STAFF REPORT FOR PLANNING COMMISSION MEETING OF SEPTEMBER 5, 2023

FILE NO: LU-2023-0315 **AGENDA ITEM: 6.A**

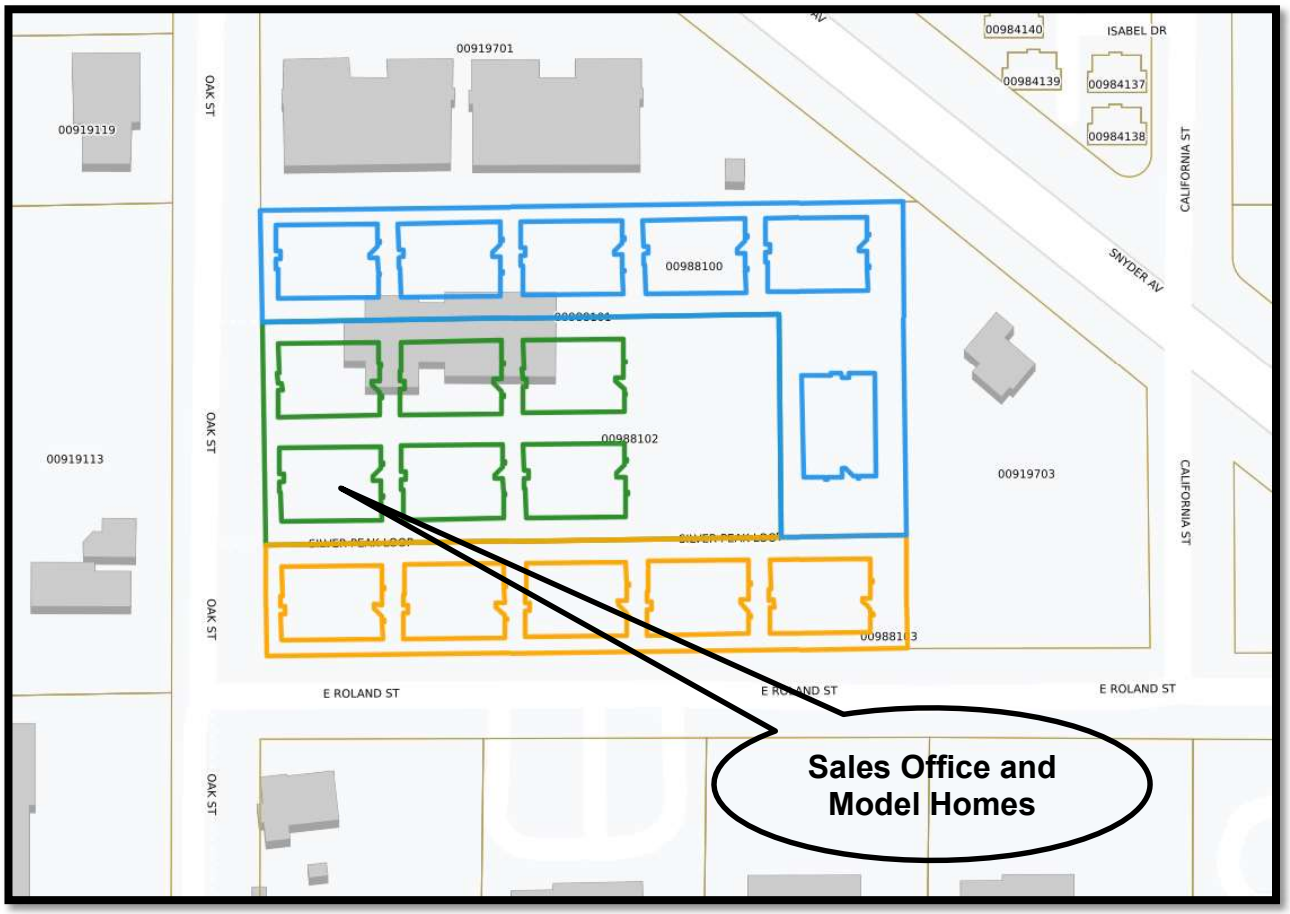
STAFF CONTACT: Heather Manzo, Associate Planner

AGENDA TITLE: For Possible Action: Discussion and possible action regarding an application from Roger Rempfer ("Applicant") for a special use permit ("SUP") to allow a temporary tract sales office, model homes, and associated parking on properties zoned Multi-Family Apartment ("MFA") located at 181 Silver Peak Loop, Assessor's Parcel Numbers ("APNs") 009-881-01, 009-881-02 and 009-881-03, as amended. (Heather Manzo, hmanzo@carson.org)

STAFF SUMMARY: The Applicant is requesting to convert three condominium units into model homes, construct a temporary tract sales office within one of the model home garages and provide temporary parking for the office. Temporary tract sales offices are a conditional use in the MFA zoning district; therefore, an SUP is required. The Planning Commission is authorized to approve the SUP.

PROPOSED MOTION: "I move to approve special use permit LU-2023-0315, based on the findings and subject to the conditions of approval contained in the staff report."

VICINITY MAP:



RECOMMENDED CONDITIONS OF APPROVAL:

1. The applicant must sign and return the Notice of Decision for conditions for approval within 10 days of receipt of notification. If the Notice of Decision is not signed and returned within 10 days, then the item may be rescheduled for the next Planning Commission meeting for further consideration.

2. All development shall be substantially in accordance with the development plans approved with this application, except as otherwise modified by these conditions of approval.

3. All on and off-site improvements shall conform to City standards and requirements.

4. The applicant shall meet all the conditions of approval and commence the use for which this permit is granted, within 12 months of the date of issuance of the special use permit. A single, one-year extension of time may be granted if requested in writing to the Planning Division of the Carson City Community Development Department ("Planning Division") 30 days prior to the one-year expiration date. Should this permit not be initiated within one-year and no extension granted the permit shall become null and void.

5. The applicant shall submit a copy of the notice of decision and conditions of approval with the building permit application.

6. Model home units and sales office operations shall be limited to Building No. 10. The Applicant shall provide for one accessible parking space and accessible restroom fully contained within the subject subdivision. An accessible path from the accessible parking and restrooms to the sales office may not rely on the private drive aisles.

7. The hours of operation for the model homes and sales office shall be limited to 8:00am to 6:00pm daily.

8. Improvements associated with the model homes and sales office shall be removed and the units converted to single family condominium units upon the sale of the last unit. Advertising methods included in this review and approval must be removed in conjunction with the timing of the conversion of the model homes to residential uses.

LEGAL REQUIREMENTS: Carson City Municipal Code ("CCMC") 18.02.080 Special Use Permits; CCMC 18.04.105 Multifamily Apartment (MFA); and Carson City Development Standards ("CCDS") Division 2 – Parking.

MASTER PLAN DESIGNATION: High Density Residential ("HDR")

PRESENT ZONING: MFA

KEY ISSUES: Will the proposed establishment of three model homes, a temporary tract sales office inside the garage of one of the model homes, and associated parking be compatible with the surrounding neighborhood and be in keeping with the standards of the CCMC?

SURROUNDING ZONING AND LAND USE INFORMATION:
NORTH: Multifamily Duplex ("MFD") / multifamily residences
EAST: Single Family 1 Acre ("SF1A") / vacant land and single-family residences
WEST: MFA / single family residence
SOUTH: Single Family 1 Acre ("SF1A") / single family residences

ENVIRONMENTAL INFORMATION:
FLOOD ZONE: X and X-shaded (no special construction requirements)
EARTHQUAKE FAULT: Beyond 500 feet
SLOPE/DRAINAGE: Slope is level

SITE DEVELOPMENT INFORMATION:

DISCUSSION:
The Applicant is seeking approval of a temporary tract sales office including three model home units with accessible parking within the Silver Crest Condominium subdivision (SUB-2022-0549).

Per CCMC 18.04.105, a temporary tract sales office is a conditional use in the MFA zoning district, requiring approval of a SUP. Per CCDS 2.3.3, off-street parking may be authorized for the parcel in a location not farther than 300 feet from the building site upon the issuance of a SUP. The applicant proposes one accessible parking space and use of the existing guest parking located on-site to address parking requirements. In addition to on-site parking, there is on-street parking along the Oak and East Roland Streets that abut the project. The applicant has verified all signage associated with the sale of units within the subdivision will conform to the adopted sign standards contained in CCDS 4.7.

Per CCMC 18.02.080, the Planning Commission has the authority to approve an SUP upon making each of the seven required findings in the affirmative.

PUBLIC COMMENTS: Public notices were mailed to 37 property owners within 750 feet of the subject site on August 24, 2023. As of the writing of this report, no public comments have been received. Any comments that are received after this report is completed will be submitted to the Planning Commission prior to or at the meeting on September 5, 2023, depending on the date of submission of the comments to the Planning Division.

OTHER CITY DEPARTMENTS OR OUTSIDE AGENCY COMMENTS: The following comments were received by various city departments. Recommendations have been incorporated into the recommended conditions of approval, where applicable.

Development Engineering:

The Carson City Public Works Department, Development Engineering Division ("Development Engineering") has no preference or objection to the SUP request provided that the following conditions of approval are met:

- Plans must be submitted which demonstrate that the portable restroom will be moved back so that the door will not impede the adjacent sidewalk, and a hard surface must be installed between the restroom and the sidewalk.

- The proposed ADA parking space does not meet ADA standards. Prior to issuance of the building permit, plans must be submitted which demonstrate that an ADA parking spot, meeting ADA standards, will be installed. The ADA path from the parking stall to the sales office may not rely on the project drive isles.

Development Engineering has reviewed the application within our areas of purview relative to adopted standards and practices and to the provisions of CCMC 18.02.080, Conditional Uses. Development Engineering offers the following discussion:

The project must meet all Carson City Development Standards and Standard Details.

CCMC 18.02.080(5)(a) - Master Plan
The request is not in conflict with any Engineering Master Plans.

CCMC 18.02.080(5)(b) – Use, Peaceful Enjoyment, Economic Value, Compatibility
Development Engineering has no comment on this finding.

CCMC 18.02.080(5)(c) - Traffic/Pedestrians
The project will have a negligible impact on pedestrian and vehicular traffic.

CCMC 18.02.080(5)(d) - Public Services
The project will have a negligible impact on city sewer, water, and stormwater services.

CCMC 18.02.080(5)(e) – Title 18 Standards
Development Engineering has no comment on this finding.

CCMC 18.02.080(5)(f) – Public health, Safety, Convenience, and Welfare
The project will meet engineering standards for health and safety if conditions are met.
Earthquake faults: No known within 500 feet.
FEMA flood zones: X and X-shaded (no special construction requirements)
Site slope: Level

CCMC 18.02.080(5)(g) – Material Damage or Prejudice to Other Property
Development Engineering has no comment on this finding.

CCMC 18.02.080(5)(h) – Adequate Information
The plans and reports provided were adequate for this analysis.

FINDINGS: Staff's recommendation is based upon the findings as required by CCMC 18.02.080 (Special Use Permits) enumerated below and substantiated in the public record for the project.

1. Will be consistent with the objectives of the Master Plan elements.

The proposed project is consistent with the Master Plan. The Master Plan land use designation of the subject property is High Density Residential. High Density Residential designation is intended to support high density residential uses which include condominiums, townhomes and multifamily residential development. Goal 6.1b – Neighborhood Design shall promote variety and visual interest in the design of new neighborhoods through the incorporation of varied lot sizes, building styles and colors, garage orientation, and other features. The subdivision has been approved and the home plans have been found to be consistent with CCMC and the approved tentative map.

2. Will not be detrimental to the use, peaceful enjoyment, economic value, or development of surrounding properties or the general neighborhood; and is compatible with and preserves the character and integrity of adjacent development and neighborhoods or includes improvements or modifications either on-site or within the public right-of-way to mitigate development related to adverse impacts such as noise, vibrations, fumes, odors, dust, glare or physical activity.

The project consists of a neotraditional design with private streets that serve to provide access to garages and landscaped areas opposite the garages within common areas. The sales office and model home units are proposed within Building 10 as shown on the site plan provided with the application materials. Landscaping along the project frontage has been installed and the first six buildings within the development have been constructed. The Applicant has noted that signage

will comply with CCMC and that it will be removed upon sale of last unit and the model homes, tract sales office, and parking will be converted to condominium homes and the garage. The proposal will not have a detrimental effect on the surrounding properties or general neighborhood.

The proposed sales office, model home units and associated improvements will not be detrimental to the use, peaceful enjoyment, economic value or development of surrounding properties or the overall neighborhood. Approval of the request is consistent with the development of a residential subdivision and will not create adverse impacts such as noise, vibrations, fumes, odors, dust, glare or physical activity.

3. Will have little or no detrimental effect on vehicular or pedestrian traffic.

Sidewalks and roadways to provide access to the subdivision, including the sales office have been constructed. The accessible parking and accessible restroom plan will need to be approved by Development Engineering and the Building Division of the Carson City Community Development Department ("Building Division"). Access to the sales office from the accessible parking area will need to be provided using an approved accessible access. It is anticipated that the accessible path will incorporate the sidewalk along Oak Street. As proposed and with recommended conditions of approval the project will not be detrimental to vehicular or pedestrian traffic.

4. Will not overburden existing public services and facilities, including schools, police and fire protection, water, sanitary sewer, public roads, storm drainage, and other public improvements.

The availability of appropriate utilities, schools, police and fire protection, public roads, storm drainage and other public improvements were reviewed in conjunction with the approval of the subdivision. This request is intended to enhance the sales of the condominium units for the approved subdivision to prospective buyers. The development of the project has already been approved and aside from improvements to meet accessibility requirements for the sales office, no new improvements are necessary to support the request.

5. Meets the definition and specific standards set forth elsewhere in this Title for such particular use and meets the purpose statement of that district.

There is on-site guest parking which is located to the east of Building 12 as depicted on the site plan contained in the application package. An additional accessible parking stall and accessible restroom will be required to comply with accessibility requirements for the sales office use. The Applicant is proposing to locate both improvements related to the temporary sales office onsite, to the approval of the Building Division and Development Engineering. The accessible parking and restroom will eventually be removed once the sales office is no longer necessary and converted back to a garage.

With the approval of this SUP with recommended conditions of approval, the request will meet the applicable definitions and specific standards found in the code. The primary purpose of the MFA zoning district is to provide for the development of higher density residential uses including condominiums.

6. Will not be detrimental to the public health, safety, convenience, and welfare.

The proposed temporary conversion of three condominium units into model homes, an on-site sales office, on-site accessible parking and restroom is not anticipated to be detrimental to the public health, safety convenience and welfare. At the conclusion of the temporary sales office and model home units, the residential units will be available for sale and the temporary use will

terminate. The Silver Crest subdivision has been approved to allow for development and there have been six buildings with a total of 18 units constructed. The other proposed buildings, onsite amenities, and site improvements are either under construction or will be constructed in the future.

7. Will not result in material damage or prejudice to other property in the vicinity, as a result of proposed mitigation measures.

This request is to allow the temporary use of three of the condominium units in this subdivision to operate as a model home complex with a sales office to market the residential development. This temporary use is located near the entrance to the project from Oak Street. Off-street parking and landscape area is provided that will mitigate the impact of the temporary use on the surrounding properties.

Attachments:
Application – LU-2023-0315

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

FILE

APPLICANT **PHONE #**
Roger Rempfer

MAILING ADDRESS, CITY, STATE, ZIP
15155 Redmond Loop, Reno, 89511

EMAIL ADDRESS
roger@rempfer.com

PROPERTY OWNER **PHONE #**
Teramont, LLC

MAILING ADDRESS, CITY, STATE, ZIP
15155 Redmond Loop, Reno, NV 89511

EMAIL ADDRESS
roger@rempfer.com

APPLICANT AGENT/REPRESENTATIVE **PHONE #**
Roger Rempfer

MAILING ADRESS, CITY STATE, ZIP
15155 Redmond Loop, Reno, NV 89511

EMAIL ADDRESS
roger@rempfer.com

FOR OFFICE USE ONLY:

CCMC 18.02.080

SPECIAL USE PERMIT

FEE*: **$2,450.00 MAJOR**
$2,200.00 MINOR (Residential zoning districts)
+ noticing fee
***Due after application is deemed complete by staff**

☐ **SUBMITTAL PACKET – 4 Complete Packets (1 Unbound Original and 3 Copies) including:**
- ☐ Application Form
- ☐ Detailed Written Project Description
- ☐ Site Plan
- ☐ Building Elevation Drawings and Floor Plans
- ☐ Special Use Permit Findings
- ☐ Master Plan Policy Checklist
- ☐ Applicant's Acknowledgment Statement
- ☐ Documentation of Taxes Paid-to-Date
- ☐ Project Impact Reports (Engineering)

☐ **CD or USB DRIVE with complete application in PDF**

Application Received and Reviewed By:

Submittal Deadline: Planning Commission application submittal schedule.

Note: Submittals must be of sufficient clarity and detail for all departments to adequately review the request. Additional information may be required.

Project's Assessor Parcel Number(s):	Street Address	
TBD	181 Silver Peak Loop, Unit 1	89704
Project's Master Plan Designation	**Project's Current Zoning**	**Nearest Major Cross Street(s)**
Medium Density Residential	MFA	Oak and Snyder

Please provide a brief description of your proposed project and/or proposed use below. Provide additional pages to describe your request in more detail.
Sales office for 51 unit condominium development

PROPERTY OWNER'S AFFIDAVIT

I, ROGER REMPFER, 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 _____ Address 15155 REDMOND LOOP RENO NV 89511 Date 08.18.2023

Use additional page(s) if necessary for additional owners.

STATE OF NEVADA)
COUNTY Douglas)

On August 18, 2023, Roger Kris Rempfer, 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.

Shannon Elyse Roberts
Notary Public

NOTE: If your project is located within the Historic District or airport area, it may need to be scheduled before the Historic Resources Commission or the Airport Authority in addition to being scheduled for review by the Planning Commission. Planning staff can help you make this determination.

SHANNON ELYSE ROBERTS
NOTARY PUBLIC
STATE OF NEVADA
APPT NO. 22-4076-03
MY APPT EXPIRES OCT 4, 2026

Heather Ferris

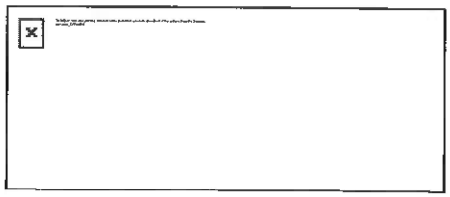
From: Roger Rempfer <Roger@Rempfer.com>
Sent: Saturday, August 19, 2023 9:10 AM
To: Heather Ferris
Subject: Re: SUP Application for Silver Crest Condominiums

Heather,

Please see my responses in your email thread below. Thanks for providing the link to the signage requirements.

Roger

Roger K. Rempfer
Managing Member, Teramont LLC
Senior Advisor Commercial /Residential
Broker Associate
Chase International Real Estate
Call/Text- 530.448.6210
roger@rempfer.com
r.rempfer@teramont.group
NV BS 251 NV BUSB 447
CA DRE 01318446



From: Heather Ferris <HFerris@carson.org>
Date: Friday, August 18, 2023 at 3:59 PM
To: Roger Rempfer <Roger@Rempfer.com>

Cc: Hope Sullivan <HSullivan@carson.org>, Cecilia Rice <crice@carson.org>
Subject: RE: SUP Application for Silver Crest Condominiums

Roger-

In reviewing your application, I have a couple of questions.

