



N E V A D A

AGENDA

Regular Meeting

Planning Commission

Wednesday, December 14, 2022 • 5:00 PM

Members

Barry Williams Sr. - Chairman
Cody Wagner - Vice Chair
Jan Hodges - Commissioner
Humayoon Lodhi - Commissioner
Angela Lewis - Commissioner
Shellie Severa - Commissioner
Jenni McCullar - Commissioner

Fernley City Council Chambers, 595 Silver Lace Boulevard, Fernley, NV 89408

Zoom information:

Please click the following link to join the webinar: <https://us02web.zoom.us/j/82966343247>, or one tap/mobile: 12532158782, Dial: 669 900 9128, Webinar ID: 829 6634 3247

Public Notice: This agenda has been physically posted in compliance with 241.020 at Fernley City Hall, 595 Silver Lace Blvd. In addition, this agenda has been electronically posted in compliance with NRS 241.020(3) at www.cityoffernley.org and NRS 232.2175 at <https://notice.nv.gov/>. To obtain further documentation regarding posting, please contact the City Clerk's Office at (775) 784-9830 or cityclerk@cityoffernley.org

Public Comment: Those wishing to address the Planning Commission may submit public comment through the online public comment form found at <https://www.cityoffernley.org/forms>, or by sending an email to cityclerk@cityoffernley.org. Comments received prior to 4:00 pm the day of the meeting will be provided to City Council and added to the record but will not be read during the live meeting. Public comments received after 4 pm the day of the meeting will be included in the record but may not reach commissioners before action is taken. Public comment, whether on action items or public comment, is limited to three (3) minutes per person. Unused time may not be reserved by the speaker, nor allocated to another speaker. The public may comment on any matter that is not specifically included on an agenda as an action item or comment on a specific agenda item. Items not included on the agenda cannot be acted upon other than to place them on a future agenda. Additionally, if you wish you can comment in person at the meeting or use the Raise your Hand feature in Zoom (*9 if you are participating via phone).

Accommodations: Planning Commission and staff will make reasonable efforts to assist and accommodate individuals with disabilities desiring to attend the meeting. Please contact the City Clerk's Office at (775) 784-9830 in advance so that arrangements can be made.

Supporting Material: Staff reports and supporting material for the meeting are available at the City Clerk's Office, and on the City's website at www.cityoffernley.org. Pursuant to NRS 241.020(6), supporting material is made available to the general public at the same time it is provided to the Planning Commission.

Order of Business: The presiding officer shall determine the order of the agenda. The Fernley Planning Commission may combine two or more agenda items for consideration; remove an item from the agenda; or delay discussion relating to an item on the agenda at any time. All items are action items unless otherwise noted. Items scheduled to be heard at a specific time will be heard no earlier than the stated time but may be heard later.

1. INTRODUCTORY ITEMS

1.1. Roll Call

1.2. Public Forum

1.3. (For Possible Action) Approval of Agenda

1.4. (Possible Action) Approval of Minutes

2. PUBLIC HEARINGS

2.1. (For Possible Action) Consideration of a type 1 vacation request (T1V22002) by 290 Logan, LLC to abandon the public street right of way known as “Shinook Court”, located at approximately 290 Logan Lane (APNs: 021-071-37, 021-071-38, 021-071-39, and 021-071-40) to facilitate development of a project with the working title of Logan Lane Commercial.

2.2. (For Possible Action) Consideration and possible action on a zoning map amendment (ZMA22009) and conditional use permit request (CUP22004) to change the zoning designation of a ±20.80-acre project site located at approximately 501 River Ranch Road (APNs: 021-281-03, 021-281-04, 021-281-09, and 021-281-10) from ±15.13-acres Industrial (I), ±3.67-acres Employment Center (EC), and ±2.00-acres General Commercial (C2) to Mixed Use (MU) to facilitate the construction of a 320-unit multi-family project called River Ranch Apartments, by request of ERGS, Inc.

2.3. (For Possible Action) Consideration and possible action on a type 1 vacation request (T1VAC22001) by Phelps Engineering Services, Inc. to abandon the public street right of way known as “Delores Court”, generally located north of Fremont Street between Vine Street and Wildwood Street (APNs: 021-092-46, 021-092-47, 021-092-54, and 021-092-55) to facilitate the development of a project called Sherwood Villages.

3. CHAIR AND COMMISSION ITEMS

(SUMMARY OR ACTIVITY REPORTS ON PLANNING ISSUES, ACTIVITIES OR ORGANIZATIONS IN WHICH INDIVIDUAL MEMBERS MAY BE INVOLVED. THIS ITEM IS TO PROVIDE GENERAL INFORMATION TO THE COMMISSION AND PUBLIC. NO DISCUSSION SHALL TAKE PLACE AND NO ACTION WILL BE TAKEN.)

4. PLANNING DIRECTOR ITEMS

(ACTIVITY SUMMARY OR UPDATES ON PROJECTS THAT HAVE BEEN PREVIOUSLY REVIEWED BY THE PLANNING COMMISSION. THIS ITEM IS TO PROVIDE GENERAL INFORMATION TO THE COMMISSION AND PUBLIC. NO DISCUSSION SHALL TAKE PLACE AND NO ACTION WILL BE TAKEN.)

5. ADDRESS REQUEST(S) FOR FUTURE AGENDA ITEMS

6. PUBLIC FORUM

7. ADJOURNMENT

Next Meeting: January 11, 2023

**MINUTES OF THE
FERNLEY PLANNING COMMISSION MEETING
NOVEMBER 9, 2022**

Planning Commission Chair Williams called the meeting to order at 5:00 PM

1. INTRODUCTORY ITEMS

1.1. Roll Call

Present: Planning Commissioner Hodges, Planning Commission Chairman Williams, Planning Commissioner Lewis, Planning Commission Vice-Chair Wagner, Planning Commissioner Lodhi, Planning Commissioner McCullar, City Attorney Brandi Jensen, Associate Planner Shay League, Development Services Coordinator Alex Lopez-Martinez, Deputy City Manager Lydia Altick, City Engineer Derek Starkey, Deputy City Clerk Brenda Gosser, and Administrative Specialist Bailie Scott. **Absent:** Planning Commissioner Severa.

1.2. Public Forum

Planning Commission Chair Williams opened the public forum.

No comments were provided at this time.

Planning Commission Chair Williams closed the public forum.

1.3. (For Possible Action) Approval of Agenda

Associate Planner Shay League requested that item 4 be heard before item 2.

Motion: Approve. **Action:** MOVE TO APPROVE THE NOVEMBER 9, 2022 PLANNING COMMISSION AGENDA WITH ITEM 4 TAKING PLACE AFTER ITEM 1, **Moved by:** Planning Commissioner Lodhi, **Seconded by:** Planning Commissioner Hodges. **Vote:** Passed, **Summary:** Yes 6, No 0, Abstained 0, Absent 1. **Yes:** Planning Commission Chairman Williams, Planning Commissioner Hodges, Planning Commissioner McCullar, Planning Commissioner Lewis, Planning Commission Vice-Chair Wagner, Planning Commissioner Lodhi, **No:** None, **Absent:** Planning Commissioner Severa, **Abstain:** None.

1.4. (For Possible Action) Approval of Minutes

Motion: Approve. **Action:** MOVE TO APPROVE OCTOBER 9, 2022 PLANNING COMMISSION MINUTES, **Moved by:** Planning Commissioner Lodhi, **Seconded by:** Planning Commissioner Hodges. **Vote:** Passed, **Summary:** Yes 5, No 0, Abstained 1, Absent 1. **Yes:** Planning Commission Chairman Williams, Planning Commissioner Hodges, Planning Commissioner McCullar, Planning Commission Vice-Chair Wagner, Planning Commissioner Lodhi, **No:** None, **Absent:** Planning Commissioner Severa, **Abstain:** Planning Commissioner Angela Lewis.

2. PUBLIC HEARINGS

2.1. Public Hearing, DA22002 – Development Amendment for Sherwood Villages

Discussion and possible action authorizing the City of Fernley to enter into a Development Agreement (DA22002) with Fernley Sherwood QOZB, LLC regarding the details of 316 multi-family residential units on a site ±26.25-acres in size and generally located north of Fremont Street, south of US Interstate 80, west of Wildwood Drive, and east of Vine Street, Fernley, NV (APNs: 021-092-23, 021-092-26, 021-092-27, 021-092-46, 021-092-47, 021-092-54, and 021-092-55).

Associate Planner Shay League provided an overview of the project. She stated that a zoning map amendment and a conditional use permit have already been approved for this item. This site has been rezoned to medium density residential, 14 dwelling units per acre. A maximum of 320 multi-family residential units has been approved. The Planning Commission voted to extend this item's conditional use permit which will expire May 12, 2023 and cannot be renewed.

The primary purpose of the development agreement is to establish 3 distinct phases of construction for this project. This will allow the developer to complete civil improvements throughout the construction of the project instead of requiring the civil improvements to be bonded or completed before the final map can be completed. The developer has agreed to put in curb, gutter, and sidewalk on both sides of Fremont Street, from the western boundary of their property to the end of the residential section at Arrow Street.

Planning Commissioner Hodges had concerns regarding the 3-story dwellings being on the outer perimeter of the project.

Matt Hurley, QOZB, the applicant's representative, stated that the 2-story buildings will be on the outside perimeter and the 3-story buildings have been moved to the middle. He stated the black top would be completed during phase 1. The right of way access for the sidewalk will need to be acquired from individual property owners. This does not prevent access for emergency vehicles to get through.

Planning Commissioner Wagner had concerns about not requiring the developer to acquire the 60' right of way before they are issued a building permit. If the Fremont Street improvements to HWY 95A are not complete, the developer will be responsible for the improvements or the amount that it will cost for the improvements.

Garret Gordon, Legal Counsel for the applicant, wanted to thank the City Attorney for a balanced agreement. He stated that the applicant has reached out to many property owners and was moving forward with acquisitions from property owners.

Motion: Approve. **Action:** MOVE TO APPROVE AND FORWARD A RECOMMENDATION OF APPROVAL TO CITY COUNCIL TO ENTER INTO A DEVELOPMENT AGREEMENT ASSOCIATED WITH DA22002 BASED ON THE ANALYSIS AND FINDINGS AS LISTED IN THE STAFF REPORT, **Moved by:** Planning Commissioner Lodhi, **Seconded by:** Planning Commissioner Hodges. **Vote:** Passed, **Summary:** Yes 5, No 1, Abstained 0, Absent 1. **Yes:** Planning Commission Chairman Williams, Planning Commissioner Hodges, Planning Commissioner McCullar, Planning Commissioner Lewis, Planning Commissioner Lodhi, **No:** Planning Commission Vice-Chair Wagner, **Absent:** Planning Commissioner Severa, **Abstain:** None.

2.2. Public Hearing, DA22003 – Clements Ranch (FOR POSSIBLE ACTION)

Discussion and possible action authorizing the City of Fernley to enter into a Development Agreement (DA22003) with Clements Family 1992 Trust to enter into a Development Agreement on a 83.90 acre parcel. The DA is associated with Master Plan Amendment MPA22003 and Zoning Map Amendment ZMA22008.

Associate Planner Shay League provided an overview of the project. She stated that in July of this year a master plan amendment and a zoning map amendment were submitted to the City of Fernley for this property. The property is currently zoned rural residential with a minimum of 1 acre with a

land use of single family residential. The applicant is proposing certain buffering standards along the east and west sides of the property lines which are adjacent to the existing subdivisions. Since the Master plan and zoning map amendment cannot be conditioned, the applicant is proposing a development agreement to provide assurance that buffering standards can be enforced going forward.

The proposed development agreement ensures that the proposed zoning will be compatible with the surrounding areas.

Derek Kirkland, Wood Rogers, the applicant's representative, provided an overview of the project.

Motion: Approve. **Action:** MOVE TO APPROVE AND FORWARD A RECOMMENDATION OF APPROVAL TO CITY COUNCIL TO ENTER INTO A DEVELOPMENT AGREEMENT ASSOCIATED WITH DA22002 BASED ON THE ANALYSIS AND FINDINGS AS LISTED IN THE STAFF REPORT, **Moved by:** Planning Commissioner Hodges, **Seconded by:** Planning Commissioner Lodhi. **Vote:** Passed, **Summary:** Yes 5, No 1, Abstained 0, Absent 1. **Yes:** Planning Commission Chairman Williams, Planning Commissioner Hodges, Planning Commissioner McCullar, Planning Commission Vice-Chair Wagner, Planning Commissioner Lodhi, **No:** Planning Commissioner Lewis, **Absent:** Planning Commissioner Severa, **Abstain:** None.

2.3. Public Hearing, TSM22007 - Tentative Subdivision Map for Duets at Red Hawk Ranch
Consideration and possible action on a Tentative Subdivision Map request to allow for the development of a 282 lot single-family attached subdivision named "Duets at Red Hawk Ranch" on a site ±31.15 acres in size and generally located at the southwest corner of the Miller Lane and Main Street intersection (APN: 021-041-09) by request of Paradiso Communities.

Associate Planner Shay League provided an overview of the project. She stated that this item is located at the southwest corner of the Miller and Main Street intersection. Previously the Planning Commission recommended disapproval of the zoning map amendment for this item. The City Council approved the zoning map amendment in September. The applicant requested a deviation from the City's design standards to accommodate duplexes. The tentative map was presented to the Commissioners. The developer offered to create CC&Rs, which would create a HOA. The HOA would maintain common areas, the exterior portion of the buildings, the exterior fencing, and all of the landscaping including homeowners' front yards. The City of Fernley will be named as a third party beneficiary. This will allow for the City to step in if the landscaping is not being maintained.

Derek Kirkland, Wood Rogers, the applicant's representative, provided an overview of the project. The Red Hawk Ranch owners and Paradiso have been working together to coordinate civil improvements.

Motion: Approve. **Action:** MOVE TO APPROVE AND FORWARD A RECOMMENDATION OF APPROVAL TO THE CITY COUNCIL FOR TSM22007 BASED ON FINDINGS TM1 THROUGH TM11 AND THE FACTS SUPPORTING THE CRITERIA AS SET FORTH IN THE STAFF REPORT AND SUBJECT TO CONDITIONS OF APPROVAL 1 THROUGH 33 AS LISTED IN THE STAFF REPORT, **Moved by:** Planning Commissioner Lewis, **Seconded by:** Planning Commissioner Lodhi. **Vote:** Passed, **Summary:** Yes 6, No 0, Abstained 0, Absent 1. **Yes:** Planning Commission Chairman Williams, Planning Commissioner Hodges, Planning Commissioner McCullar, Planning Commissioner Lewis, Planning Commission Vice-Chair Wagner, Planning Commissioner Lodhi, **No:** None, **Absent:** Planning Commissioner Severa, **Abstain:** None.

3. CHAIR AND COMMISSION ITEMS

City Attorney Brandi Jensen informed the commissioners that three separate trainings will be held on December 21st, Jan 4, and Jan 18th at 4:00 PM.

4. PLANNING ITEMS

This item was heard after item 1.4.

Associate Planner Shay League stated that all 3 of the public hearings have been updated since the time they were posted. All of the commissioners have received a copy of the updated documents.

Item 2.2 will be presented by Shaveta Sharma, a consultant with 4 Leaf.

Staff noticed for a vacation regarding Chinook Court for the Logan Lane commercial project that was to take place this evening. Staff will be noticing again for next meeting, and the item will be heard at that time.

Lydia Altick was hired as the City's Deputy City Manager. She stated that she would be taking on the Planning Director duties until the position has been filled.

5. ADDRESS REQUEST(S) FOR FUTURE AGENDA ITEMS

There were none.

6. PUBLIC FORUM

Planning Commission Chair Williams opened a public forum.

There were no comments at that time.

Planning Commission Chair Williams closed the public forum.

7. ADJOURNMENT

There being no further business to come before it, the Fernley Planning Commission meeting adjourned at 06:12 PM.

Approved by the Fernley Planning Commission on December 14, 2022, by a vote of:

AYES _____ NAYS: _____ ABSTENTIONS: _____ ABSENT: _____

PLANNING COMMISSION CHAIR BARRY WILLIAMS

ATTEST:



CITY OF FERNLEY

Planning Commission AGENDA REPORT

Meeting Date: December 14, 2022

REPORT TO: Fernley Planning Commission

REPORT FROM: Shay League

FINANCIAL IMPACT:

Yes: No: X

CURRENTLY BUDGETED:

Yes: No: X

FUND/ACCOUNT:

N/A

ACTION REQUESTED: Motion

AGENDA ITEM: (For Possible Action):

(For Possible Action) Consideration of a type 1 vacation request (T1V22002) by 290 Logan, LLC to abandon the public street right of way known as "Shinook Court", located at approximately 290 Logan Lane (APNs: 021-071-37, 021-071-38, 021-071-39, and 021-071-40) to facilitate development of a project with the working title of Logan Lane Commercial.

AGENDA ITEM BRIEF:

This is a type of application that this body of the planning commission has not seen before. A type 1 vacation is a request for the City of Fernley to vacate or abandon any public street. In this instance, the right-of-way was dedicated to construct a public street in preparation for a planned development; however, the street was never actually constructed. The applicant wishes to build a different type of development on these parcels that will not require a public street and asks that we abandon the right-of-way that was previously dedicated to us.

RECOMMENDED MOTION:

"I move to recommend the City Council approve the type 1 vacation request associated with T1V22002".

BUSINESS IMPACT (per NRS Chapter 237):

A Business Impact Statement is not required because this is not a rule (term excludes vehicles by which legislative powers are exercised under NRS Chapters 271, 278, 278A, or 278B).

See attached report for background, analysis, alternatives.

ALTERNATIVES:

All motions appropriate in accordance with City of Fernley Planning Commission parliamentary procedure are possible, to include: tabling, denial, approval with conditions, and so forth.

BACKGROUND:

In 2007, Sandbank Properties II LLC created this vacation as part of an industrial subdivision map intended to support a project known as Logan Lane Commercial Development. The project was never constructed and Sanbank Properties sold all six parcels created by the industrial subdivision map to 290 Logan LLC in December of 2021. 290 Logan LLC (the applicant) has filed another application to re-unite all six parcels into one large parcel. As part of re-uniting those parcels, this application requests that City of Fernley fully abandon the right-of-way that was initially dedicated to create a public street, called "Shinook Court", in between the subdivided parcels. Because the applicant intends to build on just one large parcel, they no longer need a public street.

Analysis:

Of the approval criteria for this type of vacation, City of Fernley Municipal Code, Section 32.03.080 (a) (4) states "If, upon public hearing, the planning commission is satisfied that the public will not be materially injured by the proposed vacation, it shall recommend the application be approved." All parcels adjacent to this right-of-way are undeveloped and owned by the applicant. Staff has found no indication of material injury to the public, and recommends approval if no evidence of material injury to the public is presented during the public hearing.

RELEVANT LAWS, STATUTES, AND REGULATIONS:

Nevada Revised Statutes Chapter 278 - Planning and Zoning

Fernley Municipal Code, Title 32 - Development Code

Specific Reference:

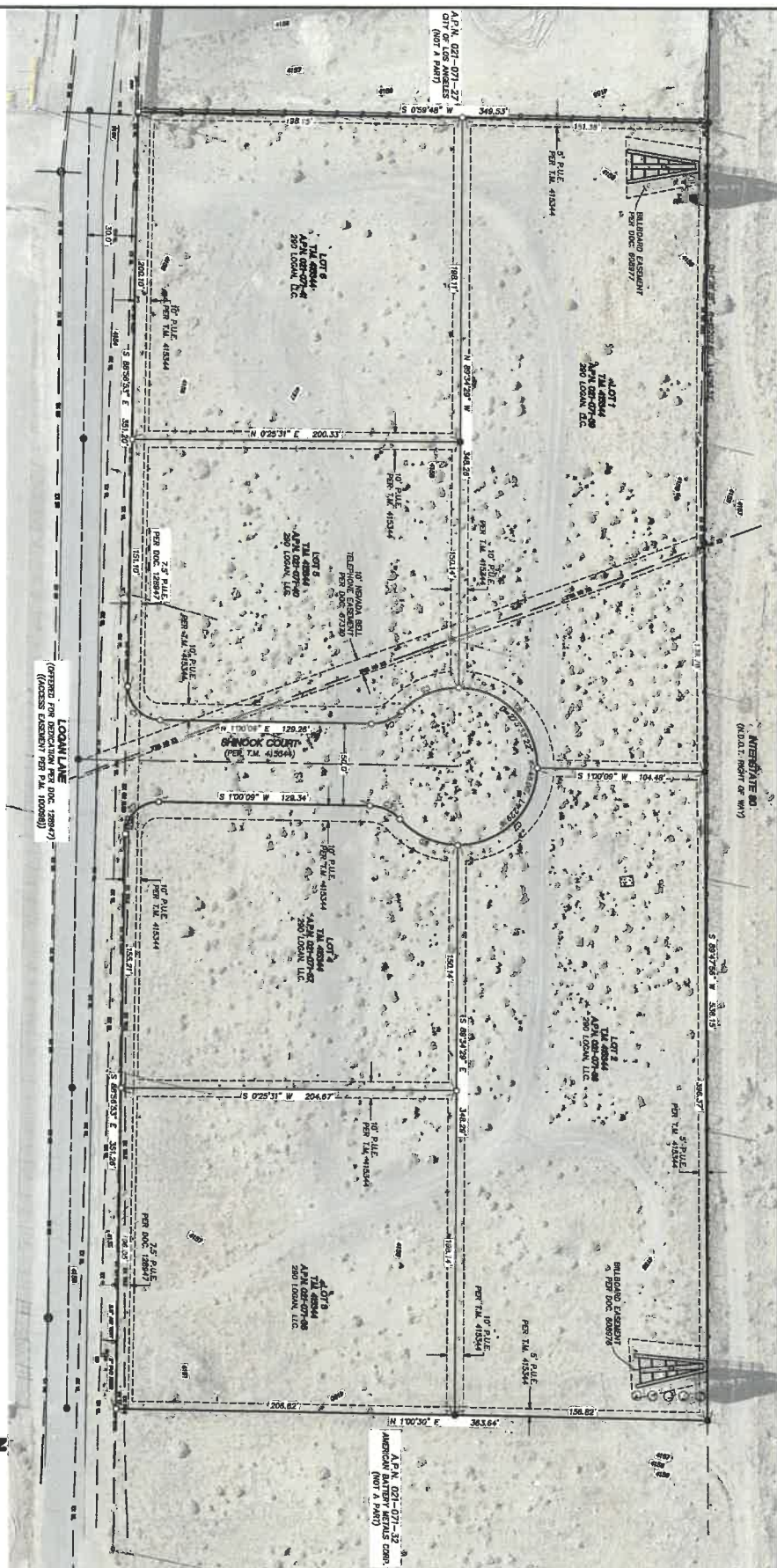
- Section 32.03.080 (a) - Vacations, Type I vacations

FINANCIAL IMPLICATIONS:

N/A

ATTACHMENTS:

1. Existing Site Plan
2. Proposed Order of Abandonment



LEGEND:

- | | | | | | | | | | | | | | | | | | | | | | | | |
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BASIS OF BEARINGS:

NEVADA STATE PLANE COORDINATE SYSTEM OF 1983. WEST ZONE, NAD 83/84. DISTANCES SHOWN ARE GROUND DISTANCES USING A PROJECT COMBINED GRID TO GROUND SCALE FACTOR OF 1.00024500.

BASIS OF ELEVATIONS:

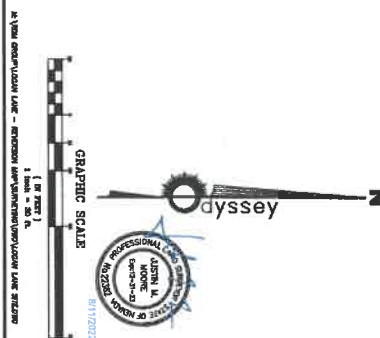
DATE: MAY 05
PROJECT BENCHMARK = N.D.Q.T. CONSTRUCTION CONTROL POINT
NO. 11300174, HAVING AN ELEVATION OF 4157.48'

SITE INFORMATION:

A.P.N. 021-071-35, & 41
2901, 2800 LANE
PERNEY, NEVADA
LOT 1, 6 - T.M. 415344

A.P.N. 021-071-37, 38, 39, & 40
603, 615, 620, 600 SHIMOOK COUR
PERNEY, NEVADA
LOT 1, 2, 4, 5 - T.M. 415344

CURVE TABLE		
CURVE #	DELTA	RADIUS
C1	80°02'58"	20.00'
C2	89°57'02"	20.00'
C3	48°46'11"	25.00'
C4	48°46'11"	25.00'



RDM GROUP, LLC
EXISTING CONDITIONS
SITE PLAN
LYON COUNTY

DATE: AUGUST 2022
DRAWN BY: B.D.M.
DESIGNED BY: J.M.M./B.
CHECKED BY: J.M.M.

[illegible]

APN: None

Adjacent APN's: 021-071-37, 021-071-38,
021-071-39, & 021-071-40

Recording requested by:
When recorded, return to:
City of Fernley
595 Silver Lace Blvd.
Fernley, NV 89408

Mail Tax Statement to:
290 Logan, LLC.
1 International Blvd, Suite 410
Mahwah, NJ 07495

Notice: Per NRS 239B.030, this document does not contain personal information as defined in
NRS 603A.040

ORDER OF ABANDONMENT
Shinook Court per Subdivision Tract Map No. 415344

WHEREAS:

- A. A petition to vacate or abandon portions of a public right-of-way was filed with the City Clerk of the City of Fernley by the owner of all the real property containing the road offer of dedication further described in Exhibit "A" and graphically shown on Exhibit "B";
- B. A duly noticed public hearing was held by the City Council for the City of Fernley on _____, 2022, for the purposes of considering the proposed vacation and abandonment, and it was duly moved, seconded, and passed by the City Council of the City of Fernley that the public road offer of dedication described in Exhibit "A", and graphically shown on Exhibit "B", be vacated and abandoned;
- C. Based on the information received in the written staff report and at the public hearing, this Council finds that the abandonment will not result in a material injury to the public;

NOW THEREFORE, IT IS HEREBY ORDERED by the City Council of the City of Fernley

1. That the public right-of-way more particularly described in Exhibit "A", and graphically shown on Exhibit "B", hereto VACATED and ABANDONED pursuant to the laws of the State of Nevada and title to said property shall revert and vest in the abutting property owner. Abutting properties owner being 290 Logan, LLC., owner of Lots 1, 2, 4, and 5, as shown on the Official Plat for Logan Lane Commercial Development, filed in the Office of the County Recorder of Lyon County, State of Nevada, on October 16, 2007, as File No. 415344, Official Records; also known as APNs: 021-071-37, 021-071-38, 021-071-39, & 021-071-40.

RESERVING THEREFROM, over, under, across and through the abandoned area, a blanket public utilities and access easement for the benefit of all public utilities for the operation, maintenance, repair, and reconstruction and upgrade of existing public utility facilities, and access thereto. Such easements are relocatable and resizable with future development and approval of the impacted utility and the City Engineer.

2. This Order shall be recorded in the County Record's office, Lyon County, Nevada.

DATED: This _____ day of _____, 2022.

City of Fernley, a municipal corporation

By _____
Roy Edgington Jr., Mayor

STATE OF NEVADA)
) SS Acknowledgement in a respective capacity
COUNTY OF LYON)

This Instrument was acknowledged before me on _____, 2022
By Roy Edgington Jr. as Mayor of the City of Fernley.

Notary Public

EXHIBIT A
LEGAL DESCRIPTION FOR ABANDONMENT OF SHINOOK COURT

All that certain real property situate within a portion of the Southeast Quarter (SE 1/4) of Section Eleven (11), Township Twenty (20) North, Range Twenty-four (24) East, Mount Diablo Meridian, City of Fernley, County of Lyon, State of Nevada, being all of the Shinook Court as shown on Tract Map No. 415344, recorded October 16, 2007, Official Records of Lyon County, Nevada, and being more particularly described as follows:

COMMENCING at the southwest corner of Lot 5 as shown on aforesaid Tract Map No. 415344 bears;

THENCE easterly coincident with the southerly line of said Lot 5, South 88°56'53" East, 151.10 feet to the southwest corner of aforesaid Shinook Court, said point also being the beginning of a tangent curve to the left, concave northwesterly, having a 20.00 foot radius, and further being the **POINT OF BEGINNING**;

THENCE coincident with the right-of-way of said Shinook Court the following seven (7) courses and distances:

- 1) 31.43 feet along the arc of said curve, through a central angle of 90°02'58",
- 2) North 01°00'09" East, 129.26 feet to the beginning of a tangent curve to the left, concave southwesterly, having a 25.00 foot radius,
- 3) 20.41 feet along the arc of said curve, through a central angle of 46°46'11" to a point of reverse curvature, having a 48.00 foot radius,
- 4) 229.16 feet along the arc of said curve, through a central angle of 273°32'22" to a point of reverse curvature, having a 25.00 foot radius,
- 5) 20.41 feet along the arc of said curve, through a central angle of 46°46'11",
- 6) South 01°00'09" West, 129.34 feet to the beginning of a tangent curve to the left, concave northeasterly, and having a 20.00 foot radius,
- 7) 31.40 feet along the arc of said curve, through a central angle of 89°57'02" to a point coincident with the northerly right of way of Logan Lane as shown on the Parcel Map for LBK & VW, recorded November 13, 1989, as File No. 128947, Official Records of Lyon County, Nevada,

THENCE westerly coincident with said northerly right of way of Logan Lane, North 88°56'53" West, 90.00 feet to the **POINT OF BEGINNING** and end of this description.

Containing 15,286 square feet of land, more or less.

SEE EXHIBIT "B" attached hereto and made a part hereof.

BASIS OF BEARINGS for this description is based on the Nevada State Plane Coordinate System of 1983, West Zone, NAD 83/94.

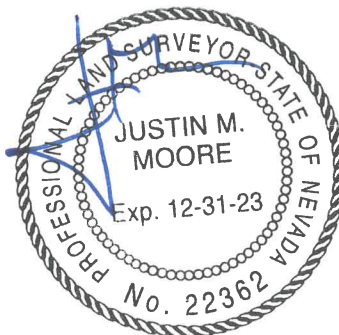
Prepared By:

ODYSSEY ENGINEERING, INC.

Justin M. Moore, P.L.S.

Nevada Certificate No. 22362

895 Roberta Lane, Suite 104, Sparks, NV 89431



CURVE TABLE			
CURVE #	DELTA	RADIUS	LENGTH
C1	90°02'58"	20.00'	31.43'
C2	46°46'11"	25.00'	20.41'
C3	46°46'11"	25.00'	20.41'
C4	89°57'02"	20.00'	31.40'

LOT 1 - T.M. 415344
A.P.N. 021-071-39
290 LOGAN, LLC.

LOT 2 - T.M. 415344
A.P.N. 021-071-38
290 LOGAN, LLC.

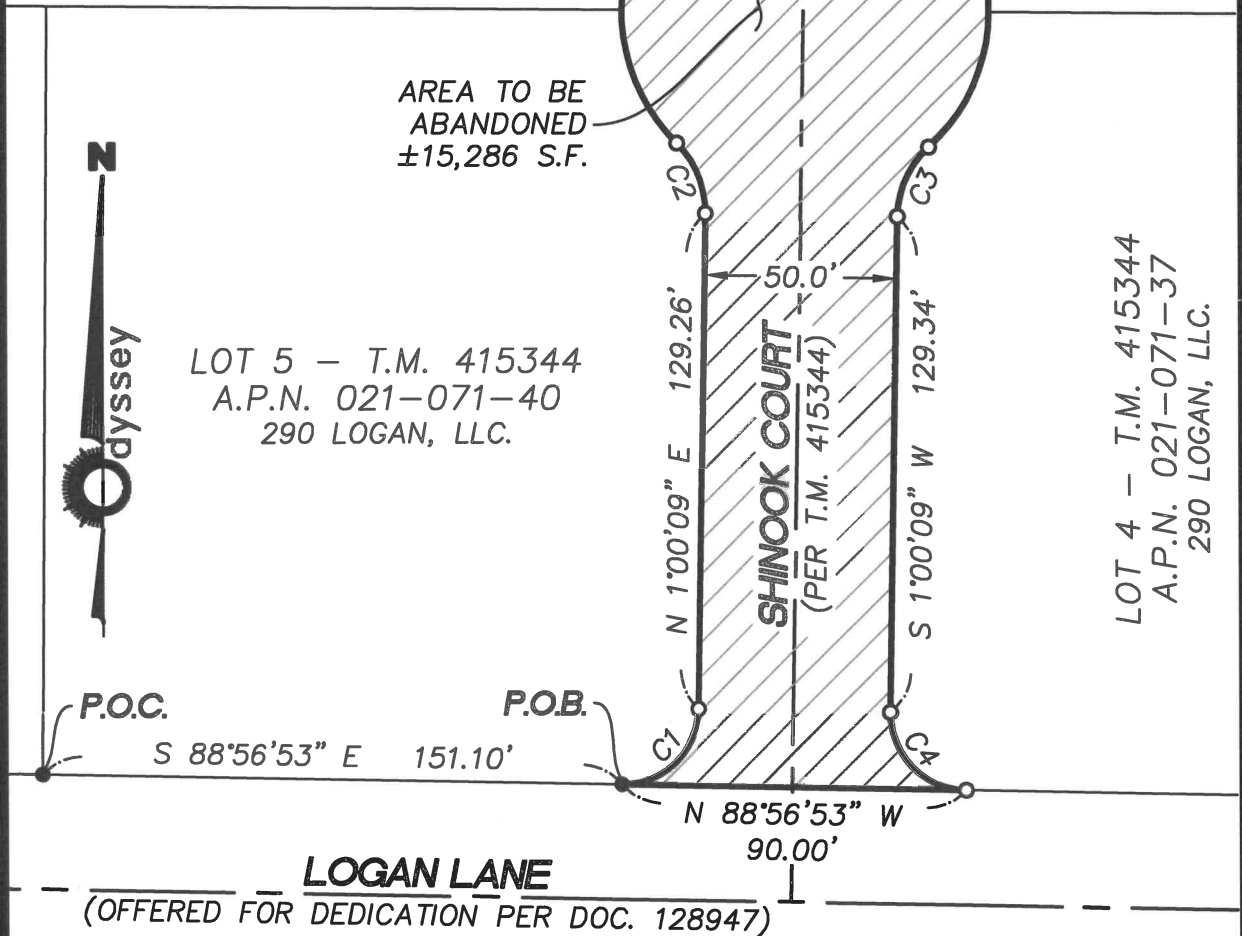


EXHIBIT "B"

WWW.ODYSSEY-CIVIL-ENGINEERING.COM

odyssey ENGINEERING
INCORPORATED

SHINOOK COURT ABANDONMENT

LOCATED WITHIN THE SOUTHEAST 1/4 OF
SECTION 11, T.20N., R.24E., M.D.M.

FERNLEY LYON COUNTY NEVADA

SCALE:
1"=50'

DATE:
08-11-2022

SHT. NO.:
1 of 1



CITY OF FERNLEY

Planning Commission AGENDA REPORT

Meeting Date: December 14, 2022

REPORT TO: Fernley Planning Commission

REPORT FROM: Shay League

FINANCIAL IMPACT:	CURRENTLY BUDGETED:	FUND/ACCOUNT:
Yes: No: X	Yes: No: X	N/A

ACTION REQUESTED: Motion

AGENDA ITEM: (For Possible Action):

(For Possible Action) Consideration and possible action on a zoning map amendment (ZMA22009) and conditional use permit request (CUP22004) to change the zoning designation of a ±20.80-acre project site located at approximately 501 River Ranch Road (APNs: 021-281-03, 021-281-04, 021-281-09, and 021-281-10) from ±15.13-acres Industrial (I), ±3.67-acres Employment Center (EC), and ±2.00-acres General Commercial (C2) to Mixed Use (MU) to facilitate the construction of a 320-unit multi-family project called River Ranch Apartments, by request of ERGS, Inc.

AGENDA ITEM BRIEF:

These parcels are all within the Suburban Mixed Use (SMU) land use area in the City of Fernley Comprehensive Master Plan. Mixed Use (MU) is an equivalent zoning category for SMU, while Industrial (I), Employment Center (EC), and General Commercial (C2) are not. Approval of this zoning map amendment will bring these parcels into conformance with our master plan.

Multifamily buildings with 100 or greater units require a conditional use permit in all residential zones in the City of Fernley where they are allowed. This project proposes 320 multi-family units and therefore must obtain a conditional use permit.

RECOMMENDED MOTION:

"I move to recommend City Council approve the zoning map amendment associated with ZMA22009, based on findings Z1 to Z3, and the facts supporting those findings as set forth in the staff report. I further move to approve the conditional use permit associated with CUP22004, adopting findings CU1 through CU6 and the facts supporting these findings as set forth in the staff report and subject to the conditions of approval 1 through 39 as listed in the staff report."

BUSINESS IMPACT (per NRS Chapter 237):

A Business Impact Statement is not required because this is not a rule (term excludes vehicles by which legislative powers are exercised under NRS Chapters 271, 278, 278A, or 278B).

See attached report for background, analysis, alternatives.

ALTERNATIVES:

All motions appropriate in accordance with City of Fernley Planning Commission parliamentary procedure are possible, to include: tabling, denial, approval with conditions, partial approval, and so forth.

BACKGROUND:

City of Fernley staff is currently processing a boundary line adjustment between APNs: 021-281-03 and 021-281-04 to facilitate this project. The applicant procured a portion of parcel -04 to add to their development site. They have requested an adjustment to move the boundary between the parcels north to add the procured portion of parcel -04 to their parcel -03. This application is in the final review stages and expected to be approved.

ERGS purchased parcels 021-281-03 and 021-281-10 in July 2022. The final parcel listed in this agenda item (021-281-09) is owned by the Sierra Pacific Power Company; however, it is included for the purposes of this application because the prior owner of parcels -03 and -10 obtained a right-of-way easement on this property to allow for site access.

Zoning Map Amendment Findings:

Z1. Consistent with the city's master plan and otherwise consistent with state and federal law.

Z2. Consistent with the surrounding land uses.

Z3. Public notice was given, and a public hearing held per the requirements of the development code and nevadan revised statutes.

The applicant has provided a response for each of these findings in the attached Project Description (pages 7-9). Staff agrees with their assessment and certifies that public notice was given in accordance with the requirements of the City of Fernley Development Code and Nevada Revised Statutes. A public hearing will be held at the December 14, 2022 Planning Commission meeting and again at the February 1, 2023 City Council meeting. Initial public notices stated that the City Council public hearing was to occur on January 4, 2023, but also that the matter may be continued to another meeting without additional notice. Staff intends to ask City Council to continue the public hearing for this item from the January 4, 2023 meeting to the February 1, 2023 meeting.

Conditional Use Permit Findings:

CUP1. The approving agency must make findings that the proposed conditional use will be in compliance with the master plan

CUP2. The conditional use will be compatible with the existing or permitted uses of adjacent properties

CUP3. The potential impairment of natural resources and the total population which the available natural resources will support without unreasonable impairment

CUP4. The availability of and need for affordable housing in the community, including affordable housing that is accessible to persons with disabilities

CUP5. The conditional use permits impacts have been conditioned to address identified impacts

CUP6. Public notice has been given and a public hearing held per the requirements of the development code and the Nevada revised statutes

The applicant has provided a response for each of these findings in the attached Project Description (pages 47-49). Staff agrees with their assessment and certifies that public notice was given in accordance with the requirements of the City of Fernley Development Code and Nevada Revised Statutes. A public hearing will be held at the December 14, 2022 Planning Commission meeting.

RELEVANT LAWS, STATUTES, AND REGULATIONS:

Nevada Revised Statutes Chapter 278 - Planning and Zoning
Fernley Municipal Code, Title 32 - Development Code

Specific References:

- Section 32.03.040 (e) - Administration / Annexation, comprehensive master plan, and zoning applications / Zoning map amendments (rezoning)
- Section 32.03.050 (b) - Administration / Entitlements / Conditional use permit
- Section 32.06.090 - Zoning districts / Mixed use (MU)
- Section 32.06.100 - Zoning districts / Commercial (C1, C2, and TC)
- Section 32.06.110 - Zoning districts / Industrial (EC and I)
- Section 32.06.150 - Zoning districts / Unlisted uses and use table

City of Fernley Comprehensive Master Plan, August 2018

Specific References:

- Chapter 3 - Land Use, Page 66 - Non-Residential Land Uses / Suburban Mixed Use (SMU)

FINANCIAL IMPLICATIONS:

N/A

ATTACHMENTS:

1. CUP22004 Conditions of Approval
2. Vicinity Map
3. Existing and Proposed Zoning
4. Project Description
5. Exhibits
6. Technical Reports
7. Full Size Plans

Conditions of Approval for CUP22004

Conditional Use Permit

1. APPROVAL:

THE PROJECT IS APPROVED AS SUBMITTED AND CONDITIONED. ANY SUBSTANTIVE CHANGE SHALL REQUIRE REVIEW AND APPROVAL BY THE PLANNING COMMISSION AS AN AMENDMENT TO THIS CONDITIONAL USE PERMIT.

2. PROJECT DESCRIPTION:

THE PROJECT APPROVAL IS LIMITED TO A MAXIMUM OF 320 MULTI-FAMILY UNITS ON ±20.80 ACRES.

3. EXPIRATION DATE:

THE CONDITIONAL USE PERMIT SHALL EXPIRE WITHIN ONE (1) YEAR OF THE DATE OF APPROVAL, UNLESS THE PERMITTED USE HAS BEEN ESTABLISHED OR CONSTRUCTION TO ACCOMMODATE THAT USE HAS BEGUN AND IS BEING DILIGENTLY PURSUED. A ONE-YEAR EXTENSION MAY BE GRANTED BY THE PLANNING COMMISSION IF REQUESTED PRIOR TO THE EXPIRATION DATE OF THE CONDITIONAL USE PERMIT APPROVAL.

4. WATER RIGHTS:

THE DEVELOPER SHALL COMPLY WITH ALL CITY OF FERNLEY MUNICIPAL CODES REGARDING THE DEDICATION OF WATER RIGHTS, INCLUDING ALL ASSOCIATED FEES, FOR THE CONNECTION TO THE CITY'S MUNICIPAL WATER SYSTEM IN THE AMOUNT THAT IS REQUIRED PRIOR TO THE ISSUANCE OF ANY BUILDING PERMIT FOR ANY PHASE OF THE PROJECT.

5. LANDSCAPING/IRRIGATION:

THE DEVELOPER SHALL SUBMIT A LANDSCAPING AND IRRIGATION PLAN FOR THE PROJECT IN CONFORMANCE WITH THE CITY OF FERNLEY'S DEVELOPMENT CODE FOR REVIEW AND APPROVAL BY THE ADMINISTRATOR PRIOR TO ISSUANCE OF A BUILDING PERMIT FOR THE PROJECT. THE LANDSCAPING AND IRRIGATION SHALL BE INSTALLED PER THE APPROVED PLANS PRIOR TO ISSUANCE OF THE CERTIFICATE OF OCCUPANCY FOR EACH BUILDING TO THE APPROVAL OF THE ADMINISTRATOR.

6. WATER AND SEWER MAINS AND SERVICES:

THE DEVELOPER SHALL COMPLY WITH ALL STANDARDS, CODES, AND REQUIREMENTS REGARDING CONNECTION TO THE CITY'S SANITARY SEWER AND POTABLE WATER SYSTEMS, INCLUDING BUT NOT LIMITED TO, ASSOCIATED FEES, EASEMENTS, DESIGN STANDARDS, SYSTEM LOOPING, DEVELOPMENT CODE REQUIREMENTS, AND STATE REQUIREMENTS.

THE DEVELOPER SHALL PROVIDE THE CITY WITH A UTILITY PLAN FOR WATER AND SANITARY SEWER THAT IS IN CONFORMANCE WITH THE CITY OF FERNLEY'S MUNICIPAL CODE AND PUBLIC WORKS DESIGN MANUAL TO THE APPROVAL OF THE CITY ENGINEER, PUBLIC WORKS DIRECTOR, AND ADMINISTRATOR. EACH PHASE MUST ALSO BE REVIEWED AND APPROVED BY THE NEVADA DEPARTMENT OF ENVIRONMENTAL PROTECTION PRIOR TO CONSTRUCTION.

7. UTILITY EASEMENTS:

THE DEVELOPER SHALL PROVIDE EASEMENTS TO THE CITY OF FERNLEY FOR THE MAINTENANCE OF THE PUBLIC INFRASTRUCTURE BEING INSTALLED ON PRIVATE PROPERTY. THE EASEMENTS SHALL INCLUDE THE CITY OF FERNLEY'S STANDARD EASEMENT LANGUAGE AND SHALL BE RECORDED PRIOR TO ISSUING A PERMIT TO START CONSTRUCTION OF THE INFRASTRUCTURE. IN NO SITUATION SHALL WORK TAKE PLACE ON PRIVATE PROPERTY WITHOUT A RECORDED EASEMENT IN PLACE.

Conditions of Approval for CUP22004

Conditional Use Permit

8. WATER SYSTEM LOOPING:

THE DEVELOPER SHALL PROVIDE THE CITY WITH A UTILITY PLAN FOR THE WATER SYSTEM THAT DEMONSTRATES ADEQUATE SYSTEM LOOPING PRIOR TO THE ISSUANCE OF A PERMIT. THE PLAN SHALL BE IN CONFORMANCE WITH THE CITY OF FERNLEY'S MUNICIPAL CODE, NEVADA ADMINISTRATIVE CODE, AND PUBLIC WORKS DESIGN MANUAL TO THE APPROVAL OF THE CITY ENGINEER, PUBLIC WORKS DIRECTOR, AND ADMINISTRATOR.

9. WATER AND SEWER SYSTEM MODELING:

THE DEVELOPER SHALL COMPLETE WATER AND SEWER MODELING FOR THE PROJECT PRIOR TO THE ISSUANCE OF A PERMIT. THE DEVELOPER SHALL CONSTRUCT ANY IMPROVEMENTS IDENTIFIED BY THE MODELING AS NECESSARY TO SERVE THE PROJECT IN ACCORDANCE WITH STATE AND LOCAL REGULATIONS. THE PROJECT WILL REQUIRE CAPACITY UPGRADES TO BE COMPLETED AT THE EXISTING TMAI LIFT STATION. THE WORK SHALL BE COMPLETED PRIOR TO ISSUING FIRST CERTIFICATE OF OCCUPANCY FOR ANY BUILDING ON THE PROJECT SITE.

10. NEVADA DEPARTMENT OF ENVIRONMENTAL PROTECTION:

THE DEVELOPER SHALL COMPLY WITH ALL REQUIREMENTS OF THE NEVADA DEPARTMENT OF ENVIRONMENTAL PROTECTION – BUREAU OF SAFE DRINKING WATER AND BUREAU OF WATER POLLUTION CONTROL FOR THE WATER AND SEWER INFRASTRUCTURE DESIGN AND CONSTRUCTION TO THE APPROVAL OF THE ADMINISTRATOR, CITY ENGINEER, AND PUBLIC WORKS DIRECTOR.

11. GRADING PERMIT:

THE DEVELOPER SHALL SUBMIT A GRADING PLAN FOR ANY PHASE OF THE PROJECT TO THE APPROVAL OF THE CITY ENGINEER. PRIOR TO THE ISSUANCE OF A GRADING PERMIT FOR THE DEVELOPMENT, THE DEVELOPER SHALL POST A SURETY BOND FOR REGRADING AND RECLAMATION OF THE SITE. THE DEVELOPER SHALL PROVIDE A STAMPED ENGINEER'S ESTIMATE FOR REGRADING AND RECLAMATION OF THE SITE. THE DEVELOPER SHALL COMPLY WITH ALL GRADING REQUIREMENTS SET FORTH IN THE CITY OF FERNLEY'S DEVELOPMENT CODE AS WELL AS ALL STATE AND FEDERAL REGULATIONS. THE DEVELOPER OR THEIR DESIGNEE SHALL BE RESPONSIBLE FOR OBTAINING AND MAINTAINING A STORM WATER POLLUTION PREVENTION PERMIT WITH THE STATE OF NEVADA AS WELL AS A SURFACE AREA DISTURBANCE PERMIT.

12. STORM DRAINAGE:

THE DEVELOPER SHALL PROVIDE A FINAL DRAINAGE REPORT FOR THE PROJECT IN CONFORMANCE WITH THE FERNLEY MUNICIPAL CODE AND THE PUBLIC WORKS DESIGN MANUAL FOR REVIEW AND APPROVAL BY THE CITY ENGINEER PRIOR TO APPROVAL OF A BUILDING PERMIT FOR ANY PORTION OF THE PROJECT. EACH SUCCESSIVE PHASE OF THE PROJECT SHALL SUBMIT AN UPDATED DRAINAGE REPORT FOR REVIEW AND APPROVAL BY THE CITY ENGINEER SHOWING THE CUMULATIVE EFFECT OF THE DEVELOPED PORTION OF THE PROJECT ALONG WITH THE PROPOSED PHASE'S EFFECT ON THE TOTAL DISCHARGE INTO THE DRAINAGE SYSTEM. THE STORM WATER AND DRAINAGE PLANS FOR THE PHASES OF THE DEVELOPMENT SHALL BE REVIEWED AND APPROVED BY THE CITY ENGINEER PRIOR TO THE ISSUANCE OF A GRADING PERMIT FOR THE PHASES OF THE PROJECT.

ALL INTERNAL STORM DRAIN INFRASTRUCTURE SHALL BE MAINTAINED BY THE PROPERTY OWNER.

13. GEOTECHNICAL REPORT:

THE DEVELOPER SHALL PROVIDE A GEOTECHNICAL REPORT FOR THE PROJECT IN CONFORMANCE WITH THE REQUIREMENTS OF THE DEVELOPMENT CODE FOR REVIEW AND APPROVAL BY THE CITY ENGINEER PRIOR TO THE APPROVAL OF A GRADING PERMIT OR BUILDING PERMIT FOR ANY PORTION OF THE PROJECT.

Conditions of Approval for CUP22004

Conditional Use Permit

14. STRUCTURAL CONTROLS:

THE DEVELOPER SHALL UTILIZE STRUCTURAL CONTROLS FOR THE TREATMENT OF STORM WATER RUNOFF IN ACCORDANCE WITH BEST MANAGEMENT PRACTICES TO THE APPROVAL OF THE PUBLIC WORKS DIRECTOR AND CITY ENGINEER.

15. SANITARY SEWER REPORT:

THE DEVELOPER SHALL PROVIDE A FINAL SANITARY SEWER REPORT FOR THE PROJECT IN CONFORMANCE WITH THE FERNLEY MUNICIPAL CODE AND THE PUBLIC WORKS DESIGN MANUAL FOR REVIEW AND APPROVAL BY THE CITY ENGINEER PRIOR TO ISSUANCE OF A BUILDING PERMIT FOR ANY PORTION OF THE PROJECT.

16. DESIGN STANDARDS:

THE DEVELOPER SHALL COMPLY WITH ANY DESIGN STANDARDS AND REGULATIONS AS SET FORTH IN THE CITY OF FERNLEY DEVELOPMENT CODE AND CITY OF FERNLEY DESIGN STANDARDS UNLESS IN CONFLICT WITH THE LOCAL, STATE OR FEDERAL REGULATIONS, IN WHICH CASE THE MORE STRINGENT REGULATION WILL TAKE PRECEDENCE.

17. ENGINEERING/PUBLIC WORKS:

THE DEVELOPER SHALL COMPLY WITH ALL THE REQUIREMENTS OF THE CITY OF FERNLEY MUNICIPAL CODE, DEVELOPMENT CODE, AND PUBLIC WORKS DESIGN MANUAL FOR THE CONSTRUCTION OF ANY PUBLIC OR PRIVATE INFRASTRUCTURE TO THE APPROVAL OF THE CITY ENGINEER AND PUBLIC WORKS DIRECTOR PRIOR TO THE ISSUANCE OF A CERTIFICATE OF OCCUPANCY FOR THE PROJECT.

18. NORTH LYON COUNTY FIRE PROTECTION DISTRICT:

THE DEVELOPER SHALL COMPLY WITH ALL REQUIREMENTS OF THE NORTH LYON COUNTY FIRE PROTECTION DISTRICT, INCLUDING BUT NOT LIMITED TO: DEVELOPING A PLAN TO PROVIDE ADEQUATE EMERGENCY ACCESS THROUGHOUT THE SITE, DEVELOPING A MASTER FIRE HYDRANT AND FIRE FLOW PLAN, DEVELOPING A MASTER FIRE DEPARTMENT CONNECTION (FDC) PLAN, AND INSTALLING FIRE SUPPRESSION AND/OR ALARM SYSTEMS TO THE APPROVAL OF THE FIRE CHIEF PRIOR TO THE ISSUANCE OF A BUILDING PERMIT.

19. BUILDING DEPARTMENT:

THE DEVELOPER SHALL COMPLY WITH ALL REQUIREMENTS OF THE BUILDING DEPARTMENT TO THE APPROVAL OF THE BUILDING OFFICIAL PRIOR TO THE ISSUANCE OF A BUILDING PERMIT.

20. ACCESS AND CIRCULATION:

THE DEVELOPER SHALL USE APPROPRIATE STRIPING AND SIGNAGE AS MAY BE NECESSARY TO MINIMIZE TRAFFIC CONFLICT WITHIN THE DEVELOPMENT SITE TO THE APPROVAL OF THE ADMINISTRATOR AND CITY ENGINEER FOR THE LIFE OF THE PROJECT.

21. FEDERAL, STATE, AND LOCAL AGENCIES:

THE DEVELOPER SHALL COMPLY WITH ALL REQUIREMENTS OF ANY FEDERAL, STATE, OR LOCAL AGENCY WITH JURISDICTION OVER THE PROJECT TO THE APPROVAL OF THE ADMINISTRATOR.

22. TRAFFIC ANALYSIS REPORT:

THE DEVELOPER SHALL PROVIDE A TRAFFIC ANALYSIS REPORT FOR THE PROJECT IN CONFORMANCE WITH THE CITY OF FERNLEY'S MUNICIPAL CODE AND THE PUBLIC WORKS DESIGN MANUAL FOR REVIEW AND APPROVAL BY THE CITY ENGINEER AND PUBLIC WORKS DIRECTOR PRIOR TO THE ISSUANCE OF A BUILDING PERMIT FOR ANY PORTION OF THE PROJECT. EACH SUCCESSIVE PHASE OF THE PROJECT SHALL SUBMIT AN UPDATED TRAFFIC ANALYSIS REPORT FOR REVIEW AND APPROVAL BY THE CITY ENGINEER AND PUBLIC WORKS DIRECTOR SHOWING THE CUMULATIVE EFFECT

Conditions of Approval for CUP22004

Conditional Use Permit

OF THE DEVELOPED PORTION OF THE PROJECT ALONG WITH THE PROPOSED PHASE'S EFFECT.

23. PARKING:

VISITOR PARKING SHALL BE PROVIDED THROUGHOUT THE SITE. THE DEVELOPER SHALL SUBMIT IMPROVEMENT PLANS THAT SHOW APPROPRIATE STRIPING AND SIGNAGE FOR THE VISITOR PARKING STALLS.

24. CONSTRUCTION MAINTENANCE:

THE DEVELOPER SHALL LOCATE AND UTILIZE A SUFFICIENT NUMBER OF TRASH CONTAINERS ON-SITE TO BE UTILIZED DURING THE CONSTRUCTION OF THE PROJECT TO MAINTAIN THE PROJECT SITE IN A CLEAN AND ORDERLY STATE TO THE APPROVAL OF THE ADMINISTRATOR.

25. CONSTRUCTION HOURS:

THE DEVELOPER SHALL LIMIT ALL CONSTRUCTION AND CONSTRUCTION-RELATED ACTIVITIES TO BETWEEN THE HOURS OF 7:00 AM TO 7:00 PM, SEVEN DAYS A WEEK. THE DEVELOPER SHALL INSTALL SIGNS AT ALL ACCESS POINTS TO THE PROJECT THAT CLEARLY INDICATE THE HOURS OF ACTIVITY ON-SITE PRIOR TO THE START OF ANY CONSTRUCTION-RELATED ACTIVITIES TO THE APPROVAL OF THE ADMINISTRATOR. THE DEVELOPER SHALL MAINTAIN THESE SIGNS IN GOOD REPAIR FOR THE DURATION OF THE CONSTRUCTION OF THE PROJECT. ONCE CONSTRUCTION IS FINISHED, THE DEVELOPER SHALL REMOVE THESE SIGNS.

26. PROJECT CONTACT:

THE DEVELOPER SHALL DESIGNATE TO THE ADMINISTRATOR A PROJECT CONTACT PERSON RESPONSIBLE/AUTHORIZED TO CORRECT PROBLEMS REGARDING THE PROJECT ON A 24-HOUR/7-DAYS A WEEK BASIS. THE DEVELOPER SHALL DESIGNATE THE PROJECT CONTACT PERSON TO THE ADMINISTRATOR PRIOR TO ISSUANCE OF A BUILDING PERMIT FOR THE PROJECT.

27. ARCHITECTURE/BUILDING ELEVATIONS:

THE DEVELOPMENT OF THE SUBJECT SITE SHALL BE IN SUBSTANTIAL CONFORMANCE WITH THE ARCHITECTURAL/BUILDING ELEVATIONS SUBMITTED AS PART OF THIS APPLICATION. SUBSTANTIAL CHANGES TO THE ARCHITECTURE/BUILDING ELEVATIONS SHALL REQUIRE REVIEW AND APPROVAL BY THE ADMINISTRATOR PRIOR TO THE ISSUANCE OF A BUILDING PERMIT FOR THAT BUILDING. THE DEVELOPER SHALL ARTICULATE LONG FACADES BY VARYING BUILDING MASS, FORM, TEXTURE, MATERIALS, AND INTERPLAY OF SOLID AND OPEN AREAS.

28. TRASH ENCLOSURES:

THE DEVELOPER SHALL LOCATE AND INSTALL TRASH ENCLOSURES TO THE APPROVAL OF WASTE MANAGEMENT AND THE ADMINISTRATOR INCLUDING THE APPROPRIATE SIZE AND LOCATION. THE TRASH ENCLOSURES SHALL MATCH THE PROJECT'S ARCHITECTURE AND BUILDING MATERIALS TO THE APPROVAL OF THE ADMINISTRATOR PRIOR TO ISSUANCE OF THE CERTIFICATE OF OCCUPANCY FOR THE INDIVIDUAL BUILDINGS.

29. UTILITY SCREENING:

THE DEVELOPER SHALL WORK IN CONJUNCTION WITH THE UTILITY COMPANIES TO LOCATE UTILITY EQUIPMENT SUCH AS ELECTRICAL, GAS, AND WATER JUNCTION BOXES, INCLUDING TRANSFORMER BOXES, VAULTS, AND ELECTRICAL PANELS, IN AREAS WHERE THE EQUIPMENT IS SCREENED BY EITHER ARCHITECTURAL ELEMENTS THAT MATCH THE MAIN STRUCTURE'S COLORS AND MATERIALS OR BY ADJUSTING THE APPROVED LANDSCAPING TO COMPENSATE TO THE APPROVAL OF THE ADMINISTRATOR PRIOR TO THE ISSUANCE OF A CERTIFICATE OF OCCUPANCY FOR EACH INDIVIDUAL BUILDING.

Conditions of Approval for CUP22004

Conditional Use Permit

30. SCREENING:

THE MECHANICAL EQUIPMENT SHALL BE SCREENED FROM VIEW OF THE PARKING LOT, ADJACENT PUBLIC STREETS, AND PUBLIC AREAS BY USING AN ARCHITECTURAL ELEMENT OF THE BUILDING CONSISTING OF THE SAME, DURABLE MATERIALS AS THE BUILDING TO THE APPROVAL OF ADMINISTRATOR. ANY LOADING DOCKS AND SERVICE AREAS INCLUDING TRASH COMPACTION AND/OR DUMPSTER(S) SHALL BE SCREENED FROM VIEW OF PARKING LOTS AND PUBLIC AREAS. LOADING DOCK SCREENING SHALL BE HIGH ENOUGH TO SCREEN THE TRUCKS. THE SCREENING SHALL BE REVIEWED AND APPROVED BY THE ADMINISTRATOR PRIOR TO THE ISSUANCE OF A BUILDING PERMIT FOR EACH INDIVIDUAL BUILDING.

31. LIGHTING:

THE DEVELOPER SHALL SUBMIT A LIGHTING PLAN FOR REVIEW AND APPROVAL BY THE ADMINISTRATOR PRIOR TO THE ISSUANCE OF A BUILDING PERMIT. THE DEVELOPER IS REQUIRED TO COMPLY WITH THE LIGHTING STANDARDS AND REQUIREMENTS IN THE CITY OF FERNLEY MUNICIPAL CODE. TO REDUCE THE IMPACT OF GLARE AND MINIMIZE THE EFFECT OF FIELD AND PARKING LIGHTING, LIGHTING FIXTURES WITH EXTERNAL "HOODS" AND INTERNAL GLARE REDUCTION LOUVERS SHALL BE USED.

32. RESIDENTIAL CONSTRUCTION TAX:

THE DEVELOPER IS SUBJECT TO THE PROVISIONS OF FERNLEY MUNICIPAL CODE RELATED TO RESIDENTIAL CONSTRUCTION TAX. THE RESIDENTIAL CONSTRUCTION TAX FEE SHALL BE PAID PRIOR TO THE ISSUANCE OF A BUILDING PERMIT FOR EACH BUILDING.

33. ADDRESSING AND STREET NAMES:

THE DEVELOPER SHALL SUBMIT A REQUEST FOR ADDRESSING AND STREET NAME RESERVATION APPLICATION TO THE CITY OF FERNLEY FOR REVIEW AND APPROVAL. ALL ADDRESSING OF LOTS SHALL BE COMPLETED BY THE CITY. STREET NAMES SHALL BE APPROVED BY THE CITY PRIOR TO THE SUBMITTAL OF A FINAL MAP FOR THE PROJECT.

34. PROJECT PHASING:

THE PROJECT SHALL BE DEVELOPED IN ACCORDANCE WITH THE PHASING PLAN INCLUDED AS PART OF THIS APPROVAL. EACH PHASE SUBMITTED MUST BE DESIGNED TO MEET THE PUBLIC FACILITIES AND IMPROVEMENT STANDARDS AND BE ABLE TO OPERATE INDEPENDENTLY AND AS PART OF THE OVERALL DESIGN. CHANGES TO THE PHASING PLAN WILL REQUIRE REVIEW AND APPROVAL BY THE ADMINISTRATOR, CITY ENGINEER, AND PUBLIC WORKS DIRECTOR PRIOR TO BEING IMPLEMENTED.

35. WASTE MANAGEMENT:

THE DEVELOPER SHALL PROVIDE A WILL SERVE FROM WASTE MANAGEMENT TO THE APPROVAL OF THE ADMINISTRATOR PRIOR TO THE APPROVAL AND RECORDATION OF A FINAL MAP.

36. NEVADA DEPARTMENT OF TRANSPORTATION:

THE DEVELOPER SHALL COMPLY WITH ALL REQUIREMENTS OF THE NEVADA DEPARTMENT OF TRANSPORTATION TO THE APPROVAL OF THE ADMINISTRATOR, PUBLIC WORKS DIRECTOR, AND CITY ENGINEER.

37. UNITED STATES POSTAL SERVICE:

THE DEVELOPER SHALL COMPLY WITH ALL REQUIREMENTS OF THE UNITED STATES POSTAL SERVICE FOR MAIL DELIVERY AND MAILBOX DESIGN AND LOCATION TO THE APPROVAL OF THE ADMINISTRATOR, PUBLIC WORKS

Conditions of Approval for CUP22004

Conditional Use Permit

DIRECTOR, AND CITY ENGINEER PRIOR TO THE ISSUANCE OF A BUILDING PERMIT FOR THE PROJECT.

38. RIVER RANCH ROAD AND US-50 INTERSECTION IMPROVEMENTS:

THE DEVELOPER SHALL SUBMIT A PROPOSED PLAN FOR THE RIVER RANCH/US-50 INTERSECTION, TO THE APPROVAL OF THE CITY ENGINEER, ADMINISTRATOR, PUBLIC WORKS DIRECTOR, AND THE NEVADA DEPARTMENT OF TRANSPORTATION. THE PLAN SHALL INCLUDE RECOMMENDATIONS FOR STRIPING, LIGHTING, AND PEDESTRIAN ACCESS AND SAFETY INCLUDING ADA COMPLIANT PEDESTRIAN RAMPS.

39. RIVER RANCH ROAD IMPROVEMENTS:

THE DEVELOPER SHALL COMPLETE IMPROVEMENTS ON RIVER RANCH ROAD FROM US-50 TO THE ENTRANCE TO THE SINGLE-FAMILY HOME SUBDIVISION TO THE SOUTH OF THE PROJECT IN ACCORDANCE WITH THE CITY OF FERNLEY DEVELOPMENT CODE. ADEQUATE RIGHT OF WAY SHALL BE DEDICATED BY THE DEVELOPER AND ACQUIRED BY THE DEVELOPER AND OFFERED FOR DEDICATION TO THE CITY OF FERNLEY. AT A MINIMUM, RIVER RANCH ROAD SHALL BE IMPROVED TO THE CITY'S 60-FOOT RIGHT-OF-WAY STANDARD INCLUDING CURB AND GUTTER AND SIDEWALK ALONG THE EASTERN BOUNDARY OF THE STREET. THE IMPROVEMENTS SHALL ALSO INCLUDE APPROPRIATE PEDESTRIAN CROSSINGS, STRIPING, SIGNAGE, AND LIGHTING. IMPROVEMENTS ALONG THE WESTERN BOUNDARY OF THE STREET THAT DO NOT ALREADY HAVE CURB AND GUTTER SHALL ADEQUATELY ADDRESS DRAINAGE TO THE SATISFACTION OF THE ADMINISTRATOR, CITY ENGINEER, AND PUBLIC WORKS DIRECTOR.



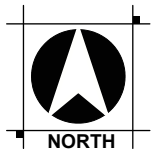
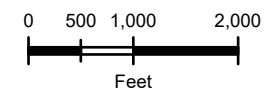
VICINITY MAP

RIVER RANCH APARTMENTS

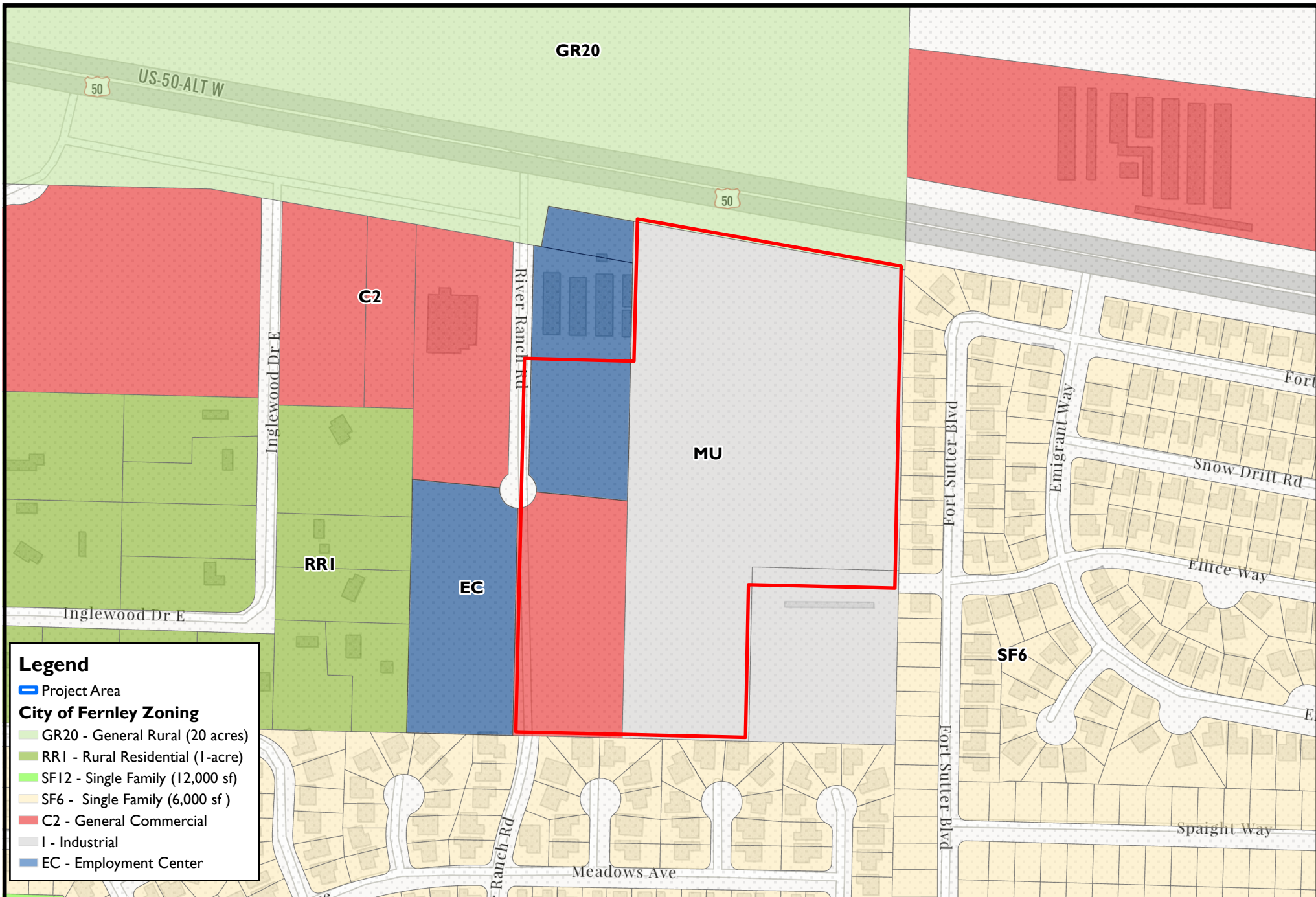
FERNLEY, NV

SEPTEMBER 2022

- Future Nevada Pacific Parkway
- BLA_Project_Boundary



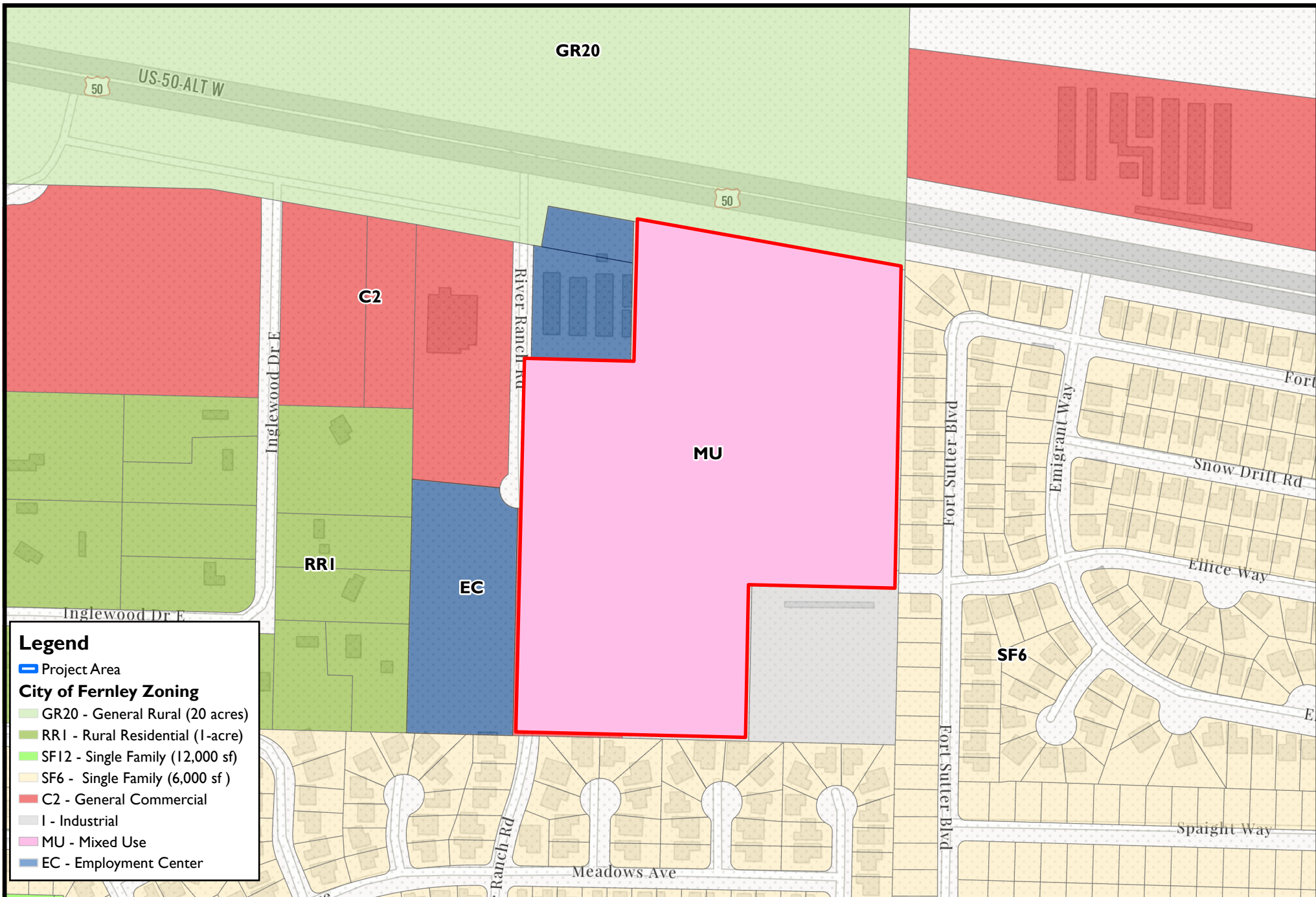
WOOD RODGERS



Existing Zoning River Ranch Apartments

September 2022

WOOD RODGERS
BUILDING RELATIONSHIPS ONE PROJECT AT A TIME
1361 Corporate Boulevard Tel: 775.823.4068
Reno, NV 89502 Fax: 775.823.4066



Proposed Zoning

River Ranch Apartments

September 2022

WOOD RODGERS
 BUILDING RELATIONSHIPS ONE PROJECT AT A TIME
 1361 Corporate Boulevard Tel: 775.823.4068
 Reno, NV 89502 Fax: 775.823.4066

SECTION 2 – PROJECT DESCRIPTION AND FINDINGS

PROJECT DESCRIPTION

OVERALL REQUEST

The request is for the following:

- (1) A Zoning Map Amendment to change the designation on 20.80± acres as follows:
 - a. 15.13± acres from I to MU
 - b. 3.67± acres from EC to MU
 - c. 2.00± acres from C2 to MUand;
- (2) A Conditional Use Permit to allow a multi-family project over 100 units in size in the MU zone. The proposed project includes 320 units and the overall density is 15.38 units per acre.

BACKGROUND INFORMATION

LOCATION

The subject site consists of 20.80± acres and is generally located north of Meadows Avenue; south of U.S. Route 50 Alternate; east of River Ranch Road and; west of Fort Sutter Boulevard. The site is in close proximity to the Victory Logistics District, a 4,300± acre developing manufacturing, distribution, logistics and data center which will result in significant job growth in Fernley. In addition, with the recent announcement of federal funding to complete the extension of Nevada Pacific Parkway from I-80 to U.S. Highway 50 Alternate the connection will facilitate quick and easy access from the project site to work locations in the district.

