticipated with this project.

Are any improvements recommended?

Because no significant traffic impacts are anticipated, no improvements are recommended for the intersections analyzed.

LIST OF FIGURES

LIST OF APPENDICES

INTRODUCTION

This report summarizes the results of a traffic analysis prepared for the Cochise St Multifamily project located on W Overland St & Cochise St in Carson City, Nevada. This analysis has been prepared to describe existing and future year traffic conditions in the study area, identify potential impacts to the transportation network, document findings, and provide recommendations to mitigate impacts, if any are found.

The proposed project consists of 143 multi-family apartments. The project would be located on the vacant land bounded by Cochise St to the east, Overland St to the north, and Voltaire St to the west as shown on **Figure 1**. The project would include access to Overland St and Cochise St as shown on **Figure 2**.

This study includes analysis of the weekday AM and PM peak hours as these are the periods of time in which the project is expected to generate the most traffic. The evaluated development scenarios are:

- Existing Conditions (no project)
- Existing Plus Project Conditions
- Cumulative No Project Conditions
- Cumulative Plus Project Conditions

ANALYSIS METHODOLOGY

Level of service (LOS) is a term commonly used by transportation practitioners to measure and describe the operational characteristics of intersections, roadway segments, and other facilities. This term equates seconds of delay per vehicle at intersections to letter grades "A" through "F" with "A" representing optimum conditions and "F" representing breakdown or over capacity flows.

Carson City intersections were analyzed using thresholds based on the *Highway Capacity Manual (HCM) 2010*. Thresholds are detailed in **Table 1**.

Table 1: Level of Service Definition for Intersections

Level of Service	Brief Description	Average Delay (seconds per vehicle)	
		Signalized Intersections	Unsignalized Intersections
A	Free flow conditions.	< 10	< 10
B	Stable conditions with some affect from other vehicles.	10 to 20	10 to 15
C	Stable conditions with significant affect from other vehicles.	20 to 35	15 to 25
D	High density traffic conditions still with stable flow.	35 to 55	25 to 35
E	At or near capacity flows.	55 to 80	35 to 50
F	Over capacity conditions.	> 80	> 50

Source: Highway Capacity Manual (2010), Chapters 18 and 19

Level of service calculations were performed using the Synchro 9 software package with results reported in accordance with the current HCM 2010 methodology.

Level of Service Policy

Carson City

> Carson City Municipal Code states that "A traffic LOS D or better...shall be maintained through mitigation of impacts from all conditions on all city maintained arterial, and collector roads and at city road intersections, except as noted in the Carson City master plan."[1]

Therefore LOS D or better is deemed an acceptable operating condition.

EXISTING CONDITIONS

Transportation Facilities

The following intersections were analyzed as part of this study:

- Clearview Drive & Cochise Street
- Overland Street & Cochise Street
- Appion Way & Cochise Street

Each of the streets within the study area is regulated by a 25 mph speed limit. The study intersections are stop-controlled. Clearview Drive is controlled by stop signs on each of the four approaches (all-way stop). Overland Street is controlled by stop signs on only the minor approaches (Overland Street) while the major

[1] Carson City Municipal Code 12.13.3.3.5.a accessed on August 27, 2018 at library.municode.com/nv/carson_city/codes

approaches (Cochise Street) free flow. Finally, Appion Way is controlled by stop signs on the minor approaches (Cochise Street) while the major approaches (Appion Way) free flows.

Each of the streets is a two-lane street. On-street parking appears to be permitted on Cochise Street, though there is no pavement striping to regulate parking. Further, only the northbound left on Cochise Street and the southbound left on Curry Street at Clearview Drive are striped for separate left turn bays. Cochise Street at Overland Street and at Appion Way appears wide enough to accommodate designated left turn bays, but no pavement striping is in place.

Pedestrian facilities include some sidewalk segments along Cochise Street between Clearview Drive and Overland Street on both sides and from Overland Street to Appion Way on the east side of Cochise Street. There are crosswalks crossing Cochise Street marked at Overland Street, Roventini Way, and at Clearview Drive. Currently, no crosswalks are striped at Appion Way.

Existing Traffic Volumes

Existing traffic volumes were obtained with in-field vehicle counts. Existing AM (7:00 AM to 9:00 AM) and PM (4:00 PM to 6:00 PM) peak hour turning movement volumes were collected at the study intersections on a mid-week day in August 2018. Existing volumes, lane configurations, and intersection controls are shown on **Figure 3**.

Intersection Level of Service Analysis

Existing conditions intersection level of service analysis was performed using Synchro 9 software, with reports based on *HCM 2010* methodology. The peak hour factors (PHF) from the existing counts were used in the analysis. The level of service results are presented in **Table 2** and the calculation sheets are provided in **Appendix A**, attached.

Crash History

A crash history was obtained from Nevada Department of Transportation (NDOT) Traffic Safety online database. Only two crashes were discovered within the project study area. One crash occurred in 2015 at Appion Way & Cochise Street. The first driver followed too closely and rear-ended the vehicle in front of him. Another crash occurred in 2015 at Roventini Way & Cochise Street. Similarly one vehicle rear-ended another. Only one of these crashes was at an intersection under analysis and the officer's report showed that the first driver was following too closely, thus causing the crash. Therefore, there does not appear to be any safety concerns with the studied intersections.

Table 2: Intersection Level of Service – Existing Conditions

Intersection	Control	Approach/ Movement	AM		PM	
			Delay[1]	LOS	Delay[1]	LOS
Cochise St / Clearview Dr	All-way Stop	Eastbound Approach	8.2	A	8.7	A
		Westbound Approach	8.1	A	8.2	A
		Northbound Approach	8.6	A	8.9	A
		Southbound Approach	8.2	A	8.8	A
Cochise St / Overland St	Side Street Stop	Eastbound Approach	9.6	A	0.0	A
		Westbound Approach	9.0	A	9.2	A
Cochise St / Appion Way	Side Street Stop	Northbound Approach	8.3	A	9.0	A
		Southbound Approach	9.1	A	9.2	A

Notes: 1. Delay is reported in seconds per vehicle for the overall intersection for signalized intersections, and for the worst movement/approach for unsignalized intersections.
Source: Traffic Works, 2018

As shown in the table, the intersections each currently operate optimally at LOS A.

PROJECT GENERATED TRAFFIC

Project Description and Access

The proposed project consists of 143 multi-family apartments. Access to the project site is proposed at two driveways. One accesses West Overland Street at the north side of the project and one accesses Cochise Street at the east side of the project as shown on **Figure 2.**

Trip Generation

Trip generation estimates were developed for project using standard trip generation rates in the ITE *Trip Generation Manual, 10th Edition*. **Table 3** shows the Daily, AM peak hour, and PM peak hour trip generation estimates for the project. As shown in the table, the project is anticipated to generate 902 Daily, 56 AM peak hour, and 74 PM peak hour trips.

Table 3: Trip Generation Estimates

Land Use - ITE Land Use & Code	Size	Trips[1]				
		Daily	AM	AM In / Out	PM	PM In/ Out
Multifamily Housing (220)	143 units	902	56	11 / 45	74	48 / 26

Notes: Trips calculated based on average trip rates in the ITE *Trip Generation Manual, 10th Edition.*
Source: Traffic Works, 2018

Trip Distribution and Assignment

Project generated traffic was distributed to the surrounding roadway network based on the location of the project in relation to complimentary land uses, major activity centers, and local roadway connections. Project trips were distributed and assigned to the study intersections as shown on **Figure 4** and summarized below:

- 45% North on S Carson Street
- 55% South on S Carson Street

EXISTING PLUS PROJECT CONDITIONS

Traffic Volumes

Existing Plus Project traffic volumes were developed by adding the project generated trips (**Figure 4**) to the existing traffic volumes (**Figure 3**) and are shown on **Figure 5**, attached.

Intersection Level of Service

Existing Plus Project intersection level of service analysis was performed using Synchro 9 software. **Table 4** shows the level of service results and the calculations sheets are provided in **Appendix B**.

Table 4: Intersection Level of Service – Existing Plus Project Conditions

Intersection	Control	Approach/ Movement	AM		PM	
			Delay[1]	LOS	Delay[1]	LOS
Cochise St / Clearview Dr	All-way Stop	Eastbound Approach	8.3	A	8.8	A
		Westbound Approach	8.3	A	8.6	A
		Northbound Approach	8.8	A	9.2	A
		Southbound Approach	8.2	A	9.0	A
Cochise St / Overland St	Side Street Stop	Eastbound Approach	9.7	A	10.5	B
		Westbound Approach	9.2	A	9.5	A
Cochise St / Appion Way	Side Street Stop	Northbound Approach	8.3	A	9.1	A
		Southbound Approach	9.2	A	9.3	A

Notes: 1. Delay is reported in seconds per vehicle for the overall intersection for signalized intersections, and for the worst movement/approach for unsignalized intersections.
Source: Traffic Works, 2018

Each of the study intersections is anticipated to operate at acceptable levels of service with the project.

FUTURE YEAR (2040) CONDITIONS

Future Year (2040) traffic volume forecasts were determined by calculating a growth factor in the area based on Carson City's Planning model. The area's population is anticipated to grow by approximately 10% annually until the year 2040. Future Year traffic was determined by applying this growth rate to the existing traffic. **Table 5** shows the level of service results for the Future Year condition. The 2040 traffic volumes are shown on **Figure 6**.

Table 5: Intersection Level of Service – Future Year Conditions

Intersection	Control	Approach/ Movement	AM		PM	
			Delay[1]	LOS	Delay[1]	LOS
Cochise St / Clearview Dr	All-way Stop	Eastbound Approach	9.3	A	10.7	B
		Westbound Approach	9.2	A	10.7	B
		Northbound Approach	13.0	B	15.8	C
		Southbound Approach	9.2	A	12.6	B
Cochise St / Overland St	Side Street Stop	Eastbound Approach	11.8	B	0.0	A
		Westbound Approach	10.4	B	10.7	B
Cochise St / Appion Way	Side Street Stop	Northbound Approach	8.3	A	9.6	A
		Southbound Approach	9.6	A	10.5	B

Notes: 1. Delay is reported in seconds per vehicle for the overall intersection for signalized intersections, and for the worst movement/approach for unsignalized intersections.
Source: Traffic Works, 2018

All the study intersections are anticipated to function at acceptable levels of service in 2040 without the project. Detailed reports of the intersection delay are included as **Appendix C**.

FUTURE YEAR (2040) PLUS PROJECT CONDITIONS

Project generated trips were added to the future year traffic volume forecasts based on the trip distribution previously described. **Table 6** shows the level of service results for the Future Year Plus Project condition. **Figure 7** shows the Future Year Plus Project traffic volumes.

Table 6: Intersection Level of Service – Future Year Plus Project Conditions

Intersection	Control	Approach/ Movement	AM		PM	
			Delay[1]	LOS	Delay[1]	LOS
Cochise St / Clearview Dr	All-way Stop	Eastbound Approach	9.4	A	10.9	B
		Westbound Approach	9.2	A	11.0	B
		Northbound Approach	13.7	B	17.2	C
		Southbound Approach	9.3	A	13.1	B
Cochise St / Overland St	Side Street Stop	Eastbound Approach	12.2	B	14.6	B
		Westbound Approach	10.6	B	11.2	B
Cochise St / Appion Way	Side Street Stop	Northbound Approach	8.3	A	9.6	A
		Southbound Approach	9.7	A	10.7	B

Notes: 1. Delay is reported in seconds per vehicle for the overall intersection for signalized intersections, and for the worst movement/approach for unsignalized intersections.
Source: Traffic Works, 2018

As shown in the table, all the study intersections are anticipated to function at acceptable levels of service in 2040 with the project. Detailed reports of the intersection delay are included as **Appendix D**.

EVALUATION OF CLEARVIEW / COCHISE INTERSECTION

The intersection of Clearview Drive & Cochise Street is controlled with stop signs on all approaches. Carson City staff asked if a roundabout should be planned for the long-term traffic growth. 2040 with project traffic operations indicate LOS B overall with the all-way stop configuration, and LOS C on the worst movement. Installation of a 120-ft diameter roundabout (common size) would not fit well within the existing intersection footprint. The adjacent businesses have a driveway that would be affected by the roundabout's construction as shown in **Exhibit 1** on the following page. A roundabout is not needed for traffic operations and therefore is not recommended.