1. Which units are your model homes? In reviewing your site plan I would assume all units in Building 10 are your models, but I need confirmation. **That is correct.**
2. What is the square footage of the proposed office? **Approximately 484 SF**
3. Are you proposing any signage with the model home complex beyond what is allowed in Carson City Development Standards 4.4.7(m)? If so, they should be provided on the site plan, and you should include the size and design of the signs. **Signage is conforming to the development standards as established.**

Thank you,

Heather

Heather Ferris
Planning Manager
108 E. Proctor Street
Carson City, NV 89701
775-283-7080

CARSON CITY
COMMUNITY DEVELOPMENT

From: Hope Sullivan <HSullivan@carson.org>
Sent: Friday, August 18, 2023 2:44 PM
To: Cecilia Rice <crice@carson.org>
Cc: Heather Ferris <HFerris@carson.org>
Subject: FW: SUP Application for Silver Crest Condominiums

For the special meeting September 5.

Hope Sullivan, AICP
Community Development Director
Carson City, NV
775-283-7922 (direct)

CARSON CITY
COMMUNITY DEVELOPMENT

From: Roger Rempfer <Roger@Rempfer.com>
Sent: Friday, August 18, 2023 2:38 PM
To: Hope Sullivan <HSullivan@carson.org>
Subject: SUP Application for Silver Crest Condominiums

Hi Hope,

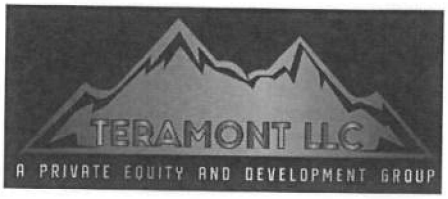
Thanks for offering to help us with expediting our SUP application for the Silver Crest Sales Office. Brandon Hill apprised me that you asked to have these materials emailed over to you directly.

I believe you will find the materials attached here will address the checklist items described on the application form. Should I have overlooked anything please let me know and I will promptly respond with what may be needed.

Again, my sincerest thanks,

Roger

Roger K. Rempfer
Managing Member, Teramont LLC
Senior Advisor Commercial /Residential
Broker Associate
Chase International Real Estate
Call/Text- 530.448.6210
roger@rempfer.com
r.rempfer@teramont.group
NV BS 251 NV BUSB 447
CA DRE 01318446


TERAMONT LLC
A PRIVATE EQUITY AND DEVELOPMENT GROUP

Special Use Permit Application Findings
Silver Crest Condominiums
Teramont LLC- Developer

Subject:
Request of a Special Use Permit to utilize one of the project unit garages as an onsite sales office for the Silver Crest Condominiums PUD.

The Silver Crest Condominium Project is a multifamily PUD that when finished will consist of 51 units within 17 buildings. The Subject property is defined by the confluence of E. Roland and Oak Streets. Currently 5 buildings (15 units) are in various stages of construction. All city plans and requirements applicable to the community master plan for this multifamily development have been received and approved by Carson City for the granting of a project final map. The final map for the project was formally approved on July 6, 2023, and recorded on July 10, 2023.

The project has been most recently reviewed by Carson City Planning and the Planning Commission for compliance with current zoning, use applications, design prior and community impact prior to the granting of building permits. This has been also inclusive of the following:

- Utility District/vendor approvals.
- Development Engineering Division, Sewage and water approvals.
- Compliance with Carson City Municipal Residential Codes.
- School District review and approvals.
- Fire and Public Safety approvals.
- Professional Traffic Study.
- Developer inclusion of park area withing the confines of the project.

Per the reviews and project approvals received it can be concluded that the use of one of the unit garages as a sales office will add no additional burdening to public health and safety or prejudice to any adjacent property. As the project is not fully built out it can be recognized that what activity might occur in a project sales office will be markedly less than what will be generated by a completed and fully occupied development.

Frame
ARCHITECTURE, INC

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

Silver Crest TEMPORARY Sales Office

Project Description

A temporary 460 sf sales office with finish sample display area for a 51-unit condominium development constructed in the existing garage of a condominium.

Findings:

1. Will be consistent with the objectives of the Master Plan elements.
    a. The 51 unit condominium development is approved. This is a TEMPORARY Sales Office. Surrounding uses include SF1A, MFD and MFA-P.
2. Will not be detrimental to the use, peaceful enjoyment, economic value, or development of surrounding properties or the general neighborhood; and is compatible with and preserves the character and integrity of adjacent development and neighborhoods or includes improvements or modifications either on-site or within the public right-of-way to mitigate development related to adverse impacts such as noise, vibrations, fumes, odors, dust, glare or physical activity
    a. The 51-unit condominium development is approved. This is a TEMPORARY Sales Office. Surrounding uses include SF1A, MFD and MFA-P.
3. Will have little or no detrimental effect on vehicular or pedestrian traffic.
    a. The 51-unit condominium development is approved. This is a TEMPORARY Sales Office. Surrounding uses include SF1A, MFD and MFA-P.
4. Will not overburden existing public services and facilities, including schools, police and fire protection, water, sanitary sewer, public roads, storm drainage and other public improvements.
    a. The 51-unit condominium development is approved. This is a TEMPORARY Sales Office. Surrounding uses include SF1A, MFD and MFA-P. We are using a portable accessible toilet for the temporary sales office.
5. Meets the definition and specific standards set forth elsewhere in Carson City Municipal Code, Title 18 for such particular use and meets the purpose statement of that district.
    a. The 51-unit condominium development is approved. This is a TEMPORARY Sales Office, which upon completion of the unit sales will be converted into the garage for the model unit.
6. Will not be detrimental to the public health, safety, convenience, and welfare.
    a. The 51-unit condominium development is approved. This is a TEMPORARY Sales Office, which upon completion of the unit sales will be converted into the garage for the model unit.
7. Will not result in material damage or prejudice to other property in the vicinity, as a result of proposed mitigation measures.
    a. The 51-unit condominium development is approved. This is a TEMPORARY Sales Office, all contained within the constructed garage space. Thus, no exterior improvements. Upon completion of the unit sales will be converted into the garage for the model unit.

If there is any additional information that would provide a clearer picture of your proposal that you would like to add for presentation to the Planning Commission, please be sure to include it in your detailed description.

Please type and sign the statement on the following page at the end of your findings response.

ACKNOWLEDGMENT OF APPLICANT

I certify that the forgoing statements are true and correct to the best of my knowledge and belief. I agree to fully comply with all conditions as established by the Planning Commission. I am aware that this permit becomes null and void if the use is not initiated within one-year of the date of the Planning Commission's approval; and I understand that this permit may be revoked for violation of any of the conditions of approval. I further understand that approval of this application does not exempt me from all City code requirements.

Applicant's Signature	Print Name	Date
	ROGER REMPFER	08.22.2023

NOTES

1. THIS SITE PLAN IS PROVIDED TO DETERMINE THE OPENING IN WALLS THAT ARE REQUIRED TO BE PROTECTED.
2. THIS SITE PLAN IS NOT TO BE USED FOR SITE LAYOUT.
3. WE WILL NOT BE ADDING ANY FURTHER INFORMATION TO THIS PLAN, ALL NECESSARY SITE INFORMATION IS FOUND IN THE CIVIL DRAWINGS
4. WALLS DETERMINED TO BE BE PROTECTED SHALL PROVIDE A 1 HOUR RATED WITH A WATER CURTAIN SYSTEM AT ALL OPENINGS, WATER CURTAIN SYSTEM IS PART OF THE FIRE SPRINKLER DESIGN AND IS UNDER SEPARATE PERMIT

ARCHITECTURAL SITE LAYOUT PLAN | SCALE: 1" = 20'-0" | 1

CONSULTANT BRANDING

CONSULTANT STAMP

Frame ARCHITECTURE, INC

JEFFERY L FRAME — REGISTERED — No. 3904 — ARCHITECT — STATE OF NEVADA

9/18/2023 | 09:47:16 AM

ARCHITECTURAL STAMP

SILVER CREST CONDOS

150 EAST ROLAND STREET, CARSON CITY APN 00919702

Teramont, LLC

FRAME ARCHITECTURE PROJECT No. : 17-43

Printed On: 9/18/2023 1:51:10 PM
Submitted Type: SUP SUBMISSION — Submitted: 09-14-2023
Drawn By: Author — Checked By: Checker

REVISION No. 2 — DATE: 01-16-2023 — DESCRIPTION: PLAN CHECK
REVISION No. 1 — DATE: 09-14-2023 — DESCRIPTION: WATER OFFICE ACCESSIBILITY
REVISION No. — DATE: — DESCRIPTION:
REVISION No. — DATE: — DESCRIPTION:

FRAME ARCHITECTURE.COM

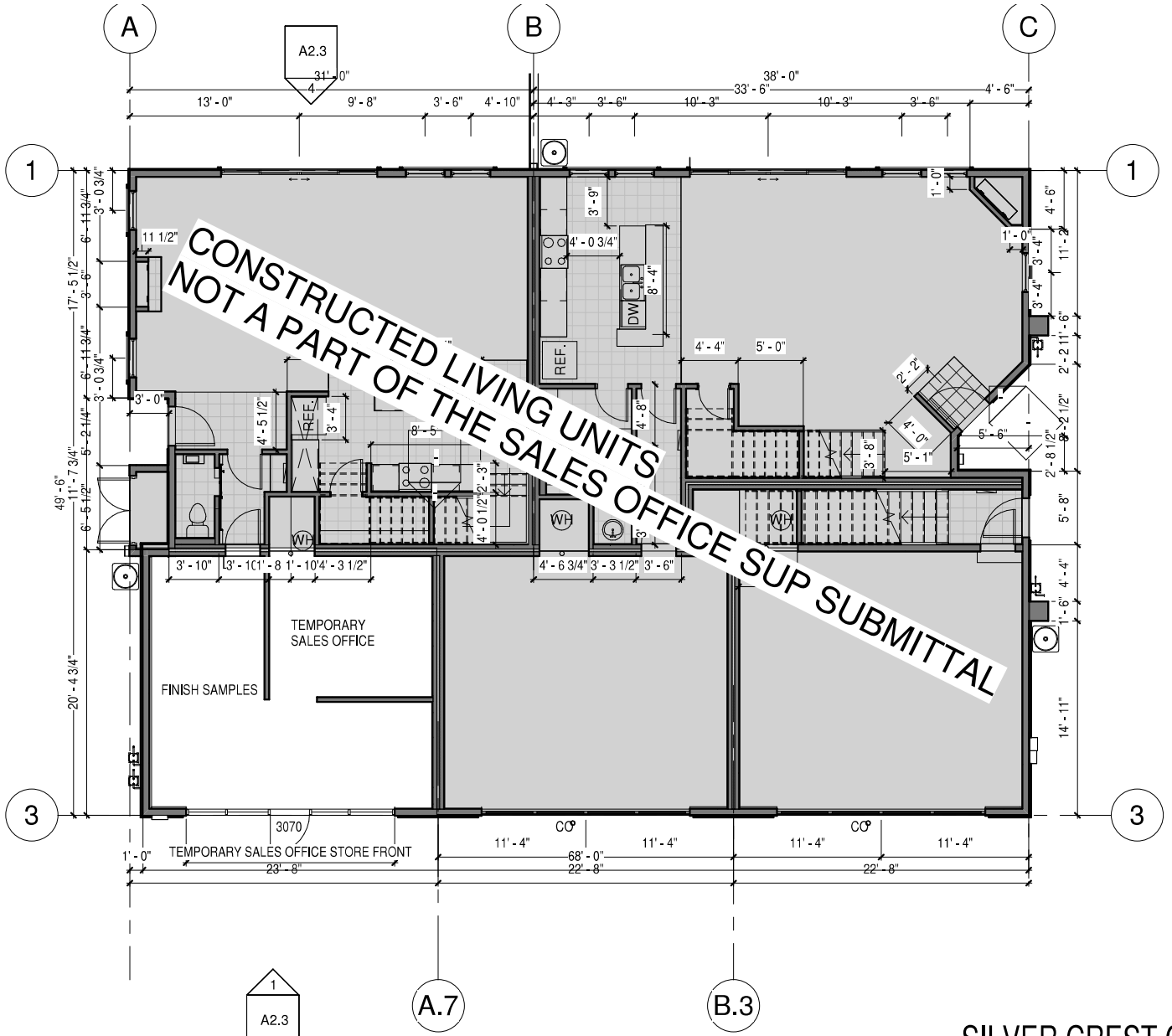
4080 BOULDER MCCARRAN BOULEVARD, UNIT E RENO NEVADA 89502 (775) 857-3977

ARCHITECTURAL SITE LAYOUT PLAN

NEW DRAWING

AS-1.1

17-43



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ARCHITECTURE, INC
4090 South McCarran Blvd, Unit E
Reno, NV 89502 (775) 827-9927

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FIRST FLOOR PLAN

SILVER CREST CONDOS

17-43 08-18-2023

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

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SALES OFFICE SUP ELEVATIONS

SILVER CREST CONDOS

17-43 08-18-2023

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Date Prepared: January 31, 2020 **Revised:** July 17, 2020

Technical Drainage Study

SILVER CREST CONDOMINIUMS

APN 009-197-02
150 E. Roland Street
Carson City, Nevada

Prepared for:

Roger Rempfer and Frank Saletta
Teramont, LLC
15155 Redmond Loop
Reno, Nevada 89511

Prepared by:

Resource Concepts, Inc.
340 N. Minnesota Street
Carson City, Nevada 89703

www.rci-nv.com

Date Prepared: January 31, 2020 **Revised:** July 17, 2020

Technical Drainage Study

SIVLVER CREST CONDOMINIUMS

APN 009-197-02
150 E. Roland Street
Carson City, Nevada

Prepared for:

Roger Rempfer and Frank Saletta
Teramont, LLC
15155 Redmond Loop
Reno, Nevada 89511

Prepared by:

Resource Concepts, Inc.
340 N. Minnesota Street
Carson City, Nevada 89703-4152
(775) 883-1600 Phone
(775) 883-1656 Fax

TABLE OF CONTENTS

File doc: 2020-07-16 TechDrngeStdy Silver Crest Condos 19-205.5 Teramont DH RK.docx

INTRODUCTION

Introduction

This technical drainage study is prepared for submittal to Carson City Community Development, on behalf of Teramont, LLC. The purpose of this study is to support the Silver Crest Condominium Improvement plans, provide information pertaining to the site drainage and determine the existing and proposed peak flows, as well as off-site releases and their impacts to downstream systems. This study considers the 2-, 5-, 25- and 100-year storm events based on times of concentration. Supporting documentation and calculations are provided within this report.

The approach taken in this study is in accordance with Division 14 of the Carson City Development Standards of the Municipal Code.

Description of Project

The Silver Crest Condominiums will be located at 150 East Roland Street (APN 009-197-02), located within Section 32, T.15N., R.20E., M.D.M. The proposed development on the subject property will be 51 condominium units (17 three-plex buildings) with associated roadways, landscaping, parking, recreation facilities, signage, and utilities. Land disturbing activity will include demolishing the existing building and all other structural improvements on the site, excavation and compaction of the subgrade, placement of aggregate base, footings and foundation, asphalt surface, and concrete sidewalks. Grading quantities for the development of the site are estimated to be approximately 14,267 C.Y. of fill. Potential for erosion is minor due to the generally flat topography and gentle slope existing on site.

This Technical Drainage Study accompanies the Improvement Plans for the Silver Crest Condominiums owned by Teramont, LLC. The proposed development includes 51 condominium units intended for individual ownership, as well as common areas. There will be 17 buildings with three units each. In each building, unit 'A' will be 1,815 SF plus a garage, unit 'B' will be 1,629 SF plus a garage, and unit 'C' will be 1,364 SF plus a garage. Common areas of the project will include a landscaped area in the middle of the development intended for the residents to use for recreation, as well as associated sidewalks and driveways. Landscaped areas include areas in-between each building and several common areas. The landscaping will include turf in some areas, with trees and shrubs providing the majority of the landscape coverage.

Existing Site Conditions

The project site is bordered on all sides by existing development. Developments to the north are zoned Multi Family Duplex. The property to the east is zoned Multi Family Apartments but is developed as a single-family residence. To the south is East Roland Street and 1-acre single family residences. To the West is Oak Street, a single- family residence, storage unit facility, and multifamily apartments.

The project property in this study encompasses approximately 2.99 acres, with the entire site included in the analyzed drainage area, as defined in the Drainage Map located in Appendix B of this report. The existing site consists of a former church and parking area, landscaped areas, undisturbed soil and vegetation, trees, and some unpaved areas of disturbed soils with minimal vegetative growth. All existing above ground improvements are to be demolished with the development of the Silver Crest

Condominiums. Existing topography in the area is generally gently sloping, with an overall on-site slope of approximately 2.3% from the northwestern corner to southeastern corner. The property is located outside any special flood hazard area and is designated as Zone X (unshaded). Based on information provided by Carson City, there is a draft Voltaire and Saliman flood zone remapping study currently under review, which modifies the area to Zone X (shaded), which is not classified as a special flood hazard area.

The Natural Resource Conservation Service Soil Survey of Carson City classifies the on-site soils in this area as Surpass gravelly sandy loam, 0 to 2 percent slopes. The Soil Resource Report for the site is included in Appendix B, and identifies the soil at the site as Hydrologic Soil Group A.

There are no existing irrigation systems on or adjacent to the site. There is an existing shallow unimproved road-side ditch along the north side of Roland Street conveying runoff from the west to the east. This project will include continuing the curb and gutter on the east side of Oak Street south to and along the north side of Roland Street. This will convey any offsite runoff around the site to a proposed drop inlet on the southeast corner of the project and convey the runoff in the new storm drain system to its historic discharge location located south of the intersection of Snyder Avenue and Roland Street. This discharge point is the existing 6’ x 3’ drop inlet at Roland Street and Snyder Avenue. The discharge rate will be the same prior to development for the 5-year storm event. Per direction from Carson City, the proposed storm drain piping will be designed to carry up to 35 cfs between the proposed development and California Avenue, and is sized to handle post development flows. See Appendix A for calculations.

Adjacent developments include multifamily duplexes and apartments to the north and west, and single-family residences to the south and east. Overall drainage in the area is conveyed to the south and east both by surface and subsurface infrastructure, as well as natural drainage channels.

Figure 1. Location Map

Map depicting location of proposed development
Not to Scale

EXISTING AND PROPOSED HYDROLOGY

Drainage Basin Boundaries

Existing Off-Site Drainage Description

The project site is bordered entirely by existing development. No existing flows from the surrounding developments flow onto or significantly impact the subject site. Off-site runoff from the north and west flows into the existing NDOT drainage basin to the west of the subject parcel, at the northeast corner of the intersection of Carson Street and Interstate 580. Off-site drainage from the south and east generally flows into the existing Carson City storm drainage system along Snyder Avenue. Some off-site flows from the west and north may impact the site only in severe flooding situations. A drainage map depicting the existing site drainage is included in Appendix B. Topography in the area is gently sloping, with a raised area in the northwest portion of the site, and with an on-site slope of approximately 2.3% from the northwest corner to southeast corner. The project site is bordered on all sides by existing development. Developments to the north are zoned Multi Family Duplex. The property to the east is zoned Multi Family Apartments but is developed as a single-family residence. To the south is East Roland Street and 1-acre single family residences. To the West is Oak Street, a single-family residence, multifamily apartments, and a storage unit facility. Due to the developed nature of the surrounding area, the erosion potential is low.