(Refer to VICINITY MAP in Section 3 of this Submittal Packet).

PARCEL NUMBERS, OWNERSHIP, ACREAGES, MASTER PLAN AND ZONING DESIGNATIONS

The site includes the following Assessor Parcels with current ownership, existing and proposed acreage, comprehensive master plan and zoning designations noted as follows:

Assessor Parcel Number (APN) /Current Owner	Existing Acreage/Proposed Acreage	Comprehensive Plan Designation	Zoning Designation
021-281-03 ERGS Fernley LLC	3.67± acres/3.67± acres	Suburban Mixed Use (SMU)	EC (Employment Center)
021-281-04* Cardin, Carl D.	3.67± acres/2.00± acres**	Suburban Mixed Use (SMU)	C2 (General Commercial)
021-281-09* Sierra Pacific Power Co.	3.55± acres/.45± acres **	Suburban Mixed Use (SMU)	I (Industrial)
021-281-10 ERGS Fernley LLC	14.68± acres/14.68± acres	Suburban Mixed Use (SMU)	I (Industrial)

* Current APN.

** Acreage to be part of the subject project area and ownership will be ERGS Fernley LLC upon final approval of boundary line adjustments by the City of Fernley and sale/transfer of property.

(Refer to ASSESSOR PARCEL MAP, PARCEL AREAS, EXISTING ZONING MAP and MASTER PLAN LAND USE MAP EXHIBITS in Section 3 of this Submittal Packet).

SITE CHARACTERISTICS

The property is undeveloped and is characterized by disturbed and undisturbed areas with sparse native vegetation. There are a number of dirt/gravel trails and roads that cross the site. In addition, there are overhead power lines adjacent to the site to the north within the U.S. 50 Alternate right-of-way and to the east within the adjacent residential rear yards.

Easements on the property include a north/south 50 foot relocatable access easement from U.S. Highway 50 Alternate providing access to the NV Energy Lonely Substation utility facility (under the ownership of SPPCo) located southeast of the site; a 10 foot PUE adjacent to the easterly property boundary; an east/west 10 foot PUE for a gas feeder main and distribution main near the northerly portion of the site; and a 50± foot Public Roadway and Utility easement adjacent to the westerly boundary which is partially improved as River Ranch Road. In addition, there is a 55-foot wide access easement along the northerly property line of the (SPPCo owned) Lonely Substation site that provides access from the subject site and the SPPCo property to Fort Sutter Boulevard.

(Refer to SITE PHOTOS and SITE AERIAL in Section 3 and SITE CONDITIONS in Section 3 or 5 of this Submittal Packet).

There are no streams, waterways, drainageways or wetlands located on the property. The FEMA designation is Zone X. *A PRELIMINARY DRAINAGE REPORT addressing existing and proposed drainage conditions, as well as a GEOTECHNICAL REPORT outlining soil conditions is included in Section 4 of this Submittal Packet.*

The site slopes from south to north. The Fernley Municipal Code Title 32 Development Code (Code), Section 32.09.130, Slopes, Hilltops and Ridges is applicable to property that has slopes 10% or greater on 25% of the site.

The following is a summary of slopes on the property:

Slope (%)	Area (Acres)	% of Total
0-10	18.70	89.70
10+	2.10	10.30
TOTAL	20.80	100.00

Slopes exceeding 10% only occur on 10.30% of the site. Section 32.09.130 is, therefore, not applicable to this project.

(Refer to SLOPE MAP in Section 3 and SITE CONDITIONS EXHIBIT in Section 3 or 5 of this Submittal Packet).

SURROUNDING USES AND DESIGNATIONS

Surrounding and nearby properties include a variety of uses, as well as a mix of master plan and zoning designations as provided in the table below. *A Noticing Map and List of Addresses of properties within 300 feet of the project boundaries is included in Section 1 of this Submittal Packet.*

DIRECTION	USES	CITY OF FERNLEY MASTER PLAN LAND USE MAP	CITY OF FERNLEY ZONING
North	U.S. Highway 50 Alternate	Open Space and Parks (OSP)	GR20
South	Single Family Residential* and Lonely Utility Substation	Single Family Residential (SFR) and Suburban Mixed Use (SMU)	SF6 and I
East	Single Family Residential** and Lonely Substation Utility Facility	Single Family Residential (SFR) and Suburban Mixed Use (SMU)	SF6 and I
West	Mini-warehouses with outside storage; Pioneer Crossing Casino; Undeveloped Land	Suburban Mixed Use (SMU)	EC and C2

* There are 7 single family residential lots with rear yards abutting the property. The average lot size is 9,334± square feet. All lots are developed with single story homes and include 6 foot rear yard wood fences.

** There are 12 single family residential lots with rear yards abutting the property. The average lot size is 7,151 square feet. Eleven lots are developed with single story homes and one lot includes a two-story home. All lots include 6 foot rear yard wood fences.

(Refer to NOTICING MAP and LIST OF ADDRESSES WITHIN 300 FEET in Section 1 and EXISTING ZONING MAP, MASTER PLAN LAND USE MAP and SITE PHOTOS in Section 3 of this Submittal Packet).

1. ZONING MAP AMENDMENT REQUEST

The request is for a Zoning Map Amendment to change the designation on 20.80± acres from I, EC and C2 to MU.

(Refer to LEGAL DESCRIPTIONS and ZONING MAP AMENDMENT BOUNDARY MAP in Section 1 and EXISTING and PROPOSED ZONING MAP in Section 3 of this Submittal Packet).

REASON AND JUSTIFICATION

As outlined above, the project site currently has three different zoning classifications. The three classifications make it inefficient and problematic to plan and develop the 20.80± acre site as an integrated project. All properties, however, are designated Suburban Mixed Use (SMU) on the City of Fernley Master Plan Land Use Map.

(Refer to EXISTING ZONING and MASTER PLAN LAND USE MAPS in Section 3 of this Submittal Packet).

Pursuant to the City of Fernley Comprehensive Plan (Master Plan), the compatible zoning districts for property designated SMU include: MDR14; MF-30; MU; C1 and PD. The current zoning designations of I, EC and C2 on the properties are not consistent with the Master Plan.

The proposed project is a multi-family development which is compatible and consistent with the Master Plan goals and action strategies, associated with the Suburban Mixed Use (SMU) designation. The overall density of the project is 15.38 units per acre. The density is slightly higher than the limits of the MDR14 zone (7 to 14 units per acre) and lower than the MF30 zone (21 to 30 units per acre). The MU density range as provided in the Master Plan is 10 to 30 dwelling units per acre. Based on the project density, the MU zone is the appropriate conforming zoning for the property.

As noted in the Code, Table 32.06.090-1 Mixed Use Density/Intensity Standards, multi-family residential projects shall utilize MF30 design standards. Compliance

with the MF30 design standards is addressed in detail in the *Conditional Use Permit Request Section of this Submittal Packet*.

The proposed project density and MU zoning provides an excellent transition from the single family residences to the east and south to the commercial and industrial type uses (Lonely Substation utility facility, mini-warehouses with outside storage, and Pioneer Crossing Casino) to the south and west. Given the site's location in close proximity to the projected job growth associated with the Victory Logistics District and the Nevada Pacific Parkway extension, this housing project is the perfect fit for the City of Fernley. The proposed MU zoning is fully consistent with the Master Plan as outlined below.

COMPREHENSIVE MASTER PLAN COMPLIANCE

The following is a discussion of Goals and Policies from the 2018 (3rd updated) Master Plan that support the proposed Zoning Map Amendment. A full discussion of the specific project's compliance with the Master Plan is additionally provided in the *Conditional Use Permit Request Section of this Submittal Packet*.

PROJECT COMPLIANCE: The CHAPTER 3. LAND USE section of the Master Plan states that future growth and development, as well as the planned extension of infrastructure and services are all based on the Land Use Map. This section also states that a balanced land plan for the City of Fernley provides for a diverse mix of housing types. To accomplish these goals, the updated Plan added a number of land use categories including the Suburban Mixed Use (SMU) to encourage a broad mix of uses including high-density residential within close proximity to services and employment. The Plan states the goal for the City is to effectuate growth and redevelopment as depicted on the Land Use Map and to have the Master Plan and Zoning Maps in conformance with each other.

The updated Land Use Map designated several acres of land (including the subject 20.80± acres) south of U.S. Highway 50 Alternate and east and west of River Ranch Road as SMU. As outlined in Section 3.6 - Implementation, general guidelines necessary for the implementation of the plan including promoting the Land Use Map to encourage new employment opportunities, revitalization of the downtown core, and housing projects that support the Land Use Chapter. The

proposed Zoning Map Amendment to MU is supported by these guidelines and will allow for a new residential project (the River Ranch Apartments) to help meet workforce housing needs in the City of Fernley.

The following also specifically supports the Zoning Map Amendment:

3.7 GOALS AND ACTION STRATEGIES

L.U.1.2 Encourage new development to be in accordance with the Comprehensive Master Plan land use category, and other land use controls to accomplish community principles.

PROJECT COMPLIANCE: The project site is designated SMU on the Comprehensive Master Plan. Existing sit zoning designations of I, EC and C2 are not in compliance with the SMU designation. The requested zone change to MU, however, is consistent with the SMU designation and is supported by this goal and action strategy. The MU zoning will allow for diverse housing options including multi-family projects and is in compliance with other specific Master Plan Goals and Action Strategies for Population, Housing and Employment and Land Use as further discussed in the *Conditional Use Permit Request Section of this Submittal Packet*.

(Refer to EXISTING MASTER PLAN EXHIBIT and EXISTING and PROPOSED ZONING EXHIBITS in Section 3 of this Submittal Packet).

ZONING MAP AMENDMENT FINDINGS

The following outlines the required findings and provides responses to address the requested zoning map amendments as outlined in the Code.

Section 32.03.040 (e) Zoning Map Amendments (rezoning) (6) outlines Findings for approval and states a zoning map amendment is committed to the city council's legislative discretion. The zoning map amendment be approved if it is:

- a. Consistent with the city's master plan and otherwise consistent with state and federal law.

APPLICANT'S RESPONSE: The proposed MU zoning is fully consistent with the master plan Suburban Mixed Use (SMU) land use map designation, characteristics and location, as well as the equivalent consistent zoning categories. The existing zoning on the property (I, EC and C2) is currently not consistent with the master plan designation. Goals and Action Strategies fully support bringing zoning into conformance with the Land Use Plan. The zoning map amendment will be beneficial to the City of Fernley as it will encourage medium to high-density development to meet future housing demands in the City of Fernley.

- b. Consistent with the surrounding land uses.

APPLICANT'S RESPONSE: The existing zoning on the project site abutting the single family residences located to the south and east is I, EC and C2. These zones typically allow the more intense and heavier industrial uses including those labeled in the Code Section 32.06.150 – Unlisted Uses and Use Table under the categories of Vehicles and Equipment; Manufacturing and Employment; Warehousing, Storage and Distribution; and Waste Related Facilities. These uses can result in compatibility related issues with single family residential neighbors. The MU zoning, however, provides an opportunity for a mix of residential and commercial uses and can be more appropriate to help create a slightly higher residential density transition from lower intensity single family homes to the higher intensity commercial/industrial uses (mini-warehouses with outside storage and Pioneer Crossing Casino) to the west. The MU zone is consistent with the master plan designation of Suburban Mixed Use and is a better and more consistent zoning transition option adjacent to the surrounding land uses.

- c. Public notice was given, and a public hearing held per the requirements of the development code and Nevada Revised Statutes.

APPLICANT'S RESPONSE: The City of Fernley is responsible for providing public notice in accordance with the Development Code and Nevada

Revised Statues. A public hearing or hearings will be properly noticed and held with a decision as to the zoning amendment made in accordance with all legal requirements.

2. CONDITIONAL USE PERMIT REQUEST

Pursuant to Section 32.06.150-2 Use Table of the Code, a Conditional Use Permit is required for a multi-family project over 100 units in size in the MU zone. The proposed project includes 320 units, therefore, a Conditional Use Permit is required and requested as part of this application. The details of the Conditional Use Permit project and compliance with various Code sections are outlined *in this Section of the Submittal Packet*.

SITE PLAN

The 20.80± acre site has been designed to provide a high quality and well designed multi-family community to meet the needs of existing and future residents relocating to or moving within Fernley including those pursuing new nearby employment opportunities in the Victory Logistics District. The site plan ensures safe primary, as well as emergency access, accommodates (agreed upon) relocated access to the NV Energy Lonely Substation, respects gas and utility easements and minimizes impacts to and from adjacent uses through the use of landscape buffers, walls and generous setbacks.

The applicant has worked with adjacent property owners to add 2.00± acres of undeveloped land to the site from the southerly portion of APN 021-281-04 via a Boundary Line Adjustment (BLA) application that was recently submitted to the City. In addition, .45± acres of excess property from the northerly portion of the Lonely Substation property (APN 021-281-09) will be added to the site via a BLA application to be submitted in the near future.

The site plan considers topography, grading, drainage, access, buffering and ADA accessibility needs to create a well-planned community. Building pads are stepped down from the south to the north. To accommodate drainage, a retention basin has been located at the northeast corner of the site and provides additional buffering adjacent to U.S. Highway 50 Alternate. Access to U.S. Highway 50 Alternate has also been eliminated for safety purposes. Direct access is only provided from one point on River Ranch Road. The site plan also includes ample parking and community open space with passive and active spaces

throughout the project site. Construction of the project will be phased in a logical manner to ensure access and utilities connections are appropriate.

(Refer to PRELIMINARY PHASING PLAN in Section 3 and PRELIMINARY SITE, GRADING, UTILITY and LANDSCAPE PLANS in Sections 3 or 5 and PRELIMINARY DRAINAGE REPORT in Section 4 of this Submittal Packet).

PROJECT DETAILS

The proposed 320-unit apartment community includes 40 Apartment Buildings, a Clubhouse Building, a Maintenance Building, ample parking and landscaping, as well as community amenities. The overall density of the project is 15.38 units per acre. The project will provide high quality, needed housing to accommodate existing and future residents of Fernley including those pursuing employment opportunities in the nearby Victory Logistics District.

COMMUNITY FEATURES

The River Ranch Apartment community will feature the following:

- **BUILDINGS**

The project includes the following building types:

- “CLUBHOUSE”: A one-story, 2,670± square foot clubhouse building including an office space and leasing area for leasing staff, a staff kitchen, restrooms, a community exercise studio and a mail room. The CLUBHOUSE is located at the main entrance to the ±community.
- “MAINTENANCE”: A one-story, 1,395± square foot maintenance building including an office for maintenance staff, a restroom, tool room, key room and warehouse storage area. The MAINTENANCE building is located across from the Lonely Substation near the southeast corner of the site.
- “RESIDENCES”
All residential buildings are two-stories in height (28.50± - 31± feet high) and include 8 apartments per building. Buildings vary in size, however, the architectural style, materials, colors, and roof lines are

compatible and consistent. The buildings are spread throughout the site along with parking, landscaping and active and passive common open space areas. The building pads are stepped to accommodate grading needs and provide visual interest. Buildings are separated by a minimum of 20 feet to comply with fire access and separation requirements.

All individual residences include a lower-level outdoor patio or upper-level deck with storage space (featuring a half wall design for privacy); a laundry area with washer and dryer provided; living/dining space; closet space; separate bedrooms and bathrooms; a well-designed kitchen with a refrigerator, dishwasher, cooktop/oven and microwave, as well as central heat and air conditioning.

The following is a description of each apartment type:

- **ONE BEDROOM (THE ONE):** Thirteen buildings with a building height of 29.5± feet and a footprint of 4,322± square feet featuring one bedroom/one bath units are proposed. A total of 104 one bedroom apartments will be available in the community. Each one bedroom apartment is approximately 801 square feet in size.
- **TWO BEDROOM (THE STANDARD):** Twelve buildings with a footprint of square feet with a building height of 29± feet featuring two bedroom/two bath units are proposed. A total of 96 STANDARD units will be provided. Each STANDARD apartment is 1,068± square feet in size.
- **TWO BEDROOM SUITE (THE SUITE):** Thirteen buildings with a footprint of 6,652± square feet and a height of about 29± feet featuring larger two bedroom/two bath suite units are proposed. A total of 104 SUITE apartments will be offered in the community. Each SUITE apartment is 1,148 square feet in size.

- **THREE BEDROOM (THE TRIO):** Two buildings with a footprint of 7,284 square feet and a height of 31± feet featuring three bedroom/two bath units are proposed. A total of 16 apartments will be provided. Each TRIO apartment is 1,434 square feet in size.
- **PARKING, LANDSCAPING AND AMENITIES**
 - The project includes 698 Parking Spaces including 680 standard and 18 ADA accessible spaces.
 - A total of 6.98± acres (34.70% of the site) is dedicated to landscape area including buffers, parkway treatments, median/entry features, passive and active community spaces including open turf areas, a dog park and areas with children's play structures. The site includes integrated sidewalks throughout with connections to a meandering sidewalk along River Ranch Road.

(Refer to BUILDING ELEVATIONS, FLOOR PLANS, PRELIMINARY SITE PLAN and PRELIMINARY LANDSCAPE PLAN in Sections 3 or 5 of this Submittal Packet).

ARCHITECTURE

Building design incorporates the use of a variety of color, accents and materials, window size variations, pitched roofs, as well as building plane articulation including recesses and projections. A separate entrance and lower-level patios or upper-level balconies are provided for each unit. Each patio and balcony features a minimum outdoor use size of 140± square feet and includes an enclosed storage area and solid half-wall design for privacy. Building materials include wood frame construction with stucco exteriors and accents. Roof elements include a combination of hip, gable and shed roofing. Roof materials will consist of composite architectural shingles. Building colors include Tuscan, French and Spanish body color and trim palettes.

(Refer to COLOR PALETTE in Section 3 and BUILDING ELEVATIONS and FLOOR PLANS in Sections 3 or 5 of this Submittal Packet).

LANDSCAPING, OPEN SPACE AND AMENITIES

The Code requirement for landscaping for MU zoned projects is 15% of the project site area. The required landscape area is 135,918 square feet (3.12 acres). Based on the required area and number of parking spaces, a minimum of 341 trees and 2,718 shrubs will be planted on the site. Planting will include screening trees on the south and east boundaries of the site to additionally buffer the existing residences. The project includes 6.98± acres of open space/landscape area for a total of 34.70±% of the site area. The project **exceeds** Code requirements for the amount of landscape area provided.

(Refer to PRELIMINARY LANDSCAPE PLAN in Sections 3 or 5 of this Submittal Packet).

In addition, the community includes the following amenities:

- A Community Exercise Studio in the Clubhouse near the entrance to the community;
- 2 Playgrounds, with children's play structures, one located in the northerly portion and one located in the southerly portion of the community.
- 4 open Turf Areas, throughout the community for active outdoor play, passive and general use.
- A fenced Dog Park with tables and benches located in the north central portion of the community.

All landscaping and community amenities, as well as buildings, parking, drainage facilities, fencing and walls, etc. will be maintained by the owner with on-site management provided.

(Refer to PRELIMINARY SITE PLAN in Sections 3 or 5 of this Submittal Packet).

NOISE AND VISUAL BUFFERING

The project has been designed with noise and visual buffering of adjacent uses in mind. Residential buildings will include dual pane windows, fiberglass filled exterior doors, 6-inch exterior walls with R19 insulation, central air conditioning and patios and balconies with half-wall designs to help mitigate privacy and noise

concerns from U.S. Highway 50 Alternate, River Ranch Road, the Lonely Substation, nearby commercial establishments and adjacent residences.

In addition, overall building setbacks; perimeter landscape buffers; a retaining wall adjacent to the north boundary of the Lonely Substation; and a retention basin located in the northeast corner of the site will allow for ample separation between the proposed buildings and the property boundaries. To further visually buffer the site and to provide sound attenuation, a 6-foot high decorative solid masonry type wall will be placed around most of the perimeter of the site with the exception of the River Ranch Road frontage which will include split rail fencing.

(Refer to PROPOSED FENCES & WALLS EXHIBIT in Section 3 and PRELIMINARY LANDSCAPE PLAN in Sections 3 or 5 of this Submittal Packet).

TRAFFIC AND ACCESS

The project is anticipated to generate approximately 2,157 Average Daily Trip with 163 PM peak hour trips. *A TRAFFIC IMPACT STUDY outlining trip generation details, existing and projected traffic volumes, analysis of key intersections and impacts on the adjacent street network is provided in Section 4 of this Submittal Packet.* Per the Study, the addition of project traffic does not have any significant impact on nearby intersections that would require mitigation.

With development access easements will be relocated and half-street improvements will be made to River Ranch Road in accordance with recommendations provided in the Traffic Impact Study. River Ranch Road adjacent to the property is currently within a 50-foot wide easement on the project site. With the project, street improvements will be made and .70± acres of right-of-way will be dedicated to the City. A meandering 5-foot wide sidewalk in a landscape strip on the project site adjacent to the street dedication area will also be constructed.

(Refer to Proposed Street Section on PRELIMINARY SITE PLAN in Sections 3 or 5 of this Submittal Packet).

Vehicular access to the project will be from one main entrance point off of River Ranch Road. The entry into the community is via a divided roadway with a landscape median. The entry is located in the central portion of the site providing easy access to the Clubhouse Building which includes the leasing office, exercise area and mail room. Vehicular access throughout the community is provided through perimeter and interior loops for emergency access and tenant convenience.

Access to U.S. Highway 50 Alternate will be eliminated with the project. This will ensure safety for residents. Secondary gated access to River Ranch Road at the southerly end of the project site will provide emergency access, as well as (agreed upon relocated) NV Energy access to the Lonely Substation property. In addition, gated access to Fort Sutter Boulevard will be provided near the southeasterly corner of the property. Sidewalks and walkways are provided to each building and throughout the community. Internal sidewalks will also connect to a meandering sidewalk along River Ranch Road to facilitate safe pedestrian travel along the roadway.

PARKING

The Code Table 32.09.120- 2 – Parking Ratios for multi-family projects of over 100 units requires the following: 1.5 spaces per 1 bedroom/studio units and 2 parking spaces per unit for 2 bedrooms and up plus .25 guest spaces.

Per Code, a total of 668 spaces are required as follows:

104 - 1 bedroom units x 1.5	=	156
216 - 2 and 3 bedroom units x 2	=	432
320 units x .25 guests	=	<u>80</u>
TOTAL	=	668

Of the required total parking amount, 2% of the total shall be designed as accessible parking spaces for a total of 14 ADA accessible spaces.

Site parking in the community consists of 698 spaces as follows:

- 680 standard spaces
- 18 ADA accessible spaces

(Refer to PRELIMINARY SITE PLAN in Sections 3 or 5 of this Submittal Packet).

With final design and consideration of trash receptacle locations and grading needs, however, it is possible that the overall final number of parking spaces may be reduced. The proposed parking, however, is expected to **exceed** Code requirements by 20-30 spaces.

SITE LIGHTING

Dark sky friendly lighting will be provided throughout the community to ensure the safety of residents and guests without contributing to light pollution. Exterior lighting will feature building mounted wall pack fixtures with cut off shields to reduce glare. Ground-mounted lighting will be provided for signage and the flag pole located near the project entry. Lighting will not project over the property boundaries. Parking lot pole lighting/street lighting is not proposed. A photometric analysis by an electrical engineer will be provided with final design of the project.

SIGNAGE

Project signage consisting of large granite boulders with individual black metal lettering identifying the River Ranch Apartment Community will be located on both sides of the entry driveway facing River Ranch Road. In addition, boulder type sign may be used to identify the office location. A Project Directory showing the site layout and the individual buildings will also be provided near the entry to assist visitors and emergency access personnel. Signage will be lit with ground level lighting fixtures.

(Refer to PROPOSED FENCES & WALLS EXHIBIT in Section 3 of this Submittal Packet).

UTILITIES

Public utilities are available to serve the site include:

- Water - City of Fernley - (*PRELIMINARY WATER CALCULATIONS are provided in Section 4 of this Submittal Packet*).
- Sanitary Sewer - City of Fernley (*A SEWER REPORT is provided in Section 4 of this Submittal Packet*).
- Gas – Southwest Gas (note this project is an electric only project and will not use gas)
- Electric – NV Energy
- Telephone – AT&T
- Cable TV/Internet – Charter, AT&T

SCHOOLS

Children residing in the community will attend the following Lyon County schools:

- East Valley Elementary School
- Fernley Intermediate School
- Silverland Middle School
- Fernley High School

DEVELOPMENT CODE COMPLIANCE

The following provides details as to how the project complies with various sections of the Code.

MIXED USE DENSITY/INTENSITY STANDARDS

The project is in compliance with **ALL** requirements of Table 32.06.090 -1 pertaining to the Mixed Use (MU) Density/Intensity Standards as follows:

- **Density/Intensity:**
The Code maximum is 30 dwelling units per acre. The project is 15.38 units per acre. The Code states multi-family residential in the MU zone shall utilize MF30 design standards per Chapter 32.06. The project follows the MF30 design standards which are explained in detail *in this Submittal Packet*.
- **Lot:**
The Code minimum lot size is 6,000 square feet. The overall site (lot size) is 20.80± acres (906,048± square feet). The Code minimum site width is 30 feet. The overall project site has a minimum lot width of approximately 655 feet. The overall project site **exceeds** the minimum requirements for both lot size and width.
- **Setbacks (principal buildings):**
 - **Front/exterior side (non-residential):** Required 10 feet (Front applies to River Ranch Road on the west and U.S. 50 Alternate on the north and; Exterior Side applies adjacent to south and east boundaries of self storage project (APN 021-281-04) and adjacent to the north and west boundaries of the Lonely Substation (APN 021-281-09): Minimum setbacks provided **exceed** the requirements.
 - **Rear:** Required – 0 or 10 feet (N/A due to project site configuration)

- Side or Rear (abutting any residential district): Required – Building height x 1 foot (applies adjacent to east and south property boundaries). The height of the tallest building is 31± feet resulting in a setback requirement of 31 feet. Minimum setbacks provided **exceed** the requirements.

(Refer to SETBACK EXHIBIT in Section 3 of this Submittal Packet).

- Height (maximum): Residential – 35 feet; Actual Building Height of Buildings ranges between 29± and 31± feet which is **below** the height maximum.

ADJACENCY STANDARDS

Section 32.09.030 of the Code outlines Adjacency Standards to minimize impacts on adjacent properties. The 20.80± acre project site is adjacent to a total of 19 single family residences and has been designed to minimize impacts as follows:

SOUTH:

Seven single family residences, all one story in height, are located on the south side of the site. To minimize impacts there are only three buildings with six upper and six lower units oriented with fronts (including unit entrances and lower-level patio and upper-level balcony areas) facing the rear yards of these residences. Blinds for tenant privacy and energy efficiency purposes are included for all windows for all apartment units. Both lower-level patios and upper-level balconies feature half-wall designs for screening and tenant privacy. Parking, landscape buffers and walls separate the buildings from the residences. Setbacks in this area range from 97± to 105± feet. The building pads and parking areas are stepped down from the southerly property boundary so that the residential lots are 7-8± feet higher than the proposed adjacent parking and finished floor of the first floor of the buildings. In addition, buffering will include a 20+ foot wide landscape area which will be planted with screening trees and a 6-foot high solid masonry wall located on the property line.

EAST:

Twelve single family residences (11 single story and 1 two-story) are located on the east side of the site. To minimize impacts, there are only five apartment buildings with ten upper and ten lower units with sides (windows only) facing eight of these residences. Blinds for tenant privacy and energy efficiency purposes are included for all windows for all apartment units. Parking and landscape buffers and walls, as well as a retention basin separate the buildings from the residences. The retention basin is located at the northeasterly boundary of the property adjacent to two of the residences. The side of the one-story maintenance building also faces two of the residences near the southeasterly boundary of the site. Setbacks range from a minimum of 39± feet near the northeasterly boundary of the site to a maximum of 97± feet. The setback from the maintenance building near the southeasterly corner of the site is 77± feet. Buffering will include a landscape area ranging in width from 6± to 39± feet which will be planted with screening trees and a 6-foot high solid masonry wall located on the property line.

(Refer to SITE PHOTOS in Section 3 and PRELIMINARY SITE PLAN, PRELIMINARY GRADING PLAN, CROSS SECTIONS, BUILDING ELEVATIONS and FLOOR PLANS in Sections 3 or 5 of this Submittal Packet).

Lot adjacency standards per Section 32.090.030 (c) Generally (1) a-e apply and are discussed below:

a. EXTERIOR LIGHTING

The applicant fully embraces Nevada's Dark Sky Designation Program. Dark sky friendly lighting will be provided throughout the community to ensure the safety of residents and guests without contributing to light pollution. Exterior lighting will feature building mounted wall pack fixtures with cut off shields to reduce glare. Ground-mounted lighting will be provided for signage and the flag pole located near the project entry. Lighting will not project over the property boundaries. Parking lot pole lighting/street lighting is not proposed. In addition, all residential units will be provided with blinds to limit spillage of interior lighting to the outside.

SOUTH:

As previously mentioned, setbacks in this area range from 97± to 105± feet and building pads and parking areas are stepped down from the southerly property boundary. The distance and grade difference between the existing residences and the buildings where the wall pack fixtures will be attached, as well as landscape buffers and walls will minimize overall lighting impacts.

EAST:

Setbacks range from 39± feet near the northeasterly boundary of the site to 97± feet. Buffering will include a landscape area ranging in width from 6± to 39± feet which will be planted with screening trees and a 6-foot high solid masonry wall located on the property line to buffer and minimize overall lighting impacts.

(Refer to SETBACK EXHIBIT in Section 3 and PRELIMINARY SITE PLAN and PRELIMINARY GRADING PLAN in Sections 3 or 5 of this Submittal Packet).

b. NOISE

Residential buildings will include dual pane windows, fiberglass filled exterior doors, 6-inch exterior walls with R19 insulation and central air conditioning to help mitigate noise concerns generated from inside the units. Amenity areas including the clubhouse, open turf play areas, children's playgrounds and the dog park are all located in the interior portions of the site to minimize outside noise.

SOUTH:

Only three buildings face the southerly property boundary. Blinds for all windows are included with all apartment units. As previously mentioned, setbacks in this area are robust and building pads and parking areas are stepped down from the property boundary. Visibility, noise and privacy impacts from the six lower units will, therefore, be minimal. The overall distance, grade differences and half-wall design of the upper-level balconies will help to mitigate noise impacts from the upper units. In addition, buffering will include a 20+ foot wide landscape area which will be

planted with screening trees and a 6-foot high solid masonry wall located on the property line to help attenuate noise.

EAST:

Only the side areas of five buildings face the easterly property boundary. Blinds for all windows are included with all apartment units. Setbacks meet and exceed adjacency requirements. Landscape buffering ranging from 6± to 39± feet including screening trees and a 6-foot high solid masonry wall located on the property line with help attenuate noise.

c. LOCATION OF OFF-STREET PARKING

Off-street parking and landscape buffers have been located around the perimeter of the site to provide for more setback separation between apartment buildings and existing residences. Parking lot pole lighting is not proposed.

SOUTH:

Parking is located adjacent to six of the seven adjacent residences. The nearest parking area is a minimum of 20 feet away from the south property line and separated by a landscape buffer which will be planted with screening trees and a 6-foot high solid masonry wall. The parking area also includes landscape islands for additional screening and visual relief. In addition, due to topography and grading, the parking in this area will be between 7± and 8± feet lower than the grade of the finish floor grade of the existing residences.

EAST:

Parking is not located adjacent to the four most northerly residences. Parking next to the other eight residences is separated by a 6-foot wide landscape buffer which will be planted with screening trees and a 6-foot high solid masonry wall. The parking area also includes landscape islands for additional screening and visual relief.

(Refer to PRELIMINARY SITE PLAN, PRELIMINARY GRADING PLAN and CROSS SECTIONS in Sections 3 or 5 of this Submittal Packet).

d. WINDOW PLACEMENT

SOUTH:

Only three buildings face the southerly property boundary. Windows facing the south are minimal and screened by lower-level half-wall designs associated with patios and balconies. In addition, setbacks in this area are robust and building pads and parking areas are stepped down from the property boundary. Visibility, noise and privacy impacts from the six lower units will, therefore, be minimal. The overall distance, grade to mitigate visibility from upper-level windows.

EAST:

Only the side areas (windows) of five buildings face the easterly property boundary. Blinds for all windows are included with all apartment units. Setbacks meet and exceed adjacency requirements and range from 39± to 97± feet. Landscape buffering ranging from 6± to 39± feet, screening trees and a 6-foot high solid masonry wall located on the property line will limit visibility through lower-level unit windows and help mitigate visibility from upper-level windows to the east.

(Refer to BUILDING FLOOR PLANS and ELEVATIONS in Sections 3 or 5 of this Submittal Packet).

e. SETBACKS

SOUTH:

There are only three apartment buildings facing the south property line. Building setbacks in this area are generous and range from 97± to 105± feet. Setbacks **exceed** all Code requirements including the adjacency setback transition technique as discussed below.

EAST:

There are only five apartment buildings with sides only facing the east property line. Setbacks in this area range from 39± to 97± feet.

Setbacks **exceed** all Code requirements including the adjacency setback transition technique as further discussed.

(Refer to SETBACK EXHIBIT in Section 3 of this Submittal Packet).

ADDITIONAL TRANSITION ADJACENCY STANDARDS

In addition, Code sections 32.090.030 (e) Lot adjacency standards – Multiple-family residential (1) a-e, apply and are also discussed below:

Existing homes with the exception of one two-story home are one story in height. The proposed apartment buildings do not exceed the height of adjacent existing homes by more than one story as they are only two stories in height, however, the buildings are larger in terms of overall mass. Therefore, transitions using at least three techniques as outline in the Code are required on the east and south boundaries of the site.

The project includes the following three transition techniques as outlined in the Code under (1) b; c; and d as discussed below:

- b. Increasing side yard setback a minimum of five feet beyond that which is required and providing a landscape buffer along a shared lot edge.

PROJECT COMPLIANCE: The side yard setback required is the highest building height x 1 foot. Building heights range from approximately 29.5 feet to 31 feet. For the purpose of this calculation the tallest building has been used. To comply with this transition technique a setback of 31 + 5 feet for a total of 36 feet would be required along with a landscape buffer on the south and east project boundaries.

SOUTH:

There are only three apartment buildings that are located adjacent to the seven residential lots that border the site on the south. Setbacks in this area range from 97± to 105± feet and include a 20-foot minimum wide landscape buffer with wider portions at the easterly and westerly edges of the buffer adjacent to the residential lots. In addition, a solid 6-foot high wall will be constructed along the shared lot edge.

EAST:

All buildings near the east property line are oriented so sides only face the rear yards of the existing single family residences. The closest building to the east property line is the one-bedroom building which is approximately 29.5 feet in height and has the smallest footprint of the four building types. This setback from this location is building is 39± feet and is entirely landscaped with shrubs and screening trees. All other buildings are setback between 77± and 97± feet and include a 6-foot wide landscape buffer, as well as a solid 6-foot high wall along the shared lot edge.

The project design exceeds the requirements of this transition technique.

(Refer to SETBACK EXHIBIT in Section 3 and PRELIMINARY LANDSCAPE PLAN in Sections 3 or 5 of this Submittal Packet).

- c. Providing variations in the side building wall and roof form so that new structures have a comparable scale as adjacent homes along a shared side.

PROJECT COMPLIANCE: All buildings have been designed with variations in front and side walls and roof forms to provide visual interest.

SOUTH:

There are only three apartment buildings that front the adjacent seven residential lots bordering the site on the south. Three different building types are located in this area to provide visual interest. Variations in the building fronts, walls, colors and roof forms are provided. Setbacks in this area range from 97± to 105± feet and include a 20-foot minimum wide landscape buffer with wider portions at the easterly and westerly edges of the buffer adjacent to the residential lots. A solid 6-foot high wall will be constructed along the shared lot edge. In addition, due to topography and grading, the finished floors of the buildings are situated between 7± and 8± feet below the finished floor of

the existing residences. The proposed buildings have similar plate heights as typical two-story homes and due to grading in this area will be comparable in scale.

EAST:

All buildings (5 residential and the maintenance building) located near the east property line are oriented so sides only face the rear yards of the existing single family residences. Three building types are located in this area to provide visual interest. Variations in the building sides, walls, colors and roof forms are provided.

The closest building to the east property line, adjacent to the existing two-story single family residence, is the one-bedroom building. This building is approximately 29.5 feet in height and has the smallest footprint of the three building types making it comparable in scale. The setback from this location is 39± feet and is entirely landscaped with shrubs and screening trees. All other buildings are setback between 77± and 97± feet and include a 6-foot wide landscape buffer, as well as a solid 6-foot high wall along the shared lot edge. The proposed buildings have similar plate heights as typical two-story homes and with setbacks and architectural side wall and roof design variations are comparable in scale.

The project design meets and/or exceeds the requirements of this transition technique.

(Refer to SITE PHOTOS in Section 3 and PRELIMINARY SITE PLAN, PRELIMINARY GRADING PLAN, CROSS SECTIONS and BUILDING ELEVATIONS in Sections 3 or 5 of this Submittal Packet).

- d. Utilizing a roof pitch and overhang similar to that of the adjacent structures.

PROJECT COMPLIANCE:

SOUTH and EAST:

Adjacent homes to the south and east have gable roofs with one to two-foot overhangs and a common roof pitch. Roofs are not flat. The project utilizes a combination of gable, hip and shed roofs of varying pitches with two-foot overhangs. The building roof forms complement the roof lines of adjacent residential properties.

The project design meets and/or exceeds the requirements of this transition technique.

(Refer to SITE PHOTOS in Section 3 and BUILDING ELEVATIONS in Sections 3 or 5 of this Submittal Packet).

MF30 DESIGN STANDARDS

Table 32.06.090-1 of the Code addresses MU Density/Intensity Standards and states that multi-family projects in the MU zone shall follow the MF30 design standards. Section 32.06.080 outlines Residential Multiple family (MDR14, MF21 and MF30) design standards. Each standard (abbreviated) is stated below along with the applicant's project compliance response.

(c) Design Standards

(1) Site planning standards

(a) Site Character

1. *Natural Site Features shall be preserved...*

APPLICANT'S RESPONSE: The site is characterized by disturbed and undisturbed land with sparse native vegetation. There are no natural site features to be preserved.

(Refer to AERIAL and SITE PHOTOS and SITE CONDITIONS EXHIBITS in Section 3 of this Submittal Packet).

2. *Natural features such as mature trees, creeks...*

APPLICANT'S RESPONSE: There are no trees, creeks or riparian corridors on the site. There are no natural site features to be preserved.

(Refer to AERIAL and SITE PHOTOS and SITE CONDITIONS EXHIBITS in Section 3 of this Submittal Packet).

3. *Multifamily developments should be served by arterial and collector...*

APPLICANT'S RESPONSE: The project will be served by one entry point from River Ranch Road. River Ranch Road provides access to U.S. Highway 50 Alternate to the north and serves the Pioneer Crossing Casino and mini-warehouse facility to the north, as well as residential uses to the south. Half street improvements in accordance with the City's Collector Street standards are proposed with the project.

(Refer to PRELIMINARY SITE PLAN in Sections 3 or 5 of this Submittal Packet).

(b) Site Design

1. *Provide landscape, open space and amenity areas...*

APPLICANT'S RESPONSE: The site includes 6.98± acres (34.70% of the site area) of landscape area which will beautify the entire community. Amenity areas including a clubhouse with an exercise studio, passive and active open space, turf areas, children's playgrounds and a dog park are located throughout the development ensuring access and useability for residents.

(Refer to PRELIMINARY SITE and LANDSCAPE PLANS in Sections 3 or 5 of this Submittal Packet).

2. *Provide convenient pedestrian circulation...*

APPLICANT'S RESPONSE: The project site includes an integrated sidewalk system throughout the community. Pedestrian circulation includes access to parking, buildings and community amenity areas. Internal sidewalks will be 4-feet in width. In addition, the network provides access to the proposed 5-foot wide meandering sidewalk adjacent to River Ranch Road.

(Refer to PRELIMINARY SITE and LANDSCAPE PLANS in Sections 3 or 5 of this Submittal Packet).

3. *Provide appropriate buffering...*

APPLICANT'S RESPONSE: The site is well buffered to and from adjacent uses. Setbacks and landscaping exceed Code requirements. A solid masonry type wall 6 feet in height will be provided adjacent to existing residences to the south and east, as well as adjacent to U.S. Highway 50 Alternate.

(Refer to SETBACK and FENCE, WALL AND SIGNAGE EXHIBITS in Section 3, as well as PRELIMINARY SITE and LANDSCAPE PLANS in Sections 3 or 5 of this Submittal Packet).

4. *Provide convenient and adequate resident and guest parking.*

APPLICANT'S RESPONSE: Parking convenient to the Clubhouse and each apartment building is located throughout the project site. Parking exceeds Code requirements for residents and guests.

(Refer to PRELIMINARY SITE PLAN in Sections 3 or 5 of this Submittal Packet).

5. *Activate street frontages with interesting building design, landscaping...*

APPLICANT'S RESPONSE: With the project, River Ranch Road will be improved with half street improvements. A 5-foot wide meandering sidewalk will be constructed within landscape areas along the street frontage with decorative split rail fencing as a pedestrian amenity. The meandering sidewalk will connect to 4-foot wide interior sidewalks located throughout the community. Buildings adjacent to the frontage vary in size and orientation to provide interest from the street.

(Refer to PROPOSED FENCES & WALLS EXHIBIT in Section 3 and PRELIMINARY SITE and LANDSCAPE PLANS in Sections 3 or 5 of this Submittal Packet).

c. *Building Orientation*

1. *Buildings shall be generally oriented with varying setbacks...*

APPLICANT'S RESPONSE: The site plan has been designed to include buildings of varying sizes, orientations, offsets and setbacks to provide visual interest. In addition, open space areas have been included adjacent to and between the buildings to avoid a monotonous appearance.

(Refer to PRELIMINARY SITE and LANDSCAPE PLANS in Sections 3 or 5 of this Submittal Packet).

2. *Buildings shall be oriented in such a way as to create courtyards and open space areas...*

APPLICANT'S RESPONSE: Buildings are oriented to provide open space yards and corridors between the structures to meet Fire Safety requirements and for strategic location of community amenities. The site includes 6.98± acres (34.70%) of landscape area. All units

include private patios and access to open space via an integrated sidewalk system throughout the community.

(Refer to PRELIMINARY SITE and LANDSCAPE PLANS in Sections 3 or 5 of this Submittal Packet).

3. *To provide indoor privacy between living spaces, there should be distance separations, buffering or changes in the angle of units. Private outdoor space...*

APPLICANT'S RESPONSE: The orientation of the buildings varies with some fronts facing each other, some sides facing sides, some fronts facing sides and a mix facing open space or amenity areas. The buildings also step down from south to north and setbacks are varied to provide project interest and privacy between living units. All buildings are separated by at least 20 feet. Blinds for tenant privacy are provided for all windows for all apartment units. Private outdoor lower-level patios and upper-level balconies are provided for each unit. Solid half-wall designs help provide privacy for outdoor use of the patios and balconies. Community open space and amenities are located and spread throughout the project. All common open space and amenity areas are located in accessible and useable areas. There are no steep slopes or riparian areas on the project site.

(Refer to PRELIMINARY SITE and LANDSCAPE PLANS and BUILDING FOOTPRINTS and ELEVATIONS in Sections 3 or 5 of this Submittal Packet).

(2) Parking and Circulation

a. Vehicular access

1. *Two points of ingress/egress shall...*

APPLICANT'S RESPONSE: There are three points of ingress/egress for the project. The primary access is from River Ranch Road near the center portion of the community. This access point includes a center

median. In addition, there is a gated access from River Ranch Road at the southerly boundary of the site. This access is intended for emergency access purposes, as well as for restricted access by NV Energy to the Lonely Substation. The third access point is located at the southeast corner of the site and will be gated for emergency access to and from Fort Sutter Boulevard to the east.

(Refer to PRELIMINARY SITE PLAN in Sections 3 or 5 of this Submittal Packet).

2. *No vehicular access shall be provided on a local street...*

APPLICANT'S RESPONSE: River Ranch Road borders the site on the west and will provide primary access to the community. River Ranch Road provides direct access from this site, as well as the single family neighborhood to the south, to the north to U.S. Highway 50 Alternate. Access to the south through the residential neighborhood by future residents is not efficient and not anticipated to be frequent. No direct via Fort Sutter Boulevard. Access in this location will be gated for emergency vehicle use only.

b. *(Driveways) Entry driveways shall have a sidewalk on both sides and shall include...*

APPLICANT'S RESPONSE: There is only one entry driveway proposed from River Ranch Road located near the center portion of the site. The entry drive will have a 4-foot wide sidewalk on each side connecting to internal sidewalks, the Clubhouse and the 5 foot wide meandering sidewalk on River Ranch Road. The entry area will incorporate three features including ground lighted monument signage (large granite boulders on each side with raised individual lettering identifying the River Ranch Apartments); enhanced landscaping and a lighted flag pole.

(Refer to PRELIMINARY SITE and LANDSCAPE PLANS in Sections 3 or 5 of this Submittal Packet).

c. *Parking*

1. *Off-street parking shall be designed to minimize...*

APPLICANT'S RESPONSE: Off-street parking is located throughout the community. There are only a few spaces located adjacent to River Ranch Road at the southwesterly corner of the site. These spaces, however, are separated from the road with a landscape buffer and meandering sidewalk. In addition, the design of the parking area includes a number of landscaped islands for visual relief.

(Refer to PRELIMINARY SITE and LANDSCAPE PLANS in Sections 3 or 5 of this Submittal Packet).

2. *On-site parking spaces shall be provided...*

APPLICANT'S RESPONSE: On-site surface parking is provided throughout the community. All parking is located to conveniently serve the residents. Parking spaces are within 150 feet or less from each building.

(Refer to PRELIMINARY SITE PLAN in Sections 3 or 5 of this Submittal Packet).

3. *Carports and garages shall be designed...*

APPLICANT'S RESPONSE: N/A. Carports and garages will not be provided with this project.

4. *To the maximum extent possible, detached garages...*

APPLICANT'S RESPONSE: N/A. Carports and garages will not be provided with this project.

5. *Detached garages and carports shall be...*

APPLICANT'S RESPONSE: N/A. Carports and garages will not be provided with this project.

d. *Pedestrian Circulation*

1. *All multifamily/attached single-family developments shall...*

APPLICANT'S RESPONSE: Sidewalks, 4-feet in width, are provided throughout the community to facilitate access to and connections between parking, buildings, the Clubhouse, and all open space and amenity areas. The sidewalk system is integrated and connects to the 5-foot wide meandering sidewalk adjacent to River Ranch Road.

(Refer to PRELIMINARY SITE PLAN in Sections 3 or 5 of this Submittal Packet).

2. *Sidewalks along public streets shall...*

APPLICANT'S RESPONSE: The proposed meandering sidewalk along River Ranch Road is 5-feet in width.

(Refer to PRELIMINARY SITE PLAN in Sections 3 or 5 of this Submittal Packet).

3. *The parking area shall be designed in a manner which links...*

APPLICANT'S RESPONSE: All parking areas on the site have been designed with links to sidewalks that provide access to all buildings and open space amenity areas.

(Refer to PRELIMINARY SITE PLAN in Sections 3 or 5 of this Submittal Packet).

(3) Community Amenities

- a. Clusters of buildings shall be arranged...*

APPLICANT'S RESPONSE: Common open spaces and recreational amenities are located throughout the project site. Clusters of buildings are arranged to frame and enclose these areas providing views from the fronts and side windows of the units.

(Refer to PRELIMINARY SITE PLAN in Sections 3 or 5 of this Submittal Packet).

- b. Multifamily/attached single-family developments shall have useable community...*

APPLICANT'S RESPONSE: The project features useable community amenities including the Clubhouse exercise studio, passive and active open space areas, children's playgrounds, and a dog park to foster recreation and social activities.

(Refer to PRELIMINARY SITE PLAN in Sections 3 or 5 of this Submittal Packet).

- c. Multifamily developments shall provide recreational amenities ...*

APPLICANT'S RESPONSE: The project includes 320 multifamily units. According to Table 32.03.080-2, at least 6 amenities are required. The project includes 8 amenities.

d. *Developments shall choose from the following recreational facilities...*

APPLICANT'S RESPONSE: The project includes the following 8 recreational facilities that are included on the list:

- Exercise equipment (Exercise studio in Clubhouse)
- Court and lawn areas for field games (4 large turf areas for open play and games)
- Play Structure (2 playground areas designated for Children's Play Structures)
- Dog Park (including fencing, tables and benches)

(Refer to PRELIMINARY SITE PLAN in Sections 3 or 5 of this Submittal Packet).

e. *To ensure that recreational facilities are conveniently located...*

1. *Be located within 1,000 feet...*

APPLICANT'S RESPONSE: The site length (longest portion) is 1,266± feet and the width (widest portion) is 925± feet. Recreational amenities are spread throughout the site and are within 1,000 feet from any dwelling unit.

(Refer to PRELIMINARY SITE PLAN in Sections 3 or 5 of this Submittal Packet).

2. *Be connected to residential buildings...*

APPLICANT'S RESPONSE: All recreational amenities are connected to buildings by 4-foot wide internal sidewalks and open space.

(Refer to PRELIMINARY SITE PLAN in Sections 3 or 5 of this Submittal Packet).

f. All living units shall have a private open space...

APPLICANT'S RESPONSE: All units have either lower-level private outdoor patios or upper-level balconies featuring half-wall designs for tenant privacy. Patios and balconies are a minimum of 140 square feet in size and exceed Code requirements.

(Refer to BUILDING FLOOR PLANS and BUILDING ELEVATIONS in Sections 3 or 5 of this Submittal Packet).

(4) Landscaping and Screening

a. Perimeter landscaping and buffers...

APPLICANT'S RESPONSE: Landscaping and buffers are provided around the perimeter of the community in accordance with Code Landscaping standards and requirements.

(Refer to PRELIMINARY LANDSCAPE PLAN in Sections 3 or 5 of this Submittal Packet).

b. Perimeter fencing and/or walls shall be a maximum of six feet tall except for the following conditions:

- 1. Walls that are adjacent to areas occupied or zoned for commercial development shall be eight feet tall.*

APPLICANT'S RESPONSE: All walls are proposed to be 6-feet in height. The site is adjacent to property zoned EC (mini-warehouses with outside storage) and I (Lonely Substation utility facility) which are industrial type uses but is not adjacent to property occupied or zoned commercial.

- 2. Walls that are adjacent to property occupied by or zoned for single family...*

APPLICANT'S RESPONSE: All walls adjacent to property occupied or zoned for single family residences will be 6 feet in height. This applies to the south and east property boundaries where properties are zoned SF6 and occupied by single family residences.

(Refer to PROPOSED FENCES & WALLS EXHIBIT in Section 3 and PRELIMINARY SITE PLAN in Sections 3 or 5 of this Submittal Packet).

3. *Fencing and wall shall incorporate the use of durable, decorative materials...*

APPLICANT'S RESPONSE: Solid masonry type walls (pre-cast decorative Verti-Crete or equivalent) and durable wood, split rail fences will be provided around perimeter areas of the site.

(Refer to PROPOSED FENCES & WALLS EXHIBIT in Section 3 of this Submittal Packet).

4. *Continuous lengths of blank walls or fencing without variation...*

APPLICANT'S RESPONSE: Walls will include a decorative type finish. Capped pillars will be provided approximately every 13 feet to provide interest and variation in the walls.

- c. *To promote visual interest, projects are encouraged to incorporate a combination of solid and open materials with offsets...*

APPLICANT'S RESPONSE: To promote visual interest, the project includes solid decorative type masonry walls and open view split rail fencing around the perimeter of the site. Solid walls include capped

pillars approximately every 13 feet providing visual interest, variation and offsets in the horizontal plane of the wall. All walls and fences are adjacent to landscape areas featuring planted trees and shrubs to also provide screening and visual relief.

(Refer to PROPOSED FENCES & WALLS EXHIBIT in Section 3 and PRELIMINARY LANDSCAPE PLAN in Section 3 or 5 of this Submittal Packet).

(5) Building Architecture

a. Building Design

- 1. There is no specific architectural “style” required...*

APPLICANT’S RESPONSE: The architectural style including form, size, color, materials and roof lines of all building types is compatible and complimentary throughout the community.

- 2. In order to avoid boxy and monotonous facades that lack...*

APPLICANT’S RESPONSE: All buildings incorporate articulation including the use of stairs, wall plane variations including recesses and projections, patio and balcony projections, windows, color bands and color variations to avoid boxy and monotonous facades. There are no flat wall planes exceeding 50 feet vertically or horizontally.

- 3. Architectural features shall be incorporated to emphasize building features...*

APPLICANT’S RESPONSE: The buildings have been designed with a distinct architectural style emphasizing features such as private, covered entries; lower-level

patios and upper-level balconies; variation in window sizes and shapes, as well as wall planes including recesses and projections and varying roof forms.

4. *The following standards apply:*

- a. *The architectural character (i.e. exterior materials, window trims, cornices, arches, etc.) of the exterior elevations...*

APPLICANT'S RESPONSE: The buildings have been situated on the site to include different sized buildings and orientations facing the River Ranch Road public street. The architectural character of the exterior elevations is consistent on all sides of all buildings.

- b. *Roof shall have variations in plane accomplished by changes in plane or by...*

APPLICANT'S RESPONSE: The buildings include a combination of hip, gable and shed roofing. The primary roof has a 4:12 pitch and the patio roof have a 3:12 pitch. There are no flat roofs proposed.

- c. *Stairs shall be compatible with the architecture...*

APPLICANT'S RESPONSE: Individual stairs serve the individual upper units and provide access to covered entries. Stairs are integrated into the design of the buildings. Stair steps are concrete and include black metal railings.

- d. Access points to units shall be clustered...

APPLICANT'S RESPONSE: Private, covered access entry points are provided to each unit. Two entry points, one to the lower unit and one to the upper unit via a stairway, are provided on each side of the building (front and back). The lower and upper-level front doors line up with each other in a clustered manner. Entry doors are painted an accent color for distinction.

(Refer to COLOR PALETTE in Section 3 and BUILDING FLOOR PLANS and BUILDING ELEVATIONS in Sections 3 or 5 of this Submittal Packet).

b. Roof Forms

- 1. *Roof forms shall be designed to correspond...*

APPLICANT'S RESPONSE: The buildings include a combination of hip, gable and shed roof forms. The various forms have been designed to correspond to building elements and functions including entries, building plane variation areas and patios/balconies.

- 2. *All roof vents, pipes, other roof penetrations and attachments...*

APPLICANT'S RESPONSE: Roof penetrations are limited and will not extend above roof ridgelines. No chimneys or equipment on the roof are proposed. All roof vents, pipes and other penetrations will be painted to match and blend in with the roof design to minimize visual impacts from River Ranch Road and other public areas.

c. *Building Materials*

1. *Exterior elevation shall demonstrate...*

APPLICANT'S RESPONSE: Exterior elevations provide a unified appearance and include a logical use of complementary materials and colors to prevent expansive areas of visual monotony.

2. *Change of materials or color shall occur at changes in plane...*

APPLICANT'S RESPONSE: Changes in color and the use of accents occur at changes in wall plane recesses and projections and logical break points. In addition, the buildings include the use of distinctive door colors.

3. *Building materials and color schemes shall be consistent with the...*

APPLICANT'S RESPONSE: Building materials include stucco and complimentary composite architectural shingles and are consistent with the architectural style. Color schemes for the individual buildings include Tuscan, French and Spanish body color and trim palettes.

The use of compatible color schemes avoid monotony and provides visual interest throughout the community.

4. *Materials such as brick and stone shall be left in their natural colors.*

APPLICANT'S RESPONSE: All accent materials including brick and stone, if and where used, will be left in their natural colors.

(Refer to COLOR PALETTE in Section 3 and BUILDING FLOOR PLANS and BUILDING ELEVATIONS in Sections 3 or 5 of this Submittal Packet).

COMPREHENSIVE MASTER PLAN COMPLIANCE

The following is an overview of specific Chapters, Sections and Goals and Policies Strategies provided in the 2018 Comprehensive Master Plan that support the proposed River Ranch Apartment project.

As stated in the document, the purpose of the Plan is to guide decision making regarding the physical development of the City. Growth, future employment and economic development opportunities are discussed, as well as the need for Fernley to consider a variety of land uses and economic development strategies. The Plan states the need to diversify the current housing stock by providing options including additional multi-family and renter-occupied housing opportunities.

PROJECT COMPLIANCE: The proposed project provides new multi-family renter-occupied housing in the City of Fernley in accordance with the comprehensive plan including the following:

CHAPTER 1 - POPULATION, HOUSING AND EMPLOYMENT

1.4 EMPLOYMENT, POPULATION AND HOUSING PROJECTIONS

This section discusses the growth in employment through new job creation leading to significant increases in the demand for housing in the Northern Nevada region. It also cites the need for Fernley to compete by diversifying the housing stock and providing workforce housing units to meet future population and employment demands. The proposed River Ranch Apartments project is specifically in compliance with the following Goals and Action Strategies outlined in the Plan:

1.5 GOALS AND ACTION STRATEGIES

HP.1.1 Enhance Fernley's vitality as a community by providing a variety of housing types, density and costs that accommodate the needs, desires and financial abilities of the current and future households.

PROJECT COMPLIANCE: The multi-family project has a density of 15.38 units per acre and will add to the diversity of housing options in the City of Fernley. The project will provide entry-level rental housing to accommodate the needs of existing and future residents seeking nearby job opportunities.

HP.1.1.4 Encourage the efficient use of land and existing infrastructure by focusing on achieving good design in new housing or redeveloped housing on either vacant land, infill parcels and/or underdeveloped parcels.

PROJECT COMPLIANCE: The project is efficiently designed at a density of 15.38 units per acre. The project is served by existing infrastructure and is well designed in full accordance with MU density/intensity standards, adjacency standards and MF30 design standards.

(Refer to PRELIMINARY SITE PLAN and BUILDING ELEVATIONS in Sections 3 or 5 of this Submittal Packet).

HP.1.4 Provide opportunities for high-density residential development near the downtown core and in the community where elsewhere in the community where appropriate.

PROJECT COMPLIANCE: The project is a multi-family residential project with a density of 15.38 units per acre and is located in an appropriate area designated on the Comprehensive Master Plan for Suburban Mixed Use Development. The project provides a logical transition from single family residences to the south and east to more intense industrial and commercial type uses to the north and west.

(Refer to EXISTING MASTER PLAN EXHIBIT in Section 3 of this Submittal Packet).

HP.1.4.1 Multi-family land use should be dispersed throughout the community near employment centers and transportation corridors rather than concentrated in a few areas.

PROJECT COMPLIANCE: The site is located south of U.S. Highway 50 Alternate with direct access from River Ranch Road. The site is in close proximity to the Victory Logistics District employment center and the

planned extension of Nevada Pacific Parkway. The project will be key in providing needed close by workforce housing.

(Refer to VICINITY MAP in Section 3 of this Submittal Packet).

HP.1.6 Provide a spectrum of high quality housing to meet the City's need.

PROJECT COMPLIANCE: The project has been well designed as a high quality entry-level multi-family apartment community that will provide new housing opportunities for existing and future residents. The project meets all City design standards.

(Refer to PRELIMINARY SITE PLAN and BUILDING ELEVATIONS in Sections 3 or 5 of this Submittal Packet).

3. LAND USE

This section references that future growth and development, as well as the planned extension of infrastructure and services are all based on the Land Use Map. This section also states that a balanced land plan for the City of Fernley provides for a diverse mix of housing types. The Plan adds the Suburban Mixed Use land use designation to encourage a broad mix of uses including high-density residential within close proximity to services and employment. The Plan further states the goal for the City is to effectuate growth and redevelopment as depicted on the Land Use Map and to have the Master Plan and Zoning Maps in conformance with each other.

3.7 GOALS AND ACTION STRATEGIES

L.U.1.2 Encourage new development to be in accordance with the Comprehensive Master Plan land use category, and other land use controls to accomplish community principles.

PROJECT COMPLIANCE: The project site is designated Suburban Mixed Use on the Comprehensive Master Plan and is in compliance with the Master Land Use Plan and specific Master Plan Goals and Action Strategies for Population, Housing and Employment and Land Use.

(Refer to EXISTING MASTER PLAN EXHIBIT in Section 3 of this Submittal Packet).

L.U.1.4 Ensure existing and future land uses are compatible.

PROJECT COMPLIANCE: The project design meets all Adjacency Standards and is compatible with existing and future land uses. The project density provides a logical transition from existing single family residences to the south and east and more intense industrial and commercial type uses to the north and west.

(Refer to PRELIMINARY SITE PLAN and BUILDING ELEVATIONS in Sections 3 or 5 of this Submittal Packet).

CONDITIONAL USE PERMIT FINDINGS

The following outlines the required findings and provides responses to address the requested Conditional Use Permit request as outlined in the Development Code per Section 32.03.050 (b) Conditional Use Permit (6) a-f:

- a. The approving agency must make findings that the proposed conditional use will be in compliance with the master plan;

APPLICANT'S RESPONSE: The master plan designation for this property is Suburban Mixed Use (SMU). The requested Conditional Use Permit, as well as the Zoning Change to MU, is consistent with the master land use plan and meets all the requirements of the Code. The proposed project is additionally in conformance with specific Population, Housing and Employment and Land Use Goals and Action Strategies.

- b. The conditional use will be compatible with the existing or permitted uses of adjacent properties;

APPLICANT'S RESPONSE: The project density is 15.38 dwelling units per acre and provides a perfect density transition from the adjacent single family residences to the south and east and the more intensive industrial and commercial type uses (mini-warehouses, Lonely Substation utility facility and Pioneer Crossing Casino) to the south and west. The project has been designed to be compatible with existing and planned adjacent uses.

The project meets and/or exceeds all compatibility requirements including mixed use density/intensity standards; adjacency standards and MF30 design standards.

- c. The potential impairment of natural resources and the total population, which the available natural resources will support without unreasonable impairment;

APPLICANT'S RESPONSE: There is no potential impairment of natural resources as a result of the proposed project. The site consists of disturbed and undisturbed land with sparse native vegetation. There are no trees, streams, waterways, drainageways, wetlands or other natural resources located on the property. In terms of water resources, water rights to support the residential and irrigation needs of the project are readily available and will be dedicated to the City with development.

- d. The availability of and need for affordable housing in the community, including affordable housing that is accessible to persons with disabilities;

APPLICANT'S RESPONSE: The need for additional affordable housing in Northern Nevada including Fernley is well documented. In August, 2022, United States Secretary of Transportation, Pete Buttigieg, visited the City of Fernley to announce a grant to complete Nevada Pacific Parkway linking I-80 with U.S. Highway 50 Alternate. During the ceremony, various officials spoke and announced 10,000 new jobs would be coming to Fernley largely in the Victory Logistics District which is in close proximity to the project site.

(Refer to VICINITY MAP in Section 3 of this Submittal Packet).

The River Ranch Apartments project will provide homes to many of the anticipated 10,000 workers. The project is an entry-level, obtainable, market rate 320-unit development. All ground floor units (160 apartments) will be accessible and a minimum of two percent of those units will be fully handicap adapted in compliance with the Fair Housing Act (FHA) and Americans with Disabilities Act (ADA). Additionally, there will be fully

accessible amenities, accessible sidewalks and handicap parking to meet requirements throughout the community.

- e. The conditional use permits impact have been conditioned to address identified impacts;

APPLICANT'S RESPONSE: The submitted Conditional Use Permit application addresses all City of Fernley requirements for projects located in a MU zone including density/intensity standards, multi-family design standards and residential adjacency standards. The City of Fernley will be responsible for providing any conditions to address impacts that have not been mitigated by the applicant through the submitted project application.

- f. Public notice has been given and a public hearing held per the requirements of the development code and the Nevada Revised Statutes.

APPLICANT'S RESPONSE: The City of Fernley is responsible for providing public notice in accordance with the Development Code and Nevada Revised Statutes. A public hearing or hearings will be properly noticed and held with a decision as to the Conditional Use Permit request made in accordance with all legal requirements.

OVERALL PROJECT SUMMARY

- The project site consists of 20.80± acres and is located south of U.S. Highway 50 Alternate and east of River Ranch Road in close proximity to the Victory Logistics District and within easy access to the proposed extension of Nevada Pacific Parkway.
- Infrastructure and utilities are available to serve the proposed project.
- In the coming years, approximately 10,000 new jobs are expected to be created in Fernley as a result of the opportunities in the Victory Logistics District and other new employment areas.
- A variety of new housing options including entry level multi-family projects with rental opportunities are needed to accommodate future anticipated work force growth.
- The project is a well designed apartment community in an ideal location to help meet the future housing needs of the City of Fernley.

ZONING MAP AMENDMENT

- The proposed MU Zoning is in full conformance with the SMU master land use plan designation, as well as applicable Goals and Action Strategies.
- The existing site zoning (I, EC and C2) is not in conformance with the existing master plan designation of Suburban Mixed Use (SMU).
- The Comprehensive Master Plan states the City's goal is to have Zoning be in conformance with the Master Land Use Plan.
- All Zoning Map Amendment Required Findings are justified in detail and can be made by the Planning Commission and City Council.

CONDITIONAL USE PERMIT

- The project is a 320-unit multi-family apartment community and will provide entry level housing options to meet the needs of new and existing residents seeking new job opportunities in the City of Fernley.

- The project has a density of 15.38 units per acre and provides a logical transition from existing single family residences to the south and east and higher intensity industrial and commercial type uses to the north and west.
- The project has been well designed to be compatible with surrounding land uses.
- The project is in compliance with all zoning and land use compatibility requirements including MU Density/Intensity Standards; Adjacency Standards; and MF30 Design Standards.
- The project is in compliance with the Comprehensive Master Plan Land Use Plan designation of Suburban Mixed Use (SMU), as well as specific Goals and Action Strategies relating to Population, Housing and Employment and Land Use.
- All Conditional Use Permit Required Findings are justified in detail and can be made by the Planning Commission and City Council.