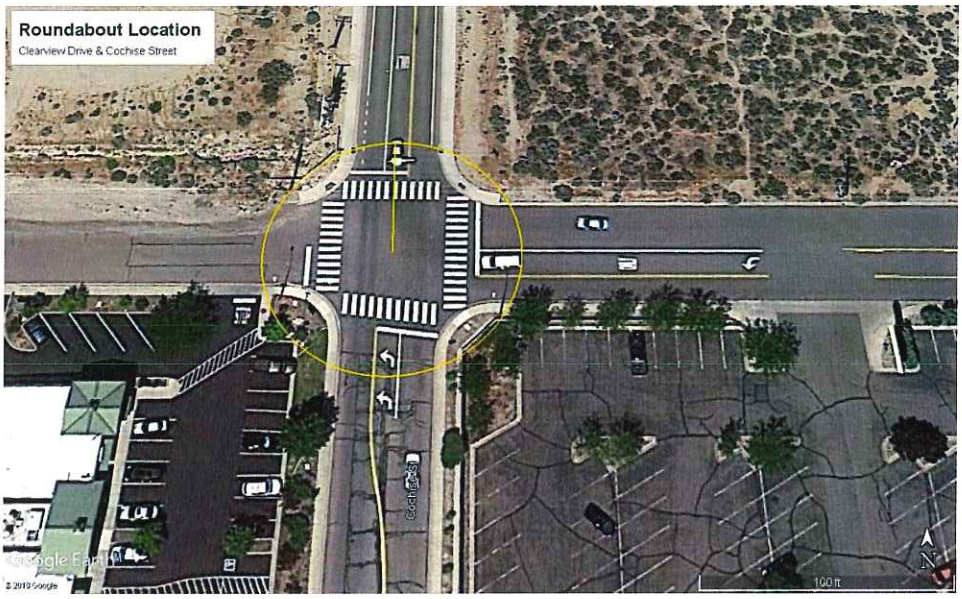


Exhibit 1 – Roundabout Fit Test – Clearview Dr & Cochise St

EVALUATION OF CONTROLS FOR OVERLAND ST AND APPION WAY

This section provides an evaluation of what controls should be provided at the Overland St / Cochise St and Appion Way / Cochise St intersections to best manage 2040 Plus Project traffic volumes. The Manual on Uniform Traffic Control Devices (MUTCD) 2009 Edition contains a warrant for controlling an intersection with all-way stop control. The minimum volume requirements are an average of at least 300 vehicles per hour on the major street for any 8 hours of an average day, and 200 vehicles on the minor street approach, with an average delay of 30 sec/veh during the highest hour.

Volumes and delay for each intersection are shown in **Table 7**. For the peak hours studied, neither intersection meets the all-way stop control warrant requirements.

The *Highway Capacity Manual 2000* contains another guidance method for intersection control. This is provided, with data points for the intersections, as **Appendix E**. Each point on the graph provided is based on the peak hour two-way volume on the minor street, and the peak hour two-way volume on the major street. Plotting points for the AM and PM Peak hours at Overland St / Cochise St and Appion Way / Cochise St showed that the recommended intersection control type based on the anticipated volumes is two-way stop control.

Therefore, the current two-way stop control at the Overland St / Cochise St and Appion Way / Cochise St intersections is recommended to remain.

Table 7: All-Way Stop Control Warrant Evaluation

Intersection	Control	Approach/ Movement	AM		PM	
			Peak Delay[1]	Volume	Peak Delay[1]	Volume
Cochise St / Overland St	Side Street Stop	Major Approaches (NB/SB)	-	376	-	465
		Minor Approaches (EB/WB)	12.3	81	14.6	123
Cochise St / Appion Way	Side Street Stop	Major Approaches (EB/WB)	-	212	-	186
		Minor Approaches (NB/SB)	9.7	90	10.7	194

Notes: 1. Delay is reported in seconds per vehicle for the overall intersection for signalized intersections, and for the worst movement/approach for unsignalized intersections.
Source: Traffic Works, 2018

PARKING

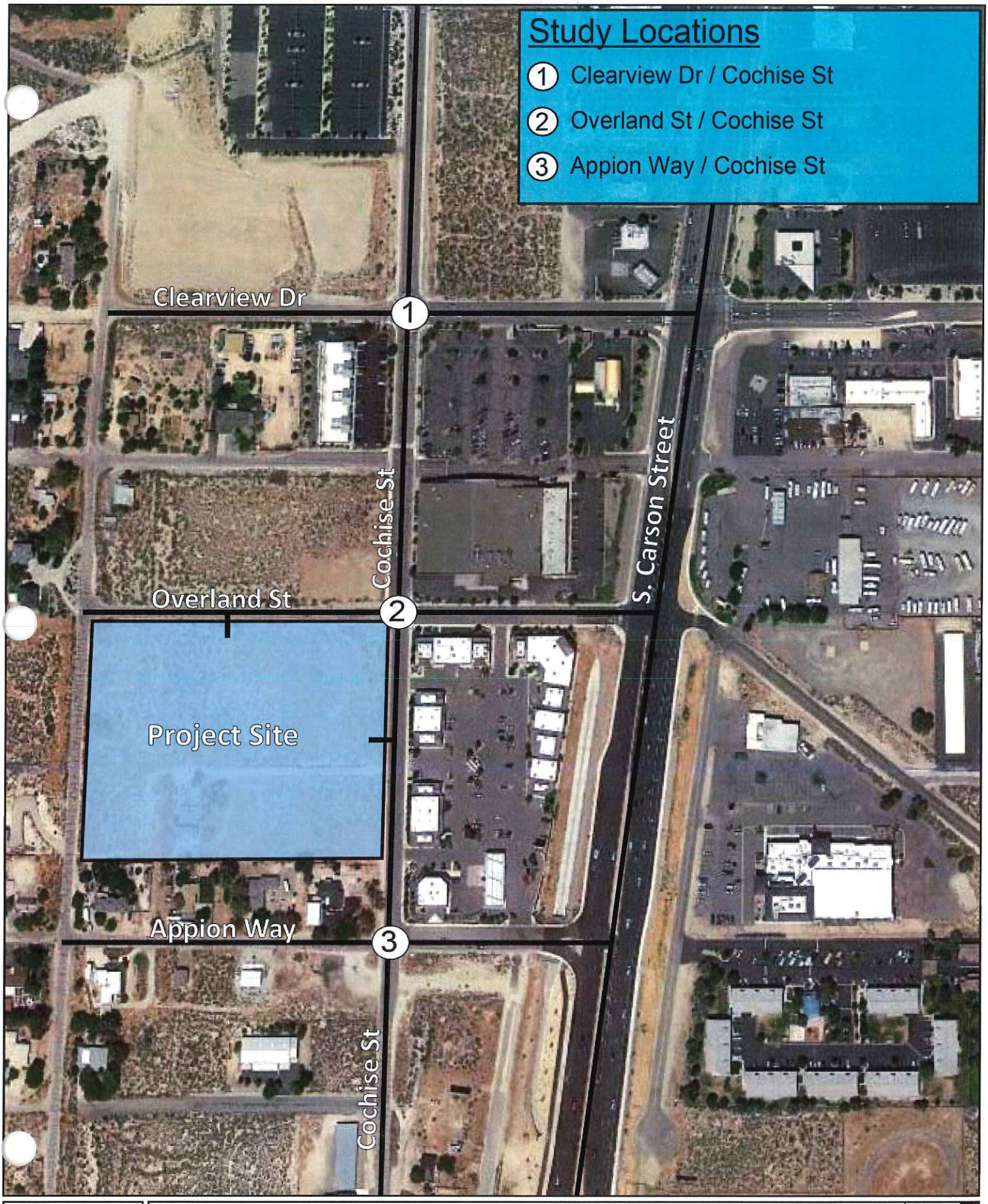
A check was conducted to ensure adequate parking is planned to be provided for the project. The number of required spaces was calculated according to parking demand rates in the Institute of Transportation Engineers' (ITE) *Parking Generation Manual, 4th Edition.* The average peak period parking demand for low to mid-rise apartments is 1.23 vehicles per dwelling unit. The 85th percentile peak period parking demand rate is 1.94 vehicles per dwelling unit (85th percentile rate of all surveyed sites in the ITE study). Therefore, parking demand is expected to be considerably less than 1.94 vehicles per dwelling unit. The average peak demand requires 176 parking spaces. The 85th percentile rate would indicate a demand of 278 spaces. The proposed development provides 272 spaces as shown on **Figure 2**. The site plan illustrates more than adequate parking spaces to meet the average peak parking rates, but also much higher than typical parking demand rates, just short of the 85th percentile demand. Therefore, adequate parking is provided.

CONCLUSIONS & RECOMMENDATIONS

The following is a list of our key findings and recommendations:

- The proposed project consists of 143 multi-family units (apartments), which will generate 902 Daily, 56 AM peak hour, and 74 PM peak hour trips.
- Even with a high anticipated growth rate in the area, and addition of the project, all studied intersections will operate at acceptable levels of service.
- Because the LOS is acceptable with all-way stop control during the 2040 Plus Project scenario, and because a roundabout would not fit well with an adjacent driveway, a roundabout is not recommended at Cochise Street & Clearview Drive.

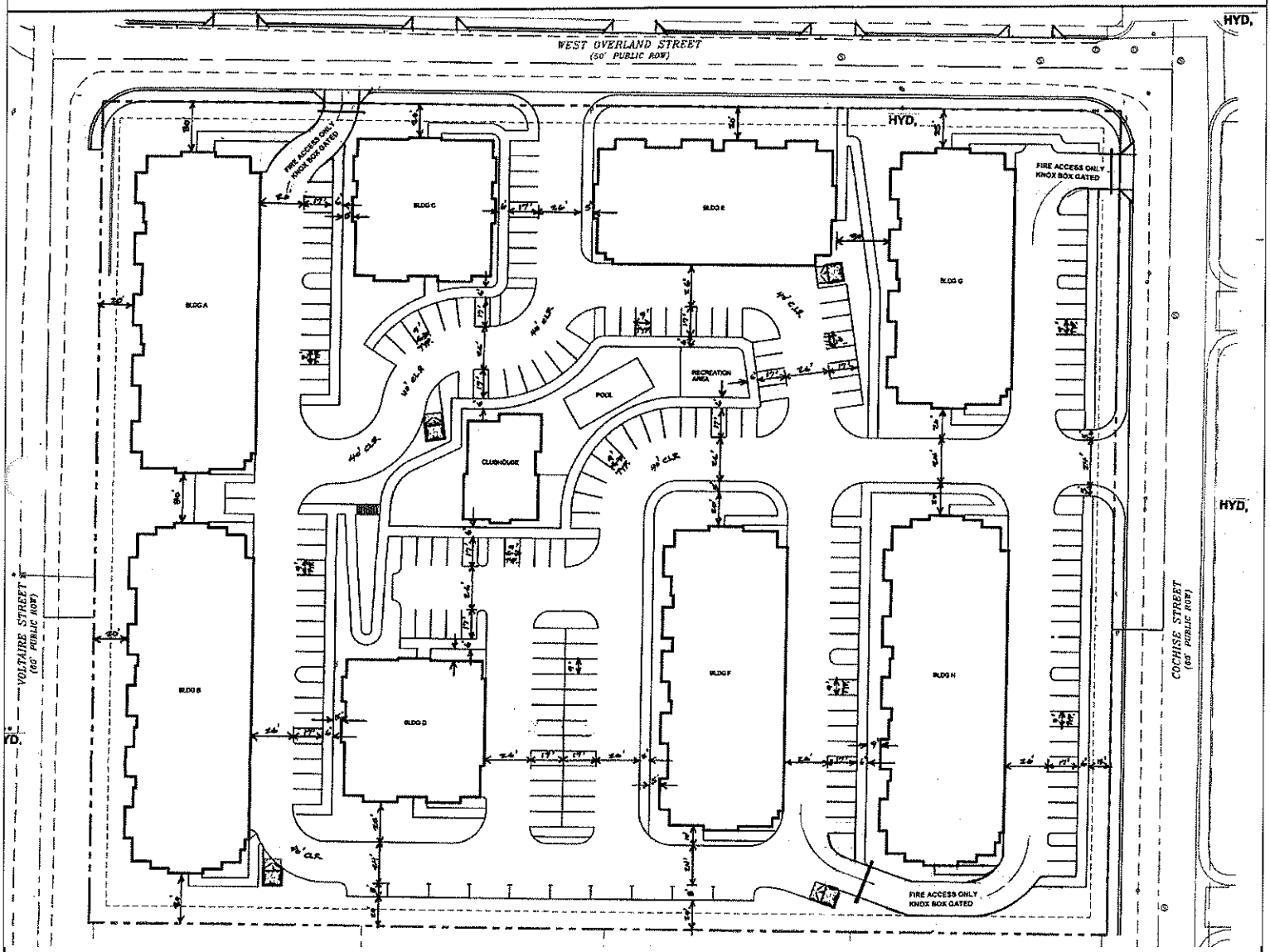
- The Overland St / Cochise St and Appion Way / Cochise St intersections should continue to be controlled with side-street stop controls as they are today.
- More than adequate parking is provided.
- No significant traffic impacts are anticipated and no improvements are recommended.