The proposed development does not change any flow paths for off-site drainage adjacent to the parcel. No changes to off-site drainage channels are proposed, and on-site proposed flow paths are much the same as pre-development flow paths.

On-Site & Downstream Drainage Description

Historic and current on-site drainage occurs mostly as sheet flow from northwest to southeast, toward Snyder Avenue. There are no existing drainage channels or basins located on site. The existing site consists of an existing building and driveway, undisturbed soil and vegetation, trees, and some unpaved areas of disturbed soils with minimal vegetative growth. A map depicting the current drainage of the site is provided in Appendix B.

Floodplain & Irrigation Information

The project is not located in or adjacent to any FEMA-designated special flood hazard area. It is located within Flood Zone X (unshaded), per the Flood Insurance Rate Map (FIRM) for Carson City, panel 3200010207F, dated June 20, 2019 (see Appendix B). The site slopes from a maximum elevation of 4750 ft at the northwest corner, to an elevation of 4738 ft at the southeast corner.

There is no existing or proposed irrigation on the subject parcel.

Previous Drainage Studies

Based on information provided by Carson City, there is a draft Voltaire and Saliman flood zone remapping study currently under review, which modifies the area to Zone X (shaded), which is not classified as a special flood hazard area. The previously submitted Conceptual Drainage Study prepared by Resource Concepts, Inc. for this development is superseded by this Technical Drainage Study.

PROPOSED DRAINAGE FACILITIES

Proposed Flow Routing

On-site runoff will be routed primarily above ground within valley gutters flowing to the southeast corner of the property where it will collect in a settling/detention basin. The detention basin will allow particles to settle and improve water quality before being routed into a proposed storm drain system within the Roland Street right-of-way. The proposed piping will extend east to Snyder Avenue and into the existing 6’ x 3’ drop inlet at Roland Street and Snyder Avenue. The outlet from the pond will be a 12” SDR35 pipe with flared end section installed at a 1.1% slope into a 24”x24” drop inlet installed with the rim 6” under the top of pond to act as the emergency overflow. This pipe will release water from the pond at predeveloped rates for the 5-year storm at less than 50% full and the 100-year flows at full flow. This overflow structure will discharge though a 12” SDR35 pipe into the proposed Type 4R curb inlet installed on Roland St. Flows will then be directed east to the existing drop inlet on Snyder Avenue southeast of Roland Street. As requested by Carson City, flows from California Street to the existing drop inlet on Snyder Avenue will convey a minimum of 35 CFS.

The detention basin is required to have approximately 379 CF of capacity and provides 857 CF of capacity with 1’ of freeboard. Storm drain manholes and storm drain stub are provided at California Street as requested by Carson City and as needed along the new storm drain system. The basin is positioned and

sized to detain the increase in runoff for the 5-year storm event. Overflow routing is provided for the 100-year storm flows.

Since the curb and gutter is being extended south on the project side of Oak Street and along the project frontage along East Roland Street, gutter spread for the proposed gutters in the existing roads was analyzed. Flows contributing to the proposed gutter along Oak Street includes runoff from the area from the crown of the road to back of the sidewalk from the intersection of Oak Street and Snyder Ave south to the intersection of Oak Street and E. Roland Street. Flows contributing to the proposed gutter along E. Roland Street are the flows from Oak Street plus the runoff from the area from the crown of E. Roland Street to the back of the sidewalk along the project frontage. Using the rational method, the 100-yr flow for Oak Street is 1.70 cfs and 2.65 cfs for Oak Street combined with E. Roland Street. Using FlowMaster to determine the street spread at the areas indicated on the proposed drainage map (included in the Appendix) the spread from the gutter extends 6.2' into the 19.5' lane along Oak Street and extends 7'-9.2' into the 19.5' lane along E. Roland St. This meets the dry lane requirement of maintaining a minimum of 12 ft dry lane (centered) on all adjacent roads, per Carson City Development Standards, Table 14.2 for local streets. Calculations are included in Appendix A.

Storm Drainage Analysis

Peak flows and volumes for the existing 2.99-acre parcel, as well as the proposed planned unit development, were analyzed using the Rational Method computational procedure. Run-off coefficients were based on weighted averages, considering undeveloped and developed surfaces. Run-off coefficient values ranged from 0.35 for existing native undeveloped areas to 0.95 for impervious areas and were selected from Applied Hydrology (Ven T. Chow, McGraw Hill International Editions. 1988). The 2-, 5-, 25-, and 100-year storm events were analyzed utilizing the times of concentration. Times of concentration were estimated based on soil conditions, topography, and NOAA Atlas 14 precipitation values for the project area. A complete set of calculations, mapping, and supporting materials are included in the appendices of this study. Peak flows and volumes for the 5-year and 100-year events are presented in Tables 1 and 2, below.

Table 1. 5-year and 100-year storm event peak flows.

Property Status	Peak Flow (CFS) 5-Yr Event	Peak Flow (CFS) 100-Yr Event
Existing Condition: 2.99-Acre Parcel	2.65	6.38
Proposed Future Condition	4.67	11.24
Difference	**2.02**	**4.86**

Table 2. 5-year and 100-year storm event peak volumes.

Property Status	Peak Volume (CF) 5-Yr Event	Peak Volume (CF) 100-Yr Event
Existing Condition: 2.99-Acre Parcel	803.00	1,930.50
Proposed Future Condition	1,181.60	2,840.70
Difference	**378.60**	**910.20**

CONCLUSIONS

Compliance with CCMC & Carson City Development Standards

The project is in compliance with state and local drainage laws, meeting the requirements of Division 14 of the Carson City Development Standards and the Municipal Code.

Compliance with FEMA requirements

The project is not located in or adjacent to any FEMA-designated special flood hazard area. It is located within Flood Zone X (unshaded), per the Flood Insurance Rate Map (FIRM) for Carson City, panel 3200010207F, dated June 20, 2019. Based on information provided by Carson City, there is a draft Voltaire and Saliman flood zone remapping study currently under review, which modifies the area to Zone X (shaded), which is not classified as a special flood hazard area.

Existing off-site runoff will not be affected by the proposed development, and no modifications to the floodplain or special design considerations are planned or anticipated as a part of this project.

Impact of Proposed Development on Off-Site Property & Facilities

This study supports the development of the Silver Crest Condominiums. Area peak flow rates and volumes are increased due to proposed development, but excess flows and volumes are detained in detention basins on-site and released at pre-development rates. Since additional flows and volumes are detained on-site and floodplain modifications are not planned, there will be limited impact on the existing storm drain system in the area.

Mitigation of Impacts & Implementation Schedule

On-site erosion and sediment control during construction shall be accomplished by employing temporary erosion control measures. In addition, the contractor will be required to comply with all local, state, and federal codes related to stormwater run-off. The schedule of construction will be determined by the owner and coordinated with Carson City. Anticipated items to be submitted by the contractor include, but may not be limited to, a proposed site plan that includes a temporary erosion control plan. Temporary erosion control shall consist of fiber rolls, silt fences, and other approved means of sediment control in accordance with Division 14 of the Carson City Development Standards of the Municipal Code. Interim detention during construction is anticipated only as necessary. Additional erosion and sediment control precautions will consist of routine maintenance of the detention basin. The maintenance will be on an as-needed basis with an interval to be determined by the frequency of storm events. Source control on the site to minimize any accumulation of sediment tracked onto the site will extend the maintenance intervals of the on-site structures.

APPENDICES

Appendix A: Calculations

Rational Method Peak Flow and Storage Calculations
Pipe Flow Calculations
Gutter Spread Calculations

Rational Method Peak Flow and Storage Calculations

Roland Street Condos
Peak Flow & Vol. Calculations
Drainage Study - On Site Pre Devlopment
Project No. 19-205.5

Time of Concentration: Peak Flow Analysis

Find: Pre- & Post-Development Peak flows & Storage volumes for the following storm events

a. 2-Year
b. 5-Year
c. 25-Year
f. 100-Year

Given:

Total Property Area =	2.99	acres
Impervious Area =	0.57	acres
Remaining Area =	2.42	acres

Assumptions: Run-off coeficients are as follows:

C =	0.35	for existing unpaved conditions
C =	0.95	for impervious surfaces (asphalt & concrete)

Equations: General equations are as follows:

Rational Method:

$Q = C * I * A$

where

Q =	Peak Flow (cfs)
C =	Run-Off Coefficient (unitless)
I =	Rainfall Intensity (in/hr)
A =	Drainage Area (acres)

Intensities are obtained from the Time of Concentration, in conjunction with the National Weather Service, NOAA Atlas 14.

Roland Street Condos - Peak Flow & Vol. Calculations
Drainage Study - On Site Pre Development
Project No. 19-205.5

Time of Concentration: Peak Flow Analysis
Equations (Cont):

Time of Concentration (Tc): Sheet Flow Only

Tc = $[0.007 * (n * L)^{0.8}] / [P^{0.5} * S^{0.4}]$ (ref. NRCS Kinematic Eq.)

where

n = Manning's Roughness Coefficient (unitless)
L = Flow Length (ft)
P = 2-Yr, 24-Hr Precipitation (in)
S = Slope of Hydraulic Grade Line (ft/ft)

Time of Concentration (Tc): Shallow Concentrated or Open Channel Flow

Tc = L / v (ref. NRCS TR-55)

where

L = Flow Length (ft)
v = Velocity (fps)

where

v = $16.1345 * (S)^{0.5}$ For Unpaved Areas
v = $20.3282 * (S)^{0.5}$ For Paved Areas

Solution: ***Pre-Development Conditions***

Tc = $[0.007 * (n * L)^{0.8}] / [P^{0.5} * S^{0.4}]$

$[0.007 * (.025 * 175)^{0.8}] / [1.55^{0.5} * .012^{0.4}]$

0.01 hr (Sheet Flow)
38.67 seconds

Tc = Length (ft) / Velocity (fps)

v = $16.1345 * (0.02)^{0.5}$

2.28 fps (Unpaved)

L = 602 ft

Tc = 263.83 seconds

Tc (total) = 302.50 seconds
5.04 minutes
0.08 hours

Roland Street Condos - Peak Flow & Vol. Calculations
Drainage Study - On Site Pre Development
Project No. 19-205.5

Time of Concentration: Peak Flow Analysis

Solution (Cont): For Tc = 5.0 minutes. Intensities are as follows:

Event	2-Yr	5-Yr	25-Yr	100-Yr
Intensity	1.44	1.93	3.13	4.64

Rational Method - Pre Development					
Storm Event	Run-Off Coefficient 'C'	Rainfall Intensity 'I'	Drainage Area 'A'	Peak Flow 'Q'	Volume 'Vol' (ft^3)
2	0.46	1.44	2.99	1.98	599.1
5	0.46	1.93	2.99	2.65	803.0
25	0.46	3.13	2.99	4.31	1,302.3
100	0.46	4.64	2.99	6.38	1,930.5

Rational Method - Difference (Pre vs. Post)				
	2-yr	5-yr	25-yr	100-yr
Peak Flow 'Q' (CFS)	1.51	2.02	3.27	4.86
Required Volume (ft3)	282.5	378.6	613.9	910.2

Roland Street Condos
Peak Flow & Vol. Calculations
Drainage Study - On Site Post Development
Project No. 19-205.5

Time of Concentration: Peak Flow Analysis

Find: Pre- & Post-Development Peak flows & Storage volumes for the following storm events

a. 2-Year
b. 5-Year
c. 25-Year
f. 100-Year

Given:

Total Property Area =	2.99	acres
Impervious Area =	2.27	acres
Remaining Area =	0.72	acres

Assumptio Run-off coeficients are as follows:

C =	0.35	for unpaved conditions (landscaping)
C =	0.95	for impervious surfaces (asphalt, concrete, pavers)

Equations: General equations are as follows:

Rational Method:

$Q = C * I * A$

where

Q =	Peak Flow (cfs)
C =	Run-Off Coefficient (unitless)
I =	Rainfall Intensity (in/hr)
A =	Drainage Area (acres)

Intensities are obtained from the Time of Concentration, in conjunction with the National Weather Service, NOAA Atlas 14.

Drainage Study - On Site Post Development
Project No. 19-205.5

Time of Concentration: Peak Flow Analysis
Equations (Cont):

Time of Concentration (Tc): Sheet Flow Only

Tc = $[0.007 * (n * L)^{0.8}] / [P^{0.5} * S^{0.4}]$ (ref. NRCS Kinematic Eq.)

where

n = Manning's Roughness Coefficient (unitless)
L = Flow Length (ft)
P = 2-Yr, 24-Hr Precipitation (in)
S = Slope of Hydraulic Grade Line (ft/ft)

Time of Concentration (Tc): Shallow Concentrated or Open Channel Flow

Tc = L / v (ref. NRCS TR-55)

where

L = Flow Length (ft)
v = Velocity (fps)

where

v = $16.1345 * (S)^{0.5}$ For Unpaved Areas
v = $20.3282 * (S)^{0.5}$ For Paved Areas

Solution: ***Post-Development Conditions***

Tc = $[0.007 * (n * L)^{0.8}] / [P^{0.5} * S^{0.4}]$

$[0.007 * (.011 * 49)^{0.8}] / [1.55^{0.5} * .02^{0.4}]$

0.02 hr (Sheet Flow)
59.03 seconds

Tc = Length (ft) / Velocity (fps)

v = $20.3282 * (0.02)^{0.5}$

2.87 fps (Paved)

L = 557 ft

Tc = 193.75 seconds

Tc (total) = 252.78 seconds
4.21 minutes
0.07 hours

Roland Street Condos - Peak Flow & Vol. Calculations
Drainage Study - On Site Post Development
Project No. 18-135

Time of Concentration: Peak Flow Analysis

Solution (C For Tc = 5.0 minutes. Intensities are as follows:

Event	2-Yr	5-Yr	25-Yr	100-Yr
Intensity	1.44	1.93	3.13	4.64

Rational Method - Post Development					
Storm Event	Run-Off Coefficient 'C'	Rainfall Intensity 'I'	Drainage Area 'A'	Peak Flow 'Q'	Volume 'Vol' (ft^3)
2	0.81	1.44	2.99	3.49	881.6
5	0.81	1.93	2.99	4.67	1,181.6
25	0.81	3.13	2.99	7.58	1,916.2
100	0.81	4.64	2.99	11.24	2,840.7

Rational Method - Difference (Pre vs. Post)				
	2-yr	5-yr	25-yr	100-yr
Peak Flow 'Q' (CFS)	1.51	2.02	3.28	4.86
Required Volume (ft3)	282.5	378.6	614.0	910.2

Pipe Flow Calculations
Gutter Spread Calculations

Worksheet for Circular Pipe - 12" 5 Yr Flow

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.010
Channel Slope	0.011 ft/ft
Diameter	12.0 in
Discharge	2.01 cfs

Results	
Normal Depth	5.4 in
Flow Area	0.3 ft²
Wetted Perimeter	1.5 ft
Hydraulic Radius	2.8 in
Top Width	0.99 ft
Critical Depth	7.3 in
Percent Full	44.9 %
Critical Slope	0.004 ft/ft
Velocity	5.89 ft/s
Velocity Head	0.54 ft
Specific Energy	0.99 ft
Froude Number	1.772
Maximum Discharge	5.23 cfs
Discharge Full	4.86 cfs
Slope Full	0.002 ft/ft
Flow Type	Supercritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Average End Depth Over Rise	0.0 %
Normal Depth Over Rise	44.9 %
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	5.4 in
Critical Depth	7.3 in
Channel Slope	0.011 ft/ft
Critical Slope	0.004 ft/ft

Worksheet for Circular Pipe - 12" Full FLow

Project Description	
Friction Method	Manning Formula
Solve For	Full Flow Capacity

Input Data	
Roughness Coefficient	0.010
Channel Slope	0.011 ft/ft
Normal Depth	12.0 in
Diameter	12.0 in
Discharge	4.86 cfs

Results	
Discharge	4.86 cfs
Normal Depth	12.0 in
Flow Area	0.8 ft²
Wetted Perimeter	3.1 ft
Hydraulic Radius	3.0 in
Top Width	0.00 ft
Critical Depth	10.9 in
Percent Full	100.0 %
Critical Slope	0.010 ft/ft
Velocity	6.18 ft/s
Velocity Head	0.59 ft
Specific Energy	1.59 ft
Froude Number	(N/A)
Maximum Discharge	5.23 cfs
Discharge Full	4.86 cfs
Slope Full	0.011 ft/ft
Flow Type	Supercritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Average End Depth Over Rise	0.0 %
Normal Depth Over Rise	100.0 %
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	12.0 in
Critical Depth	10.9 in
Channel Slope	0.011 ft/ft
Critical Slope	0.010 ft/ft

Worksheet for Circular Pipe - 15"

Project Description	
Friction Method	Manning Formula
Solve For	Full Flow Capacity

Input Data	
Roughness Coefficient	0.010
Channel Slope	0.010 ft/ft
Normal Depth	15.0 in
Diameter	15.0 in
Discharge	8.40 cfs

Results	
Discharge	8.40 cfs
Normal Depth	15.0 in
Flow Area	1.2 ft²
Wetted Perimeter	3.9 ft
Hydraulic Radius	3.8 in
Top Width	0.00 ft
Critical Depth	13.6 in
Percent Full	100.0 %
Critical Slope	0.009 ft/ft
Velocity	6.84 ft/s
Velocity Head	0.73 ft
Specific Energy	1.98 ft
Froude Number	(N/A)
Maximum Discharge	9.03 cfs
Discharge Full	8.40 cfs
Slope Full	0.010 ft/ft
Flow Type	Undefined

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Average End Depth Over Rise	0.0 %
Normal Depth Over Rise	100.0 %
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	15.0 in
Critical Depth	13.6 in
Channel Slope	0.010 ft/ft
Critical Slope	0.009 ft/ft

Worksheet for Circular Pipe - 30" Full Flow

Project Description	
Friction Method	Manning Formula
Solve For	Full Flow Capacity

Input Data	
Roughness Coefficient	0.013
Channel Slope	0.012 ft/ft
Normal Depth	30.0 in
Diameter	30.0 in
Discharge	44.36 cfs

Results	
Discharge	44.36 cfs
Normal Depth	30.0 in
Flow Area	4.9 ft²
Wetted Perimeter	7.9 ft
Hydraulic Radius	7.5 in
Top Width	0.00 ft
Critical Depth	26.6 in
Percent Full	100.0 %
Critical Slope	0.010 ft/ft
Velocity	9.04 ft/s
Velocity Head	1.27 ft
Specific Energy	3.77 ft
Froude Number	(N/A)
Maximum Discharge	47.72 cfs
Discharge Full	44.36 cfs
Slope Full	0.012 ft/ft
Flow Type	Supercritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Average End Depth Over Rise	0.0 %
Normal Depth Over Rise	100.0 %
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	30.0 in
Critical Depth	26.6 in
Channel Slope	0.012 ft/ft
Critical Slope	0.010 ft/ft

Worksheet for Circular Pipe - 30" 35cfs

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.013
Channel Slope	0.012 ft/ft
Diameter	30.0 in
Discharge	35.00 cfs