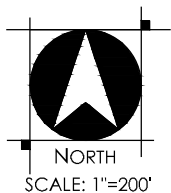
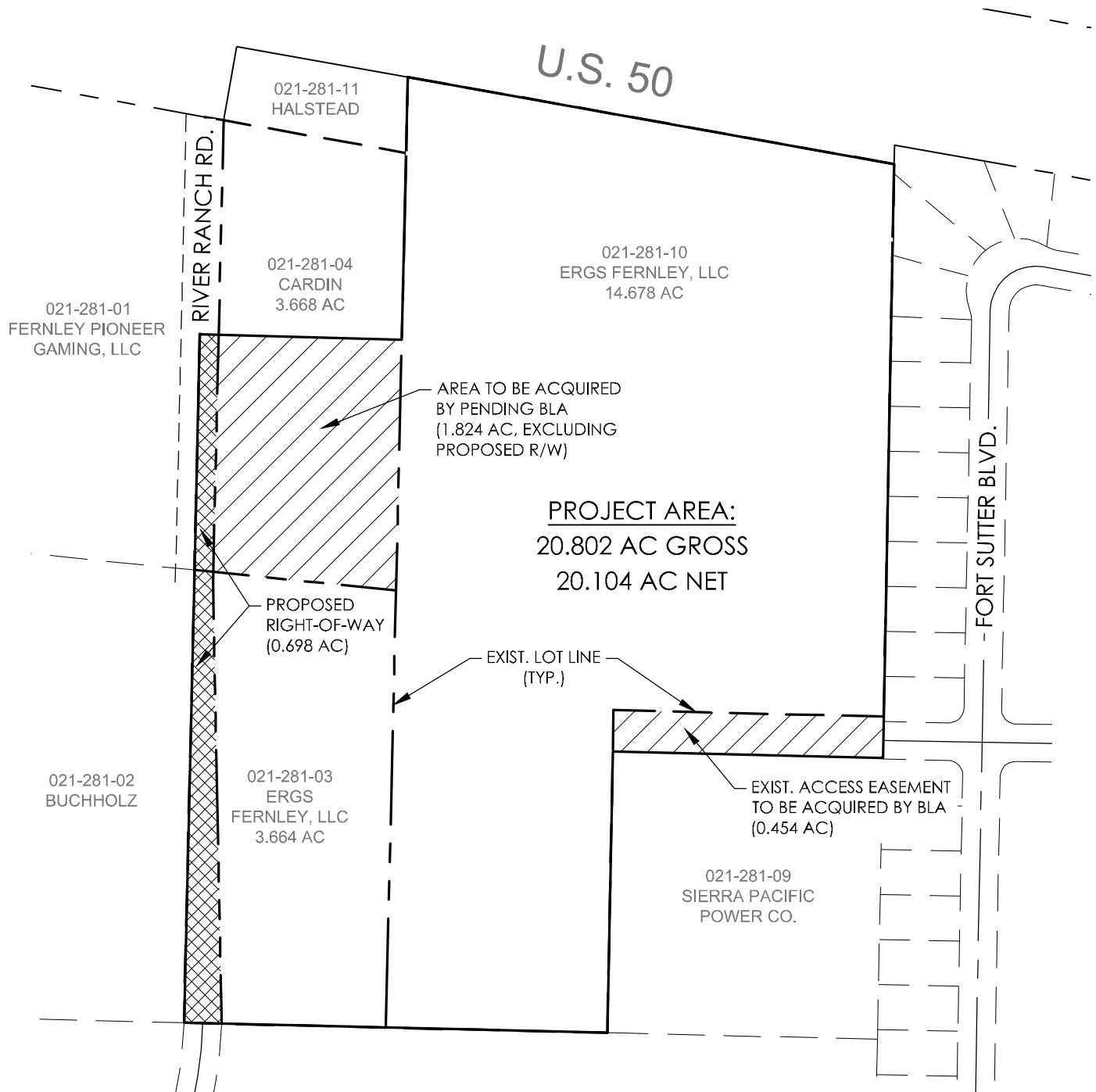
SECTION 3 – MAPS AND EXHIBITS

ZMA / CUP FOR RIVER RANCH APARTMENTS

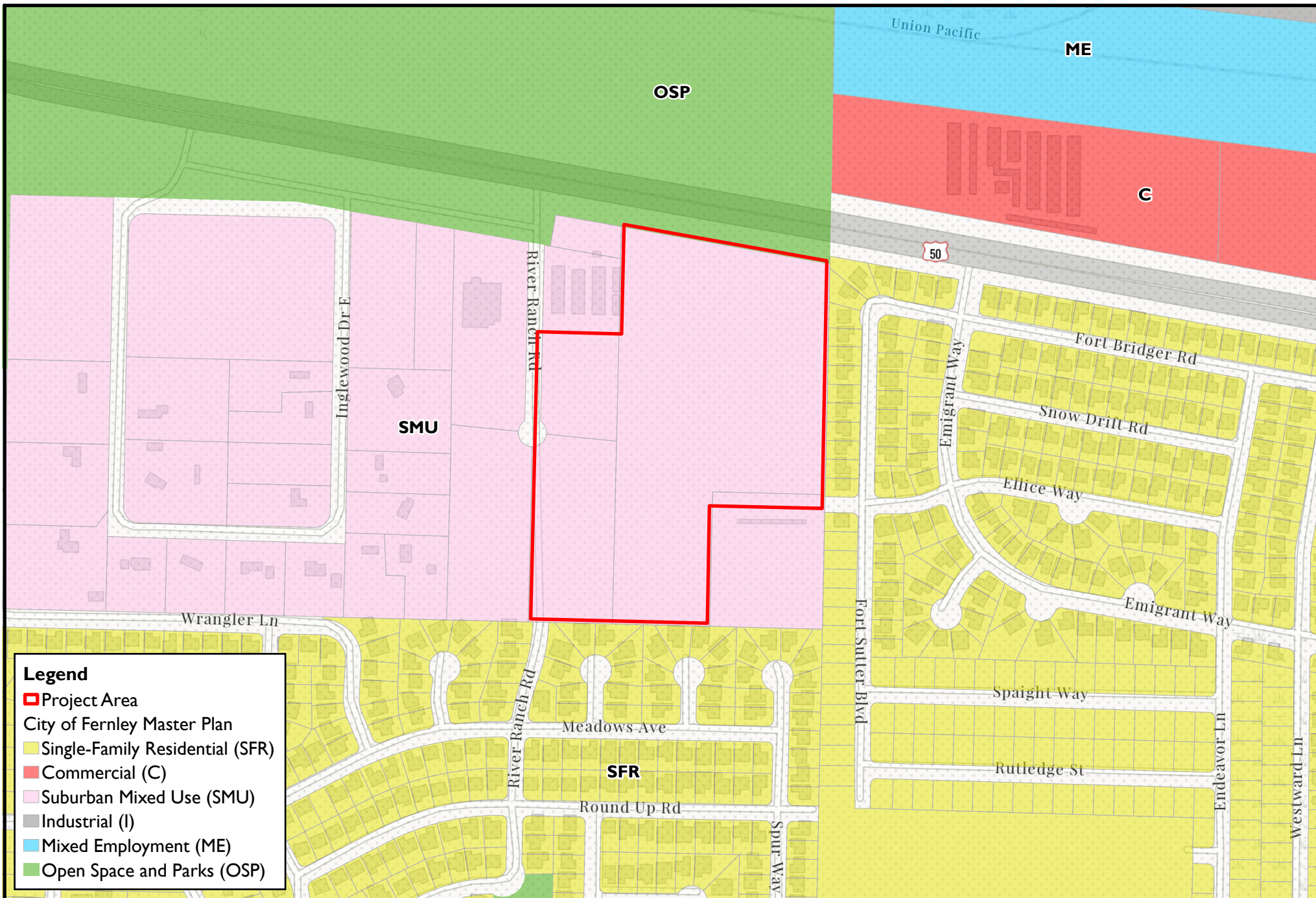
PARCEL AREAS

FERNLEY, NEVADA

SEPTEMBER 2022



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1961 Corporate Boulevard Tel 775.823.4068
Reno, NV 89502 Fax 775.823.4066



Existing Master Plan River Ranch Apartments September 2022

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Reno, NV 89502 Fax: 775.823.4066

SITE PHOTOS
River Ranch Apartments ZMA-CUP



Overall site – view northeast



Overall site – view north



Overall site – view southeast

SITE PHOTOS

River Ranch Apartments ZMA-CUP



NV Energy substation panorama – view northeast



NV Energy substation panorama – view east



NV Energy substation panorama – view southeast

SITE PHOTOS

River Ranch Apartments ZMA-CUP



Houses on south boundary – view southeast



Houses on south boundary – view south



Houses on south boundary – view southwest

SITE PHOTOS

River Ranch Apartments ZMA-CUP



Houses on east boundary – view south-southeast



Houses on east boundary – view north-northeast

SITE PHOTOS
River Ranch Apartments ZMA-CUP



Highway 50A on north boundary – view east



Highway 50A on north boundary – view west



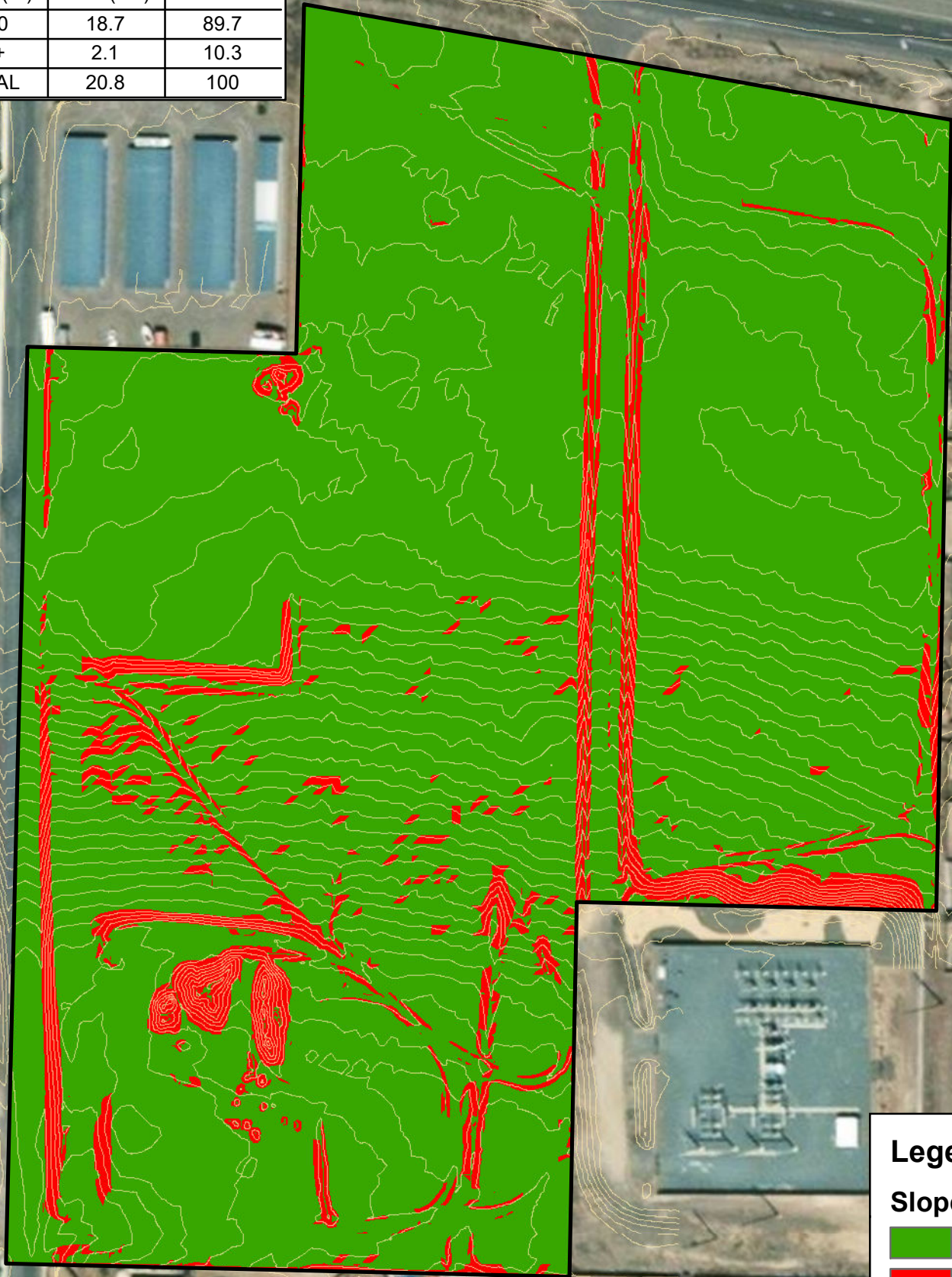
Self-storage units on adjacent (NW) parcel – view southwest



Aerial Map
River Ranch Apartments ZMA/CUP
September 2022

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Reno, NV 89502 Fax: 775.823.4066

Slope (%)	Area (ac.)	% of Total
0-10	18.7	89.7
10+	2.1	10.3
TOTAL	20.8	100

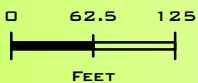


Legend

Slope (%)

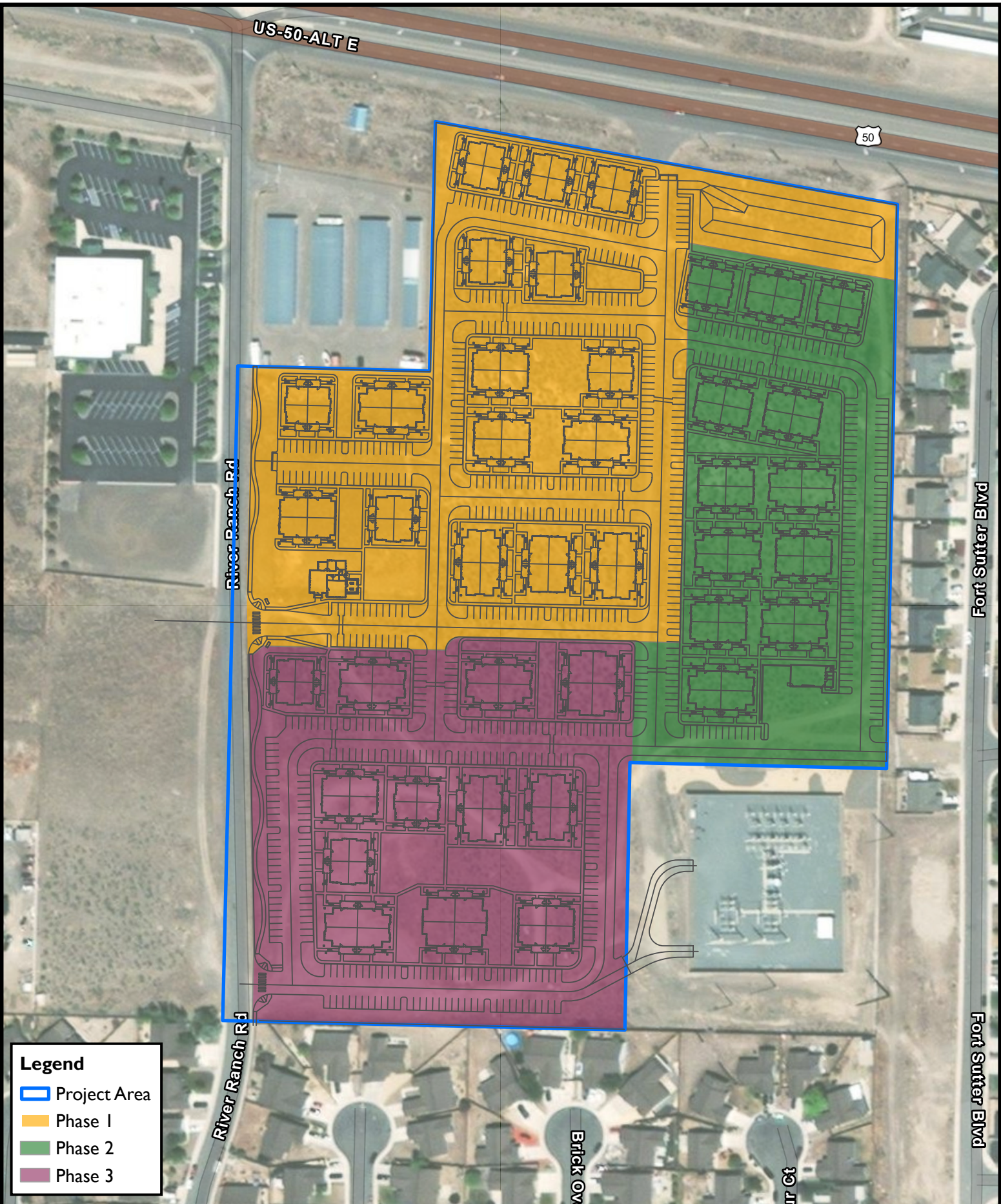
0-10

10+



Slope Map
River Ranch
Apartments
 Fernley, NV
 August 2022

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 BUILDING RELATIONSHIPS ONE PROJECT AT A TIME
 1361 Corporate Boulevard
 Reno, NV 89502
 Tel: 775.823.4068



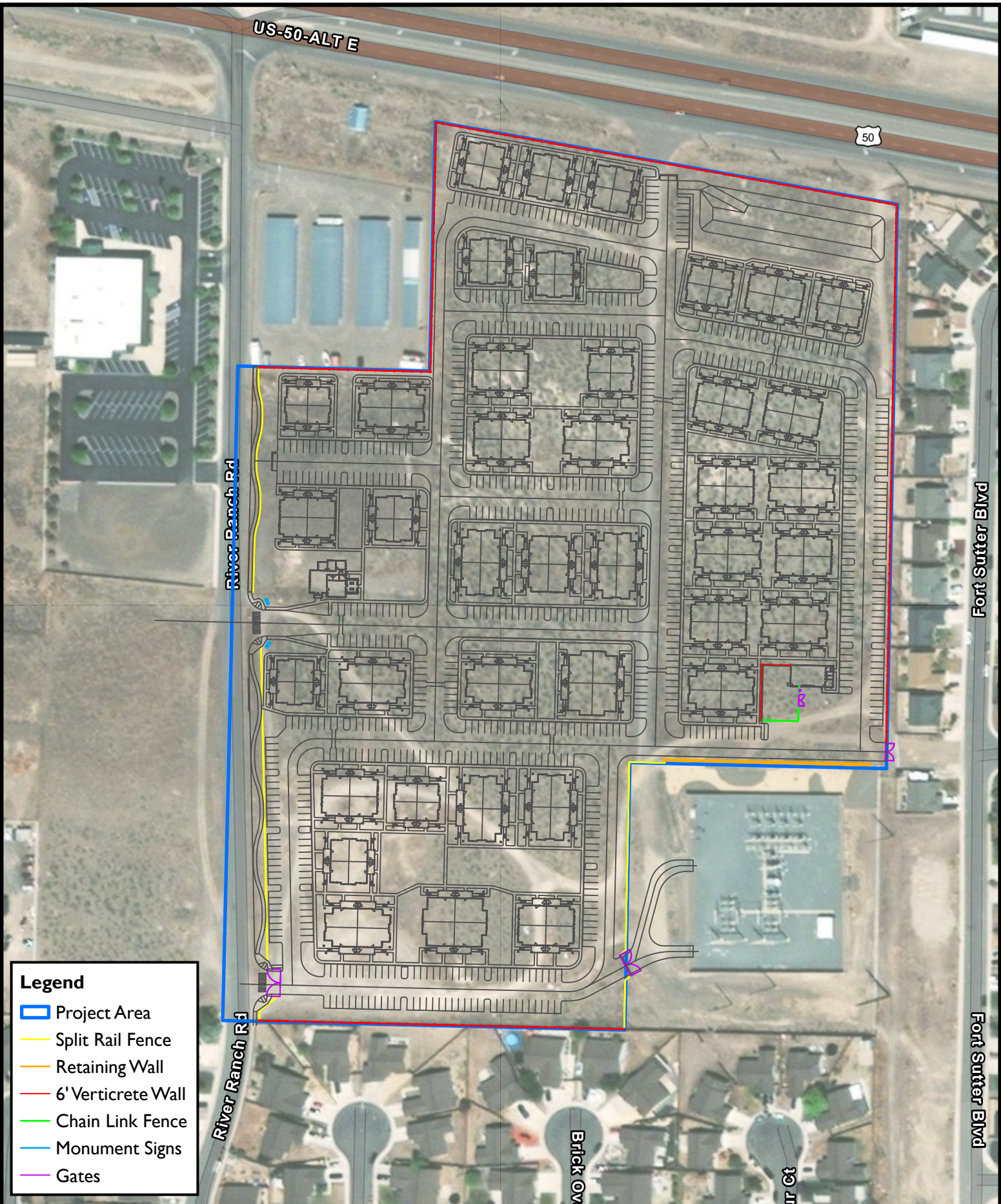
Proposed Phasing **River Ranch Apartments ZMA/CUP** **September 2022**

WOOD ROGERS

BUILDING RELATIONSHIPS ONE PROJECT AT A TIME

1361 Corporate Boulevard
Reno, NV 89502

Tel: 775.823.4068
Fax: 775.823.4066



Legend

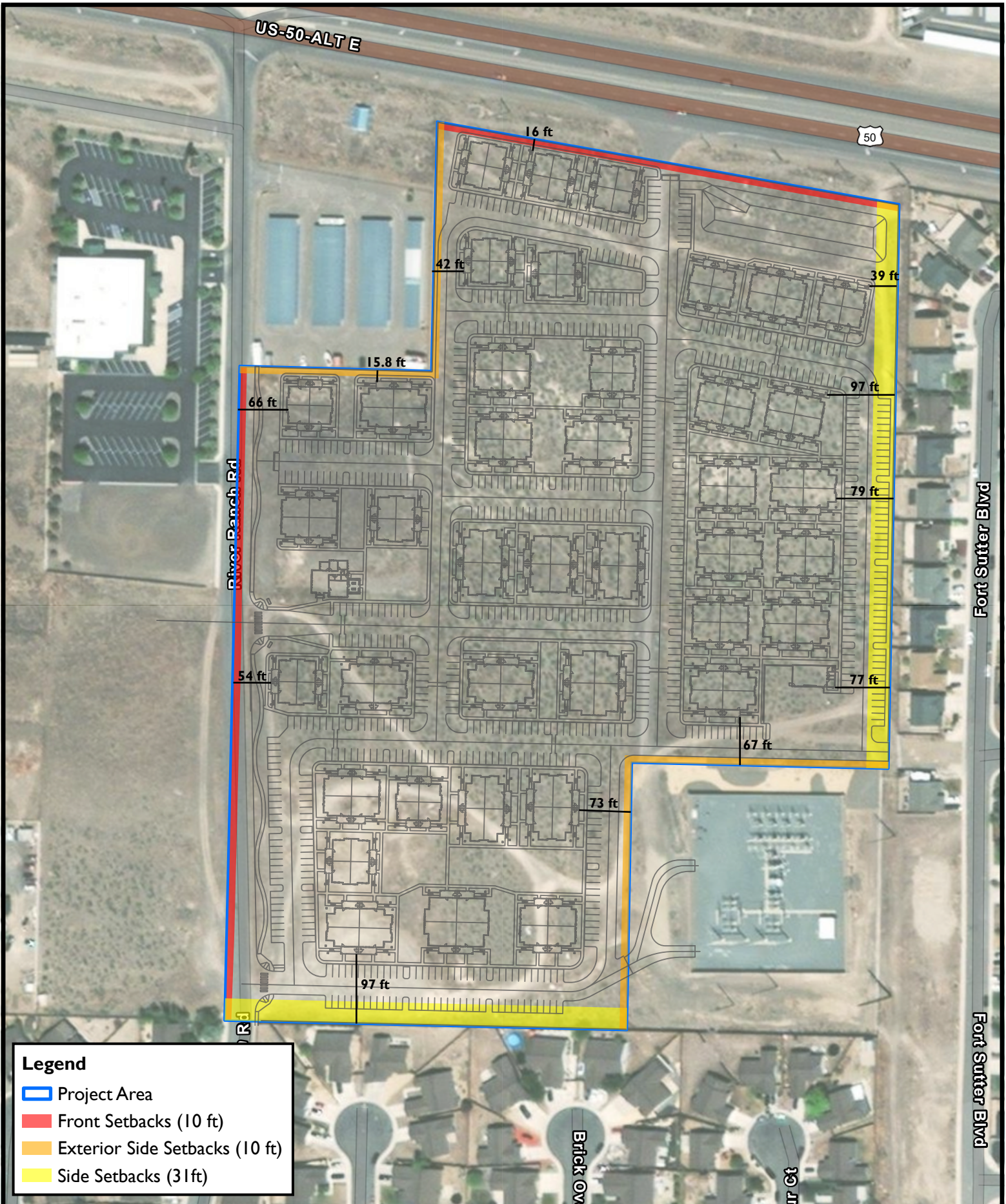
- Project Area
- Split Rail Fence
- Retaining Wall
- 6' Verticrete Wall
- Chain Link Fence
- Monument Signs
- Gates

Proposed Fences & Walls

River Ranch Apartments ZMA/CUP

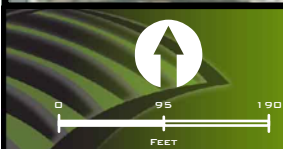
September 2022

WOOD ROGERS
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 1361 Corporate Boulevard Tel: 775.823.4068
 Reno, NV 89502 Fax: 775.823.4066



Legend

- Project Area
- Front Setbacks (10 ft)
- Exterior Side Setbacks (10 ft)
- Side Setbacks (31 ft)



Setbacks Exhibit

River Ranch Apartments ZMA/CUP

September 2022

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Fax: 775.823.4066



TUSCAN



Body Color #1:
Frazee #CL 2707N
Cinder

Body Color #2:
Frazee #CL2745D
Magic Eye

Body Color #3:
Frazee #CL2876N
Dug Up

Trim Color:
Frazee #CL3277N
Bon Nuit





FRENCH

Body Color #1:
Frazee #CL2925A
Sicklepod

Body Color #2:
Frazee #CL2834D
Falcon

Body Color #3:
Frazee #CL2886N
Sea Blite

Trim Color:
Frazee #CL3277N
Bon Nuit





SPANISH

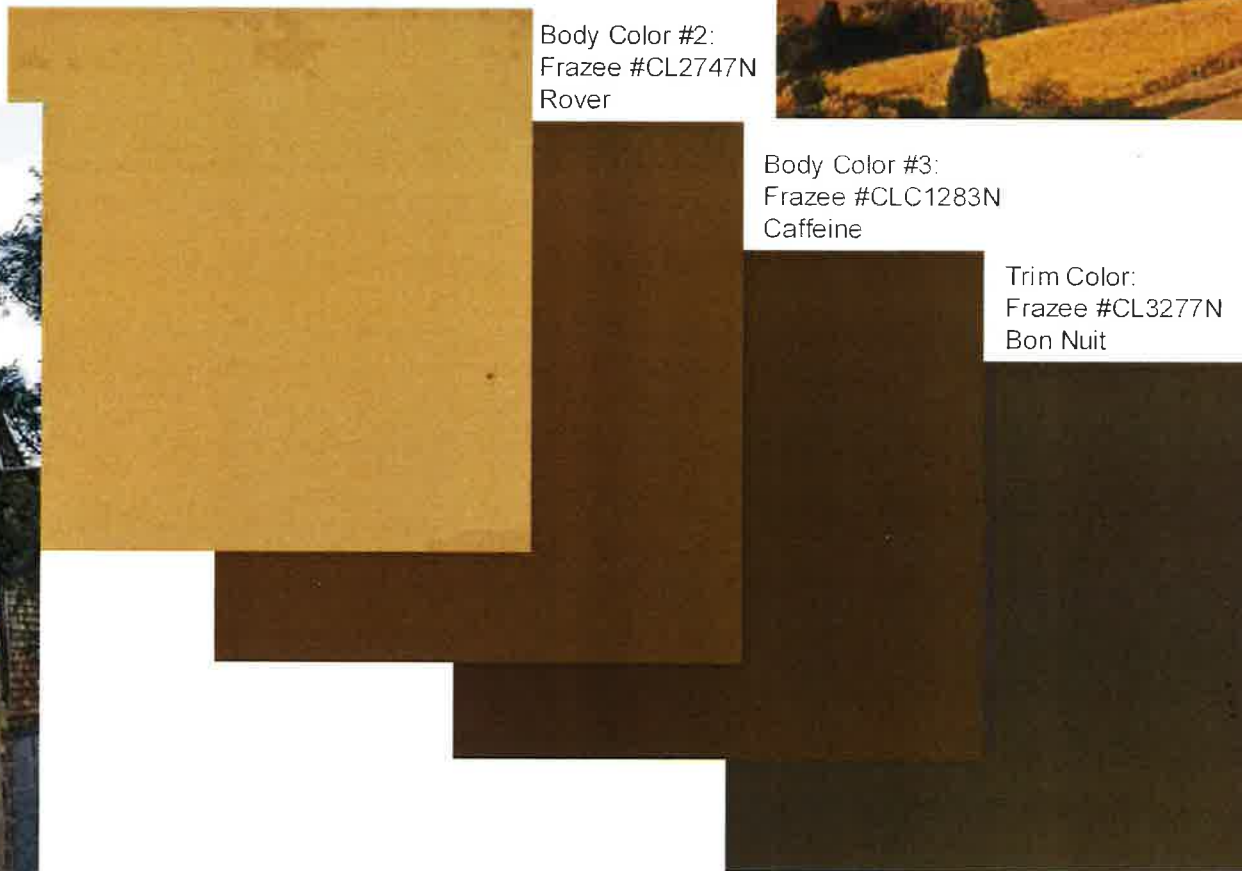
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Shareware



Body Color #2:
Frazee #CL2747N
Rover

Body Color #3:
Frazee #CLC1283N
Caffeine

Trim Color:
Frazee #CL3277N
Bon Nuit



SECTION 4 – REPORTS



GEOTECHNICAL DESIGN REPORT

River Ranch Apartments

Fernley, Lyon County, Nevada

Submitted To:

Greg Peek
ERGS, Inc.
9345 Lemmon Drive
Reno, Nevada 89506

Project No.

3034059

Date

September 2022

Digitally signed
by Lilian Lorincz
Date:
2022.09.12
13:44:26-07'00'



Lilian Lorincz, PE
RE Number 030237 (NV)

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Appendix C –Laboratory Testing Results

C-1a through C-1d – Laboratory Testing Results

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EXECUTIVE SUMMARY

The project is located in Fernley, Nevada and consists of constructing an apartment complex with structures up to two stories in height, founded on standard spread foundations with concrete slab on grade flooring. Utilities and associated parking and access drives will also be part of the project. A storm water retention pond is also proposed to be constructed in the northeastern portion of the property. Access to the property is from US Highway 50 and River Ranch Road.

During the geotechnical investigation, a 3-feet thick fill layer consisting of clayey sand was encountered within the southwestern portion of the site. Overall, the site is mapped as Holocene-age alluvial and lacustrine deposits consisting of aeolian sands, silts, and clays interlayered with colluvial gravels. Native soils encountered in the geotechnical investigation typically consisted of non-plastic silty and poorly graded sands, low plasticity silts, and clayey sands and gravels. Additionally, a high plasticity sandy clay zone was encountered, at an average thickness approaching 1-foot in two of the test pits. Groundwater was not encountered during investigation.

A grading plan was not available at the time of preparation of this report. However, maximum cuts and fills are currently anticipated to approach 14-feet and 5-feet, respectively.

Sloughing soils should be anticipated during trenching and excavating, especially in deeper excavations.

Mitigation of corrosive soils should also be anticipated. Severe sulfate levels were measured in the site soils. Therefore, special concrete considerations have been presented as discussed and addressed by the American Concrete Institute (ACI). Chloride ion concentration was measured at 58 mg/Kg. The structural engineer should specify any required mitigation due to the presence of chlorides.

Special inspection and materials' testing services are integral to the success of any geotechnical and/or construction project and have been recommended herein as required by the International Building Code and City of Fernley adoptions to the Standard Specifications for Public Works Construction and Engineer-of-Record program.

1. INTRODUCTION

Presented herein are the results of Wood Rodgers' geotechnical exploration, laboratory testing, and associated geotechnical design recommendations for the proposed River Ranch Apartments development in Fernley, Nevada. The assessments and recommendations presented in this geotechnical report have been determined, in part, around the surface and subsurface conditions identified by our exploration program which was developed to be consistent with locally accepted industry practices regarding exploratory means and methods for geotechnical investigations of similar projects. The proposed structural elements, topography, grading design, soils, and geology are all unique; therefore, the engineering judgment employed by those in responsible charge of geotechnical design is in general conformance with the accepted standards of care for engineering analyses as defined by the Nevada State Board of Engineers and Land Surveyors.

This report has been prepared in consideration of the applicable provisions of the International Building Code (IBC, 2018), ASCE 7, and the amendments and modifications adopted by the City of Fernley. These documents establish the minimum requirements to safeguard the public health, safety and general welfare of the occupants as well as the minimum level of structural integrity, life safety, and fire safety for inhabitants of new and existing structures. Geotechnical considerations for public improvements have been formulated around the requirements of the City of Fernley Public Works Design Manual and the Standard Specifications for Public Works Construction. Performance standards around which our primary recommendations have been framed are based upon the requirements of the referenced documents. Any expectations of performance inconsistent with, outside the purview of, or exceeding the requirements of the referenced documents are subjective and, therefore, a function of materials, design, workmanship, and ownership. Unless these expectations of performance are specifically stipulated or quantified herein, they are considered in excess to the scope and design standards of this report.

The objectives of this study were to:

1. Explore, test, and assess general soil, geology, and ground water conditions pertaining to design and construction considerations for the proposed development as required by the IBC.
2. Provide recommendations associated with the design and construction of the project, as related to the identified geotechnical conditions and the stipulated design levels and performance standards established herein, and the requirements of the IBC.

2. SCOPE OF SERVICES

As indicated in our proposal, upon completion of our field and office studies, a geotechnical investigation report, consistent with the requirements of the 2018 International Building Code (IBC), was to be completed for the project and would present the following:

- General summary of the site soils and geology, including documented geotechnical natural hazards as they might affect foundations.
- Summary of surface and ground water conditions encountered.
- Summary of seismic hazards including site seismicity, design parameters, and potential for surface fault rupture.
- Determination of Site Class.
- A preliminary assessment of liquefaction susceptibility.
- Site preparation and grading recommendations based on the results of our field exploration and laboratory testing.
- Types of suitable foundations, allowable bearing pressures, appropriate footing depths and widths, and anticipated settlement.
- Lateral earth pressures and design parameters, as applicable for planned structures.
- Concrete and concrete slab-on-grade support options.
- Drainage considerations that may affect foundation and concrete slab-on-grade performance.
- Structural pavement sections for parking and drive areas.
- Percolation test results for design of the storm water retention pond.

Our study included field exploration, laboratory testing, and engineering analyses to identify the physical and mechanical properties of the various on-site materials. Results of our field exploration and testing programs are included in this report. In consideration of the stated design levels and performance standards, these results form the basis for our conclusions and recommendations.

3. PROJECT CHARACTERIZATION

3.1. Project Description

- The project is located in Fernley, Nevada and encompasses APN's 021-281-03, -10, and a portion of -04. (Figure 1 – Vicinity Map)
- The project consists of constructing an apartment complex with planned structures up to two stories in height with standard spread foundation and concrete slab on grade flooring. Associated utilities, access drives, parking, and public improvements (Figure 2 – Improvement Plan) will also be constructed.
- Maximum cuts and fills are anticipated to be on the order of 14-feet and 5-feet, respectively.
- The northeastern portion of the property has been reserved for the construction of a storm water retention pond.
- Services will be provided by a combination of public and private utilities.

3.2. Site Conditions

- The overall site encompasses an area of approximately 19 acres.
- The development area is located at a central latitude and longitude of 39.5981°N and 119.2100°W, respectively.
- Single family residential developments border the property to the east and south. US Highway 50 and River Ranch Road border the site to the north and west, respectively.
- A Nevada Energy substation is located proximate to the southeastern portion of the site. Markers for an existing gas line, trending northeast, were observed in the northern portion of the property.
- The site is mostly undeveloped with native vegetation consisting of brush and grasses. A portion of the southwestern project area has been capped with soil stockpiles consisting mostly of clayey and silty sands.

3.3. Exploration

3.3.1. *Excavating and Sampling*

- The project was explored in July 2022 by advancing a series of 15 test pits with a rubber-tired backhoe utilizing a 24-inch bucket.
- Approximate exploration locations are presented in Figure 3 - Site Map and Approximate Exploration Locations in Appendix A of this report.

- Maximum depths of exploration advance extended to 10-feet below the existing ground surface. Refusal was met as shallow as 7-feet due to sloughing of the soils.
- Wood Rodgers' personnel examined and classified soils in the field in general accordance with ASTM D2488 (Description and Identification of Soils).
- Representative bulk samples were sampled from the trench sidewalls and placed in sealed plastic bags or buckets and returned to our Reno, Nevada laboratory for testing.

3.3.2. Geophysical Methods

- Seismic refraction methods (ReMi™) were utilized to measure shear wave velocity and determine V_{s100} .
- Shear wave velocity measurements have been relied upon to aid in the determination of an appropriate Site Class (ASCE 7). Figure B-3 (Appendix B) presents the shear wave geophysical profile.

3.4. Sampling, Classification and Reporting

- Wood Rodgers' personnel examined and classified soils in the field in general accordance with ASTM D2488 (Standard Practice for Description and Identification of Soils (Visual-Manual Procedure)).
- It should be noted that soil classifications performed for geotechnical investigations are specific to geotechnical engineering characterization of soils and do not meet the scientifically based quantitative sampling protocols necessary for consideration in bidding.
- Representative bulk samples were placed in sealed plastic bags and returned to our Reno, Nevada laboratory for testing.
- Logs of the test pits are presented as figures B-1a through B-1o in Appendix B.

3.5. Percolation Testing

- Percolation testing was performed to assess retention characteristics at the proposed storm retention pond location in Test Pits 1, 2, and 3, shown in Figure 3 – Site Map and Approximate Exploration Locations.
- Percolation tests were prepared by excavating an 8-inch diameter hole to a depth of 12-inches, backfilling with gravel to preclude sloughing, pre-soaking the hole and performing the designated slow percolation test per Lyon County's Standards (Lyon County, 2019).
- Percolation test results are presented on B-1a through B-1c and summarized in Table 1.

Table 1: Summary of Percolation Test Results

Location and Depth (ft)	Existing Ground Surface Elevation ¹ (ft)	Percolation Test Elevation ² (ft)	Percolation Rate (min/in)
TP-1 @ 8	4127	4119	7.6
TP-2 @ 8	4129	4121	4.8
TP-3 @ 8	4128	4120	1.5 ³

¹ Approximate elevation is based on Lyon County Contours (NAVD 88).

² Elevation is approximate based on ground surface elevation.

³ Percolation test was performed in soils that had sloughed from the sidewall during excavating.

3.6. Laboratory Testing

- Soil testing performed in the Wood Rodgers' laboratory was conducted in general accordance with the standards and methods described in Volume 4.08 (Soil and Rock; Dimension Stone; Geosynthetics) of the ASTM Standards.
- Samples of significant soil types were analyzed to determine in-situ moisture contents (ASTM D2216), grain size distributions (ASTM D6913), and plasticity indices (ASTM D4318).
- Test results were used to classify the soils according the USCS (ASTM D2487) and to verify the field logs which were then updated.
- The USCS explanatory chart of soil unit symbols and related descriptions has been included as B-2 - Unified Soil Classification and Key to Soil Descriptions.
- Results of the laboratory testing is presented in Appendix C in C-1a through C-1d. Table 2 also presents a summary of the test data.

Table 2 - Summary of Test Data

Test Hole	Depth (Ft.)	Moisture (%)	%Gravel (+ #4)*	% Sand (#4-#200)	%Fines (-#200)	Liquid Limit	Plastic Index	R-Value	USCS
ASTM Standard		D2216	D6913			D4318		D2844	D2487
TP-1	8.0-10.0	5.3	0.1	94.6	5.3	---	---	---	SP-SM ²
TP-2	3.0-4.0	21.7	0.0	5.9	94.1	--	---	---	ML ²

Table 2 - Summary of Test Data

Test Hole	Depth (Ft.)	Moisture (%)	%Gravel (+ #4)*	% Sand (#4-#200)	%Fines (-#200)	Liquid Limit	Plastic Index	R-Value	USCS
ASTM Standard		D2216	D6913			D4318		D2844	D2487
TP-4	0-2.0	---	---	---	---	NP	NP	70	SM ²
TP-5	3.0-4.0	10.7	61.4	25.8	12.8	51	25	---	GC
TP-6	5.0-6.0	13.2	36.7	37.6	25.7	51	29	---	SC
TP-7	5.0-6.0	14.7	0.0	20.2	79.8	41	15	---	ML
TP-8	2.0-3.0	6.3	1.8	67.1	31.1	23	10	---	SC
TP-9	7.0-8.0	15.4	0.4	61.6	38.0	31	7	---	SM

¹ Since ASTM D2487 is limited by a maximum particle size of 3", the gradation test data presented is based on a maximum particle size of 3". Larger particles (i.e., 8 to 12" in diameter) if observed in our test holes would be documented on the logs and should be anticipated as part of grading.

² ASTM D2488, Description and Identification of Soils (Visual – Manual Procedure)

- R-Value Testing, ASTM D2844, resulted in a subgrade R-Value of 70.
- Chemical testing, performed to indicate the potential for corrosion to concrete and steel elements, is presented on C-2 (Appendix C).

Wood Rodgers, Inc. is not a corrosion engineering firm. Therefore, a corrosion engineer or structural engineer knowledgeable in the project steel specifications should be consulted for final assessments of corrosion potential at the site.

3.7. Geologic and General Soil and Groundwater Conditions

- Based on geologic mapping by Faulds and Ramelli (2005), the site is mapped in an area of Holocene alluvial and lacustrine deposits (Qfe, Qsmb, Qc). These deposits consist of aeolian sands, clays, and silts with layers of colluvial gravels.
- A 3-feet thick fill layer consisting of clayey sand was encountered near the southwestern portion of the site in Test Pits 8, 9, and 10. Google Earth Imagery from 2004 shows evidence of grading and development within the southwestern portion of the site.

- A sporadic high plasticity sandy clay layer was encountered at an average thickness approaching 1-foot in Test Pits 2, 3, 6, and 7.
- In addition to the sporadic clay zone, the native soils encountered in our explorations typically consisted of non-plastic silty and poorly graded sands, low plasticity silts, and clayey sands and gravels.
- The gravels can also present a significant amount of highly plastic clay fines.
- Groundwater was not encountered to the depths explored. Domestic well logs indicate groundwater levels approaching 30-feet below ground surface (NDWR, 2022).

4. SEISMIC HAZARDS

The International Building Code (IBC) requires that structures assigned to Seismic Design Category D, E, or F be evaluated for the following potential geologic and seismic hazards: surface rupture or displacement due to faulting, slope instability, liquefaction including the potential for seismically induced spreading or lateral flow, and slope instability. The following sections present our discussion and assessments of the stipulated hazards.

4.1. Surface Rupture

4.1.1. Evaluation Guidelines

In 1998, the Nevada Earthquake Safety Council formulated guidelines for evaluating potential surface rupture due to faulting. The intent of the guidelines is to provide *a standardized minimum level of investigation for fault rupture in Nevada*; these guidelines have been adopted with the 2018 Northern Nevada Amendments of the IBC. Specifically, the guidelines state that investigation of sites for potential surface rupture or hazards shall be included in all geotechnical investigations. Further, if any Quaternary age surface rupture is mapped or otherwise interpreted to be present on the site, the feature is to be investigated further.

In addition to establishing the minimum level of investigation for fault rupture, the guidelines also offer recommendations for dealing with or mitigating identified hazards, including:

- Holocene active faults (evidence of movement within the past 10,000 years) shall be set-back a minimum distance of 50-feet for occupied structures.
- Late Quaternary (evidence of movement within the past 130,000 years) faults shall not be spanned by any critical facilities (hospitals, schools, fire stations, etc.). The facility under investigation does not meet the requisite requirements to be considered critical.

These guidelines allow for set-back distances to be adjusted by the competent professional. No additional constraints regarding fault-structure location are presented in the guidelines.

4.1.2. Investigation

- The United States Geological Survey's (USGS) interactive fault map was accessed to determine the presence of any mapped features transecting the property. No faults have been mapped crossing, intersecting, or trending toward the property.

4.2. Liquefaction

Liquefaction is a loss of soil shear strength that can occur during a seismic event as excessive pore water pressure between the soil grains is induced by cyclic shear stresses. This phenomenon is limited to poorly consolidated (Standard Penetration Test less than 30, overburden stress corrected shear wave velocity less than 700 fps) clean to silty sand/sandy silt lying below the ground water table (typically less than 50

feet deep). In addition, we are using AASHTO's recommendation of Bray and Sancio (2006) criteria for assessing liquefaction susceptibility of soils which suggests that a soil with a plasticity index less than 12 and a water content to liquid limit ratio greater than 0.85 will be susceptible to liquefaction.

- Due to the soil stiffness (based on shear wave velocity) and a review of anticipated depth to groundwater and geotechnical data from investigations performed in the nearby area, the potential for liquefaction induced settlement or lateral spread is considered low.

4.2.1. *Lateral Spread*

- Liquefaction induced horizontal ground displacement from lateral spreading or flow failure has been calculated from our software using the Zhang et al. 2004 method to be less than one foot.

4.3. Slope Instability

- When evaluating for slope instability, the terms incidence and susceptibility are used. Susceptibility is the likelihood a landslide would occur based on local terrain. Incidence reflects the number of known landslides, irrespective of the age or climate at the time they occurred.
- MyHAZARDS – MyHAZARDS – Nevada was reviewed for a mapped susceptibility rating. The absence of a susceptibility rating would indicate that less than unless widespread artificial cutting or high precipitation would occur, the area would present a less than 1.5 percent of the land area be considered susceptible to landslides.
- Provided the final site grading recommendations presented in this report are incorporated in cut and fill slope designs, the susceptibility for future potential slope instability would be considered very low.

4.4. Seismic Compression

- Seismic compression is an accrual of volumetric strains during seismic events in unsaturated soil and is typically confined to poorly compacted engineered fills and Holocene soils.
- The bulk of the site soils, as mapped, are older than Holocene and would therefore not be considered susceptible to seismic compression.
- When considering engineered fills, the settlement potential due to seismic compression is considered negligible providing the recommendations for site preparation and grading are followed.

5. DISCUSSION AND RECOMMENDATIONS

5.1. General Information

- *Conformance with the Geotechnical Report:* The recommendations provided herein, particularly under Site Preparation, Grading and Filling, Foundations, Site Drainage, and Construction Observations and Testing Services are intended to reduce risks of structural distress related to consolidation or expansion of native soils and/or structural fills. These recommendations, along with proper design and construction of the planned structure(s) and associated improvements, work together as a system to improve overall performance. If any aspect of this system is ignored or poorly implemented, the performance of the project will suffer.
- *Clarification of Structural Areas:* Structural areas referred to in this report include all areas of buildings, concrete slabs, asphalt pavements, as well as pads for any minor structures or retaining walls. Areas which extend behind or under rockery or other retaining structures are considered structural zones. In addition, the structural zone shall be considered to extend at a 1:1 (H:V) slope out from the edge of the structural footprint. All compaction requirements presented in this report are relative to ASTM D 1557 (ASTM D Volume 4, 2022).
- *Hazardous Materials:* Any evaluation of the site for the presence of surface or subsurface hazardous substances is beyond the scope of this study. When suspected hazardous substances are encountered during routine geotechnical investigations, they are noted in the exploration logs and reported to the client. No such substances were identified during our exploration.
- *Backfill of Exploration Locations:* Explorations were advanced at the approximate locations shown on the Site Map and Approximate Exploration Locations (Figure 3). Each exploration was backfilled upon completion of the field portion of our study, and the backfill was compacted to the extent possible with the equipment on hand. However, the backfill was not compacted to the requirements presented herein under Grading and Filling. If structures, concrete flatwork, pavement, utilities, or other improvements located in the vicinity of any of the test pits, the backfill should be removed and re-compacted in accordance with the requirements contained in the soils report. Failure to properly compact backfill could result in excessive settlement of improvements located over test pits.
- *SWPPP Requirements:* The site-specific Stormwater Pollution Prevention Plan (SWPPP), as required by the State of Nevada, will be the responsibility of the general contractor and/or owner. Recommendations presented herein regarding moisture conditioning are for the benefit of creating a targeted fill behavior. Moisture conditioning recommendations are not intended to direct the contractor in their means and methods for dust and SWPPP control.
- *Public Improvements:* Recommendations for paved improvements in right-of-way areas will be consistent with City of Fernley standards. On-site parking and driveway recommendations are in

general conformance with AASHTO's Low Volume Road design protocols, the Portland Cement Association (PCA) and American Concrete Institute (ACI) recommendations. Underground utilities will be provided by a variety of public and private companies; trenching and backfill recommendations presented herein are generally consistent with OSHA and City of Fernley's requirements, respectively.

5.2. Soil Profile Type Amplification Factors

- Seismic design values were determined based on a representative latitude and longitude of 39.5981°N and 119.2100°W, respectively.
- In accordance with ASCE 7-16 (Table 20.3-1) and the Northern Nevada Amendments of the 2018 IBC, Site Class D has been assigned to the project and Seismic Risk Category II has been evaluated for soil profile type amplification factors. (Appendix D)
- Per ASCE 7-16, the site's modified Peak Ground Acceleration (PGA_M) to be used for engineering analyses is equal to 0.61g.

5.3. Earthwork

5.3.1. Clarification of Geomaterials

The following definitions characterize terms utilized in this report:

- Rock fill possesses more than 30-percent retained on the 3/4-inch sieve. Rock fill may present particles up to 12-inches.
- Fine-grained soil possesses more than 40 percent by weight passing the number 200 sieve and exhibits a plasticity index lower than 15.
- Clay soil possesses more than 30 percent passing the number 200 sieve and exhibits a plasticity index greater than 15.
- Granular soil does not meet the above criteria and has a maximum particle size less than 6-inches.

It should be noted these definitions have been formulated around anticipated soil behavior and may not coincide with classifications provided by the Unified Soil Classification System.

5.3.2. Clearing and Grubbing

- All vegetation and topsoil are to be cleared and grubbed from structural areas. A minimum stripping depth of 0.3 to 0.5 feet is anticipated.
- Vegetation and organic debris should be disposed of offsite or placed in designated non-structural areas.

- If on-site disposal is approved, vegetation could be blended with soil (at a maximum ratio of 1:10 vegetation to soil, by mass) prior to placement in nonstructural fill or landscape areas.
- Organic material should be broken up using a large sheep's foot roller or chipper prior to blending with soil and moisture conditioning.

5.3.3. *Undocumented Fill*

- Approximately 3-feet of undocumented fill was encountered in Test Pits 8, 9, and 10.
- All undocumented fills must be dozed up, stockpiled, and qualified prior to use as fill. Assessments during the geotechnical investigation and test results so far indicate the stockpiled fills would be suitable as structural fill.
- Refer to Section 5.3.6 for placement limitations of undocumented fill.
- Refer to Section 5.3.6 for material quality and compaction requirements for reuse of undocumented fill.

5.3.4. *Subgrade Preparation*

- Prior to placing fill or constructing improvements, subgrade soils shall be scarified for a minimum depth of 12-inches, moisture conditioned to within 3-percent of optimum moisture content and compacted to not less than 90-percent of the soil's maximum dry density (ASTM D1557).
- In all cases, the final subgrade shall be smooth, firm, and relatively unyielding as determined by the testing agencies' qualified representative.

5.3.5. *Subgrade Stabilization*

- The fine-grained soils encountered within the project limits may tend to pump and or destabilize when moisture content exceeds optimum.
- Care should be taken during grading to assure irrigation water, precipitation, or construction activities do not lead to an increase in or ponding of water on exposed grade.
- Pumping soils may be scarified and allowed to dry or removed and replaced with a layer of clean, angular, 12-inch minus rock fill or stabilized with a geogrid.
- The size of the rock could vary depending on the soil's consistency and depth of soft, saturated soils.
- Typically, a stabilization depth of 12 to 18-inches is adequate to develop a firm and relatively unyielding subgrade, but variations may exist.
- The rock zone should be separated from the adjacent soils by encasing the rock in a geomembrane such as Mirafi 180N installed per the manufacturer's instructions.

- As an alternative, the use of a stabilizing geogrid (such as Tensar TX160), complemented by an aggregate layer to bridge unstable and/or pumping subgrade, may be used to stabilize subgrade.
- The City of Reno requires prior approval where subgrade stabilization measures incorporating geomembrane or geogrid are used.
- Subgrade stabilization is a trial-and-error process, and it is recommended that a test section of suitable depth and length be conducted.
- The contractor should propose a stabilization protocol that is consistent with their readily available means and methods, and this proposal presented for review, by the owner, the general contractor, and grading inspector.
- Subgrade stabilization is considered adequate if the subgrade is firm and relatively unyielding (as approved by the engineer) when proof-rolled with a fully loaded water truck.
- Subgrade stabilization may not be required for walkways or private improvements subject solely to foot traffic providing the required compaction levels are achieved.
- Where walkways or private improvements are structurally connected to the building, subgrade stabilization is required.

5.3.6. Mass Grading

- Verification testing of onsite soils to be qualified as structural fill shall be in accordance with ASTM D75, ASTM D6913, and ASTM D4318 and shall meet the requirements of Table 3.
- For fill generated on-site, material should be excavated, dozed, and processed into a uniform stockpile prior to being sampled and tested for material quality prior to acceptance.
- Existing fill and native soils generated from cut and meeting the requirements of Table 3 may be placed as structural fill to pad grade.
- Existing fill and native soils generated from cut and not meeting the requirements of Table 3 may be placed as structural fill at least 4-feet below pad grade.
- Import structural fill, meeting the requirements of Table 3, shall be obtained from a commercial borrow source.
- Prior to importing material to the site, a submittal verifying import quality shall be received and approved by Wood Rodgers.

Table 3 - Guideline Specification for Import Structural Fill

Sieve Size (ASTM D6913)		Percent by Weight Passing Sieve	
6 Inch ¹		100	
4 Inch		90 - 100	
¾ Inch ²		50 - 100	
Percent Passing #200 (ASTM D6913)	Maximum Liquid Limit (ASTM D4318) ³	Maximum Plasticity Index (ASTM D4318) ³	Maximum Expansion Index (ASTM D4829)
5 - 20	50	25	20
20 - 40	50	15	20
Soluble Sulfate Level (ACI 318, Table 4.3.1)		Negligible	
R-Value (ASTM D2844) ⁴		30 Min.	

¹ Pending approval of the means and methods of the contractor, maximum particle size may be increased to 12-inches.

² Material presenting more than 30-percent material retained on the ¾" sieve shall be referred to as rockfill. (Section 5.3.7)

³ Dry Method

⁴ Within right-of-way only.

- All fill soils shall be moisture conditioned to within 3-percent of optimum, placed in 12-inch maximum loose lifts, and compacted to not less than 90-percent of the soil's maximum dry density.
- Some of the soils on-site meet the definition of rockfill (i.e. greater than 30% of the soil mass is retained on the ¾-inch sieve) and rockfill placement protocols (Section 5.3.7) will be required for verification of fill placement.

5.3.7. Rockfill Placement and Verification

Soils that are classified as rockfill should be placed and verified in accordance with the following placement procedures.

- Oversize (i.e., rock > 6-inches in least dimension but less than 12-inches) must be blended and placed in such a manner that: nesting of the rock does not occur, rock is uniformly distributed throughout the fill lift, and voids are uniformly filled with the soil matrix.
- A maximum lift thickness of 12-inches should be observed for 6-inch minus rock fill. A maximum lift thickness of 18-inches should be observed for 12-inch minus rock fill.

5.3.7.a. Rockfill Verification Protocols

- Determine a moisture-density relationship (ASTM D1557 Method C) on the portion of the sample passing the ¾-inch sieve.
- Rockfill shall be placed and compacted with the ¾-inch minus fraction moisture conditioned to at least optimum as determined in accordance with ASTM D1557, Method C.
- Where standard density testing cannot be performed due to oversize material, performance criteria for acceptance of the compacted fill shall be established; otherwise rockfill shall be compacted to not less than 90-percent of the soil's maximum dry density.
- For acceptance based on performance criteria, an initial rolling pattering consisting of at least five single passes with a minimum 20-ton roller (815 Caterpillar "Sheepsfoot" compactor, or equivalent) for mass grading, or five complete passes with hand compactors or pneumatic trench roller in footing trenches is recommended.
- Increase the number of passes as necessary until no notable increase in density can be measured (ASTM D6938, Standard Test Methods for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods) or notable deflection is reduced to negligible.
- Modifications to the rolling pattern will be required with change in percentage of + ¾-inch rock and/or changes in moisture content of the ¾-inch minus portion of the rockfill.
- The established rolling patterns, and estimated percentage of + ¾-inch material, shall be recorded.

5.3.8. Trenching and Excavations

- OSHA - Regulations amended in Part 1926, Volume 54, Number 209 of the Federal Register (Table B-1, October 31, 1989) require that the temporary sidewall slopes be limited to maintain trench stability. Minimum sidewall slopes and acceptable trench configurations are also presented in the referenced register.
- Zones of difficulty with excavatability should be expected due to the presence of cobbles and sloughing soils.
- Should any large precipitation events be forecast, open excavations should be protected from flooding. Covering trenches with plates or tarps, constructing berms around the excavations, daylighting trenches to drain or temporary backfilling should be considered by the contractor to prevent flooding damage and erosion in general.

- Based on the results of our exploration program, it is our opinion that the bulk of the native site soils appear to be predominately Type C, although variations exist.
- All fills should conservatively be considered Type C unless directed otherwise by the contractor's competent individual trained in trench safety.
- All trenching should be performed and stabilized in accordance with local, state, and OSHA standards. Bank stability is the responsibility of the contractor or contractor's qualified representative who is present at the site, able to observe changes in ground conditions, and has control over personnel and equipment.
- Pipe bedding, initial backfill, and trench backfill shall be consistent with the approved civil and/or utility plans.

5.3.9. Earthwork Testing and Observation

- Verification of subgrade and fills should be performed by a firm that is AMRL accredited in ASTM E329.
- Special inspection of fill soils is required during mass grading of the development; the Special Inspector should be ICC certified in soils or NAQTC certified in Sampling and Density disciplines.
- The special inspector shall verify and document that placement of fill is consistent with the Mass Grading (5.3.6) section and Rockfill Placement and Verification Requirements (5.3.7).
- Density testing of fills should be in accordance with ASTM D6938 (Standard Test Methods for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods) or ASTM D1556 (Standard Test Method for Density and Unit Weight of Soil in Place by Sand-Cone Method).
- Subgrade should be density tested approximately every 500 square yards.
- Fill should be density tested once for every 1,000 square yards per lift of material placed during mass grading and one test per 300 feet of footing trenches or overexcavation of footings.
- One density test should be performed for each 500 square yards or per each lift for smaller, localized fill zones.
- Full time construction observation is required for mass graded fills and for any rock fill placement.
- The testing frequency should be increased if the contractor is having difficulty achieving and maintaining the required moisture levels.
- Utility bedding and trench backfill should be density tested per the requirements of the governing agency. Typically, agencies prescribe density testing per foot of bedding/backfill thickness, at a frequency of one test between manholes or valves, or one test every 500 lineal feet, including laterals.

- Nonstructural fills should be density tested for every 2,000 yards or for every 2-feet of fill for smaller, localized fill zones.

5.3.10. Embankments

- The surface of any embankment should be compacted to the same percent compaction as the body of the fill. This may be accomplished by compacting the surface of the embankment as it is constructed or by overbuilding the fill and cutting back to its compacted core.
- The exterior face of embankments should be constructed with an inclination no steeper than 2H:1V.
- Minor variations in slope gradient due to sculpting or landscaping of the slope face should not be considered inconsistent with the recommendations of this report or adverse to the ultimate performance of the global stability of the overall slope.
- Refer to Section 5.6.1 Slopes and Drainage for erosion protection considerations.

5.4. Structures

The following sections have been developed based on the understanding and expectation that the requirements specified in Section 5.3 Earthwork of this report have been met.

5.4.1. Standard Spread Foundations

The following table and supporting statements present design values and considerations for use in the development of standard spread foundation design.

Table 4 - Allowable Foundation Bearing Pressures for Standard Spread Foundations

Loading Condition	Maximum Net Allowable Bearing Pressure (PSF) ¹
Dead Load Plus Full Time Live Load	2,500
Dead Load Plus Live Loads, Plus Transient Wind or Seismic Loads	3,300

¹ Net allowable bearing pressure is that pressure at the base of the footing is in addition to the adjacent overburden pressure.

- For frost protection, footings should be founded at least 1 ½-feet below adjacent outside or unheated interior finish grades.
- Interior footings not located within frost prone areas should be founded at least 12 inches below surrounding ground or slab level for confinement.
- Regardless of loading, individual pad foundations and continuous spread foundations should be at least 18 and 12 inches wide, respectively, or as required by code.

- The minimum footing sizes recommended are based on the ability to develop bearing capacity. Footing dimensions should be determined by the engineer responsible for structural design.
- Lateral loads, such as wind or seismic, may be resisted by passive soil pressure and friction on the bottom of the footing. A coefficient of base friction of 0.45 is typical to the structural fills and native granular or fine-grained soils.
- Design values for active and passive equivalent fluid pressures of 35 and 350 pounds per square foot per foot of depth, respectively, can be utilized.
- When designing for passive pressure, the upper one foot of the soil profile should not be included unless confined by a concrete slab, or pavement.
- The integrity of the foundation support soils shall be maintained until concrete is placed.
- Total post-construction settlement for the structures is anticipated to be on the order of 1-inch, or less.
- Differential settlement between foundations with similar loads and sizes is anticipated to be half of the total settlement across 40-feet.

5.4.1.a. Slab-on-Grade Flooring

- A 4-inch minimum compacted aggregate base course (Type 2, Class B, Standard Specifications for Public Works Construction) compacted to 95-percent relative compaction is recommended beneath interior or exterior concrete slabs-on-grade subject solely to foot traffic.
- Some floor coverings, such as tile or linoleum, are sensitive to moisture that can be transmitted through slabs. Floor coverings should be installed in accordance with the manufacturer's recommendations including restrictions related to maximum vapor transmission rates.
- Wood Rodgers typically recommends a moisture vapor retarder, consisting of Stego Wrap (15 mil), or equal, to be placed beneath the aggregate base course as part of the moisture vapor system.

Wood Rodgers does not practice in the field of moisture vapor transmission evaluation/mitigation. Therefore, if a vapor retarder system more rigorous than the requirement of the IBC/IRC is desired, we recommend that a qualified person/firm be engaged/consulted with to evaluate the general and specific moisture vapor transmission paths and any impact on the proposed construction.

5.4.1.b. Site Drainage

- Adequate surface drainage must be constructed and maintained away from the structures.
- Permanent finish slopes away from the structures should be constructed to allow water to drain away quickly from and prevent any ponding of water adjacent to the structure per code requirements.
- Runoff should be collected within permanent drainage paths that can convey water off the property or to designated collection facilities. A system of roof gutters and downspouts are recommended to collect roof drainage and direct it away from foundations.
- Foundation and stem wall backfill should be densified to at least 90 percent relative compaction in accordance with the requirements given in the Grading and Filling Section. Compacting the backfill material decreases permeability and reduces the amount of irrigation and storm water available to enter under floor areas.

5.4.2. Retaining Structures

- Recommended lateral earth pressures for consideration in the design of retaining walls and landscaping walls are presented in Table 5.

Table 5 - Lateral Earth Pressures¹

Condition	Minimum Cohesion Modeled (psf)	Active (psf/f)		Passive (psf/f)		At Rest
		Static	Pseudo-Static	Static	Pseudo-Static	
Level	50	35	65	350	250	57

¹ Walls retaining sloping backfill or are greater than six feet in exposed height, require specific analyses and design values should be evaluated and presented by the geotechnical engineer.

- Changes in earth pressures due to seismic influences were assessed via the AASHTO LRFD protocol that considers some component of cohesion will be maintained within the backfill.
- In addition, it has been assumed that some displacement is allowable during the design event, and our recommended values have therefore been based on 50% of the USGS' predicted PGA.
- The values presented in Table 5 do not consider hydrostatic pressures or surcharge loading.
- Excessive wall pressures can be developed due to heavy compaction equipment proximate to the wall during backfill placement. Therefore, due care during placement and compaction of backfill is required.

- Backfill behind retaining structures should be granular and compacted to not less than 90 percent of the soils' maximum dry density.
- French drains, a drainage gravel backfill layer wrapped in geotextile such as Mirafi 140 N, or a pre-manufactured drain system such as Tensor[®] DC1200 should be utilized if buildup of hydrostatic pressure is possible which may cause excessive loading on pool walls or buoyancy conditions.
- Site preparation and foundations for retaining structures shall be consistent with Section 5.3 Earthwork and Section 5.4.1 Standard Spread Foundations.
- Walls retaining sloping backfill, or walls greater than six feet in exposed height, require specific analyses, and design values should be evaluated and presented by the geotechnical engineer.

5.5. Concrete

The American Concrete Institute (ACI) considers three different exposure classes to address the degree of severity for environmental conditions: freezing and thawing (Exposure Category F), concrete in contact with soil that contains water soluble sulfate ions (Exposure Category S), and Exposure Class W for concrete in contact with water. Exposure categories F and S, and potential mitigation, are discussed in Section 5.5.1.

5.5.1. Materials

The concrete material recommendations vary between Exposure Class F and Exposure Class S. Therefore, those specifying concrete subject to both freezing and thawing and water-soluble sulfate ions should consider the potential exposure conditions for Class F and Class S and select the most appropriate. When considering post-tensioned slabs-on-grade chlorides can also present an aggressive environment (Section 5.5.1c).

5.5.1.a. Exposure Class F

- Class F3 has been assigned because of the potential for some portions of concrete to absorb sufficient water to be saturated prior to freezing and the potential application of deicing salts.
- Per ACI, concrete for Class F3 should present a maximum water: cement ratio of 0.40, a minimum 28-day compressive strength of 5,000 psi, and be air entrained to 6.0 ± 1.5 -percent.
- Per the Standard Specifications for Public Works Construction (Table 337.10.01.03-I), the 28-day compressive strength minimum is specified at 4,000 psi.

5.5.1.b. Exposure Class S

Mitigation for sulfate exposure is required based on the test results. The summary below presents excerpts from ACI and SSPWC. Refer to the referenced standards in their entirety

when specifying sulfate resistance exceeding the presented geotechnical or civil considerations.

Mitigation for sulfate exposure is required based on the chemical test results (C-2, Appendix C). The summary below presents excerpts from ACI and SSPWC. Refer to the referenced standards in their entirety when specifying sulfate resistance exceeding the presented geotechnical or civil considerations.

- Sulfate testing on the native soils yielded results in the S2 severe range (ACI 318, $0.20\% \leq \text{SO}_4^{2-} \% < 2\% \text{SO}_4^{2-}$, by mass).
- Per ACI, concrete for Class S2 should: present a maximum water: cementitious ratio of 0.45, and a minimum 28-day compressive strength of 4,500 psi. Type IP cement is recommended for use.
- Per the SSPWC (Table 337.10.01.03-I), concrete subject to severe sulfate exposure shall present a maximum water: cementitious ratio of 0.45, a minimum 28-day compressive strength of 4,000 psi, and be air entrained to 6.0 ± 1.5 -percent. Type II + Flyash (25% min.) cementitious materials are recommended for use.
- Because signification grading will occur across the project site, soils should be retested for sulfate levels at the end of grading and the mitigation requirements presented herein lessened as appropriate.

5.5.1.c. Chlorides

- Chemical testing on the native soils presented chloride ion concentrations of 58 mg/kg.
- The structural engineer will identify any required mitigation due to the presence of chlorides.

5.5.2. Construction

- Concrete placement and curing should be performed in accordance with procedures outlined by the American Concrete Institute. Special considerations should be given to concrete placed and cured during hot or cold weather conditions.
- The occurrence of concrete shrinkage cracking may be reduced and/or controlled by limiting the amount of water within the mix (water cement ratio of 0.45 or less), the incorporation of crack control joints and proper concrete placing and curing practices including ACI 318 provisions for areas subject to freeze thaw conditions.
- Proper curing, finishing, control joints and reinforcing should be provided to minimize any damage resulting from shrinkage including cracks and slab curling.

- Western Nevada is a region with absorptive aggregates and exceptionally low relative humidity. Therefore, concrete flatwork will shrink and curl in a manner which is not typical of many other US regions.
- Proper site preparation and placement of reinforcement are imperative to the performance of slab-on-grade improvements.
- Joint spacing, locally, is typically on 10-to-12-foot centers for large slabs and no more than five feet for sidewalks.
- Cracking that occurs within the slab-on-grade floors will often reflect through overlying improvements even if adequate substrate preparation has occurred.
- Control of the rate of moisture loss in concrete slab-on-grade improvements by using curing compounds, fogging, or other suitable means is imperative to protecting the slab from excessive curling.
- Slabs-on-grade will still exhibit some cracking and curling. The occurrence of concrete shrinkage cracks is independent of the soil supporting characteristics.

5.6. Public Improvements

Unless noted otherwise, dedicated improvements shall be designed and constructed in accordance with the approved civil plans, the Standard Specifications for Public Works Construction, and the jurisdiction's standard details.

5.6.1. Slopes and Drainage

- Surface drainage shall be per the approved project Civil design drawings.
- Refer to Section 5.3.10 for embankment considerations.
- Due to the sloughing soils encountered during our exploration program, temporary slope protection may be required in deeper trenches and/or on the sidewalls of the retention basin especially if vibration loading due to construction equipment is proximate.
- The second aspect of slope stability involves erosion potential which is dependent on numerous factors involving grain size distribution, cohesion, moisture content, slope angle and the velocity of the water or wind across the ground surface.
- Erosion protection should be as indicated on the approved Civil drawings and/or per the jurisdiction's design standards.
- Typically, 2:1 (H:V) slopes typically require armoring. Slopes steeper than 3:1 (H:V) are typically addressed with a combination of revegetation and localize armoring or landscape retaining walls.

- Temporary (during construction) and permanent (after construction) erosion control will be required for all disturbed areas.
- Brow ditches are recommended above any slopes greater than 10-feet in height and should be incorporated into the overall drainage considerations presented on the civil drawings.
- Provisions for drainage from behind common retaining walls should be considered and presented in the approved civil plans.
- In compliance with all applicable city, county, state and federal regulations the contractor shall prevent dust from being generated during construction, and the contractor shall submit an acceptable dust control plan prior to starting site preparation or earthwork.

5.6.2. Structural Pavement Sections

- Materials and workmanship shall be consistent with the requirements of the jurisdiction and the Standard Specifications for Public Works Construction.
- Table 6 presents the recommended minimum structural pavement sections for the development based on planned use. Minimum sections required by the jurisdictions shall govern if more than specified in Table 6.

Table 6 - Structural Pavement Sections¹

Road Type	Pavement Thickness (In.)	Pavement Type ²	Type II Class B Base Course Thickness (In.)
Main Access Drives	4	2" Type 3 + Lime / 2" Type 2	6
Parking and Automobile Traffic Driveways	3	Type 3 + Lime	6
Dumpster Aprons ⁴	6	Reinforced Portland Cement Concrete	6

¹ Per City of Fernley Public Works Department Standard Details. Final design shall be verified based on lot distribution, street loading, subgrade R-value and separation requirements.

² Per the Standard Specifications for Public Works Construction.

The Contractor should submit a pavement mix design to the Owner or Engineer, for approval, at least five working days prior to paving. When pavement is placed directly adjacent to concrete flatwork, the finish compacted grade of the pavement should be at least ½ of an inch higher than the edge of adjacent concrete surface to allow adequate compaction of the pavement without damaging the concrete.

5.6.3. Pavement Design Life

- Maintenance is mandatory to ensure long-term pavement performance and to meet or exceed the assumed 20-year design life.

- Maintenance refers to any activity performed on the pavement that is intended to preserve its original service life or load-carrying capacity. Examples of maintenance activities include patching, crack or joint sealing, and seal coats. If these maintenance activities are ignored or deferred, premature failure of the pavement will occur.
- Premature failure of asphaltic concrete frequently occurs adjacent to poorly graded ponding areas and/or landscape areas. Failures may occur due to excessive precipitation, irrigation and landscaping water infiltrating into the subgrade soils causing subgrade failure.
- In areas where saturation of the subgrade soils beneath asphaltic pavement may occur, it is strongly recommended the owner/project manager include provisions by design for a subdrain system to eliminate the potential for saturation of subgrade soils. The subdrain system should discharge into a permanent drainage area that will not impede drainage flow to cause the system to back-up and/or clog. Appropriate maintenance procedures should be implemented to ensure the subdrain system does not plug and allow for proper drainage of surface and subsurface water beneath paved areas. Subdrain location and configuration should be evaluated once final grading and landscaping plans have been prepared.
- If the ultimate traffic exceeds the anticipated levels, it may be necessary to reevaluate and overlay the pavement at some time in the future.
- The cost associated with proper maintenance is generally much less than the cost for reconstruction due to the premature failure of the pavement. Therefore, it is strongly recommended the owner/project manager implement a pavement management program.

6. CONSTRUCTION OBSERVATION AND TESTING SERVICES

- The recommendations presented in this report assume that the contractors perform their work as required by the project documents and that owner/project manager provides for sufficient field-testing and construction review during each phase of construction.
- Prior to construction, the owner/project manager should schedule a pre-construction conference including, but not limited to representatives of the owner, architect, civil engineer, the general contractor, earthwork and materials subcontractors, building official, and geotechnical engineer.
- It is the owner's/project manager responsibility to set-up this meeting and contact all responsible parties. The conference will allow parties to review the project plans, specifications, scheduling and recommendations presented in this report, and discuss applicable material quality and mix design requirements.
- Quality control reports should be submitted to the owner/project manager for review and distributed to the appropriate parties. It is essential that any changes or revisions to project plans be provided to Wood Rodgers in a timely fashion to ensure contractor compliance and avoid construction delays or the need to remove completed work.
- During construction, Wood Rodgers Incorporated should have the opportunity to provide sufficient on-site observation of site preparation and grading, over-excavation, fill placement, foundation installation, and paving.

These observations would allow us to document the geotechnical conditions are as anticipated and that the contractor's work meets with the criteria in the approved plans and specifications. Verification of horizontal and vertical control must be provided by whoever was responsible for establishing those boundaries and constructing associated improvements.

7. STANDARD LIMITATION CLAUSE

- This report has been prepared in accordance with generally accepted local geotechnical practices.
- The analyses and recommendations submitted are based upon field exploration performed at the specific locations identified and the conditions encountered, as discussed in our report.
- No guarantee or warranty as to the continuity of soil conditions between exploration points is implied or intended.
- Therefore, this report does not reflect soil variations that may become evident during the construction period, at which time re-evaluation of the recommendations may be necessary.
- Final plans and specifications should be reviewed by the design engineer responsible for this geotechnical report to determine if they have been prepared in accordance with the recommendations contained in this report prior to submitting to the building department for review.
- It is the owner's/project manager responsibility to provide the plans and specifications to the engineer.
- This report is issued with the understanding that it is the responsibility of the owner or their representative to ensure that the information and recommendations contained herein are brought to the attention of the design team for the project and incorporated into the plans and specifications, and that the necessary steps are taken to see that the contractor and subcontractors carry out such recommendations in the field.
- We recommend our firm be retained to perform construction observation in all phases of the project related to geotechnical factors to document compliance with our recommendations.
- The owner/project manager is responsible for distribution of this geotechnical report to all designers and contractors whose work is related to geotechnical factors.
- It is the contractor's responsibility for the grading and construction of the designed improvements. This responsibility includes the means, methods, techniques, sequence, and procedures of construction and safety of construction at the site.
- All construction shall conform to the requirements of the most recently adopted version of the Standard Specifications for Public Works Construction and the requirements of the City of Fernley and Lyon County, Nevada.
- Failure to inspect the work shall not relieve the contractor from his obligation to perform sound and reliable work as described herein and as described in the Standard Specifications for Public Works Construction.

- In the event of changes in the design, location, or ownership of the project after presentation of this report, our recommendations should be reviewed and possibly modified by the Geotechnical Engineer.
- If the Geotechnical Engineer is not accorded the privilege of making this recommended review, we can assume no responsibility for misinterpretation or misapplication of our recommendations or their validity in the event changes have been made in the original design concept without our prior review. The engineer makes no other warranties, either expressed or implied, as to the professional advice provided under the terms of this agreement and included in this report.
- This report was prepared by Wood Rodgers, Inc. for the benefit of ERGS, Inc. and their duly assigned agents or other responsible parties.
- The material in this report reflects Wood Rodgers' best judgment considering the information available to it at the time of preparation. Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of such third parties.
- Wood Rodgers accepts no responsibility for damages, if any, suffered by any third party because of decisions made by third parties or actions based on this report without consultation with Wood Rodgers and written approval for such actions.

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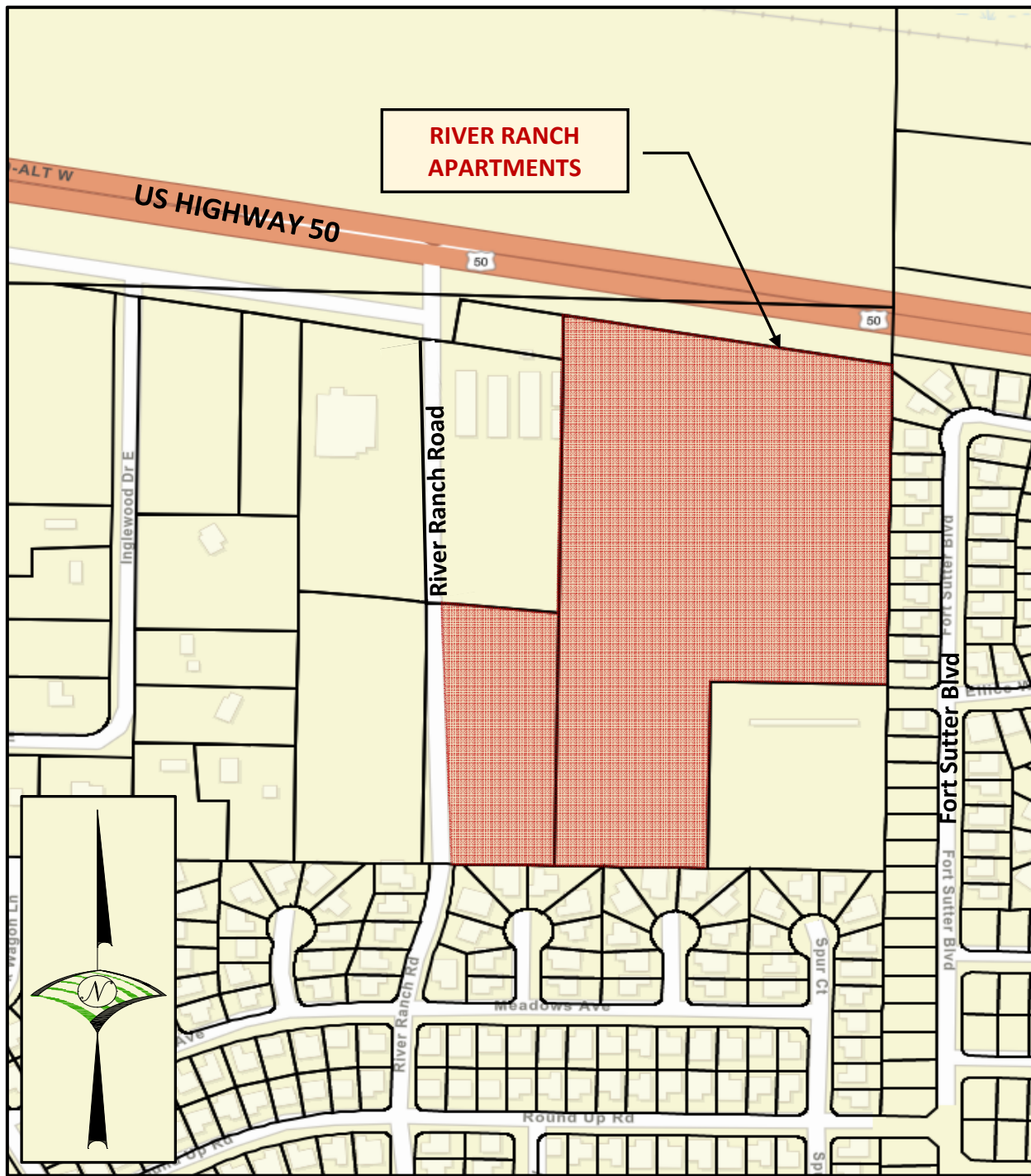
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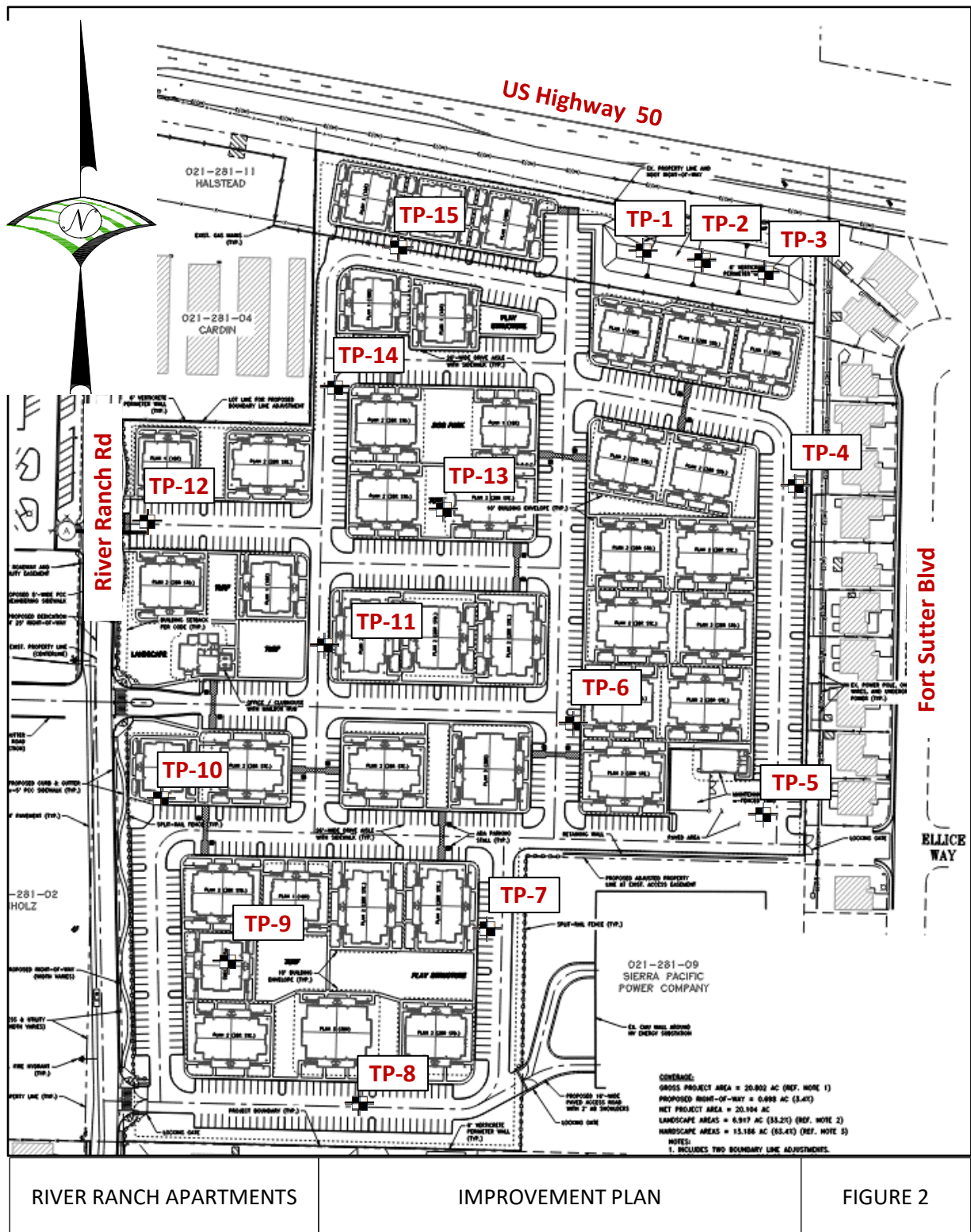
APPENDIX A FIGURES



RIVER RANCH APARTMENTS

VICINITY MAP

FIGURE 1





RIVER RANCH APARTMENTS

SITE PLAN & APPROXIMATE EXPLORATION LOCATIONS

FIGURE 3



APPENDIX B FIELD EXPLORATION



Wood Rodgers

TEST PIT NUMBER TP-1

PAGE 1 OF 1

CLIENT ERGS, Inc. **PROJECT NAME** River Ranch Apartments
PROJECT NUMBER 3034059 **PROJECT LOCATION** Fernley, Nevada
DATE STARTED 7/14/22 **COMPLETED** 7/14/22 **GROUND ELEVATION** 4127 ft **TEST PIT SIZE** 24 inches
EXCAVATION CONTRACTOR King Construction **GROUND WATER LEVELS:**
EXCAVATION METHOD Backhoe **AT TIME OF EXCAVATION** --- NO FREE WATER ENCOUNTERED
LOGGED BY Lilian Lorincz **CHECKED BY** Justin McDougal **AT END OF EXCAVATION** --- NO FREE WATER ENCOUNTERED
NOTES: Elevations: Fernley GIS 09/07/22 (NAVD 88); Loc: 39.59946, -119.20929 **AFTER EXCAVATION** --- NO FREE WATER ENCOUNTERED

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	R-VALUE	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
									LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
0												
		SILTY SAND, (SM) loose, dry, light brownish gray, non plastic, trace rootlets	GB 1A									
		POORLY GRADED SAND WITH SILT, (SP-SM) loose, dry, light brownish gray, non plastic	GB 1B									
5		Medium dense	GB 1C									
		Silt seams	GB 1D									
		PERCOLATION TEST, sloughing	GB 1E					2.6				5.3
10												

Bottom of Test Pit at 10.0 Feet.