TRAFFIC WORKS

NO SCALE

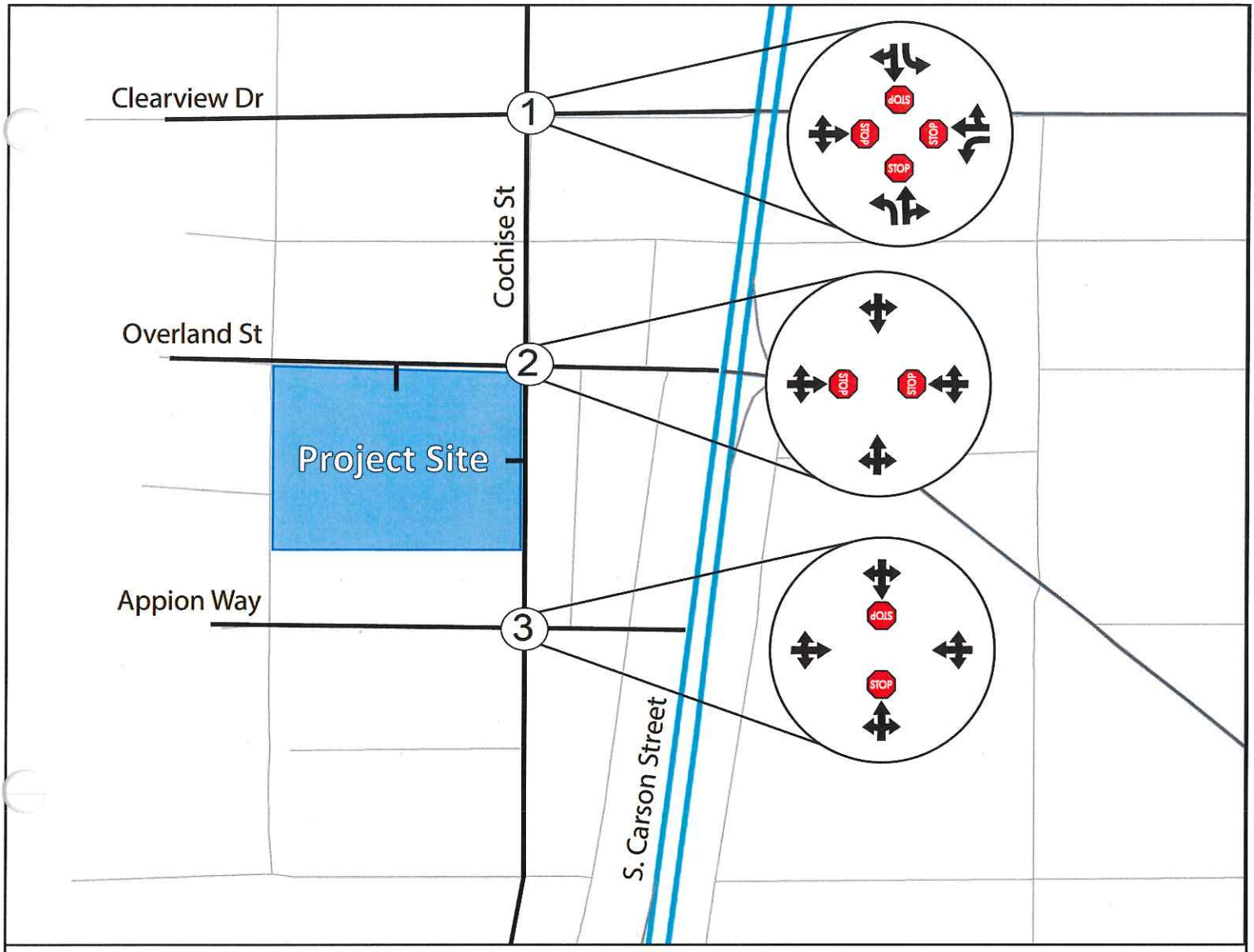
Figure 1
TRAFFIC IMPACT STUDY
Cochise Street Multifamily
Project Location



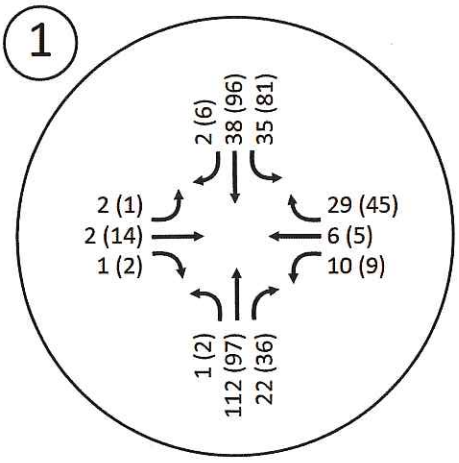
TRAFFIC WORKS LLC

NO SCALE

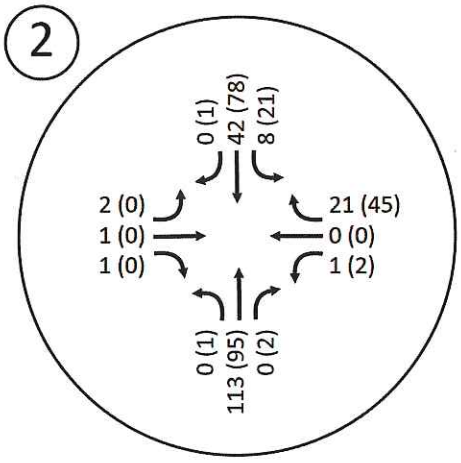
Figure 2
TRAFFIC IMPACT STUDY
Cochise Street Multifamily
Conceptual Site Plan



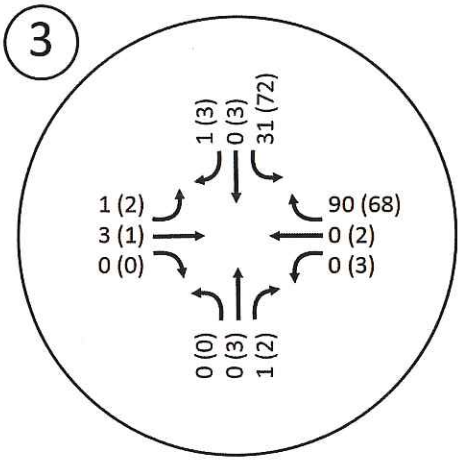
Clearview Dr / Cochise St



Overland St / Cochise St



Appion Way / Cochise St



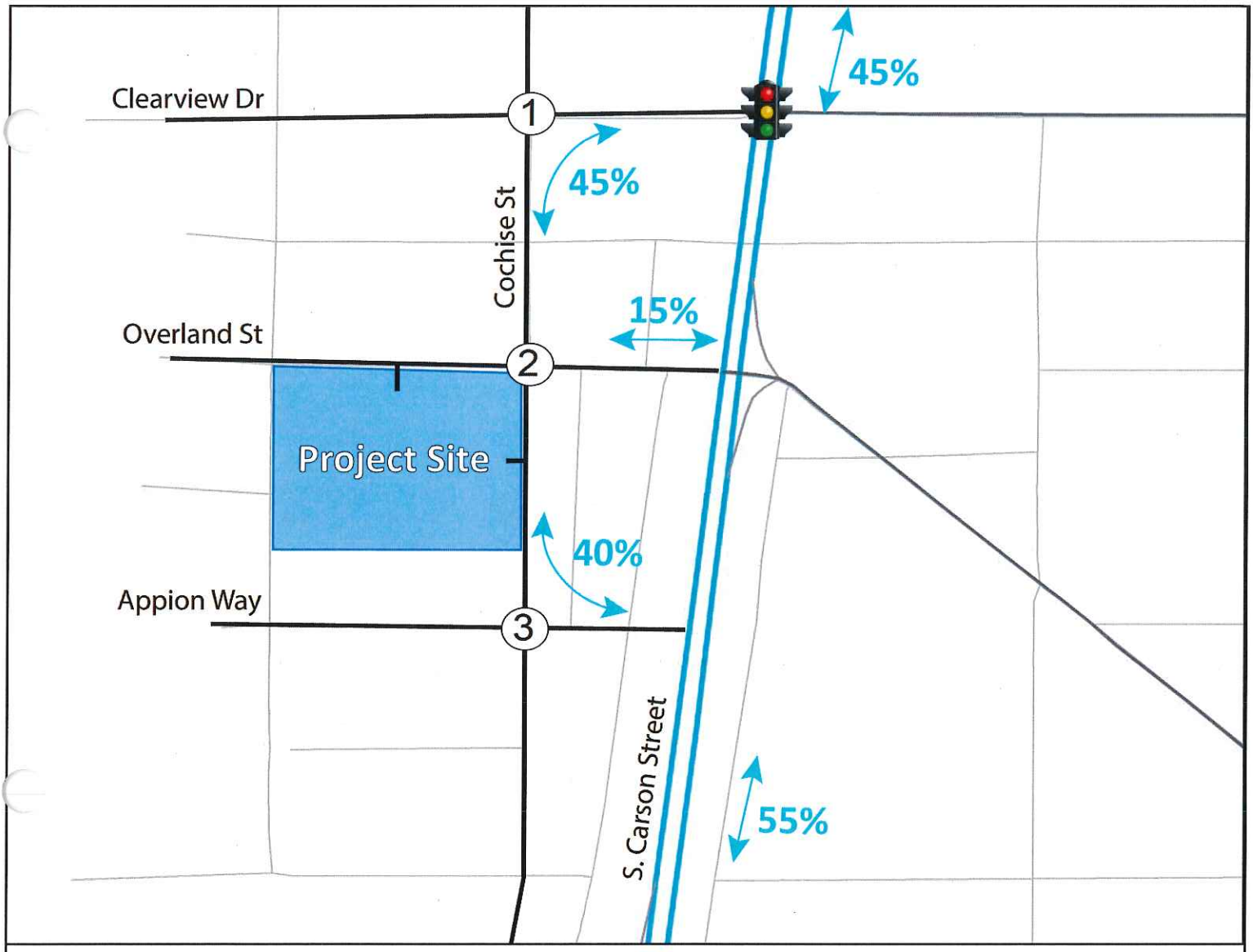
AM Peak Hour Volume (PM Peak Hour Volume)

TRAFFIC WORKS

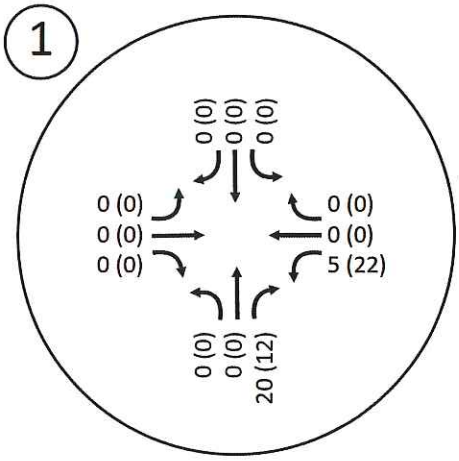
NO SCALE

Figure 3

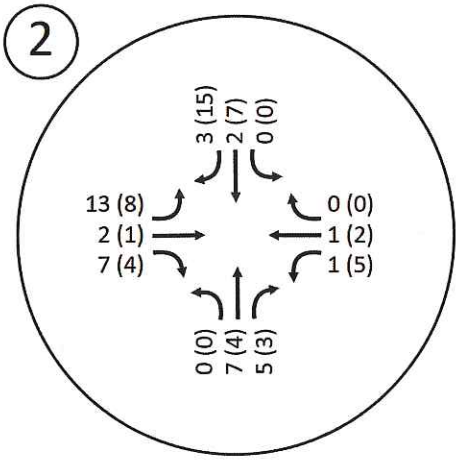
TRAFFIC IMPACT STUDY
Cochise Street Multifamily
Existing Lane Configurations, Controls, and Traffic Volumes