Results	
Normal Depth	20.1 in
Flow Area	3.5 ft²
Wetted Perimeter	4.8 ft
Hydraulic Radius	8.7 in
Top Width	2.35 ft
Critical Depth	24.1 in
Percent Full	67.0 %
Critical Slope	0.008 ft/ft
Velocity	10.02 ft/s
Velocity Head	1.56 ft
Specific Energy	3.23 ft
Froude Number	1.448
Maximum Discharge	47.72 cfs
Discharge Full	44.36 cfs
Slope Full	0.007 ft/ft
Flow Type	Supercritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Average End Depth Over Rise	0.0 %
Normal Depth Over Rise	67.0 %
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	20.1 in
Critical Depth	24.1 in
Channel Slope	0.012 ft/ft
Critical Slope	0.008 ft/ft

Roland Street Condos - Peak Flow & Vol. Calculations
Drainage Study - On Site Pre Development
Project No. 19-205.5

Time of Concentration: Peak Flow Analysis

Solution (Cont): For Tc = 5.0 minutes. Intensities are as follows:

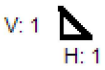
Event	2-Yr	5-Yr	25-Yr	100-Yr
Intensity	1.44	1.93	3.13	4.64

Rational Method - Oak St					
Storm Event	Run-Off Coefficient 'C'	Rainfall Intensity 'I'	Drainage Area 'A'	Peak Flow 'Q'	Volume 'Vol' (ft^3)
2	0.95	1.44	0.39	0.53	159.3
5	0.95	1.93	0.39	0.71	213.5
25	0.95	3.13	0.39	1.14	346.3
100	0.95	4.64	0.39	1.70	513.4

Cross Section for Oak St

Project Description	
Solve For	Spread

Input Data	
Channel Slope	0.013 ft/ft
Discharge	1.70 cfs
Gutter Width	1.5 ft
Gutter Cross Slope	0.125 ft/ft
Road Cross Slope	0.020 ft/ft
Spread	6.2 ft
Roughness Coefficient	0.013



Roland Street Condos - Peak Flow & Vol. Calculations
Drainage Study - On Site Post Development
Project No. 18-135

Time of Concentration: Peak Flow Analysis

Solution (C For Tc = 5.0 minutes. Intensities are as follows:

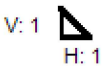
Event	2-Yr	5-Yr	25-Yr	100-Yr
Intensity	1.44	1.93	3.13	4.64

Rational Method - Oak & E Roland St					
Storm Event	Run-Off Coefficient 'C'	Rainfall Intensity 'I'	Drainage Area 'A'	Peak Flow 'Q'	Volume 'Vol' (ft^3)
2	0.95	1.44	0.60	0.82	207.8
5	0.95	1.93	0.60	1.10	278.5
25	0.95	3.13	0.60	1.79	451.7
100	0.95	4.64	0.60	2.65	669.7

Cross Section for E Roland St 0.7% Slope

Project Description	
Solve For	Spread

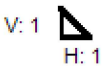
Input Data	
Channel Slope	0.007 ft/ft
Discharge	2.65 cfs
Gutter Width	1.5 ft
Gutter Cross Slope	0.125 ft/ft
Road Cross Slope	0.020 ft/ft
Spread	9.2 ft
Roughness Coefficient	0.013



Cross Section for E Roland St 2%

Project Description	
Solve For	Spread

Input Data	
Channel Slope	0.020 ft/ft
Discharge	2.65 cfs
Gutter Width	1.5 ft
Gutter Cross Slope	0.125 ft/ft
Road Cross Slope	0.020 ft/ft
Spread	7.0 ft
Roughness Coefficient	0.013



Appendix B: Exhibits

Soil Resource Report and Map
FEMA FIRMette
Precipitation Frequency Data
Existing Drainage Map
Proposed Drainage Map

Soil Resource Report and Map

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Carson City Area, Nevada

June 4, 2019

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require

alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410 or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map

Map Scale: 1:1,120 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 15 30 60 90

Feet
0 50 100 200 300

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 11N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

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

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

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

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

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

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

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

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

Soil Survey Area: Carson City Area, Nevada
Survey Area Data: Version 12, Sep 17, 2018

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

Date(s) aerial images were photographed: Jun 1, 2018—Jun 30, 2018

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

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
6719	Surpass gravelly sandy loam, 0 to 2 percent slopes	5.4	100.0%
Totals for Area of Interest		**5.4**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas.* Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Carson City Area, Nevada

6719—Surpass gravelly sandy loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2w4bz
Elevation: 4,430 to 5,580 feet
Mean annual precipitation: 8 to 14 inches
Mean annual air temperature: 46 to 52 degrees F
Frost-free period: 90 to 110 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Surpass and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Surpass

Setting

Landform: Alluvial fans
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Mixed alluvium

Typical profile

A - 0 to 14 inches: gravelly sandy loam
Bw - 14 to 26 inches: gravelly sandy loam
C - 26 to 66 inches: gravelly loamy sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Rare
Frequency of ponding: None
Calcium carbonate, maximum in profile: 1 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Low (about 5.5 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: A
Ecological site: LOAMY 8-10 P.Z. (R026XY016NV)
Hydric soil rating: No

Minor Components

Holbrook

Percent of map unit: 5 percent
Landform: Alluvial fans
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Convex
Ecological site: LOAMY 10-12 P.Z. (R026XY010NV)
Hydric soil rating: No

Mottsville

Percent of map unit: 4 percent
Landform: Alluvial fans
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Ecological site: GRANITIC FAN 10-12 P.Z. (R026XY008NV)
Hydric soil rating: No

Greenbrae

Percent of map unit: 3 percent
Landform: Alluvial fans
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Convex
Ecological site: LOAMY 8-10 P.Z. (R026XY016NV)
Hydric soil rating: No

Indian creek

Percent of map unit: 2 percent
Landform: Fan remnants
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Convex
Ecological site: CLAYPAN 8-10 P.Z. (R026XY025NV)
Hydric soil rating: No

Incy

Percent of map unit: 1 percent
Landform: Dunes
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: SANDY 8-10 P.Z. (R026XY020NV)
Hydric soil rating: No

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FEMA FIRMette

National Flood Hazard Layer FIRMette

FEMA

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 / 17.5 Cross Sections with 1% Annual Chance / Water Surface Elevation
- Coastal Transect
- 513 Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 7/16/2020 at 2:21 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

Precipitation Frequency Data

NOAA Atlas 14, Volume 1, Version 5
Location name: Carson City, Nevada, USA*
Latitude: 39.1235°, Longitude: -119.7673°
Elevation: 4743.01 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sarah Dietz, Sarah Heim, Lillian Hiner, Kazungu Maitaria, Deborah Martin, Sandra Pavlovic, Ishani Roy, Carl Trypaluk, Dale Unruh, Fenglin Yan, Michael Yekta, Tan Zhao, Geoffrey Bonnin, Daniel Brewer, Li-Chuan Chen, Tye Parzybok, John Yarchoan

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.097 (0.083-0.114)	0.120 (0.104-0.142)	0.161 (0.138-0.190)	0.198 (0.169-0.235)	0.261 (0.216-0.309)	0.319 (0.255-0.380)	0.387 (0.299-0.466)	0.469 (0.348-0.574)	0.599 (0.419-0.748)	0.716 (0.477-0.912)
10-min	0.147 (0.127-0.173)	0.183 (0.159-0.216)	0.244 (0.210-0.288)	0.302 (0.258-0.358)	0.398 (0.329-0.471)	0.485 (0.388-0.578)	0.589 (0.456-0.709)	0.713 (0.530-0.873)	0.911 (0.638-1.14)	1.09 (0.727-1.39)
15-min	0.182 (0.157-0.214)	0.227 (0.197-0.268)	0.303 (0.260-0.358)	0.375 (0.320-0.443)	0.493 (0.407-0.584)	0.601 (0.481-0.716)	0.730 (0.565-0.878)	0.884 (0.657-1.08)	1.13 (0.791-1.41)	1.35 (0.901-1.72)
30-min	0.245 (0.211-0.289)	0.305 (0.265-0.361)	0.408 (0.350-0.482)	0.505 (0.430-0.596)	0.663 (0.549-0.786)	0.809 (0.648-0.964)	0.983 (0.761-1.18)	1.19 (0.884-1.46)	1.52 (1.07-1.90)	1.82 (1.21-2.32)
60-min	0.303 (0.262-0.357)	0.378 (0.328-0.447)	0.504 (0.433-0.596)	0.624 (0.533-0.738)	0.821 (0.679-0.973)	1.00 (0.802-1.19)	1.22 (0.942-1.46)	1.47 (1.09-1.80)	1.88 (1.32-2.35)	2.25 (1.50-2.87)
2-hr	0.414 (0.370-0.474)	0.513 (0.458-0.587)	0.653 (0.578-0.745)	0.778 (0.682-0.887)	0.965 (0.823-1.11)	1.13 (0.944-1.31)	1.32 (1.07-1.55)	1.55 (1.21-1.84)	1.93 (1.45-2.38)	2.30 (1.67-2.90)
3-hr	0.498 (0.448-0.559)	0.620 (0.561-0.699)	0.777 (0.695-0.873)	0.904 (0.803-1.02)	1.09 (0.949-1.23)	1.24 (1.06-1.41)	1.41 (1.19-1.63)	1.63 (1.34-1.91)	1.99 (1.59-2.40)	2.34 (1.81-2.93)
6-hr	0.697 (0.628-0.778)	0.870 (0.784-0.973)	1.08 (0.966-1.20)	1.24 (1.11-1.39)	1.47 (1.29-1.64)	1.64 (1.42-1.85)	1.82 (1.55-2.07)	2.02 (1.69-2.34)	2.32 (1.89-2.72)	2.57 (2.05-3.08)
12-hr	0.936 (0.834-1.05)	1.18 (1.05-1.32)	1.48 (1.31-1.66)	1.71 (1.52-1.92)	2.03 (1.78-2.30)	2.28 (1.97-2.59)	2.53 (2.15-2.91)	2.78 (2.32-3.24)	3.13 (2.54-3.71)	3.40 (2.70-4.09)
24-hr	1.24 (1.12-1.36)	1.55 (1.41-1.71)	1.96 (1.79-2.16)	2.29 (2.08-2.52)	2.76 (2.48-3.04)	3.12 (2.79-3.44)	3.50 (3.10-3.87)	3.89 (3.42-4.33)	4.43 (3.84-4.96)	4.86 (4.16-5.49)
2-day	1.49 (1.34-1.67)	1.88 (1.68-2.10)	2.40 (2.15-2.69)	2.82 (2.52-3.16)	3.41 (3.03-3.84)	3.88 (3.42-4.38)	4.38 (3.83-4.96)	4.91 (4.24-5.60)	5.64 (4.79-6.49)	6.22 (5.21-7.23)
3-day	1.65 (1.47-1.86)	2.08 (1.85-2.34)	2.67 (2.37-3.01)	3.15 (2.79-3.55)	3.83 (3.37-4.33)	4.37 (3.82-4.96)	4.95 (4.29-5.63)	5.56 (4.76-6.36)	6.41 (5.40-7.40)	7.10 (5.90-8.27)
4-day	1.80 (1.60-2.04)	2.28 (2.02-2.58)	2.94 (2.60-3.34)	3.48 (3.07-3.95)	4.24 (3.72-4.83)	4.86 (4.22-5.54)	5.51 (4.74-6.31)	6.21 (5.29-7.12)	7.19 (6.01-8.31)	7.98 (6.58-9.30)
7-day	2.09 (1.86-2.36)	2.65 (2.35-2.99)	3.43 (3.04-3.88)	4.05 (3.59-4.58)	4.93 (4.35-5.60)	5.63 (4.92-6.40)	6.37 (5.52-7.26)	7.15 (6.14-8.17)	8.23 (6.96-9.49)	9.09 (7.58-10.6)
10-day	2.32 (2.06-2.61)	2.95 (2.62-3.33)	3.83 (3.39-4.31)	4.51 (3.99-5.09)	5.46 (4.79-6.16)	6.20 (5.41-7.01)	6.96 (6.03-7.89)	7.75 (6.66-8.82)	8.84 (7.50-10.2)	9.68 (8.12-11.2)
20-day	2.88 (2.57-3.22)	3.65 (3.27-4.09)	4.72 (4.22-5.27)	5.52 (4.92-6.17)	6.61 (5.85-7.38)	7.42 (6.53-8.30)	8.26 (7.22-9.27)	9.09 (7.89-10.2)	10.2 (8.76-11.6)	11.0 (9.37-12.6)
30-day	3.28 (2.94-3.65)	4.17 (3.74-4.64)	5.37 (4.82-5.97)	6.27 (5.61-6.98)	7.48 (6.66-8.33)	8.40 (7.43-9.36)	9.33 (8.20-10.4)	10.3 (8.94-11.5)	11.5 (9.90-13.0)	12.4 (10.6-14.2)
45-day	3.87 (3.49-4.30)	4.93 (4.44-5.47)	6.35 (5.71-7.04)	7.40 (6.64-8.20)	8.76 (7.82-9.73)	9.77 (8.68-10.9)	10.8 (9.52-12.0)	11.7 (10.3-13.1)	13.0 (11.3-14.6)	13.9 (12.0-15.7)
60-day	4.45 (4.00-4.95)	5.69 (5.11-6.32)	7.31 (6.56-8.10)	8.46 (7.59-9.39)	9.92 (8.86-11.0)	11.0 (9.77-12.2)	12.0 (10.6-13.3)	12.9 (11.4-14.4)	14.1 (12.4-15.8)	14.8 (13.0-16.8)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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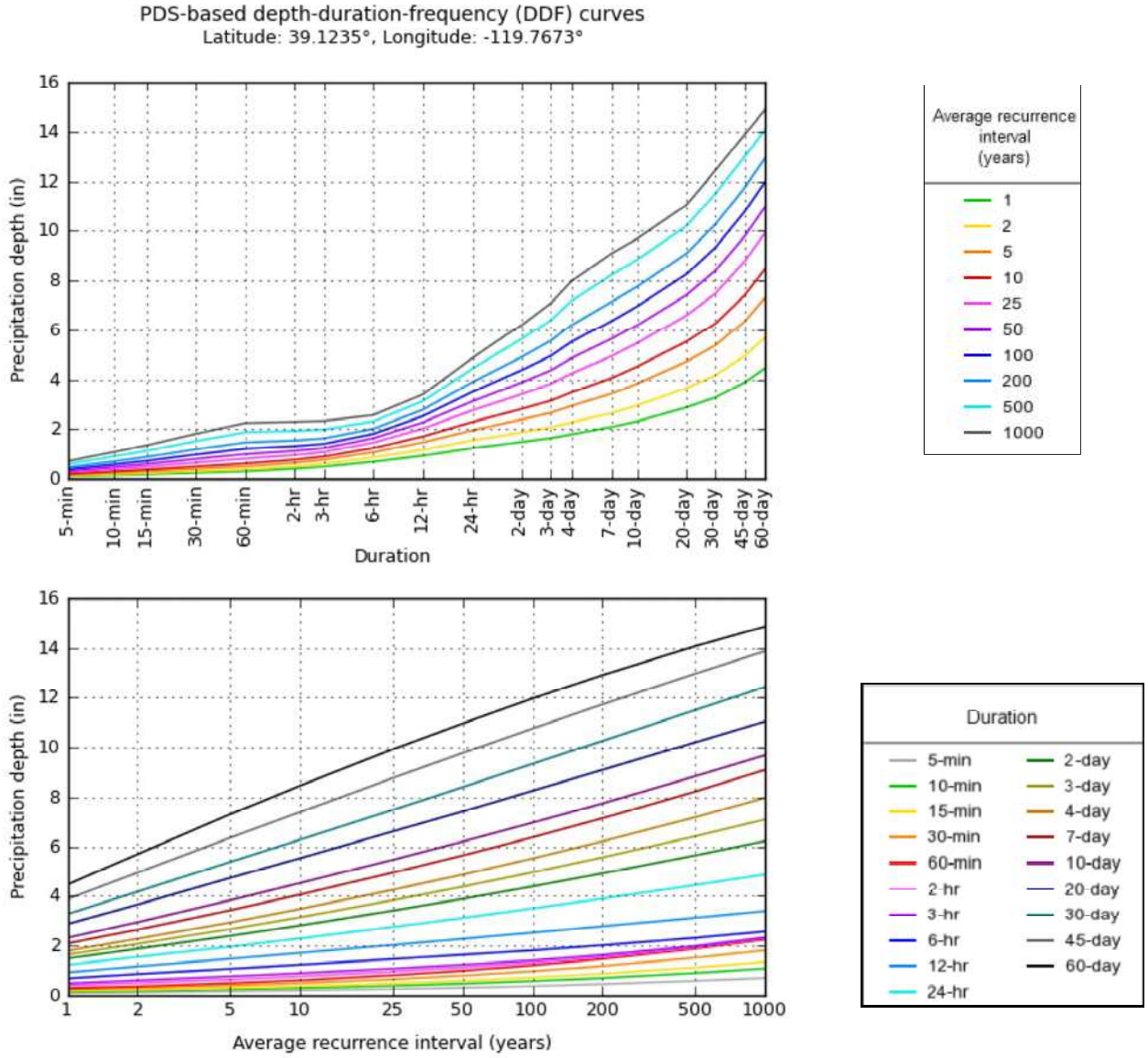
PF graphical



NOAA Atlas 14, Volume 1, Version 5

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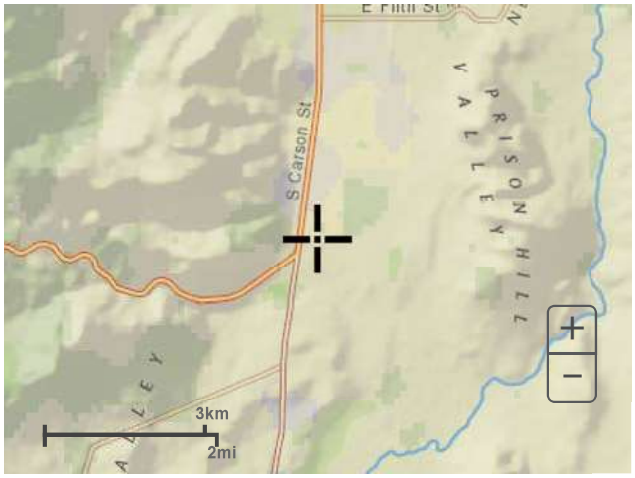
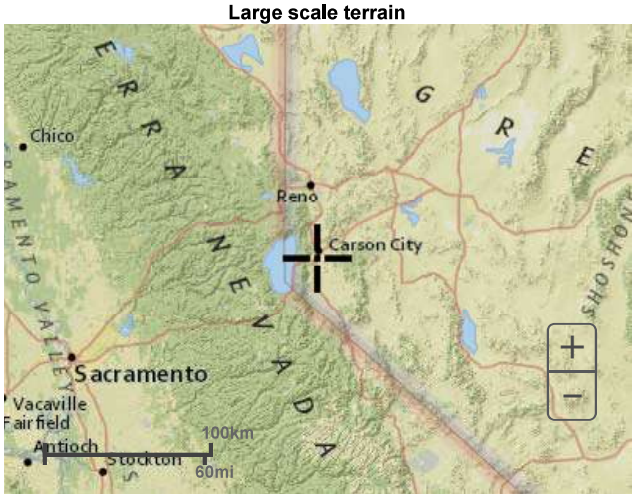
Maps & aerials