Soil Percolation Recorded Measurements

1. Depth to test : 8 ft
 2. Time of 1st saturation to 12" 9:50 Date : 7/13/2022
If 12" of water drains from hole in 10 mins or less, refill to 12".
 3. Time of 2nd saturation : 10:00
 4. If 2nd filling drains in less than 10 mins, begin 1 hour test with 10 mins or less reading intervals.
 5. If either filling exceeds 10 mins to drain from hole, begin a 4-hr pre-soak.
- Return between 16 - 24 hrs to start test.

Date of percolation test : 7/14/2022Hole # : TP-1 Diameter : 8 in Depth : 12 in Soil Type : SP-SM

Reading	Time		Water Level (in)		Elapsed	Water
	Start	Finish	Start	Finish	Time min	Fall (in)
1	10:06	10:16	6	8 1/16	10	2 1/16
2	10:16	10:26	6	7 5/8	10	1 5/8
3	10:26	10:36	6	7 5/8	10	1 5/8
4	10:36	10:46	6	7 3/8	10	1 3/8
5	10:46	10:56	6	7 5/16	10	1 5/16
6	10:56	11:06	6	7 5/16	10	1 5/16

Stabilized Rate : 7.6 Min/inch
 Tested by: SB
 Checked by: LL



Wood Rodgers

TEST PIT NUMBER TP-2

PAGE 1 OF 1

CLIENT ERGS, Inc.PROJECT NAME River Ranch ApartmentsPROJECT NUMBER 3034059PROJECT LOCATION Fernley, NevadaDATE STARTED 7/14/22COMPLETED 7/14/22GROUND ELEVATION 4129 ftTEST PIT SIZE 24 inchesEXCAVATION CONTRACTOR King Construction

GROUND WATER LEVELS:

EXCAVATION METHOD BackhoeAT TIME OF EXCAVATION --- NO FREE WATER ENCOUNTEREDLOGGED BY Lilian LorinczCHECKED BY Justin McDougalAT END OF EXCAVATION --- NO FREE WATER ENCOUNTEREDNOTES: Elevations: Fernley GIS 09/07/22 (NAVD 88); Loc: 39.59944, -119.20894 AFTER EXCAVATION --- NO FREE WATER ENCOUNTERED

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	R-VALUE	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
									LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
0		SANDY FAT CLAY, (CH) stiff, dry, yellowish brown, high plasticity	GB 2A									
		SILTY SAND, (SM) loose, dry, light brownish gray, non plastic										
		SILT, (ML) very stiff, slightly moist, olive yellow, low plasticity	GB 2B					21.7				94.1
5		POORLY GRADED SAND WITH SILT, (SP-SM) loose, dry, light brownish gray, non plastic	GB 2C									
		Medium dense	GB 2D									
		Loose, sloughing, PERCOLATION TEST										

Bottom of Test Pit at 9.5 Feet.

Soil Percolation Recorded Measurements

1. Depth to test : 8 ft
2. Time of 1st saturation to 12" 10:50 Date : 7/13/2022
If 12" of water drains from hole in 10 mins or less, refill to 12".
3. Time of 2nd saturation : 11:00
4. If 2nd filling drains in less than 10 mins, begin 1 hour test with 10 mins or less reading intervals.
5. If either filling exceeds 10 mins to drain from hole, begin a 4-hr pre-soak.
- Return between 16 - 24 hrs to start test.

Date of percolation test : 7/14/2022Hole # : TP-2 Diameter : 8 in Depth : 12 in Soil Type : SP-SM

Reading	Time		Water Level		Elapsed Time min	Water Fall (in)
	Start	Finish	Start	Finish		
1	10:10	10:20	6	8 7/16	10	2 7/16
2	10:20	10:30	6	8 1/4	10	2 1/4
3	10:30	10:40	6	8 1/8	10	2 1/8
4	10:40	10:50	6	8 1/8	10	2 1/8
5	10:50	11:00	6	8 1/16	10	2 1/16

Stabilized Rate : 4.8 Min/inchTested by: SB
Checked by : LL



Wood Rodgers

TEST PIT NUMBER TP-3

PAGE 1 OF 1

CLIENT ERGS, Inc.PROJECT NAME River Ranch ApartmentsPROJECT NUMBER 3034059PROJECT LOCATION Fernley, NevadaDATE STARTED 7/14/22COMPLETED 7/14/22GROUND ELEVATION 4128 ftTEST PIT SIZE 24 inchesEXCAVATION CONTRACTOR King Construction

GROUND WATER LEVELS:

EXCAVATION METHOD BackhoeAT TIME OF EXCAVATION --- NO FREE WATER ENCOUNTEREDLOGGED BY Lilian LorinczCHECKED BY Justin McDougalAT END OF EXCAVATION --- NO FREE WATER ENCOUNTEREDNOTES: Elevations: Fernley GIS 09/07/22 (NAVD 88); Loc: 39.59941, -119.20866 AFTER EXCAVATION --- NO FREE WATER ENCOUNTERED

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	R-VALUE	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
									LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
0		SANDY FAT CLAY, (CH) stiff, dry, yellowish brown, high plasticity	GB 3A									
		SILTY SAND, (SM) loose, dry, light brownish gray, non plastic										
		SILT, (ML) stiff, slightly moist, yellowish brown, low plasticity	GB 3B									
		POORLY GRADED SAND WITH SILT, (SP-SM) loose, dry, light brownish gray, non plastic										
5		Sloughing	GB 3C									

Bottom of Test Pit at 7.5 Feet.

Soil Percolation Recorded Measurements

1. Depth to test : 8 ft
2. Time of 1st saturation to 12" 11:45 Date : 7/13/2022
If 12" of water drains from hole in 10 mins or less, refill to 12".
3. Time of 2nd saturation : 11:55
4. If 2nd filling drains in less than 10 mins, begin 1 hour test with 10 mins or less reading intervals.
5. If either filling exceeds 10 mins to drain from hole, begin a 4-hr pre-soak.
- Return between 16 - 24 hrs to start test.

Date of percolation test : 7/14/2022Hole # : TP-3 Diameter : 8 in Depth : 12 in Soil Type : SP-SM

Reading	Time		Water Level		Elapsed Time min	Water Fall (in)
	Start	Finish	Start	Finish		
1			6	9 9/16	5	
2			6	9 7/16	5	
3			6	9 3/8	5	
4			6	9 5/16	5	
5			6	9 5/16	5	
6			6	9 1/4	5	
7			6	9 1/4	5	
8			6	9 1/4	5	
9			6	9 1/4	5	

Stabilized Rate : 1.5 Min/inch*Tested by: SB

*Rate may be due to test performed in sloughed soils

Checked by: LL



Wood Rodgers

TEST PIT NUMBER TP-4

PAGE 1 OF 1

CLIENT ERGS, Inc. **PROJECT NAME** River Ranch Apartments
PROJECT NUMBER 3034059 **PROJECT LOCATION** Fernley, Nevada
DATE STARTED 7/13/22 **COMPLETED** 7/13/22 **GROUND ELEVATION** 4133 ft **TEST PIT SIZE** 24 inches
EXCAVATION CONTRACTOR King Construction **GROUND WATER LEVELS:**
EXCAVATION METHOD Backhoe **AT TIME OF EXCAVATION** --- NO FREE WATER ENCOUNTERED
LOGGED BY Lilian Lorincz **CHECKED BY** Justin McDougal **AT END OF EXCAVATION** --- NO FREE WATER ENCOUNTERED
NOTES: Elevations: Fernley GIS 09/07/22 (NAVD 88); Loc: 39.59857, -119.20834 **AFTER EXCAVATION** --- NO FREE WATER ENCOUNTERED

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	R-VALUE	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
									LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
0.0		SILTY SAND, (SM) loose, dry, light brownish gray, non plastic	GB 4A			70			NP	NP	NP	
2.5												
			GB 4B									
5.0		POORLY GRADED SAND WITH SILT, (SP-SM) loose, dry, light brownish gray, non plastic	GB 4C									
7.5		SILT, (ML) very stiff, dry, olive yellow, low plasticity										
10.0												

Bottom of Test Pit at 10.0 Feet.

GEOTECH BH COLUMNS - GINT STD US LAB.GDT - 9/9/22 14:23 - \\WOODRODGERS.LOC\PRODUCTION\DATA\JOBS-RENO\JOBS\3034 - ERGS\RIVER_RNCH_DOUBLE_R_OA\GEOTECH\GEO\TECH\06 GINT\RIVER_RANCH APARTMENTS.GPJ



Wood Rodgers

TEST PIT NUMBER TP-5

PAGE 1 OF 1

CLIENT ERGS, Inc. **PROJECT NAME** River Ranch Apartments
PROJECT NUMBER 3034059 **PROJECT LOCATION** Fernley, Nevada
DATE STARTED 7/13/22 **COMPLETED** 7/13/22 **GROUND ELEVATION** 4142 ft **TEST PIT SIZE** 24 inches
EXCAVATION CONTRACTOR King Construction **GROUND WATER LEVELS:**
EXCAVATION METHOD Backhoe **AT TIME OF EXCAVATION** --- NO FREE WATER ENCOUNTERED
LOGGED BY Lilian Lorincz **CHECKED BY** Justin McDougal **AT END OF EXCAVATION** --- NO FREE WATER ENCOUNTERED
NOTES: Elevations: Fernley GIS 09/07/22 (NAVD 88); Loc: 39.59941, -119.20864 **AFTER EXCAVATION** --- NO FREE WATER ENCOUNTERED

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	R-VALUE	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
									LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
0.0		CLAYEY GRAVEL WITH SAND, (GC) medium dense, dry, yellowish brown, medium plasticity	GB 5A									
2.5		Dense, slightly moist	GB 5B					10.7	51	26	25	12.8
5.0			GB 5C									
7.5			GB 5D									
10.0												

Bottom of Test Pit at 10.0 Feet.

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Wood Rodgers

TEST PIT NUMBER TP-6

PAGE 1 OF 1

CLIENT ERGS, Inc. **PROJECT NAME** River Ranch Apartments
PROJECT NUMBER 3034059 **PROJECT LOCATION** Fernley, Nevada
DATE STARTED 7/13/22 **COMPLETED** 7/13/22 **GROUND ELEVATION** 4144 ft **TEST PIT SIZE** 24 inches
EXCAVATION CONTRACTOR King Construction **GROUND WATER LEVELS:**
EXCAVATION METHOD Backhoe **AT TIME OF EXCAVATION** --- NO FREE WATER ENCOUNTERED
LOGGED BY Lilian Lorincz **CHECKED BY** Justin McDougal **AT END OF EXCAVATION** --- NO FREE WATER ENCOUNTERED
NOTES: Elevations: Fernley GIS 09/07/22 (NAVD 88); Loc: 39.59784, -119.20934 **AFTER EXCAVATION** --- NO FREE WATER ENCOUNTERED

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	R-VALUE	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
									LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
0.0		FAT CLAY WITH SAND, (CH) stiff, dry, olive brown, high plasticity	GB 6A									
2.5		CLAYEY SAND WITH GRAVEL, (SC) dense, slightly moist, yellowish brown, high plasticity	GB 6B									
5.0		Rootlets	GB 6C					13.2	51	22	29	25.7
7.5												
10.0			GB 6D									

Bottom of Test Pit at 10.0 Feet.

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Wood Rodgers

TEST PIT NUMBER TP-7

PAGE 1 OF 1

CLIENT ERGS, Inc. **PROJECT NAME** River Ranch Apartments
PROJECT NUMBER 3034059 **PROJECT LOCATION** Fernley, Nevada
DATE STARTED 7/13/22 **COMPLETED** 7/13/22 **GROUND ELEVATION** 4160 ft **TEST PIT SIZE** 24 inches
EXCAVATION CONTRACTOR King Construction **GROUND WATER LEVELS:**
EXCAVATION METHOD Backhoe **AT TIME OF EXCAVATION** --- NO FREE WATER ENCOUNTERED
LOGGED BY Lilian Lorincz **CHECKED BY** Justin McDougal **AT END OF EXCAVATION** --- NO FREE WATER ENCOUNTERED
NOTES: Elevations: Fernley GIS 09/07/22 (NAVD 88); Loc: 39.59706, -119.20926 **AFTER EXCAVATION** --- NO FREE WATER ENCOUNTERED

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	R-VALUE	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
									LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
0.0												
		FAT CLAY WITH SAND, (CH) stiff, dry, olive brown, high plasticity, rootlets	GB 7A									
2.5		SILT WITH SAND, (ML) stiff, dry, yellowish brown, medium plasticity	GB 7B									
5.0		Slightly moist	GB 7C					14.7	41	26	15	79.8
7.5		CLAYEY SAND WITH GRAVEL, (SC) dense, dry, yellowish brown, high plasticity	GB 7D									
10.0		SILT WITH GRAVEL, (ML) stiff, dry, yellowish brown, low plasticity	GB 7E									

Bottom of Test Pit at 10.0 Feet.

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Wood Rodgers

TEST PIT NUMBER TP-8

PAGE 1 OF 1

CLIENT ERGS, Inc. **PROJECT NAME** River Ranch Apartments
PROJECT NUMBER 3034059 **PROJECT LOCATION** Fernley, Nevada
DATE STARTED 7/13/22 **COMPLETED** 7/13/22 **GROUND ELEVATION** 4161 ft **TEST PIT SIZE** 24 inches
EXCAVATION CONTRACTOR King Construction **GROUND WATER LEVELS:**
EXCAVATION METHOD Backhoe **AT TIME OF EXCAVATION** --- NO FREE WATER ENCOUNTERED
LOGGED BY Lilian Lorincz **CHECKED BY** Justin McDougal **AT END OF EXCAVATION** --- NO FREE WATER ENCOUNTERED
NOTES: Elevations: Fernley GIS 09/07/22 (NAVD 88); Loc: 39.59941, -119.20846 **AFTER EXCAVATION** --- NO FREE WATER ENCOUNTERED

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	R-VALUE	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
									LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
0.0												
		FILL - CLAYEY SAND, (SC) medium dense, dry, yellowish brown, medium plasticity	GB 8A									
2.5			GB 8B					6.3	23	13	10	31.1
		SILT WITH SAND, (ML) stiff, dry, olive yellow, low plasticity Yellowish brown										
5.0			GB 8C									
		POORLY GRADED SAND WITH SILT, (SP-SM) dense, dry, light brownish gray, non plastic										
7.5			GB 8D									
10.0												

Bottom of Test Pit at 10.0 Feet.

GEOTECH BH COLUMNS - GINT STD US LAB.GDT - 9/9/22 14:23 - \\WOODRODGERS.LOC\PRODUCTION\DATA\JOBS-RENO\JOBS\3034 - ERGS\RIVER_RNCH_DOUBLE - R.OA\GEOTECH\GINT\06 GINT\RIVER RANCH APARTMENTS.GPJ



Wood Rodgers

TEST PIT NUMBER TP-9

PAGE 1 OF 1

CLIENT ERGS, Inc. **PROJECT NAME** River Ranch Apartments
PROJECT NUMBER 3034059 **PROJECT LOCATION** Fernley, Nevada
DATE STARTED 7/14/22 **COMPLETED** 7/14/22 **GROUND ELEVATION** 4162 ft **TEST PIT SIZE** 24 inches
EXCAVATION CONTRACTOR King Construction **GROUND WATER LEVELS:**
EXCAVATION METHOD Backhoe **AT TIME OF EXCAVATION** --- NO FREE WATER ENCOUNTERED
LOGGED BY Lilian Lorincz **CHECKED BY** Justin McDougal **AT END OF EXCAVATION** --- NO FREE WATER ENCOUNTERED
NOTES: Elevations: Fernley GIS 09/07/22 (NAVD 88); Loc: 39.59696, -119.211 **AFTER EXCAVATION** --- NO FREE WATER ENCOUNTERED

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	R-VALUE	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
									LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
0.0												
		FILL - CLAYEY SAND, (SC) medium dense, dry, yellowish brown, medium plasticity, construction debris	GB 9A									
2.5		SILTY SAND, (SM) medium dense, dry, yellowish brown, low plasticity, rootlets	GB 9B									
5.0		Dense, olive yellow	GB 9C									
7.5		Slightly moist	GB 9D					15.4	31	24	7	38.0
10.0			GB 9E									

Bottom of Test Pit at 10.0 Feet.

GEOTECH BH COLUMNS - GINT STD US LAB.GDT - 9/9/22 14:23 - \\WOODRODGERS.LOC\PRODUCTION\DATA\JOBS-RENO\JOBS\3034_ERGS\RIVER_RNCH_DOUBLE_R_OA\GEOTECH\GINT\TP-9_RIVER_RNCH_APARTMENTS.GPJ



Wood Rodgers

TEST PIT NUMBER TP-10

PAGE 1 OF 1

CLIENT ERGS, Inc. **PROJECT NAME** River Ranch Apartments
PROJECT NUMBER 3034059 **PROJECT LOCATION** Fernley, Nevada
DATE STARTED 7/14/22 **COMPLETED** 7/14/22 **GROUND ELEVATION** 4153 ft **TEST PIT SIZE** 24 inches
EXCAVATION CONTRACTOR King Construction **GROUND WATER LEVELS:**
EXCAVATION METHOD Backhoe **AT TIME OF EXCAVATION** --- NO FREE WATER ENCOUNTERED
LOGGED BY Lilian Lorincz **CHECKED BY** Justin McDougal **AT END OF EXCAVATION** --- NO FREE WATER ENCOUNTERED
NOTES: Elevations: Fernley GIS 09/07/22 (NAVD 88); Loc: 39.59753, -119.2114 **AFTER EXCAVATION** --- NO FREE WATER ENCOUNTERED

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	R-VALUE	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
									LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
0.0												
		FILL - CLAYEY SAND, (SC) medium dense, dry, yellowish brown, medium plasticity, construction debris	GB 10A									
2.5			GB 10B									
		SILT WITH SAND, (ML) stiff, dry, olive yellow, medium plasticity, rootlets	GB 10C									
5.0												
		Very stiff	GB 10D									
7.5												
		SILT WITH GRAVEL, (ML) very stiff, slightly moist, olive yellow, non plastic										
10.0												

Bottom of Test Pit at 10.0 Feet.

GEOTECH BH COLUMNS - GINT STD US LAB.GDT - 9/9/22 14:24 - \\WOODRODGERS.LOC\PRODUCTION\DATA\JOBS-RENO\JOBS\3034 - ERGS\RIVER_RNCH_DOUBLE_R_OA\GEOTECH\GINT\06 GINT\RIVER RANCH APARTMENTS.GPJ



Wood Rodgers

TEST PIT NUMBER TP-11

PAGE 1 OF 1

CLIENT ERGS, Inc. **PROJECT NAME** River Ranch Apartments
PROJECT NUMBER 3034059 **PROJECT LOCATION** Fernley, Nevada
DATE STARTED 7/14/22 **COMPLETED** 7/14/22 **GROUND ELEVATION** 4149 ft **TEST PIT SIZE** 24 inches
EXCAVATION CONTRACTOR King Construction **GROUND WATER LEVELS:**
EXCAVATION METHOD Backhoe **AT TIME OF EXCAVATION** --- NO FREE WATER ENCOUNTERED
LOGGED BY Lilian Lorincz **CHECKED BY** Justin McDougal **AT END OF EXCAVATION** --- NO FREE WATER ENCOUNTERED
NOTES: Elevations: Fernley GIS 09/07/22 (NAVD 88); Loc: 39.59769, -119.21064 **AFTER EXCAVATION** --- NO FREE WATER ENCOUNTERED

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	R-VALUE	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
									LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
0.0		SILTY SAND, (SM) loose, dry, yellowish brown, non plastic	GB 11A									
2.5		Silt seam										
5.0		SILT WITH SAND, (ML) stiff, dry, yellowish brown, medium plasticity	GB 11B									
			GB 11C									
7.5		POORLY GRADED SAND WITH GRAVEL, (SP) medium dense, dry, light brownish gray to olive brown, non plastic	GB 11D									
10.0												

Bottom of Test Pit at 10.0 Feet.

GEOTECH BH COLUMNS - GINT STD US LAB.GDT - 9/9/22 14:24 - \\WOODRODGERS.LOC\PRODUCTION\DATA\JOBS-RENO\JOBS\3034 - ERGS\RIVER_RNCH_DOUBLE_R_OA\GEOTECH\GEO\TECH\06 GINT\RIVER_RANCH_APARTMENTS.GPJ



Wood Rodgers

TEST PIT NUMBER TP-12

PAGE 1 OF 1

CLIENT ERGS, Inc. **PROJECT NAME** River Ranch Apartments
PROJECT NUMBER 3034059 **PROJECT LOCATION** Fernley, Nevada
DATE STARTED 7/14/22 **COMPLETED** 7/14/22 **GROUND ELEVATION** 4135 ft **TEST PIT SIZE** 24 inches
EXCAVATION CONTRACTOR King Construction **GROUND WATER LEVELS:**
EXCAVATION METHOD Backhoe **AT TIME OF EXCAVATION** --- NO FREE WATER ENCOUNTERED
LOGGED BY Lilian Lorincz **CHECKED BY** Justin McDougal **AT END OF EXCAVATION** --- NO FREE WATER ENCOUNTERED
NOTES: Elevations: Fernley GIS 09/07/22 (NAVD 88); Loc: 39.59845, -119.21134 **AFTER EXCAVATION** --- NO FREE WATER ENCOUNTERED

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	R-VALUE	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
									LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
0.0		SILT WITH GRAVEL, (ML) stiff, dry, yellowish brown, medium plasticity	GB 12A									
		SILT WITH SAND, (ML) stiff, dry, olive yellow, medium plasticity, rootlets	GB 12B									
2.5		SILTY SAND, (SM) medium dense, dry, yellowish brown, low plasticity	GB 12C									
5.0		POORLY GRADED SAND WITH SILT, (SP-SM) medium dense, dry, light brownish gray, non plastic	GB 12D									
7.5		SILT WITH SAND, (ML) stiff, dry, yellowish brown, medium plasticity	GB 12E									
10.0												

Bottom of Test Pit at 10.0 Feet.

GEOTECH BH COLUMNS - GINT STD US LAB.GDT - 9/9/22 14:24 - \\WOODRODGERS.LOC\PRODUCTION\DATA\JOBS-RENO\JOBS\3034 - ERGS\RIVER_RNCH.DOUBLE_R_OA\GEOTECH\GEO\TECH\06 GINT\RIVER_RANCH APARTMENTS.GPJ



Wood Rodgers

TEST PIT NUMBER TP-13

PAGE 1 OF 1

CLIENT ERGS, Inc. **PROJECT NAME** River Ranch Apartments
PROJECT NUMBER 3034059 **PROJECT LOCATION** Fernley, Nevada
DATE STARTED 7/14/22 **COMPLETED** 7/14/22 **GROUND ELEVATION** 4135 ft **TEST PIT SIZE** 24 inches
EXCAVATION CONTRACTOR King Construction **GROUND WATER LEVELS:**
EXCAVATION METHOD Backhoe **AT TIME OF EXCAVATION** --- NO FREE WATER ENCOUNTERED
LOGGED BY Lilian Lorincz **CHECKED BY** Justin McDougal **AT END OF EXCAVATION** --- NO FREE WATER ENCOUNTERED
NOTES: Elevations: Fernley GIS 09/07/22 (NAVD 88); Loc: 39.59853, -119.210 **AFTER EXCAVATION** --- NO FREE WATER ENCOUNTERED

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	R-VALUE	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
									LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
0.0												
		SILTY SAND, (SM) loose, dry, light brownish gray, non plastic, trace rootlets	GB 13A									
2.5		POORLY GRADED SAND WITH SILT, (SP-SM) medium dense, dry, light brownish gray, non plastic	GB 13B									
5.0		SILT WITH SAND, (ML) stiff, dry, olive yellow, medium plasticity, rootlets	GB 13C									
7.5		Slightly moist										
10.0			GB 13D									

Bottom of Test Pit at 10.0 Feet.

GEOTECH BH COLUMNS - GINT STD US LAB.GDT - 9/9/22 14:24 - \\WOODRODGERS.LOC\PRODUCTION\DATA\JOBS-RENO\JOBS\3034_ERGS\RIVER_RNCH_DOUBLE_R_OA\GEOTECH\GINT\TP13\B-1m



Wood Rodgers

TEST PIT NUMBER TP-14

PAGE 1 OF 1

CLIENT ERGS, Inc. **PROJECT NAME** River Ranch Apartments
PROJECT NUMBER 3034059 **PROJECT LOCATION** Fernley, Nevada
DATE STARTED 7/14/22 **COMPLETED** 7/14/22 **GROUND ELEVATION** 4133 ft **TEST PIT SIZE** 24 inches
EXCAVATION CONTRACTOR King Construction **GROUND WATER LEVELS:**
EXCAVATION METHOD Backhoe **AT TIME OF EXCAVATION** --- NO FREE WATER ENCOUNTERED
LOGGED BY Lilian Lorincz **CHECKED BY** Justin McDougal **AT END OF EXCAVATION** --- NO FREE WATER ENCOUNTERED
NOTES: Elevations: Fernley GIS 09/07/22 (NAVD 88); Loc: 39.59899, -119.21046 **AFTER EXCAVATION** --- NO FREE WATER ENCOUNTERED

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	R-VALUE	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
									LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
0.0		SILTY SAND, (SM) medium dense, dry, yellowish brown, non plastic	GB 14A									
2.5		Low plasticity, silt seam	GB 14B									
5.0												
7.5		SILT WITH SAND, (ML) stiff, dry, yellowish brown, medium plasticity	GB 14C									
10.0		POORLY GRADED SAND WITH SILT, (SP-SM) medium dense, dry, light brownish gray, non plastic	GB 14D									

Bottom of Test Pit at 10.0 Feet.

GEOTECH BH COLUMNS - GINT STD US LAB.GDT - 9/9/22 14:24 - \\WOODRODGERS.LOC\PRODUCTION\DATA\JOBS-RENO\JOBS\3034 - ERGS\RIVER_RNCH_DOUBLE_R.OA\GEOTECH\GEO\TECH\06 GINT\RIVER RANCH APARTMENTS.GPJ



Wood Rodgers

TEST PIT NUMBER TP-15

PAGE 1 OF 1

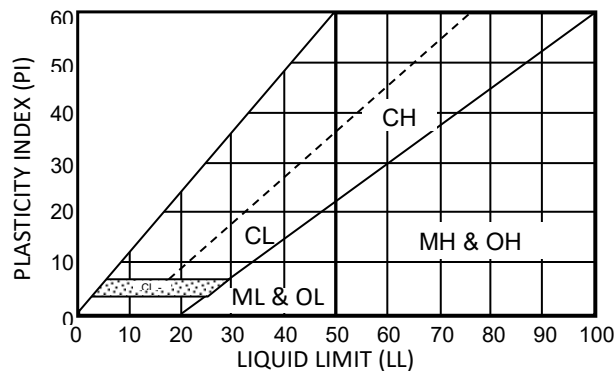
CLIENT ERGS, Inc. **PROJECT NAME** River Ranch Apartments
PROJECT NUMBER 3034059 **PROJECT LOCATION** Fernley, Nevada
DATE STARTED 7/14/22 **COMPLETED** 7/14/22 **GROUND ELEVATION** 4131 ft **TEST PIT SIZE** 24 inches
EXCAVATION CONTRACTOR King Construction **GROUND WATER LEVELS:**
EXCAVATION METHOD Backhoe **AT TIME OF EXCAVATION** --- NO FREE WATER ENCOUNTERED
LOGGED BY Lilian Lorincz **CHECKED BY** Justin McDougal **AT END OF EXCAVATION** --- NO FREE WATER ENCOUNTERED
NOTES: Elevations: Fernley GIS 09/07/22 (NAVD 88); Loc: 39.59949, -119.21024 **AFTER EXCAVATION** --- NO FREE WATER ENCOUNTERED

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	R-VALUE	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
									LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
0.0												
		SILTY SAND, (SM) loose, dry, light brownish gray, non plastic, trace rootlets	GB 15A									
2.5		SILT WITH SAND, (ML) very stiff, dry, yellowish brown, medium plasticity	GB 15B									
5.0		POORLY GRADED SAND WITH SILT, (SP-SM) loose, dry, light brownish gray, non plastic	GB 15C									
		Sloughing										

Bottom of Test Pit at 7.0 Feet.

GEOTECH BH COLUMNS - GINT STD US LAB.GDT - 9/9/22 14:24 - \\WOODRODGERS.LOC\PRODUCTIONDATA\JOBS-RENO\JOBS\3034 - ERGS\RIVER_RNCH_DOUBLE_R_OA\GEOTECH\GEO\GINT\TP15\TP15.GPJ

MAJOR DIVISION				TYPICAL NAMES	
COARSE-GRAINED SOILS MORE THAN HALF IS COARSER THAN NO. 200 SIEVE	GRAVEL MORE THAN HALF COARSE FRACTION IS LARGER THAN NO. 4 SIEVE	CLEAN SANDS WITH LITTLE OR NO FINES		GW	WELL GRADED GRAVELS WITH OR WITHOUT SAND, LITTLE OR NO FINES
		GRAVELS WITH OVER 12% FINES		GP	POORLY GRADED GRAVELS WITH OR WITHOUT SAND, LITTLE OR NO FINES
				GM	SILTY GRAVELS, SILTY GRAVELS WITH SAND
				GC	CLAYEY GRAVELS, CLAYEY GRAVELS WITH SAND
	SAND MORE THAN HALF COARSE FRACTION IS SMALLER THAN NO. 4 SIEVE	CLEAN SANDS WITH LITTLE OR NO FINES		SW	WELL GRADED SANDS WITH OR WITHOUT GRAVEL, LITTLE OR NO FINES
				SP	POORLY GRADED SAND WITH OR WITHOUT GRAVEL, LITTLE OR NO FINES
		SANDS WITH OVER 12% FINES		SM	SILTY SANDS WITH OR WITHOUT GRAVEL
				SC	CLAYEY SANDS WITH OR WITHOUT GRAVEL
FINE-GRAINED SOILS MORE THAN HALF IS FINER THAN NO. 200 SIEVE	SILT AND CLAY LIQUID LIMIT 50% OR LESS			ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTS WITH SANDS AND GRAVELS
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY CLAYS WITH SANDS AND GRAVELS, LEAN CLAYS
				OL	ORGANIC SILTS OR CLAYS OF LOW PLASTICITY
	SILT AND CLAY LIQUID LIMIT GREATER THAN 50%			MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOLID, ELASTIC SILTS
				CH	INORGANIC CLAYS OR HIGH PLASTICITY, FAT CLAYS
				OH	ORGANIC SILTS OR CLAYS MEDIUM TO HIGH PLASTICITY
	HIGHLY ORGANIC SOILS			PT	PEAT AND OTHER HIGHLY ORGANIC SOILS



CONSISTENCY		RELATIVE DENSITY	
SILTS & CLAYS	SPT BLOW* COUNTS (N)	SANDS & GRAVELS	SPT BLOW* COUNTS (N)
VERY SOFT	0 - 2	VERY LOOSE	0 - 4
SOFT	3 - 4	LOOSE	5 - 10
MEDIUM STIFF	5 - 8	MD DENSE	11 - 30
STIFF	9 - 15	DENSE	31 - 50
VERY STIFF	16 - 30	VERY DENSE	50 +
HARD	30 +		

* The Standard Penetration Resistance (N) in blows per foot is obtained by the ASTM D1585 procedure using 2" O.D., 1 3/8" I.D. samplers.

PLASTICITY DESCRIPTIONS			
DESCRIPTION	RANGE	DESCRIPTION	RANGE
NONPLASTIC	<5	MEDIUM	10-20
LOW	< 10	MEDIUM-HIGH	15 - 25
LOW-MEDIUM	5 - 15	HIGH	>25

DESCRIPTION OF ESTIMATED PERCENTAGES OF GRAVEL, SAND, AND FINES	
TRACE	Particles are present but est. < 5%
FEW	5% - 10%
LITTLE	15% - 20%
SOME	30% - 45%
MOSTLY	50% - 100%

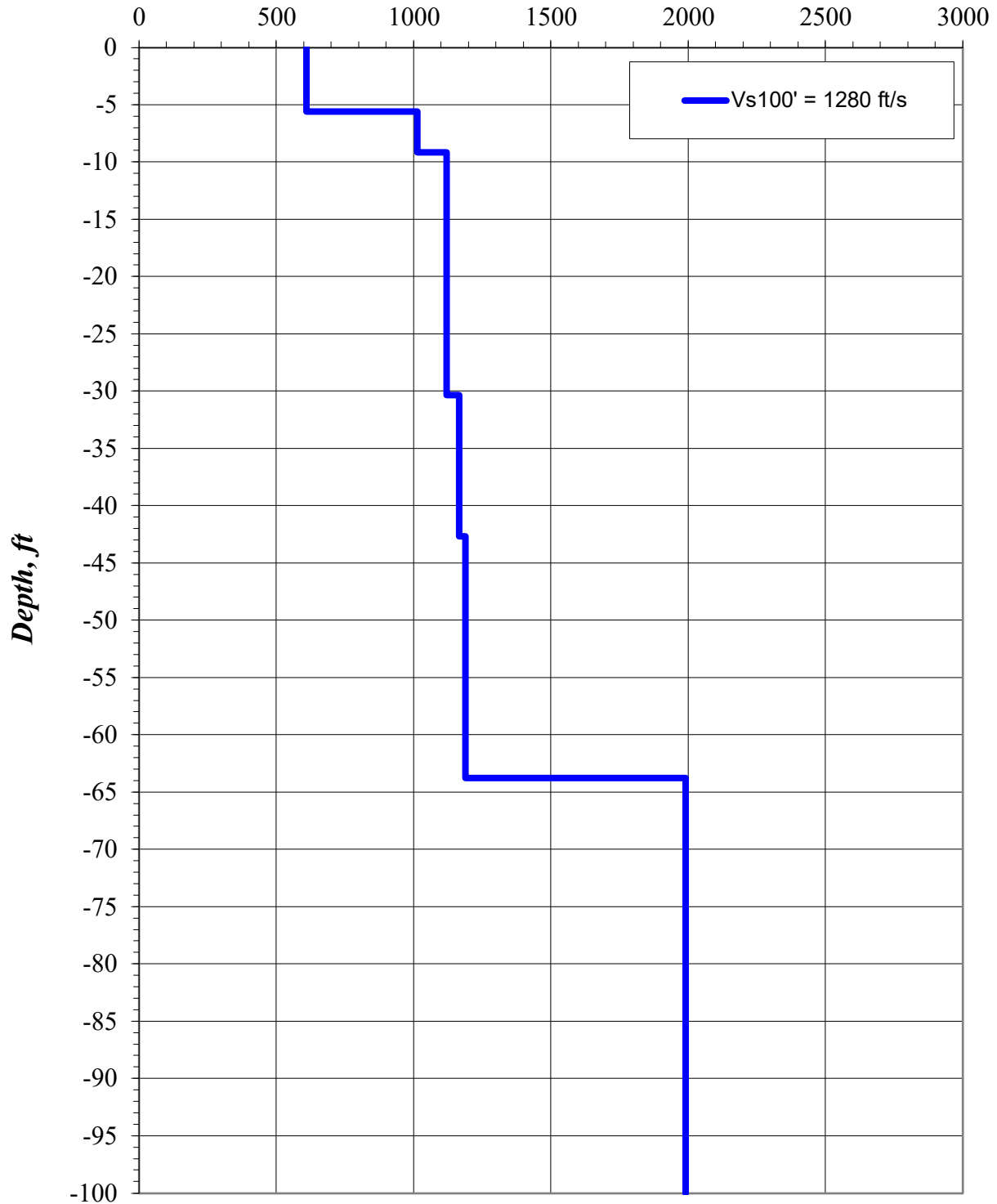
NOTE: Percentages are presented within soil description for soil horizon with laboratory tested soil samples.

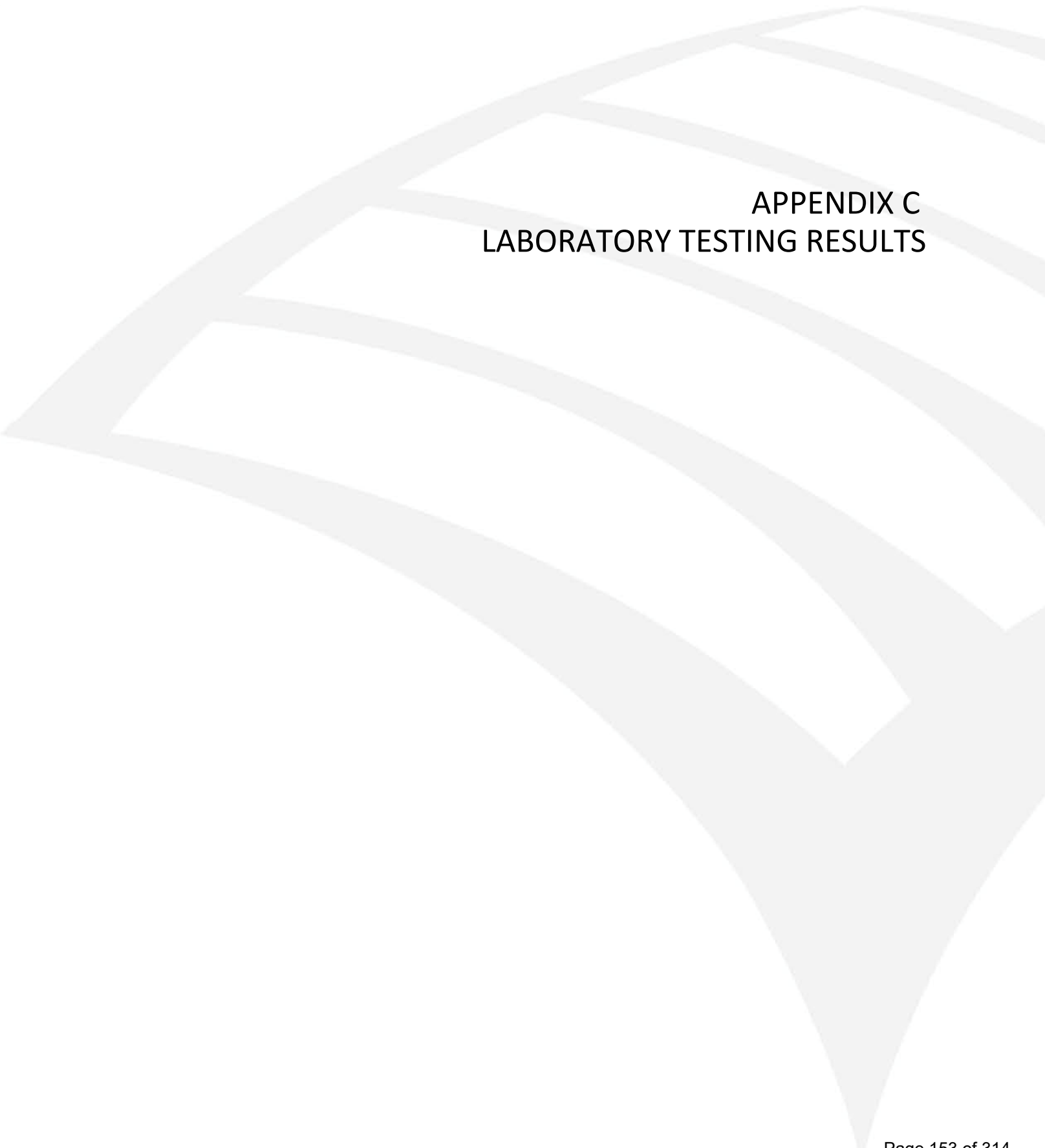
DEFINITIONS OF SOIL FRACTIONS	
SOIL COMPONENT	PARTICLE SIZE RANGE
BOULDERS	> 12 INCHES
COBBLES	3 to 12 Inches
GRAVEL	3 IN. TO NO. 4 SIEVE
COARSE GRAVEL	3 IN. TO 3/4 IN.
FINE GRAVEL	3/4 IN. TO NO. 4 SIEVE
SAND	NO. 4 TO NO. 200
COARSE SAND	NO. 4 TO NO. 10
MEDIUM SAND	NO. 10 TO NO. 40
FINE SAND	NO. 40 TO NO. 200
FINES (SILT OR CLAY)	MINUS NO. 200 SIEVE

RIVER RANCH APARTMENTS	UNIFIED SOIL CLASSIFICATION AND KEY TO SOIL DESCRIPTIONS	B-2
------------------------	--	-----

River Ranch Apartments, 165': Vs Model

Shear-Wave Velocity, ft/s





APPENDIX C LABORATORY TESTING RESULTS



Wood Rodgers Inc.
1361 Corporate Blvd
Reno NV 89521
Telephone: 775-823-4068
Fax: 775-823-4066

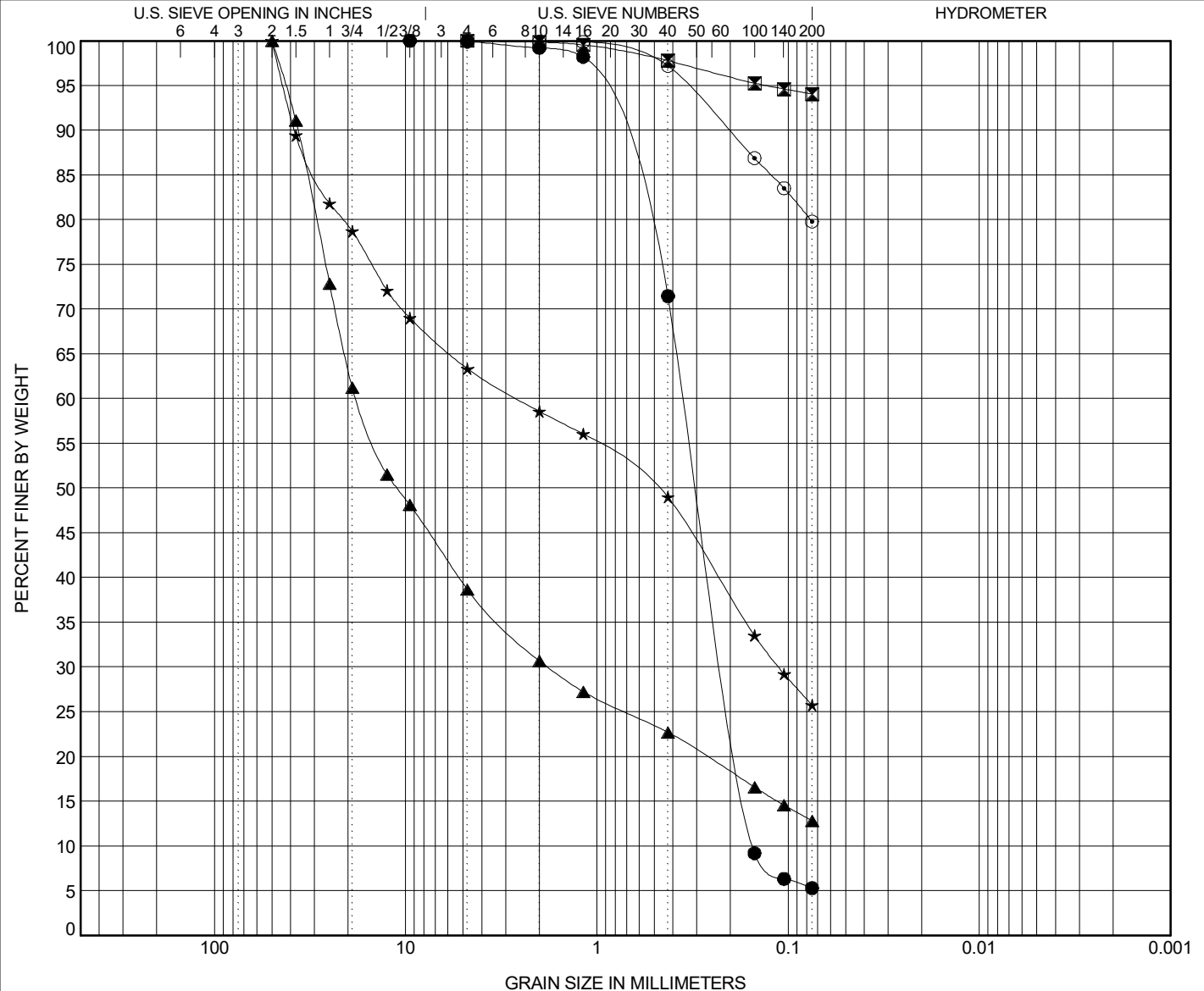
GRAIN SIZE DISTRIBUTION

CLIENT ERGS, Inc.

PROJECT NAME River Ranch Apartments

PROJECT NUMBER 3034059

PROJECT LOCATION Fernley, Nevada



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

TEST PIT	DEPTH	Classification					LL	PL	PI	Cc	Cu
● TP-1	8.0	POORLY GRADED SAND with SILT (SP-SM)								0.85	2.31
☒ TP-2	3.0	SILT (ML)									
▲ TP-5	3.0	CLAYEY GRAVEL with SAND(GC)					51	26	25		
★ TP-6	5.0	CLAYEY SAND with GRAVEL(SC)					51	22	29		
⊙ TP-7	5.0	SILT with SAND(ML)					41	26	15		
TEST PIT	DEPTH	D100	D60	D30	D10	%Gravel	%Sand	%Silt		%Clay	
● TP-1	8.0	9.5	0.351	0.212	0.152	0.1	94.6	5.3			
☒ TP-2	3.0	4.75				0.0	5.9	94.1			
▲ TP-5	3.0	50	18.025	1.808		61.4	25.8	12.8			
★ TP-6	5.0	50	2.593	0.112		36.7	37.6	25.7			
⊙ TP-7	5.0	9.5				0.0	20.2	79.8			



Wood Rodgers Inc.
1361 Corporate Blvd
Reno NV 89521
Telephone: 775-823-4068
Fax: 775-823-4066

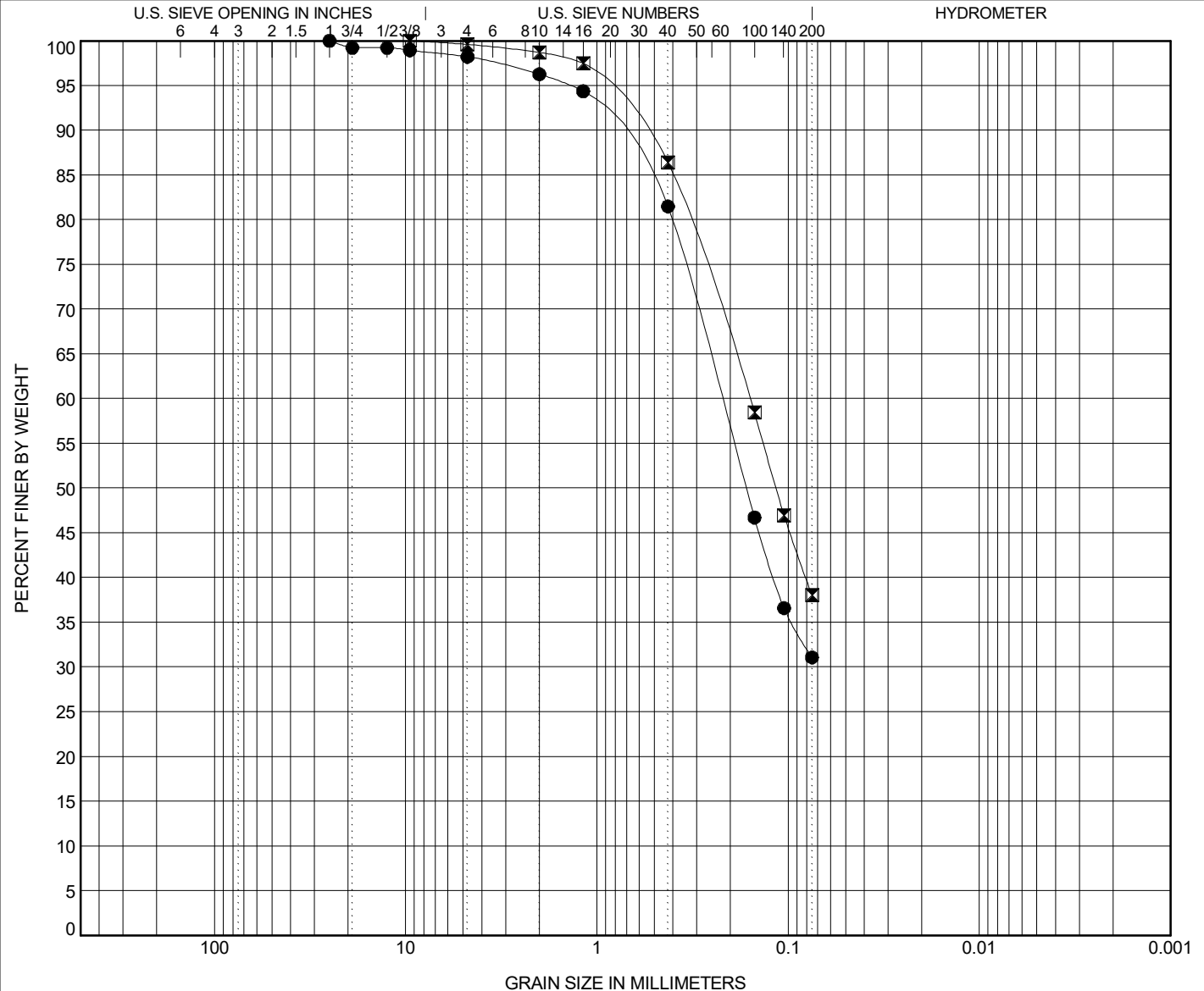
GRAIN SIZE DISTRIBUTION

CLIENT ERGS, Inc.

PROJECT NAME River Ranch Apartments

PROJECT NUMBER 3034059

PROJECT LOCATION Fernley, Nevada





PROJECT NAME River Ranch Apartments

CLIENT ERGS, Inc.

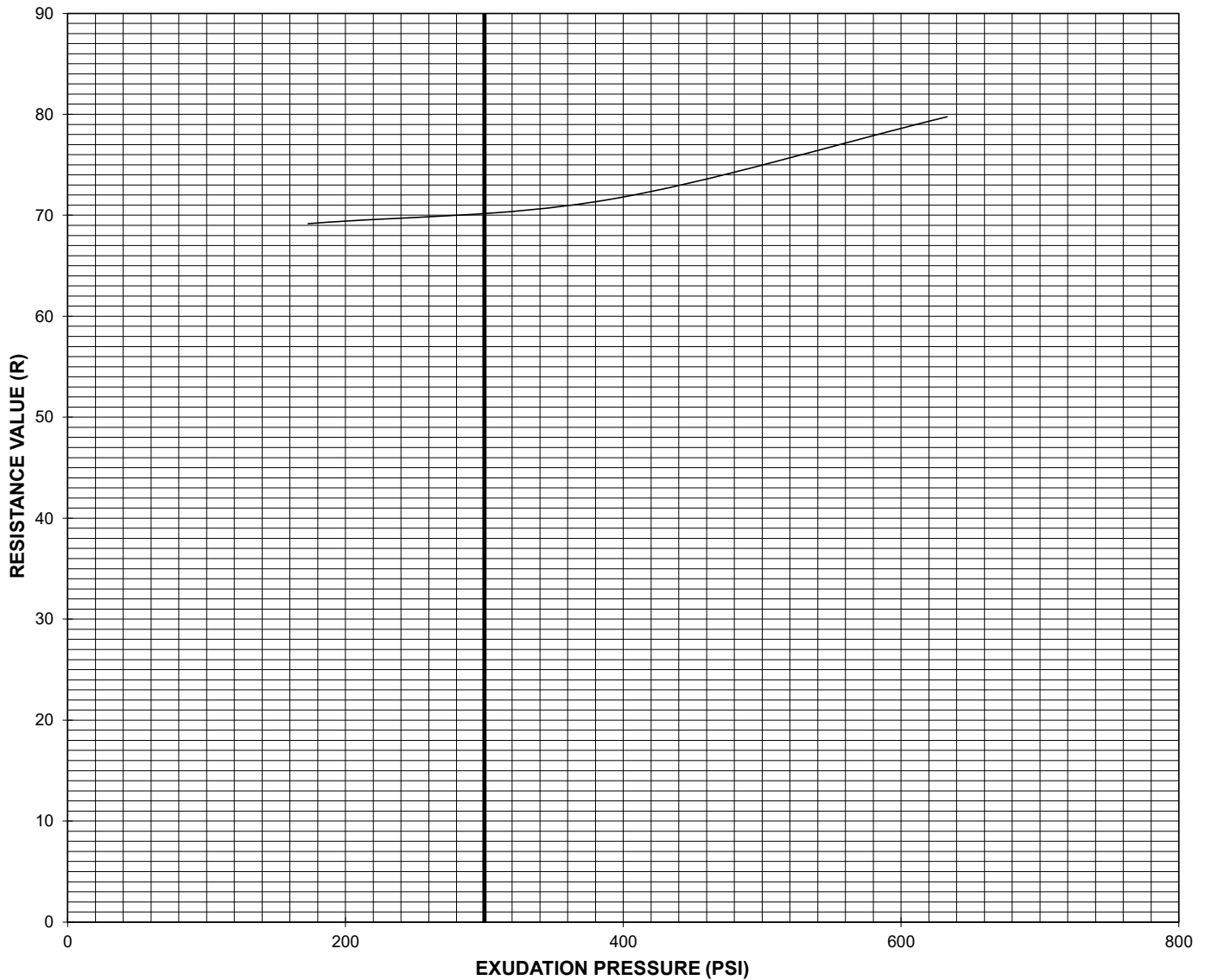
PROJECT NUMBER 3034059

PROJECT LOCATION Fernley, Nevada



C-1c

R-Value and Expansion Pressure of Compacted Soils AASHTO T190 / ASTM D2844



Lab Log #	Sample Source	Material	Expansion Pressure (psf) @ 300 (psi)	R-Value @ 300 (psi)
6388	TP - 4 @ 0' - 2'	SILTY SAND (SM)	0	70

POINT #	WATER CONTENT (%)	DRY DENSITY (PCF)	EXUDATION PRESS. (PSI)	EXPANSION PRESS. (PSF)	RESISTANCE VALUE (R)
1	11.0	115.9	633	0	80
2	12.1	113.4	388	0	72
3	13.2	111.5	173	-62	69
4					
5					

WOOD RODGERS
BUILDING RELATIONSHIPS ONE PROJECT AT A TIME
1361 Corporate Boulevard
Reno, NV 89502
Tel: 775.823.4068
Fax: 775.823.4066

River Ranch Apartments
0



TESTED BY	JOB NUMBER	APPROVED	DATE	REVISED	DATE
BL	3034059		7/18/2022		



Silver State Labs-Reno
1135 Financial Blvd
Reno, NV 89502
(775) 857-2400 FAX: (888) 398-7002
www.ssalabs.com

Analytical Report

Workorder#: 22070953
Date Reported: 8/3/2022

Client: Wood Rodgers
Project Name: River Ranch Apartments / 3034059 / TP-9 5-6'
PO #: LAB 3961

Sampled By: Client

Laboratory Accreditation Number: NV015/CA2990

Laboratory ID	Client Sample ID	Date/Time Sampled	Date Received
22070953-01	TP - 9 @ 5'-6'	07/20/2022 9:30	7/20/2022

Parameter	Method	Result	Units	PQL	Analyst	Date/Time Analyzed	Data Flag
Sodium	ASTM D2791	< 0.01	%	0.01	AC	07/29/2022 8:38	
Sodium Sulfate as Na ₂ SO ₄	Calculation	< 0.01	%	0.01	AC	08/01/2022 14:47	
Sulfate	SM4500 SO ₄ E	1.2	%	0.01	SR	08/01/2022 10:29	

Laboratory Accreditation Number: NV015/CA2990

Laboratory ID	Client Sample ID	Date/Time Sampled	Date Received
22070953-02	TP-1 @ 0'-2'	07/20/2022 9:30	7/20/2022

Parameter	Method	Result	Units	PQL	Analyst	Date/Time Analyzed	Data Flag
Chloride	EPA 9056	58	mg/Kg	50	CTR	07/27/2022 14:06	
Oxidation-Reduction Potential	SM 2580B	227	mV		AC	07/28/2022 9:28	
pH	SW-846 9045D	7.44	pH Units		AC	07/27/2022 15:06	
pH Temperature	SW-846 9045D	22.0	°C		AC	07/27/2022 15:06	
Resistivity	AASHTO T288	90	Ohms-cm		AL	08/01/2022 14:15	
Sodium	ASTM D2791	< 0.01	%	0.01	AC	07/29/2022 8:38	
Sodium Sulfate as Na ₂ SO ₄	Calculation	< 0.01	%	0.01	AC	08/01/2022 14:47	
Sulfate	SM4500 SO ₄ E	0.40	%	0.01	SR	08/01/2022 10:29	
Sulfide	AWWA C105	Negative	POS/NEG		AC	08/01/2022 9:58	

RIVER RANCH APARTMENTS

CHEMICAL TESTING RESULTS

FIGURE C-2



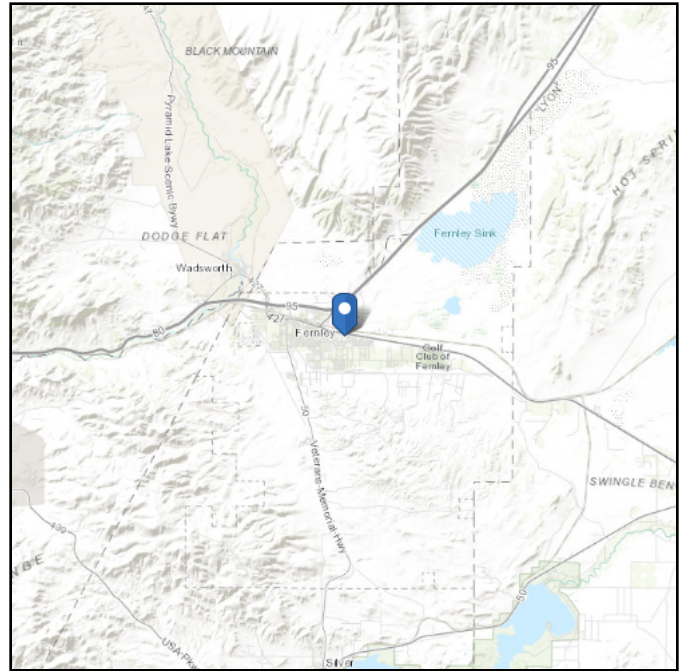
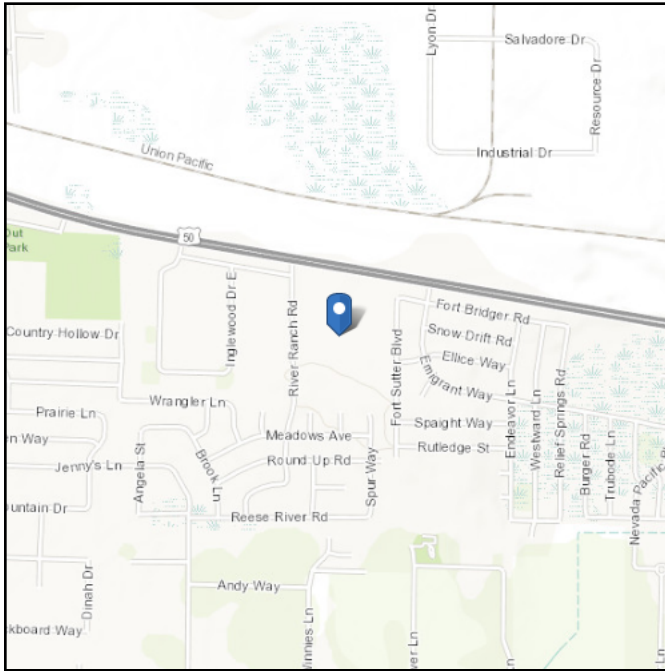
APPENDIX D ASCE 7 HAZARDS REPORT

ASCE 7 Hazards Report

Address:
No Address at This
Location

Standard: ASCE/SEI 7-16
Risk Category: II
Soil Class: D - Stiff Soil

Elevation: 4139.01 ft (NAVD 88)
Latitude: 39.598122
Longitude: -119.210001



Site Soil Class: D - Stiff Soil

Results:

S_S :	1.215	S_{D1} :	N/A
S_1 :	0.44	T_L :	6
F_a :	1.014	PGA :	0.553
F_v :	N/A	PGA_M :	0.608
S_{MS} :	1.232	F_{PGA} :	1.1
S_{M1} :	N/A	I_e :	1
S_{DS} :	0.821	C_v :	1.343

Ground motion hazard analysis may be required. See ASCE/SEI 7-16 Section 11.4.8.

Data Accessed: Wed Aug 24 2022

Date Source: [USGS Seismic Design Maps](#)

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PRELIMINARY DRAINAGE REPORT

FOR THE

RIVER RANCH APARTMENTS CONDITIONAL USE PERMIT

FERNLEY, NEVADA

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SEPTEMBER 13, 2022

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09.13.2022



WOOD RODGERS
BUILDING RELATIONSHIPS ONE PROJECT AT A TIME

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1 INTRODUCTION

This report describes existing drainage conditions and provides preliminary estimates of storm water runoff and facility sizing for the conceptual design of the proposed River Ranch apartment complex in Fernley, Nevada. The report has been prepared in support of the Conditional Use Permit and will provide the foundation for subsequent detailed analysis and facility design pursuant to Chapter 10 of the *City of Fernley Department of Public Works Design Standards*, dated May 2008 (*Design Standards*). The following sections summarize the design criteria, flow analysis, and preliminary design of facilities proposed to collect and convey runoff generated within the project boundary. Supporting exhibits, data, and calculations are included in the appendices to this report.

The project parcels are not currently served by storm drain facilities in either River Ranch Road or U.S. Highway 50A, both of which front the site. Both roadways have unimproved shoulders, with neither curb and gutter nor roadside ditch installed along the edge of pavement. Curb and gutter has been installed on the west side of River Ranch Road where it fronts the Pioneer Crossing Casino located northwest of the project. All storm water runoff generated within project limits will be collected by swales, yard drains, curb and gutter, and catch basins for routing to an on-site retention pond. The surface impoundment will be constructed with sufficient storage capacity to manage the entire volume of anticipated post-development runoff for the 100-year, 24-hour storm event. The private pond will be maintained by the apartment complex.

1.1 PROJECT LOCATION

The River Ranch apartment project will be a multi-family residential complex created from two existing parcels, which will be modified by two boundary line adjustments (BLAs), in central Fernley, as shown on the Vicinity Map enclosed in Appendix A. The project parcels are located at 501 River Ranch Road (APN 021-281-03) and 1855 U.S. Highway 50A (APN 021-281-10). The site is bounded by River Ranch Road to the west, U.S. Highway 50A to the north, single-family residences in the Donner Trails Estates subdivision on its eastern border, and single-family residences in the River Ranch subdivision on its southern boundary. A NV Energy substation located on a parcel (APN 021-281-09) at the southeast corner of the project, and an existing self-storage warehouse business is located on a parcel (APN 021-281-04) at the northwest corner of the site. According to the Public Land Survey System, the site is situated within the southeast quarter of Section 18, Township 20 North, Range 25 East, Mount Diablo Meridian (SE1/4, Sec. 18, T.20 N., R.25 E., M.D.M.). The centroid of the site is approximately located at latitude 39.5982°N, longitude -119.2096°W.

1.2 PROJECT DESCRIPTION

The owner proposes to construct a network of paved drive aisles with parking, curb and gutter, sidewalk, and utility infrastructure for 40 apartment buildings comprising 320 dwelling units. The complex will also include an office / clubhouse, a maintenance building, amenities, landscaped areas, and a storm water retention pond at the northeast corner of the site. There will be four styles of apartment buildings, each



of which contains eight units, with sizes ranging from one-bedroom to three-bedroom floor plans. The general layout of the development and its infrastructure is shown on the “Preliminary Storm Drain Exhibit,” enclosed in Appendix A. Type 4R catch basins will collect runoff from curb and gutter and route flows via ten-inch-diameter PVC SDR35 laterals to storm drain manholes installed in the drive aisles. Yard drains will collect runoff from walks and landscaped areas around the buildings and connect to storm drains by blind tap. The 12-inch-diameter PVC SDR35 storm drain mains will gravity flow to the north for discharge to the retention pond constructed adjacent to the U.S. Highway 50A right-of-way at the northeast corner of the site.

Site infrastructure will include 26-foot-wide paved drive aisles with curb, gutter, sidewalk, pedestrian ramps, storm drain facilities, water and sewer systems extended from the City’s existing networks, and dry utilities (i.e., power, telephone, cable television). The site entrance will connect with River Ranch Road directly across from the unnamed connector street currently being constructed as part of The Meadows at Inglewood development. Emergency access connections will be made at two locations: River Ranch Road at the southwest corner of the site and Ellice Way on the eastern boundary adjacent to the NV Energy substation.

1.3 SITE TOPOGRAPHY AND VEGETATION

The combined adjusted parcels comprise a net project area (i.e., less proposed River Ranch Road right-of-way) of 20.104 acres, as shown in the “Parcel Areas” exhibit included in Appendix A. The project site is currently undeveloped. High-voltage power poles and backyard wood fencing from the adjacent Donner Trails Estates subdivision border the eastern boundary, and backyard wood fencing and a segmental block retaining wall on lots in the adjacent River Ranch subdivision border the south boundary. The project site is bisected by a 50-foot-wide access easement with a gravel road from U.S. Highway 50A to the NV Energy substation. Existing terrain generally slopes from south to north at an overall average rate of 2.5 percent, with relatively flat areas in the southern and northern thirds of the site separated by a 6.0 percent slope in the middle third. Elevations range from highs between 4156 feet to 4164 feet along the south property line to lows between 4127 feet and 4132 feet at the highway right-of-way on the north boundary. Native vegetation includes sparse desert grasses and shrubs.

1.4 SITE SOILS

A geotechnical site investigation was performed in July, 2022 (Wood Rodgers, 2022) to evaluate soil, bedrock, and ground water conditions and to provide design recommendations for site development. Field work included exploration of subsurface conditions with 15 test pits extended to 10 feet below ground surface (bgs) to evaluate the soil horizon and ground water conditions. Test pit locations are shown in the exhibit enclosed in Appendix B. Soils were classified in the field and representative bulk samples were obtained for laboratory index testing. Shear wave velocity measurements were also made to a depth of 100 feet to characterize soil stiffness and determine the appropriate Site Class for structural design. Laboratory testing included in-situ moisture content, soil classification, grain size distribution,

plasticity indices, and chemical testing for corrosion potential. Free water was not encountered in test pits, and nearby well records indicate the static groundwater level is about 30 feet bgs.

In general, near-surface soils consist of non-plastic silty sands and poorly-graded sands, low plasticity silts, clayey sands, and and clayey gravels.

Because on-site retention ponds are proposed for storm water infiltration, percolation tests were performed in three test pits at the proposed location of the storm water retention pond at the northeast corner of the site. Test results indicate infiltration rates of less than 10 minutes per inch, which is well below the maximum rate of 60 minutes per inch specified in the City's Design Standards. The test pit locations are shown in Figure 3 from the geotechnical design report, a copy of which is enclosed in Appendix C; test pit logs and test results are also enclosed in Appendix C.

1.5 FLOOD HAZARD INFORMATION

According to Flood Insurance Rate Map (FIRM) Panel 32019C0105E, effective January 16, 2009, prepared by the Federal Emergency Management Agency (FEMA, 2009), the project parcel is located within an "Unshaded X" Flood Zone, which indicates an area of minimal flood hazard. An excerpt of the FIRM panel ("FIRMette") for the subject area is included in Appendix B.

1.6 PRIOR DRAINAGE STUDIES

No prior drainage studies are known to have been prepared for the project site. Prior to the current proposal, the site was undeveloped.

1.7 REGULATORY PERSPECTIVE

The project site is located within the City of Fernley jurisdiction. The drainage facilities will not be dedicated to the City of Fernley but will be privately owned and maintained by the apartment complex.

2 HYDROLOGIC METHODOLOGY, CRITERIA, AND DESIGN

The preliminary hydrologic analysis for the River Ranch apartments consists of peak runoff flow and volumetric computations for post-development conditions in accordance with City of Fernley Municipal Code and the City of Fernley Department of Public Works Design Standards (May 2008). Runoff generated on the project site will be retained on-site. For this preliminary analysis, the 5-year design storm was not considered but rather peak flows were developed for storm drain design using the 25-year, 6-hour design storm. The 100-year, 24-hour storm event is used to determine the minimum required retention pond storage volume.

The Rational Method was used to compute peak runoff flow rates for proposed site conditions for the 25-year, 6-hour design storm. The Rational Method requires only the area of the basin or watershed, the

rainfall intensity corresponding to the time of concentration, and the Rational Runoff Coefficient correlating to the anticipated land use. Peak runoff flows are determined using the following equation:

$$Q = ciA$$

Where:

Q = peak runoff in cubic feet per second (cfs).

c = Rational runoff coefficient (dimensionless)

i = rainfall intensity for design storm (inches/hr)

A = area of the basin (acres)

Rational Method runoff coefficients were taken from Table 701, Runoff Coefficient Table in the Truckee Meadows Regional Drainage Manual (TMRDM) for post-development conditions. Table 701 was used rather than the table provided in Chapter 10 of the Design Standards because it provides coefficients for the 5-year and 100-year storm events and a value for the 25-year storm event can be estimated by linear interpolation. A copy of the Rational Runoff Coefficient table is included in Appendix B.

The time of concentration (t_c) is defined as the time required for water to flow from the hydraulically most distant part of the drainage area to the point of consideration. Usually, the point of consideration is the discharge point of the hydrologic basin or sub-basin. Time of concentration is used in the Rational Method to determine the corresponding rainfall intensity for calculation of the peak runoff rate of a given storm event for the basin or sub-basin. The final time of concentration is the greater of the calculated t_c (equations not shown) or 10 minutes, per Section 10.3.2.1 of Chapter 10 in the Design Standards.

For design of the retention pond, the Natural Resources Conservation Service (formerly SCS) unit hydrograph method was used to determine total runoff volumes for proposed conditions. The SCS method requires a curve number (CN) and accumulated rainfall depth. The equations for the SCS method are:

$$V = q_d \cdot A / (12 \text{ in. / ft.})$$

$$q_d = (P - 0.2S)^2 / (P - 0.8S)$$

$$S = \left(\frac{1000}{CN} \right) - 10$$

Where:

V = Storm volume (cubic feet)

A = Area of the hydrologic basin (square feet)

q_d = Excess rainfall depth (inches)

P = Accumulated rainfall depth (inches)

S = Currently-available soil moisture storage deficit (inches)

CN = Curve number (dimensionless)



For preliminary storm drain design, the analysis used the prescribed 25-year storm return frequency with a 6-hour duration. The minimum storage volume for on-site retention basins was estimated from the 100-year, 24-hour storm event using the SCS method (above).

3 HYDROLOGIC ANALYSIS

The hydrologic analyses for post-development conditions consist of peak discharge computations using the Rational Method and volumetric runoff calculations using the SCS Unit Hydrograph Method, as described above.

3.1 DESIGN RAINFALL DATA

Precipitation intensity and depth estimates were taken from the Point Precipitation Frequency Data Server website for Atlas 14, Volume 1, Version 5, which is maintained by the National Oceanic and Atmospheric Administration (NOAA). The Point Precipitation Frequency Data Server provides site-specific rainfall data based on latitude and longitude. The latitude and longitude used to obtain storm intensities and depths for the 5-, 25-, and 100-year storm events were 39.5982°N and -119.2096°W, respectively. The resulting tables with precipitation intensities and depths for various storm durations and return intervals are included in Appendix B of this report.

3.2 RUNOFF COEFFICIENTS

For the multi-unit residential development, C-values of 0.60 and 0.78 are applied to developed areas for the 5-year and 100-year storm events, respectively, based on Table 701. The resulting coefficient for the 25-year storm is interpolated as 0.64.

3.3 CURVE NUMBER

The Runoff Curve Number (CN) for each hydrologic basin is determined by overlaying land use information, vegetation type and coverage or surface material, and soil data available for the area. Soil types are rated from A to D with correspondingly higher curve number values for higher runoff potential. Based on test pit logs, percolation test results, and the general presence of gravels and poorly-graded sands, the preliminary watershed identified for this analysis was estimated to be in hydrologic soil group (HSG) "A". This HSG is assigned to soils with a low runoff potential and high infiltration rate. For apartments, townhouses, and very small residential lots, the corresponding curve number for HSG "A" is 77. The SCS table for runoff curve numbers in urban areas is included in Appendix B.

4 EXISTING HYDROLOGIC CONDITIONS

Historically the site drains from south to north at an overall average slope of 2.5 percent but the ground is sloped at approximately 6 percent in the middle third of the site. Nominal runoff from surfaces abutting River Ranch Road discharge off-site, but the majority of sheet flow historically discharges to the self-storage warehouse business at the northwest corner of the site and to the U.S. Highway 50A right-of-way. In addition, the gravel access road to the NV Energy substation has roadside ditches on each side; these



terminate off-site at the highway shoulder. The site sits below the residential lots along the southern and eastern perimeters, but those lots are sloped toward the streets they front, largely eliminating storm water run-on to the project site. Existing topography is depicted in the figure, "Existing Conditions" exhibit included in Appendix A.

5 PROPOSED DRAINAGE SYSTEM

The proposed drainage system will consist of swales and yard drains in landscape areas around buildings, with curb and gutter on the downhill side of drive aisles to collect and convey runoff to catch basins at curb returns. Runoff will be routed via 12-inch-diameter storm drains for discharge into the proposed retention pond at the northeast corner of the site. Runoff stored in the retention pond will drain into the underlying soil through infiltration. The general layout of the development and its storm water facilities are shown on the "Preliminary Storm Drain Exhibit" enclosed in Appendix A.

5.1 PROPOSED HYDROLOGIC BASINS

For final design the proposed development will be analyzed in detail with hydrologic basins delineated by the storm drain they contribute to, but for purposes of this preliminary analysis the site has been analyzed as a single basin. The total runoff volume for the 25-year, 6-hour and 100-year, 24-hour storm and the peak discharge for the 25-year, 6-hour storm event are calculated in the following sections.