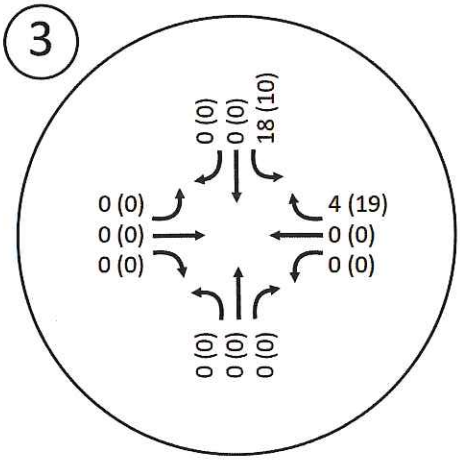
Clearview Dr / Cochise St



Overland St / Cochise St



Appion Way / Cochise St

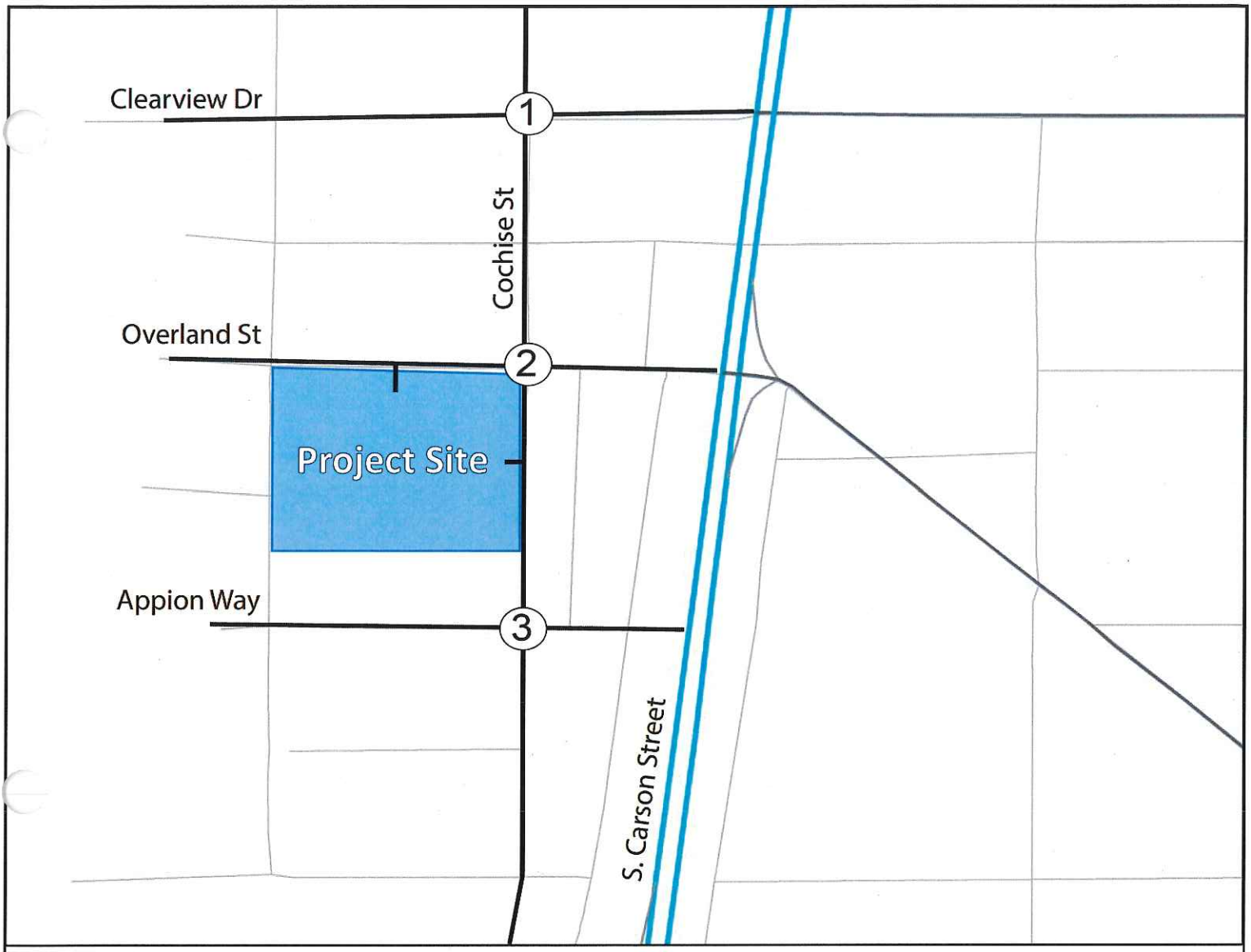


AM Peak Hour Volume (PM Peak Hour Volume)

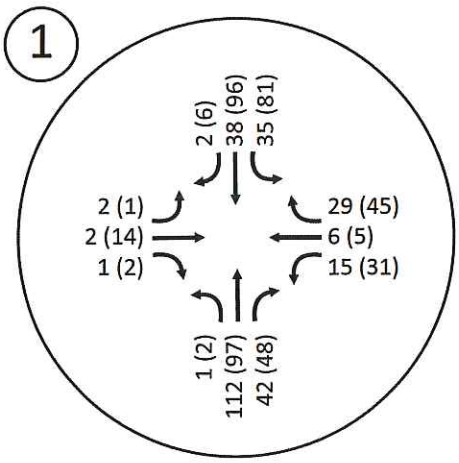
TRAFFIC WORKS

NO SCALE

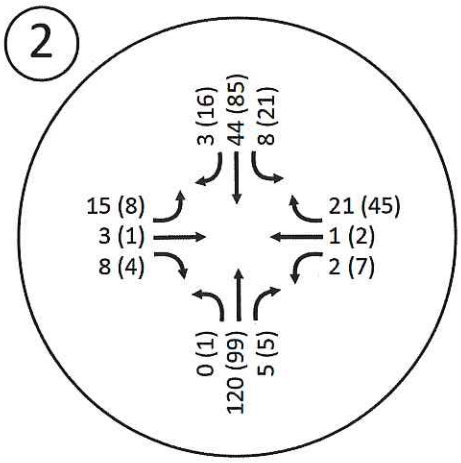
Figure 4
TRAFFIC IMPACT STUDY
Cochise Street Multifamily
Project Trips



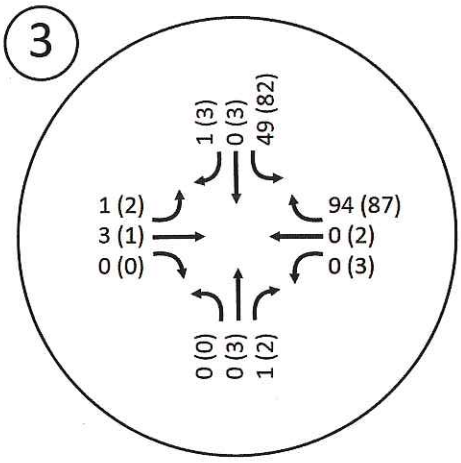
Clearview Dr / Cochise St



Overland St / Cochise St



Appion Way / Cochise St



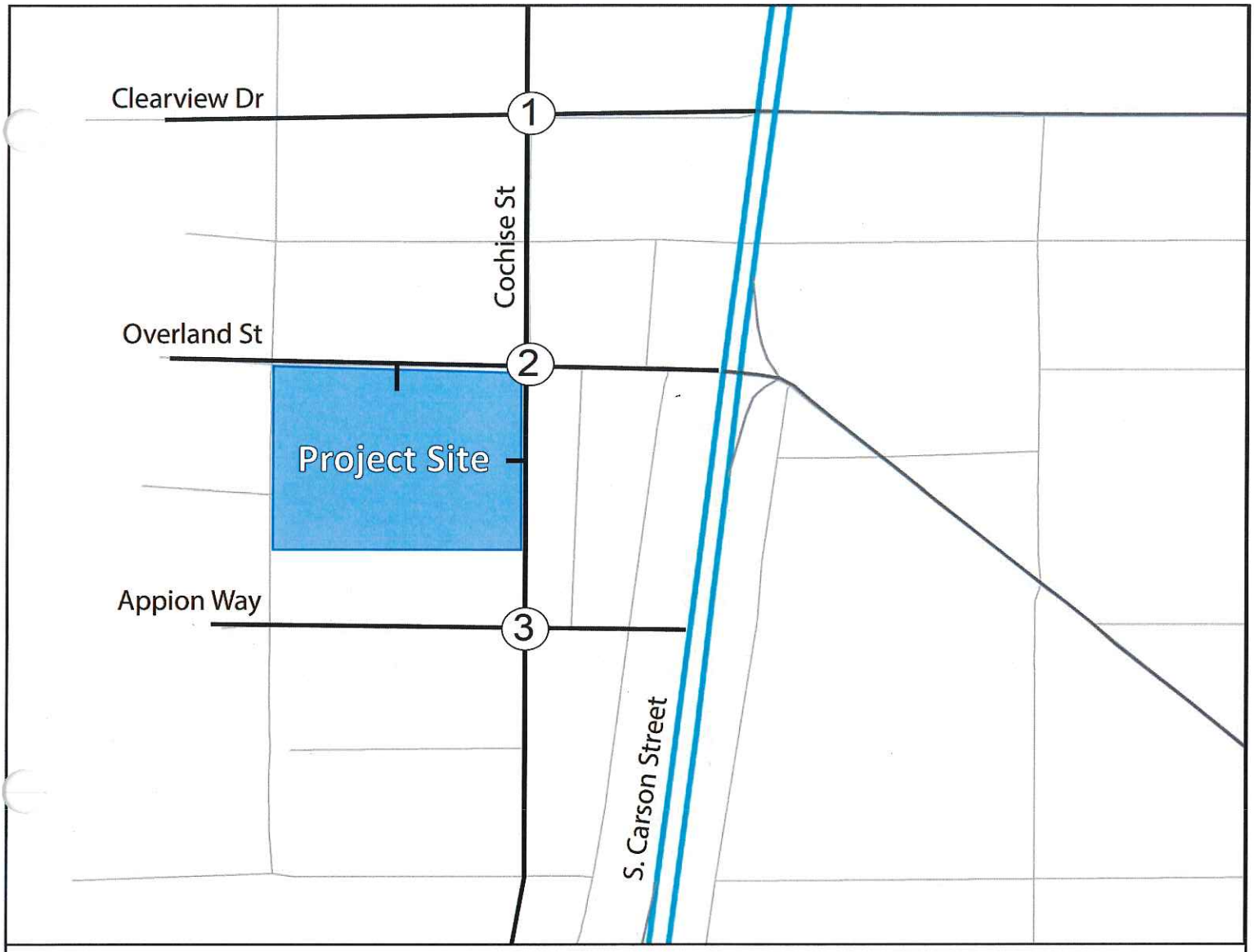
AM Peak Hour Volume (PM Peak Hour Volume)

TRAFFIC WORKS

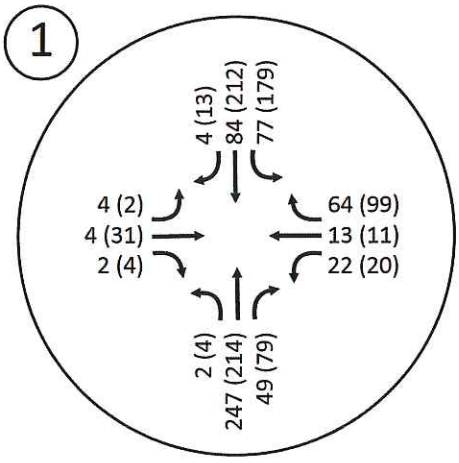
NO SCALE

Figure 5

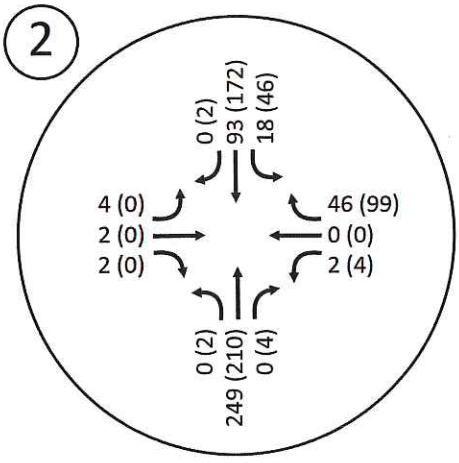
TRAFFIC IMPACT STUDY
Cochise Street Multifamily
Existing Plus Project Traffic Volumes