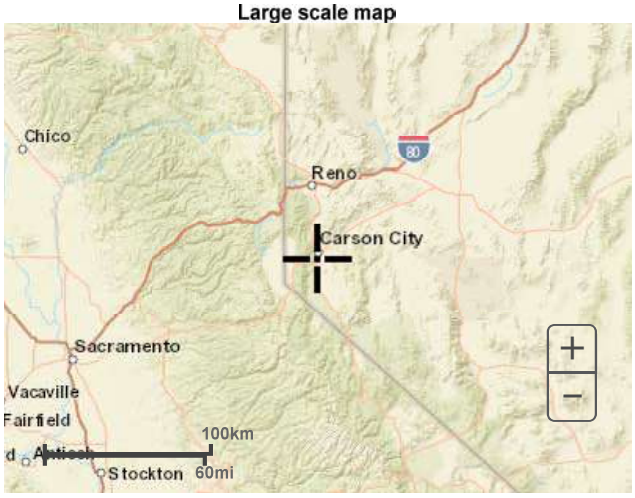
Small scale terrain



Large scale terrain



Large scale map



Large scale aerial

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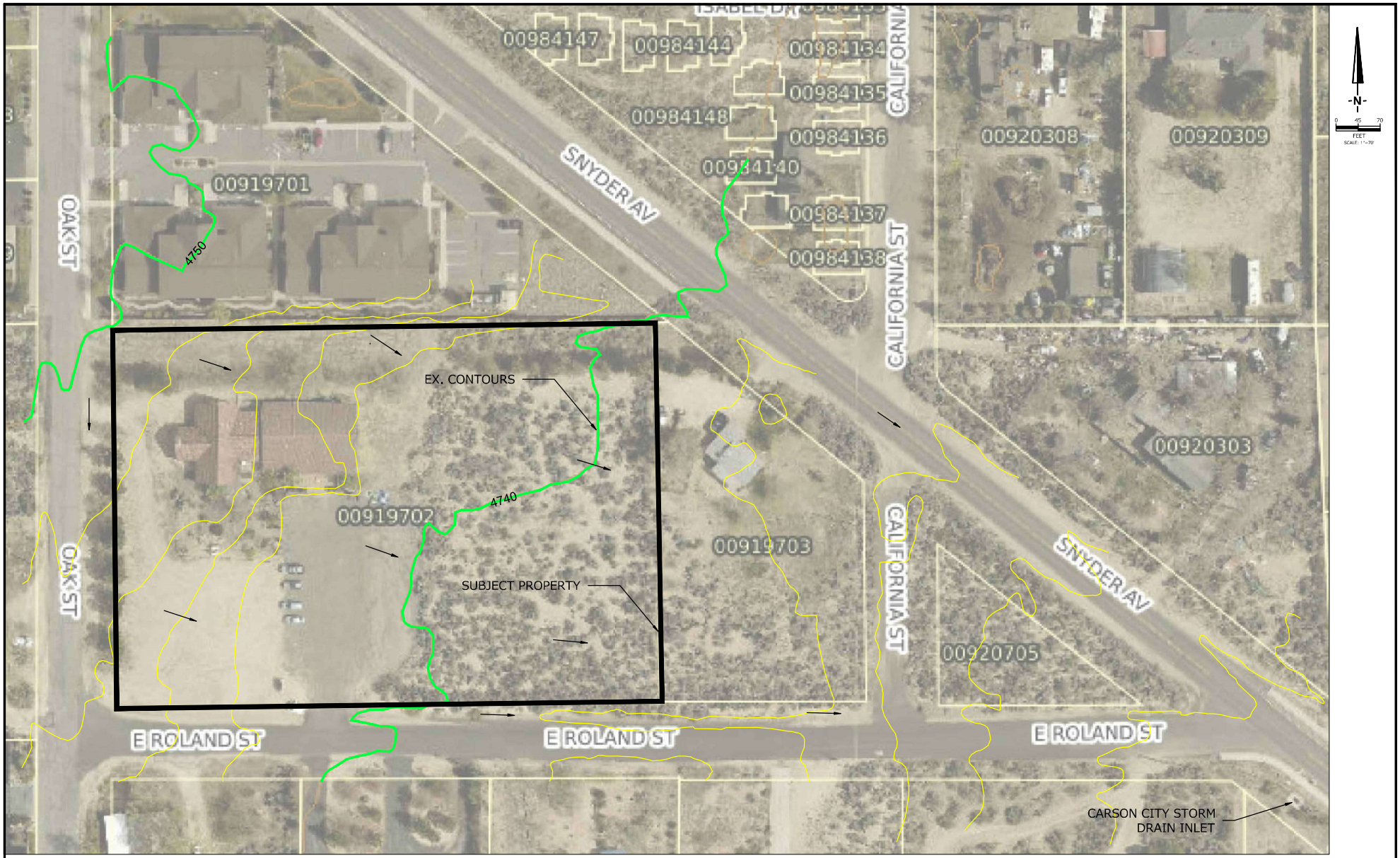
US Department of Commerce
National Oceanic and Atmospheric Administration
National Weather Service
National Water Center
1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

Disclaimer

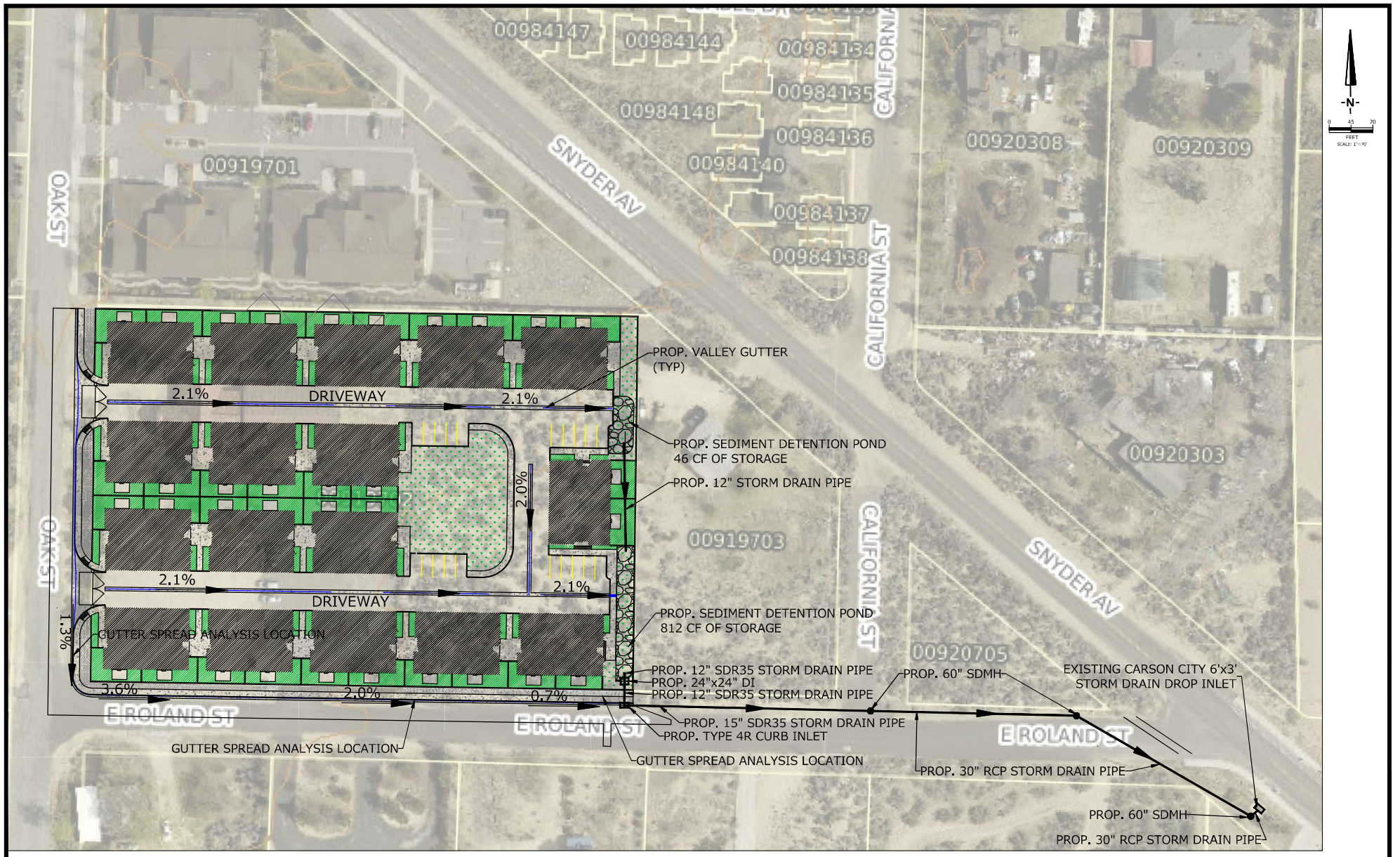
Existing Drainage Map



EXISTING DRAINAGE MAP

RCI
Resource Concepts Inc

Proposed Drainage Map



PROPOSED DRAINAGE MAP

RCI
Resource Concepts Inc

Water and Sanitary Sewer Main Analysis

SILVER CREST CONDOMINIUMS

Residential Condominiums
150 E. Roland St.
Carson City, Nevada

February 25, 2020

Prepared For:

Roger Rempfer and Frank Saletta
Teramont, LLC
15155 Redmond Loop
Reno, Nevada 89511

Prepared By:

Resource Concepts, Inc.
340 N. Minnesota St.
Carson City, Nevada 89703

RCI
www.rci-nv.com

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Appendix B: Sewer System Calculations

Sewer Main Existing
Sewer Main Plus ADD
Sewer Main Plus MDD
Sewer Main Plus PHD

File Doc: 2020-02-25 final rpt Water Sewer Silver Crest 19-205.6 RK-ca L2-47.docx
[February 25, 2020]

GENERAL LOCATION AND DEVELOPMENT DESCRIPTION

Introduction

This Water and Sanitary Sewer Main Analysis report has been prepared for submittal to Carson City Community Development, on behalf of Teramont, LLC. The purpose of this study is to analyze performance and capacity of on-site and off-site water and sanitary sewer infrastructure for the proposed 51-unit residential condominium complex. Supporting documentation and calculations are provided within this report.

Plans for the site include 17 3-plex condominium buildings, paved internal access roads, landscape areas, perimeter and internal 6-ft walls and fences, drainage infrastructure, and subsurface utilities.

Location of Property

The project site is located at 150 E. Roland Street, Carson City Assessor's parcel number 009-19-702. The parcel is bordered to the east by a single-family residence, to the south by Roland Street (then single-family residences), to the west by Oak Street (then a single-family residence), and to the north by multi-family residential development. The proposed multi-family residential development is located within the Carson City limits, at the intersection of Oak Street and Roland Street, south of Snyder Avenue, in the northwest corner of Section 32, T.15N., R.20E., M.D.M. Please refer to the Location Map, Figure 1, on Page 2.

Description of Property

The project site is bordered on all sides by existing development. Developments to the north are zoned Multi Family Duplex. The property to the east is zoned Multi Family Apartments but is developed as a single-family residence. To the south is East Roland Street and 1-acre single-family residences. To the west is Oak Street, a single-family residence, and storage facility. To the north is multi-family apartments.

The project property in this study encompasses approximately 2.99 acres. The existing site consists of a former church and parking area, landscaped areas, undisturbed soil and vegetation, trees, and some unpaved areas of disturbed soils with minimal vegetative growth. Existing utility connections will be abandoned and removed. The proposed water system will connect to existing public infrastructure within Oak Street and Roland Street. The proposed sanitary sewer will connect to an existing sanitary sewer line within Roland Street.

Project Description

The proposed development on the subject property will be 17 3-plex condominium buildings, paved internal access roads, landscape areas, and associated on-site infrastructure. Domestic water serving the development will be master-metered, and each 3-plex building will be served by a single 1.5-in domestic water connection, which will be split into three separately-valved service lines at a manifold located adjacent to each building. The fire sprinkler line for each separate unit within the building will be served off the domestic line coming into the unit.

Two new fire hydrants are proposed within the development and will be served by a private 6-inch water line, which will connect to existing infrastructure on Oak Street and Roland Street. No fire department

connections are proposed. In addition to the on-site utility improvements proposed, an off-site water main will be constructed to connect the existing 6-inch water main on Roland Street to the existing 8-inch water main on Snyder Avenue as required by Carson City.

Each condo unit will have a separate 4-inch sanitary sewer lateral that ties into on-site 8-inch sanitary sewer mains. The proposed on-site sewer will connect to the existing 8-inch sewer main on Roland Street.

Figure 1: Location Map

Map depicting location of proposed development
Not to scale

WATER SYSTEM ANALYSIS

Existing Conditions

An existing 8-inch water main is located within Oak Street, and an existing 6-inch water main is located within Roland Street. The water main along Snyder Avenue is 8-inch diameter. Information provided by Carson City indicates that though the water infrastructure adjacent to Snyder Avenue is connected to the north along California Street, there is a check valve that opens only if there is a severe pressure drop in the south portion of the system. For this reason, the portion of the water system the project is tying into is treated as having a single connection to the rest of the existing Carson City water system to the west along Snyder Avenue.

The existing water main along Oak Street terminates approximately 360 feet south of the subject property, and the water main along Roland Street terminates approximately 170 feet east of the subject property, at the corner of Roland Street and California Street. The existing water line on Snyder Avenue terminates at the intersection with California Street.

Proposed Project Description

The proposed new water infrastructure associated with Silver Crest Condos includes both on-site and off-site improvements. On-site water improvements consist of a private 6-inch water line and a private 4-inch water line. The 6-inch line will serve two proposed fire hydrants within the development. It will connect to the existing infrastructure along Oak Street and Roland Street, and will be isolated with DCDA backflow valves at the connections to public water mains. The proposed 4-inch private line will provide potable and fire protection sprinkler water with a single 1.5-inch connection to each building, which will be split for separate service to each unit. The 4-inch private water line will connect to existing infrastructure along Oak Street and Roland Street, will be master-metered, and will include RPPA backflow valves adjacent to each point of connection with public water infrastructure. At the request of Carson City, a sample tap has been included on the property, adjacent to Oak Street and Roland Street.

Water for common area landscape irrigation will be provided via a separate connection with a meter and backflow prevention as shown on the improvement plans.

Proposed off-site infrastructure includes a public 6-inch water main that will connect the existing 6-inch water main along Roland Street with the existing 8-inch water main along Snyder Avenue. The length of the proposed public infrastructure is approximately 250 feet. This off-site improvement is required by Carson City as a condition of approval of the Silver Crest Subdivision.

Water System Analysis Scenarios

Water Use Calculation and Methodology

Projected water demand for the condominiums consists of domestic use for the dwelling units as well as irrigation use for landscaping. Projected water demands are summarized in the table below. The total average day demand is estimated to be 8,321 gallons per day (gpd) during the irrigation season.

Table 1. Proposed Development Water Use

Use Category	Average Day Demand (gpd)
Dwelling Unit (51)	7,395
Landscape Irrigation	926
Total	**8,321**

The average daily domestic demand for the condo complex is calculated as 145 gpd per dwelling unit. The water usage estimate was based on data from Carson City Utilities for a similar development. The development that was referenced was the Long Street Townhomes. That development currently uses, on average, 145 gallons per day per unit. Truckee Meadows Water Authority estimates a water use of approximately 107 gallons per day for condos for the purpose of water rights dedication. The estimate provided here is based on the 145 gpd per unit use estimate (5.14 gpm, averaged over 24 hours per day for Average Day Demand). The maximum day water demand is assumed to be 2.5 times the average daily demand. The peak hour demand is assumed to be 4.0 times the average daily demand.

Landscaping irrigation includes all water used for outdoor turf and plant watering, including trees and shrubs. The estimated water usage is based on plans prepared by the Landscape Architect. The average day demand flow for the irrigation portion of the water use is 0.64 gpm.

For the purpose of modeling, the irrigation demand is located at the junction where the 6-inch proposed water connects to the existing 8-inch water main on Oak Street (J-OAK/SP6) and the domestic demand is located along the 4-inch domestic water line within the proposed development at the northeast corner of Silver Peak Loop (J-SP4-1). The proposed 6-inch off-site water main to be constructed along California Street is included in the modeled configuration.

Table 2. Proposed Development Water Demands

Use	AVG. Day Demand (gpm)	MAX. Day Demand (gpm)	Peak Hour Demand (gpm)
Domestic	**5.14**	**12.85**	**20.56**
Irrigation	**0.64**	**1.60**	**2.56**
Total	**5.78**	**14.45**	**23.12**

Fire Flow

The fire flow required is determined based on the largest fire flow calculation area. Because each condo unit will be separated by fire walls without openings, constructed in accordance with the International Building Code, each condo unit can be considered a separate fire flow calculation area, the largest of which is under 3,000 SF for each building. For Type V-B construction, the required fire flow for this square footage is 1,500 gpm for 2 hours, according to the International Fire Code (IFC). Each three-plex residential building will include automatic fire sprinklers. The fire sprinkler design will be provided by others and is not part of this report. The IFC allows for a 50% reduction in the required fire flow with an approved automatic sprinkler system, to a minimum of 1,500 gpm, so in this case the minimum flow requirement is

1,500 gpm. For modeling purposes, the fire flow is located within the development, at the end of the 6-inch water line, near the southwest corner of Silver Peak Loop (J-SP6-3).

Modeling Methodology

Bentley WaterCAD CONNECT Edition Update 2 software was used for water system modeling and analysis. The water model was constructed as a stand-alone portion of the larger Carson City municipal water system. An excerpt of the system was modeled, with the pressure and flow response calibrated based on a fire flow test performed by Carson City on October 15, 2019. The Pump Report and junction tables demonstrating the static and flowing conditions used for calibration are included in Appendix A.

The Bureau of Safe Drinking Water (BSDW) requires that a water system maintain a minimum pressure of 40 psi under maximum day demand conditions, and a minimum pressure of 20 psi under maximum day demand plus fire flow conditions.

Analysis Results

Water System Pressures

The analyzed portion of the water distribution system maintained a minimum water system pressure of 111 psi in the Maximum Day and Peak Hour Demand scenarios. The lowest pressure in the distribution system for these scenarios is at node J-SNY1, which is located along Snyder Avenue, at the highest elevation within the analyzed portion of the system. The water distribution system maintained a minimum water system pressure of 72 psi on-site and 73 psi off-site in the Maximum Day Demand Plus Fire Flow scenario (other than the junction where fire flow was located) with the fire flow located at Junction J-SP6-3, which corresponds to the dead-end portion of the on-site 6-inch water line. During on-site fire flow, the lowest pressure off-site for the analyzed portion of the water system is located at the highest elevation, along Snyder Avenue.

In all considered scenarios, the pressure within the analyzed portion of Carson City's water system is maintained between 73 and 82 psi, which is well above the required minimum pressures.

Pipe Velocities

The analyzed portion of the water distribution system has a maximum off-site pipe velocity of 0.14 feet per second (ft/s) during the Peak Hour Demand scenario, 0.09 ft/s during the Max Day Demand scenario, and 9.66 ft/s during the Max Day Demand Plus Fire Flow scenario. The off-site maximum velocity in the Peak Hour Demand, Max Day Demand, and Max Day Demand Plus Fire Flow is located within pipe P-SNY1, which is connected to the rest of the Carson City water distribution system along Snyder Avenue, west of Oak Street. The maximum on-site pipe velocity of 17.02 ft/s occurs within the 6-inch water line during maximum day demand plus fire flow. The maximum on-site pipe velocity under non fire flow conditions is 0.27 ft/s in the 4-inch domestic water line.