5.2 PROPOSED STORM DRAIN SYSTEM

Proposed drainage control facilities will consist of landscape swales, yard drains, curb and gutter, and catch basins to collect and convey runoff to the retention pond. Catch basin laterals will be 10-inch-diameter PVC SDR35 pipe and the storm drain main will be 12-inch-diameter PVC SDR35 pipe. Runoff from roofs will be collected by roof gutters and discharged via downspouts to landscape swales and yard drains, which will discharge to the storm drain fronting the area.

The storm water retention pond will be 6 to 8 feet deep and provide a storage capacity of at least 45,000 cubic feet below the one-foot freeboard. It will be constructed with 3:1 (horizontal to vertical) sideslopes and a 10-foot-wide paved ramp will be constructed to provide maintenance access to the pond interior and base. The final pond dimensions will be determined during detailed design.

5.3 WATER QUALITY CONTROLS

The retention pond will settle sediment or pollutants transported by storm water runoff. Water quality controls that will be utilized during construction of subdivision improvements will include fiber rolls on the exterior boundary of the grading, construction entrances, and any additional best management practices presented in the approved Erosion Control Plan.

5.4 RESULTS OF DRAINAGE ANALYSES

For purposes of this preliminary study, the site was analyzed as a single watershed, with all storm drains combining and flowing to the retention pond at the northeast corner of the site. The peak flow rate calculated for the overall hydrologic basin in post-development conditions and the 25-year, 6-hour storm event is as follows:

$$Q = (0.64)(0.205 \text{ in/hr})(20.10 \text{ ac}) = 2.64 \text{ cfs}$$

During detailed design, hydraulic calculations will be performed using the computer software FlowMaster® V8i by Bentley Systems (Watertown, CT) to determine flow characteristics for peak discharge in each hydrologic sub-basin.

The results of post-development volumetric analyses by the SCS method as described above indicate a 25-year, 6-hour storm event will generate approximately 8,070 cubic feet (cf) of runoff, whereas an estimated 44,670 cf will be generated for the 100-year, 24-hour design storm.

5.5 RETENTION REQUIREMENTS

The proposed River Ranch apartment complex will use a single retention pond to collect and temporarily store runoff generated on-site. The pond will be sized to accommodate the full post-development runoff volume of the 100-year, 24-hour storm event. To provide a conservative design that includes an adequate freeboard and a factor of safety for the assumptions made, the design volume of the pond will have a minimum capacity of 44,670 cubic feet at the 1-foot freeboard. Detailed stage-storage volume calculations for the pond will be prepared during final design.

In addition, the storm drain discharging into the retention pond will be analyzed during detailed design to ensure the pipe won't back up into the street and will continue to flow under pressure. The basin depth will provide adequate capacity below the invert elevations of storm drain outlets for most storm events.

6 SPECIAL FLOOD HAZARDS

As noted above, the entire site lies within a FEMA "Unshaded X" flood hazard area, which indicates that the project is outside the 0.2% probability per year flood zone. As such, there are no special flood hazard considerations proposed with this project.

6.1 IMPACTS OF PROPOSED DEVELOPMENT ON FLOOD HAZARD AREA

On a broad scale, the project is within a closed hydrologic basin and, theoretically, storm water runoff discharged from site will ultimately drain to the Fernley Reservoir Number 1 / Fernley Wildlife Management Area. However, no runoff is expected to be discharged from the site and no negative impacts on downstream facilities are anticipated.

6.2 FEMA AND LOCAL CODE COMPLIANCE

Development of the Desert Shadows subdivision will be compliant with all federal and local code requirements.

7 CONCLUSIONS

The proposed River Ranch apartment complex will be designed to collect, convey, and retain storm flows generated on-site. Increases in runoff from relatively impervious surfaces following site development will be temporarily stored in the proposed on-site retention pond, where it will infiltrate into the underlying soil. Storm water quality measures will be installed during construction to reduce probability of sediment being discharged off-site by storm runoff. No negative downstream impacts are anticipated from the development of the project.

8 REFERENCES

Fernley, 2008a. *City of Fernley Department of Public Works Design Standards and Review Guidelines for Streets, Potable Water, Sewer, Storm Drains & Alternative Water*, published by the City of Fernley Department of Public Works, Fernley, Nevada, May 2008. <http://www.cityoffernley.org/DocumentCenter/Index/279>.

Wood Rodgers, 2022. *Geotechnical Design Report, River Ranch Apartments*, unpublished report prepared by Wood Rodgers, Inc.. for ERGS, Inc.; Wood Rodgers, Inc., Reno, Nevada, September 2022.



APPENDIX A

EXHIBITS





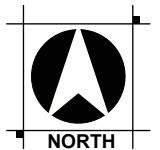
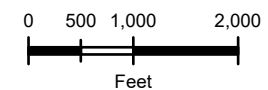
VICINITY MAP

RIVER RANCH APARTMENTS

FERNLEY, NV

SEPTEMBER 2022

- Future Nevada Pacific Parkway
- BLA_Project_Boundary



WOOD RODGERS



Aerial Map
River Ranch Apartments ZMA/CUP
September 2022

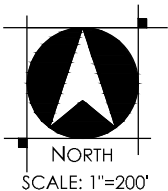
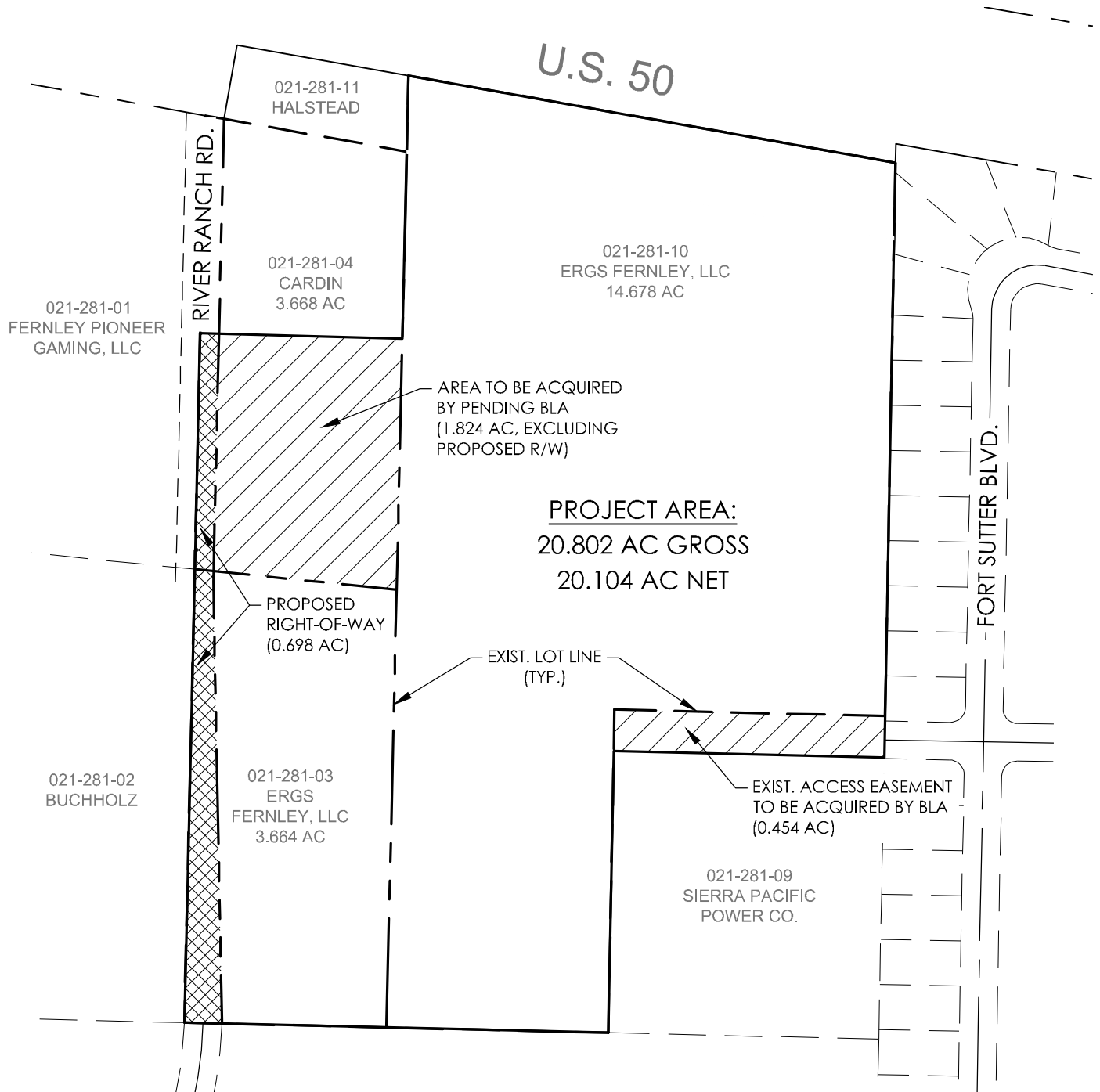
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ZMA / CUP FOR RIVER RANCH APARTMENTS

PARCEL AREAS

FERNLEY, NEVADA

SEPTEMBER 2022



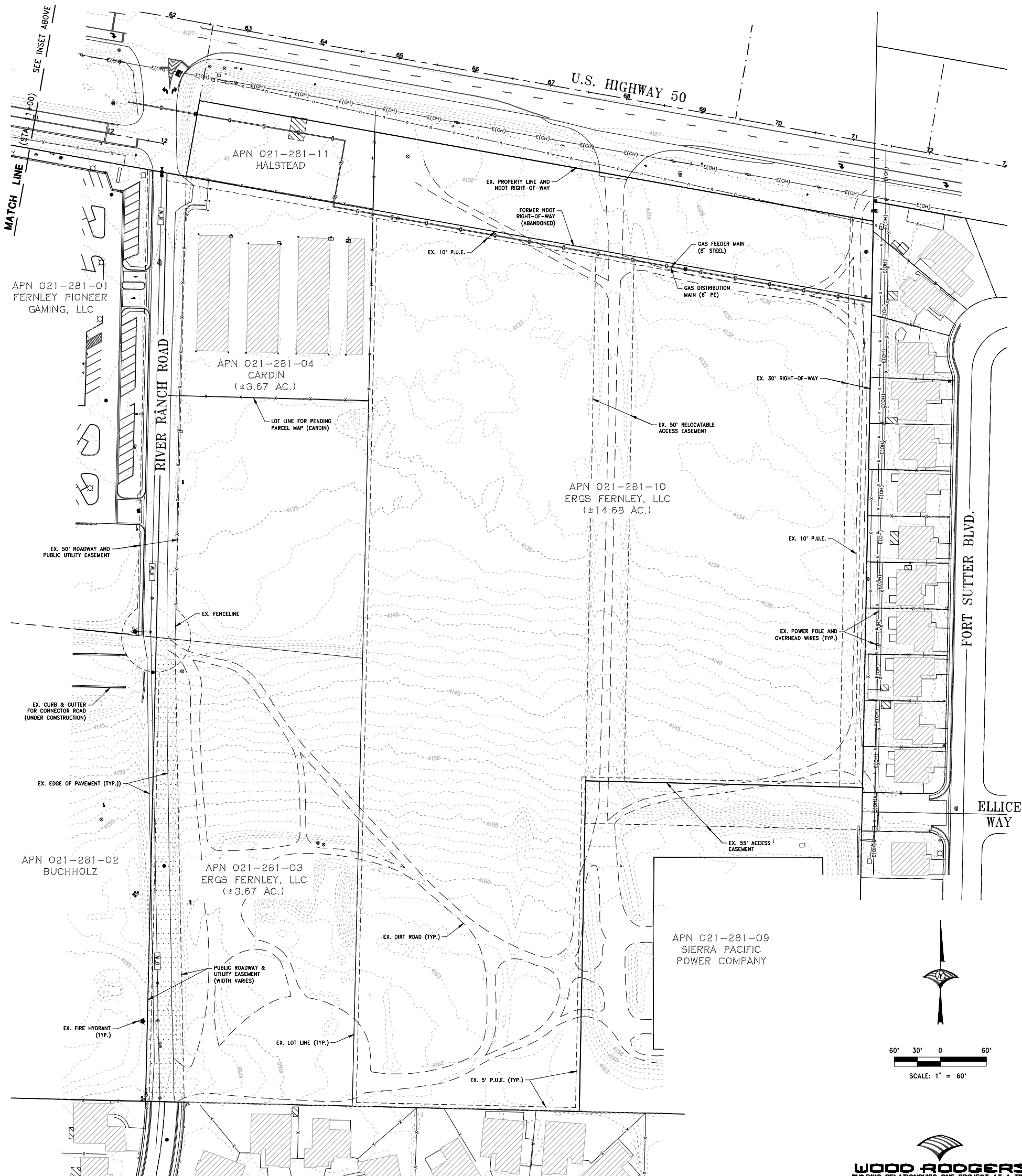
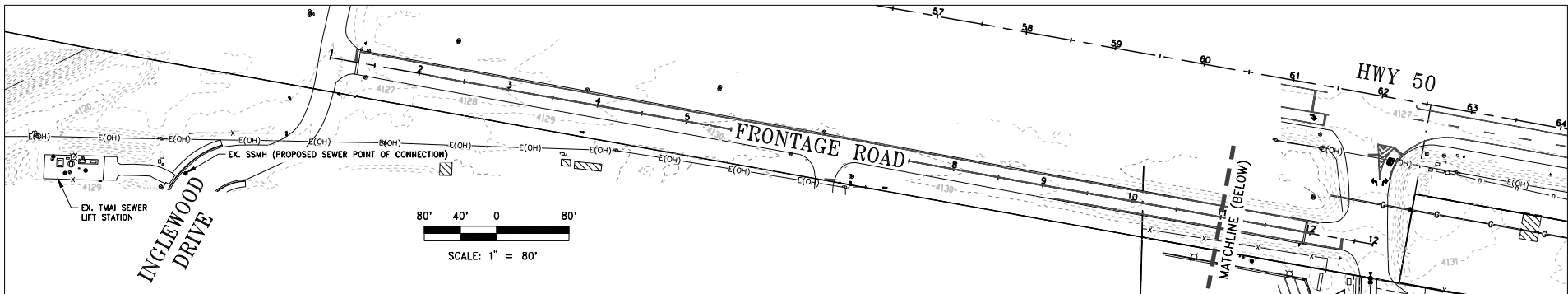
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RIVER RANCH APARTMENTS
EXISTING CONDITIONS
ERGS, INC.

FERNLEY

NEVADA

AUGUST 29, 2022



NOTE: BASE SURVEY AND TOPOGRAPHY PREPARED BY WOOD RODGERS, INC. (RENO). DATE OF PHOTOGRAPHY: JUNE 30, 2022.

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ERGS FERNLEY, LLC
FERNLEY, NEVADA
SEPTEMBER, 2022



APPENDIX B

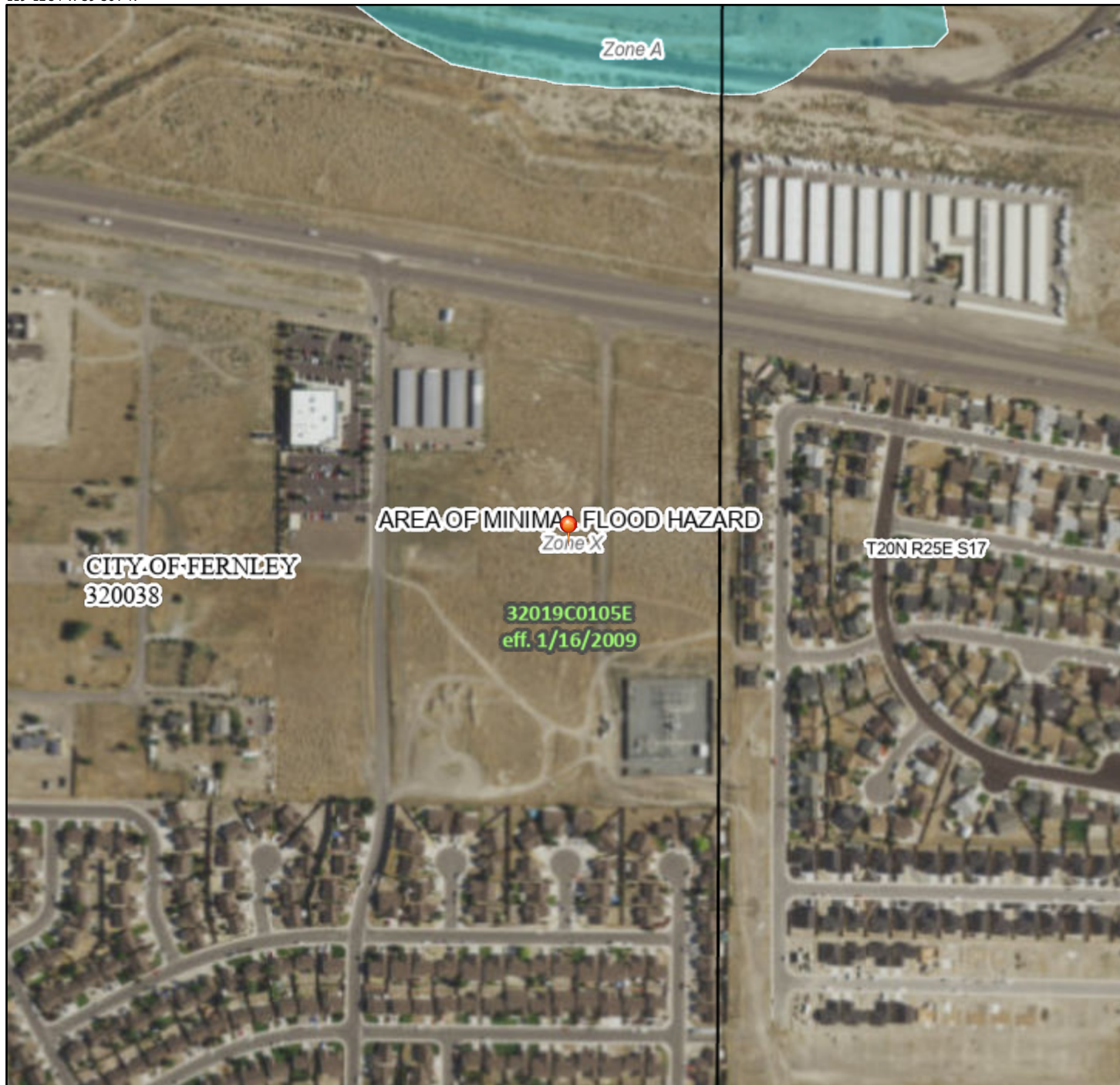
PRECIPITATION AND HYDROLOGIC DATA



National Flood Hazard Layer FIRMette



119°12'54"W 39°36'7"N



0 250 500 1,000 1,500 2,000 Feet

1:6,000

119°12'17"W 39°35'40"N

Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

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
GENERAL STRUCTURES		Area of Undetermined Flood Hazard Zone D
		Channel, Culvert, or Storm Sewer
		Levee, Dike, or Floodwall
OTHER FEATURES		20.2 Cross Sections with 1% Annual Chance Water Surface Elevation
		17.5
		Coastal Transect
		Base Flood Elevation Line (BFE)
		Limit of Study
		Jurisdiction Boundary
		Coastal Transect Baseline
		Profile Baseline
MAP PANELS		Digital Data Available
		No Digital Data Available
		Unmapped



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 **8/24/2022 at 10:55 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.



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	0.101 (0.083-0.121)	0.127 (0.103-0.154)	0.170 (0.140-0.207)	0.210 (0.170-0.256)	0.274 (0.217-0.337)	0.333 (0.256-0.413)	0.402 (0.300-0.503)	0.484 (0.347-0.619)	0.614 (0.417-0.814)	0.733 (0.474-0.990)
10-min	0.153 (0.126-0.185)	0.193 (0.157-0.234)	0.259 (0.212-0.316)	0.319 (0.259-0.389)	0.417 (0.330-0.514)	0.507 (0.390-0.629)	0.612 (0.456-0.765)	0.737 (0.529-0.941)	0.935 (0.635-1.24)	1.12 (0.722-1.51)
15-min	0.190 (0.156-0.229)	0.239 (0.195-0.290)	0.321 (0.263-0.391)	0.396 (0.322-0.483)	0.517 (0.409-0.637)	0.629 (0.484-0.780)	0.759 (0.565-0.949)	0.913 (0.655-1.17)	1.16 (0.787-1.54)	1.38 (0.895-1.87)
30-min	0.257 (0.210-0.309)	0.322 (0.263-0.391)	0.433 (0.355-0.527)	0.533 (0.433-0.650)	0.696 (0.550-0.858)	0.847 (0.651-1.05)	1.02 (0.761-1.28)	1.23 (0.882-1.57)	1.56 (1.06-2.07)	1.86 (1.21-2.52)
60-min	0.318 (0.260-0.382)	0.398 (0.326-0.483)	0.536 (0.439-0.653)	0.659 (0.536-0.804)	0.862 (0.681-1.06)	1.05 (0.806-1.30)	1.26 (0.942-1.58)	1.52 (1.09-1.95)	1.93 (1.31-2.56)	2.31 (1.49-3.11)
2-hr	0.395 (0.333-0.482)	0.495 (0.418-0.602)	0.641 (0.536-0.784)	0.766 (0.632-0.937)	0.955 (0.766-1.18)	1.12 (0.880-1.39)	1.32 (1.01-1.67)	1.57 (1.17-2.00)	1.97 (1.40-2.58)	2.34 (1.60-3.14)
3-hr	0.450 (0.381-0.541)	0.565 (0.480-0.681)	0.718 (0.603-0.864)	0.840 (0.700-1.02)	1.02 (0.835-1.23)	1.17 (0.945-1.43)	1.37 (1.08-1.69)	1.61 (1.24-2.01)	2.00 (1.50-2.61)	2.36 (1.72-3.17)
6-hr	0.556 (0.473-0.660)	0.697 (0.594-0.835)	0.883 (0.750-1.07)	1.03 (0.867-1.24)	1.23 (1.02-1.48)	1.37 (1.12-1.66)	1.53 (1.24-1.87)	1.76 (1.39-2.18)	2.12 (1.64-2.66)	2.44 (1.85-3.20)
12-hr	0.646 (0.558-0.752)	0.819 (0.706-0.958)	1.05 (0.906-1.23)	1.23 (1.06-1.44)	1.47 (1.25-1.73)	1.66 (1.39-1.97)	1.85 (1.53-2.22)	2.05 (1.66-2.48)	2.31 (1.82-2.86)	2.59 (1.99-3.26)
24-hr	0.775 (0.687-0.875)	0.980 (0.870-1.11)	1.26 (1.12-1.42)	1.48 (1.31-1.67)	1.79 (1.57-2.02)	2.04 (1.77-2.30)	2.29 (1.98-2.59)	2.56 (2.19-2.90)	2.92 (2.48-3.34)	3.22 (2.69-3.70)
2-day	0.860 (0.758-0.972)	1.09 (0.957-1.23)	1.40 (1.24-1.58)	1.65 (1.44-1.85)	1.99 (1.74-2.24)	2.26 (1.97-2.56)	2.55 (2.20-2.89)	2.85 (2.43-3.24)	3.26 (2.74-3.74)	3.58 (2.98-4.14)
3-day	0.923 (0.819-1.04)	1.17 (1.03-1.32)	1.51 (1.34-1.70)	1.78 (1.57-2.00)	2.15 (1.89-2.42)	2.45 (2.13-2.76)	2.76 (2.39-3.13)	3.09 (2.64-3.51)	3.54 (2.98-4.05)	3.90 (3.24-4.50)
4-day	0.986 (0.879-1.12)	1.25 (1.11-1.41)	1.61 (1.43-1.82)	1.91 (1.69-2.15)	2.31 (2.04-2.60)	2.63 (2.30-2.96)	2.98 (2.58-3.36)	3.33 (2.86-3.77)	3.83 (3.22-4.37)	4.22 (3.50-4.86)
7-day	1.13 (1.00-1.29)	1.43 (1.26-1.63)	1.85 (1.63-2.11)	2.18 (1.92-2.48)	2.64 (2.30-3.01)	3.01 (2.60-3.43)	3.39 (2.92-3.88)	3.79 (3.23-4.35)	4.34 (3.64-5.03)	4.79 (3.96-5.58)
10-day	1.26 (1.10-1.45)	1.60 (1.40-1.83)	2.07 (1.81-2.38)	2.44 (2.13-2.81)	2.94 (2.55-3.39)	3.34 (2.87-3.84)	3.75 (3.20-4.32)	4.17 (3.53-4.84)	4.74 (3.96-5.55)	5.18 (4.27-6.12)
20-day	1.48 (1.31-1.69)	1.89 (1.66-2.16)	2.43 (2.14-2.77)	2.84 (2.50-3.24)	3.39 (2.96-3.87)	3.81 (3.31-4.35)	4.23 (3.64-4.84)	4.65 (3.98-5.34)	5.21 (4.41-6.04)	5.63 (4.72-6.56)
30-day	1.65 (1.46-1.88)	2.09 (1.85-2.38)	2.69 (2.37-3.07)	3.14 (2.76-3.57)	3.73 (3.26-4.25)	4.18 (3.64-4.77)	4.64 (4.01-5.31)	5.09 (4.37-5.85)	5.68 (4.83-6.57)	6.12 (5.16-7.13)
45-day	1.91 (1.69-2.16)	2.43 (2.14-2.74)	3.12 (2.74-3.51)	3.63 (3.18-4.08)	4.29 (3.75-4.83)	4.78 (4.16-5.39)	5.26 (4.56-5.95)	5.72 (4.93-6.50)	6.31 (5.40-7.21)	6.73 (5.72-7.72)
60-day	2.17 (1.92-2.44)	2.76 (2.44-3.11)	3.54 (3.13-3.98)	4.10 (3.62-4.59)	4.80 (4.22-5.38)	5.30 (4.65-5.97)	5.78 (5.06-6.52)	6.24 (5.44-7.06)	6.79 (5.88-7.70)	7.17 (6.19-8.18)

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
Location name: Fernley, Nevada, USA*
Latitude: 39.5982°, Longitude: -119.2096°
Elevation: 4136.3 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/hour) ¹										
Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	1.21 (0.996-1.45)	1.52 (1.24-1.85)	2.04 (1.68-2.48)	2.52 (2.04-3.07)	3.29 (2.60-4.04)	4.00 (3.07-4.96)	4.82 (3.60-6.04)	5.81 (4.16-7.43)	7.37 (5.00-9.77)	8.80 (5.69-11.9)
10-min	0.918 (0.756-1.11)	1.16 (0.942-1.40)	1.55 (1.27-1.90)	1.91 (1.55-2.33)	2.50 (1.98-3.08)	3.04 (2.34-3.77)	3.67 (2.74-4.59)	4.42 (3.17-5.65)	5.61 (3.81-7.43)	6.70 (4.33-9.04)
15-min	0.760 (0.624-0.916)	0.956 (0.780-1.16)	1.28 (1.05-1.56)	1.58 (1.29-1.93)	2.07 (1.64-2.55)	2.52 (1.94-3.12)	3.04 (2.26-3.80)	3.65 (2.62-4.67)	4.64 (3.15-6.14)	5.53 (3.58-7.48)
30-min	0.514 (0.420-0.618)	0.644 (0.526-0.782)	0.866 (0.710-1.05)	1.07 (0.866-1.30)	1.39 (1.10-1.72)	1.69 (1.30-2.10)	2.04 (1.52-2.56)	2.46 (1.76-3.14)	3.12 (2.12-4.14)	3.73 (2.41-5.03)
60-min	0.318 (0.260-0.382)	0.398 (0.326-0.483)	0.536 (0.439-0.653)	0.659 (0.536-0.804)	0.862 (0.681-1.06)	1.05 (0.806-1.30)	1.26 (0.942-1.58)	1.52 (1.09-1.95)	1.93 (1.31-2.56)	2.31 (1.49-3.11)
2-hr	0.198 (0.166-0.241)	0.248 (0.209-0.301)	0.320 (0.268-0.392)	0.383 (0.316-0.468)	0.478 (0.383-0.588)	0.560 (0.440-0.696)	0.662 (0.506-0.832)	0.784 (0.583-0.999)	0.986 (0.700-1.29)	1.17 (0.802-1.57)
3-hr	0.150 (0.127-0.180)	0.188 (0.160-0.227)	0.239 (0.201-0.288)	0.280 (0.233-0.339)	0.339 (0.278-0.409)	0.391 (0.315-0.477)	0.456 (0.360-0.562)	0.536 (0.414-0.670)	0.667 (0.500-0.869)	0.785 (0.573-1.06)
6-hr	0.093 (0.079-0.110)	0.116 (0.099-0.139)	0.147 (0.125-0.178)	0.172 (0.145-0.206)	0.205 (0.170-0.246)	0.229 (0.188-0.278)	0.256 (0.206-0.312)	0.294 (0.232-0.364)	0.354 (0.274-0.445)	0.408 (0.308-0.535)
12-hr	0.054 (0.046-0.062)	0.068 (0.059-0.080)	0.087 (0.075-0.102)	0.102 (0.088-0.120)	0.122 (0.104-0.144)	0.138 (0.115-0.164)	0.154 (0.127-0.184)	0.170 (0.137-0.206)	0.192 (0.151-0.237)	0.215 (0.165-0.270)
24-hr	0.032 (0.029-0.036)	0.041 (0.036-0.046)	0.052 (0.047-0.059)	0.062 (0.055-0.070)	0.075 (0.065-0.084)	0.085 (0.074-0.096)	0.096 (0.083-0.108)	0.107 (0.091-0.121)	0.122 (0.103-0.139)	0.134 (0.112-0.154)
2-day	0.018 (0.016-0.020)	0.023 (0.020-0.026)	0.029 (0.026-0.033)	0.034 (0.030-0.039)	0.042 (0.036-0.047)	0.047 (0.041-0.053)	0.053 (0.046-0.060)	0.059 (0.051-0.067)	0.068 (0.057-0.078)	0.075 (0.062-0.086)
3-day	0.013 (0.011-0.014)	0.016 (0.014-0.018)	0.021 (0.019-0.024)	0.025 (0.022-0.028)	0.030 (0.026-0.034)	0.034 (0.030-0.038)	0.038 (0.033-0.043)	0.043 (0.037-0.049)	0.049 (0.041-0.056)	0.054 (0.045-0.063)
4-day	0.010 (0.009-0.012)	0.013 (0.012-0.015)	0.017 (0.015-0.019)	0.020 (0.018-0.022)	0.024 (0.021-0.027)	0.027 (0.024-0.031)	0.031 (0.027-0.035)	0.035 (0.030-0.039)	0.040 (0.034-0.046)	0.044 (0.036-0.051)
7-day	0.007 (0.006-0.008)	0.009 (0.008-0.010)	0.011 (0.010-0.013)	0.013 (0.011-0.015)	0.016 (0.014-0.018)	0.018 (0.015-0.020)	0.020 (0.017-0.023)	0.023 (0.019-0.026)	0.026 (0.022-0.030)	0.028 (0.024-0.033)
10-day	0.005 (0.005-0.006)	0.007 (0.006-0.008)	0.009 (0.008-0.010)	0.010 (0.009-0.012)	0.012 (0.011-0.014)	0.014 (0.012-0.016)	0.016 (0.013-0.018)	0.017 (0.015-0.020)	0.020 (0.016-0.023)	0.022 (0.018-0.025)
20-day	0.003 (0.003-0.004)	0.004 (0.003-0.004)	0.005 (0.004-0.006)	0.006 (0.005-0.007)	0.007 (0.006-0.008)	0.008 (0.007-0.009)	0.009 (0.008-0.010)	0.010 (0.008-0.011)	0.011 (0.009-0.013)	0.012 (0.010-0.014)
30-day	0.002 (0.002-0.003)	0.003 (0.003-0.003)	0.004 (0.003-0.004)	0.004 (0.004-0.005)	0.005 (0.005-0.006)	0.006 (0.005-0.007)	0.006 (0.006-0.007)	0.007 (0.006-0.008)	0.008 (0.007-0.009)	0.008 (0.007-0.010)
45-day	0.002 (0.002-0.002)	0.002 (0.002-0.003)	0.003 (0.003-0.003)	0.003 (0.003-0.004)	0.004 (0.003-0.004)	0.004 (0.004-0.005)	0.005 (0.004-0.006)	0.005 (0.005-0.006)	0.006 (0.005-0.007)	0.006 (0.005-0.007)
60-day	0.002 (0.001-0.002)	0.002 (0.002-0.002)	0.002 (0.002-0.003)	0.003 (0.003-0.003)	0.003 (0.003-0.004)	0.004 (0.003-0.004)	0.004 (0.004-0.005)	0.004 (0.004-0.005)	0.005 (0.004-0.005)	0.005 (0.004-0.006)

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

RATIONAL FORMULA METHOD RUNOFF COEFFICIENTS

Land Use or Surface Characteristics	Aver. % Impervious Area	Runoff Coefficients	
		5-Year (C ₅)	100-Year (C ₁₀₀)
<u>Business/Commercial:</u>			
Downtown Areas	85	.82	.85
Neighborhood Areas	70	.65	.80
<u>Residential:</u>			
(Average Lot Size)			
1/8 Acre or Less (Multi-Unit)	65	.60	.78
1/4 Acre	38	.50	.65
1/8 Acre	30	.45	.60
1/2 Acre	25	.40	.55
1 Acre	20	.35	.50
<u>Industrial:</u>	72	.68	.82
<u>Open Space:</u>			
(Lawns, Parks, Golf Courses)	5	.05	.30
<u>Undeveloped Areas:</u>			
Range	0	.20	.50
Forest	0	.05	.30
<u>Streets/Roads:</u>			
Paved	100	.88	.93
Gravel	20	.25	.50
<u>Drives/Walks:</u>	95	.87	.90
<u>Roof:</u>	90	.85	.87

Notes:

1. Composite runoff coefficients shown for Residential, Industrial, and Business/Commercial Areas assume irrigated grass landscaping for all pervious areas. For development with landscaping other than irrigated grass, the designer must develop project specific composite runoff coefficients from the surface characteristics presented in this table.

VERSION: April 30, 2009

REFERENCE:

USDCM, DROCOG, 1969
(with modifications)

TABLE
701

WRC ENGINEERING, INC.

RUNOFF CURVE NUMBERS FOR URBAN AREAS¹

Runoff Curve Numbers

Cover Type and Hydrologic Condition	Aver. % Impervious Area ²	Soil Comp A	Soil Comp B	Soil Comp C	Soil Comp D
<i>Fully developed urban area (vegetation established)</i>					
Open space (lawns, parks, golf courses, cemeteries, etc.) ³					
Poor condition (grass cover < 50%)		68	79	86	89
Fair condition (grass cover 50 to 75%)		49	69	79	84
Good condition (grass cover > 75%)		39	61	74	80
Impervious areas:					
Paved parking lots, roofs, driveways, etc. (excluding right-of-way)		98	98	98	98
Streets and roads:					
Paved; curbs and storm sewers (excluding right-of-way)		98	98	98	98
Paved; open ditches (including right-of-way)		83	89	92	93
Gravel (including right-of-way)		76	85	89	91
Dirt (including right-of-way)		72	82	87	89
Western desert urban areas:					
Natural desert landscaping (pervious areas only) ⁴		63	77	85	88
Artificial desert landscaping (impervious weed barrier, desert shrub with 1- to 2-inch sand or gravel mulch and basin borders)		96	96	96	96
Urban districts:					
Commercial and business	85	89	92	94	95
Industrial	72	81	88	91	93
Residential districts by average lot size:					
1/8 acre or less (town houses)	65	77	85	90	92
1/4 acre	38	61	75	83	87
1/3 acre	30	57	72	81	86
1/2 acre	25	54	70	80	85
1 acre	20	51	68	79	84
2 acres	12	46	65	77	82
<i>Developing urban areas</i>					
Newly graded areas (pervious only, no vegetation) ⁵		77	86	91	94
Idle lands (CNs are determined using cover types similar to those Table 702 - 3 of 4)					

¹Average runoff condition, and $I_a = 0.2S$

²The average percent impervious area shown was used to develop the composite CNs. Other assumptions are as follows: impervious areas are directly connected to the drainage system, impervious areas have a CN of 98, and pervious areas are considered equivalent to open space in good hydrologic condition. CNs for other combinations of conditions may be computed using figure 2-3 or 2-4 in TR-55 (SCS, 1986).

³CNs shown are equivalent to those of pasture. Composite CNs may be computed for other combinations of open space cover type.

⁴Composite CNs for natural desert landscaping should be computed using figure 2-3 or 2-4 in TR-55 (SCS, 1986) based on the impervious area percentage (CN = 98) and the pervious area CN. The pervious area CNs are assumed equivalent to desert shrub in poor hydrologic condition.

⁵Composite CNs to use for the design of temporary measures during grading and construction should be computed using figure 2-3 or 2-4 in TR-55 (SCS, 1986) based on the degree of development (impervious area percentage) and the CNs for the newly graded pervious areas.

VERSION: April 30, 2009

REFERENCE:

210-VI-TR-55, Second Edition, June 1986

TABLE

702

1 of 4

WRC ENGINEERING, INC.

Appendix A

Hydrologic Soil Groups

Soils are classified into hydrologic soil groups (HSG's) to indicate the minimum rate of infiltration obtained for bare soil after prolonged wetting. The HSG's, which are A, B, C, and D, are one element used in determining runoff curve numbers (see chapter 2). For the convenience of TR-55 users, exhibit A-1 lists the HSG classification of United States soils.

The infiltration rate is the rate at which water enters the soil at the soil surface. It is controlled by surface conditions. HSG also indicates the transmission rate—the rate at which the water moves within the soil. This rate is controlled by the soil profile. Approximate numerical ranges for transmission rates shown in the HSG definitions were first published by Musgrave (USDA 1955). The four groups are defined by SCS soil scientists as follows:

Group Asoils have low runoff potential and high infiltration rates even when thoroughly wetted. They consist chiefly of deep, well to excessively drained sand or gravel and have a high rate of water transmission (greater than 0.30 in/hr).

Group Bsoils have moderate infiltration rates when thoroughly wetted and consist chiefly of moderately deep to deep, moderately well to well drained soils with moderately fine to moderately coarse textures. These soils have a moderate rate of water transmission (0.15-0.30 in/hr).

Group Csoils have low infiltration rates when thoroughly wetted and consist chiefly of soils with a layer that impedes downward movement of water and soils with moderately fine to fine texture. These soils have a low rate of water transmission (0.05-0.15 in/hr).

Group Dsoils have high runoff potential. They have very low infiltration rates when thoroughly wetted and consist chiefly of clay soils with a high swelling potential, soils with a permanent high water table, soils with a claypan or clay layer at or near the surface, and shallow soils over nearly impervious material. These soils have a very low rate of water transmission (0-0.05 in/hr).

In exhibit A-1, some of the listed soils have an added modifier; for example, "Abrazo, gravelly." This refers to a gravelly phase of the Abrazo series that is found in SCS soil map legends.

Disturbed soil profiles

As a result of urbanization, the soil profile may be considerably altered and the listed group classification may no longer apply. In these circumstances, use the following to determine HSG according to the texture of the new surface soil, provided that significant compaction has not occurred (Brakensiek and Rawls 1983).

<i>HSG</i>	<i>Soil textures</i>
A	Sand, loamy sand, or sandy loam
B	Silt loam or loam
C	Sandy clay loam
D	Clay loam, silty clay loam, sandy clay, silty clay, or clay

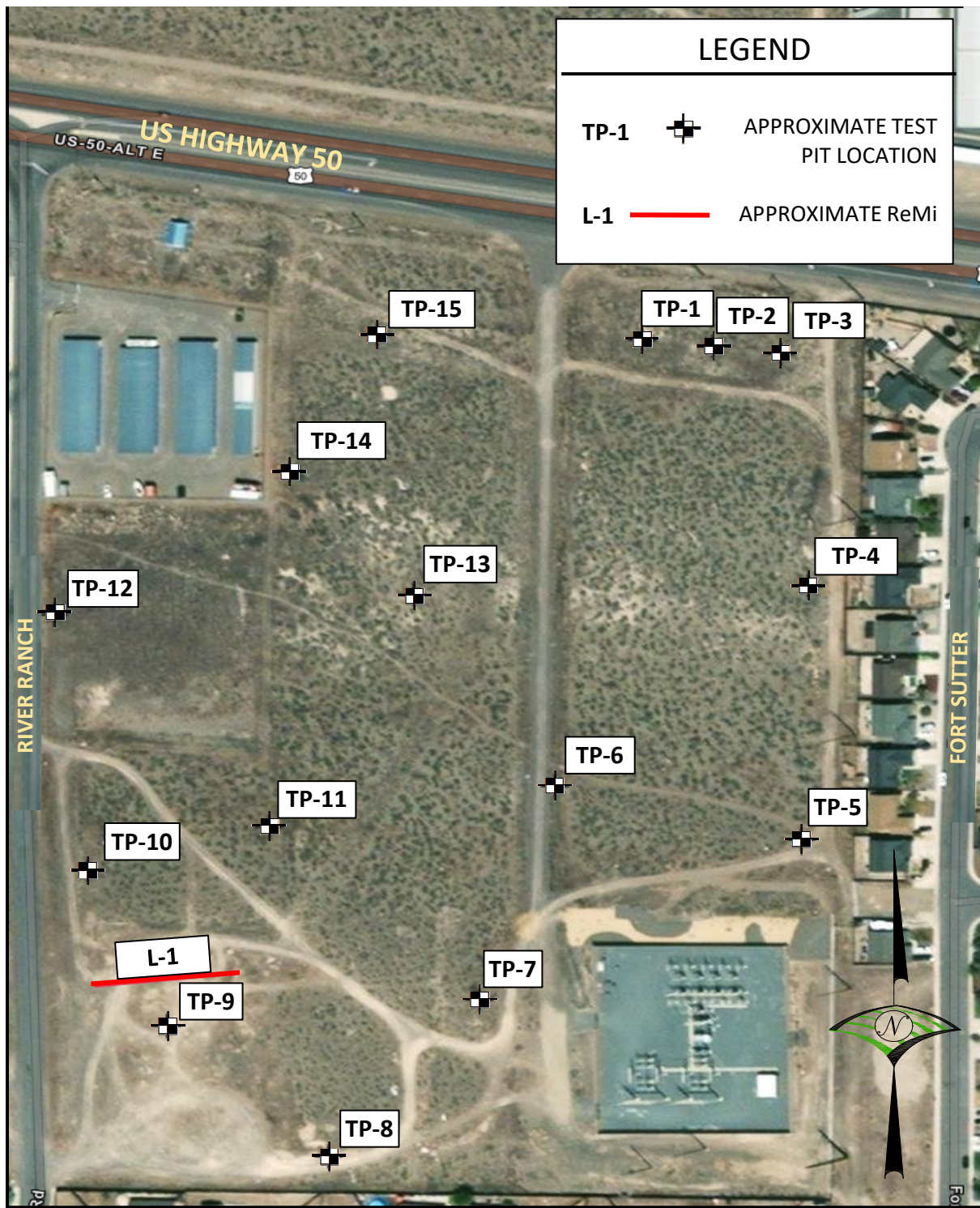
Drainage and group D soils

Some soils in the list are in group D because of a high water table that creates a drainage problem. Once these soils are effectively drained, they are placed in a different group. For example, Ackerman soil is classified as A/D. This indicates that the drained Ackerman soil is in group A and the undrained soil is in group D.

APPENDIX C

TEST PIT LOGS & PERCOLATION TEST RESULTS





RIVER RANCH APARTMENTS

SITE PLAN & APPROXIMATE EXPLORATION
LOCATIONS

FIGURE 3



Wood Rodgers

TEST PIT NUMBER TP-1

PAGE 1 OF 1

CLIENT ERGS, Inc. **PROJECT NAME** River Ranch Apartments
PROJECT NUMBER 3034059 **PROJECT LOCATION** Fernley, Nevada
DATE STARTED 7/14/22 **COMPLETED** 7/14/22 **GROUND ELEVATION** 4127 ft **TEST PIT SIZE** 24 inches
EXCAVATION CONTRACTOR King Construction **GROUND WATER LEVELS:**
EXCAVATION METHOD Backhoe **AT TIME OF EXCAVATION** --- NO FREE WATER ENCOUNTERED
LOGGED BY Lilian Lorincz **CHECKED BY** Justin McDougal **AT END OF EXCAVATION** --- NO FREE WATER ENCOUNTERED
NOTES: Elevations: Fernley GIS 09/07/22 (NAVD 88); Loc: 39.59946, -119.20929 **AFTER EXCAVATION** --- NO FREE WATER ENCOUNTERED

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	R-VALUE	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
									LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
0												
		SILTY SAND, (SM) loose, dry, light brownish gray, non plastic, trace rootlets	GB 1A									
		POORLY GRADED SAND WITH SILT, (SP-SM) loose, dry, light brownish gray, non plastic	GB 1B									
5		Medium dense	GB 1C									
		Silt seams	GB 1D									
		PERCOLATION TEST, sloughing	GB 1E					2.6				5.3
10												

Bottom of Test Pit at 10.0 Feet.

Soil Percolation Recorded Measurements

1. Depth to test : 8 ft
 2. Time of 1st saturation to 12" 9:50 Date : 7/13/2022
If 12" of water drains from hole in 10 mins or less, refill to 12".
 3. Time of 2nd saturation : 10:00
 4. If 2nd filling drains in less than 10 mins, begin 1 hour test with 10 mins or less reading intervals.
 5. If either filling exceeds 10 mins to drain from hole, begin a 4-hr pre-soak.
- Return between 16 - 24 hrs to start test.

Date of percolation test : 7/14/2022Hole # : TP-1 Diameter : 8 in Depth : 12 in Soil Type : SP-SM

Reading	Time		Water Level (in)		Elapsed	Water
	Start	Finish	Start	Finish	Time min	Fall (in)
1	10:06	10:16	6	8 1/16	10	2 1/16
2	10:16	10:26	6	7 5/8	10	1 5/8
3	10:26	10:36	6	7 5/8	10	1 5/8
4	10:36	10:46	6	7 3/8	10	1 3/8
5	10:46	10:56	6	7 5/16	10	1 5/16
6	10:56	11:06	6	7 5/16	10	1 5/16

Stabilized Rate : 7.6 Min/inch
 Tested by: SB
 Checked by: LL

GEOTECH BH COLUMNS - GINT STD US LAB.GDT - 9/9/22 14:23 - \\WOODRODGERS.LOC\PRODUCTION\DATA\JOBS-RENO\JOBS\3034 - ERGS\RIVER_RNCH_DOUBLE_R_OA\GEOTECH\GINT\TP1\TP1_RANCH_APARTMENTS.GPJ



Wood Rodgers

TEST PIT NUMBER TP-2

PAGE 1 OF 1

CLIENT ERGS, Inc. **PROJECT NAME** River Ranch Apartments
PROJECT NUMBER 3034059 **PROJECT LOCATION** Fernley, Nevada
DATE STARTED 7/14/22 **COMPLETED** 7/14/22 **GROUND ELEVATION** 4129 ft **TEST PIT SIZE** 24 inches
EXCAVATION CONTRACTOR King Construction **GROUND WATER LEVELS:**
EXCAVATION METHOD Backhoe **AT TIME OF EXCAVATION** --- NO FREE WATER ENCOUNTERED
LOGGED BY Lilian Lorincz **CHECKED BY** Justin McDougal **AT END OF EXCAVATION** --- NO FREE WATER ENCOUNTERED
NOTES: Elevations: Fernley GIS 09/07/22 (NAVD 88); Loc: 39.59944, -119.20894 **AFTER EXCAVATION** --- NO FREE WATER ENCOUNTERED

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	R-VALUE	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
									LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
0		SANDY FAT CLAY, (CH) stiff, dry, yellowish brown, high plasticity	GB 2A									
		SILTY SAND, (SM) loose, dry, light brownish gray, non plastic										
		SILT, (ML) very stiff, slightly moist, olive yellow, low plasticity	GB 2B					21.7				94.1
5		POORLY GRADED SAND WITH SILT, (SP-SM) loose, dry, light brownish gray, non plastic	GB 2C									
		Medium dense	GB 2D									
		Loose, sloughing, PERCOLATION TEST										

Bottom of Test Pit at 9.5 Feet.

Soil Percolation Recorded Measurements

1. Depth to test : 8 ft
 2. Time of 1st saturation to 12" 10:50 Date : 7/13/2022
 If 12" of water drains from hole in 10 mins or less, refill to 12".
 3. Time of 2nd saturation : 11:00
 4. If 2nd filling drains in less than 10 mins, begin 1 hour test with 10 mins or less reading intervals.
 5. If either filling exceeds 10 mins to drain from hole, begin a 4-hr pre-soak.
 Return between 16 - 24 hrs to start test.

Date of percolation test : 7/14/2022Hole # : TP-2 Diameter : 8 in Depth : 12 in Soil Type : SP-SM

Reading	Time		Water Level		Elapsed Time min	Water Fall (in)
	Start	Finish	Start	Finish		
1	10:10	10:20	6	8 7/16	10	2 7/16
2	10:20	10:30	6	8 1/4	10	2 1/4
3	10:30	10:40	6	8 1/8	10	2 1/8
4	10:40	10:50	6	8 1/8	10	2 1/8
5	10:50	11:00	6	8 1/16	10	2 1/16

Stabilized Rate : 4.8 Min/inch
 Tested by: SB
 Checked by: LL



Wood Rodgers

TEST PIT NUMBER TP-3

PAGE 1 OF 1

CLIENT ERGS, Inc.PROJECT NAME River Ranch ApartmentsPROJECT NUMBER 3034059PROJECT LOCATION Fernley, NevadaDATE STARTED 7/14/22COMPLETED 7/14/22GROUND ELEVATION 4128 ftTEST PIT SIZE 24 inchesEXCAVATION CONTRACTOR King Construction

GROUND WATER LEVELS:

EXCAVATION METHOD BackhoeAT TIME OF EXCAVATION --- NO FREE WATER ENCOUNTEREDLOGGED BY Lilian LorinczCHECKED BY Justin McDougalAT END OF EXCAVATION --- NO FREE WATER ENCOUNTEREDNOTES: Elevations: Fernley GIS 09/07/22 (NAVD 88); Loc: 39.59941, -119.20866 AFTER EXCAVATION --- NO FREE WATER ENCOUNTERED

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	R-VALUE	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
									LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
0		SANDY FAT CLAY, (CH) stiff, dry, yellowish brown, high plasticity	GB 3A									
		SILTY SAND, (SM) loose, dry, light brownish gray, non plastic										
		SILT, (ML) stiff, slightly moist, yellowish brown, low plasticity	GB 3B									
		POORLY GRADED SAND WITH SILT, (SP-SM) loose, dry, light brownish gray, non plastic										
5		Sloughing	GB 3C									

Bottom of Test Pit at 7.5 Feet.

Soil Percolation Recorded Measurements

1. Depth to test : 8 ft
2. Time of 1st saturation to 12" 11:45 Date : 7/13/2022
If 12" of water drains from hole in 10 mins or less, refill to 12".
3. Time of 2nd saturation : 11:55
4. If 2nd filling drains in less than 10 mins, begin 1 hour test with 10 mins or less reading intervals.
5. If either filling exceeds 10 mins to drain from hole, begin a 4-hr pre-soak.
- Return between 16 - 24 hrs to start test.

Date of percolation test : 7/14/2022Hole # : TP-3 Diameter : 8 in Depth : 12 in Soil Type : SP-SM

Reading	Time		Water Level		Elapsed Time min	Water Fall (in)
	Start	Finish	Start	Finish		
1			6	9 9/16	5	
2			6	9 7/16	5	
3			6	9 3/8	5	
4			6	9 5/16	5	
5			6	9 5/16	5	
6			6	9 1/4	5	
7			6	9 1/4	5	
8			6	9 1/4	5	
9			6	9 1/4	5	

Stabilized Rate : 1.5 Min/inch*Tested by: SB

*Rate may be due to test performed in sloughed soils

Checked by: LL



Wood Rodgers

TEST PIT NUMBER TP-4

PAGE 1 OF 1

CLIENT ERGS, Inc. **PROJECT NAME** River Ranch Apartments
PROJECT NUMBER 3034059 **PROJECT LOCATION** Fernley, Nevada
DATE STARTED 7/13/22 **COMPLETED** 7/13/22 **GROUND ELEVATION** 4133 ft **TEST PIT SIZE** 24 inches
EXCAVATION CONTRACTOR King Construction **GROUND WATER LEVELS:**
EXCAVATION METHOD Backhoe **AT TIME OF EXCAVATION** --- NO FREE WATER ENCOUNTERED
LOGGED BY Lilian Lorincz **CHECKED BY** Justin McDougal **AT END OF EXCAVATION** --- NO FREE WATER ENCOUNTERED
NOTES: Elevations: Fernley GIS 09/07/22 (NAVD 88); Loc: 39.59857, -119.20834 **AFTER EXCAVATION** --- NO FREE WATER ENCOUNTERED

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	R-VALUE	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
									LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
0.0		SILTY SAND, (SM) loose, dry, light brownish gray, non plastic	GB 4A			70			NP	NP	NP	
2.5												
			GB 4B									
5.0		POORLY GRADED SAND WITH SILT, (SP-SM) loose, dry, light brownish gray, non plastic	GB 4C									
7.5		SILT, (ML) very stiff, dry, olive yellow, low plasticity										
10.0												

Bottom of Test Pit at 10.0 Feet.

GEOTECH BH COLUMNS - GINT STD US LAB.GDT - 9/9/22 14:23 - \\WOODRODGERS.LOC\PRODUCTION\DATA\JOBS-RENO\JOBS\3034 - ERGS\RIVER_RNCH_DOUBLE_R_OA\GEOTECH\GEO\TECH\06 GINT\RIVER_RANCH APARTMENTS.GPJ



Wood Rodgers

TEST PIT NUMBER TP-5

PAGE 1 OF 1

CLIENT ERGS, Inc. **PROJECT NAME** River Ranch Apartments
PROJECT NUMBER 3034059 **PROJECT LOCATION** Fernley, Nevada
DATE STARTED 7/13/22 **COMPLETED** 7/13/22 **GROUND ELEVATION** 4142 ft **TEST PIT SIZE** 24 inches
EXCAVATION CONTRACTOR King Construction **GROUND WATER LEVELS:**
EXCAVATION METHOD Backhoe **AT TIME OF EXCAVATION** --- NO FREE WATER ENCOUNTERED
LOGGED BY Lilian Lorincz **CHECKED BY** Justin McDougal **AT END OF EXCAVATION** --- NO FREE WATER ENCOUNTERED
NOTES: Elevations: Fernley GIS 09/07/22 (NAVD 88); Loc: 39.59941, -119.20864 **AFTER EXCAVATION** --- NO FREE WATER ENCOUNTERED

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	R-VALUE	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
									LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
0.0		CLAYEY GRAVEL WITH SAND, (GC) medium dense, dry, yellowish brown, medium plasticity	GB 5A									
2.5		Dense, slightly moist	GB 5B					10.7	51	26	25	12.8
5.0			GB 5C									
7.5			GB 5D									
10.0												

Bottom of Test Pit at 10.0 Feet.

GEOTECH BH COLUMNS - GINT STD US LAB.GDT - 9/9/22 14:23 - \\WOODRODGERS.LOC\PRODUCTION\DATA\JOBS-RENO\JOBS\3034 - ERGS\RIVER_RNCH_DOUBLE - R_OA\GEOTECH\GINT\06 GINT\RIVER RANCH APARTMENTS.GPJ



Wood Rodgers

TEST PIT NUMBER TP-6

PAGE 1 OF 1

CLIENT ERGS, Inc. **PROJECT NAME** River Ranch Apartments
PROJECT NUMBER 3034059 **PROJECT LOCATION** Fernley, Nevada
DATE STARTED 7/13/22 **COMPLETED** 7/13/22 **GROUND ELEVATION** 4144 ft **TEST PIT SIZE** 24 inches
EXCAVATION CONTRACTOR King Construction **GROUND WATER LEVELS:**
EXCAVATION METHOD Backhoe **AT TIME OF EXCAVATION** --- NO FREE WATER ENCOUNTERED
LOGGED BY Lilian Lorincz **CHECKED BY** Justin McDougal **AT END OF EXCAVATION** --- NO FREE WATER ENCOUNTERED
NOTES: Elevations: Fernley GIS 09/07/22 (NAVD 88); Loc: 39.59784, -119.20934 **AFTER EXCAVATION** --- NO FREE WATER ENCOUNTERED

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	R-VALUE	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
									LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
0.0		FAT CLAY WITH SAND, (CH) stiff, dry, olive brown, high plasticity	GB 6A									
2.5		CLAYEY SAND WITH GRAVEL, (SC) dense, slightly moist, yellowish brown, high plasticity	GB 6B									
5.0		Rootlets	GB 6C					13.2	51	22	29	25.7
7.5												
10.0			GB 6D									

Bottom of Test Pit at 10.0 Feet.

GEOTECH BH COLUMNS - GINT STD US LAB.GDT - 9/9/22 14:23 - \\WOODRODGERS.LOC\PRODUCTION\DATA\JOBS-RENO\JOBS\3034 - ERGS\RIVER_RNCH_DOUBLE_R_OA\GEOTECH\GEO\TECH\06 GINT\RIVER RANCH APARTMENTS.GPJ



Wood Rodgers

TEST PIT NUMBER TP-7

PAGE 1 OF 1

CLIENT ERGS, Inc. **PROJECT NAME** River Ranch Apartments
PROJECT NUMBER 3034059 **PROJECT LOCATION** Fernley, Nevada
DATE STARTED 7/13/22 **COMPLETED** 7/13/22 **GROUND ELEVATION** 4160 ft **TEST PIT SIZE** 24 inches
EXCAVATION CONTRACTOR King Construction **GROUND WATER LEVELS:**
EXCAVATION METHOD Backhoe **AT TIME OF EXCAVATION** --- NO FREE WATER ENCOUNTERED
LOGGED BY Lilian Lorincz **CHECKED BY** Justin McDougal **AT END OF EXCAVATION** --- NO FREE WATER ENCOUNTERED
NOTES: Elevations: Fernley GIS 09/07/22 (NAVD 88); Loc: 39.59706, -119.20926 **AFTER EXCAVATION** --- NO FREE WATER ENCOUNTERED

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	R-VALUE	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
									LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
0.0		FAT CLAY WITH SAND, (CH) stiff, dry, olive brown, high plasticity, rootlets	GB 7A									
2.5		SILT WITH SAND, (ML) stiff, dry, yellowish brown, medium plasticity	GB 7B									
5.0		Slightly moist	GB 7C					14.7	41	26	15	79.8
7.5		CLAYEY SAND WITH GRAVEL, (SC) dense, dry, yellowish brown, high plasticity	GB 7D									
10.0		SILT WITH GRAVEL, (ML) stiff, dry, yellowish brown, low plasticity	GB 7E									

Bottom of Test Pit at 10.0 Feet.

GEOTECH BH COLUMNS - GINT STD US LAB.GDT - 9/9/22 14:23 - \\WOODRODGERS.LOC\PRODUCTION\DATA\JOBS-RENO\JOBS\3034 - ERGS\RIVER_RNCH_DOUBLE - R_OA\GEOTECH\GINT\06 GINT\RIVER_RANCH APARTMENTS.GPJ



Wood Rodgers

TEST PIT NUMBER TP-8

PAGE 1 OF 1

CLIENT ERGS, Inc. **PROJECT NAME** River Ranch Apartments
PROJECT NUMBER 3034059 **PROJECT LOCATION** Fernley, Nevada
DATE STARTED 7/13/22 **COMPLETED** 7/13/22 **GROUND ELEVATION** 4161 ft **TEST PIT SIZE** 24 inches
EXCAVATION CONTRACTOR King Construction **GROUND WATER LEVELS:**
EXCAVATION METHOD Backhoe **AT TIME OF EXCAVATION** --- NO FREE WATER ENCOUNTERED
LOGGED BY Lilian Lorincz **CHECKED BY** Justin McDougal **AT END OF EXCAVATION** --- NO FREE WATER ENCOUNTERED
NOTES: Elevations: Fernley GIS 09/07/22 (NAVD 88); Loc: 39.59941, -119.20846 **AFTER EXCAVATION** --- NO FREE WATER ENCOUNTERED

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	R-VALUE	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
									LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
0.0												
		FILL - CLAYEY SAND, (SC) medium dense, dry, yellowish brown, medium plasticity	GB 8A									
2.5			GB 8B					6.3	23	13	10	31.1
		SILT WITH SAND, (ML) stiff, dry, olive yellow, low plasticity										
5.0		Yellowish brown	GB 8C									
7.5		POORLY GRADED SAND WITH SILT, (SP-SM) dense, dry, light brownish gray, non plastic	GB 8D									
10.0												

Bottom of Test Pit at 10.0 Feet.

GEOTECH BH COLUMNS - GINT STD US LAB.GDT - 9/9/22 14:23 - \\WOODRODGERS.LOC\PRODUCTION\DATA\JOBS-RENO\JOBS\3034 - ERGS\RIVER_RNCH_DOUBLE - R.OA\GEOTECH\GINT\06 GINT\RIVER_RANCH_APARTMENTS.GPJ



Wood Rodgers

TEST PIT NUMBER TP-9

PAGE 1 OF 1

CLIENT ERGS, Inc. **PROJECT NAME** River Ranch Apartments
PROJECT NUMBER 3034059 **PROJECT LOCATION** Fernley, Nevada
DATE STARTED 7/14/22 **COMPLETED** 7/14/22 **GROUND ELEVATION** 4162 ft **TEST PIT SIZE** 24 inches
EXCAVATION CONTRACTOR King Construction **GROUND WATER LEVELS:**
EXCAVATION METHOD Backhoe **AT TIME OF EXCAVATION** --- NO FREE WATER ENCOUNTERED
LOGGED BY Lilian Lorincz **CHECKED BY** Justin McDougal **AT END OF EXCAVATION** --- NO FREE WATER ENCOUNTERED
NOTES: Elevations: Fernley GIS 09/07/22 (NAVD 88); Loc: 39.59696, -119.211 **AFTER EXCAVATION** --- NO FREE WATER ENCOUNTERED

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	R-VALUE	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
									LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
0.0												
		FILL - CLAYEY SAND, (SC) medium dense, dry, yellowish brown, medium plasticity, construction debris	GB 9A									
2.5		SILTY SAND, (SM) medium dense, dry, yellowish brown, low plasticity, rootlets	GB 9B									
5.0		Dense, olive yellow	GB 9C									
7.5		Slightly moist	GB 9D					15.4	31	24	7	38.0
10.0			GB 9E									

Bottom of Test Pit at 10.0 Feet.

GEOTECH BH COLUMNS - GINT STD US LAB.GDT - 9/9/22 14:23 - \\WOODRODGERS.LOC\PRODUCTION\DATA\JOBS-RENO\JOBS\3034_ERGS\RIVER_RNCH_DOUBLE_R_OA\GEOTECH\GINT\TP-9_RIVER_RNCH_APARTMENTS.GPJ



Wood Rodgers

TEST PIT NUMBER TP-10

PAGE 1 OF 1

CLIENT ERGS, Inc. **PROJECT NAME** River Ranch Apartments
PROJECT NUMBER 3034059 **PROJECT LOCATION** Fernley, Nevada
DATE STARTED 7/14/22 **COMPLETED** 7/14/22 **GROUND ELEVATION** 4153 ft **TEST PIT SIZE** 24 inches
EXCAVATION CONTRACTOR King Construction **GROUND WATER LEVELS:**
EXCAVATION METHOD Backhoe **AT TIME OF EXCAVATION** --- NO FREE WATER ENCOUNTERED
LOGGED BY Lilian Lorincz **CHECKED BY** Justin McDougal **AT END OF EXCAVATION** --- NO FREE WATER ENCOUNTERED
NOTES: Elevations: Fernley GIS 09/07/22 (NAVD 88); Loc: 39.59753, -119.2114 **AFTER EXCAVATION** --- NO FREE WATER ENCOUNTERED

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	R-VALUE	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
									LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
0.0												
		FILL - CLAYEY SAND, (SC) medium dense, dry, yellowish brown, medium plasticity, construction debris	GB 10A									
2.5			GB 10B									
		SILT WITH SAND, (ML) stiff, dry, olive yellow, medium plasticity, rootlets	GB 10C									
5.0		Very stiff	GB 10D									
7.5		SILT WITH GRAVEL, (ML) very stiff, slightly moist, olive yellow, non plastic										
10.0												

Bottom of Test Pit at 10.0 Feet.

GEOTECH BH COLUMNS - GINT STD US LAB.GDT - 9/9/22 14:24 - \\WOODRODGERS.LOC\PRODUCTION\DATA\JOBS-RENO\JOBS\3034 - ERGS\RIVER_RNCH_DOUBLE_R_OA\GEOTECH\GINT\06 GINT\RIVER_RANCH APARTMENTS.GPJ



Wood Rodgers

TEST PIT NUMBER TP-11

PAGE 1 OF 1

CLIENT ERGS, Inc. **PROJECT NAME** River Ranch Apartments
PROJECT NUMBER 3034059 **PROJECT LOCATION** Fernley, Nevada
DATE STARTED 7/14/22 **COMPLETED** 7/14/22 **GROUND ELEVATION** 4149 ft **TEST PIT SIZE** 24 inches
EXCAVATION CONTRACTOR King Construction **GROUND WATER LEVELS:**
EXCAVATION METHOD Backhoe **AT TIME OF EXCAVATION** --- NO FREE WATER ENCOUNTERED
LOGGED BY Lilian Lorincz **CHECKED BY** Justin McDougal **AT END OF EXCAVATION** --- NO FREE WATER ENCOUNTERED
NOTES: Elevations: Fernley GIS 09/07/22 (NAVD 88); Loc: 39.59769, -119.21064 **AFTER EXCAVATION** --- NO FREE WATER ENCOUNTERED

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	R-VALUE	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
									LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
0.0		SILTY SAND, (SM) loose, dry, yellowish brown, non plastic	GB 11A									
2.5		Silt seam										
5.0		SILT WITH SAND, (ML) stiff, dry, yellowish brown, medium plasticity	GB 11B									
			GB 11C									
7.5		POORLY GRADED SAND WITH GRAVEL, (SP) medium dense, dry, light brownish gray to olive brown, non plastic	GB 11D									
10.0												

Bottom of Test Pit at 10.0 Feet.

GEOTECH BH COLUMNS - GINT STD US LAB.GDT - 9/9/22 14:24 - \\WOODRODGERS.LOC\PRODUCTION\DATA\JOBS-RENO\JOBS\3034 ERGS\RIVER RNCH DOUBLE R.OA\GEOTECH\GEO\TECH\06 GINT\RIVER RANCH APARTMENTS.GPJ



Wood Rodgers

TEST PIT NUMBER TP-12

PAGE 1 OF 1

CLIENT ERGS, Inc. **PROJECT NAME** River Ranch Apartments
PROJECT NUMBER 3034059 **PROJECT LOCATION** Fernley, Nevada
DATE STARTED 7/14/22 **COMPLETED** 7/14/22 **GROUND ELEVATION** 4135 ft **TEST PIT SIZE** 24 inches
EXCAVATION CONTRACTOR King Construction **GROUND WATER LEVELS:**
EXCAVATION METHOD Backhoe **AT TIME OF EXCAVATION** --- NO FREE WATER ENCOUNTERED
LOGGED BY Lilian Lorincz **CHECKED BY** Justin McDougal **AT END OF EXCAVATION** --- NO FREE WATER ENCOUNTERED
NOTES: Elevations: Fernley GIS 09/07/22 (NAVD 88); Loc: 39.59845, -119.21134 **AFTER EXCAVATION** --- NO FREE WATER ENCOUNTERED

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	R-VALUE	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
									LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
0.0												
		SILT WITH GRAVEL, (ML) stiff, dry, yellowish brown, medium plasticity	GB 12A									
		SILT WITH SAND, (ML) stiff, dry, olive yellow, medium plasticity, rootlets	GB 12B									
2.5		SILTY SAND, (SM) medium dense, dry, yellowish brown, low plasticity	GB 12C									
5.0		POORLY GRADED SAND WITH SILT, (SP-SM) medium dense, dry, light brownish gray, non plastic	GB 12D									
7.5		SILT WITH SAND, (ML) stiff, dry, yellowish brown, medium plasticity	GB 12E									
10.0												

Bottom of Test Pit at 10.0 Feet.

GEOTECH BH COLUMNS - GINT STD US LAB.GDT - 9/9/22 14:24 - \\WOODRODGERS.LOC\PRODUCTION\DATA\JOBS-RENO\JOBS\3034 - ERGS\RIVER_RNCH.DOUBLE_R_OA\GEOTECH\GEO\TECH\06 GINT\RIVER_RANCH APARTMENTS.GPJ



Wood Rodgers

TEST PIT NUMBER TP-13

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CLIENT <u>ERGS, Inc.</u>	PROJECT NAME <u>River Ranch Apartments</u>
PROJECT NUMBER <u>3034059</u>	PROJECT LOCATION <u>Fernley, Nevada</u>
DATE STARTED <u>7/14/22</u> COMPLETED <u>7/14/22</u>	GROUND ELEVATION <u>4135 ft</u> TEST PIT SIZE <u>24 inches</u>
EXCAVATION CONTRACTOR <u>King Construction</u>	GROUND WATER LEVELS:
EXCAVATION METHOD <u>Backhoe</u>	AT TIME OF EXCAVATION <u>--- NO FREE WATER ENCOUNTERED</u>
LOGGED BY <u>Lilian Lorincz</u> CHECKED BY <u>Justin McDougal</u>	AT END OF EXCAVATION <u>--- NO FREE WATER ENCOUNTERED</u>
NOTES: <u>Elevations: Fernley GIS 09/07/22 (NAVD 88); Loc: 39.59853, -119.210</u> AFTER EXCAVATION <u>--- NO FREE WATER ENCOUNTERED</u>	

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	R-VALUE	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
									LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
0.0												
		SILTY SAND, (SM) loose, dry, light brownish gray, non plastic, trace rootlets	GB 13A									
2.5		POORLY GRADED SAND WITH SILT, (SP-SM) medium dense, dry, light brownish gray, non plastic	GB 13B									
5.0		SILT WITH SAND, (ML) stiff, dry, olive yellow, medium plasticity, rootlets	GB 13C									
7.5		Slightly moist										
10.0			GB 13D									

Bottom of Test Pit at 10.0 Feet.

GEOTECH BH COLUMNS - GINT STD US LAB.GDT - 9/9/22 14:24 - \\WOODRODGERS.LOC\PRODUCTION\DATA\JOBS-RENO\JOBS\3034 - ERGS\RIVER_RNCH_DOUBLE_R_OA\GEOTECH\GEO\TECH\06 GINT\TRIVER RANCH APARTMENTS.GPJ



Wood Rodgers

TEST PIT NUMBER TP-14

PAGE 1 OF 1

CLIENT ERGS, Inc. **PROJECT NAME** River Ranch Apartments
PROJECT NUMBER 3034059 **PROJECT LOCATION** Fernley, Nevada
DATE STARTED 7/14/22 **COMPLETED** 7/14/22 **GROUND ELEVATION** 4133 ft **TEST PIT SIZE** 24 inches
EXCAVATION CONTRACTOR King Construction **GROUND WATER LEVELS:**
EXCAVATION METHOD Backhoe **AT TIME OF EXCAVATION** --- NO FREE WATER ENCOUNTERED
LOGGED BY Lilian Lorincz **CHECKED BY** Justin McDougal **AT END OF EXCAVATION** --- NO FREE WATER ENCOUNTERED
NOTES: Elevations: Fernley GIS 09/07/22 (NAVD 88); Loc: 39.59899, -119.21046 **AFTER EXCAVATION** --- NO FREE WATER ENCOUNTERED

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	R-VALUE	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
									LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
0.0		SILTY SAND, (SM) medium dense, dry, yellowish brown, non plastic	GB 14A									
2.5		Low plasticity, silt seam	GB 14B									
5.0												
7.5		SILT WITH SAND, (ML) stiff, dry, yellowish brown, medium plasticity	GB 14C									
10.0		POORLY GRADED SAND WITH SILT, (SP-SM) medium dense, dry, light brownish gray, non plastic	GB 14D									

Bottom of Test Pit at 10.0 Feet.

GEOTECH BH COLUMNS - GINT STD US LAB.GDT - 9/9/22 14:24 - \\WOODRODGERS.LOC\PRODUCTION\DATA\JOBS-RENO\JOBS\3034 - ERGS\RIVER_RNCH_DOUBLE_R_OA\GEOTECH\GEO\TECH\06 GINT\RIVER RANCH APARTMENTS.GPJ



Wood Rodgers

TEST PIT NUMBER TP-15

PAGE 1 OF 1

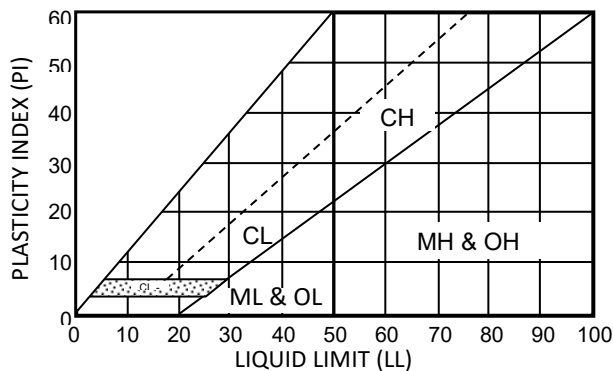
CLIENT ERGS, Inc. **PROJECT NAME** River Ranch Apartments
PROJECT NUMBER 3034059 **PROJECT LOCATION** Fernley, Nevada
DATE STARTED 7/14/22 **COMPLETED** 7/14/22 **GROUND ELEVATION** 4131 ft **TEST PIT SIZE** 24 inches
EXCAVATION CONTRACTOR King Construction **GROUND WATER LEVELS:**
EXCAVATION METHOD Backhoe **AT TIME OF EXCAVATION** --- NO FREE WATER ENCOUNTERED
LOGGED BY Lilian Lorincz **CHECKED BY** Justin McDougal **AT END OF EXCAVATION** --- NO FREE WATER ENCOUNTERED
NOTES: Elevations: Fernley GIS 09/07/22 (NAVD 88); Loc: 39.59949, -119.21024 **AFTER EXCAVATION** --- NO FREE WATER ENCOUNTERED

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	R-VALUE	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
									LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
0.0												
		SILTY SAND, (SM) loose, dry, light brownish gray, non plastic, trace rootlets	GB 15A									
2.5		SILT WITH SAND, (ML) very stiff, dry, yellowish brown, medium plasticity	GB 15B									
5.0		POORLY GRADED SAND WITH SILT, (SP-SM) loose, dry, light brownish gray, non plastic	GB 15C									
		Sloughing										

Bottom of Test Pit at 7.0 Feet.