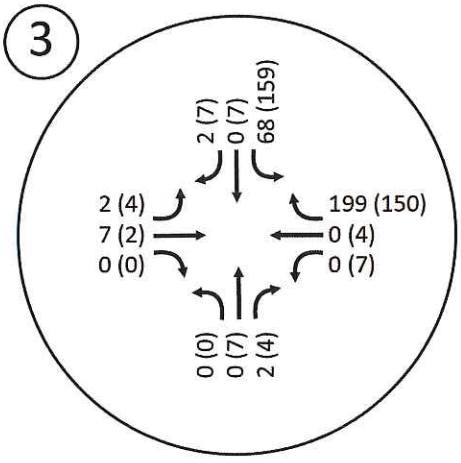
Clearview Dr / Cochise St



Overland St / Cochise St



Appion Way / Cochise St



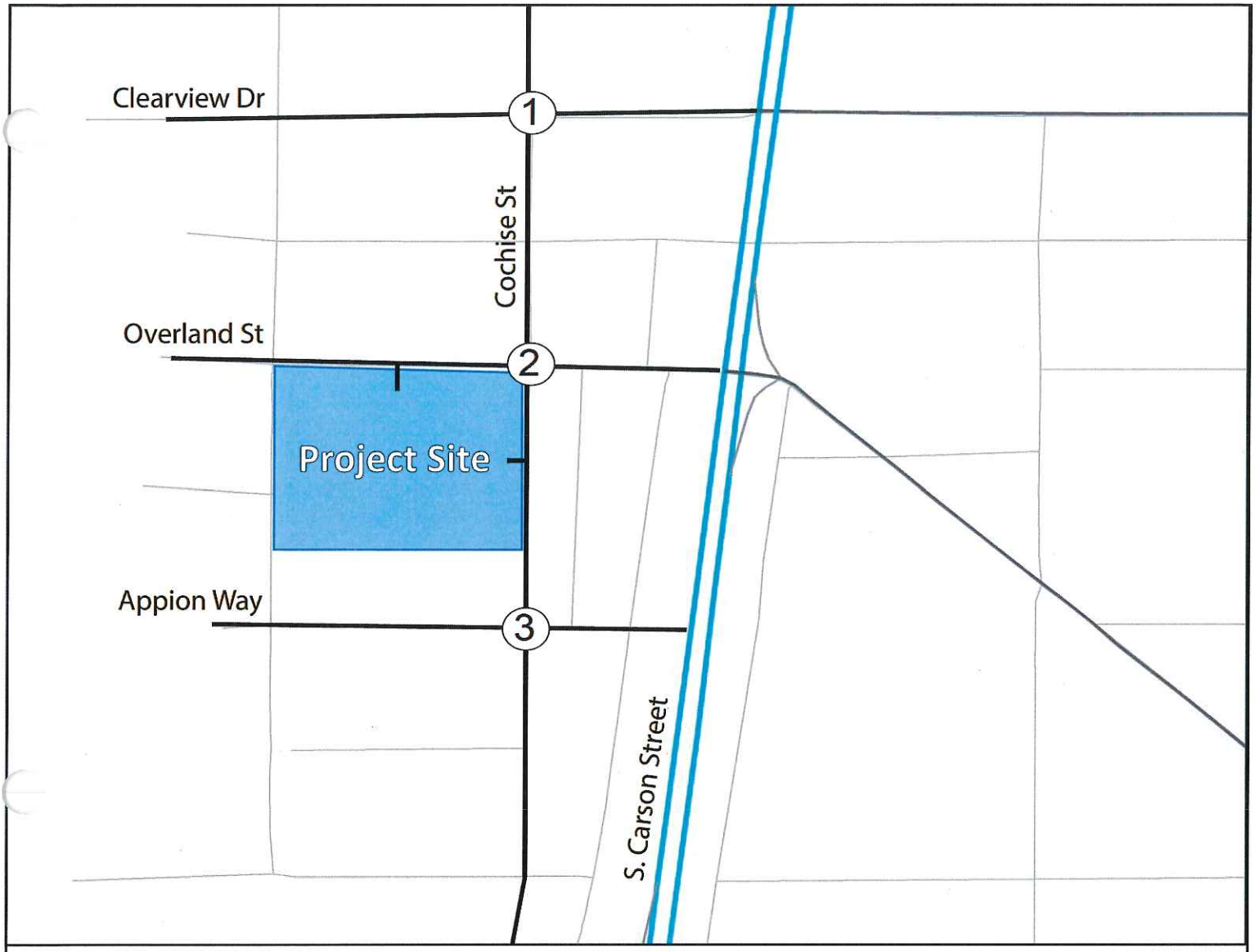
AM Peak Hour Volume (PM Peak Hour Volume)

TRAFFIC WORKS LLC

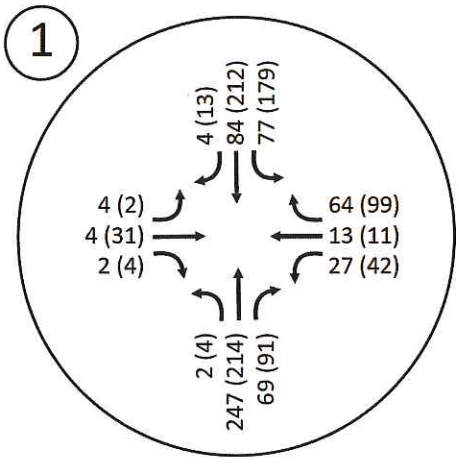
NO SCALE

Figure 6

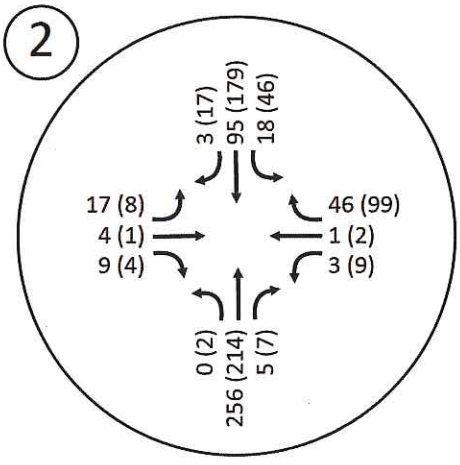
TRAFFIC IMPACT STUDY
Cochise Street Multifamily
Future Year (2040) Traffic Volumes



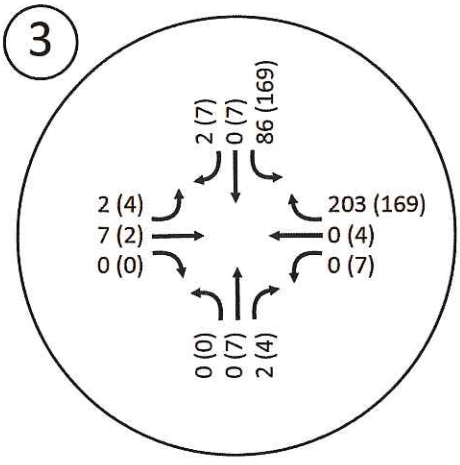
Clearview Dr / Cochise St



Overland St / Cochise St



Appion Way / Cochise St



AM Peak Hour Volume (PM Peak Hour Volume)

TRAFFIC WORKS

NO SCALE

Figure 7

TRAFFIC IMPACT STUDY
Cochise Street Multifamily MPR
Future Year (2040) Plus Project Traffic Volumes

Appendix A
Existing LOS Calculations

TRAFFIC WORKS LLC

Intersection	
Int Delay, s/veh	2.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	1	3	0	0	0	90	0	0	1	31	0	1
Future Vol, veh/h	1	3	0	0	0	90	0	0	1	31	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	0	0	0	0	0	2	0	0	0	13	0	0
Mvmt Flow	1	3	0	0	0	99	0	0	1	34	0	1

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	99	0	0	3	0	0	55	104	3	55	54	49
Stage 1	-	-	-	-	-	-	5	5	-	49	49	-
Stage 2	-	-	-	-	-	-	50	99	-	6	5	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.23	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.23	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.23	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.617	4	3.3
Pot Cap-1 Maneuver	1507	-	-	1632	-	-	948	790	1087	916	841	1025
Stage 1	-	-	-	-	-	-	1022	896	-	937	858	-
Stage 2	-	-	-	-	-	-	968	817	-	988	896	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1507	-	-	1632	-	-	946	789	1087	914	840	1025
Mov Cap-2 Maneuver	-	-	-	-	-	-	946	789	-	914	840	-
Stage 1	-	-	-	-	-	-	1021	895	-	936	858	-
Stage 2	-	-	-	-	-	-	967	817	-	986	895	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.8	0	8.3	9.1
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	1087	1507	-	-	1632	-	-	917
HCM Lane V/C Ratio	0.001	0.001	-	-	-	-	-	0.038
HCM Control Delay (s)	8.3	7.4	0	-	0	-	-	9.1
HCM Lane LOS	A	A	A	-	A	-	-	A
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0.1

Intersection	
Int Delay, s/veh	1.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	2	1	1	1	0	21	0	113	0	8	42	0
Future Vol, veh/h	2	1	1	1	0	21	0	113	0	8	42	0
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	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	0	0	0	0	0	5	0	0	0	25	7	0
Mvmt Flow	2	1	1	1	0	23	0	122	0	9	45	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	195	184	45	185	184	122	45	0	0	122	0	0
Stage 1	62	62	-	122	122	-	-	-	-	-	-	-
Stage 2	133	122	-	63	62	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.25	4.1	-	-	4.35	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.345	2.2	-	-	2.425	-	-
Pot Cap-1 Maneuver	769	714	1031	780	714	921	1576	-	-	1334	-	-
Stage 1	954	847	-	887	799	-	-	-	-	-	-	-
Stage 2	875	799	-	953	847	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	746	709	1031	774	709	921	1576	-	-	1334	-	-
Mov Cap-2 Maneuver	746	709	-	774	709	-	-	-	-	-	-	-
Stage 1	954	841	-	887	799	-	-	-	-	-	-	-
Stage 2	854	799	-	944	841	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.6	9	0	1.2
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1576	-	-	790	913	1334	-	-
HCM Lane V/C Ratio	-	-	-	0.005	0.026	0.006	-	-
HCM Control Delay (s)	0	-	-	9.6	9	7.7	0	-
HCM Lane LOS	A	-	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.1	0	-	-

Intersection	
Intersection Delay, s/veh	8.4
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	2	1	10	6	29	1	112	22	35	38	2
Future Vol, veh/h	2	2	1	10	6	29	1	112	22	35	38	2
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Heavy Vehicles, %	0	0	0	30	17	10	0	2	5	6	5	0
Mvmt Flow	2	2	1	12	7	35	1	137	27	43	46	2
Number of Lanes	0	1	0	1	1	0	1	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	2	1
HCM Control Delay	8.2	8.1	8.6	8.2
HCM LOS	A	A	A	A

Lane	NBLn1	NBLn2	EBLn1	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	100%	0%	40%	100%	0%	100%	0%
Vol Thru, %	0%	84%	40%	0%	17%	0%	95%
Vol Right, %	0%	16%	20%	0%	83%	0%	5%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	1	134	5	10	35	35	40
LT Vol	1	0	2	10	0	35	0
Through Vol	0	112	2	0	6	0	38
RT Vol	0	22	1	0	29	0	2
Lane Flow Rate	1	163	6	12	43	43	49
Geometry Grp	7	7	6	7	7	7	7
Degree of Util (X)	0.002	0.207	0.009	0.021	0.057	0.064	0.066
Departure Headway (Hd)	5.152	4.571	5.158	6.141	4.836	5.395	4.842
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	686	775	697	586	744	668	744
Service Time	2.948	2.366	3.166	3.847	2.542	3.095	2.542
HCM Lane V/C Ratio	0.001	0.21	0.009	0.02	0.058	0.064	0.066
HCM Control Delay	8	8.6	8.2	9	7.8	8.5	7.9
HCM Lane LOS	A	A	A	A	A	A	A
HCM 95th-tile Q	0	0.8	0	0.1	0.2	0.2	0.2