SEWER ANALYSIS

Existing Conditions

An existing 8-inch PVC sanitary sewer line is located within Roland Street which flows east along Roland Street toward Snyder Avenue. The sewer main within Roland Street at the proposed tie-in point is over 8 feet deep based on the invert elevations of the manholes to the west and east of the proposed new manhole and the proposed rim elevation. Based on information from Carson City Public Works, the existing 8-inch PVC gravity sewer within Roland Street has a ratio of the depth of current flow over the diameter of the pipe (d/D) of 0.17 and a slope of between 1.0 and 1.6%. The current flow condition equates to a flow depth of 1.4 inches, which is equivalent to 0.10 cubic feet per second (cfs) at a slope of 1.0%.

Proposed Project Description

The proposed sanitary sewer system will connect to the existing infrastructure within Roland Street as discussed above, including construction of a new 48-inch manhole at the connection point, matching the existing sewer inverts at that location. Off-site sanitary infrastructure is limited to the proposed manhole at the tie-in point.

Proposed on-site sanitary sewer infrastructure includes 8-inch diameter PVC gravity mains, five 48-inch manholes, one 8-inch cleanout, and 51 individual 4-inch sewer laterals to serve each condo unit. Sewer slopes range from 1.0 to 3.1%, and manholes between 7.0 and 8.7 ft in depth.

Sewer System Analysis and Results

Sanitary sewer discharge is estimated to be 90% of the domestic water use for each unit. This estimate takes into consideration that most outdoor irrigation use on-site is from the separate irrigation meter and does not contribute to sewer flow. Table 2 below summarizes the flow based on domestic water use, and with the same peaking factors.

Carson City provided the existing flow condition in the sewer along Roland Street with a d/D ratio of 0.17 in the 8-inch pipe. This corresponds to an existing flow depth of 1.4 inches and flow rate of 0.10 cfs (44.9 gpm) with a pipe slope of 1.0%. Modeled normal depths for peaking factors are shown in Table 2, below.

Table 3. Proposed Development Sanitary Sewer Flow

Use	Existing Condition	AVG. Day Demand	MAX. Day Demand	Peak Hour Demand
Additional Flow (gpm)	-	4.63	11.58	18.52
Total Flow (gpm)	44.9	49.53	56.46	63.37
Total Flow (cfs)	0.10	0.1103	0.1258	0.1412
Normal depth (in)	1.4	1.4	1.5	1.6
d/D	0.17	0.17	0.1875	0.20

CONCLUSION

Compliance with NDEP requirements

The water and sanitary sewer improvements proposed by the Silver Crest Condominium development do not adversely affect the Carson City water or sanitary sewer systems. Network hydraulic modeling shows that the water system performance exceeds the minimum requirements of NAC 445A.6711 for all scenarios. Sewer pipe flow modeling shows the increased flows for proposed conditions are well within acceptable standards and do not exceed the capacity of the existing system.

Effectiveness of Proposed Infrastructure to Serve Development

The proposed water and sanitary sewer infrastructure provides adequate service, including the required fire flow, to the proposed development without adversely affecting the Carson City water distribution or sanitary sewer collection systems.

APPENDICES

Appendix A

Water System Calculations

Irrigation Water Use Tabulation
Fire Flow Test Results
Pump Report
Model Calibration Junction Reports
MDD Junction and Pipe Reports
PHD Junction and Pipe Reports
MDD + FF Junction and Pipe Reports
Network Hydraulic Model Layout

Irrigation Water Use Tabulation

Silver Crest Condominiums
ESTIMATED LANDSCAPE WATER USE CALCULATIONS
February 20, 2020

ITEM	QTY	GAL/ HR	TIME AMOUNT (HR)	DAY/ WEEK	WATER USE (GAL/WEEK)	WATER USE (GAL/MONTH) (4 WEEKS/MONTH)	WATER USE (GAL/YR) (34 WEEKS/YR)	ACRE FEET/YR
Tree	26	15	0.5	3	585	2,340	19,890	0.061
Spaded Trees	5	30	0.5	3	225	900	7,650	0.023
Shrub	233	10	0.5	3	3,495	13,980	118,830	0.365
Perennials/Grasses/Vines	363	4	0.5	3	2,178	8,712	74,052	0.227
Turf (sf)	1733	1	0.25	4	1,733	6,932	58,922	0.181
	TOTAL WATER USE				**6,483**	**25,932**	**220,422**	**0.676**

Fire Flow Test Result

Fire Flow Test Data Sheet

Location of Test (Street and Cross Street): Oak and Roland

Address Nearest Residual Hydrant: 175 E. Roland St

Test Date: 10/15/2019 Test Time:

Testing Personnel:

Pressure Zone: Lower Voltaire Main Size: 6"

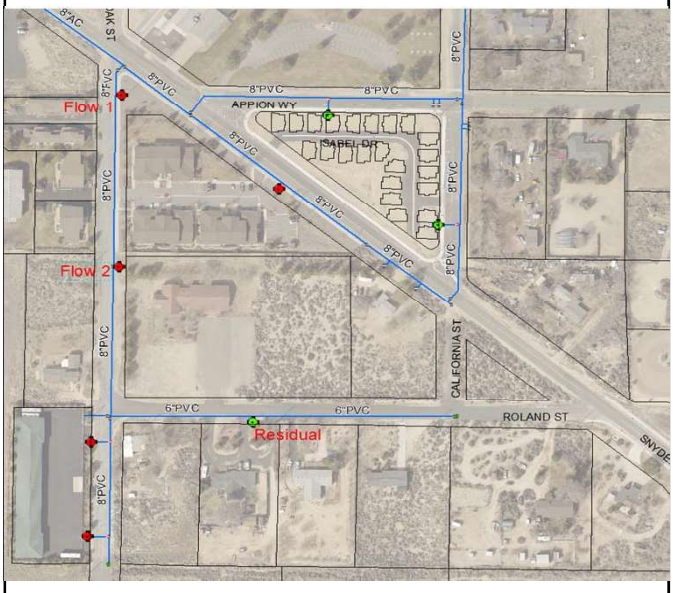
Comments: 8" main in Oak, 6" main in Roland

Test Results:

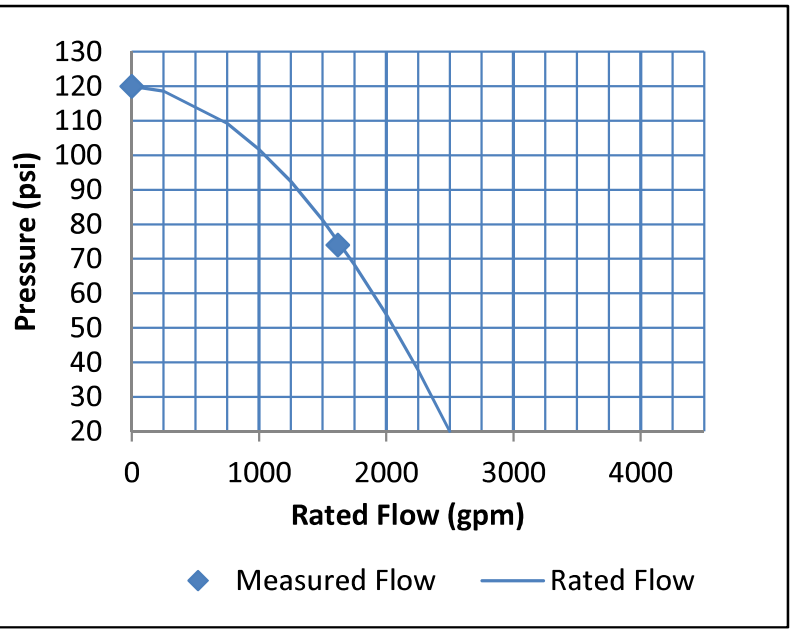
Residual Hydrant	
Static:	120 psi
Residual:	74 psi
Pressure Drop:	46 psi
	38 %

	Flow Hydrant(s)				
	Hydrant Tester	Pitot Pressure (psi)	Discharge Diameter (in)	Outlet Coeff. (c)	Pitot Flow (gpm)
Flow 1	HM2	26	2	1.307	795
Flow 2	HM1	28	2	1.307	825
Flow 3					
				Total	1621

Area Map



Rated Flow



Rated Pressure (for Rated Capacity Calculation) 20 psi

Rated Capacity at 20 psi residual pressure. 2,500 gpm

Based on NFPA 291 - 2019 Edition and APWA Manual 17 - Fourth Edition

Pursuant to NFPA 291, fire flow test data over five years old should not be used.

Hydrant OBJECTID: 78

Data Sheet File Name: Oak-Roland3.pdf

Pump Report

Pump Definition Detailed Report: Pump Definition - 1

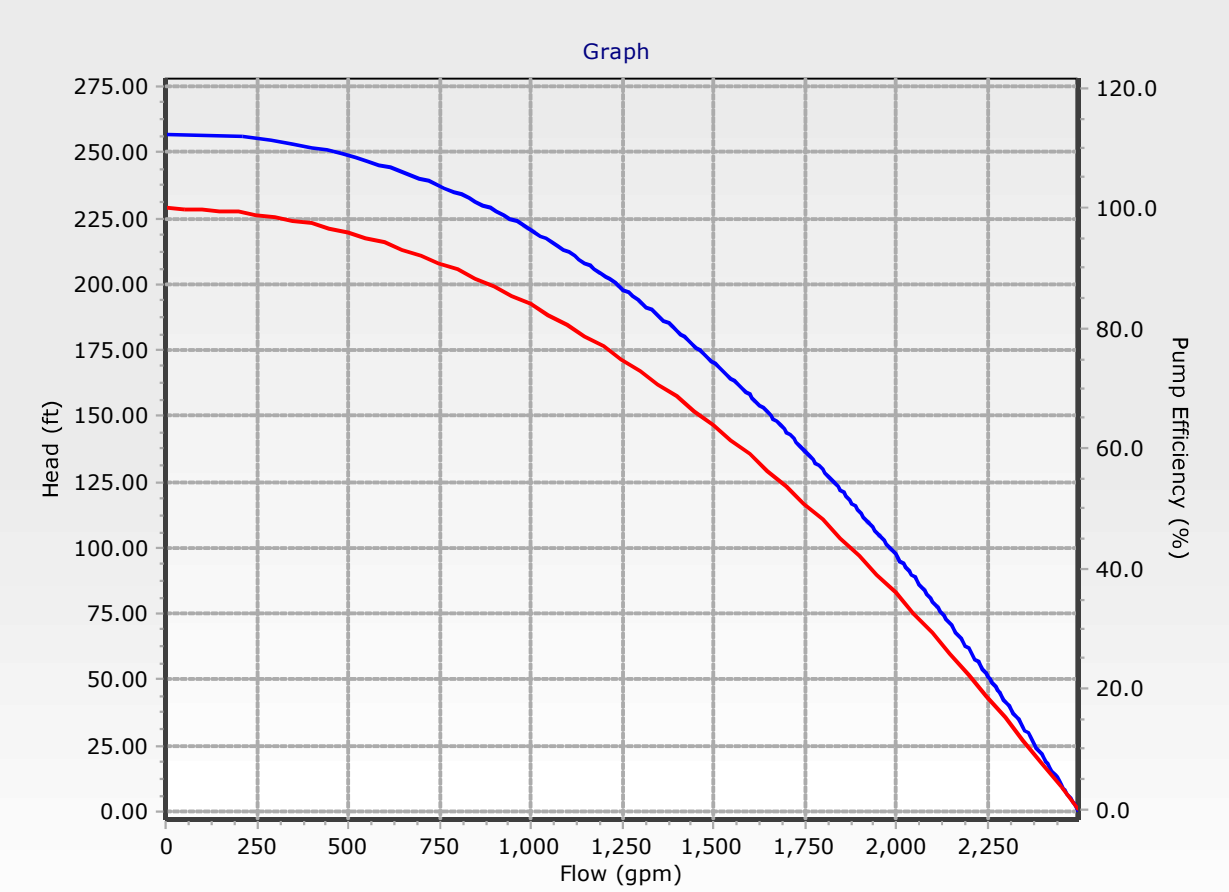
Element Details			
ID	54	Notes	
Label	Pump Definition - 1		

Pump Definition Type			
Pump Definition Type	Standard (3 Point)	Design Head	155.00 ft
Shutoff Flow	0 gpm	Maximum Operating Flow	2,500 gpm
Shutoff Head	257.00 ft	Maximum Operating Head	0.00 ft
Design Flow	1,621 gpm		

Pump Efficiency Type			
Pump Efficiency Type	Best Efficiency Point	Motor Efficiency	100.0 %
BEP Efficiency	100.0 %	Is Variable Speed Drive?	False
BEP Flow	0 gpm		

Transient (Physical)			
Inertia (Pump and Motor)	0.000 lb·ft²	Specific Speed	SI=25, US=1280
Speed (Full)	0 rpm	Reverse Spin Allowed?	True

Pump Definition Detailed Report: Pump Definition - 1



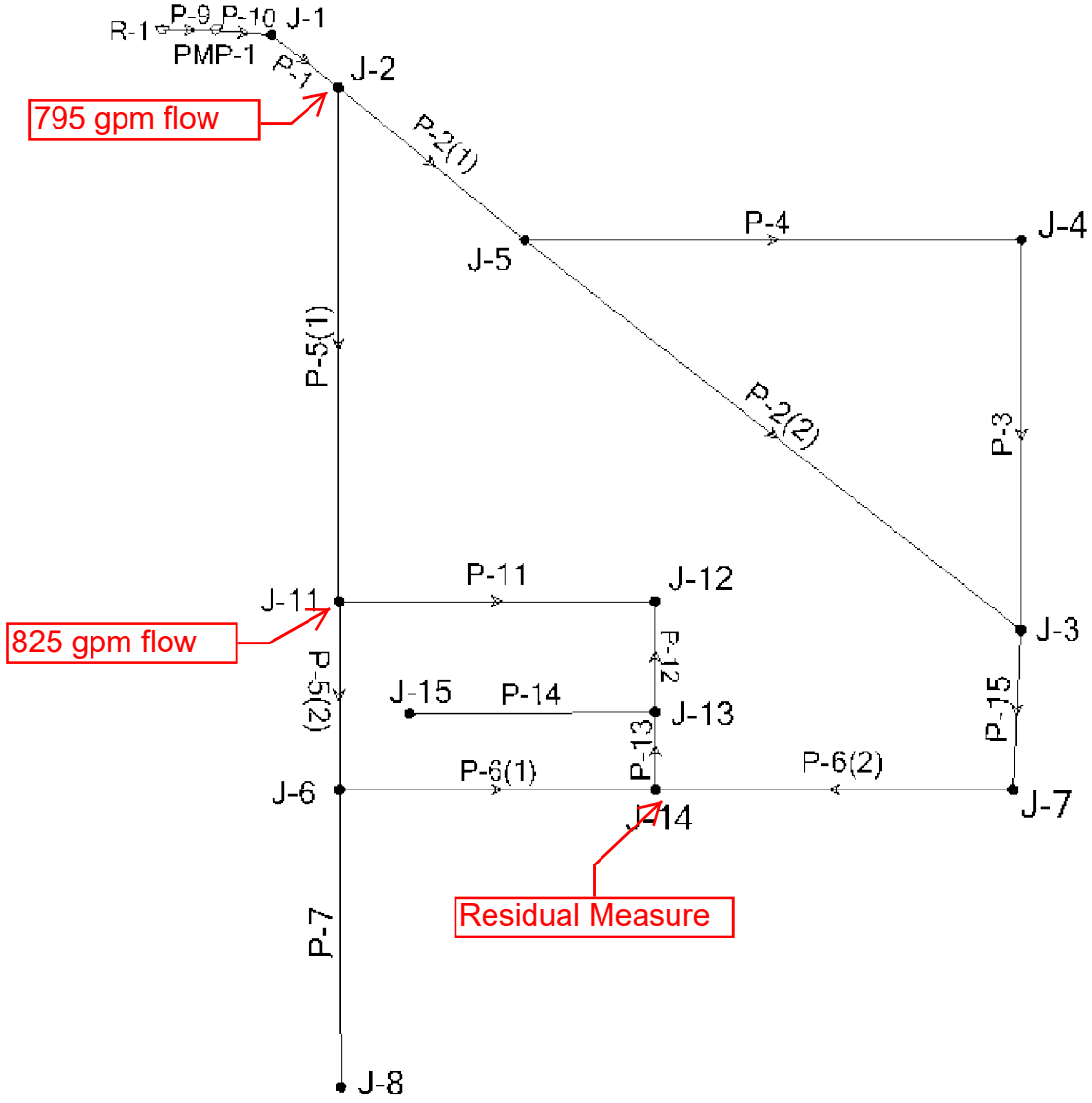
Model Calibration Junction Reports

Calibration - Static: Junction Table

ID	Label	Elevation (ft)	Zone	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
30	J-1	4,758.00	<None>	0	5,015.00	111
31	J-2	4,753.00	<None>	0	5,015.00	113
33	J-3	4,735.00	<None>	0	5,015.00	121
35	J-4	4,738.00	<None>	0	5,015.00	120
37	J-5	4,747.00	<None>	0	5,015.00	116
41	J-6	4,743.00	<None>	0	5,015.00	118
43	J-7	4,733.00	<None>	0	5,015.00	122
45	J-8	4,739.00	<None>	0	5,015.00	119
55	J-11	4,745.69	<None>	0	5,015.00	117
58	J-12	4,742.50	<None>	0	5,015.00	118
60	J-13	4,740.50	<None>	0	5,015.00	119
62	J-14	4,738.34	<None>	0	5,015.00	120
66	J-15	4,745.00	<None>	0	5,015.00	117

Calibration - Flow: Junction Table

ID	Label	Elevation (ft)	Zone	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
30	J-1	4,758.00	<None>	0	4,913.13	67
31	J-2	4,753.00	<None>	795	4,911.59	69
33	J-3	4,735.00	<None>	0	4,911.59	76
35	J-4	4,738.00	<None>	0	4,911.59	75
37	J-5	4,747.00	<None>	0	4,911.59	71
41	J-6	4,743.00	<None>	0	4,906.14	71
43	J-7	4,733.00	<None>	0	4,906.14	75
45	J-8	4,739.00	<None>	0	4,906.14	72
55	J-11	4,745.69	<None>	825	4,906.14	69
58	J-12	4,742.50	<None>	0	4,906.14	71
60	J-13	4,740.50	<None>	0	4,906.14	72
62	J-14	4,738.34	<None>	0	4,906.14	73
66	J-15	4,745.00	<None>	0	4,906.14	70



Schematic Network Layout - Calibration

MDD Junction and Pipe Reports

Max Day: Junction Table

ID	Label	Elevation (ft)	Zone	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
35	J-APP/CAL	4,738.00	<None>	0.00	5,015.00	120
45	J-OAK/END	4,739.00	<None>	0.00	5,014.99	119
41	J-OAK/ROL	4,743.00	<None>	0.00	5,014.99	118
69	J-OAK/SP4	4,745.53	<None>	0.00	5,014.99	117
55	J-OAK/SP6	4,745.69	<None>	1.60	5,014.99	117
43	J-ROL/CAL	4,733.00	<None>	0.00	5,014.99	122
74	J-ROL/SP4	4,738.49	<None>	0.00	5,014.99	120
62	J-ROL/SP6	4,738.34	<None>	0.00	5,014.99	120
37	J-SNY/APP	4,747.00	<None>	0.00	5,015.00	116
33	J-SNY/CAL	4,735.00	<None>	0.00	5,015.00	121
31	J-SNY/OAK	4,753.00	<None>	0.00	5,015.00	113
30	J-SNY1	4,758.00	<None>	0.00	5,015.00	111
72	J-SP4-1	4,742.50	<None>	12.85	5,014.98	118
78	J-SP4-2	4,740.50	<None>	0.00	5,014.99	119
81	J-SP4-3	4,745.00	<None>	0.00	5,014.99	117
58	J-SP6-1	4,742.50	<None>	0.00	5,014.99	118
60	J-SP6-2	4,740.50	<None>	0.00	5,014.99	119
66	J-SP6-3	4,745.00	<None>	0.00	5,014.99	117