GEOTECH BH COLUMNS - GINT STD US LAB.GDT - 9/9/22 14:24 - \\WOODRODGERS.LOC\\PRODUCTIONDATA\\JOBS-RENO\\JOBS3034 - ERGS\\RIVER RNCH - DOUBLE - R.OA\\GEOTECH\\GEO TECH\\06 GINT\\RIVER RANCH APARTMENTS.GPJ

MAJOR DIVISION				TYPICAL NAMES	
COARSE-GRAINED SOILS MORE THAN HALF IS COARSER THAN NO. 200 SIEVE	GRAVEL MORE THAN HALF COARSE FRACTION IS LARGER THAN NO. 4 SIEVE	CLEAN SANDS WITH LITTLE OR NO FINES		GW	WELL GRADED GRAVELS WITH OR WITHOUT SAND, LITTLE OR NO FINES
		GRAVELS WITH OVER 12% FINES		GP	POORLY GRADED GRAVELS WITH OR WITHOUT SAND, LITTLE OR NO FINES
				GM	SILTY GRAVELS, SILTY GRAVELS WITH SAND
				GC	CLAYEY GRAVELS, CLAYEY GRAVELS WITH SAND
	SAND MORE THAN HALF COARSE FRACTION IS SMALLER THAN NO. 4 SIEVE	CLEAN SANDS WITH LITTLE OR NO FINES		SW	WELL GRADED SANDS WITH OR WITHOUT GRAVEL, LITTLE OR NO FINES
				SP	POORLY GRADED SAND WITH OR WITHOUT GRAVEL, LITTLE OR NO FINES
		SANDS WITH OVER 12% FINES		SM	SILTY SANDS WITH OR WITHOUT GRAVEL
				SC	CLAYEY SANDS WITH OR WITHOUT GRAVEL
FINE-GRAINED SOILS MORE THAN HALF IS FINER THAN NO. 200 SIEVE	SILT AND CLAY LIQUID LIMIT 50% OR LESS			ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTS WITH SANDS AND GRAVELS
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY CLAYS WITH SANDS AND GRAVELS, LEAN CLAYS
				OL	ORGANIC SILTS OR CLAYS OF LOW PLASTICITY
	SILT AND CLAY LIQUID LIMIT GREATER THAN 50%			MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOLID, ELASTIC SILTS
				CH	INORGANIC CLAYS OR HIGH PLASTICITY, FAT CLAYS
				OH	ORGANIC SILTS OR CLAYS MEDIUM TO HIGH PLASTICITY
	HIGHLY ORGANIC SOILS			PT	PEAT AND OTHER HIGHLY ORGANIC SOILS



CONSISTENCY		RELATIVE DENSITY	
SILTS & CLAYS	SPT BLOW* COUNTS (N)	SANDS & GRAVELS	SPT BLOW* COUNTS (N)
VERY SOFT	0 - 2	VERY LOOSE	0 - 4
SOFT	3 - 4	LOOSE	5 - 10
MEDIUM STIFF	5 - 8	MD DENSE	11 - 30
STIFF	9 - 15	DENSE	31 - 50
VERY STIFF	16 - 30	VERY DENSE	50 +
HARD	30 +		

* The Standard Penetration Resistance (N) in blows per foot is obtained by the ASTM D1585 procedure using 2" O.D., 1 3/8" I.D. samplers.

PLASTICITY DESCRIPTIONS			
DESCRIPTION	RANGE	DESCRIPTION	RANGE
NONPLASTIC	<5	MEDIUM	10-20
LOW	< 10	MEDIUM-HIGH	15 - 25
LOW-MEDIUM	5 - 15	HIGH	>25

DESCRIPTION OF ESTIMATED PERCENTAGES OF GRAVEL, SAND, AND FINES	
TRACE	Particles are present but est. < 5%
FEW	5% - 10%
LITTLE	15% - 20%
SOME	30% - 45%
MOSTLY	50% - 100%

NOTE: Percentages are presented within soil description for soil horizon with laboratory tested soil samples.

DEFINITIONS OF SOIL FRACTIONS	
SOIL COMPONENT	PARTICLE SIZE RANGE
BOULDERS	> 12 INCHES
COBBLES	3 to 12 Inches
GRAVEL	3 IN. TO NO. 4 SIEVE
COARSE GRAVEL	3 IN. TO 3/4 IN.
FINE GRAVEL	3/4 IN. TO NO. 4 SIEVE
SAND	NO. 4 TO NO. 200
COARSE SAND	NO. 4 TO NO. 10
MEDIUM SAND	NO. 10 TO NO. 40
FINE SAND	NO. 40 TO NO. 200
FINES (SILT OR CLAY)	MINUS NO. 200 SIEVE

RIVER RANCH APARTMENTS	UNIFIED SOIL CLASSIFICATION AND KEY TO SOIL DESCRIPTIONS	B-2
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PRELIMINARY SANITARY SEWER REPORT

FOR THE
RIVER RANCH APARTMENTS
CONDITIONAL USE PERMIT
FERNLEY, NEVADA

Prepared for:

ERGS, INC.
9345 Lemmon Drive
Reno, Nevada 89506
775.972.0213

SEPTEMBER 13, 2022

Prepared by:

WOOD RODGERS, INC.
1361 Corporate Boulevard
Reno, Nevada 89502
775.823.4068

Evan Nikirk, P.E.
Associate



09.13.2022



WOOD RODGERS
BUILDING RELATIONSHIPS ONE PROJECT AT A TIME

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- APPENDIX A – EXHIBITS
- APPENDIX B – SEWER DISCOVERY
- APPENDIX C – HYDRAULIC CALCULATIONS



1 INTRODUCTION

This report describes existing sanitary sewer conditions and provides an estimate of sewage flows anticipated from the proposed River Ranch apartment complex in Fernley, Nevada. The report has been prepared in support of the Conditional Use Permit and proposed site development, which will consist of 320 apartments in 40 buildings on a network of 26-foot-wide drive aisles with curb, gutter, sidewalk, utility infrastructure, and a storm water retention pond.

The following sections summarize the design criteria, general flow analysis, and preliminary design of sewer facilities proposed to serve the multi-family residences, which will connect to existing City infrastructure at the TMAI Lift Station on Inglewood Drive. The proposed sewer system, as described below, is consistent with Chapter 8 of the *City of Fernley Department of Public Works Design Standards and Review Guidelines for Streets, Potable Water, Sewer, Storm Drains & Alternative Water (Design Standards)*, dated May 2008 (Fernley, 2008a).

The proposed project is located within the City's Rolling Meadows Contributory Area, as delineated in Figure 14 from the unpublished 2009 Sewer Master Plan Update (TRC, 2009). Domestic sewage from the River Ranch apartment complex will be collected by newly-constructed sewer laterals and gravity mains, which will extend off-site under Frontage Road adjacent to U.S. Highway 50A for connection to the existing TMAI Lift Station on Inglewood Drive. The recently-constructed lift station routes flows via force main up Inglewood Drive, then west for discharge to a gravity manhole in Wagon Wheel Lane. Sewage flows within the Rolling Meadows Contributory Area gravity drain to the Rolling Meadows Lift Station, which pumps to the Farm District Road Lift Station for discharge into the South Fernley Interceptor and East Lift Station for treatment at the East Wastewater Treatment Plant.

2 PROJECT BACKGROUND

The River Ranch apartment project will be a multi-family residential complex created from two existing parcels, which will be modified by two boundary line adjustments (BLAs), in central Fernley, as shown on the Vicinity Map enclosed in Appendix A. The existing parcels, designated by Lyon County as Assessor's Parcel Numbers (APNs) 021-281-03 and -10, are undeveloped.

2.1 Site Location

The project parcels are located at 501 River Ranch Road (APN 021-281-03) and 1855 U.S. Highway 50A (APN 021-281-10). The site is bounded by River Ranch Road to the west, U.S. Highway 50A to the north, single-family residences in the Donner Trails Estates subdivision on its eastern border, and single-family residences in the River Ranch subdivision on its southern boundary. A NV Energy substation is located on a parcel (APN 021-281-09) at the southeast corner of the project, and an existing self-storage warehouse business is located on a parcel (APN 021-281-04) at the northwest corner of the site. According to the



Public Land Survey System, the site is situated within the southeast quarter of Section 18, Township 20 North, Range 25 East, Mount Diablo Meridian (SE1/4, Sec. 18, T.20 N., R.25 E., M.D.M.). The centroid of the site is approximately located at latitude 39.5982°N, longitude -119.2096°W.

2.2 Existing Conditions

The combined adjusted parcels comprise a net project area (i.e., less proposed River Ranch Road right-of-way) of 20.104 acres, as shown in the “Parcel Areas” exhibit included in Appendix A. The project site is currently undeveloped. High-voltage power poles and backyard wood fencing from the adjacent Donner Trails Estates subdivision border the eastern boundary, and backyard wood fencing and a segmental block retaining wall on lots in the adjacent River Ranch subdivision border the south boundary. The project site is bisected by a 50-foot-wide north-south access easement with gravel road from U.S. Highway 50A to the NV Energy substation. Existing terrain slopes from south to north at an overall average rate of 2.5 percent, with relatively flat areas in the southern and northern thirds of the site separated by a 6.0 percent slope in the middle third. Elevations range from highs between 4156 feet to 4164 feet along the south property line to lows between 4127 feet and 4132 feet at the highway right-of-way on the north boundary.

A public gravity sewer system is not available adjacent to the project in River Ranch Road, though there is a dedicated sewer force main from the Pioneer Crossing Casino. The point of connection to the City’s sanitary sewer system will be off-site at an existing manhole in Inglewood Drive adjacent to the TMAI Lift Station. This manhole represents the closest point of the City’s gravity sewer system to the project’s low point. The TMAI Lift Station is part of a network that ultimately drains to the South Fernley Interceptor west of the project site, with flows ultimately reaching the East Lift Station and East Wastewater Treatment Plant. The TMAI sewershed serves development in the vicinity of The Meadows at Inglewood (TMAI) commercial complex, including the proposed River Ranch apartment complex, as shown in the modified Summit Engineering exhibit (Summit, 2018) included in Appendix A. This sewershed is a sub-unit of the larger Rolling Meadows Contributory Area, shown in Figure 14 from the City’s unpublished Sewer Master Plan Update (TRC, 2008).

3 PROJECT DESCRIPTION

The owner proposes to construct a network of paved drive aisles with parking, curb and gutter, sidewalk, and utility infrastructure for 40 apartment buildings comprising 320 dwelling units. The complex will also include an office / clubhouse, a maintenance building, amenities, landscaped areas, and a storm water retention pond at the northeast corner of the site. There will be four styles of apartment buildings, each of which contains eight units, with sizes ranging from one-bedroom to three-bedroom floor plans. The general layout of the development and its sewer infrastructure is shown on the “Preliminary Sanitary Sewer Exhibit,” enclosed in Appendix A. Four-inch-diameter PVC SDR35 sewer laterals will be installed to serve each building; the laterals will connect to a new 8-inch-diameter sewer main constructed in the drive aisles. The gravity mains will sewer to the north, then connect to the City’s TMAI Lift Station west of



the project. The off-site sewer extension will be constructed within the U.S. Highway 50A right-of-way by permit from the State of Nevada Department of Transportation.

Site infrastructure will include 26-foot-wide paved drive aisles with curb, gutter, sidewalk, pedestrian ramps, storm drain facilities, water and sewer systems extended from the City's existing networks, and dry utilities (i.e., power, telephone, cable television). The site entrance will connect with River Ranch Road directly across from the unnamed connector street currently being constructed as part of The Meadows at Inglewood development. Emergency access connections will be made at two locations: River Ranch Road at the southwest corner of the site and Ellice Way on the eastern boundary adjacent to the NV Energy substation. In general, on-site sewage will gravity flow north to the low end of the site adjacent to U.S. Highway 50A, then west to the TMAI Lift Station, and ultimately to the South Fernley Interceptor, East Lift Station, and East Wastewater Treatment Plant. A preliminary analysis and model of apartment complex flows was completed in a discovery performed by Shaw Engineering (Shaw, 2022) on behalf of the City of Fernley. The discovery indicates the City's system has the capacity to serve the project, but the TMAI Lift Station will require upgrades. A copy of the discovery letter with pre- and post-development model results is enclosed in Appendix B of this report.

4 TRIBUTARY AREAS

The project is located within the City's Rolling Meadows Contributory Area, at the northeast corner of the sewershed, with no tributary flows upstream from the site. The project area is shown within the sewershed in modified figures included in Appendix A. As noted above, the point of connection represents the manhole nearest to the project's low point. Residential and commercial development within the TMAI Sewershed and Rolling Meadows Contributory Area currently flow to the South Fernley Interceptor, which is ultimately processed by the East Wastewater Treatment Plant. This facility takes wastewater flows from several interceptors and lift stations throughout the City.

Per the *City of Fernley Public Works Design Standards*, the downstream tributary areas were analyzed to verify adequate sewer pipe capacities within the City's existing sewer network. The discovery by Shaw Engineering (Shaw, 2022) includes figures and pre- and post-development model flows routed through the City's network, with sewer main identification, diameter, slope, and flow for each segment. The discovery includes an analysis of downstream flows and project impact on the sewershed as a result of the proposed apartment complex. A copy of the discovery is attached as Appendix B.

A copy of Figure 14 from the City's unpublished Sewer Master Plan Update (TRC, 2009) is enclosed in Appendix A to show sewershed boundaries; the figure has been modified to indicate the proposed project area. The figure identifies existing parcels and sewer main sizes, as well as the total residential and commercial Equivalent Residential Connections (ERCs) anticipated within the contributory area at full build-out (i.e., 915 residential ERCs, 113 commercial ERCs). However, these estimates are out of date.



5 PROPOSED CONDITIONS

On-site sewer laterals, mains, and manholes will be privately-owned and maintained by the apartment complex owner. Off-site sewer mains and manholes will be dedicated to the City of Fernley. Wastewater generated by apartment complex residents will be collected by 8-inch-diameter sewer mains, which will gravity-drain to the north project boundary, as described above. The proposed project layout and associated sewer network are shown on the exhibit, "Preliminary Sanitary Sewer Exhibit," in Appendix A.

The proposed on-site and off-site sanitary sewer system constructed for the River Ranch Apartment complex will conform with design standards specified in Chapter 8 of the *City of Fernley Department of Public Works Design Standards and Review Guidelines* (Fernley, 2008a) and with the *City of Fernley Standard Details for Public Works Construction* (Fernley, 2008b). Gravity sewer mains will be 8-inch-diameter PVC SDR35 sewer pipe installed under drive aisles. At the upper end of a given sewer trunk, two apartment buildings comprising a total of 16 dwelling units will connect to the adjacent main set at a 1.00 percent slope. Downstream mains may be set as flat as 0.40 percent to 0.60 percent, depending on how many units contribute to it. These flowline slopes are consistent with minimums specified in Table 8.1 of the *Design Standards* for an 8-inch-diameter main serving up to 10 dwelling units (1.0 percent), between 10 to 20 dwelling units (0.6 percent), and more than 20 units (0.40 percent). Each building will drain via 4-inch-diameter PVC SDR35 sewer lateral connected to the adjacent sewer main. Minimum clearances will be maintained over the sewer mains and over the laterals at the curb. No non-domestic waste will be introduced into the City's sanitary sewer system from the proposed project.

As specified in Chapter 8 of the *Design Standards*, the on-site sewer system will be designed to satisfy the minimum flow velocity of 2 feet per second (fps) at half-full capacity, and a maximum velocity of 10 fps, with a Manning's roughness coefficient ("n") of 0.012 used for pipe hydraulic calculations. Further, all sanitary sewer mains within the proposed development are designed to carry the calculated peak flow at no more than three-quarters full (0.75D).

5 HYDRAULIC ANALYSIS

This report evaluates the predicted sewage contribution from the River Ranch Apartment complex to the City's existing sewer system. The average daily flows expected for the project are calculated using a sewage generation rate of 345 gallons per dwelling unit per day, as specified by the *Design Standards* for an 8-inch-diameter main. This results in an average flow rate of **110,400 gallons per day (gpd)**. For the Peak Hourly Flow, a peaking factor of 3.0 is applied. The estimated peak flow rate collected by the subdivision's single 8-inch-diameter gravity sewer main is calculated as:

$$\text{Peak Flow Rate} = (3.0 \text{ peaking factor}) \times (320 \text{ residences}) \times (345 \text{ gal. / residence / day}) = \mathbf{331,200 \text{ GPD}}$$



The shallowest pipe slope within the on-site network could be 0.4 percent for an 8-inch-diameter PVC SDR35 sewer main. Hydraulic calculations were performed using the computer software FlowMaster® V8i by Bentley Systems (Watertown, CT) to determine flow characteristics at pipe capacity (0.75D) and, by extension, this information was used to evaluate compliance within the sewer system. At three-quarters full an 8-inch pipe set at 0.4 percent slope has a flow rate of 487,939 gpd, which far exceeds the anticipated peak flow from the project. By definition, the capacities of an 8-inch pipe set at slopes steeper than 0.4 percent will have greater capacity. Hydraulic calculations were also performed for a half-full 8-inch pipe set at 0.4 percent to verify compliance with the minimum velocity of 2.0 fps; this condition will result in a flow velocity of 2.4 fps; mains set at slopes over 0.4 percent will exceed this velocity. Detailed calculations are provided in Appendix C.

6 CONCLUSIONS

The proposed sanitary sewer system described in this report has been designed to meet the City's design criteria and adequately serve the residents of the River Ranch apartment complex. Exhibits showing the site location, existing conditions, the general site layout, and the proposed sewer system for the project are included in Appendix A. The project's gravity mains will discharge into an existing sanitary sewer manhole on Inglewood Drive adjacent to the TMAI Lift Station, which ultimately drains to the South Fernley Interceptor located west of the project. Based on data presented in unpublished 2009 Sewer Master Plan Update (TRC, 2009), the interceptor was designed to have sufficient capacity to manage the additional flows, which ultimately discharge into the City's East Wastewater Treatment Plant.

7 REFERENCES

Fernley, 2008a. *City of Fernley Department of Public Works Design Standards and Review Guidelines for Streets, Potable Water, Sewer, Storm Drains & Alternative Water*, published by the City of Fernley Department of Public Works, Fernley, Nevada, May 2008. <http://www.cityoffernley.org/DocumentCenter/Index/279>.

Fernley, 2008b. *City of Fernley Standard Details for Public Works Construction*, published by the City of Fernley Department of Public Works, Fernley, Nevada, July 15, 2008. <http://www.cityoffernley.org/DocumentCenter/View/2009>.

Shaw, 2022. *501 River Ranch Road Sewer Discovery*, unpublished letter report prepared by Shaw Engineering, Inc. for the City of Fernley Engineering Department, Shaw Engineering, Inc., Reno, Nevada, September 13, 2022.

Summit, 2018. *Sanitary Sewer Report for TMAI Phase 1*, unpublished report prepared by Summit Engineering Corp. for the City of Fernley Engineering Department, Summit Engineering Corp., Reno, Nevada, April, 2018.

TRC, 2009. *Sewer Master Plan Update*, unpublished report prepared by TRC Engineers for the City of Fernley Department of Public Works, TRC Engineers, Inc., Reno, Nevada, February 2009.



APPENDIX A

EXHIBITS

VICINITY MAP

AERIAL MAP

SEWERSHED (FIGURE 14, 2009 SEWER MASTER PLAN)

TMAI LIFT STATON SEWERSHED

PROJECT PARCELS

EXISTING CONDITIONS

PRELIMINARY SANITARY SEWER EXHIBIT



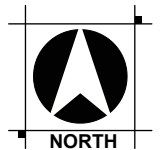
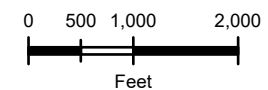
VICINITY MAP

RIVER RANCH APARTMENTS

FERNLEY, NV

SEPTEMBER 2022

- Future Nevada Pacific Parkway
- BLA_Project_Boundary

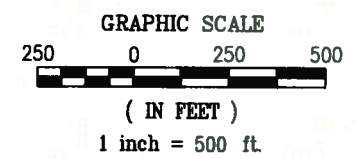
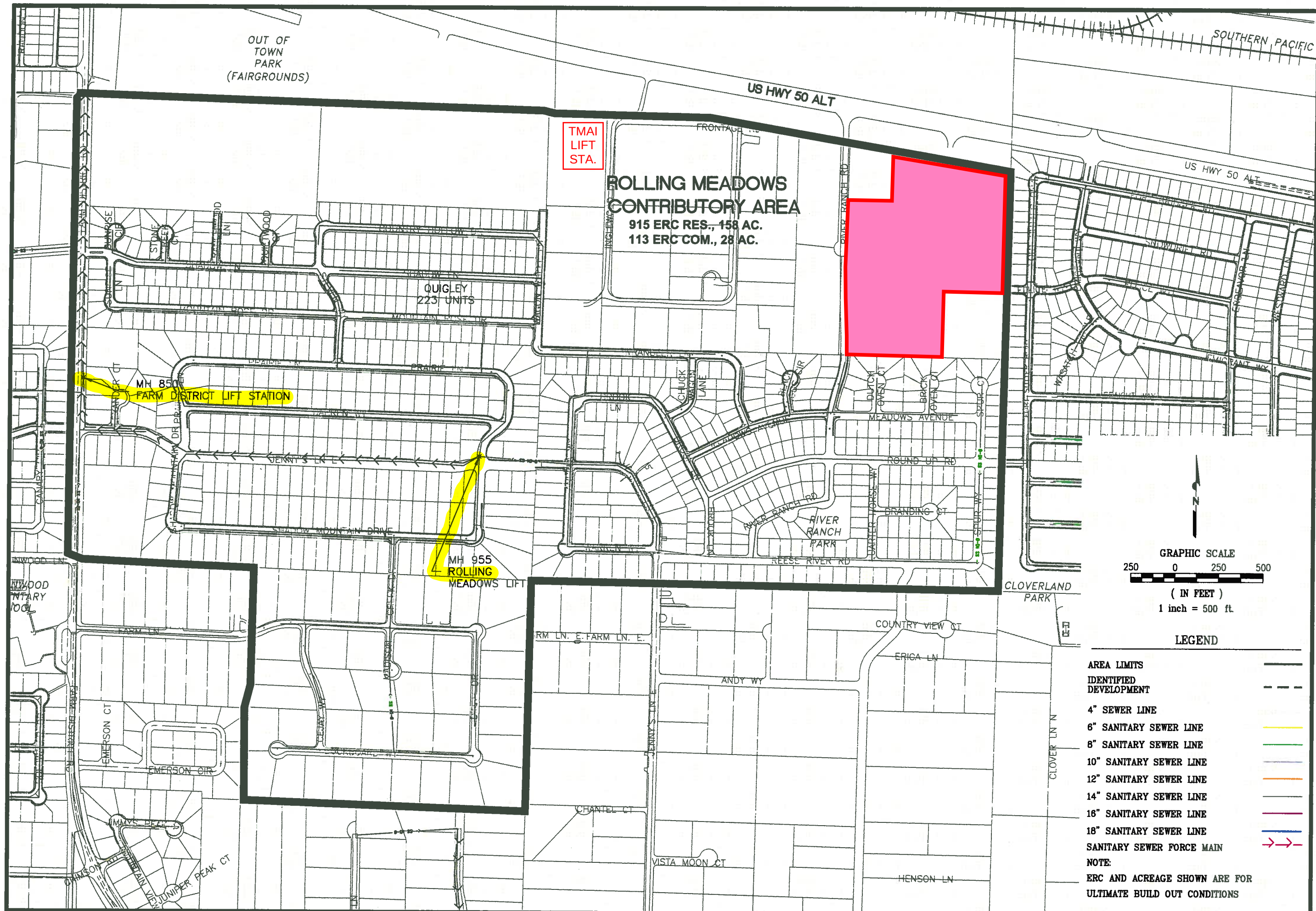



WOOD RODGERS



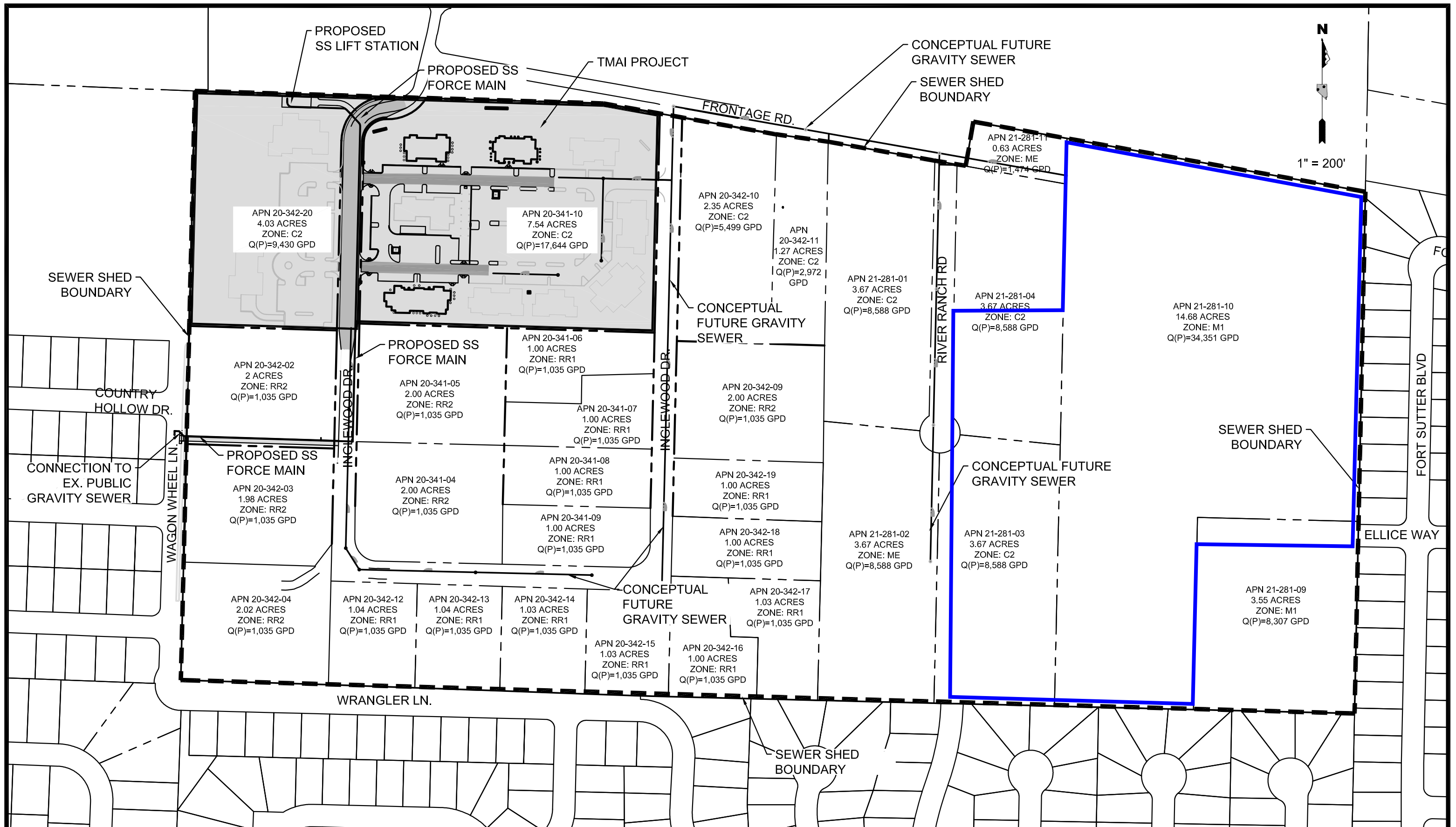
Aerial Map
River Ranch Apartments ZMA/CUP
September 2022

WOOD RODGERS
BUILDING RELATIONSHIPS ONE PROJECT AT A TIME
1361 Corporate Boulevard Tel: 775.823.4068
Reno, NV 89502 Fax: 775.823.4066



LEGEND

AREA LIMITS	---
IDENTIFIED DEVELOPMENT	---
4" SEWER LINE	---
6" SANITARY SEWER LINE	---
8" SANITARY SEWER LINE	---
10" SANITARY SEWER LINE	---
12" SANITARY SEWER LINE	---
14" SANITARY SEWER LINE	---
16" SANITARY SEWER LINE	---
18" SANITARY SEWER LINE	---
SANITARY SEWER FORCE MAIN	---
NOTE:	
ERC AND ACREAGE SHOWN ARE FOR ULTIMATE BUILD OUT CONDITIONS	



SCALE: 1"=200'	DESIGNED BY: CH,CM
JOB #: 1-30638	CHECKED BY: CH
Copyright SUMMIT ENG 2018	DRAWN BY: chayes
N:\DWGS\J30638_Meadows\Civil\Sewer\TMAI_SEWERSHED.DWG	

TMAI PHASE 1 SANITARY SEWER REPORT SEWERSHED

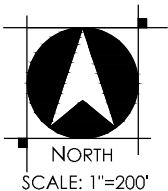
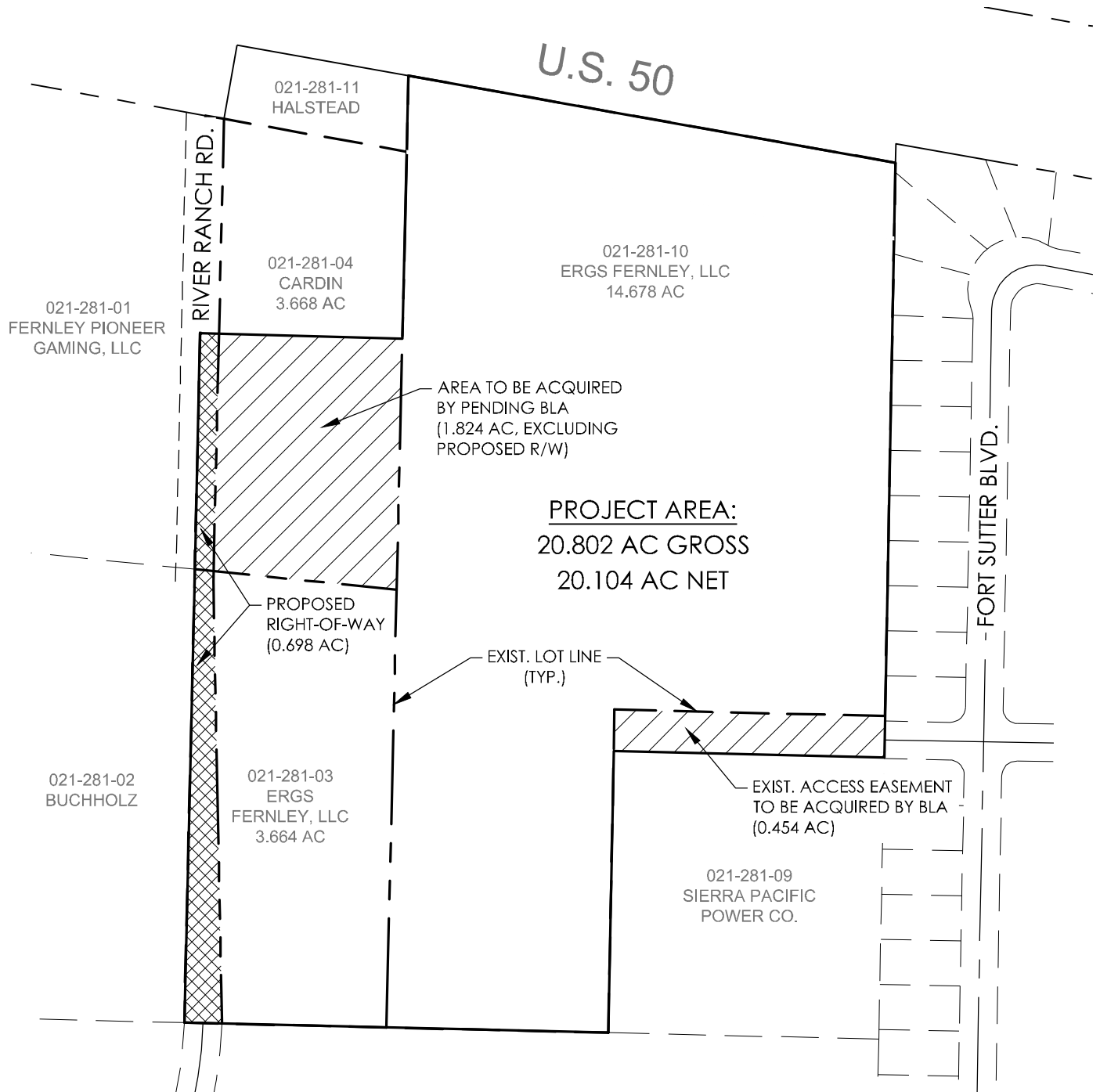
SHEET
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OF
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ZMA / CUP FOR RIVER RANCH APARTMENTS

PARCEL AREAS

FERNLEY, NEVADA

SEPTEMBER 2022



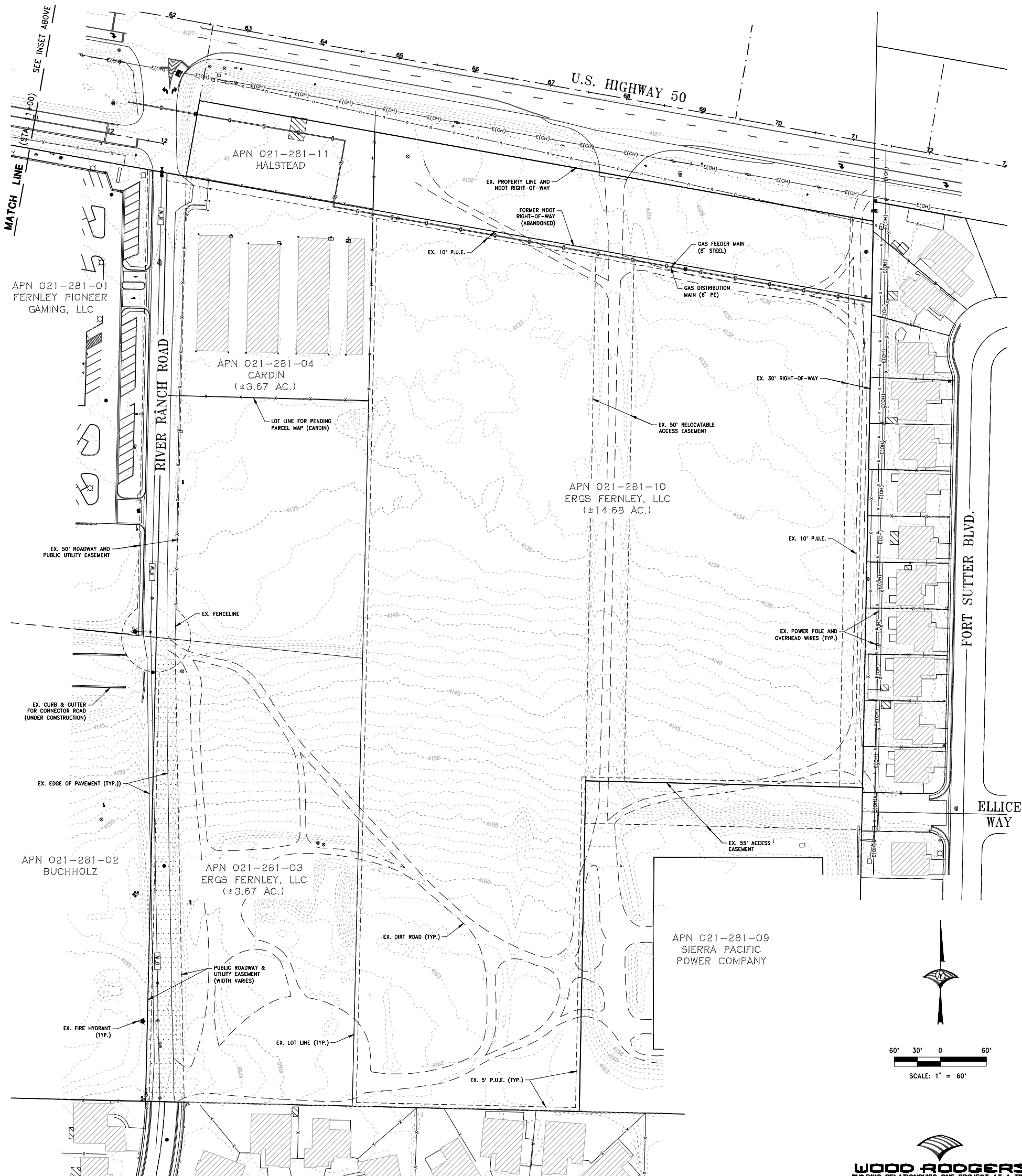
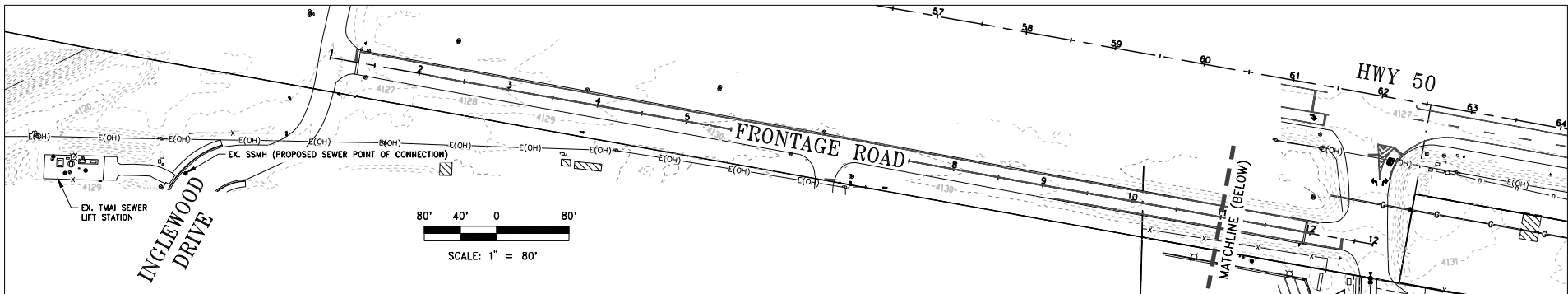
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BUILDING RELATIONSHIPS ONE PROJECT AT A TIME
1961 Corporate Boulevard Tel 775.823.4068
Reno, NV 89502 Fax 775.823.4066

RIVER RANCH APARTMENTS
EXISTING CONDITIONS
ERGS, INC.

FERNLEY

NEVADA

AUGUST 29, 2022



NOTE: BASE SURVEY AND TOPOGRAPHY PREPARED BY WOOD RODGERS, INC. (RENO). DATE OF PHOTOGRAPHY: JUNE 30, 2022.

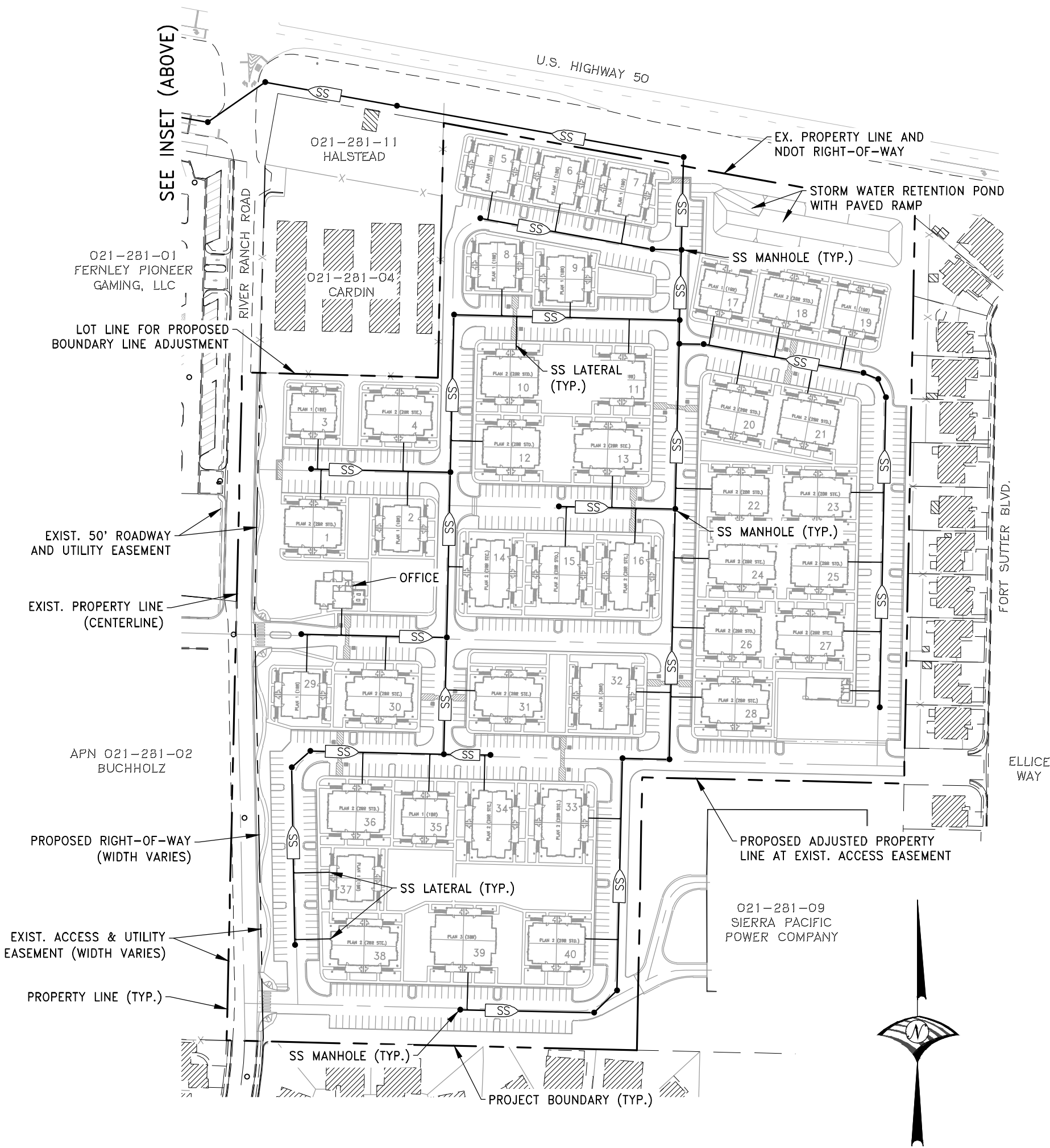
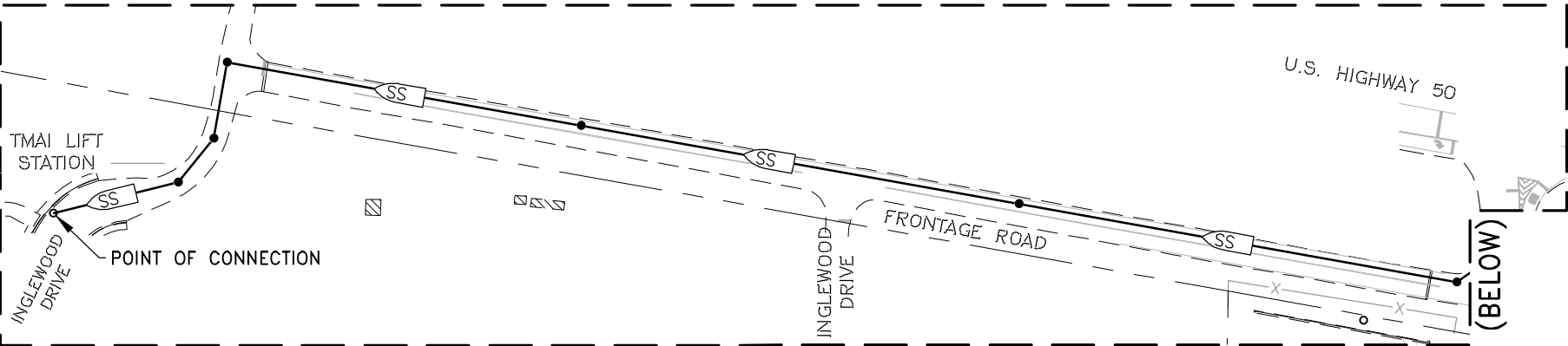
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1961 Corporate Boulevard Tel 775.823.4088
Reno, NV 89502 Fax 775.823.4086

PRELIMINARY SANITARY SEWER EXHIBIT RIVER RANCH APARTMENTS

ERGS FERNLEY, LLC

FERNLEY, NEVADA

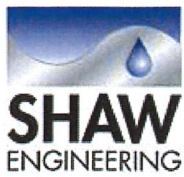
SEPTEMBER, 2022



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1301 Corporate Boulevard Tel 775.823.4068
Reno, NV 89502 Fax 775.823.4066

APPENDIX B

SEWER DISCOVERY FOR RIVER RANCH APARTMENTS



TO: Derek Starkey, P.E.

DATE: September 13, 2022

FROM: Cody Black, P.E.

RE: 501 River Ranch Road Sewer Discovery CoF W&S2022.06.24

Summary:

The applicant has proposed the residential development and construction of 8 multi-family residential buildings composed of 320 units on 3 parcels. The existing City of Fernley sewer system is capable of serving the project; however, offsite extensions and upgrades are required. Wood Rodgers, Inc. is the consulting engineer for the 501 River Ranch Road Development and Shaw Engineering has been retained to provide an analysis of the development's impacts on the City of Fernley's sewer system.

Purpose:

The purpose of this discovery is to identify the offsite required sewer facility improvements to serve the project.

The Project is comprised of 3 parcels totaling 22.02± acres. The project is located within the City of Fernley's retail service territory south of Highway 50 and straddled by River Ranch Road and the Donner Trails Subdivision.

Discussion:

Project parcels are listed in Table 1 and are shown in Figure 1. Sewer capacity is available on a first-come, first-serve basis. The existing system is deemed to have sufficient capacity for the referenced project provided offsite facilities are constructed and permitted.

Table 1: Proposed Parcel Information

APN	Proposed Parcel-Use	Acreage±
021-281-03	Parcel 1 – Vacant - Commercial	3.67
021-281-04	Parcel 2 – General Industrial	3.67
021-281-10	Parcel 3 – Vacant – Industrial	14.68
Total Acres =		22.02

Project Sewage Peak Hour Flows:

Based on a similar project recently permitted in the City, the anticipated sewer flows for the 501 River Ranch Road development are estimated to be 317.83 ERC's for a total average day flow of 79,458 gpd (55.18 gpm) for a total average day flow of and peak hour flow of 238,374 gpd (165.54 gpm) with a peak hour factor (PHF) of 3. Per the 2009 Sewer Master Plan, 1 ERC equals 250 gpd. Table 2 lists the estimated project flows based on master planning criteria.

Table 2: 501 River Ranch Road Project Flows

Phase	Site Total ERC's	ADF (GPM/GPD)	PHF (GPM/GPD)
501 River Ranch Road	317.83	55.18/79,458	165.54/238,374

20 Vine Street
Reno, Nevada
89503

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775.
329.5559

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775.
329.5406

Email:
mail@
shawengineering
.com

Conclusions

Based on topography and previous planning efforts by neighboring developments, the project will need to extend offsite sewer mains from The Meadows at Inglewood (TMAI) development. In addition, the City's TMAI Lift Station will need to be upgraded to serve the project. Further analysis of the sewer shed and lift station will need to be performed during final design and permitting. Sewer flows from the TMAI Lift Station will flow through the Rolling Meadows, Farm District Road, and East Lift Stations (Figure 1).

Table 2: Infrastructure Capacity Analysis

Lift Station	Current Flow	Future Flow	Capacity
TMAI Lift Station	6.5 gpm	171 gpm	34 gpm
Rolling Meadows Lift Station	228 gpm	393 gpm	605 gpm
Farm District Road Lift Station	315 gpm	480 gpm	1,134* gpm
East Lift Station	1,963 gpm	2,128 gpm	4,765 gpm
East Wastewater Treatment Plant	1.67 MGD	1.91 MGD	3.05 MGD

*Estimated capacity after Phase II improvements, Fall 2022

Preliminary analysis determined nearby downstream infrastructure upgrades are required and other gravity mains, lift station(s), force main(s), and the East Wastewater Treatment Plant downstream of the TMAI Lift Station have sufficient capacity to serve the development.

The TMAI Lift Station was installed with a 2" Force Main and Grinder Pumps for Phase 1 operation. Due to the anticipated growth within the sewer shed, a 4" force main was installed to accommodate future flows up to 212 gpm with the replacement of the current grinder pumps with larger solids passing submersible pumps. The pipe report after development included represents the lift station operating with the 4" force main and upgraded pumps.

System capacity is available on a first-come, first-serve basis, and is secured once will-serve documents have been issued to the owner. Additional modeling will need to be performed again before will-serves are issued and NDEP approval is organized.

Permitting

The offsite gravity main extension will require NDOT permitting and possibly additional easement(s) from neighboring property owners. We highly recommend significant due diligence be pursued prior to moving forward with this project.

Assumptions and Final Design Guidance:

1. The applicant shall be responsible for all application, review, inspection, connection, permit, easements, and other fees pertinent to the project as adopted by the City of Fernley at the time of application.
2. Future development may alter the conclusions of this discovery. Capacity in the City of Fernley's system is available on a first-come, first-served basis, and commitment to providing service is not established until a contract for service is executed and all fees are paid.
3. All manholes are to be designed with only one outlet pipe.

4. Portions of the project will require gravity sewer lines to remain private. Final improvement plans shall delineate public vs. private infrastructure.
5. All sewer mains, existing and proposed, must not have depth to diameter ratios (d/D) exceeding 0.75.
6. Separation between manholes shall be no greater than 400 feet.
7. Manholes shall have a 0.10-foot drop from the entrance pipe to the outlet.
8. All new collection mains must be tested to determine the degree of leak potential.
9. All new manholes must be vacuum tested.
10. All residential lateral connections must be installed with tracer wire at no less than 2% slope and 4-Inches in diameter.
11. Cleanouts shall be placed at the property line or easement line for every connection.
12. All new mains must be inspected using sewer cameras to verify all laterals meet specifications following installation.
13. All new mains must be inspected for vertical and horizontal alignment to be compared with designed plans.
14. Pipe reports attached are created under the assumption that all downstream lift stations have capacity and only provide information on capacity of the collection system itself.

Attachments:

Figure 1: City of Fernley Sewer System

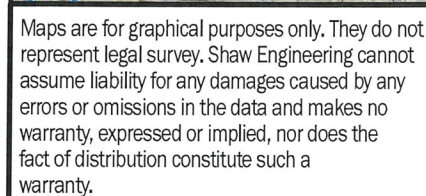
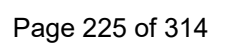


Figure 1: 501 River Ranch Road Sewer Infrastructure Impact



501 River Ranch Road - Peak Hour Pipe Report - Before Development						
ID	Full Depth (ft)	Length (ft)	Percent Slope (%)	Maximum Flow (gpm)	Maximum Velocity (ft/s)	Max.Depth/ Full Depth
0940-9	8	86	0.5	70.6	1.9	0.29
0991-11	8	86	0.4	71.2	2.0	0.28
1195-6	12	425	0.7	472.3	3.5	0.41
1196-10	24	83	0.3	875.6	1.2	0.51
1197-10	24	399	0.4	853.0	3.2	0.24
1198-10	24	349	0.4	809.5	3.2	0.24
1199-10	24	351	0.4	771.3	3.1	0.23
1200-8	24	172	0.3	768.8	3.0	0.24
1201-7	24	127	0.3	767.6	3.0	0.24
1202-8	24	401	0.4	750.6	3.2	0.22
1214-7	24	142	0.6	768.4	3.2	0.23
1639-12	15	262	0.1	30.3	0.9	0.12
1643-9	15	318	0.1	31.6	0.9	0.11
1874-6	8	260	0.2	35.7	1.1	0.26
1880-12	10	250	0.2	30.0	1.2	0.16
2014-10.5	42	11	0.5	773.8	3.0	0.11
2016-9	42	511	0.2	773.2	1.6	0.17
2017-9	42	465	0.1	1341.5	2.1	0.20
2018-9	42	487	0.1	1341.0	2.0	0.22
2019-6	42	515	0.1	1340.5	2.0	0.21
2020-9	42	589	0.1	1350.9	2.1	0.21
2021-9	42	509	0.1	1350.2	2.3	0.19
2022-9	42	20	1.2	1362.3	2.5	0.19
2023-9	42	573	0.1	1573.6	2.0	0.24
2024-9	42	587	0.1	1573.5	2.0	0.24
2025-9	42	493	0.1	1573.5	2.3	0.22
2026-9	42	486	0.1	1635.3	2.5	0.21
2027-9	42	528	0.1	1635.3	2.4	0.21
2028-9	42	216	0.1	1705.4	2.4	0.22
2029-9	42	598	0.1	1705.2	2.0	0.26
2030-9	42	598	0.1	1705.1	2.1	0.24
2031-9	42	416	0.1	1705.0	2.3	0.23
2032-9	42	47	0.1	1705.0	3.2	0.18
2033-7	42	29	0.4	1705.0	5.4	0.13
2034-9	42	15	6.7	1705.0	6.2	0.12
289-6	18	142	0.6	751.0	3.5	0.32
290-6	18	254	0.6	748.0	2.7	0.39
291-6	18	410	0.2	735.3	2.4	0.43
292-9	18	357	0.2	727.1	2.5	0.41
293-9	18	373	0.2	723.0	2.5	0.40
294-6	18	412	0.3	720.6	2.6	0.39
295-6	18	502	0.2	717.6	2.7	0.38
296-9	21	10	9.3	773.9	9.5	0.13
409-6	12	481	0.4	612.2	3.1	0.56

501 River Ranch Road - Peak Hour Pipe Report - Before Development						
ID	Full Depth (ft)	Length (ft)	Percent Slope (%)	Maximum Flow (gpm)	Maximum Velocity (ft/s)	Max.Depth/ Full Depth
874-1	8	176	0.3	81.7	1.9	0.32
875-12	8	212	0.9	71.5	2.2	0.26
955-12.5	8	81	1.6	82.5	3.0	0.23
CDT-21	12	11	22.6	891.8	4.0	0.61
CDT-217	12	4	26.8	222.4	12.3	0.10
CDT-221	44	239	0.9	1939.8	4.7	0.24
CDT-313	8	223	0.3	6.5	0.8	0.10
CDT-315	8	207	0.4	6.5	0.9	0.09
CDT-317	8	151	0.9	6.5	1.1	0.08
CDT-319	4	1064	0.2	210.4	7.2	0.73
CDT-321	8	228	0.6	6.5	1.0	0.09
CDT-323	8	262	0.5	6.5	1.0	0.09
P-1609	15	34	8.1	35.7	1.2	0.10

501 River Ranch Road - Peak Hour Pipe Report - After Development/LS Upgrade						
ID	Full Depth (ft)	Length (ft)	Percent Slope (%)	Maximum Flow (gpm)	Maximum Velocity (ft/s)	Max.Depth/ Full Depth
0940-9	8	86	0.5	260.8	2.8	0.58
0991-11	8	86	0.4	261.4	2.9	0.56
1195-6	12	425	0.7	471.6	3.5	0.41
1196-10	24	83	0.3	874.6	1.2	0.51
1197-10	24	399	0.4	852.1	3.2	0.24
1198-10	24	349	0.4	808.7	3.2	0.24
1199-10	24	351	0.4	770.6	3.1	0.23
1200-8	24	172	0.3	768.0	3.0	0.24
1201-7	24	127	0.3	766.8	3.0	0.24
1202-8	24	401	0.4	749.9	3.2	0.22
1214-7	24	142	0.6	767.7	3.2	0.23
1639-12	15	262	0.1	225.8	1.7	0.29
1643-9	15	318	0.1	226.7	1.4	0.36
1874-6	8	260	0.2	230.2	1.9	0.72
1880-12	10	250	0.2	231.0	2.1	0.47
2014-10.5	42	11	0.5	773.5	3.0	0.11
2016-9	42	511	0.2	772.9	1.6	0.17
2017-9	42	465	0.1	1341.5	2.1	0.20
2018-9	42	487	0.1	1341.0	2.0	0.22
2019-6	42	515	0.1	1340.4	2.0	0.21
2020-9	42	589	0.1	1350.7	2.1	0.21
2021-9	42	509	0.1	1349.7	2.3	0.19
2022-9	42	20	1.2	1361.8	2.5	0.19
2023-9	42	573	0.1	1573.1	2.0	0.24
2024-9	42	587	0.1	1573.0	2.0	0.24
2025-9	42	493	0.1	1572.9	2.3	0.22
2026-9	42	486	0.1	1634.7	2.5	0.21
2027-9	42	528	0.1	1634.7	2.4	0.21
2028-9	42	216	0.1	1704.7	2.4	0.22
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2034-9	42	15	6.7	1704.3	6.1	0.12
289-6	18	142	0.6	750.4	3.5	0.32
290-6	18	254	0.6	747.3	2.7	0.39
291-6	18	410	0.2	734.7	2.3	0.43
292-9	18	357	0.2	726.6	2.5	0.41
293-9	18	373	0.2	722.5	2.5	0.40
294-6	18	412	0.3	720.1	2.6	0.39
295-6	18	502	0.2	717.2	2.7	0.38
296-9	21	10	9.3	773.5	9.5	0.13
409-6	12	481	0.4	611.5	3.1	0.55

501 River Ranch Road - Peak Hour Pipe Report - After Development/LS Upgrade						
ID	Full Depth (ft)	Length (ft)	Percent Slope (%)	Maximum Flow (gpm)	Maximum Velocity (ft/s)	Max.Depth/ Full Depth
874-1	8	176	0.3	270.8	2.5	0.65
875-12	8	212	0.9	261.8	2.7	0.61
955-12.5	8	81	1.6	271.6	4.2	0.43
CDT-21	12	11	22.6	892.5	4.0	0.61
CDT-217	12	4	26.8	415.4	14.7	0.14
CDT-221	44	239	0.9	1939.5	4.7	0.24
CDT-313	8	223	0.3	172.0	2.0	0.53
CDT-315	8	207	0.4	172.0	2.3	0.48
CDT-317	8	151	0.9	172.0	2.8	0.42
CDT-319	4	1064	0.2	279.3	7.2	0.43
CDT-321	8	228	0.6	172.0	2.5	0.45
CDT-323	8	262	0.5	172.0	2.4	0.46
P-1609	15	34	8.1	230.2	2.5	0.22
CDT-303	8	439	0.8	165.5	2.6	0.43
CDT-305	8	422	0.7	165.5	2.6	0.43
CDT-307	8	337	0.8	165.5	2.6	0.43
CDT-309	8	302	0.8	165.5	2.6	0.43
CDT-311	8	301	0.7	165.5	2.5	0.45

APPENDIX C

HYDRAULIC CALCULATIONS

8" SDR35 PVC Main at 0.4% and 0.75D (River Ranch Apts)

Project Description	
Friction Method	Manning
Solve For	Formula Discharge
Input Data	
Roughness Coefficient	0.012
Channel Slope	0.004 ft/ft
Normal Depth	6.0 in
Diameter	8.0 in
Results	
Discharge	487,939 gal/day
Flow Area	0.3 ft ²
Wetted Perimeter	1.4 ft
Hydraulic Radius	2.4 in
Top Width	0.58 ft
Critical Depth	4.9 in
Percent Full	75.0 %
Critical Slope	0.007 ft/ft
Velocity	2.69 ft/s
Velocity Head	0.11 ft
Specific Energy	0.61 ft
Froude Number	0.680
Maximum Discharge	575,603 gal/day
Discharge Full	535,093 gal/day
Slope Full	0.003 ft/ft
Flow Type	Subcritical
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	50.0 %
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	6.0 in
Critical Depth	4.9 in
Channel Slope	0.004 ft/ft
Critical Slope	0.007 ft/ft

8" SDR35 PVC Main at 0.4% and 0.5D (River Ranch Apartments)

Project Description	
Friction Method	Manning
Solve For	Formula Discharge
Input Data	
Roughness Coefficient	0.012
Channel Slope	0.004 ft/ft
Normal Depth	4.0 in
Diameter	8.0 in
Results	
Discharge	267,546 gal/day
Flow Area	0.2 ft ²
Wetted Perimeter	1.0 ft
Hydraulic Radius	2.0 in
Top Width	0.67 ft
Critical Depth	3.6 in
Percent Full	50.0 %
Critical Slope	0.006 ft/ft
Velocity	2.37 ft/s
Velocity Head	0.09 ft
Specific Energy	0.42 ft
Froude Number	0.817
Maximum Discharge	575,603 gal/day
Discharge Full	535,093 gal/day
Slope Full	0.001 ft/ft
Flow Type	Subcritical
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	50.0 %
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	4.0 in
Critical Depth	3.6 in
Channel Slope	0.004 ft/ft
Critical Slope	0.006 ft/ft

TRAFFIC IMPACT STUDY FOR River Ranch Apartments

September 12, 2022

PREPARED FOR:
Wood Rogers, Inc

PREPARED BY:



Headway Transportation, LLC
5482 Longley Lane, Suite B, Reno, Nevada 89511
775.322.4300
www.HeadwayTransportation.com

YOUR QUESTIONS ANSWERED QUICKLY

Why did you perform this study?

This Traffic Impact Study evaluates the potential traffic impacts associated with the proposed River Ranch Apartments multifamily residential project in Fernley, Nevada. This study of potential transportation impacts was undertaken for planning purposes and to assist in determining what traffic controls or mitigations may be needed to reduce potential impacts, if any are found.

What does the project consist of?

The project consists of 320 multifamily housing units in the southeast quadrant of the US 50 / River Ranch Road intersection in Fernley, NV. The project location is shown in **Figure 1** and the preliminary site plan is shown in **Figure 2**.

How much traffic will the project generate?

The project is anticipated to generate approximately 2,157 Daily, 128 AM peak hour, and 163 PM peak hour trips to the external roadway network.

How will project traffic affect the roadway network?

Under Existing Plus Project and Future Year Plus Project conditions, the study intersections are expected to operate within policy level of service thresholds. The addition of project traffic does not have any significant impact on the studied intersections which would require mitigation.

Are any improvements recommended?

No improvements are recommended at the study intersections based on the addition of project traffic. The project should construct half street improvements and sidewalk along the property frontage of River Ranch Road.



LIST OF FIGURES

1. Project Location
2. Preliminary Site Plan
3. Existing Traffic Volumes, Lane Configurations, and Controls
4. Project Trip Distribution and Assignment
5. Existing Plus Project Traffic Volumes, Lane Configurations, and Controls
6. Future Year Traffic Volumes, Lane Configurations, and Controls
7. Future Year Plus Project Traffic Volumes, Lane Configurations, and Controls

LIST OF APPENDICES

- A. NDOT Crash Data History
- B. Existing Conditions LOS Calculations
- C. Existing Plus Project Conditions LOS Calculations
- D. Future Year Conditions LOS Calculations
- E. Future Year Plus Project Conditions LOS Calculations



INTRODUCTION

This Traffic Impact Study evaluates the potential traffic impacts associated with the proposed River Ranch multifamily residential project in Fernley, Nevada. This study of potential transportation impacts was undertaken for planning purposes and to assist in determining what traffic controls or mitigations may be needed to reduce potential impacts, if any are found. The location of the project is shown on **Figure 1** and the preliminary project site plan is shown on **Figure 2**.

Study Area and Evaluated Scenarios

The project consists of 320 multifamily housing units in the southeast quadrant of the US 50 / River Ranch Road intersection in Fernley, NV. The following intersections shown on **Figure 1** are included in this study:

1. US 50 / River Ranch Road
2. River Ranch Road / Project Access / Future Connector Road

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

- ▶ Existing Conditions
- ▶ Existing Plus Project Conditions
- ▶ Future Year Conditions (20-year horizon)
- ▶ Future Year Plus Project Conditions

ANALYSIS METHODOLOGY

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

Intersections

The complete methodology for intersection level of service analysis is established in *the Highway Capacity Manual (HCM)*, 6th Edition published by the Transportation Research Board (TRB). **Table 1** presents the delay thresholds for each level of service grade at signalized and unsignalized intersections.



Table 1: Level of Service Definition for Intersections

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

Source: *Highway Capacity Manual, 6th Edition*

Level of service calculations were performed for the study intersections using the Synchro 11 software package with analysis and results reported in accordance with *HCM 6th Edition* methodology.

Level of Service Policy

The *City of Fernley Comprehensive Master Plan* indicates that “the minimum Level of Service on all city-maintained roadways shall be LOS D.” This is consistent with Nevada Department of Transportation (NDOT) policies, which indicate that “*Level of Service “C” will be the design objective for capacity and under no circumstances will less than Level of Service “D” be accepted for site and non-site traffic.*”

Therefore, LOS D was used as the threshold for evaluating this project. Where intersections are currently experiencing LOS beyond the thresholds, conditions should not be exacerbated.

The level of service policies are not specific to minor side street approaches, but rather focus on maintaining quality operations on the mainline corridors. LOS “E” or “F” on a side street approach does not constitute an exceedance of the level of service policy as this is understood to be a common and manageable condition in the urban environment, particularly during peak hours. Overall intersection operation is the measure to which the level of service policy applies.

EXISTING CONDITIONS

Roadway Facilities

A brief description of the key roadways in the study area is provided below:

US 50 is classified by NDOT as an Other Principal Arterial in the project vicinity. The roadway has 4 through lanes, two in each direction of travel. The posted speed limit is 65 mph.



River Ranch Road is classified by NDOT as a Local Road. The roadway has 2 lanes, one in each direction of travel. The posted speed limit is 25 mph.

The intersection of US 50 / River Ranch Road is signalized for all movements except for the westbound through movement. This movement is unsignalized and is a free movement. The configuration is a signalized High – T.

Bicycle & Pedestrian Facilities

No bicycle lanes or sidewalks exist on US 50. No bicycle lanes exist on River Ranch Road, but a sidewalk exists south of Inglewood Drive for approximately 600 feet on the west side of River Ranch Road.

Transit Facilities

Transit services in Lyon County are offered to and from senior centers with advanced scheduling. Park-and-ride transit facilities are planned in the future.

Crash History

Vehicle crash data for the intersection of US 50 and River Ranch Road was provided by NDOT and includes information for the five-year period between 2016 and 2020 (the most current data available). Fifteen (15) crashes occurred during this time, six of which were property damage only, while nine crash resulted in an injury. The crash data is provided in **Appendix A**. The intersection was recently signalized to address former operational and safety concerns.

Traffic Volumes

AM and PM peak hour traffic volumes were collected at the intersection of US 50 / River Ranch Road on June 29 and June 30, 2022. The intersection counts were collected from 7:00 to 9:00 AM and 4:00 to 6:00 PM which are the typical commuter periods. The peak hours were identified as 7:15 to 8:15 AM and 4:30 to 5:30 PM. The traffic volumes used in this analysis include the existing truck percentage and peak hour factor. **Figure 3** shows the existing peak hour traffic volumes, lane configurations, and controls at the study intersections.

Comparison to Recent Counts

The collected AM and PM peak hour intersection turning movement volumes were compared to the following recent data sources:

- ▶ Hourly traffic volume data (2021) from the Nevada Department of Transportation (NDOT) Traffic Record Information Access (TRINA) database.



- ▶ Baseline Conditions on US 50 for the Nevada Pacific Boulevard Development Traffic Impact Study (Headway January 2022). That proposed development is off US 50 less than a mile to the east of River Ranch Road.

The volume data collected was higher than both sources; therefore, the counts were not adjusted.

Intersection Level of Service Analysis

Existing AM and PM peak hour intersection level of service analysis was performed for the study intersections using Synchro 11 analysis software. Signal timings were derived from the data collection videos of the intersection during the peak hours. **Table 2** shows the existing conditions level of service results, and the technical calculations are provided in **Appendix B**.

Table 2: Existing Intersection Level of Service

ID	Intersection	Intersection Control	AM Peak		PM Peak	
			LOS	Delay ¹	LOS	Delay ¹
1	US 50 / River Ranch Road	Signalized				
	Overall		A	6.2	A	7.0

Notes: 1. Delay is reported in seconds per vehicle for the overall intersection for signalized and all way stop controlled intersections, and for the worst approach/movement for side street stop-controlled intersections.

As shown in the table, the study intersection operates at LOS “A” which is within policy level of service thresholds for the existing conditions AM and PM peak hours.

PROJECT CONDITIONS

Trip Generation

Trip generation rates from the *Trip Generation Manual, 11th Edition* published by the Institute of Transportation Engineers (ITE) were used to develop trip generation estimates for the proposed project based on the Multifamily Housing (ITE Code 220) for 320 dwelling units. **Table 3** shows the Daily, AM peak hour, and PM peak hour trip generation estimates.



Table 3: Trip Generation Estimates

Land Use (ITE Code)	Size ¹	Trips ²				
		Daily	AM In/Out	AM	PM In/Out	PM
Multifamily Housing (220)	320 du	2,157	31 / 97	128	103 / 60	163

Notes: 1. du = dwelling units

2. Trips were calculated based on the following rates per du: Daily – 6.74; AM – 0.40 (24% in / 76% out); PM – 0.51 (63% in / 37% out)

Source: Headway Transportation, 2022

As shown in the table, the project is expected to generate 2,157 Daily, 128 AM peak hour, and 163 PM peak hour trips to the external roadway network.

Trip Distribution

Project trips were distributed to the adjacent roadway network based on existing traffic volumes, the locations of complimentary land uses, and anticipated travel patterns. Project trips were distributed based on the following:

- ▶ 65% to/from west via US 50
- ▶ 30% to/from the east via US 50
- ▶ 5% to/from the south via River Ranch Road

Figure 4 shows the project trip distribution and assignment.

Project Access

Project access is proposed on River Ranch Road, opposite a future planned roadway connecting to Inglewood Drive, shown on **Figure 1**. Two emergency vehicle access points are proposed, one on the southwest corner of the project site and the other connecting to Fort Sutter Boulevard on the east side of the project site. The proposed emergency vehicle access points are shown on **Figure 2**.

EXISTING PLUS PROJECT CONDITIONS

Traffic Volumes

Project trips (**Figure 4**) were added to the existing traffic volumes (**Figure 3**) to develop the Existing Plus Project conditions traffic volumes, shown on **Figure 5**.



Intersection Level of Service

AM and PM peak hour intersection level of service analysis was performed for the study intersections based on the Existing Plus Project traffic volumes, and the lane configurations and controls shown on **Figure 5**. **Table 4** shows the level of service results, and the technical calculations are provided in **Appendix C**.

Table 4: Existing Plus Project Intersection Level of Service

ID	Intersection Name	Intersection Control	Existing				Existing Plus Project			
			AM Peak		PM Peak		AM Peak		PM Peak	
			LOS	Delay ¹	LOS	Delay ¹	LOS	Delay ¹	LOS	Delay ¹
1	US 50 / River Ranch Rd	Signalized								
	Overall		A	6.2	A	7.0	A	7.8	A	8.6
2	River Ranch Road / Project Access	Side Street Stop								
	Overall		N/A				A	4.5	A	3.5
	Southbound Left		N/A				A	7.4	A	7.7
	Westbound Approach		N/A				A	9.2	A	9.5

Notes: 1. Delay is reported in seconds per vehicle for the overall intersection for signalized and all way stop controlled intersections, and for the worst approach/movement for side street stop-controlled intersections.

As shown in the table, the addition of project traffic will have minimal impact on the study intersections. All the study intersections continue to operate within LOS policy.

FUTURE YEAR CONDITIONS

Roadway Facilities

The *City of Fernley Transportation Master Plan* includes the Nevada Pacific Parkway Extension project, less than a mile to the east on US 50. The project is to “extend the existing Nevada Pacific Parkway south across the UPRR railroad to existing US 50A to provide additional north/south and I-80 connectivity.”

A road connection is planned to be built opposite the Project access and connect to Inglewood Drive, as shown on **Figure 1**. This future roadway is part of the Meadows at Inglewood project, a business/ retail park currently under construction.

Traffic Volume Forecasts

Future Year (20-year horizon) traffic volumes were developed considering regional growth rates, planned roadway projects such as the Nevada Pacific Parkway connection, and planned development in the area, including the *Nevada Pacific Boulevard Development Traffic Impact Study* (Headway January 2022). A



growth rate of 2% per year was applied to the existing traffic volumes, consistent with the annual growth rate used in the *Comprehensive Master Plan*, the *Transportation Master Plan*, and previous approved traffic impact studies. Project trips from the proposed Nevada Pacific Boulevard Development were added on top of the background growth. A road connection is planned to be built opposite the Project Access. Volumes for this connection were estimated using trip generation rates from the *Trip Generation Manual, 11th Edition* published by the Institute of Transportation Engineers (ITE) and added to future year volume forecasts. **Figure 6** shows the Future (20-year horizon) traffic volumes at the study intersections.

Intersection Level of Service

AM and PM peak hour intersection level of service analysis was performed for the study intersections using Synchro 11 analysis software. **Table 5** shows the Future Year conditions level of service results, and the technical calculations are provided in **Appendix D**.

Table 5: Future Year Intersection Level of Service

ID	Intersection	Intersection Control	AM Peak		PM Peak	
			LOS	Delay ¹	LOS	Delay ¹
1	US 50 / River Ranch Road	Signalized				
	Overall		A	6.6	A	8.2
2	River Ranch Road / Future Connector	Side Street Stop				
	Overall		A	0.1	A	0.3
	Northbound Left		A	7.4	A	0.0
	Eastbound Approach		A	9.6	B	10.1

Notes: 1. Delay is reported in seconds per vehicle for the overall intersection for signalized and all way stop controlled intersections, and for the worst approach/movement for side street stop-controlled intersections.

As shown in the table, all intersections are expected to operate within level of service policy in the Future Year conditions.

FUTURE YEAR PLUS PROJECT CONDITIONS

Traffic Volumes

Project trips (**Figure 4**) were added to the Future Year traffic volumes (**Figure 6**) to develop the Future Year Plus Project conditions traffic volumes, shown on **Figure 7**.

Intersection Level of Service

AM and PM peak hour intersection level of service analysis was performed for the study intersections based on the Future Year Plus Project traffic volumes. **Table 6** shows the level of service results, and the technical calculations are provided in **Appendix E**.



Table 6: Future Year Plus Project Intersection Level of Service

ID	Intersection Name	Intersection Control	Future				Future Plus Project			
			AM Peak		PM Peak		AM Peak		PM Peak	
			LOS	Delay ¹	LOS	Delay ¹	LOS	Delay ¹	LOS	Delay ¹
1	US 50 / River Ranch Rd	Signalized								
	Overall		A	6.6	A	8.2	A	8.3	B	10.4
2	River Ranch Road / Project Access / Future Connector	Side Street Stop								
	Overall		A	0.1	A	0.3	A	3.8	A	3.1
	Northbound Left		A	7.4	A	0.0	A	7.4	A	0
	Southbound Left		N/A				A	7.5	A	7.8
	Eastbound Approach		A	9.6	B	10.1	B	11.5	B	14.0
	Westbound Approach		N/A				A	9.5	A	9.9

Notes: 1. Delay is reported in seconds per vehicle for the overall intersection for signalized and all way stop controlled intersections, and for the worst approach/movement for side street stop-controlled intersections.

As shown in the table, all intersections are expected to operate within level of service policy in the Future Year Plus Project conditions.

CONCLUSIONS

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

- ▶ The proposed project consists of 320 multifamily housing units and is anticipated to generate approximately 2,157 Daily, 128 AM peak hour, and 163 PM peak hour trips to the external roadway network.
- ▶ Under all conditions, all study intersections will operate within the level of service policy. The addition of project traffic does not have any significant impact on the studied intersection operations which would require mitigation.
- ▶ No improvements are recommended at the study intersections based on the addition of project traffic.
- ▶ The project should construct half street improvements and sidewalk along the property frontage of River Ranch Road.