Intersection	
Int Delay, s/veh	5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	2	1	0	3	2	68	0	3	2	72	3	3
Future Vol, veh/h	2	1	0	3	2	68	0	3	2	72	3	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	33	0	1	0	0	0	0	0	0
Mvmt Flow	2	1	0	3	2	74	0	3	2	78	3	3

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	76	0	0	1	0	0	54	88	1	54	51	39
Stage 1	-	-	-	-	-	-	5	5	-	46	46	-
Stage 2	-	-	-	-	-	-	49	83	-	8	5	-
Critical Hdwy	4.1	-	-	4.43	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.497	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1536	-	-	1440	-	-	949	806	1090	949	844	1038
Stage 1	-	-	-	-	-	-	1022	896	-	973	861	-
Stage 2	-	-	-	-	-	-	969	830	-	1019	896	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1536	-	-	1440	-	-	941	804	1090	942	841	1038
Mov Cap-2 Maneuver	-	-	-	-	-	-	941	804	-	942	841	-
Stage 1	-	-	-	-	-	-	1021	895	-	972	859	-
Stage 2	-	-	-	-	-	-	960	828	-	1012	895	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	4.9	0.3	9	9.2
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	898	1536	-	-	1440	-	-	941
HCM Lane V/C Ratio	0.006	0.001	-	-	0.002	-	-	0.09
HCM Control Delay (s)	9	7.3	0	-	7.5	0	-	9.2
HCM Lane LOS	A	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0.3

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	0	0	0	2	0	45	1	95	2	21	78	1
Future Vol, veh/h	0	0	0	2	0	45	1	95	2	21	78	1
Conflicting Peds, #/hr	0	0	0	0	0	1	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	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	0	0	0	0	0	2	0	3	50	5	3	0
Mvmt Flow	0	0	0	2	0	54	1	113	2	25	93	1

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	287	261	93	260	261	115	94	0	0	115	0	0
Stage 1	143	143	-	117	117	-	-	-	-	-	-	-
Stage 2	144	118	-	143	144	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.22	4.1	-	-	4.15	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.318	2.2	-	-	2.245	-	-
Pot Cap-1 Maneuver	669	647	970	697	647	937	1513	-	-	1455	-	-
Stage 1	865	782	-	892	803	-	-	-	-	-	-	-
Stage 2	864	802	-	865	782	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	621	635	970	687	635	936	1513	-	-	1454	-	-
Mov Cap-2 Maneuver	621	635	-	687	635	-	-	-	-	-	-	-
Stage 1	864	768	-	891	802	-	-	-	-	-	-	-
Stage 2	813	801	-	849	768	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	9.2	0.1	1.6
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1513	-	-	-	922	1454	-	-
HCM Lane V/C Ratio	0.001	-	-	-	0.061	0.017	-	-
HCM Control Delay (s)	7.4	0	-	0	9.2	7.5	0	-
HCM Lane LOS	A	A	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	-	0.2	0.1	-	-

Intersection	
Intersection Delay, s/veh	8.7
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	14	2	9	5	45	2	97	36	81	96	6
Future Vol, veh/h	1	14	2	9	5	45	2	97	36	81	96	6
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Heavy Vehicles, %	0	0	0	11	0	2	0	5	0	1	2	0
Mvmt Flow	1	17	2	11	6	56	2	120	44	100	119	7
Number of Lanes	0	1	0	1	1	0	1	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	2	1
HCM Control Delay	8.7	8.2	8.9	8.8
HCM LOS	A	A	A	A

Lane	NBLn1	NBLn2	EBLn1	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	100%	0%	6%	100%	0%	100%	0%
Vol Thru, %	0%	73%	82%	0%	10%	0%	94%
Vol Right, %	0%	27%	12%	0%	90%	0%	6%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	2	133	17	9	50	81	102
LT Vol	2	0	1	9	0	81	0
Through Vol	0	97	14	0	5	0	96
RT Vol	0	36	2	0	45	0	6
Lane Flow Rate	2	164	21	11	62	100	126
Geometry Grp	7	7	6	7	7	7	7
Degree of Util (X)	0.004	0.221	0.032	0.019	0.083	0.15	0.17
Departure Headway (Hd)	5.449	4.842	5.482	6.164	4.839	5.397	4.871
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	658	742	653	582	741	666	738
Service Time	3.171	2.564	3.513	3.891	2.566	3.118	2.592
HCM Lane V/C Ratio	0.003	0.221	0.032	0.019	0.084	0.15	0.171
HCM Control Delay	8.2	8.9	8.7	9	8	9.1	8.6
HCM Lane LOS	A	A	A	A	A	A	A
HCM 95th-tile Q	0	0.8	0.1	0.1	0.3	0.5	0.6

Appendix B
Existing Plus Project LOS Calculations

TRAFFIC WORKS LLC

Intersection	
Int Delay, s/veh	3.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	1	3	0	0	0	94	0	0	1	49	0	1
Future Vol, veh/h	1	3	0	0	0	94	0	0	1	49	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	0	0	0	0	0	2	0	0	0	13	0	0
Mvmt Flow	1	3	0	0	0	103	0	0	1	54	0	1

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	103	0	0	3	0	0	57	108	3	58	57	52
Stage 1	-	-	-	-	-	-	5	5	-	52	52	-
Stage 2	-	-	-	-	-	-	52	103	-	6	5	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.23	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.23	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.23	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.617	4	3.3
Pot Cap-1 Maneuver	1502	-	-	1632	-	-	945	786	1087	912	838	1021
Stage 1	-	-	-	-	-	-	1022	896	-	934	856	-
Stage 2	-	-	-	-	-	-	966	814	-	988	896	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1502	-	-	1632	-	-	943	785	1087	910	837	1021
Mov Cap-2 Maneuver	-	-	-	-	-	-	943	785	-	910	837	-
Stage 1	-	-	-	-	-	-	1021	895	-	933	856	-
Stage 2	-	-	-	-	-	-	965	814	-	986	895	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.8	0	8.3	9.2
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	1087	1502	-	-	1632	-	-	912
HCM Lane V/C Ratio	0.001	0.001	-	-	-	-	-	0.06
HCM Control Delay (s)	8.3	7.4	0	-	0	-	-	9.2
HCM Lane LOS	A	A	A	-	A	-	-	A
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0.2

Intersection	
Int Delay, s/veh	2.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	15	3	8	2	1	21	0	120	5	8	44	3
Future Vol, veh/h	15	3	8	2	1	21	0	120	5	8	44	3
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	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	0	0	0	0	0	5	0	0	0	25	7	0
Mvmt Flow	16	3	9	2	1	23	0	129	5	9	47	3

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	210	200	49	204	200	132	51	0	0	134	0	0
Stage 1	66	66	-	132	132	-	-	-	-	-	-	-
Stage 2	144	134	-	72	68	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.25	4.1	-	-	4.35	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.345	2.2	-	-	2.425	-	-
Pot Cap-1 Maneuver	752	699	1025	758	699	909	1568	-	-	1320	-	-
Stage 1	950	844	-	876	791	-	-	-	-	-	-	-
Stage 2	864	789	-	943	842	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	729	694	1025	745	694	909	1568	-	-	1320	-	-
Mov Cap-2 Maneuver	729	694	-	745	694	-	-	-	-	-	-	-
Stage 1	950	838	-	876	791	-	-	-	-	-	-	-
Stage 2	841	789	-	925	836	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.7	9.2	0	1.1
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1568	-	-	795	881	1320	-	-
HCM Lane V/C Ratio	-	-	-	0.035	0.029	0.007	-	-
HCM Control Delay (s)	0	-	-	9.7	9.2	7.7	0	-
HCM Lane LOS	A	-	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.1	0	-	-

Intersection	
Intersection Delay, s/veh	8.5
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	2	1	15	6	29	1	112	42	35	38	2
Future Vol, veh/h	2	2	1	15	6	29	1	112	42	35	38	2
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Heavy Vehicles, %	0	0	0	30	17	10	0	2	5	6	5	0
Mvmt Flow	2	2	1	18	7	35	1	137	51	43	46	2
Number of Lanes	0	1	0	1	1	0	1	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	2	1
HCM Control Delay	8.3	8.3	8.8	8.2
HCM LOS	A	A	A	A

Lane	NBLn1	NBLn2	EBLn1	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	100%	0%	40%	100%	0%	100%	0%
Vol Thru, %	0%	73%	40%	0%	17%	0%	95%
Vol Right, %	0%	27%	20%	0%	83%	0%	5%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	1	154	5	15	35	35	40
LT Vol	1	0	2	15	0	35	0
Through Vol	0	112	2	0	6	0	38
RT Vol	0	42	1	0	29	0	2
Lane Flow Rate	1	188	6	18	43	43	49
Geometry Grp	7	7	6	7	7	7	7
Degree of Util (X)	0.002	0.241	0.009	0.031	0.058	0.064	0.066
Departure Headway (Hd)	5.27	4.611	5.22	6.193	4.887	5.424	4.87
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	683	783	687	580	735	662	738
Service Time	2.97	2.311	3.241	3.91	2.604	3.138	2.584
HCM Lane V/C Ratio	0.001	0.24	0.009	0.031	0.059	0.065	0.066
HCM Control Delay	8	8.8	8.3	9.1	7.9	8.5	7.9
HCM Lane LOS	A	A	A	A	A	A	A
HCM 95th-tile Q	0	0.9	0	0.1	0.2	0.2	0.2

Intersection	
Int Delay, s/veh	4.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	2	1	0	3	2	87	0	3	2	82	3	3
Future Vol, veh/h	2	1	0	3	2	87	0	3	2	82	3	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	33	0	1	0	0	0	0	0	0
Mvmt Flow	2	1	0	3	2	95	0	3	2	89	3	3

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	97	0	0	1	0	0	64	108	1	64	61	49
Stage 1	-	-	-	-	-	-	5	5	-	56	56	-
Stage 2	-	-	-	-	-	-	59	103	-	8	5	-
Critical Hdwy	4.1	-	-	4.43	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.497	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1509	-	-	1440	-	-	935	786	1090	935	834	1025
Stage 1	-	-	-	-	-	-	1022	896	-	961	852	-
Stage 2	-	-	-	-	-	-	958	814	-	1019	896	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1509	-	-	1440	-	-	927	784	1090	928	831	1025
Mov Cap-2 Maneuver	-	-	-	-	-	-	927	784	-	928	831	-
Stage 1	-	-	-	-	-	-	1021	895	-	960	850	-
Stage 2	-	-	-	-	-	-	949	812	-	1012	895	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	4.9	0.2	9.1	9.3
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	883	1509	-	-	1440	-	-	927
HCM Lane V/C Ratio	0.006	0.001	-	-	0.002	-	-	0.103
HCM Control Delay (s)	9.1	7.4	0	-	7.5	0	-	9.3
HCM Lane LOS	A	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0.3

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	8	1	4	7	2	45	1	99	5	21	85	16
Future Vol, veh/h	8	1	4	7	2	45	1	99	5	21	85	16
Conflicting Peds, #/hr	0	0	0	0	0	1	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	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	0	0	0	0	0	2	0	3	50	5	3	0
Mvmt Flow	10	1	5	8	2	54	1	118	6	25	101	19

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	313	287	111	287	293	122	120	0	0	124	0	0
Stage 1	161	161	-	123	123	-	-	-	-	-	-	-
Stage 2	152	126	-	164	170	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.22	4.1	-	-	4.15	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.318	2.2	-	-	2.245	-	-
Pot Cap-1 Maneuver	643	626	948	669	621	929	1480	-	-	1444	-	-
Stage 1	846	769	-	886	798	-	-	-	-	-	-	-
Stage 2	855	796	-	843	762	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	594	613	948	655	609	928	1480	-	-	1443	-	-
Mov Cap-2 Maneuver	594	613	-	655	609	-	-	-	-	-	-	-
Stage 1	845	754	-	885	797	-	-	-	-	-	-	-
Stage 2	802	795	-	822	748	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.5	9.5	0.1	1.3
HCM LOS	B	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1480	-	-	673	865	1443	-	-
HCM Lane V/C Ratio	0.001	-	-	0.023	0.074	0.017	-	-
HCM Control Delay (s)	7.4	0	-	10.5	9.5	7.5	0	-
HCM Lane LOS	A	A	-	B	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.2	0.1	-	-