Max Day: Pipe Table

ID	Label	Diameter (in)	Flow (gpm)	Velocity (ft/s)	Length (ft)	Hazen-Williams C
32	P-SNY1	8.0	14.45	0.09	45	150.0
36	P-CAL1	8.0	-2.13	0.01	395	150.0
38	P-SNY2	8.0	4.73	0.03	215	150.0
39	P-SNY3	8.0	2.60	0.02	610	150.0
40	P-APP1	8.0	-2.13	0.01	485	150.0
46	P-OAK4	8.0	0.00	0.00	350	150.0
52	P-9	36.0	14.45	0.00	1	130.0
53	P-10	36.0	14.45	0.00	1	130.0
56	P-OAK1	8.0	9.72	0.06	556	150.0
59	P-SP 6-1	6.0	0.87	0.01	345	150.0
61	P-SP 6-2	6.0	0.87	0.01	150	150.0
64	P-ROL3	6.0	-4.73	0.05	200	150.0
65	P-SP 6-4	6.0	0.87	0.01	190	150.0
67	P-SP 6-3	6.0	0.00	0.00	180	150.0
68	P-CAL2	6.0	4.73	0.05	246	150.0
70	P-OAK2	8.0	7.25	0.05	3	150.0
71	P-OAK3	8.0	1.10	0.01	224	150.0
73	P-SP 4-1	4.0	6.15	0.16	340	150.0
75	P-ROL1	6.0	1.10	0.01	421	150.0
76	P-ROL2	6.0	-5.60	0.06	3	150.0
79	P-SP 4-2	4.0	-6.70	0.17	150	150.0
80	P-SP 4-4	4.0	-6.70	0.17	138	150.0
82	P-SP 4-3	4.0	0.00	0.00	263	150.0

PHD Junction and Pipe Reports

Peak Hour: Junction Table

ID	Label	Elevation (ft)	Zone	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
35	J-APP/CAL	4,738.00	<None>	0.00	5,014.99	120
45	J-OAK/END	4,739.00	<None>	0.00	5,014.98	119
41	J-OAK/ROL	4,743.00	<None>	0.00	5,014.98	118
69	J-OAK/SP4	4,745.53	<None>	0.00	5,014.98	117
55	J-OAK/SP6	4,745.69	<None>	2.56	5,014.98	117
43	J-ROL/CAL	4,733.00	<None>	0.00	5,014.99	122
74	J-ROL/SP4	4,738.49	<None>	0.00	5,014.98	120
62	J-ROL/SP6	4,738.34	<None>	0.00	5,014.98	120
37	J-SNY/APP	4,747.00	<None>	0.00	5,014.99	116
33	J-SNY/CAL	4,735.00	<None>	0.00	5,014.99	121
31	J-SNY/OAK	4,753.00	<None>	0.00	5,014.99	113
30	J-SNY1	4,758.00	<None>	0.00	5,014.99	111
72	J-SP4-1	4,742.50	<None>	20.56	5,014.96	118
78	J-SP4-2	4,740.50	<None>	0.00	5,014.97	119
81	J-SP4-3	4,745.00	<None>	0.00	5,014.97	117
58	J-SP6-1	4,742.50	<None>	0.00	5,014.98	118
60	J-SP6-2	4,740.50	<None>	0.00	5,014.98	119
66	J-SP6-3	4,745.00	<None>	0.00	5,014.98	117

Peak Hour: Pipe Table

ID	Label	Diameter (in)	Flow (gpm)	Velocity (ft/s)	Length (ft)	Hazen-Williams C
32	P-SNY1	8.0	23.13	0.15	45	150.0
36	P-CAL1	8.0	-3.41	0.02	395	150.0
38	P-SNY2	8.0	7.58	0.05	215	150.0
39	P-SNY3	8.0	4.16	0.03	610	150.0
40	P-APP1	8.0	-3.41	0.02	485	150.0
46	P-OAK4	8.0	0.00	0.00	350	150.0
52	P-9	36.0	23.13	0.01	1	130.0
53	P-10	36.0	23.13	0.01	1	130.0
56	P-OAK1	8.0	15.56	0.10	556	150.0
59	P-SP 6-1	6.0	1.39	0.02	345	150.0
61	P-SP 6-2	6.0	1.39	0.02	150	150.0
64	P-ROL3	6.0	-7.58	0.09	200	150.0
65	P-SP 6-4	6.0	1.38	0.02	190	150.0
67	P-SP 6-3	6.0	0.00	0.00	180	150.0
68	P-CAL2	6.0	7.58	0.09	246	150.0
70	P-OAK2	8.0	11.61	0.07	3	150.0
71	P-OAK3	8.0	1.77	0.01	224	150.0
73	P-SP 4-1	4.0	9.84	0.25	340	150.0
75	P-ROL1	6.0	1.76	0.02	421	150.0
76	P-ROL2	6.0	-8.96	0.10	3	150.0
79	P-SP 4-2	4.0	-10.72	0.27	150	150.0
80	P-SP 4-4	4.0	-10.72	0.27	138	150.0
82	P-SP 4-3	4.0	0.00	0.00	263	150.0

MDD + FF Junction and Pipe Reports

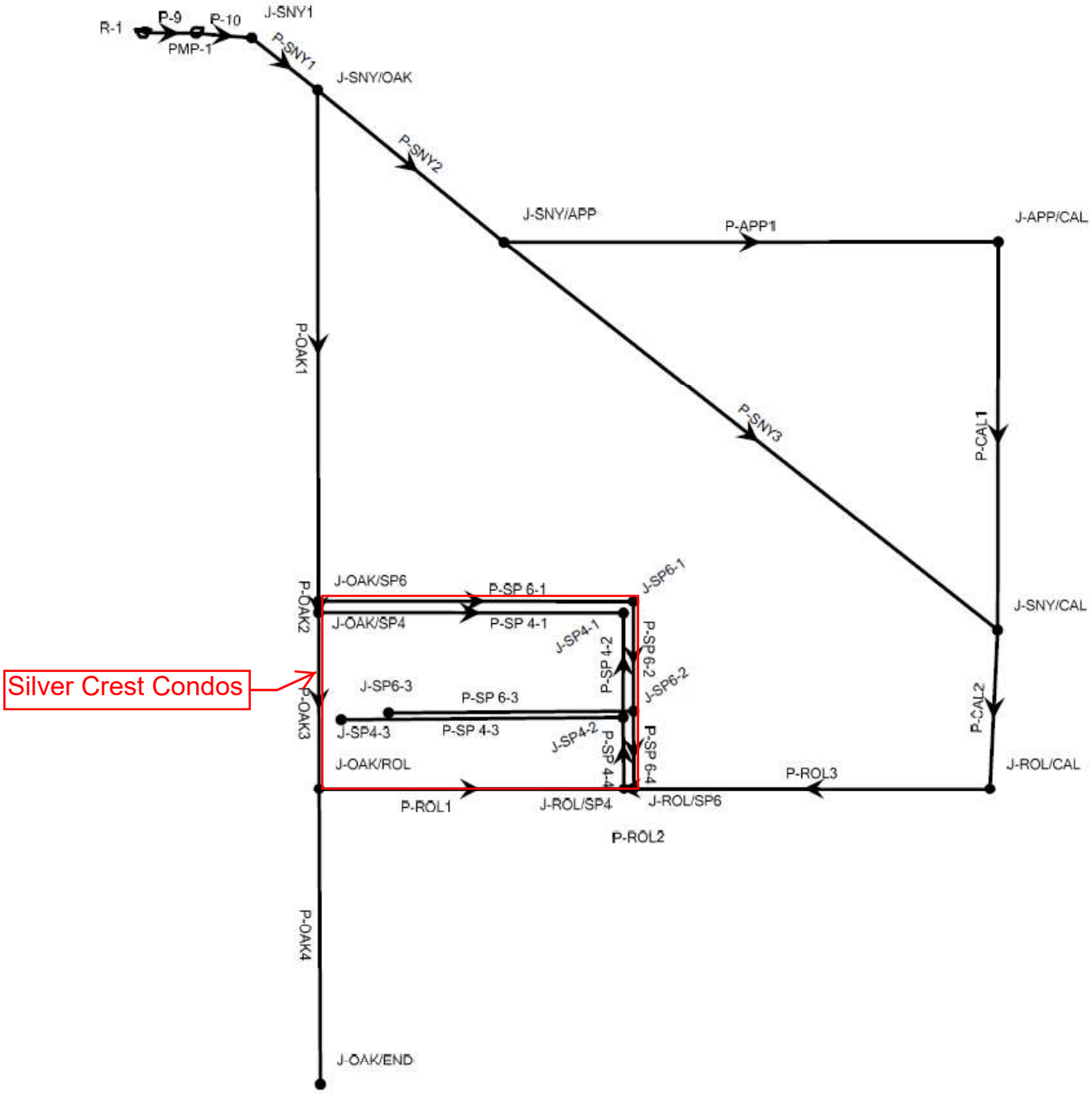
Max Day + FF: Junction Table

ID	Label	Elevation (ft)	Zone	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
35	J-APP/CAL	4,738.00	<None>	0.00	4,923.95	80
45	J-OAK/END	4,739.00	<None>	0.00	4,917.68	77
41	J-OAK/ROL	4,743.00	<None>	0.00	4,917.68	76
69	J-OAK/SP4	4,745.53	<None>	0.00	4,917.97	75
55	J-OAK/SP6	4,745.69	<None>	1.60	4,917.98	75
43	J-ROL/CAL	4,733.00	<None>	0.00	4,919.08	81
74	J-ROL/SP4	4,738.49	<None>	0.00	4,915.47	77
62	J-ROL/SP6	4,738.34	<None>	0.00	4,915.45	77
37	J-SNY/APP	4,747.00	<None>	0.00	4,924.45	77
33	J-SNY/CAL	4,735.00	<None>	0.00	4,923.55	82
31	J-SNY/OAK	4,753.00	<None>	0.00	4,925.41	75
30	J-SNY1	4,758.00	<None>	0.00	4,926.77	73
72	J-SP4-1	4,742.50	<None>	12.85	4,916.44	75
78	J-SP4-2	4,740.50	<None>	0.00	4,915.94	76
81	J-SP4-3	4,745.00	<None>	0.00	4,915.94	74
58	J-SP6-1	4,742.50	<None>	0.00	4,910.14	73
60	J-SP6-2	4,740.50	<None>	0.00	4,906.72	72
66	J-SP6-3	4,745.00	<None>	1,500.00	4,885.02	61

Max Day + FF: Pipe Table

ID	Label	Diameter (in)	Flow (gpm)	Velocity (ft/s)	Length (ft)	Hazen-Williams C
32	P-SNY1	8.0	1,514.45	9.67	45	150.0
36	P-CAL1	8.0	-243.26	1.55	395	150.0
38	P-SNY2	8.0	539.74	3.45	215	150.0
39	P-SNY3	8.0	296.48	1.89	610	150.0
40	P-APP1	8.0	-243.26	1.55	485	150.0
46	P-OAK4	8.0	0.00	0.00	350	150.0
52	P-9	36.0	1,514.45	0.48	1	130.0
53	P-10	36.0	1,514.45	0.48	1	130.0
56	P-OAK1	8.0	974.71	6.22	556	150.0
59	P-SP 6-1	6.0	609.39	6.91	345	150.0
61	P-SP 6-2	6.0	609.39	6.91	150	150.0
64	P-ROL3	6.0	-539.74	6.12	200	150.0
65	P-SP 6-4	6.0	-890.61	10.11	190	150.0
67	P-SP 6-3	6.0	1,500.00	17.02	180	150.0
68	P-CAL2	6.0	539.74	6.12	246	150.0
70	P-OAK2	8.0	363.72	2.32	3	150.0
71	P-OAK3	8.0	276.16	1.76	224	150.0
73	P-SP 4-1	4.0	87.56	2.24	340	150.0
75	P-ROL1	6.0	276.16	3.13	421	150.0
76	P-ROL2	6.0	350.87	3.98	3	150.0
79	P-SP 4-2	4.0	74.71	1.91	150	150.0
80	P-SP 4-4	4.0	74.71	1.91	138	150.0
82	P-SP 4-3	4.0	0.00	0.00	263	150.0

Network Hydraulic Model Layout



Schematic Proposed Network Layout

Appendix B

Sewer System Calculations

Sewer Main Existing

Sewer Main plus ADD

Sewer Main plus MDD

Sewer Main plus PHD

Sewer Main Existing

Worksheet for Existing 8 in

Project Description	
Friction Method	Manning Formula
Solve For	Discharge

Input Data	
Roughness Coefficient	0.010
Channel Slope	0.010 ft/ft
Normal Depth	1.4 in
Diameter	8.0 in

Results	
Discharge	0.10 cfs
Flow Area	0.0 ft²
Wetted Perimeter	0.6 ft
Hydraulic Radius	0.8 in
Top Width	0.50 ft
Critical Depth	1.7 in
Percent Full	17.0 %
Critical Slope	0.004 ft/ft
Velocity	2.51 ft/s
Velocity Head	0.10 ft
Specific Energy	0.21 ft
Froude Number	1.579
Maximum Discharge	1.69 cfs
Discharge Full	1.57 cfs
Slope Full	0.000 ft/ft
Flow Type	Supercritical

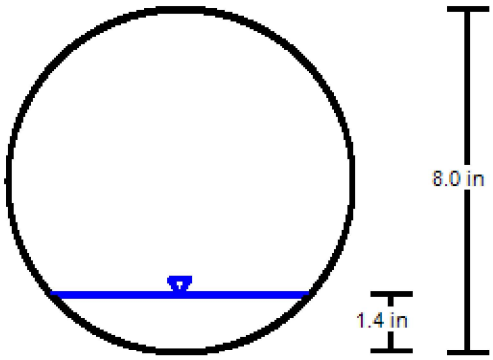
GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Average End Depth Over Rise	0.0 %
Normal Depth Over Rise	17.0 %
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	1.4 in
Critical Depth	1.7 in
Channel Slope	0.010 ft/ft
Critical Slope	0.004 ft/ft

Cross Section for Existing 8 in

Project Description	
Friction Method	Manning Formula
Solve For	Discharge

Input Data	
Roughness Coefficient	0.010
Channel Slope	0.010 ft/ft
Normal Depth	1.4 in
Diameter	8.0 in
Discharge	0.10 cfs



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H: 1

Sewer Main Plus ADD

Worksheet for Proposed 8 in ADD

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.010
Channel Slope	0.010 ft/ft
Diameter	8.0 in
Discharge	0.11 cfs

Results	
Normal Depth	1.4 in
Flow Area	0.0 ft²
Wetted Perimeter	0.6 ft
Hydraulic Radius	0.9 in
Top Width	0.51 ft
Critical Depth	1.8 in
Percent Full	17.9 %
Critical Slope	0.004 ft/ft
Velocity	2.59 ft/s
Velocity Head	0.10 ft
Specific Energy	0.22 ft
Froude Number	1.586
Maximum Discharge	1.69 cfs
Discharge Full	1.57 cfs
Slope Full	0.000 ft/ft
Flow Type	Supercritical

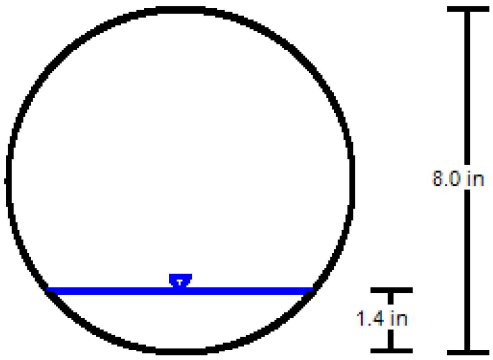
GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Average End Depth Over Rise	0.0 %
Normal Depth Over Rise	17.9 %
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	1.4 in
Critical Depth	1.8 in
Channel Slope	0.010 ft/ft
Critical Slope	0.004 ft/ft

Cross Section for Proposed 8 in ADD

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.010
Channel Slope	0.010 ft/ft
Normal Depth	1.4 in
Diameter	8.0 in
Discharge	0.11 cfs



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H: 1

Sewer Main Plus MDD

Worksheet for Proposed 8 in MDD

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.010
Channel Slope	0.010 ft/ft
Diameter	8.0 in
Discharge	0.13 cfs

Results	
Normal Depth	1.5 in
Flow Area	0.0 ft²
Wetted Perimeter	0.6 ft
Hydraulic Radius	0.9 in
Top Width	0.52 ft
Critical Depth	1.9 in
Percent Full	19.1 %
Critical Slope	0.004 ft/ft
Velocity	2.70 ft/s
Velocity Head	0.11 ft
Specific Energy	0.24 ft
Froude Number	1.600
Maximum Discharge	1.69 cfs
Discharge Full	1.57 cfs
Slope Full	0.000 ft/ft
Flow Type	Supercritical

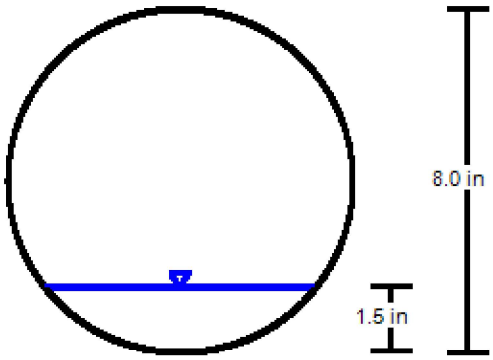
GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Average End Depth Over Rise	0.0 %
Normal Depth Over Rise	19.1 %
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	1.5 in
Critical Depth	1.9 in
Channel Slope	0.010 ft/ft
Critical Slope	0.004 ft/ft

Cross Section for Proposed 8 in MDD

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.010
Channel Slope	0.010 ft/ft
Normal Depth	1.5 in
Diameter	8.0 in
Discharge	0.13 cfs



V: 1
H: 1

Sewer Main Plus PHD

Worksheet for Proposed 8 in PHD

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.010
Channel Slope	0.010 ft/ft
Diameter	8.0 in
Discharge	0.14 cfs

Results	
Normal Depth	1.6 in
Flow Area	0.1 ft²
Wetted Perimeter	0.6 ft
Hydraulic Radius	1.0 in
Top Width	0.54 ft
Critical Depth	2.1 in
Percent Full	20.3 %
Critical Slope	0.004 ft/ft
Velocity	2.79 ft/s
Velocity Head	0.12 ft
Specific Energy	0.26 ft
Froude Number	1.600
Maximum Discharge	1.69 cfs
Discharge Full	1.57 cfs
Slope Full	0.000 ft/ft
Flow Type	Supercritical