Study Location

- ① US 50 / River Ranch Rd
- ② River Ranch Rd / Future Rd / Project Access



RIVER RANCH APARTMENTS

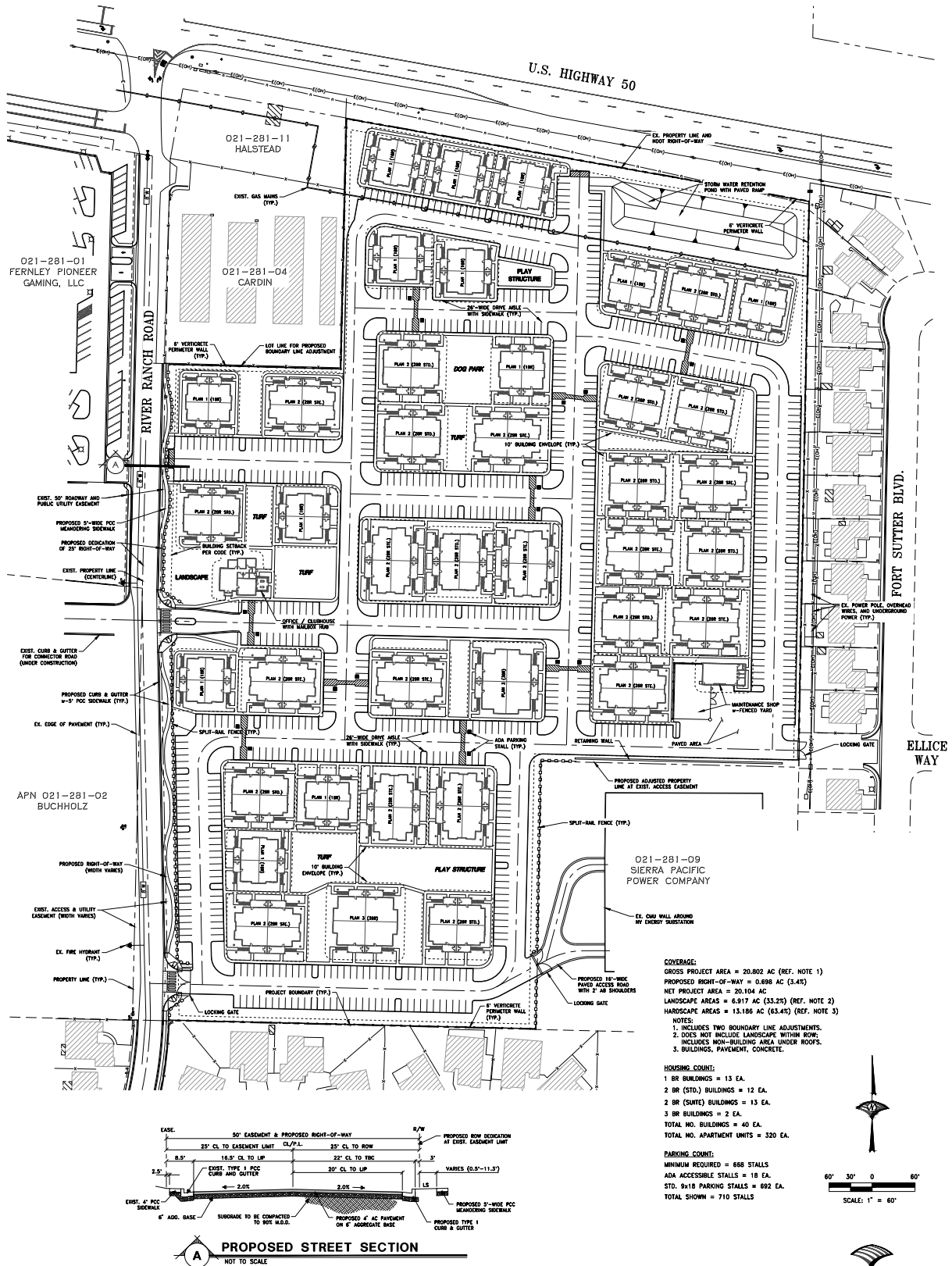
PRELIMINARY SITE PLAN

ERGS, INC.

FERNLEY

NEVADA

SEPTEMBER 3, 2022

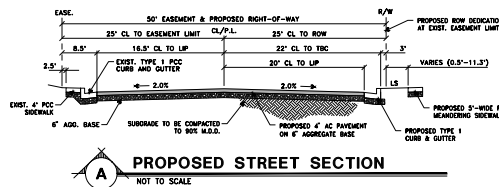
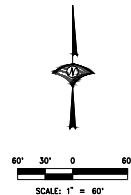


COVERAGE:
 GROSS PROJECT AREA = 20.802 AC (REF. NOTE 1)
 PROPOSED RIGHT-OF-WAY = 0.698 AC (8.4%)
 NET PROJECT AREA = 20.104 AC
 LANDSCAPE AREAS = 6.917 AC (33.2%) (REF. NOTE 2)
 HARDSCAPE AREAS = 13.186 AC (65.4%) (REF. NOTE 3)

NOTES:
 1. INCLUDES TWO BOUNDARY LINE ADJUSTMENTS.
 2. DOES NOT INCLUDE LANDSCAPE WITHIN ROW.
 3. INCLUDES NON-BUILDING AREA UNDER ROOFS.
 3. BUILDINGS, PAVEMENT, CONCRETE.

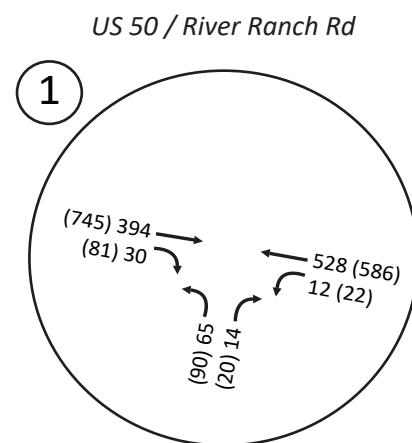
HOUSING COUNT:
 1 BR BUILDINGS = 13 EA.
 2 BR (STD.) BUILDINGS = 12 EA.
 2 BR (SUITE) BUILDINGS = 13 EA.
 3 BR BUILDINGS = 2 EA.
 TOTAL NO. BUILDINGS = 40 EA.
 TOTAL NO. APARTMENT UNITS = 320 EA.

PARKING COUNT:
 MINIMUM REQUIRED = 688 STALLS
 ADA ACCESSIBLE STALLS = 18 EA.
 STD. 9x18 PARKING STALLS = 692 EA.
 TOTAL SHOWN = 710 STALLS



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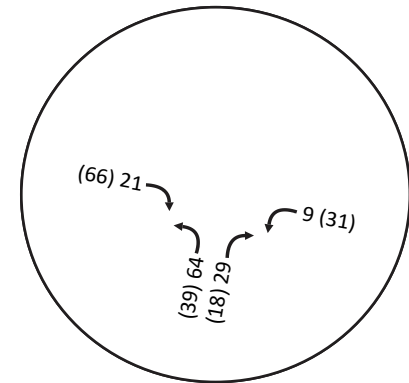
RIVER RANCH APTS





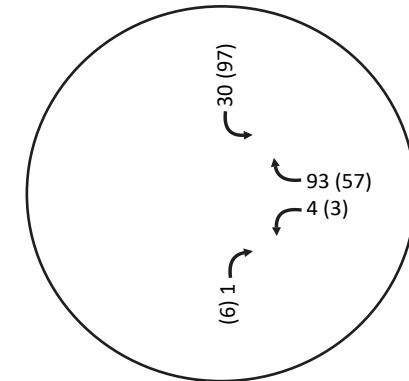
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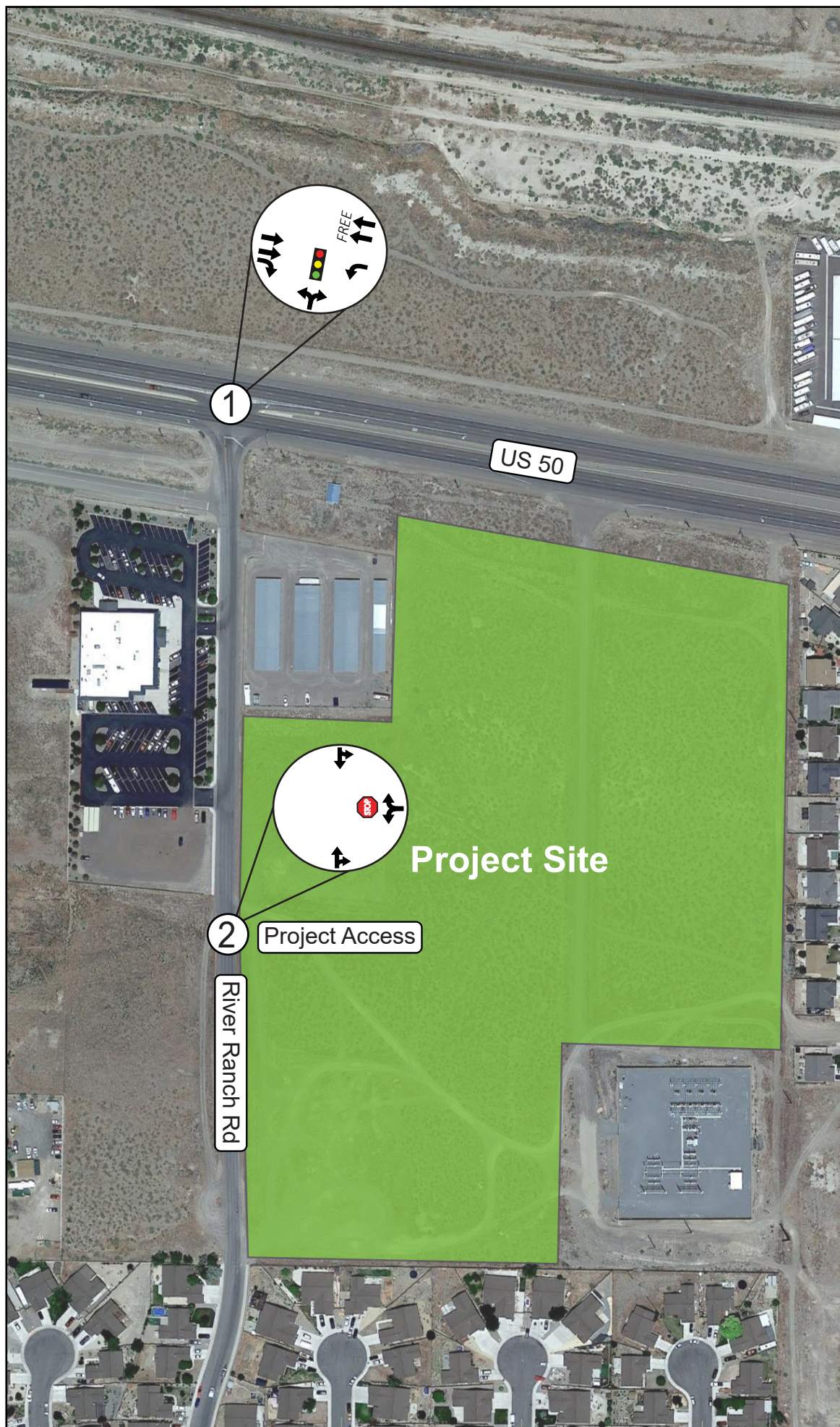
US 50 / River Ranch Rd



2

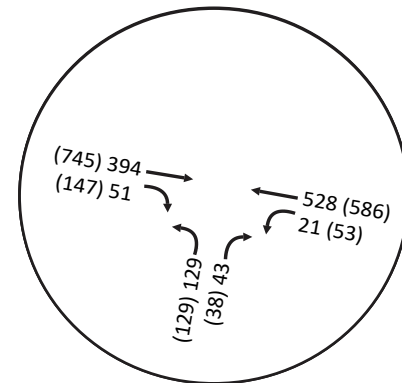
River Ranch Rd / Future Rd /
Project Access





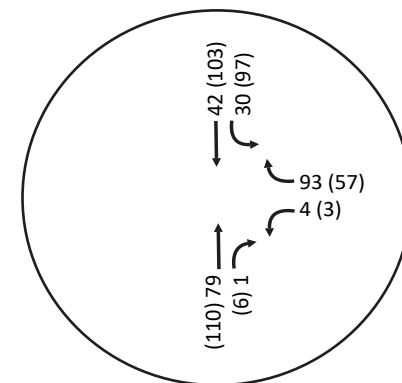
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US 50 / River Ranch Rd



2

River Ranch Rd / Project Access





1

US 50 / River Ranch Rd

2

River Ranch Rd / Future Rd

Figure 6

River Ranch Apartments

Traffic Impact Study

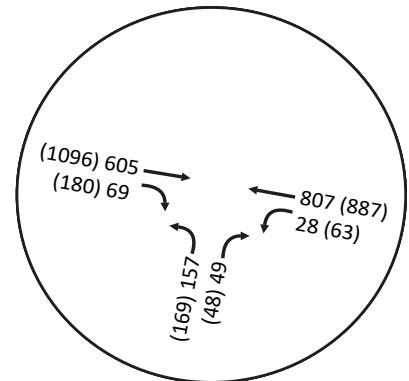
Page 24 of 34

Future Year Traffic Volumes, Lane Configurations, and Controls



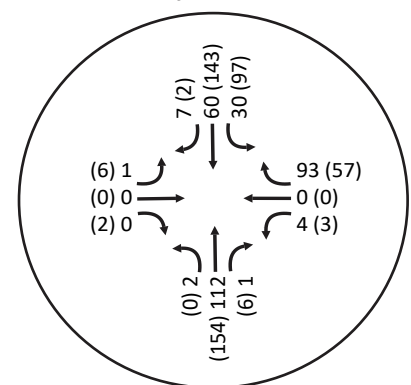
1

US 50 / River Ranch Rd



2

River Ranch Rd / Future Rd / Project Access



Appendix A

NDOT Crash Data



Crash Severity	Crash Date	Crash Year	Crash Time	Primary Street	Distance	Dir	Secondary Street	Weather	Fatalities	Injured	Property Damage Only	Injury Type	Crash Type	Total Vehicles
INJURY ACCIDENT	23-Nov-2016	2016	12:00 PM	US50A		AT INT	RIVER RANCH RD	CLOUDY		3		C	ANGLE	2
INJURY ACCIDENT	18-Mar-2016	2016	08:34 PM	RIVER RANCH RD		AT INT	US50A	CLEAR		1		A	ANGLE	2
PROPERTY DAMAGE ONLY	11-Apr-2016	2016	03:40 PM	RIVER RANCH RD		AT INT	US50A	CLEAR			PDO		ANGLE	2
INJURY ACCIDENT	20-Oct-2016	2016	02:00 PM	RIVER RANCH RD		AT INT	US50A	CLEAR		1		A	ANGLE	2
INJURY ACCIDENT	29-Apr-2017	2017	12:10 PM	US50A		AT INT	RIVER RANCH RD	CLEAR		3		A	ANGLE	2
INJURY ACCIDENT	7-Aug-2017	2017	04:17 PM	RIVER RANCH RD		AT INT	US50A	CLEAR		3		B	ANGLE	2
PROPERTY DAMAGE ONLY	4-Dec-2018	2018	06:01 PM	US50A	528	E	RIVER RANCH RD	FOG, SMOG, SMOKE			PDO		NON-COLLISION	1
PROPERTY DAMAGE ONLY	5-Jan-2018	2018	11:26 AM	US50A		AT INT	RIVER RANCH RD	CLEAR			PDO		ANGLE	2
PROPERTY DAMAGE ONLY	28-Oct-2018	2018	08:17 PM	US50A		AT INT	RIVER RANCH RD	CLEAR			PDO		ANGLE	2
INJURY ACCIDENT	23-May-2018	2018	06:17 PM	US50A		AT INT	RIVER RANCH RD	CLEAR		2		C	ANGLE	2
INJURY ACCIDENT	22-Jan-2018	2018	11:45 AM	RIVER RANCH RD		AT INT	US50A	CLEAR		2		C	ANGLE	2
PROPERTY DAMAGE ONLY	20-Feb-2018	2018	06:20 PM	RIVER RANCH RD		AT INT	US50A	CLOUDY			PDO		ANGLE	2
INJURY ACCIDENT	13-Apr-2018	2018	01:05 PM	RIVER RANCH RD		AT INT	US50A	CLEAR		3		A	ANGLE	2
INJURY ACCIDENT	2-Sep-2019	2019	04:31 PM	US50A	300	E	RIVER RANCH RD	CLOUDY		2		C	ANGLE	2
PROPERTY DAMAGE ONLY	22-Aug-2018	2018	09:50 AM	RIVER RANCH RD	150	S	INGLEWOOD DR	CLEAR			PDO		ANGLE	2
									Sum: 0	Sum: 20	Count: 6			
									Count: 0	Count: 9				
									Total:	15				

V1 Type	V1 Dir	V1 Driver Age	V1 Lane Num	V1 Action	V1 Driver Factors	V1 Driver Distracted	V1 Vehicle Factors	V1 Most Harmful Event	V1 All Events
SEDAN	N	77		TURNING LEFT	APPARENTLY NORMAL		FAILED TO YIELD RIGHT OF WAY		
SEDAN, 4 DOOR	N	18		TURNING LEFT	APPARENTLY NORMAL		FAILED TO YIELD RIGHT OF WAY		
SEDAN, 4 DOOR	N	32		TURNING LEFT	APPARENTLY NORMAL		FAILED TO YIELD RIGHT OF WAY		
SEDAN	N	31		TURNING LEFT	APPARENTLY NORMAL		FAILED TO YIELD RIGHT OF WAY		
PICKUP	W	74		TURNING LEFT	PHYSICAL IMPAIRMENT: FELL ASLEEP, FAINTED, FATIGUED, ETC.: OTHER IMPROPER DRIVING		FAILED TO YIELD RIGHT OF WAY		
SEDAN, 4 DOOR	N	17		GOING STRAIGHT	APPARENTLY NORMAL		FAILED TO YIELD RIGHT OF WAY		
CARRY-ALL	W	60	2	GOING STRAIGHT	DRUG INVOLVEMENT		DRIVING TOO FAST FOR CONDITIONS	OVERTURN/ROLLOVER	RAN OFF ROAD RIGHT: OVERTURN/ROLLOVER
SEDAN	E	68		GOING STRAIGHT	OTHER IMPROPER DRIVING		OTHER IMPROPER DRIVING		SLOW/STOPPED VEHICLE
PICKUP	N	70	L1	TURNING LEFT	APPARENTLY NORMAL		FAILED TO YIELD RIGHT OF WAY	MOTOR VEHICLE IN TRANSPORT	
CARRY-ALL	N	79	2	TURNING LEFT	APPARENTLY NORMAL		FAILED TO YIELD RIGHT OF WAY	MOTOR VEHICLE IN TRANSPORT	
HATCHBACK, 4 DOOR	N	74		TURNING LEFT	APPARENTLY NORMAL		FAILED TO YIELD RIGHT OF WAY		
PICKUP	N	71		TURNING LEFT	APPARENTLY NORMAL		FAILED TO YIELD RIGHT OF WAY		
SEDAN, 4 DOOR	N	70	2	TURNING LEFT	APPARENTLY NORMAL		FAILED TO YIELD RIGHT OF WAY		NOT REPORTED
SEDAN	W	70	L1	TURNING LEFT	APPARENTLY NORMAL		FAILED TO YIELD RIGHT OF WAY	MOTOR VEHICLE IN TRANSPORT	
PICKUP	E			TURNING LEFT	APPARENTLY NORMAL		FAILED TO YIELD RIGHT OF WAY	MOTOR VEHICLE IN TRANSPORT	

V2 Type	V2 Dir	V2 Driver Age	V2 Lane Num	V2 Action	V2 Driver Factors	V2 Driver Distracted	V2 Vehicle Factors	V2 Most Harmful Event	V2 All Events	First Harmful Event	Nonmotorist Factors	Factors Roadway	Lighting	HWY Factors	Agency	Accident Rec Num
PICKUP	E	62		GOING STRAIGHT	APPARENTLY NORMAL							DRY	DAYLIGHT	NONE	NHP	2340877
PICKUP	E	51		GOING STRAIGHT	APPARENTLY NORMAL							DRY	DARK - SPOT LIGHTING	NONE	NHP	2235145
HATCHBACK, 4 DOOR	E	42		GOING STRAIGHT	APPARENTLY NORMAL							DRY	DAYLIGHT	NONE	NHP	2236481
CARRY-ALL	E	39		GOING STRAIGHT	APPARENTLY NORMAL		UNKNOWN					DRY	DAYLIGHT	NONE	NHP	2338887
UTILITY	E	42		GOING STRAIGHT	APPARENTLY NORMAL							DRY	DAYLIGHT	NONE	NHP	2306640
SEDAN, 4 DOOR	E	21		GOING STRAIGHT	APPARENTLY NORMAL							DRY	DAYLIGHT	OTHER HIGHWAY	NHP	2395523
										RAN OFF ROAD RIGHT		SNOW	DARK - SPOT LIGHTING	WET, ICY, SNOW, SLUSH	NHP	3112819
UTILITY	N	46		STOPPED	APPARENTLY NORMAL							DRY	DAYLIGHT	NONE	NHP	2418531
SEDAN	W	19	L1	TURNING LEFT	APPARENTLY NORMAL			MOTOR VEHICLE IN TRANSPORT		MOTOR VEHICLE IN TRANSPORT		DRY	DARK - SPOT LIGHTING	NONE	NHP	3107221
SEDAN, 4 DOOR	E	55	2	GOING STRAIGHT	APPARENTLY NORMAL			MOTOR VEHICLE IN TRANSPORT		MOTOR VEHICLE IN TRANSPORT		DRY	DAYLIGHT	NONE	NHP	3063380
SEDAN, 4 DOOR	E	30		GOING STRAIGHT	APPARENTLY NORMAL		UNKNOWN					DRY	DAYLIGHT	NONE	NHP	2419549
PICKUP	E	29		GOING STRAIGHT	APPARENTLY NORMAL							DRY	DARK - SPOT LIGHTING	NONE	NHP	2421201
VAN	E	88	2	GOING STRAIGHT	APPARENTLY NORMAL				NOT REPORTED			DRY	DAYLIGHT	NONE	NHP	2522878
SEDAN	E	35	1	GOING STRAIGHT	APPARENTLY NORMAL			SLOW/STOPPED VEHICLE	SLOW/STOPPED VEHICLE	SLOW/STOPPED VEHICLE		DRY	DAYLIGHT	NONE	NHP	3150699
PICKUP	S			GOING STRAIGHT	APPARENTLY NORMAL										LYSO	3096496

Appendix B

Existing Conditions

LOS Calculations



HCM 6th Signalized Intersection Summary

1: River Ranch Rd & US 50

09/08/2022

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↗	↙	↑↑	↘	
Traffic Volume (veh/h)	394	30	12	528	65	14
Future Volume (veh/h)	394	30	12	528	65	14
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1796	1796	1796	1796	1796	1796
Adj Flow Rate, veh/h	402	31	12	539	66	14
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	7	7	7	7	7	7
Cap, veh/h	944	421	27	1705	118	25
Arrive On Green	0.28	0.28	0.02	0.50	0.09	0.09
Sat Flow, veh/h	3503	1522	1711	3503	1366	290
Grp Volume(v), veh/h	402	31	12	539	81	0
Grp Sat Flow(s),veh/h/ln	1706	1522	1711	1706	1676	0
Q Serve(g_s), s	2.3	0.4	0.2	2.3	1.1	0.0
Cycle Q Clear(g_c), s	2.3	0.4	0.2	2.3	1.1	0.0
Prop In Lane		1.00	1.00		0.81	0.17
Lane Grp Cap(c), veh/h	944	421	27	1705	145	0
V/C Ratio(X)	0.43	0.07	0.44	0.32	0.56	0.00
Avail Cap(c_a), veh/h	4236	1889	708	6354	1387	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	7.2	6.5	11.8	3.6	10.6	0.0
Incr Delay (d2), s/veh	0.3	0.1	10.6	0.1	3.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	0.1	0.0	0.4	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	7.5	6.5	22.4	3.7	13.9	0.0
LnGrp LOS	A	A	C	A	B	A
Approach Vol, veh/h	433			551	81	
Approach Delay, s/veh	7.4			4.1	13.9	
Approach LOS	A			A	B	
Timer - Assigned Phs		2	3	4		8
Phs Duration (G+Y+Rc), s		7.1	5.4	11.7		17.1
Change Period (Y+Rc), s		5.0	5.0	5.0		5.0
Max Green Setting (Gmax), s		20.0	10.0	30.0		45.0
Max Q Clear Time (g_c+I1), s		3.1	2.2	4.3		4.3
Green Ext Time (p_c), s		0.2	0.0	2.4		3.3
Intersection Summary						
HCM 6th Ctrl Delay			6.2			
HCM 6th LOS			A			

HCM 6th Signalized Intersection Summary

1: River Ranch Rd & US 50

09/08/2022

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↗	↙	↑↑	↘	
Traffic Volume (veh/h)	745	81	22	586	90	20
Future Volume (veh/h)	745	81	22	586	90	20
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	793	86	23	623	96	21
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	1402	625	51	2058	143	31
Arrive On Green	0.40	0.40	0.03	0.58	0.10	0.10
Sat Flow, veh/h	3618	1572	1767	3618	1407	308
Grp Volume(v), veh/h	793	86	23	623	118	0
Grp Sat Flow(s),veh/h/ln	1763	1572	1767	1763	1730	0
Q Serve(g_s), s	5.6	1.1	0.4	2.8	2.1	0.0
Cycle Q Clear(g_c), s	5.6	1.1	0.4	2.8	2.1	0.0
Prop In Lane		1.00	1.00		0.81	0.18
Lane Grp Cap(c), veh/h	1402	625	51	2058	176	0
V/C Ratio(X)	0.57	0.14	0.45	0.30	0.67	0.00
Avail Cap(c_a), veh/h	3325	1483	556	4988	1088	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	7.4	6.1	15.2	3.3	13.8	0.0
Incr Delay (d2), s/veh	0.4	0.1	6.1	0.1	4.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.1	0.2	0.0	0.9	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	7.8	6.2	21.3	3.4	18.1	0.0
LnGrp LOS	A	A	C	A	B	A
Approach Vol, veh/h	879			646	118	
Approach Delay, s/veh	7.6			4.1	18.1	
Approach LOS	A			A	B	
Timer - Assigned Phs		2	3	4		8
Phs Duration (G+Y+Rc), s		8.2	5.9	17.7		23.6
Change Period (Y+Rc), s		5.0	5.0	5.0		5.0
Max Green Setting (Gmax), s		20.0	10.0	30.0		45.0
Max Q Clear Time (g_c+I1), s		4.1	2.4	7.6		4.8
Green Ext Time (p_c), s		0.3	0.0	5.1		3.9
Intersection Summary						
HCM 6th Ctrl Delay			7.0			
HCM 6th LOS			A			

Appendix C

Existing Plus Project Conditions

LOS Calculations



HCM 6th Signalized Intersection Summary

1: River Ranch Rd & US 50

09/08/2022

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↗	↙	↑↑	↘	
Traffic Volume (veh/h)	394	51	21	528	129	43
Future Volume (veh/h)	394	51	21	528	129	43
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1796	1796	1796	1796	1796	1796
Adj Flow Rate, veh/h	402	52	21	539	132	44
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	7	7	7	7	7	7
Cap, veh/h	904	403	46	1641	175	58
Arrive On Green	0.26	0.26	0.03	0.48	0.14	0.14
Sat Flow, veh/h	3503	1522	1711	3503	1238	413
Grp Volume(v), veh/h	402	52	21	539	177	0
Grp Sat Flow(s),veh/h/ln	1706	1522	1711	1706	1660	0
Q Serve(g_s), s	2.6	0.7	0.3	2.6	2.7	0.0
Cycle Q Clear(g_c), s	2.6	0.7	0.3	2.6	2.7	0.0
Prop In Lane		1.00	1.00		0.75	0.25
Lane Grp Cap(c), veh/h	904	403	46	1641	235	0
V/C Ratio(X)	0.44	0.13	0.45	0.33	0.75	0.00
Avail Cap(c_a), veh/h	3867	1725	646	5801	1254	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	8.1	7.4	12.7	4.2	10.9	0.0
Incr Delay (d2), s/veh	0.3	0.1	6.8	0.1	4.9	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.1	0.2	0.0	1.0	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	8.5	7.5	19.5	4.4	15.8	0.0
LnGrp LOS	A	A	B	A	B	A
Approach Vol, veh/h	454			560	177	
Approach Delay, s/veh	8.3			4.9	15.8	
Approach LOS	A			A	B	
Timer - Assigned Phs		2	3	4		8
Phs Duration (G+Y+Rc), s		8.7	5.7	12.0		17.7
Change Period (Y+Rc), s		5.0	5.0	5.0		5.0
Max Green Setting (Gmax), s		20.0	10.0	30.0		45.0
Max Q Clear Time (g_c+I1), s		4.7	2.3	4.6		4.6
Green Ext Time (p_c), s		0.4	0.0	2.4		3.3
Intersection Summary						
HCM 6th Ctrl Delay			7.8			
HCM 6th LOS			A			

HCM 6th TWSC
2: Project Access & River Ranch Rd

09/08/2022

Intersection						
Int Delay, s/veh	4.5					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	4	93	79	1	30	42
Future Vol, veh/h	4	93	79	1	30	42
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	103	88	1	33	47
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	202	89	0	0	89	0
Stage 1	89	-	-	-	-	-
Stage 2	113	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	787	969	-	-	1506	-
Stage 1	934	-	-	-	-	-
Stage 2	912	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	770	969	-	-	1506	-
Mov Cap-2 Maneuver	770	-	-	-	-	-
Stage 1	934	-	-	-	-	-
Stage 2	892	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	9.2	0		3.1		
HCM LOS	A					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	959	1506	-	
HCM Lane V/C Ratio	-	-	0.112	0.022	-	
HCM Control Delay (s)	-	-	9.2	7.4	0	
HCM Lane LOS	-	-	A	A	A	
HCM 95th %tile Q(veh)	-	-	0.4	0.1	-	

HCM 6th Signalized Intersection Summary

1: River Ranch Rd & US 50

09/08/2022

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↗	↙	↑↑	↘	
Traffic Volume (veh/h)	745	147	53	586	129	38
Future Volume (veh/h)	745	147	53	586	129	38
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	793	156	56	623	137	40
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	1349	602	105	2052	183	54
Arrive On Green	0.38	0.38	0.06	0.58	0.14	0.14
Sat Flow, veh/h	3618	1572	1767	3618	1324	386
Grp Volume(v), veh/h	793	156	56	623	178	0
Grp Sat Flow(s),veh/h/ln	1763	1572	1767	1763	1720	0
Q Serve(g_s), s	6.4	2.4	1.1	3.2	3.6	0.0
Cycle Q Clear(g_c), s	6.4	2.4	1.1	3.2	3.6	0.0
Prop In Lane		1.00	1.00		0.77	0.22
Lane Grp Cap(c), veh/h	1349	602	105	2052	238	0
V/C Ratio(X)	0.59	0.26	0.53	0.30	0.75	0.00
Avail Cap(c_a), veh/h	2955	1318	494	4432	961	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	8.8	7.6	16.3	3.8	14.8	0.0
Incr Delay (d2), s/veh	0.4	0.2	4.1	0.1	4.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	0.4	0.4	0.1	1.5	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	9.2	7.8	20.4	3.9	19.4	0.0
LnGrp LOS	A	A	C	A	B	A
Approach Vol, veh/h	949			679	178	
Approach Delay, s/veh	9.0			5.2	19.4	
Approach LOS	A			A	B	
Timer - Assigned Phs		2	3	4		8
Phs Duration (G+Y+Rc), s		10.0	7.1	18.7		25.8
Change Period (Y+Rc), s		5.0	5.0	5.0		5.0
Max Green Setting (Gmax), s		20.0	10.0	30.0		45.0
Max Q Clear Time (g_c+I1), s		5.6	3.1	8.4		5.2
Green Ext Time (p_c), s		0.4	0.0	5.3		3.9
Intersection Summary						
HCM 6th Ctrl Delay			8.6			
HCM 6th LOS			A			

HCM 6th TWSC
2: Project Access & River Ranch Rd

09/08/2022

Intersection						
Int Delay, s/veh	3.5					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	3	57	110	6	97	103
Future Vol, veh/h	3	57	110	6	97	103
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	67	129	7	114	121
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	482	133	0	0	136	0
Stage 1	133	-	-	-	-	-
Stage 2	349	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	543	916	-	-	1448	-
Stage 1	893	-	-	-	-	-
Stage 2	714	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	497	916	-	-	1448	-
Mov Cap-2 Maneuver	497	-	-	-	-	-
Stage 1	893	-	-	-	-	-
Stage 2	654	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	9.5	0		3.7		
HCM LOS	A					
Minor Lane/Major Mvmt	NBT	NBRWBLn1		SBL	SBT	
Capacity (veh/h)	-	-		879	1448	
HCM Lane V/C Ratio	-	-		0.08	0.079	
HCM Control Delay (s)	-	-		9.5	7.7	
HCM Lane LOS	-	-		A	A	
HCM 95th %tile Q(veh)	-	-		0.3	0.3	

Appendix D

Future Year Conditions

LOS Calculations



HCM 6th Signalized Intersection Summary

1: River Ranch Rd & US 50

09/08/2022

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↗	↙	↑↑	↘	
Traffic Volume (veh/h)	605	48	19	807	93	20
Future Volume (veh/h)	605	48	19	807	93	20
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1796	1796	1796	1796	1796	1796
Adj Flow Rate, veh/h	617	49	19	823	95	20
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	7	7	7	7	7	7
Cap, veh/h	1183	528	42	1862	144	30
Arrive On Green	0.35	0.35	0.02	0.55	0.11	0.11
Sat Flow, veh/h	3503	1522	1711	3503	1372	289
Grp Volume(v), veh/h	617	49	19	823	116	0
Grp Sat Flow(s),veh/h/ln	1706	1522	1711	1706	1676	0
Q Serve(g_s), s	4.1	0.6	0.3	4.1	1.9	0.0
Cycle Q Clear(g_c), s	4.1	0.6	0.3	4.1	1.9	0.0
Prop In Lane		1.00	1.00		0.82	0.17
Lane Grp Cap(c), veh/h	1183	528	42	1862	176	0
V/C Ratio(X)	0.52	0.09	0.45	0.44	0.66	0.00
Avail Cap(c_a), veh/h	3575	1595	597	5363	1170	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	7.5	6.3	13.8	3.9	12.3	0.0
Incr Delay (d2), s/veh	0.4	0.1	7.5	0.2	4.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.1	0.2	0.0	0.8	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	7.8	6.4	21.3	4.1	16.5	0.0
LnGrp LOS	A	A	C	A	B	A
Approach Vol, veh/h	666			842	116	
Approach Delay, s/veh	7.7			4.4	16.5	
Approach LOS	A			A	B	
Timer - Assigned Phs		2	3	4		8
Phs Duration (G+Y+Rc), s		8.0	5.7	14.9		20.6
Change Period (Y+Rc), s		5.0	5.0	5.0		5.0
Max Green Setting (Gmax), s		20.0	10.0	30.0		45.0
Max Q Clear Time (g_c+I1), s		3.9	2.3	6.1		6.1
Green Ext Time (p_c), s		0.3	0.0	3.8		5.6
Intersection Summary						
HCM 6th Ctrl Delay			6.6			
HCM 6th LOS			A			

HCM 6th TWSC
2: River Ranch Rd & Future Rd

09/08/2022

Intersection						
Int Delay, s/veh	0.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	1	0	2	112	60	7
Future Vol, veh/h	1	0	2	112	60	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	0	2	124	67	8
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	199	71	75	0	-	0
Stage 1	71	-	-	-	-	-
Stage 2	128	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	790	991	1524	-	-	-
Stage 1	952	-	-	-	-	-
Stage 2	898	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	789	991	1524	-	-	-
Mov Cap-2 Maneuver	789	-	-	-	-	-
Stage 1	951	-	-	-	-	-
Stage 2	898	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	9.6	0.1		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1524	-	789	-	-	
HCM Lane V/C Ratio	0.001	-	0.001	-	-	
HCM Control Delay (s)	7.4	0	9.6	-	-	
HCM Lane LOS	A	A	A	-	-	
HCM 95th %tile Q(veh)	0	-	0	-	-	

Future AM

Synchro 11 Light Report

HCM 6th Signalized Intersection Summary

1: River Ranch Rd & US 50

09/08/2022

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↗	↙	↑↑	↘	
Traffic Volume (veh/h)	1096	113	32	887	130	30
Future Volume (veh/h)	1096	113	32	887	130	30
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	1166	120	34	944	138	32
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	1679	749	69	2232	183	43
Arrive On Green	0.48	0.48	0.04	0.63	0.13	0.13
Sat Flow, veh/h	3618	1572	1767	3618	1394	323
Grp Volume(v), veh/h	1166	120	34	944	171	0
Grp Sat Flow(s),veh/h/ln	1763	1572	1767	1763	1728	0
Q Serve(g_s), s	11.0	1.8	0.8	5.7	4.1	0.0
Cycle Q Clear(g_c), s	11.0	1.8	0.8	5.7	4.1	0.0
Prop In Lane		1.00	1.00		0.81	0.19
Lane Grp Cap(c), veh/h	1679	749	69	2232	227	0
V/C Ratio(X)	0.69	0.16	0.49	0.42	0.75	0.00
Avail Cap(c_a), veh/h	2491	1111	416	3736	814	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	8.7	6.3	20.0	3.9	17.8	0.0
Incr Delay (d2), s/veh	0.5	0.1	5.4	0.1	5.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	0.3	0.4	0.2	1.7	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	9.2	6.4	25.4	4.0	22.8	0.0
LnGrp LOS	A	A	C	A	C	A
Approach Vol, veh/h	1286			978	171	
Approach Delay, s/veh	9.0			4.8	22.8	
Approach LOS	A			A	C	
Timer - Assigned Phs		2	3	4		8
Phs Duration (G+Y+Rc), s		10.6	6.7	25.2		31.9
Change Period (Y+Rc), s		5.0	5.0	5.0		5.0
Max Green Setting (Gmax), s		20.0	10.0	30.0		45.0
Max Q Clear Time (g_c+I1), s		6.1	2.8	13.0		7.7
Green Ext Time (p_c), s		0.4	0.0	7.2		6.7
Intersection Summary						
HCM 6th Ctrl Delay			8.2			
HCM 6th LOS			A			

HCM 6th TWSC
2: River Ranch Rd & Future Rd

09/08/2022

Intersection						
Int Delay, s/veh	0.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	6	2	0	154	143	2
Future Vol, veh/h	6	2	0	154	143	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	7	2	0	167	155	2
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	323	156	157	0	-	0
Stage 1	156	-	-	-	-	-
Stage 2	167	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	671	890	1423	-	-	-
Stage 1	872	-	-	-	-	-
Stage 2	863	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	671	890	1423	-	-	-
Mov Cap-2 Maneuver	671	-	-	-	-	-
Stage 1	872	-	-	-	-	-
Stage 2	863	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	10.1	0		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1423	-	715	-	-	
HCM Lane V/C Ratio	-	-	0.012	-	-	
HCM Control Delay (s)	0	-	10.1	-	-	
HCM Lane LOS	A	-	B	-	-	
HCM 95th %tile Q(veh)	0	-	0	-	-	

Future PM

Synchro 11 Light Report

Appendix E

Future Year Plus Project

LOS Calculations



HCM 6th Signalized Intersection Summary

1: River Ranch Rd & US 50

09/08/2022

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↗	↙	↑↑	↘	
Traffic Volume (veh/h)	605	69	28	807	157	49
Future Volume (veh/h)	605	69	28	807	157	49
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1796	1796	1796	1796	1796	1796
Adj Flow Rate, veh/h	617	70	29	823	160	50
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	7	7	7	7	7	7
Cap, veh/h	1124	502	61	1776	213	67
Arrive On Green	0.33	0.33	0.04	0.52	0.17	0.17
Sat Flow, veh/h	3503	1522	1711	3503	1261	394
Grp Volume(v), veh/h	617	70	29	823	211	0
Grp Sat Flow(s),veh/h/ln	1706	1522	1711	1706	1662	0
Q Serve(g_s), s	4.8	1.0	0.5	4.9	3.9	0.0
Cycle Q Clear(g_c), s	4.8	1.0	0.5	4.9	3.9	0.0
Prop In Lane		1.00	1.00		0.76	0.24
Lane Grp Cap(c), veh/h	1124	502	61	1776	281	0
V/C Ratio(X)	0.55	0.14	0.48	0.46	0.75	0.00
Avail Cap(c_a), veh/h	3181	1419	532	4772	1033	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	8.8	7.6	15.2	4.9	12.7	0.0
Incr Delay (d2), s/veh	0.4	0.1	5.7	0.2	4.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	0.2	0.2	0.2	1.5	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	9.3	7.7	21.0	5.1	16.8	0.0
LnGrp LOS	A	A	C	A	B	A
Approach Vol, veh/h	687			852	211	
Approach Delay, s/veh	9.1			5.6	16.8	
Approach LOS	A			A	B	
Timer - Assigned Phs		2	3	4		8
Phs Duration (G+Y+Rc), s		10.4	6.1	15.6		21.7
Change Period (Y+Rc), s		5.0	5.0	5.0		5.0
Max Green Setting (Gmax), s		20.0	10.0	30.0		45.0
Max Q Clear Time (g_c+I1), s		5.9	2.5	6.8		6.9
Green Ext Time (p_c), s		0.5	0.0	3.8		5.6
Intersection Summary						
HCM 6th Ctrl Delay			8.3			
HCM 6th LOS			A			

Intersection												
Int Delay, s/veh	3.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	1	0	0	4	0	93	2	112	1	30	60	7
Future Vol, veh/h	1	0	0	4	0	93	2	112	1	30	60	7
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	0	0	4	0	103	2	124	1	33	67	8
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	317	266	71	266	270	125	75	0	0	125	0	0
Stage 1	137	137	-	129	129	-	-	-	-	-	-	-
Stage 2	180	129	-	137	141	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	636	640	991	687	636	926	1524	-	-	1462	-	-
Stage 1	866	783	-	875	789	-	-	-	-	-	-	-
Stage 2	822	789	-	866	780	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	554	624	991	674	620	926	1524	-	-	1462	-	-
Mov Cap-2 Maneuver	554	624	-	674	620	-	-	-	-	-	-	-
Stage 1	865	764	-	874	788	-	-	-	-	-	-	-
Stage 2	730	788	-	845	761	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	11.5		9.5		0.1		2.3					
HCM LOS	B		A									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR					
Capacity (veh/h)	1524	-	-	554	912	1462	-	-				
HCM Lane V/C Ratio	0.001	-	-	0.002	0.118	0.023	-	-				
HCM Control Delay (s)	7.4	0	-	11.5	9.5	7.5	0	-				
HCM Lane LOS	A	A	-	B	A	A	A	-				
HCM 95th %tile Q(veh)	0	-	-	0	0.4	0.1	-	-				

HCM 6th Signalized Intersection Summary

1: River Ranch Rd & US 50

09/08/2022

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↗	↙	↑↑	↘	
Traffic Volume (veh/h)	1096	180	63	887	169	48
Future Volume (veh/h)	1096	180	63	887	169	48
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	1166	191	67	944	180	51
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	1604	716	108	2185	231	66
Arrive On Green	0.46	0.46	0.06	0.62	0.17	0.17
Sat Flow, veh/h	3618	1572	1767	3618	1335	378
Grp Volume(v), veh/h	1166	191	67	944	232	0
Grp Sat Flow(s),veh/h/ln	1763	1572	1767	1763	1721	0
Q Serve(g_s), s	13.0	3.6	1.8	6.7	6.2	0.0
Cycle Q Clear(g_c), s	13.0	3.6	1.8	6.7	6.2	0.0
Prop In Lane		1.00	1.00		0.78	0.22
Lane Grp Cap(c), veh/h	1604	716	108	2185	298	0
V/C Ratio(X)	0.73	0.27	0.62	0.43	0.78	0.00
Avail Cap(c_a), veh/h	2188	976	366	3282	712	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	10.7	8.2	22.1	4.8	19.1	0.0
Incr Delay (d2), s/veh	0.8	0.2	5.6	0.1	4.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.1	0.8	0.8	0.7	2.6	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	11.5	8.4	27.7	4.9	23.5	0.0
LnGrp LOS	B	A	C	A	C	A
Approach Vol, veh/h	1357			1011	232	
Approach Delay, s/veh	11.1			6.4	23.5	
Approach LOS	B			A	C	
Timer - Assigned Phs		2	3	4		8
Phs Duration (G+Y+Rc), s		13.4	8.0	27.0		35.0
Change Period (Y+Rc), s		5.0	5.0	5.0		5.0
Max Green Setting (Gmax), s		20.0	10.0	30.0		45.0
Max Q Clear Time (g_c+I1), s		8.2	3.8	15.0		8.7
Green Ext Time (p_c), s		0.5	0.0	7.0		6.6
Intersection Summary						
HCM 6th Ctrl Delay			10.4			
HCM 6th LOS			B			

Intersection												
Int Delay, s/veh	3.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	6	0	2	3	0	57	0	154	6	97	143	2
Future Vol, veh/h	6	0	2	3	0	57	0	154	6	97	143	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	7	0	2	4	0	67	0	181	7	114	168	2
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	615	585	169	583	583	185	170	0	0	188	0	0
Stage 1	397	397	-	185	185	-	-	-	-	-	-	-
Stage 2	218	188	-	398	398	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	403	423	875	424	424	857	1407	-	-	1386	-	-
Stage 1	629	603	-	817	747	-	-	-	-	-	-	-
Stage 2	784	745	-	628	603	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	346	385	875	393	385	857	1407	-	-	1386	-	-
Mov Cap-2 Maneuver	346	385	-	393	385	-	-	-	-	-	-	-
Stage 1	629	548	-	817	747	-	-	-	-	-	-	-
Stage 2	723	745	-	569	548	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	14		9.9		0		3.1					
HCM LOS	B		A									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR					
Capacity (veh/h)	1407	-	-	408	809	1386	-	-				
HCM Lane V/C Ratio	-	-	-	0.023	0.087	0.082	-	-				
HCM Control Delay (s)	0	-	-	14	9.9	7.8	0	-				
HCM Lane LOS	A	-	-	B	A	A	A	-				
HCM 95th %tile Q(veh)	0	-	-	0.1	0.3	0.3	-	-				

River Ranch Apartments

Water Calculations

	ERC	# of bldgs	ERC*	AF	AF
1 bedroom/1 bath	1.9	12	22.8	2.1	25.2
2 bedroom/2 bath	3.4	26	88.4	3.8	98.8
3 bedroom/2 bath	3.4	2	6.8	3.8	7.6
Office/Clubhouse	0.36	1	0.36	0.24	0.24
Maintenance	0.21	1	0.21	0.4	0.4
Landscape**				5.35	5.35
TOTALS			118.57		137.59

*ERC and AF based on Fremont Apartment building/calculations

** Landscape AF is actual from landscape architect



PRELIMINARY ESTIMATE OF PROBABLE LANDSCAPE WATER DEMAND

Project: River Ranch Apartments

L.A. Studio Nevada Job No: 632-504-08-22

Prepared for: ERGS, Inc.

Prepared by: L.A. Studio Nevada/Kevin Kirk

Date: September 13, 2022

This water demand is preliminary and based on the landscape plan for "River Ranch Apartments" prepared by L.A. Studio Nevada. This demand utilizes Fernley Public Works ERC calculations.

Required Landscape Area: 135,918 min.

Required Min. Trees: 341

Required Min. Shrubs: 2,718

Fernely Public Works, ERC Calculation

	Qty	Size	# emitters	GPH	load	run time (hr)	x week	Season	Totals
Evergreen tree	190	15 gal	3	2	1140	1	3	32	109,440
Decidius tree	151	5 ft. ht.	4	2	1208	1	3	32	115,968
Shrub, large	2,718	#5	2	1	5436	1	3	32	521,856
Shrub, small	0	#1	1	1	0	1	3	32	-
Groundcover/perennials	0	flats	1	0.5	0	1	3	32	-
lawn	-	Roll	spray*		(see below)				--
drip, Gal/Yr:									747,264

						2.29	AFY		
*Turf Spray:	39,000	Sq. Ft.	x	3.41	=	3.05	AFY	spray, Gal/Yr:	994,836
			43,560					Total use, Gal/Yr:	1,742,100
								AFY:	5.35

SECTION 5 – FULL SIZE PLANS

TITLE SHEET

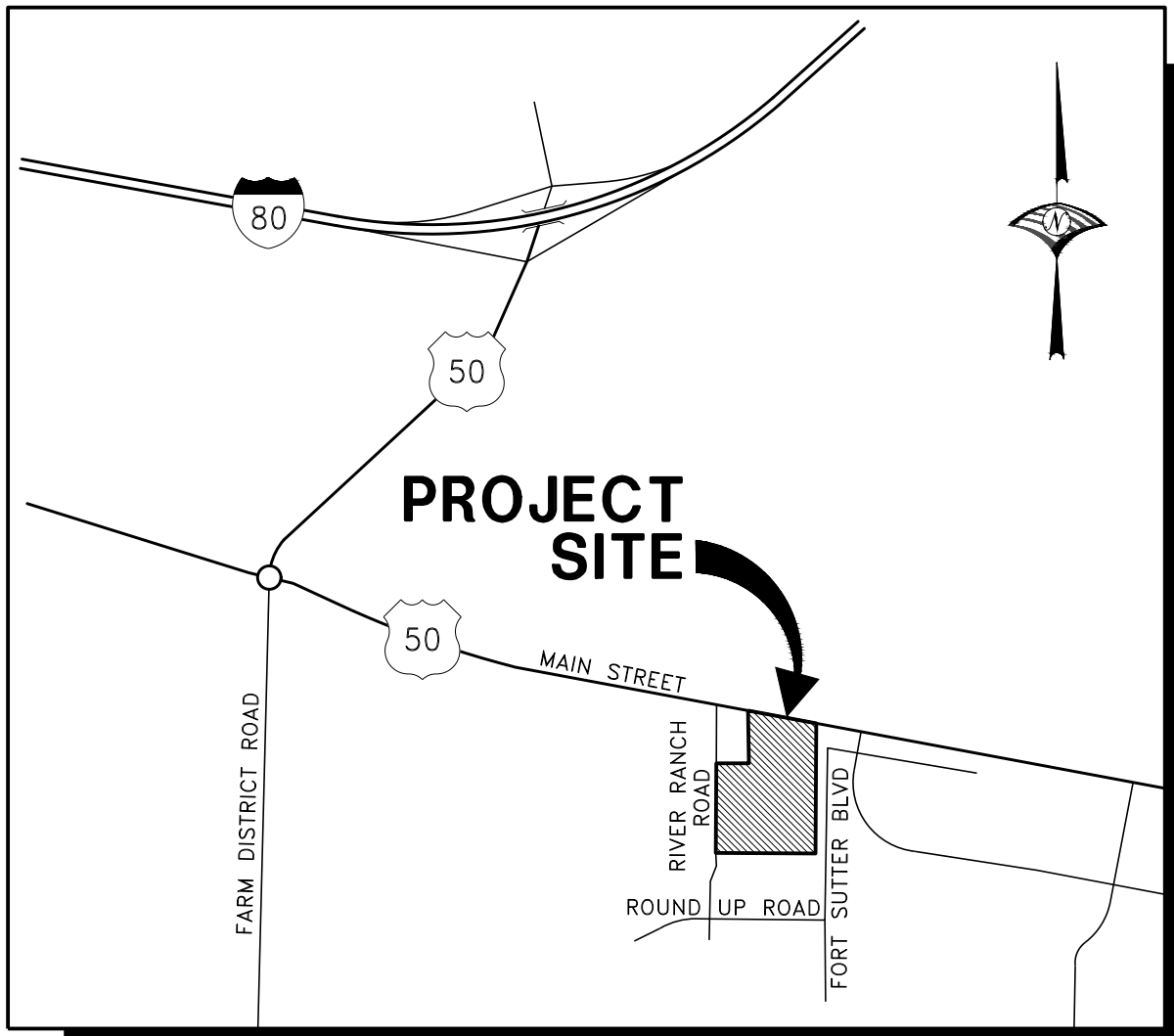
RIVER RANCH APARTMENTS

ERGS FERNLEY, LLC

FERNLEY

NEVADA

SEPTEMBER, 2022



VICINITY MAP

NOT TO SCALE

OWNER/DEVELOPER:

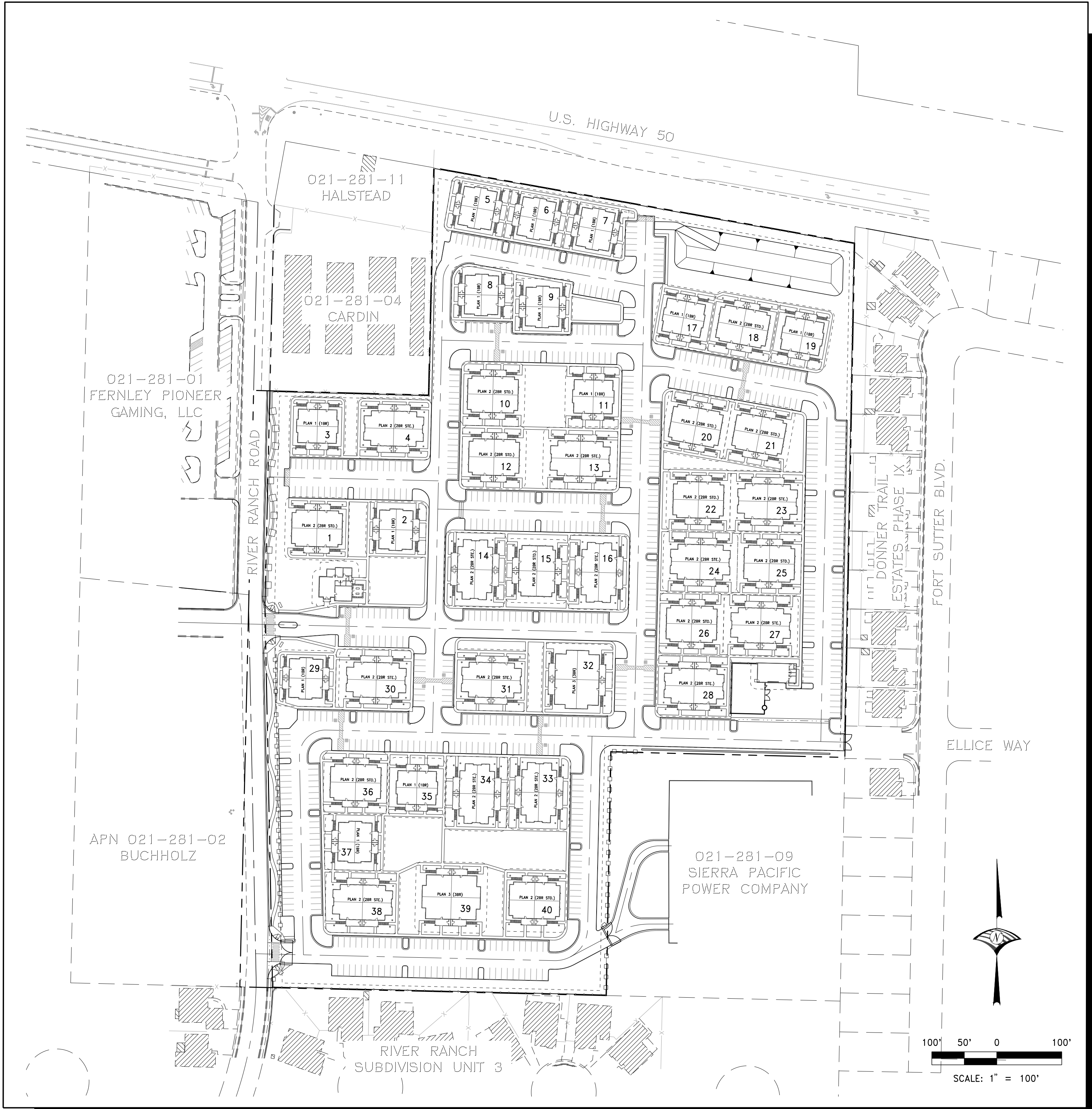
ERGS FERNLEY, LLC
9345 LEMMON DRIVE
RENO, NV 89506
775.972.0213

BASIS OF BEARINGS

NEVADA STATE PLANE COORDINATE SYSTEM, WEST ZONE, NORTH AMERICAN DATUM OF 1983/1994, HIGH ACCURACY REFERENCE NETWORK (NAD 83/94-HARN), AS DETERMINED USING REAL TIME KINEMATIC (RTK) GPS OBSERVATIONS. THE BEARING BETWEEN NDOT MONUMENT 1528013 AND 1528011 (LPN 1528) IS TAKEN AS NORTH 76°59'40" WEST. ALL DIMENSIONS SHOWN ARE GROUND DISTANCES. GRID TO GROUND COMBINED FACTOR = 1.0002694480

BASIS OF ELEVATIONS

BASED ON THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88) AS TAKEN FROM NDOT BENCHMARK 1528013 (LPN 1528), WITH A PUBLISHED ELEVATION OF 4104.87 FEET. BENCHMARK 1528013 IS DESCRIBED AS BEING A 2.5" ALUMINUM CAP IN FENO POLYROC STAMPED "1528013M 2017". THE MONUMENT IS LOCATED AT US-50A MILEPOST LYON 14.5, 25-FEET SOUTH OF THE EDGE OF OIL AND 30-FEET EAST OF CINDER BLOCK FENCE END.



SITE PLAN



WOOD RODGERS
BUILDING RELATIONSHIPS ONE PROJECT AT A TIME
1361 Corporate Boulevard
Reno, NV 89502
Tel 775.823.4068
Fax 775.823.4066

EXISTING CONDITIONS

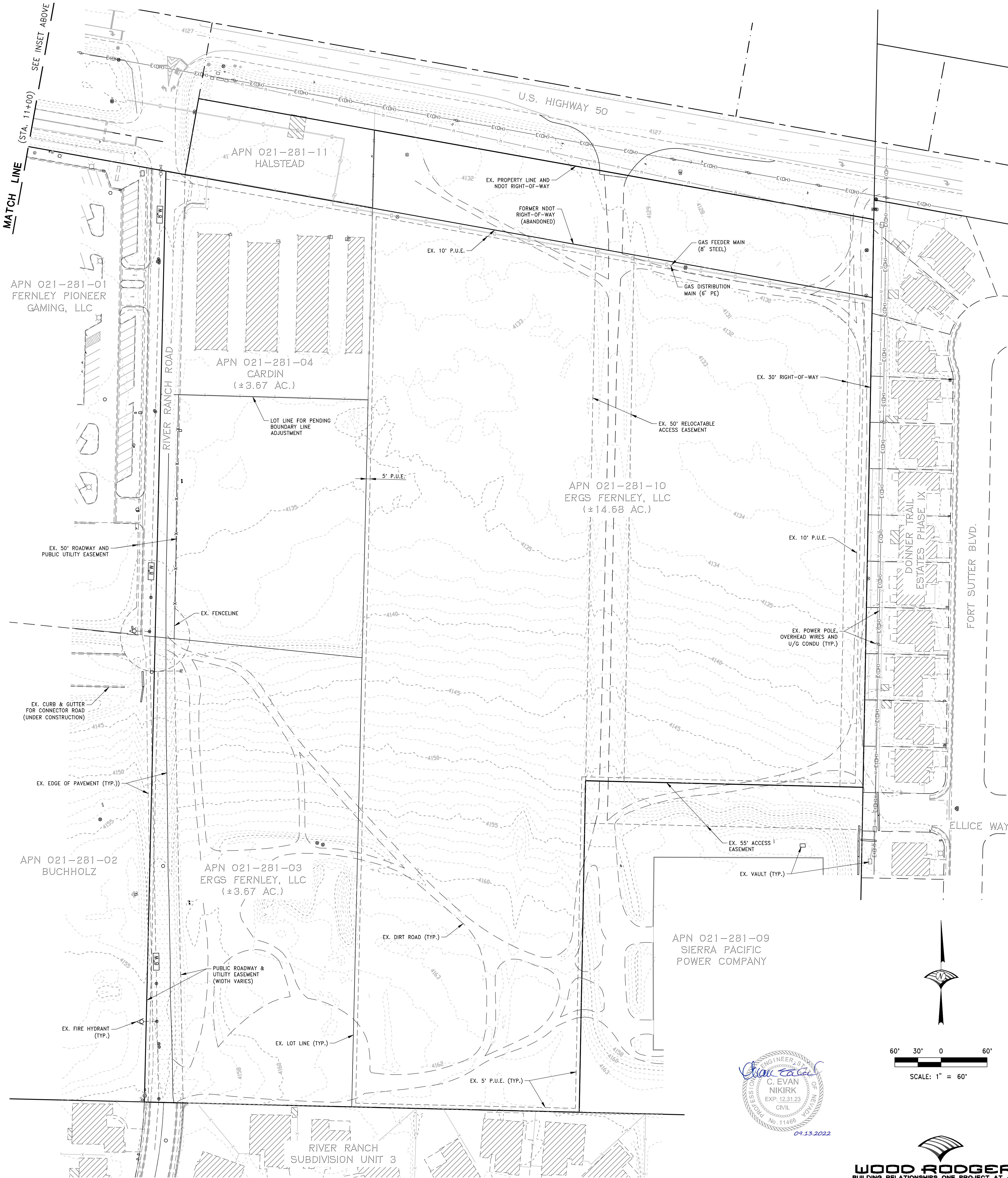
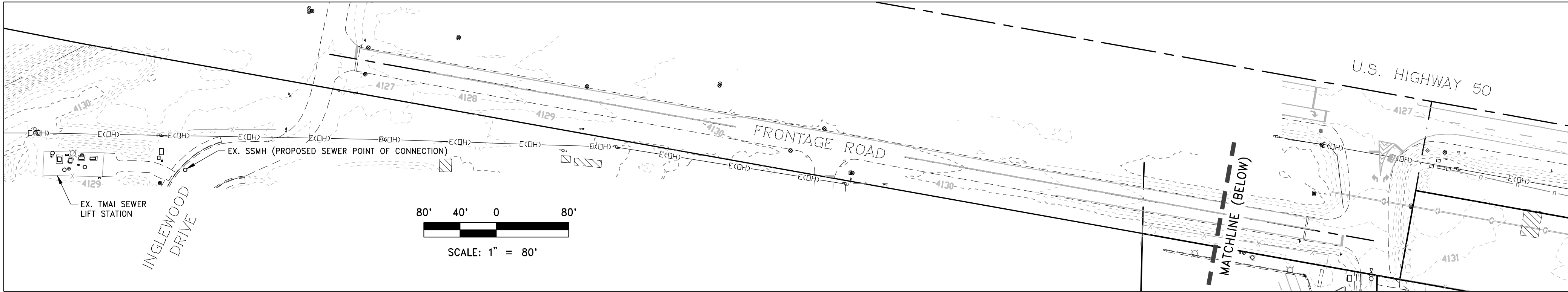
RIVER RANCH APARTMENTS

ERGS FERNLEY, LLC

FERNLEY

NEVADA

SEPTEMBER, 2022



NOTE: BASE SURVEY AND TOPOGRAPHY PREPARED BY WOOD RODGERS, INC. (RENO). DATE OF PHOTOGRAPHY: JUNE 30, 2022.



WOOD RODGERS
BUILDING RELATIONSHIPS ONE PROJECT AT A TIME
1361 Corporate Boulevard Tel 775.823.4068
Reno, NV 89502 Fax 775.823.4066

PRELIMINARY SITE PLAN

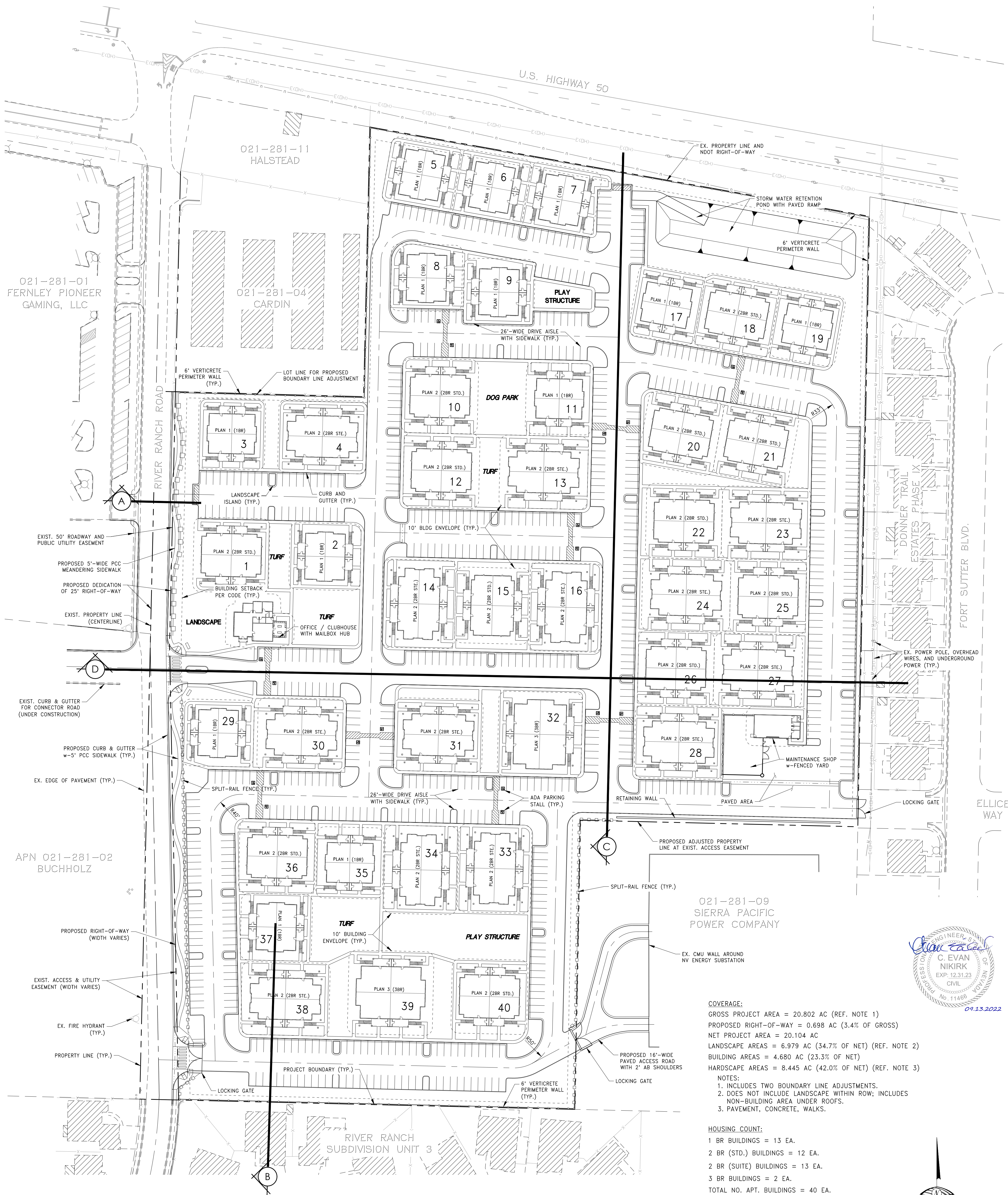
RIVER RANCH APARTMENTS

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NEVADA

SEPTEMBER, 2022



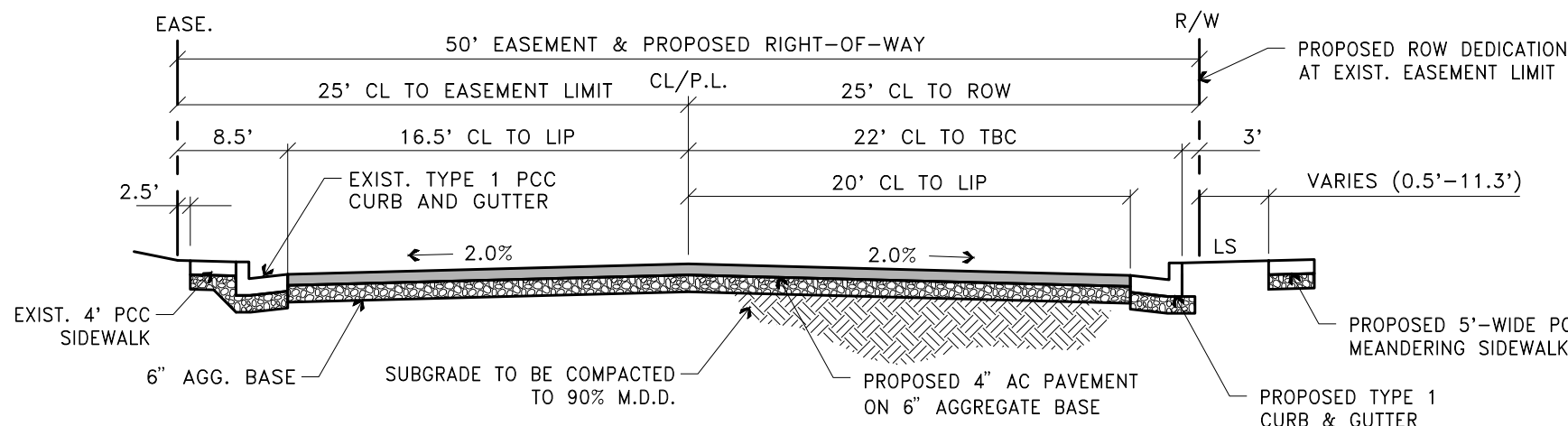
COVERAGE:
GROSS PROJECT AREA = 20.802 AC (REF. NOTE 1)
PROPOSED RIGHT-OF-WAY = 0.698 AC (3.4% OF GROSS)
NET PROJECT AREA = 20.104 AC
LANDSCAPE AREAS = 6.979 AC (34.7% OF NET) (REF. NOTE 2)
BUILDING AREAS = 4.680 AC (23.3% OF NET)
HARDSCAPE AREAS = 8.445 AC (42.0% OF NET) (REF. NOTE 3)

NOTES:
1. INCLUDES TWO BOUNDARY LINE ADJUSTMENTS.
2. DOES NOT INCLUDE LANDSCAPE WITHIN ROW; INCLUDES NON-BUILDING AREA UNDER ROOFS.
3. PAVEMENT, CONCRETE, WALKS.

HOUSING COUNT:
1 BR BUILDINGS = 13 EA.
2 BR (STD.) BUILDINGS = 12 EA.
2 BR (SUITE) BUILDINGS = 13 EA.
3 BR BUILDINGS = 2 EA.
TOTAL NO. APT. BUILDINGS = 40 EA.
TOTAL NO. APARTMENT UNITS = 320 EA.

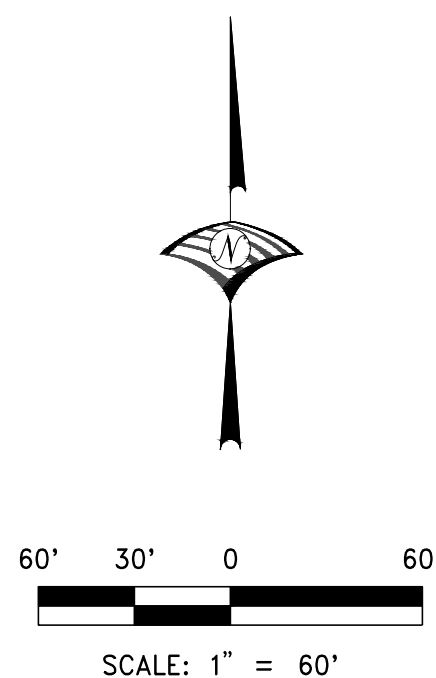
BUILDING COUNT:
APARTMENT BUILDINGS = 40 EA.
OFFICE / CLUBHOUSE = 1 EA.
MAINTENANCE BUILDING = 1 EA.
TOTAL BUILDINGS = 42 EA.