Intersection	
Intersection Delay, s/veh	9
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	14	2	31	5	45	2	97	48	81	96	6
Future Vol, veh/h	1	14	2	31	5	45	2	97	48	81	96	6
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Heavy Vehicles, %	0	0	0	11	0	2	0	5	0	1	2	0
Mvmt Flow	1	17	2	38	6	56	2	120	59	100	119	7
Number of Lanes	0	1	0	1	1	0	1	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	2	1
HCM Control Delay	8.8	8.6	9.2	9
HCM LOS	A	A	A	A

Lane	NBLn1	NBLn2	EBLn1	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	100%	0%	6%	100%	0%	100%	0%
Vol Thru, %	0%	67%	82%	0%	10%	0%	94%
Vol Right, %	0%	33%	12%	0%	90%	0%	6%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	2	145	17	31	50	81	102
LT Vol	2	0	1	31	0	81	0
Through Vol	0	97	14	0	5	0	96
RT Vol	0	48	2	0	45	0	6
Lane Flow Rate	2	179	21	38	62	100	126
Geometry Grp	7	7	6	7	7	7	7
Degree of Util (X)	0.004	0.243	0.032	0.066	0.084	0.153	0.174
Departure Headway (Hd)	5.541	4.891	5.568	6.203	4.879	5.497	4.971
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	646	734	641	578	733	653	722
Service Time	3.274	2.624	3.615	3.941	2.615	3.228	2.702
HCM Lane V/C Ratio	0.003	0.244	0.033	0.066	0.085	0.153	0.175
HCM Control Delay	8.3	9.2	8.8	9.4	8.1	9.2	8.8
HCM Lane LOS	A	A	A	A	A	A	A
HCM 95th-tile Q	0	0.9	0.1	0.2	0.3	0.5	0.6

Appendix C
Future Year (2040) LOS Calculations

TRAFFIC WORKS LLC

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	2	7	0	0	0	199	0	0	2	68	0	2
Future Vol, veh/h	2	7	0	0	0	199	0	0	2	68	0	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	33	0	1	0	0	0	0	0	0
Mvmt Flow	2	8	0	0	0	216	0	0	2	74	0	2

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	216	0	0	8	0	0	121	228	8	121	120	108
Stage 1	-	-	-	-	-	-	12	12	-	108	108	-
Stage 2	-	-	-	-	-	-	109	216	-	13	12	-
Critical Hdwy	4.1	-	-	4.43	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.497	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1366	-	-	1432	-	-	859	675	1080	859	774	951
Stage 1	-	-	-	-	-	-	1014	890	-	902	810	-
Stage 2	-	-	-	-	-	-	901	728	-	1013	890	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1366	-	-	1432	-	-	856	674	1080	857	773	951
Mov Cap-2 Maneuver	-	-	-	-	-	-	856	674	-	857	773	-
Stage 1	-	-	-	-	-	-	1013	889	-	901	810	-
Stage 2	-	-	-	-	-	-	899	728	-	1010	889	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.7	0	8.3	9.6
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	1080	1366	-	-	1432	-	-	859
HCM Lane V/C Ratio	0.002	0.002	-	-	-	-	-	0.089
HCM Control Delay (s)	8.3	7.6	0	-	0	-	-	9.6
HCM Lane LOS	A	A	A	-	A	-	-	A
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0.3

Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	4	2	2	2	0	46	0	249	0	18	93	0
Future Vol, veh/h	4	2	2	2	0	46	0	249	0	18	93	0
Conflicting Peds, #/hr	0	0	0	0	0	1	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	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	0	0	0	0	0	2	0	3	50	5	3	0
Mvmt Flow	5	2	2	2	0	55	0	296	0	21	111	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	479	450	111	452	450	297	111	0	0	296	0	0
Stage 1	154	154	-	296	296	-	-	-	-	-	-	-
Stage 2	325	296	-	156	154	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.22	4.1	-	-	4.15	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.318	2.2	-	-	2.245	-	-
Pot Cap-1 Maneuver	500	508	948	521	508	742	1492	-	-	1248	-	-
Stage 1	853	774	-	717	672	-	-	-	-	-	-	-
Stage 2	692	672	-	851	774	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	456	499	948	511	499	741	1492	-	-	1247	-	-
Mov Cap-2 Maneuver	456	499	-	511	499	-	-	-	-	-	-	-
Stage 1	853	760	-	717	672	-	-	-	-	-	-	-
Stage 2	640	672	-	831	760	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11.8	10.4	0	1.3
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1492	-	-	537	727	1247	-	-
HCM Lane V/C Ratio	-	-	-	0.018	0.079	0.017	-	-
HCM Control Delay (s)	0	-	-	11.8	10.4	7.9	0	-
HCM Lane LOS	A	-	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.3	0.1	-	-

Intersection	
Intersection Delay, s/veh	11.2
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	4	4	2	22	13	64	2	247	49	77	84	4
Future Vol, veh/h	4	4	2	22	13	64	2	247	49	77	84	4
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Heavy Vehicles, %	0	0	0	11	0	2	0	5	0	1	2	0
Mvmt Flow	5	5	2	27	16	79	2	305	60	95	104	5
Number of Lanes	0	1	0	1	1	0	1	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	2	1
HCM Control Delay	9.3	9.2	13	9.2
HCM LOS	A	A	B	A

Lane	NBLn1	NBLn2	EBLn1	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	100%	0%	40%	100%	0%	100%	0%
Vol Thru, %	0%	83%	40%	0%	17%	0%	95%
Vol Right, %	0%	17%	20%	0%	83%	0%	5%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	2	296	10	22	77	77	88
LT Vol	2	0	4	22	0	77	0
Through Vol	0	247	4	0	13	0	84
RT Vol	0	49	2	0	64	0	4
Lane Flow Rate	2	365	12	27	95	95	109
Geometry Grp	7	7	6	7	7	7	7
Degree of Util (X)	0.004	0.512	0.021	0.05	0.141	0.151	0.157
Departure Headway (Hd)	5.573	5.04	6.067	6.605	5.325	5.717	5.199
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	640	713	585	540	669	625	687
Service Time	3.323	2.789	4.153	4.37	3.09	3.475	2.956
HCM Lane V/C Ratio	0.003	0.512	0.021	0.05	0.142	0.152	0.159
HCM Control Delay	8.3	13	9.3	9.7	9	9.5	8.9
HCM Lane LOS	A	B	A	A	A	A	A
HCM 95th-tile Q	0	2.9	0.1	0.2	0.5	0.5	0.6

Intersection	
Int Delay, s/veh	5.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	4	2	0	7	4	150	0	7	4	159	7	7
Future Vol, veh/h	4	2	0	7	4	150	0	7	4	159	7	7
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	33	0	1	0	0	0	0	0	0
Mvmt Flow	4	2	0	8	4	163	0	8	4	173	8	8

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	167	0	0	2	0	0	120	194	2	118	112	86
Stage 1	-	-	-	-	-	-	11	11	-	101	101	-
Stage 2	-	-	-	-	-	-	109	183	-	17	11	-
Critical Hdwy	4.1	-	-	4.43	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.497	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1423	-	-	1439	-	-	860	705	1088	863	782	978
Stage 1	-	-	-	-	-	-	1015	890	-	910	815	-
Stage 2	-	-	-	-	-	-	901	752	-	1008	890	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1423	-	-	1439	-	-	841	699	1088	847	775	978
Mov Cap-2 Maneuver	-	-	-	-	-	-	841	699	-	847	775	-
Stage 1	-	-	-	-	-	-	1012	887	-	907	810	-
Stage 2	-	-	-	-	-	-	880	747	-	992	887	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	5	0.3	9.6	10.5
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	803	1423	-	-	1439	-	-	848
HCM Lane V/C Ratio	0.015	0.003	-	-	0.005	-	-	0.222
HCM Control Delay (s)	9.6	7.5	0	-	7.5	0	-	10.5
HCM Lane LOS	A	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0.8

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	0	0	0	4	0	99	2	210	4	46	172	2
Future Vol, veh/h	0	0	0	4	0	99	2	210	4	46	172	2
Conflicting Peds, #/hr	0	0	0	0	0	1	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	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	0	0	0	0	0	2	0	3	50	5	3	0
Mvmt Flow	0	0	0	5	0	118	2	250	5	55	205	2

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	632	575	206	572	574	253	207	0	0	255	0	0
Stage 1	315	315	-	257	257	-	-	-	-	-	-	-
Stage 2	317	260	-	315	317	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.22	4.1	-	-	4.15	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.318	2.2	-	-	2.245	-	-
Pot Cap-1 Maneuver	396	431	840	434	432	786	1376	-	-	1293	-	-
Stage 1	700	659	-	752	699	-	-	-	-	-	-	-
Stage 2	698	697	-	700	658	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	323	409	840	417	410	785	1376	-	-	1292	-	-
Mov Cap-2 Maneuver	323	409	-	417	410	-	-	-	-	-	-	-
Stage 1	699	627	-	750	698	-	-	-	-	-	-	-
Stage 2	591	696	-	666	626	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	10.7	0.1	1.7
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1376	-	-	-	759	1292	-	-
HCM Lane V/C Ratio	0.002	-	-	-	0.162	0.042	-	-
HCM Control Delay (s)	7.6	0	-	0	10.7	7.9	0	-
HCM Lane LOS	A	A	-	A	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	-	0.6	0.1	-	-

Intersection	
Intersection Delay, s/veh	13.3
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	31	4	20	11	99	4	214	79	179	212	13
Future Vol, veh/h	2	31	4	20	11	99	4	214	79	179	212	13
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Heavy Vehicles, %	0	0	0	11	0	2	0	5	0	1	2	0
Mvmt Flow	2	38	5	25	14	122	5	264	98	221	262	16
Number of Lanes	0	1	0	1	1	0	1	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	2	1
HCM Control Delay	10.7	10.7	15.8	12.6
HCM LOS	B	B	C	B

Lane	NBLn1	NBLn2	EBLn1	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	100%	0%	5%	100%	0%	100%	0%
Vol Thru, %	0%	73%	84%	0%	10%	0%	94%
Vol Right, %	0%	27%	11%	0%	90%	0%	6%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	4	293	37	20	110	179	225
LT Vol	4	0	2	20	0	179	0
Through Vol	0	214	31	0	11	0	212
RT Vol	0	79	4	0	99	0	13
Lane Flow Rate	5	362	46	25	136	221	278
Geometry Grp	7	7	6	7	7	7	7
Degree of Util (X)	0.009	0.574	0.089	0.051	0.232	0.378	0.434
Departure Headway (Hd)	6.323	5.712	6.988	7.479	6.139	6.15	5.62
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	566	633	512	479	584	586	642
Service Time	4.063	3.452	5.048	5.229	3.889	3.886	3.356
HCM Lane V/C Ratio	0.009	0.572	0.09	0.052	0.233	0.377	0.433
HCM Control Delay	9.1	15.9	10.7	10.6	10.7	12.6	12.6
HCM Lane LOS	A	C	B	B	B	B	B
HCM 95th-tile Q	0	3.6	0.3	0.2	0.9	1.8	2.2

Appendix D
Future Year (2040) Plus Project LOS Calculations

TRAFFIC WORKS LLC

Intersection	
Int Delay, s/veh	2.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	2	7	0	0	0	203	0	0	2	86	0	2
Future Vol, veh/h	2	7	0	0	0	203	0	0	2	86	0	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	33	0	1	0	0	0	0	0	0
Mvmt Flow	2	8	0	0	0	221	0	0	2	93	0	2