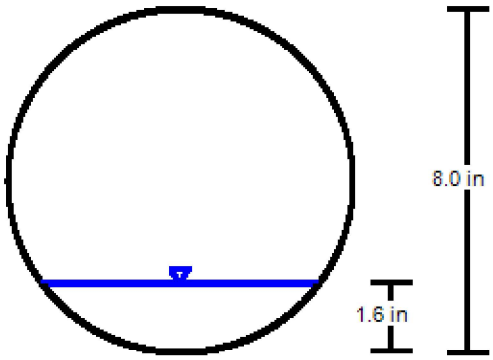
GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Average End Depth Over Rise	0.0 %
Normal Depth Over Rise	20.3 %
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	1.6 in
Critical Depth	2.1 in
Channel Slope	0.010 ft/ft
Critical Slope	0.004 ft/ft

Cross Section for Proposed 8 in PHD

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.010
Channel Slope	0.010 ft/ft
Normal Depth	1.6 in
Diameter	8.0 in
Discharge	0.14 cfs



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H: 1

TENTATIVE MAP FOR
COMMON OPEN SPACE DEVELOPMENT
SILVER CREST CONDOMINIUMS

150 EAST ROLAND STREET
CARSON CITY, NEVADA 89701
APN 009-197-02

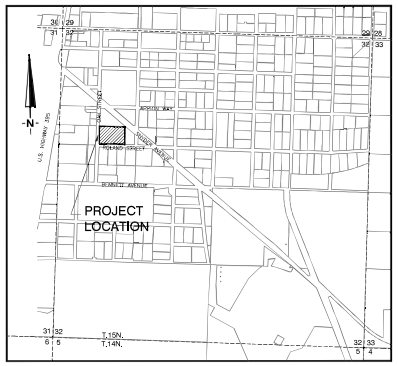
ABBREVIATIONS

(SOME ABBREVIATIONS LISTED BELOW MAY NOT BE INCLUDED IN THIS PLAN SET)

A.B.	AGGREGATE BASE
AC	ASPHALT CEMENT CONCRETE
AP	ANGLE POINT
APPROX	APPROXIMATE
BC	BEGIN CURVE
BLDG	BUILDING
BM	BENCH MARK
BW	BACK OF SIDEWALK
CB	CATCH BASIN
C&G	CURB AND GUTTER
CL	CENTER LINE
CMP	CORRUGATED METAL PIPE
CY	CUBIC YARD
DI	DROP INLET
DIA	DIAMETER
E	ELECTRIC
EA	EACH
EOP	EDGE OF AC PAVEMENT
EC	END CURVE
EL	ELEVATION
EX.	EXISTING
FF	FINISH FLOOR ELEVATION
FG	FINISH GRADE
FH	FIRE HYDRANT
FL	FLOW LINE
G	GAS
GB	GRADE BREAK
GV	GATE VALVE
IE	INVERT ELEVATION
LF	LINEAR FOOT
MAX	MAXIMUM
MIN	MINIMUM
NDOT	NEVADA DEPARTMENT OF TRANSPORTATION
NTS	NOT TO SCALE
PCC	PORTLAND CEMENT CONCRETE
PE	POLYETHYLENE
PP	POWER POLE
PUE	PUBLIC UTILITY EASEMENT
PVC	POLYVINYL CHLORIDE
R	RADIUS
RCP	REINFORCED CONCRETE PIPE
SD	STORM DRAIN
SS	SANITARY SEWER
SSCO	SANITARY SEWER CLEANOUT
SSMH	SANITARY SEWER MANHOLE
STA	STATION
TBC	TOP BACK OF CURB
TYP	TYPICAL
W	WATER
WM	WATER METER
%	PERCENT

LEGEND

- EX. PROPERTY LINE
- CENTER LINE OF ROADWAY
- EX. WATER LINE
- EX. SANITARY SEWER
- EX. GAS
- EX. FIRE HYDRANT
- EX. POWER POLE
- EX. SANITARY SEWER MANHOLE
- EX. EDGE OF PAVEMENT
- EX. CONTOUR
- PROPOSED PRIVATE WATER
- PROPOSED GAS
- PROPOSED PRIVATE SANITARY SEWER
- PROPOSED FIRE HYDRANT
- PROPOSED SANITARY SEWER MANHOLE
- PROPOSED CURB & GUTTER
- PROPOSED FLOWLINE
- PROPOSED PCC CONCRETE



LOCATED WITHIN SECTION 32, T.15N., R.20E., M.D.M.

VICINITY MAP

NOT TO SCALE

SHEET INDEX

OWNER

TERAMONT, LLC
CONTACT: ROGER REMPFER,
MANAGING MEMEBER
15155 REDMOND LOOP
RENO, NEVADA 89511
(530) 448-6210

ENGINEER

RESOURCE CONCEPTS, INC.
CONTACT: RACHEL D. KRYDER, P.E.
340 NORTH MINNESOTA STREET
CARSON CITY, NEVADA 89703
(775) 883-1600

BASIS OF BEARINGS

THE BASIS OF BEARINGS IS BASED OF THIS SURVEY IS THE NEVADA STATE PLANE COORDINATE SYSTEM, WEST ZONE NAD 83/94 SCALED TO GROUND AROUND 0.00N, 0.00E BY THE COMBINED SCALE FACTOR OF 1.00020000 AND AS REFERENCED TO THE RECORD OF SURVEY OF THE 2010 CARSON CITY CONTROL NETWORK, RECORD OF SURVEY NO. 2744, FILED FOR RECORD AUGUST 11, 2010 IN THE OFFICE OF THE CARSON CITY RECORDER AS FILE NO 403435.

BASIS OF ELEVATION

CARSON CITY CONTROL POINT CC035 (05/31/16), ELEVATION 4775.67'.

PROJECT DATA

ASSESSORS PARCEL NUMBER:	009-197-02
TOTAL SITE AREA:	2.990 ACRES (130,244 S.F.)
TOTAL CONDOMINIUM UNITS:	51 UNITS - 17.1 UNITS PER ACRE
PARKING SPACES (GARAGE):	102
PARKING SPACES (GUEST):	20
MASTER PLAN DESIGNATION:	HIGH DENSITY RESIDENTIAL
CURRENT ZONING:	MFA
FEMA FLOOD HAZARD ZONE:	X (UNSHADED)

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Resources • Environmental Services
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Carson City, NV 89703-4152
775-883-1600
Lake Tahoe
276 Kingsbury Grade, Ste. 206
Stateline, NV 89449
775-588-2600
Resource Concepts Inc.

DATE

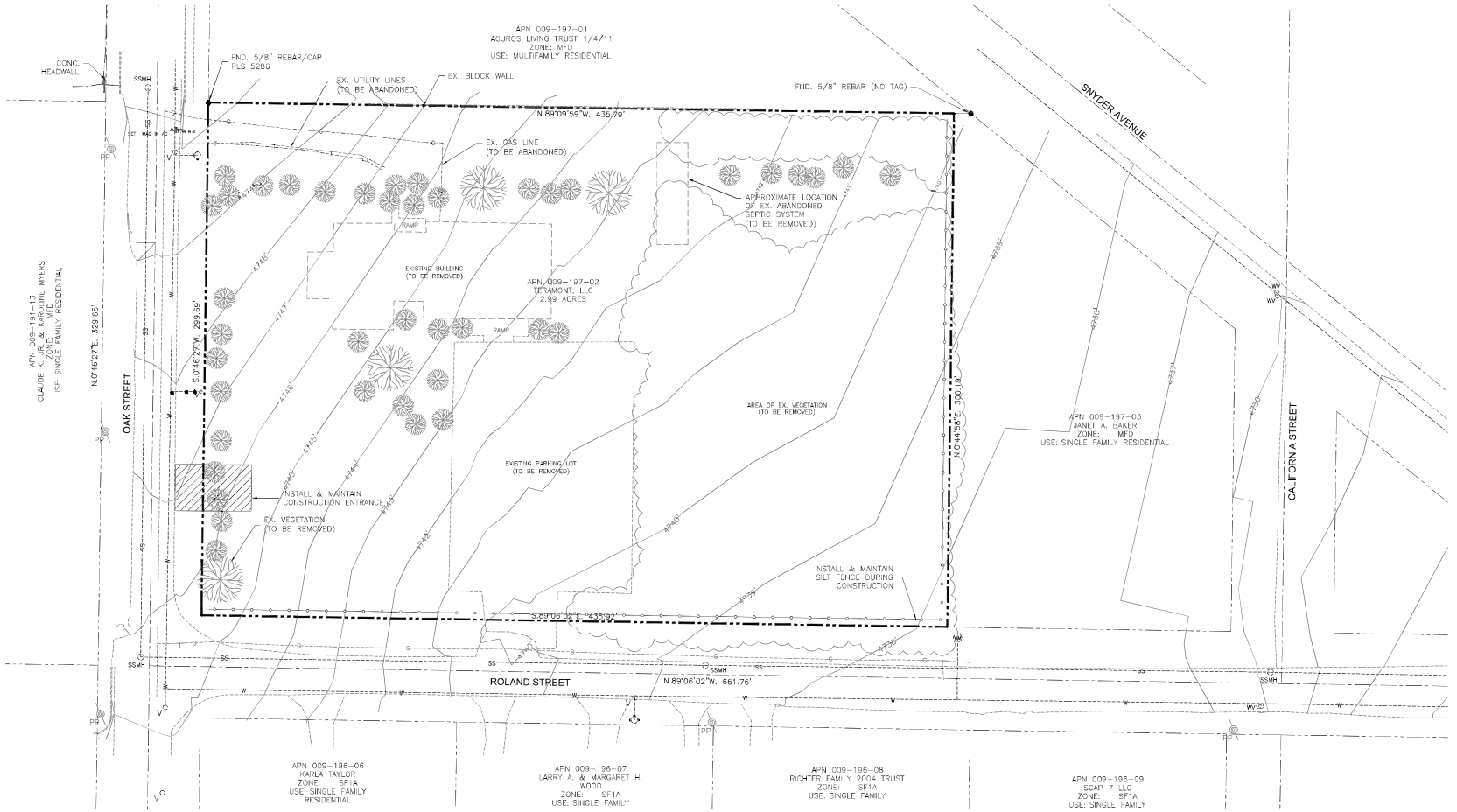
REVISION

TENTATIVE MAP
Silver Crest Condominiums
Carson City, Nevada

Title Sheet

RACHEL D. KRYDER (EXP. 06/30/21) CIVIL No. 21313
7-18-19

JOB NO.:	19-205.3
DATE:	7-18-19
DESIGNED:	RDK
DRAWN:	MLM
CHECKED:	RDK



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REVISION	DATE

TENTATIVE MAP
Silver Crest Condominiums
Carson City, Nevada

Existing Site Plan & Erosion Control

RACHEL D. KRYDER
EXP. 06/30/21
CIVIL
No. 21313
STATE OF NEVADA
REGISTERED PROFESSIONAL ENGINEER
7-18-19

JOB NO.:	19-205.3
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NOTE:
FINISH FLOOR ELEVATIONS AND STREET GRADES SHOWN ARE APPROXIMATE AND ARE SUBJECT TO CHANGE DURING CIVIL SITE DESIGN.

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TENTATIVE MAP
Silver Crest Condominiums
Carson City, Nevada

Proposed Site Plan & Open Space Plan

RACHEL D. KRYDER
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CIVIL
No. 21313
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NOTES:

1. ONSITE POWER TO BE UNDERGROUND AND CONNECT TO OVERHEAD POWER ON OAK STREET. ALL POWER WILL BE COORDINATED WITH NV ENERGY.

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TENTATIVE MAP
Silver Crest Condominiums
Carson City, Nevada

Proposed Utility Plan

RACHEL D. KRYDER
EXP. 06/30/21
CIVIL
No. 21313
STATE OF NEVADA
7-18-19

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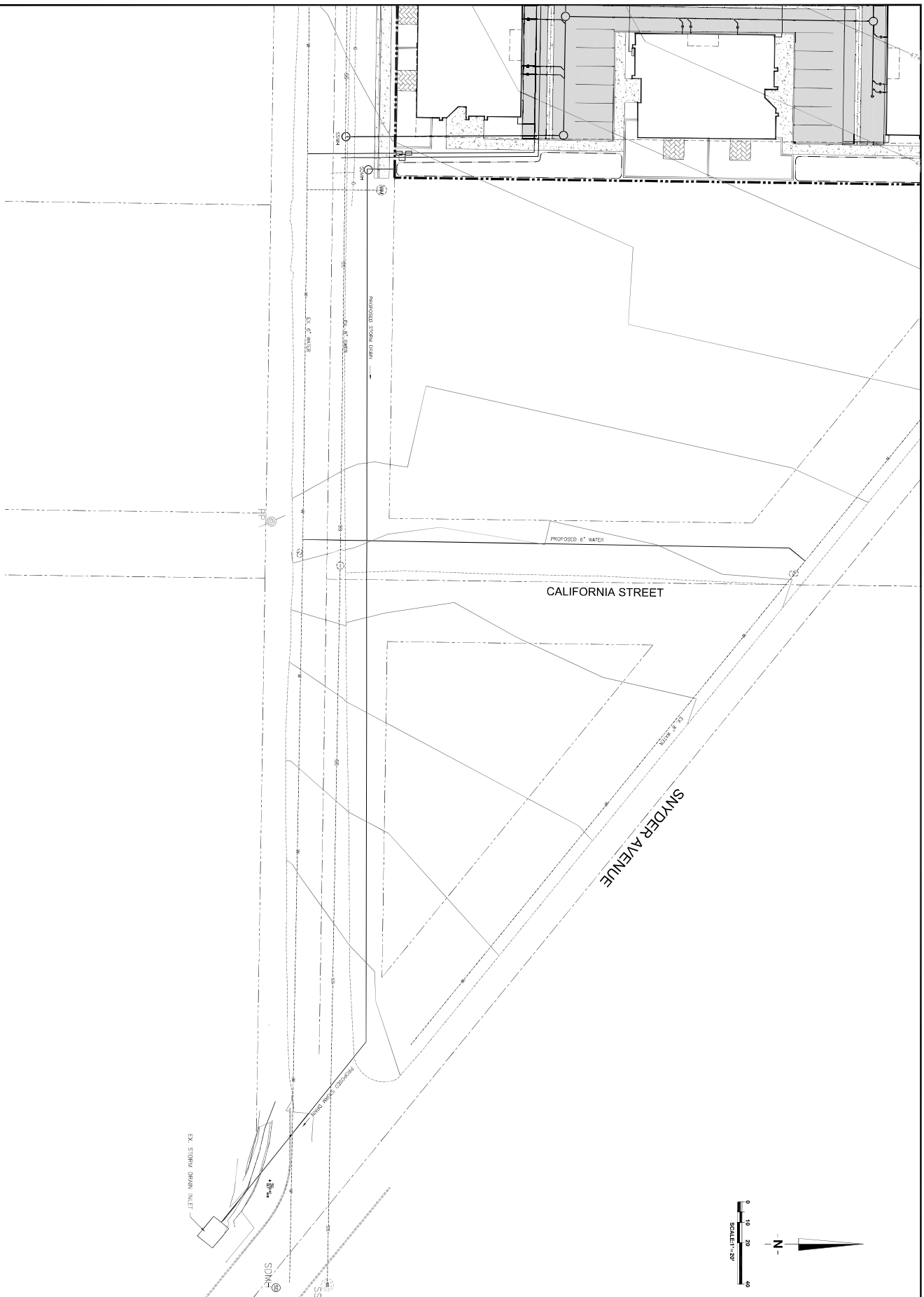

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Sheet 5 of 6

7-18-19

RACHEL D. KRYDER
CIVIL
No. 09730
STATE OF NEVADA
REGISTERED PROFESSIONAL ENGINEER

TENTATIVE MAP
Silver Crest Condominiums
Carson City, Nevada

Proposed Off-Site Utility Plan

REVISION	DATE

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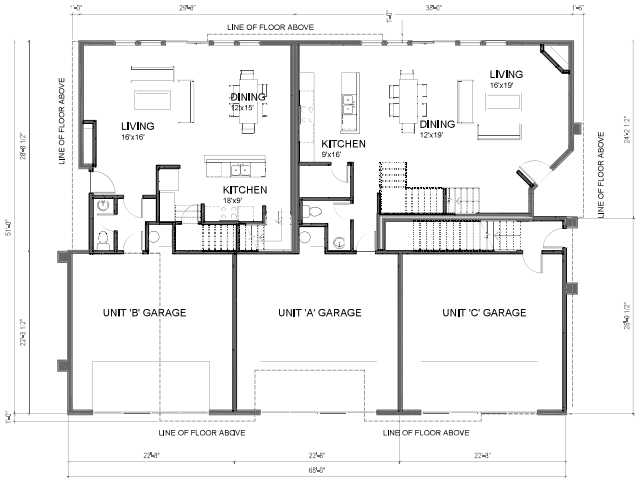
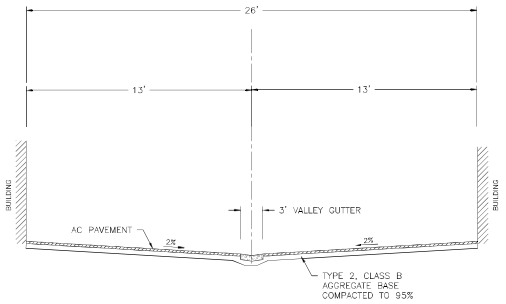
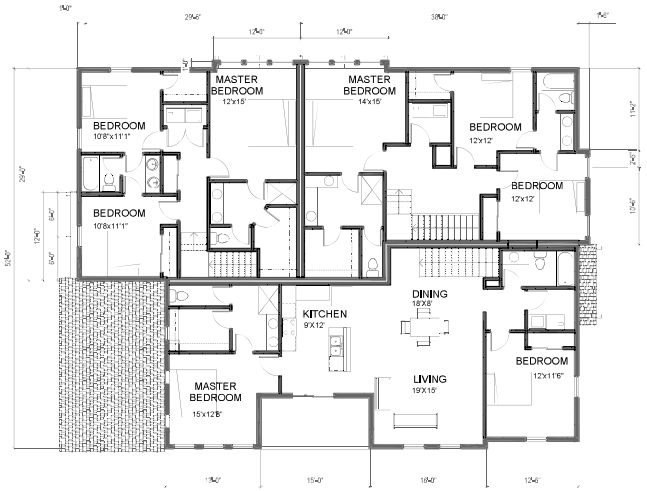
775-588-7500



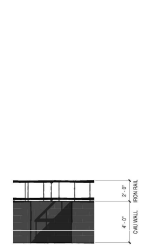
TYPICAL CONDO UNIT LAYOUT
FIRST FLOOR
NO SCALE



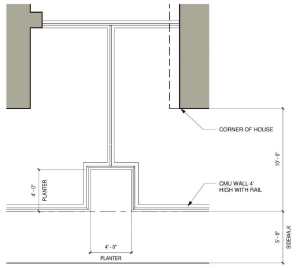
TYPICAL INTERIOR STREET SECTION
NO SCALE



TYPICAL CONDO UNIT LAYOUT
SECOND FLOOR
NO SCALE



(2) Fence Elevation



(1) Fence - Planting Detail

Frame ARCHITECTURE, INC
4000 South McCarran Blvd, Unit E
Reno, NV 89502 (775) 827-9527

RM 3461//Roland Street Condominiums/Revit design 2f.rvt
7/16/2019 4:42:16 PM

Fence / Railing Elevation

ROLAND STREET TOWNHOMES

07-16-2019

A9

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TENTATIVE MAP
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Detail Sheet

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