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	221	0	0	8	0	0	123	233	8	123	122	110
Stage 1	-	-	-	-	-	-	12	12	-	110	110	-
Stage 2	-	-	-	-	-	-	111	221	-	13	12	-
Critical Hdwy	4.1	-	-	4.43	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.497	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1360	-	-	1432	-	-	856	671	1080	856	772	949
Stage 1	-	-	-	-	-	-	1014	890	-	900	808	-
Stage 2	-	-	-	-	-	-	899	724	-	1013	890	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1360	-	-	1432	-	-	853	670	1080	854	771	949
Mov Cap-2 Maneuver	-	-	-	-	-	-	853	670	-	854	771	-
Stage 1	-	-	-	-	-	-	1013	889	-	899	808	-
Stage 2	-	-	-	-	-	-	897	724	-	1010	889	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.7	0	8.3	9.7
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	1080	1360	-	-	1432	-	-	856
HCM Lane V/C Ratio	0.002	0.002	-	-	-	-	-	0.112
HCM Control Delay (s)	8.3	7.7	0	-	0	-	-	9.7
HCM Lane LOS	A	A	A	-	A	-	-	A
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0.4

Intersection	
Int Delay, s/veh	2.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	17	4	9	3	1	46	0	256	5	18	95	3
Future Vol, veh/h	17	4	9	3	1	46	0	256	5	18	95	3
Conflicting Peds, #/hr	0	0	0	0	0	1	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	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	0	0	0	0	0	2	0	3	50	5	3	0
Mvmt Flow	20	5	11	4	1	55	0	305	6	21	113	4

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	495	469	115	473	468	309	117	0	0	311	0	0
Stage 1	158	158	-	308	308	-	-	-	-	-	-	-
Stage 2	337	311	-	165	160	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.22	4.1	-	-	4.15	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.318	2.2	-	-	2.245	-	-
Pot Cap-1 Maneuver	488	495	943	505	496	731	1484	-	-	1233	-	-
Stage 1	849	771	-	706	664	-	-	-	-	-	-	-
Stage 2	681	662	-	842	769	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	444	486	943	489	487	730	1484	-	-	1232	-	-
Mov Cap-2 Maneuver	444	486	-	489	487	-	-	-	-	-	-	-
Stage 1	849	757	-	706	664	-	-	-	-	-	-	-
Stage 2	628	662	-	812	755	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	12.2	10.6	0	1.2
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1484	-	-	535	702	1232	-	-
HCM Lane V/C Ratio	-	-	-	0.067	0.085	0.017	-	-
HCM Control Delay (s)	0	-	-	12.2	10.6	8	0	-
HCM Lane LOS	A	-	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.3	0.1	-	-

Intersection	
Intersection Delay, s/veh	11.6
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	4	4	2	27	13	64	2	247	69	77	84	4
Future Vol, veh/h	4	4	2	27	13	64	2	247	69	77	84	4
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Heavy Vehicles, %	0	0	0	11	0	2	0	5	0	1	2	0
Mvmt Flow	5	5	2	33	16	79	2	305	85	95	104	5
Number of Lanes	0	1	0	1	1	0	1	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	2	1
HCM Control Delay	9.4	9.2	13.7	9.3
HCM LOS	A	A	B	A

Lane	NBLn1	NBLn2	EBLn1	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	100%	0%	40%	100%	0%	100%	0%
Vol Thru, %	0%	78%	40%	0%	17%	0%	95%
Vol Right, %	0%	22%	20%	0%	83%	0%	5%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	2	316	10	27	77	77	88
LT Vol	2	0	4	27	0	77	0
Through Vol	0	247	4	0	13	0	84
RT Vol	0	69	2	0	64	0	4
Lane Flow Rate	2	390	12	33	95	95	109
Geometry Grp	7	7	6	7	7	7	7
Degree of Util (X)	0.004	0.545	0.021	0.062	0.142	0.152	0.158
Departure Headway (Hd)	5.598	5.027	6.14	6.661	5.381	5.763	5.244
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	637	714	578	535	662	620	680
Service Time	3.35	2.779	4.234	4.431	3.15	3.525	3.006
HCM Lane V/C Ratio	0.003	0.546	0.021	0.062	0.144	0.153	0.16
HCM Control Delay	8.4	13.7	9.4	9.9	9	9.6	9
HCM Lane LOS	A	B	A	A	A	A	A
HCM 95th-tile Q	0	3.3	0.1	0.2	0.5	0.5	0.6

Intersection	
Int Delay, s/veh	5.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	4	2	0	7	4	169	0	7	4	169	7	7
Future Vol, veh/h	4	2	0	7	4	169	0	7	4	169	7	7
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	33	0	1	0	0	0	0	0	0
Mvmt Flow	4	2	0	8	4	184	0	8	4	184	8	8

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	188	0	0	2	0	0	130	214	2	128	122	96
Stage 1	-	-	-	-	-	-	11	11	-	111	111	-
Stage 2	-	-	-	-	-	-	119	203	-	17	11	-
Critical Hdwy	4.1	-	-	4.43	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.497	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1398	-	-	1439	-	-	847	687	1088	850	772	966
Stage 1	-	-	-	-	-	-	1015	890	-	899	807	-
Stage 2	-	-	-	-	-	-	890	737	-	1008	890	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1398	-	-	1439	-	-	828	681	1088	834	765	966
Mov Cap-2 Maneuver	-	-	-	-	-	-	828	681	-	834	765	-
Stage 1	-	-	-	-	-	-	1012	887	-	896	802	-
Stage 2	-	-	-	-	-	-	869	733	-	992	887	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	5.1	0.3	9.6	10.7
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	788	1398	-	-	1439	-	-	835
HCM Lane V/C Ratio	0.015	0.003	-	-	0.005	-	-	0.238
HCM Control Delay (s)	9.6	7.6	0	-	7.5	0	-	10.7
HCM Lane LOS	A	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0.9

Intersection	
Int Delay, s/veh	3.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	8	1	4	9	2	99	2	214	7	46	179	17
Future Vol, veh/h	8	1	4	9	2	99	2	214	7	46	179	17
Conflicting Peds, #/hr	0	0	0	0	0	1	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	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	0	0	0	0	0	2	0	3	50	5	3	0
Mvmt Flow	10	1	5	11	2	118	2	255	8	55	213	20

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	658	601	223	600	607	260	233	0	0	263	0	0
Stage 1	333	333	-	264	264	-	-	-	-	-	-	-
Stage 2	325	268	-	336	343	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.22	4.1	-	-	4.15	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.318	2.2	-	-	2.245	-	-
Pot Cap-1 Maneuver	380	417	822	416	414	779	1346	-	-	1284	-	-
Stage 1	685	647	-	746	694	-	-	-	-	-	-	-
Stage 2	692	691	-	682	641	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	308	396	822	397	393	778	1346	-	-	1283	-	-
Mov Cap-2 Maneuver	308	396	-	397	393	-	-	-	-	-	-	-
Stage 1	684	615	-	745	693	-	-	-	-	-	-	-
Stage 2	583	690	-	644	610	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	14.6	11.2	0.1	1.5
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1346	-	-	390	710	1283	-	-
HCM Lane V/C Ratio	0.002	-	-	0.04	0.184	0.043	-	-
HCM Control Delay (s)	7.7	0	-	14.6	11.2	7.9	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.7	0.1	-	-

Intersection	
Intersection Delay, s/veh	14.1
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	31	4	42	11	99	4	214	91	179	212	13
Future Vol, veh/h	2	31	4	42	11	99	4	214	91	179	212	13
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Heavy Vehicles, %	0	0	0	11	0	2	0	5	0	1	2	0
Mvmt Flow	2	38	5	52	14	122	5	264	112	221	262	16
Number of Lanes	0	1	0	1	1	0	1	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	2	1
HCM Control Delay	10.9	11	17.2	13.1
HCM LOS	B	B	C	B

Lane	NBLn1	NBLn2	EBLn1	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	100%	0%	5%	100%	0%	100%	0%
Vol Thru, %	0%	70%	84%	0%	10%	0%	94%
Vol Right, %	0%	30%	11%	0%	90%	0%	6%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	4	305	37	42	110	179	225
LT Vol	4	0	2	42	0	179	0
Through Vol	0	214	31	0	11	0	212
RT Vol	0	91	4	0	99	0	13
Lane Flow Rate	5	377	46	52	136	221	278
Geometry Grp	7	7	6	7	7	7	7
Degree of Util (X)	0.009	0.609	0.091	0.109	0.234	0.386	0.445
Departure Headway (Hd)	6.45	5.818	7.143	7.55	6.209	6.293	5.763
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	554	621	500	474	577	572	625
Service Time	4.196	3.563	5.215	5.306	3.965	4.035	3.504
HCM Lane V/C Ratio	0.009	0.607	0.092	0.11	0.236	0.386	0.445
HCM Control Delay	9.3	17.3	10.9	11.2	10.9	13	13.1
HCM Lane LOS	A	C	B	B	B	B	B
HCM 95th-tile Q	0	4.1	0.3	0.4	0.9	1.8	2.3

Appendix E
HCM Intersection Control Type Graph

TRAFFIC WORKS LLC

Peak-Hour Factor

Refer to the peak-hour factor discussion in this chapter under Section II, Urban Streets, Required Input Data and Estimated Values.

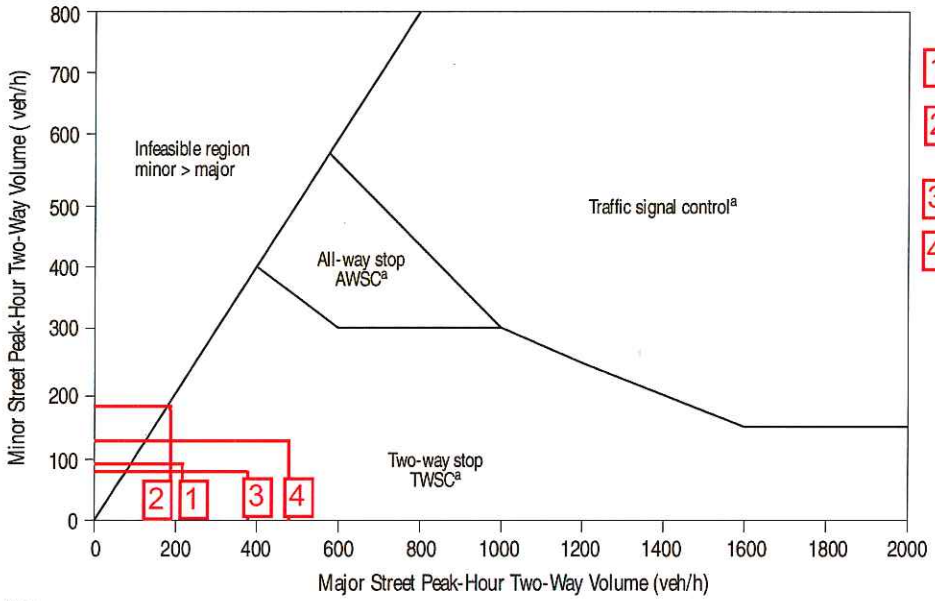
Length of Analysis Period

Refer to the length of analysis period discussion in this chapter under Section II, Urban Streets, Required Input Data and Estimated Values.

Intersection Control Type

The intersection control type for an existing facility is known, by definition. In the case of future facilities, the likely intersection control types can be forecast using Exhibit 10-15 and the forecast two-way peak-hour volumes on the major and minor streets. Note that this exhibit is based on a set of specific assumptions, which are identified in a footnote.

EXHIBIT 10-15. INTERSECTION CONTROL TYPE AND PEAK-HOUR VOLUMES (SEE FOOTNOTE FOR ASSUMED VALUES)



1 Cochise & Appion AM
2 Cochise & Appion PM
3 Cochise & Overland AM
4 Cochise & Overland PM

Notes
a. Roundabouts may be appropriate within portion of these ranges.
Source: Adapted from *Traffic Control Devices Handbook* (8, pp. 4–18) - peak-direction, 8-h warrants converted to two-way peak-hour volumes assuming ADT equals twice the 8-h volume and peak hour is 10 percent of daily. Two-way volumes assumed to be 150 percent of peak-direction volume.

Cycle Length

Greater accuracy can be achieved when using the computational methodology if the cycle length for each intersection along the urban street is known or can be calculated on the basis of intersection-specific data. In the absence of a known cycle length or intersection-specific data, the cycle lengths for signalized intersections along an urban street can be estimated using the default values in Exhibit 10-16.

EXHIBIT 10-16. DEFAULT CYCLE LENGTHS BY AREA TYPE

Area Type	Default (s)
CBD	70
Other	100