PARKING COUNT:
MINIMUM REQUIRED = 668 STALLS
MIN. ADA STALLS REQUIRED = 14 EA.
ADA STALLS PROVIDED = 18 EA.
STD. 9x18 PARKING STALLS = 680 EA.
TOTAL SHOWN = 698 STALLS



PROPOSED STREET SECTION

NOT TO SCALE



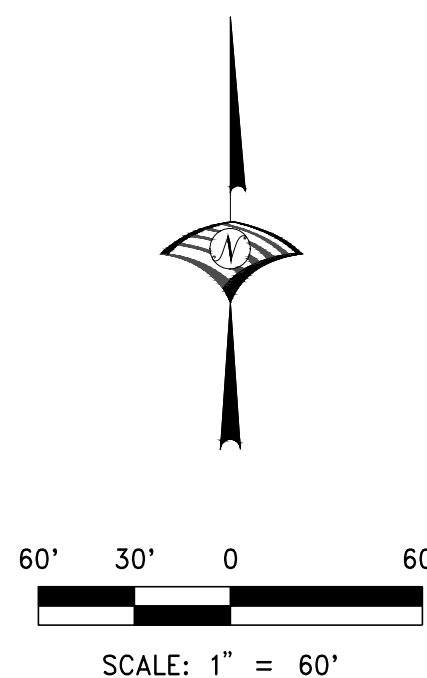
WOOD RODGERS
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Reno, NV 89502 Fax 775.823.4066

PRELIMINARY GRADING PLAN

RIVER RANCH APARTMENTS

ERGS FERNLEY, LLC
FERNLEY NEVADA

SEPTEMBER, 2022



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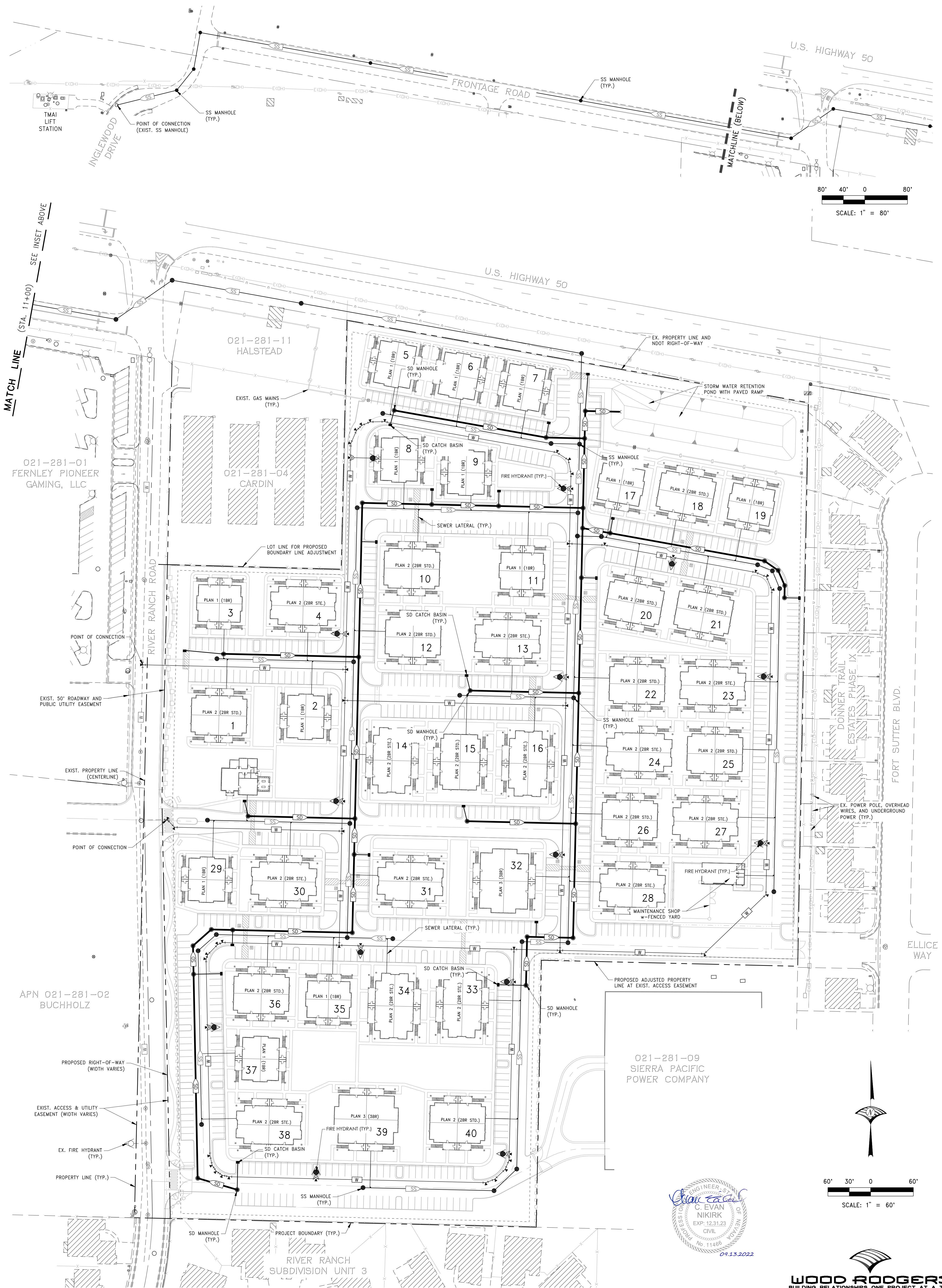
PRELIMINARY UTILITY PLAN

RIVER RANCH APARTMENTS

ERGS FERNLEY, LLC

FERNLEY NEVADA

SEPTEMBER, 2022



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PRELIMINARY CROSS SECTIONS

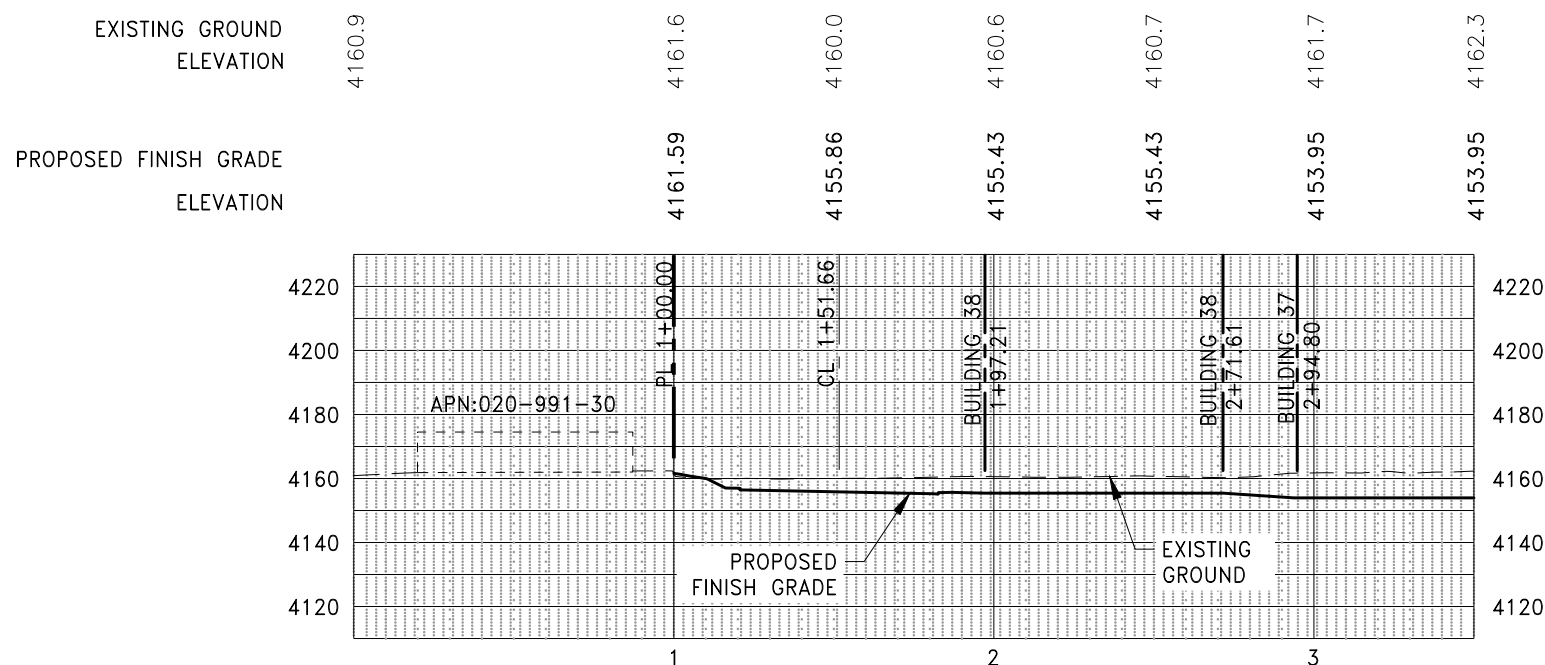
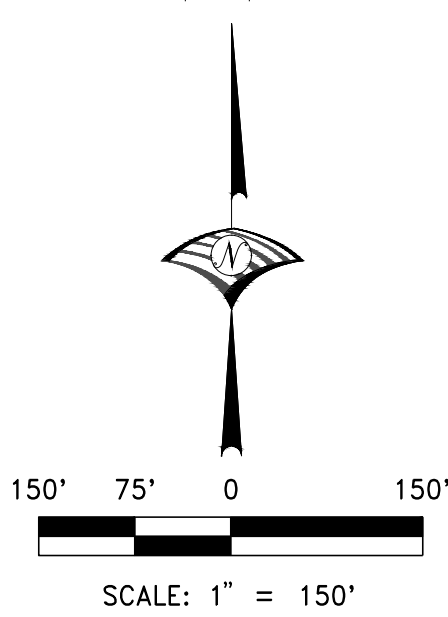
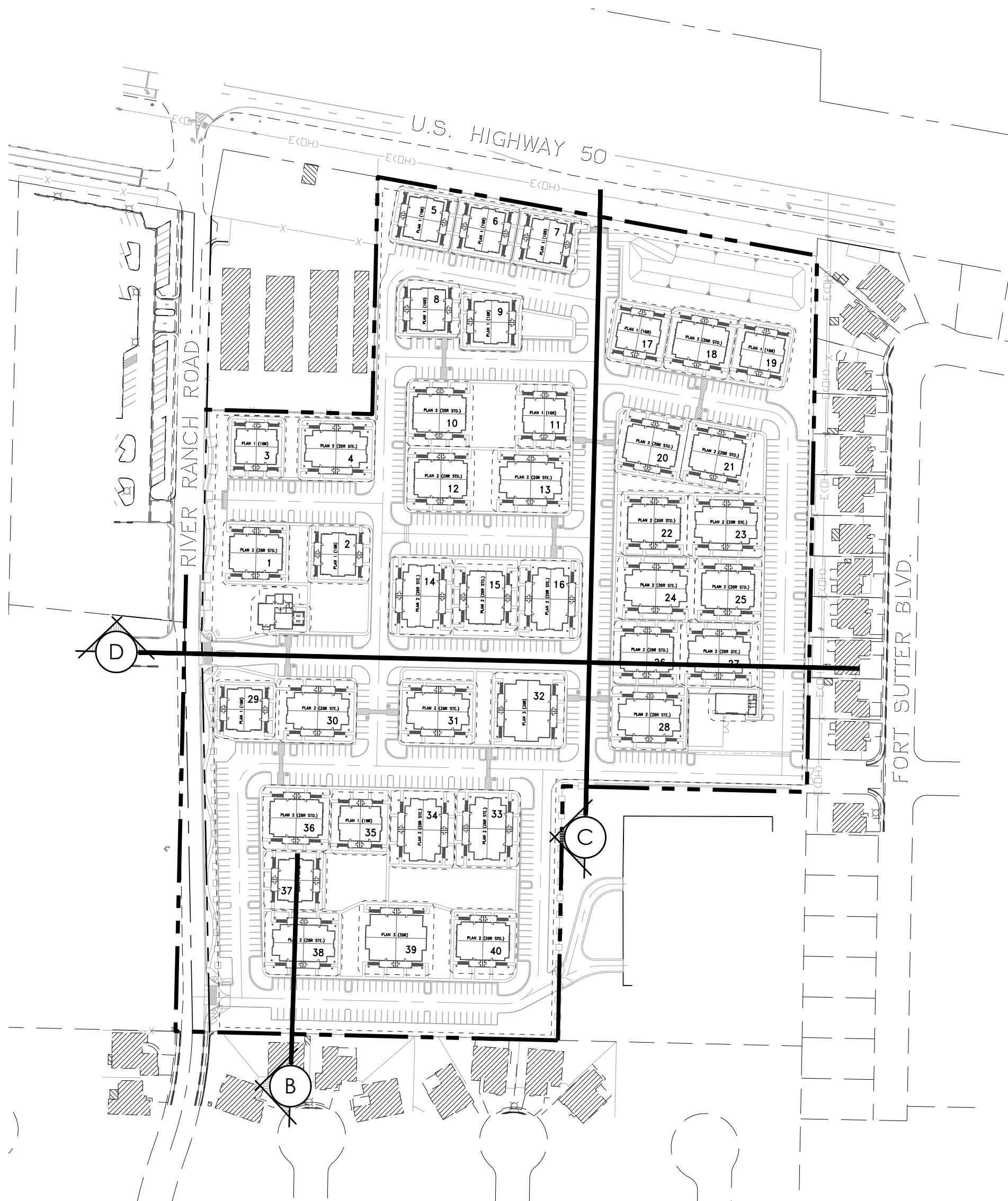
RIVER RANCH APARTMENTS

ERGS FERNLEY, LLC

FERNLEY

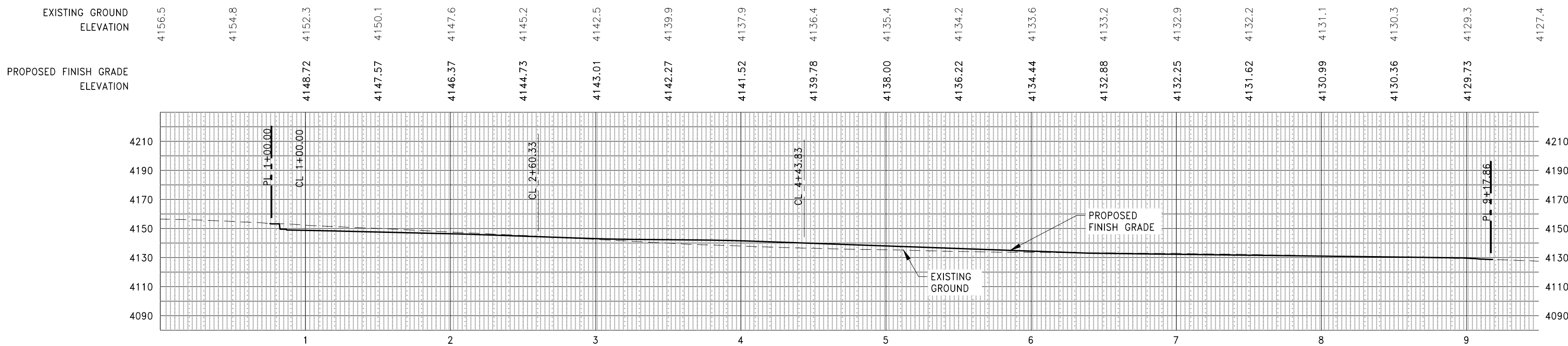
NEVADA

SEPTEMBER, 2022



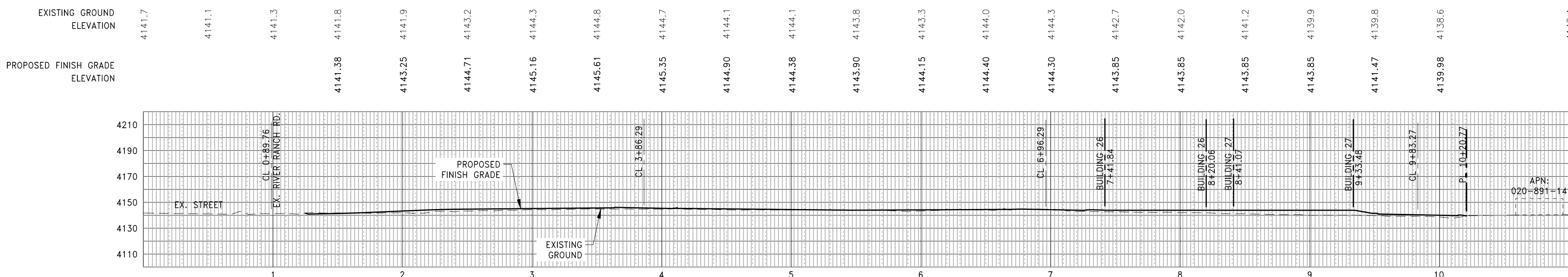
CROSS SECTION B

SCALE:
HORIZ: 1"=60'
VERT: 1"=60'



CROSS SECTION C

SCALE:
HORIZ: 1"=60'
VERT: 1"=60'

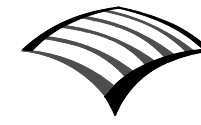


CROSS SECTION D

SCALE:
HORIZ: 1"=60'
VERT: 1"=60'



09.13.2022



WOOD RODGERS
BUILDING RELATIONSHIPS ONE PROJECT AT A TIME
1361 Corporate Boulevard Reno, NV 89502
Tel 775.823.4068 Fax 775.823.4066

	ORNAMENTAL TREES
	DECIDUOUS SHADE TREES
	EVERGREEN TREES
	BUFFER TREES ALONG SOUTH AND EAST BOUNDARIES
	LANDSCAPE AREA
	LAWN AREA
	AMENITIES

SITE AREA: 906,119 SQ FT (21 ACRES)
JURISDICTION: FERNLEY
ZONING: MIXED USE

REQUIRED LANDSCAPE AREA = 135,918 SQ FT
• (15% OF TOTAL SITE AREA)

PROVIDED LANDSCAPE AREA = 135,918 SQ FT MIN.

REQUIRED TREES = 341 MIN.

- (1) TREE PER 500 SQ FT OF REQUIRED LANDSCAPE AREA = 272
- (1) TREE PER 10 PARKING SPACES (642 PARKING SPACES) = 64

REQUIRED SHRUBS = 2,718 MIN.

- (6) SHRUBS PER REQUIRED TREE)

- 1) ALL PLANTING AND IRRIGATION SHALL BE INSTALLED PER LOCAL GOVERNING CODES.
- 2) TREES
 - DECIDUOUS TREES SHALL HAVE A MINIMUM CALIPER OF 2 INCHES.
 - EVERGREEN TREES SHALL HAVE A MINIMUM HEIGHT OF 6 FEET.
 - ADDITIONAL TREES, BEYOND THOSE REQUIRED BY CODE, MAY BE REDUCED IN SIZE AT INSTALLATION.
 - BUFFER TREES PROVIDED ALONG SOUTH AND EAST BOUNDARIES
- 3) FINAL PLANT SELECTION AND LAYOUT WILL BE BASED ON SOUND HORTICULTURAL PRACTICES RELATING TO MICRO-CLIMATE, SOIL, AND WATER REGIMES. ALL TREES WILL BE STAKED SO AS TO REMAIN UPRIGHT AND PLUMB FOLLOWING INSTALLATION. PLANT SIZE AND QUALITY AT TIME OF PLANTING WILL BE PER THE AMERICAN STANDARD FOR NURSERY STOCK (ANSI Z60.1-1990).
- 4) ALL SHRUB BEDS SHALL RECEIVE 4" DEPTH MULCH WITH WEED CONTROL.
- 5) ALL LANDSCAPING WILL BE AUTOMATICALLY IRRIGATED. CONTAINER PLANTINGS WILL BE DRIP IRRIGATED BASED ON THE SPECIFIC HORTICULTURAL REQUIREMENTS OF EACH SPECIES. A REDUCED-PRESSURE-TYPE BACKFLOW PREVENTER WILL BE PROVIDED ON THE IRRIGATION SYSTEM AS REQUIRED PER CODE.
- 6) PLAN IS CONCEPTUAL. PLANT QUANTITIES INDICATED ARE PER CITY OF FERNLEY REQUIREMENTS. PLANT LOCATIONS, FINAL SPECIES SELECTION, AND SIZE AT PLANTING SHALL BE DETERMINED DURING DEVELOPMENT OF THE FINAL CONSTRUCTION DOCUMENTS.

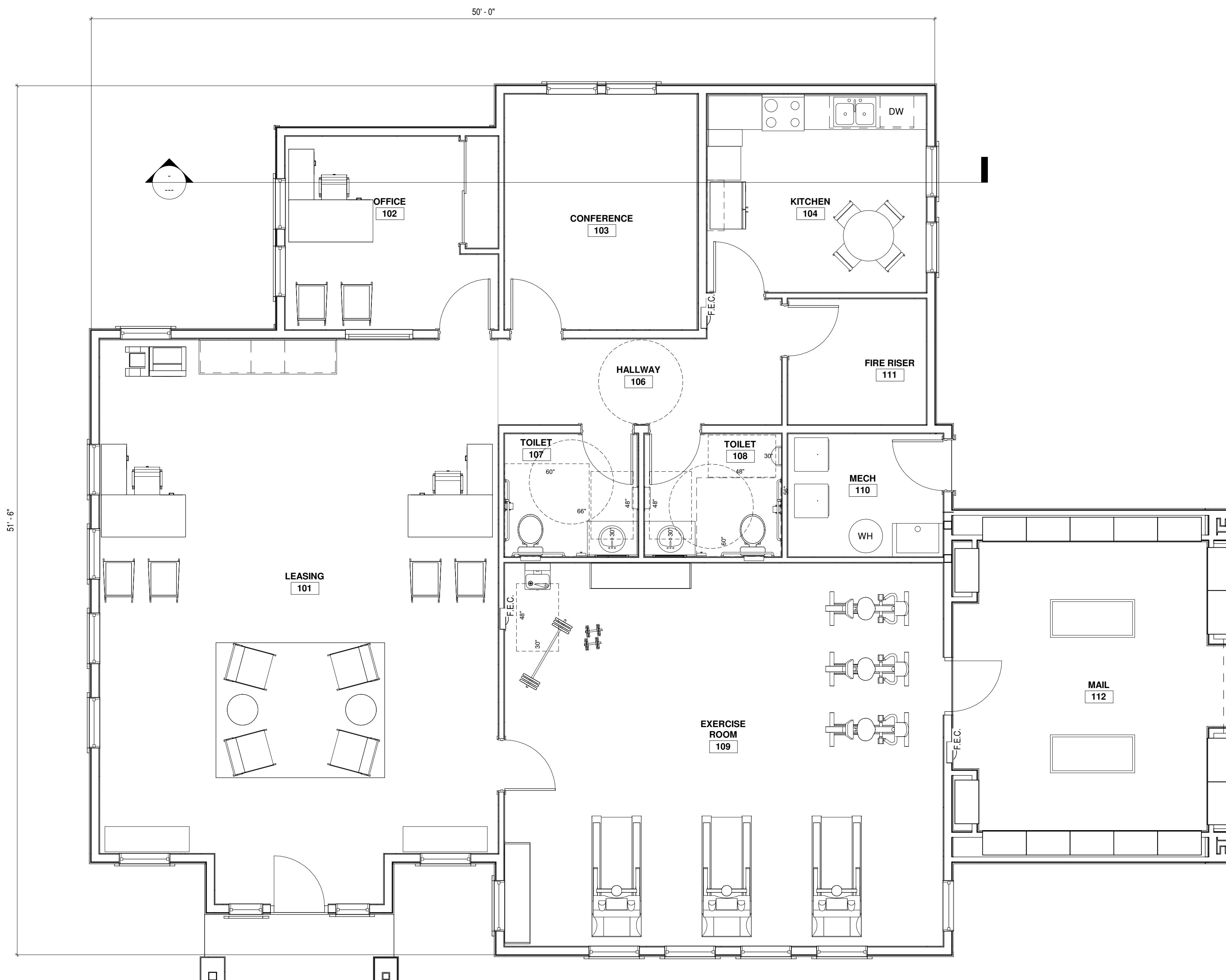


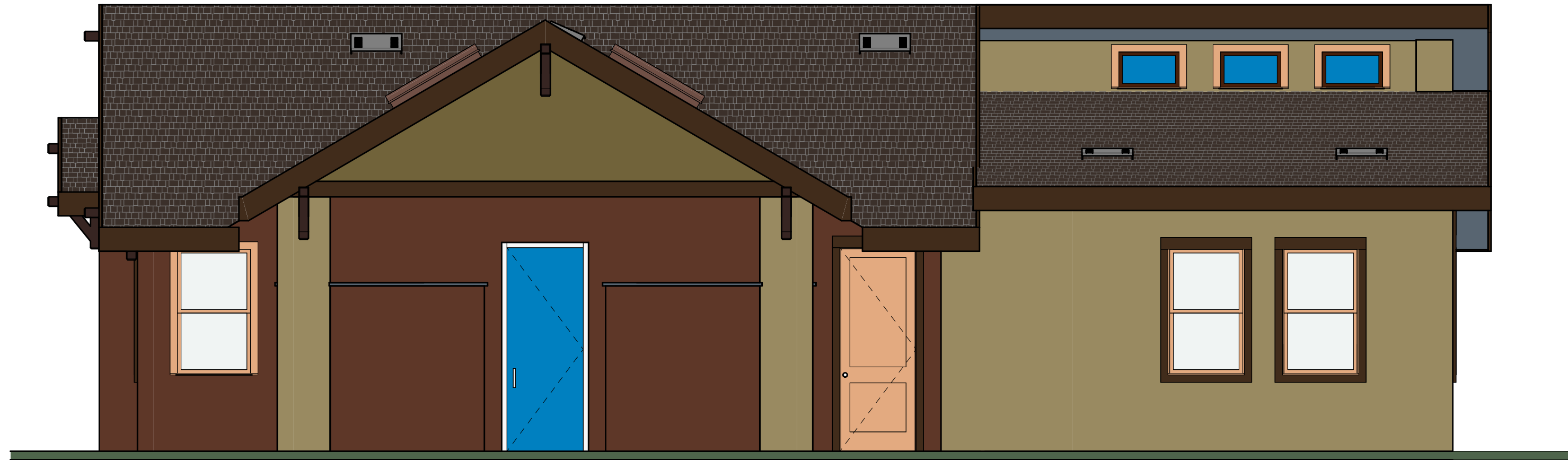
Nevada

Preliminary Landscape Plan
River Ranch Apartments
ERGS Properties

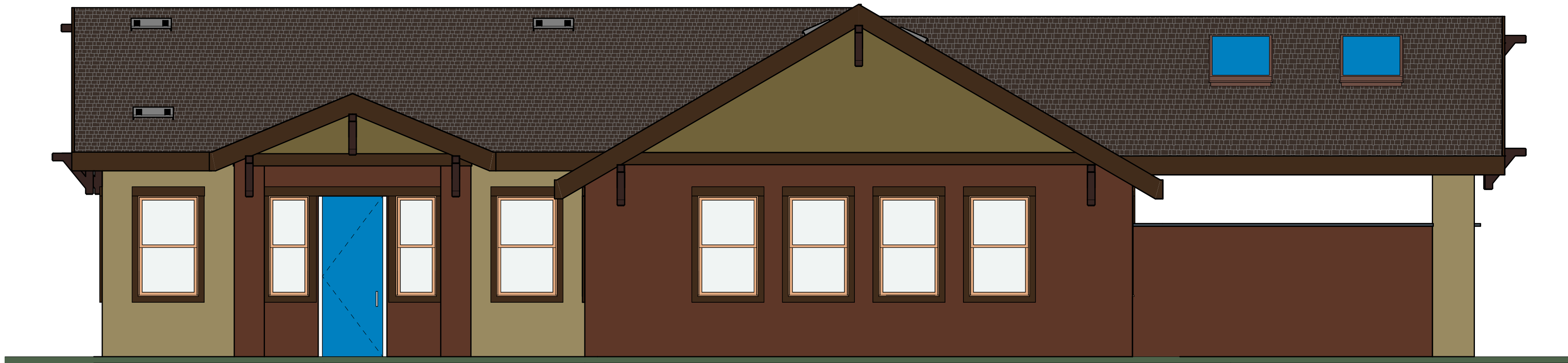
Fernley

No.	Revision Date
LA No:	632-504-08-22
Designed:	RWH
Drawn:	AHH
Checked:	RWH
Date:	9/13/2022

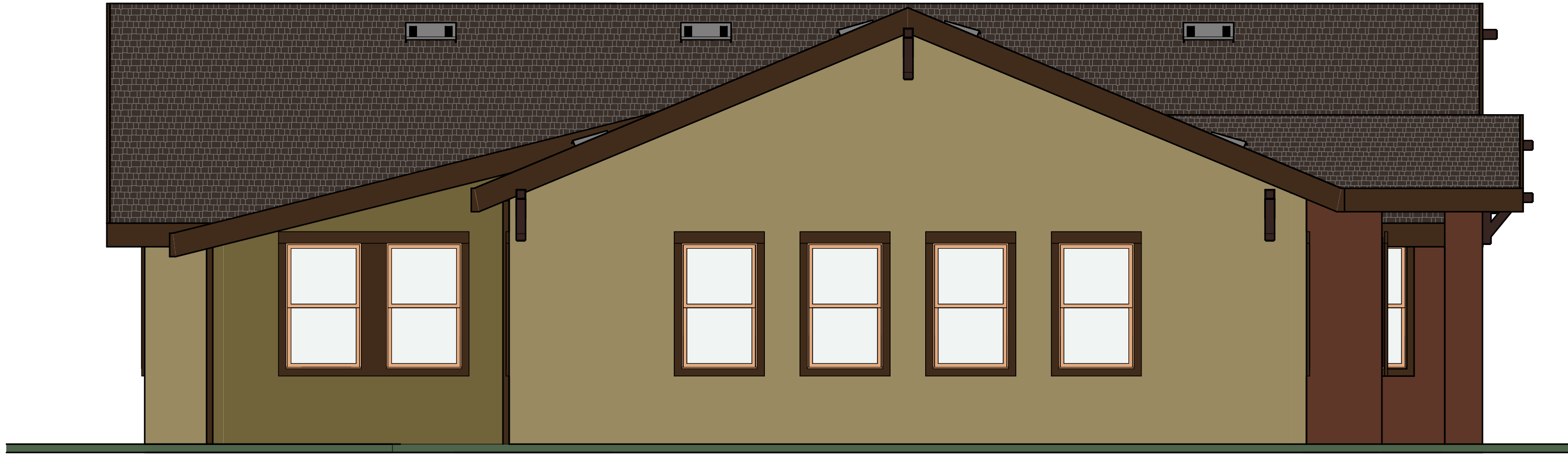




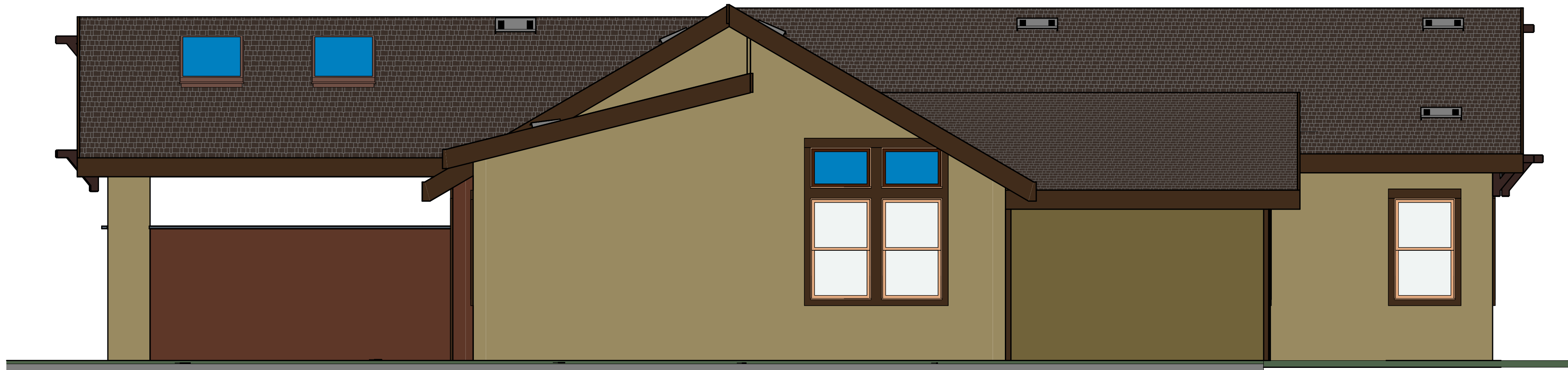
1 East -presentation
1/4" = 1'-0"



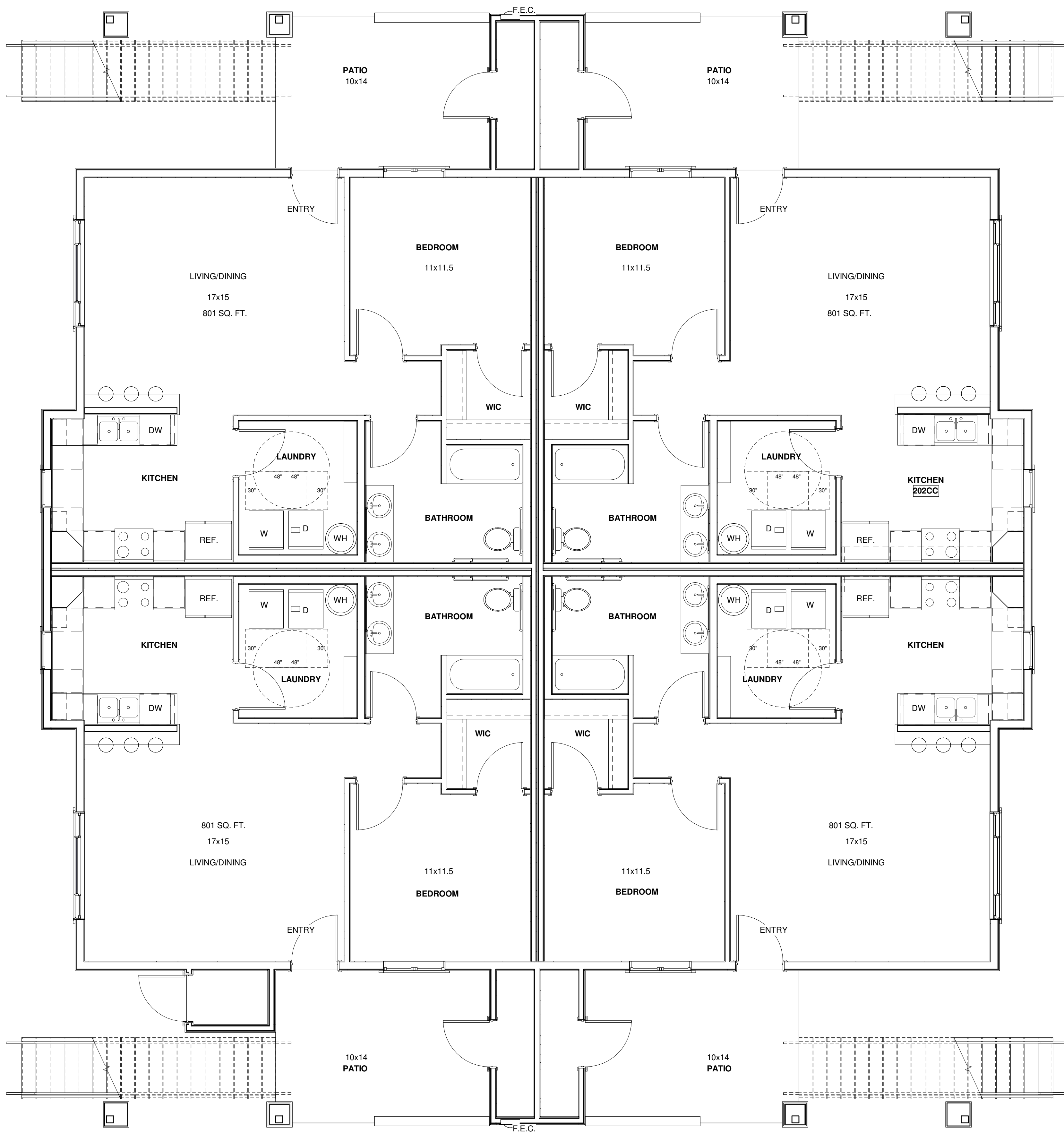
2 ENTRY - SOUTH-presentation
1/4" = 1'-0"



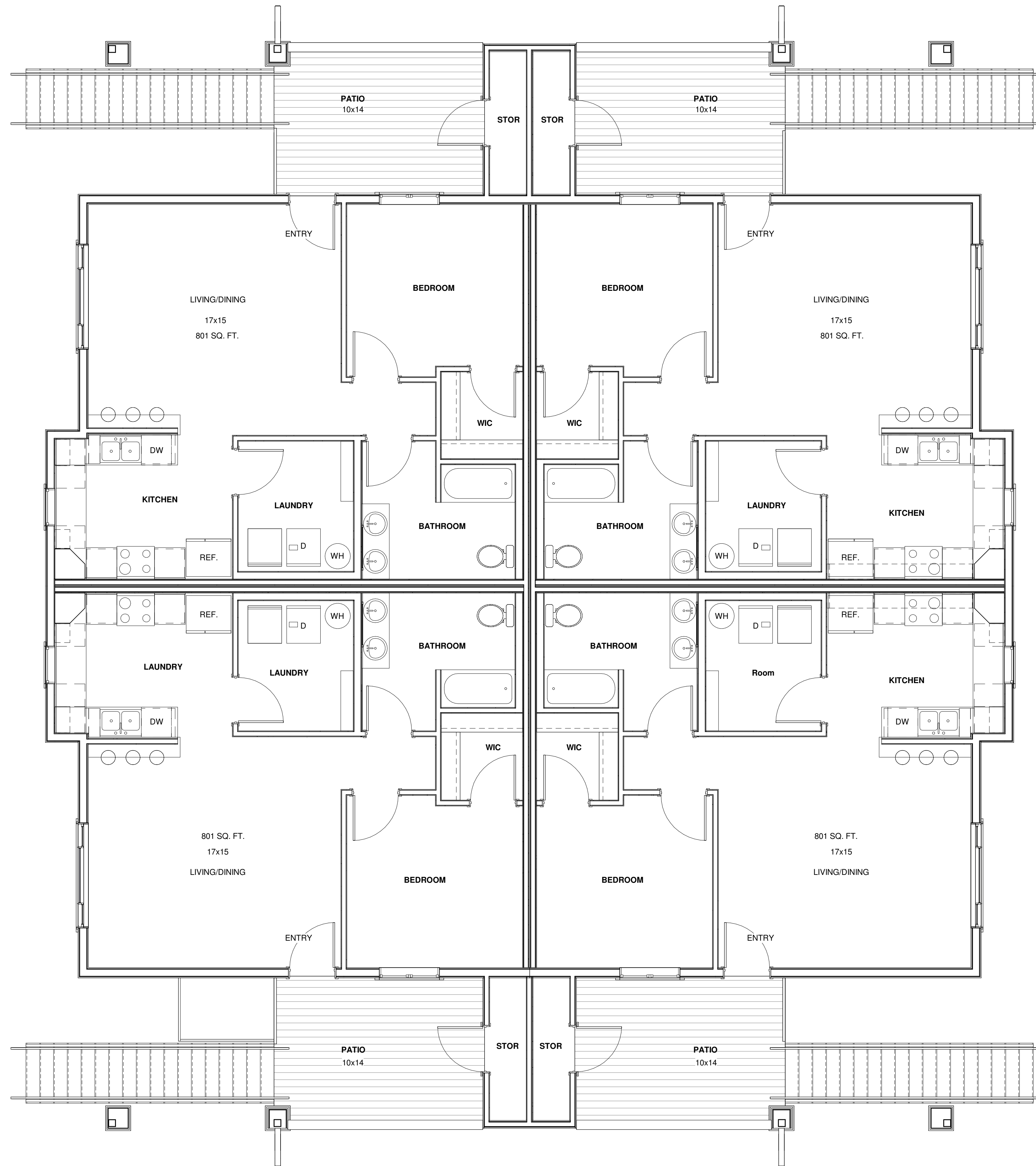
2 West-Presentation
1/4" = 1'-0"



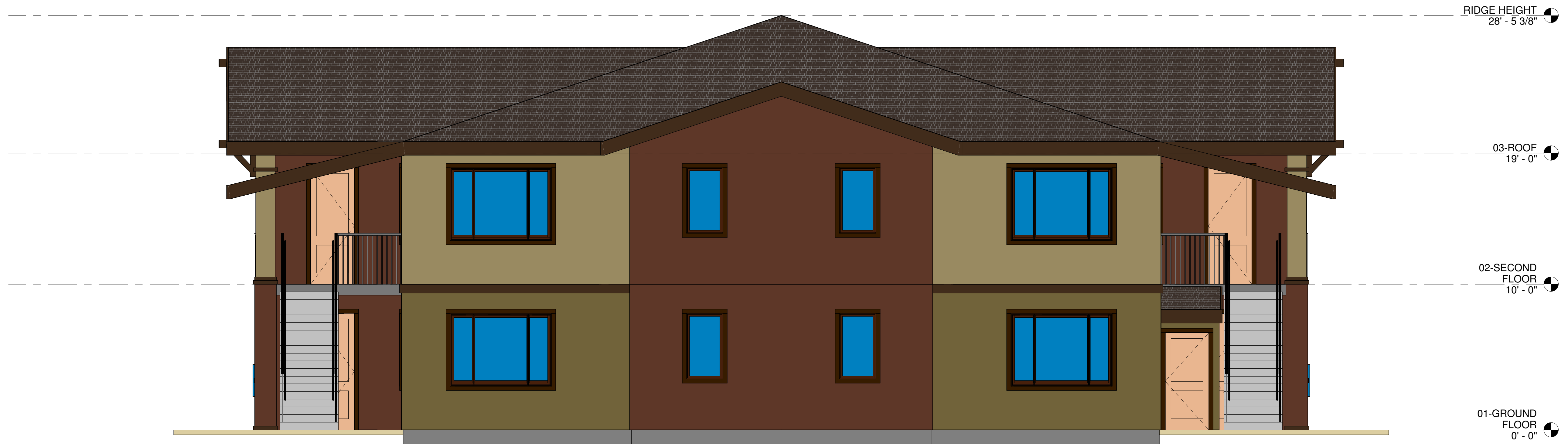
1 North-Presentation
1/4" = 1'-0"



1 THE ONE - GROUND FLOOR PLAN (1 BEDROOM)
1/4" = 1'-0"



1 THE ONE - SECOND FLOOR PLAN (1 BEDROOM)



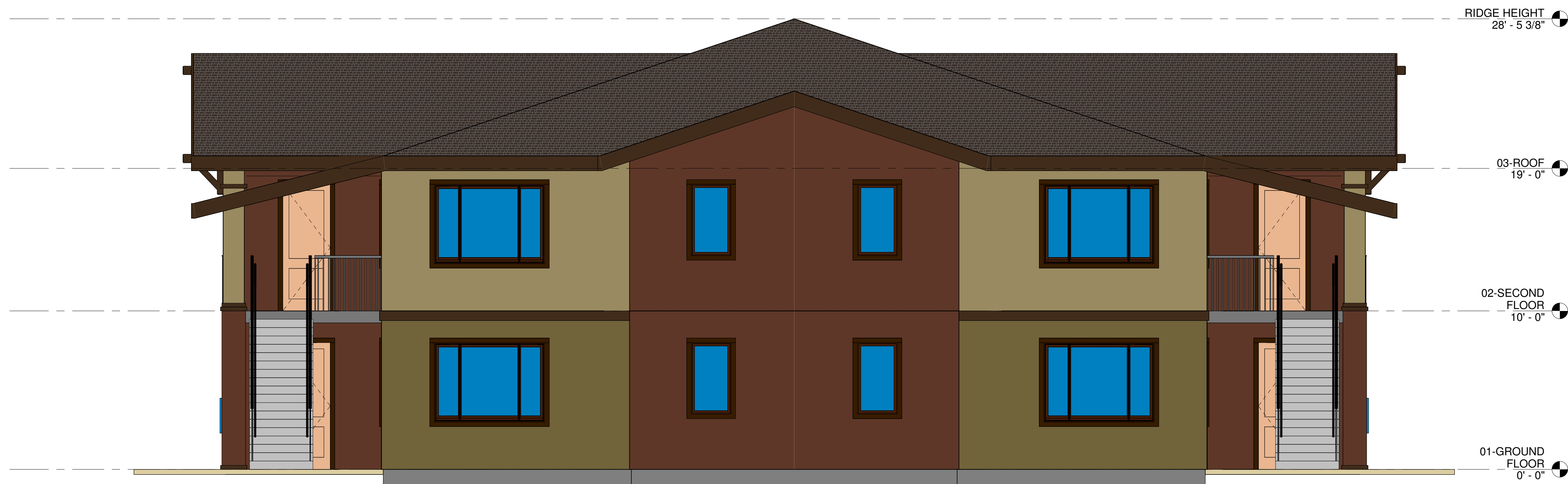
1 East Elevation
1/4" = 1'-0"



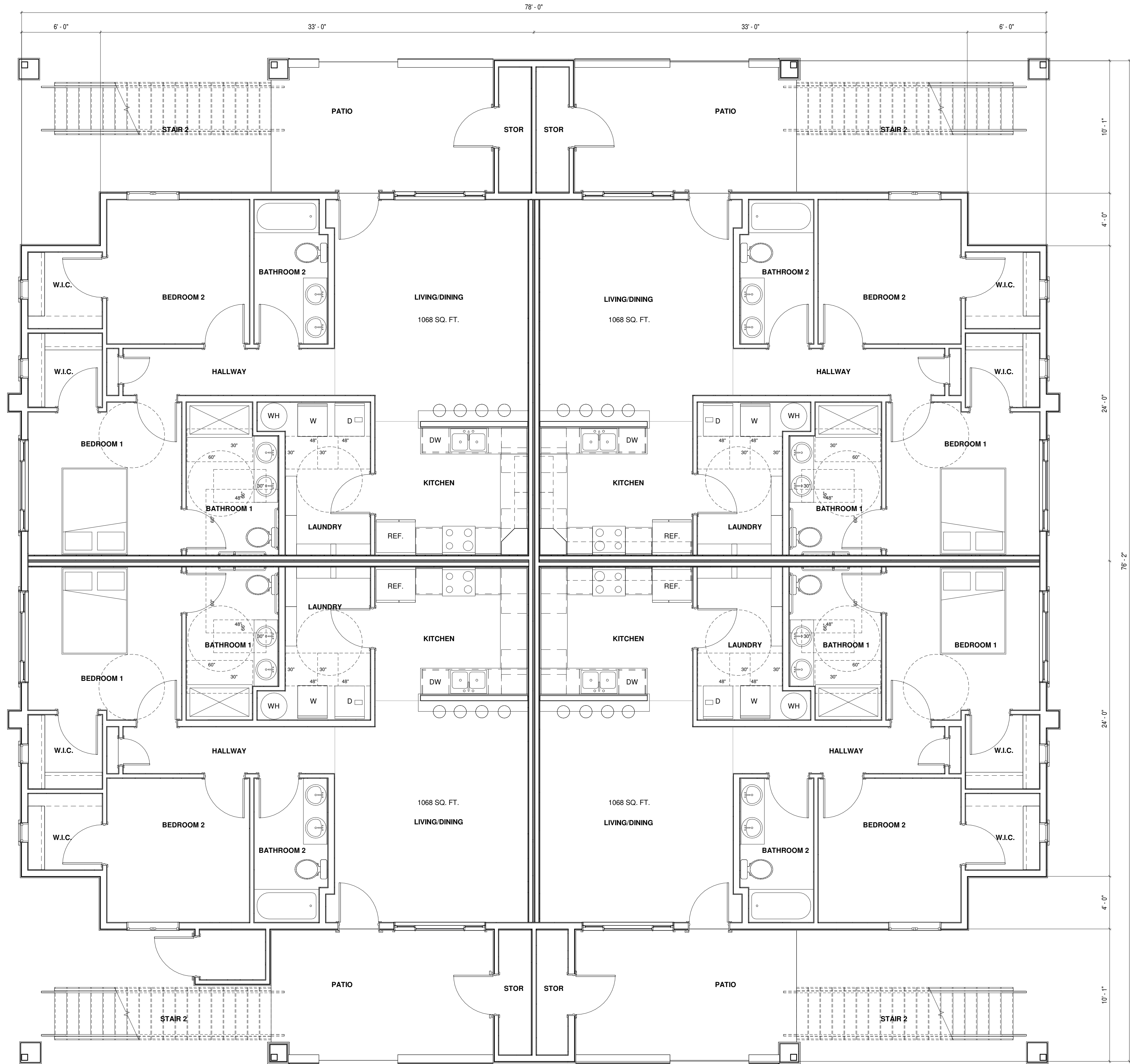
2 North Elevations
1/4" = 1'-0"



1 South Elevation.
1/4" = 1'-0"



2 West Elevation
1/4" = 1'-0"

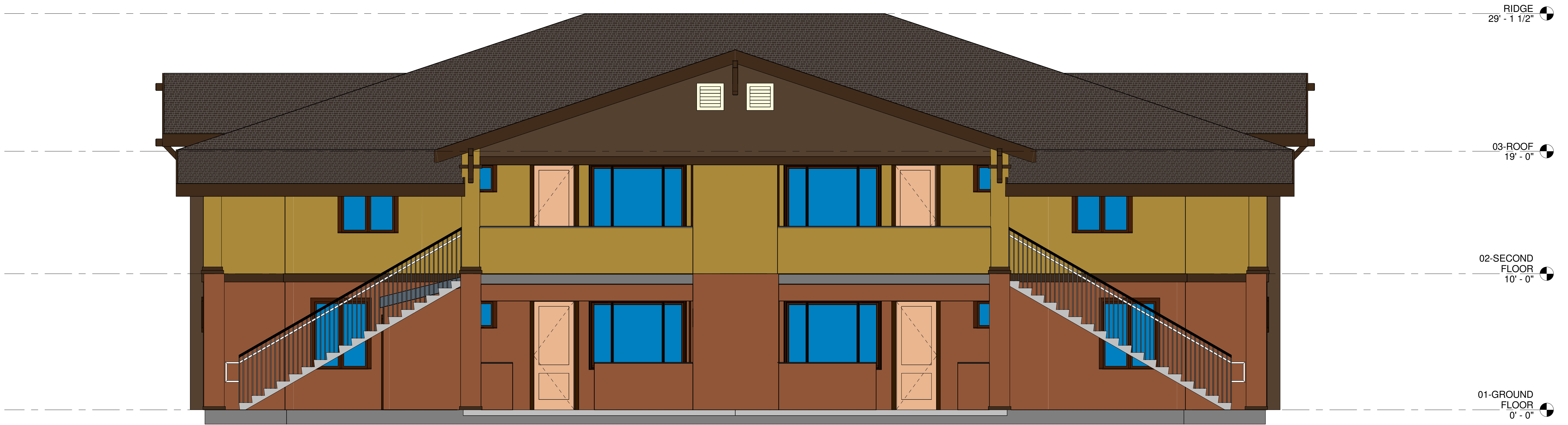


1 THE STANDARD - GROUND FLOOR PLAN (2 Bedroom)

1/4" = 1'-0"



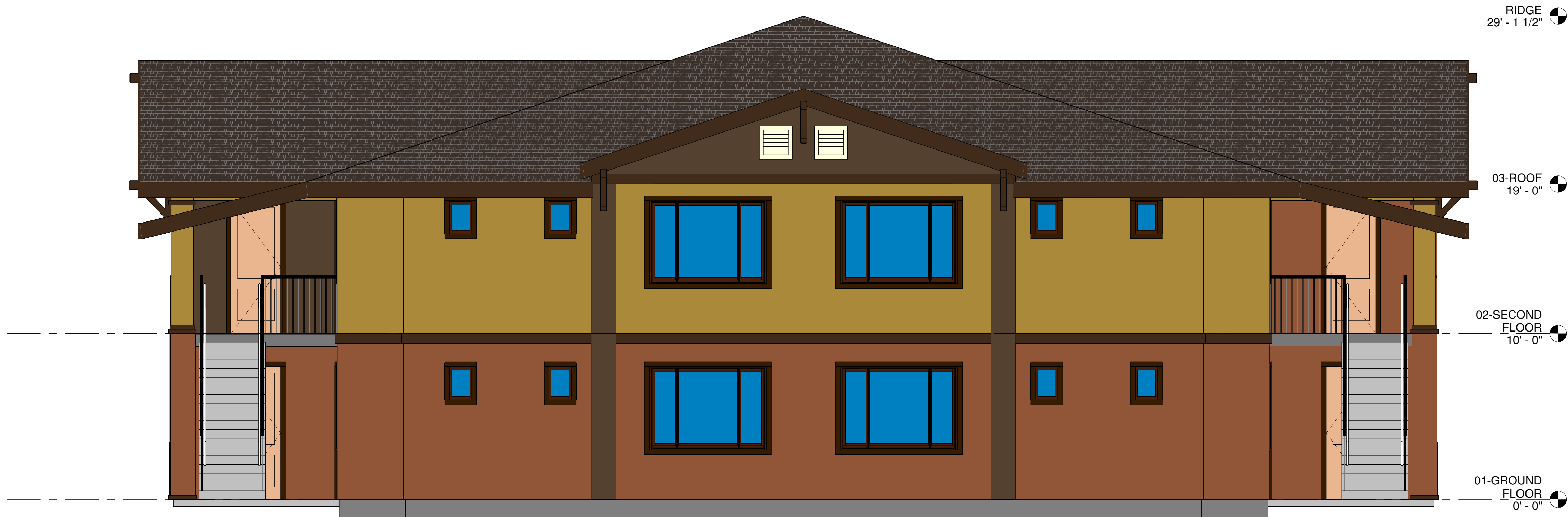
1 SECOND FLOOR PLAN
1/4" = 1'-0"



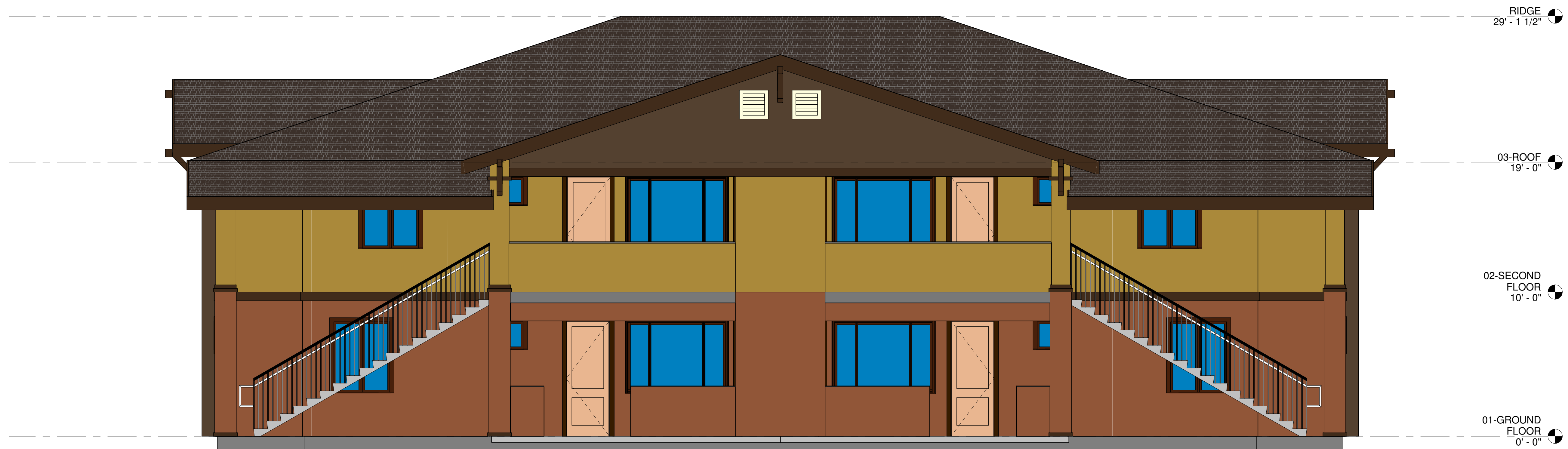
1 EAST ELEVATION
1/4" = 1'-0"



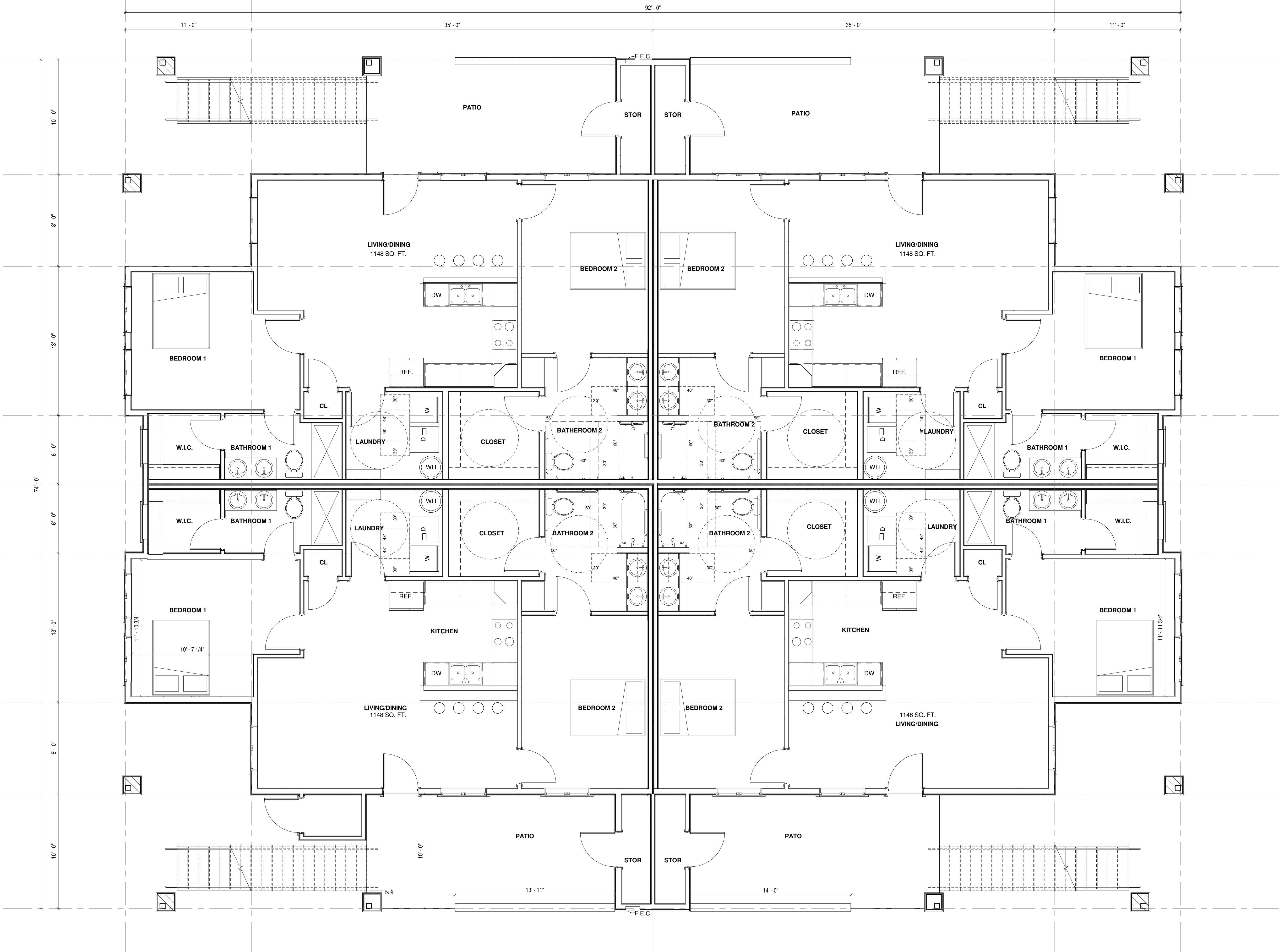
2 NORTH ELEVATION
1/4" = 1'-0"



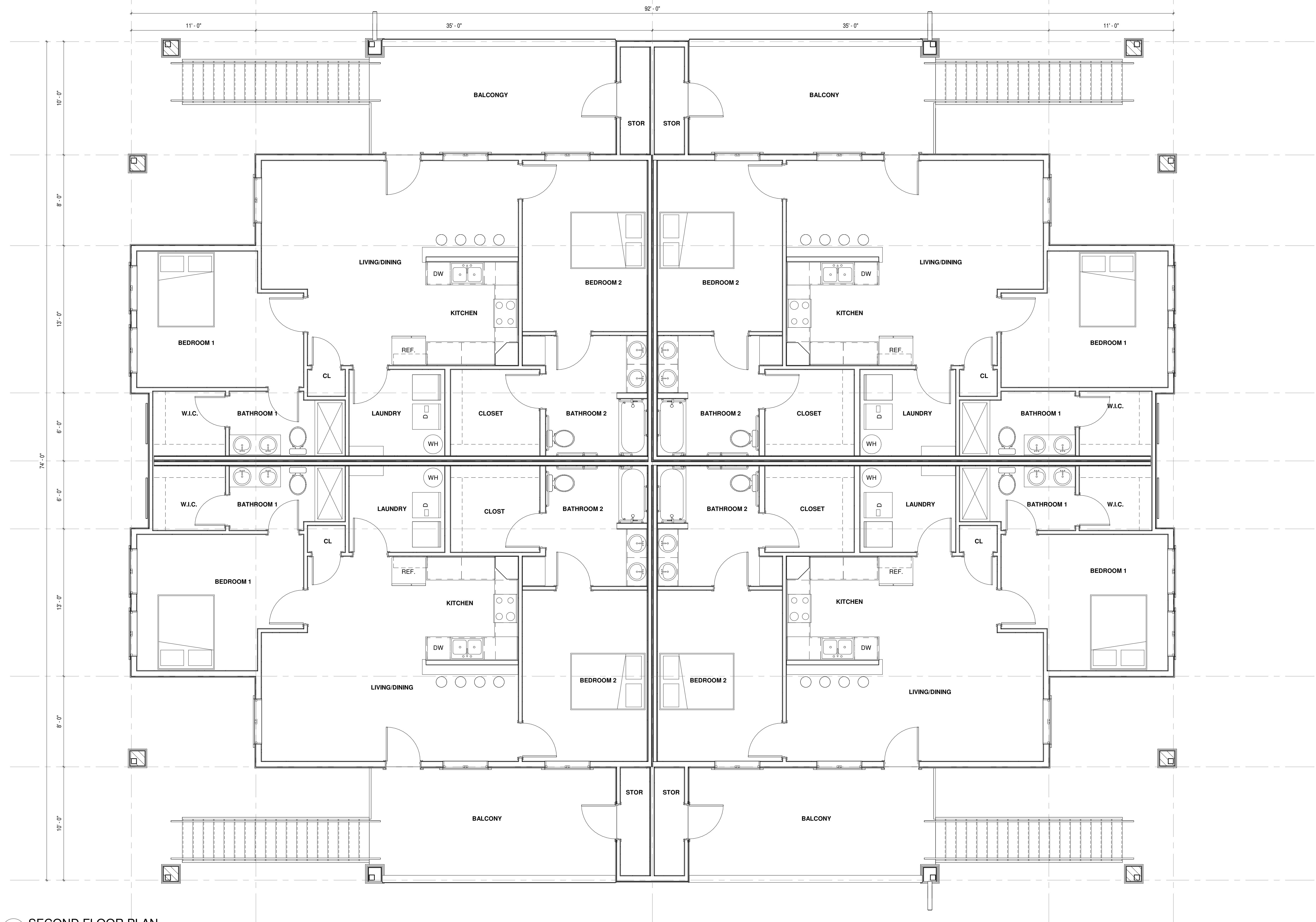
1 SOUTH ELEVATION
1/4" = 1'-0"



2 WEST ELEVATION
1/4" = 1'-0"



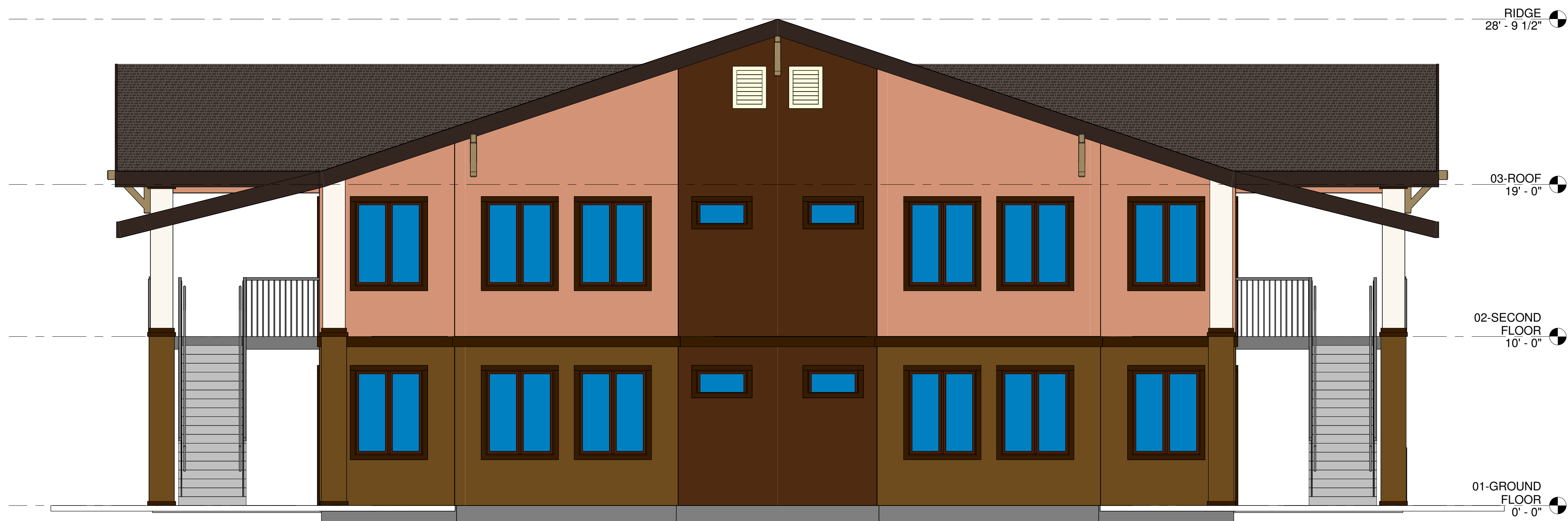
1 THE SUITES - GROUND FLOOR PLAN (2 Bedroom)
1/4" = 1'-0"



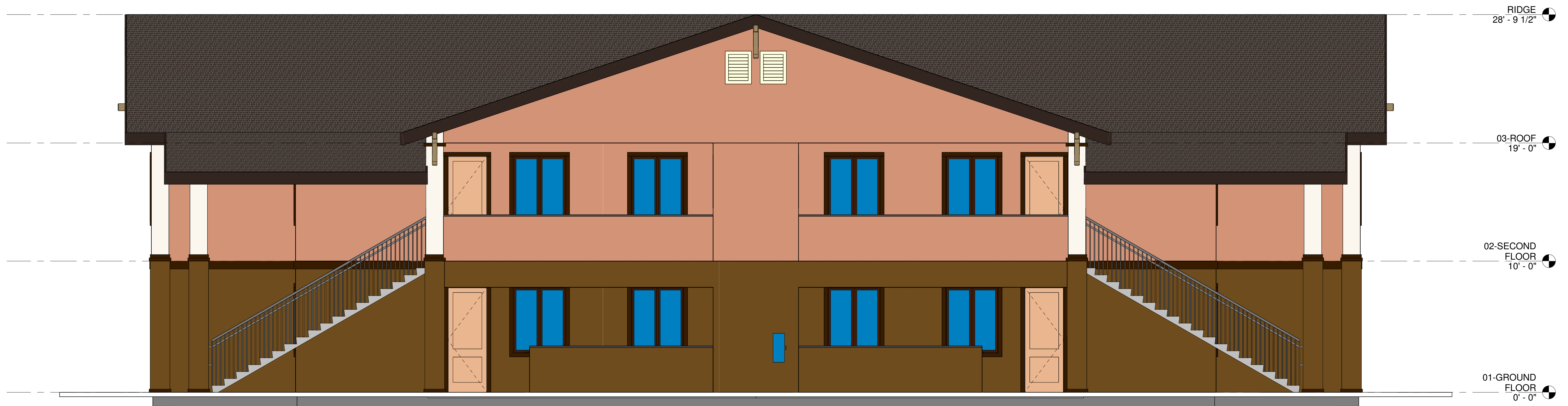
1 SECOND FLOOR PLAN
1/4" = 1'-0"



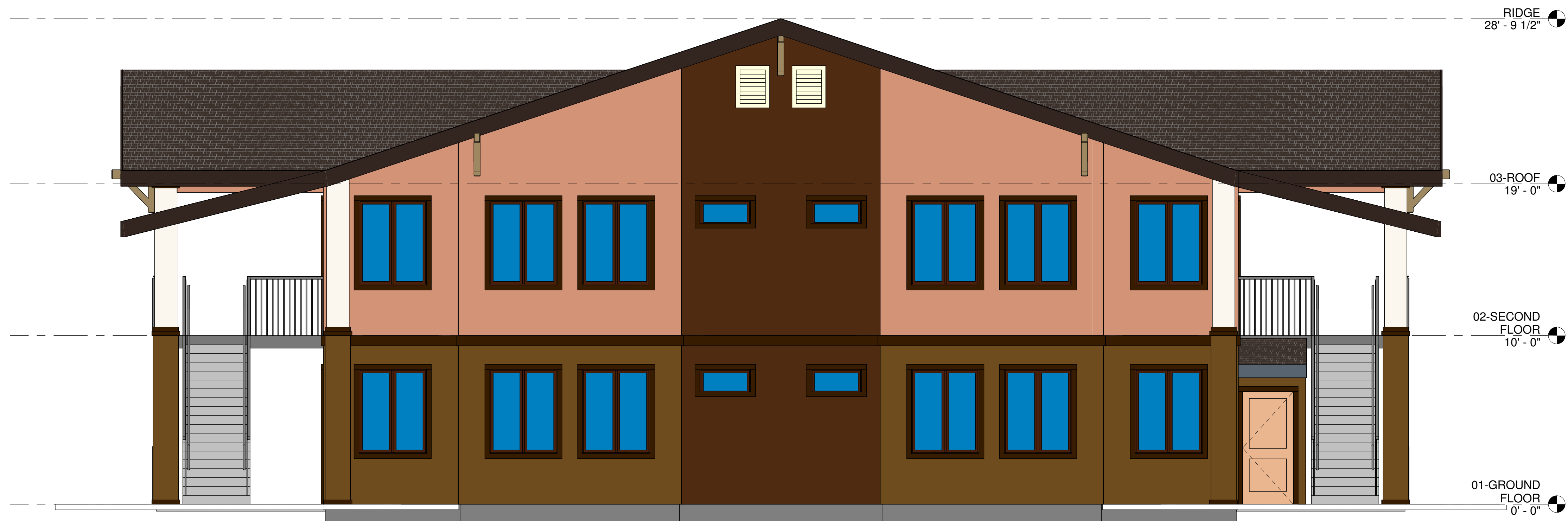
1 Elevation 2 - a1
1/4" = 1'-0"



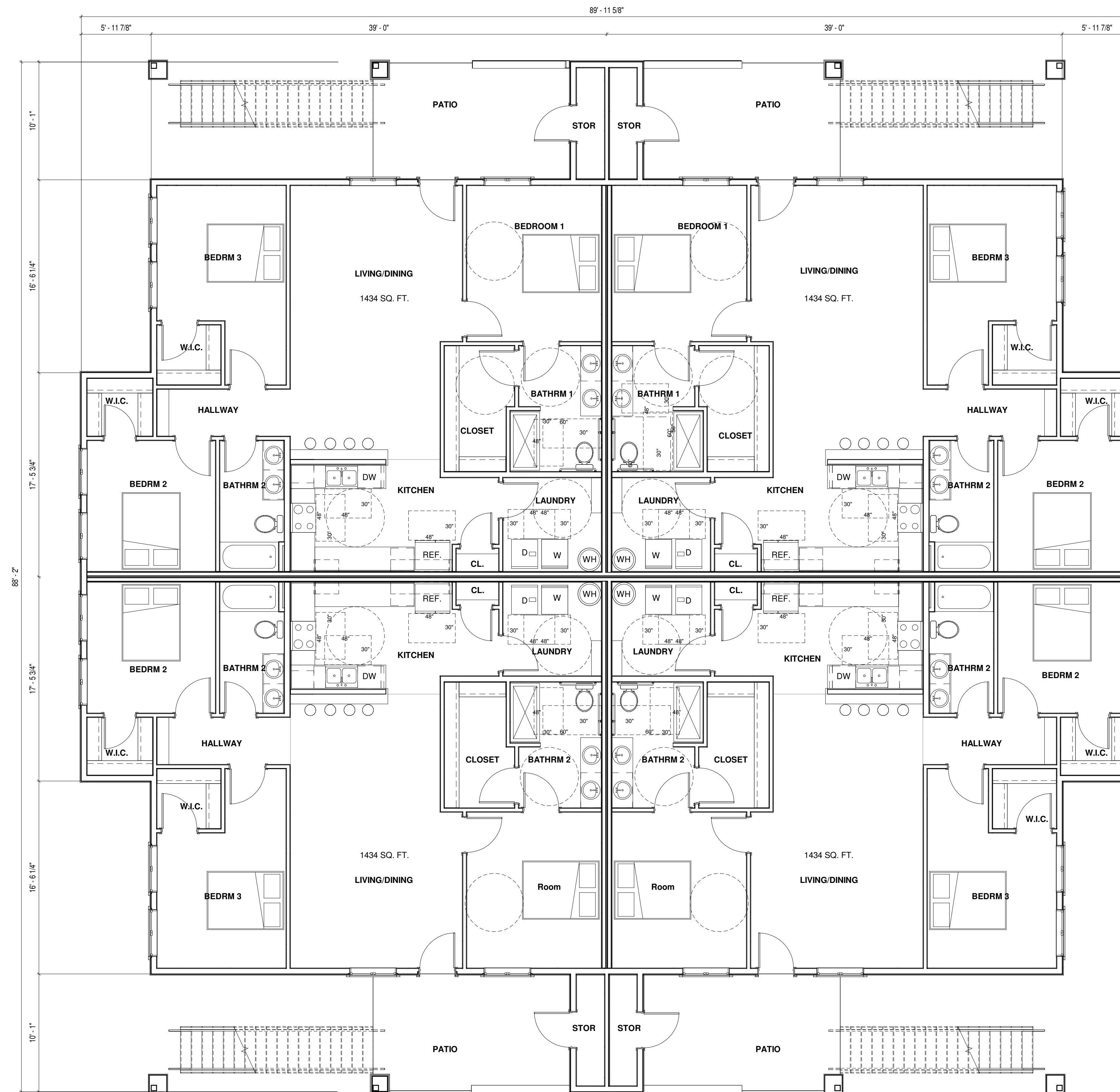
2 Elevation 1 - a1
1/4" = 1'-0"



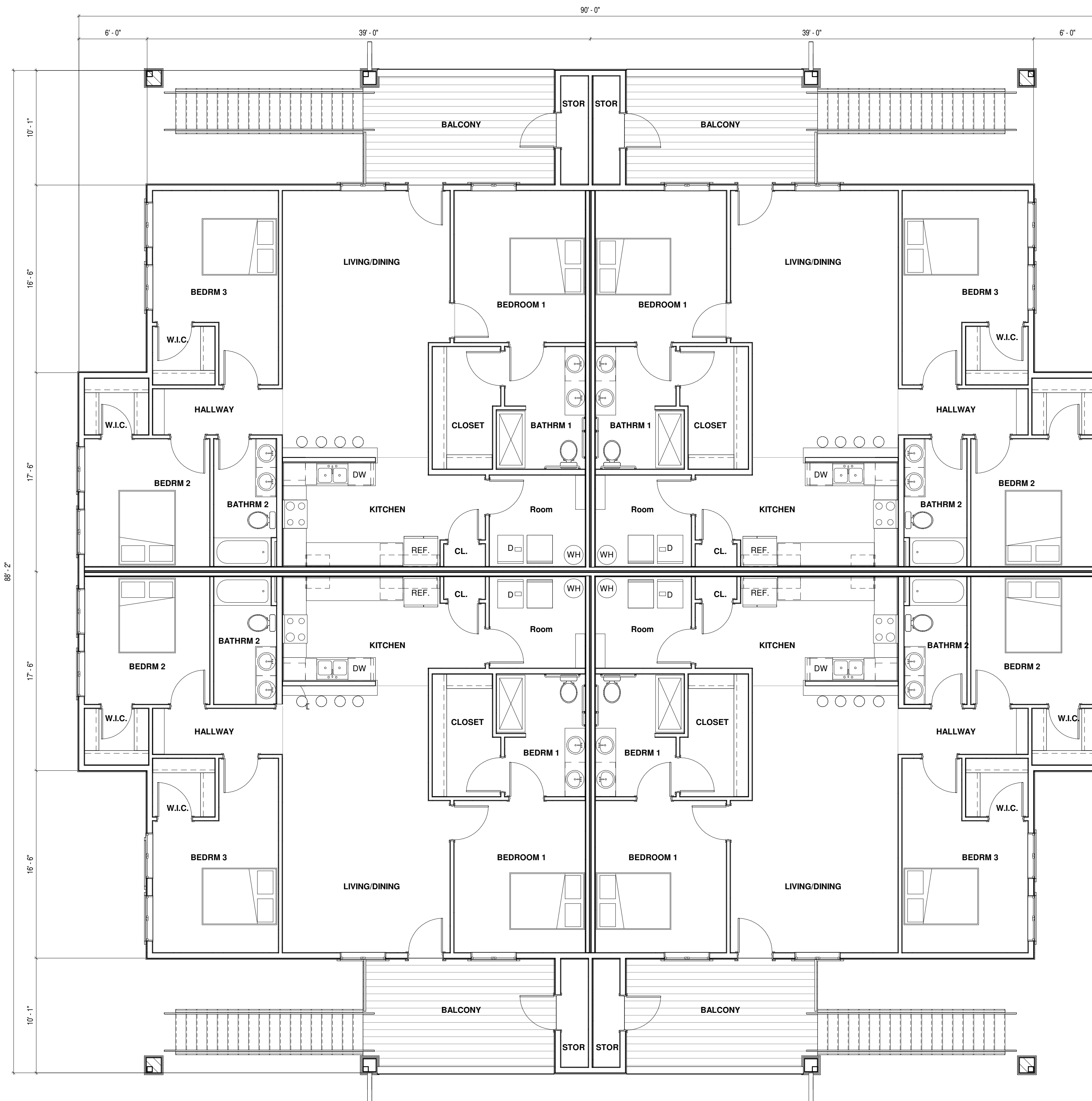
1 Elevation 2 - a
1/4" = 1'-0"



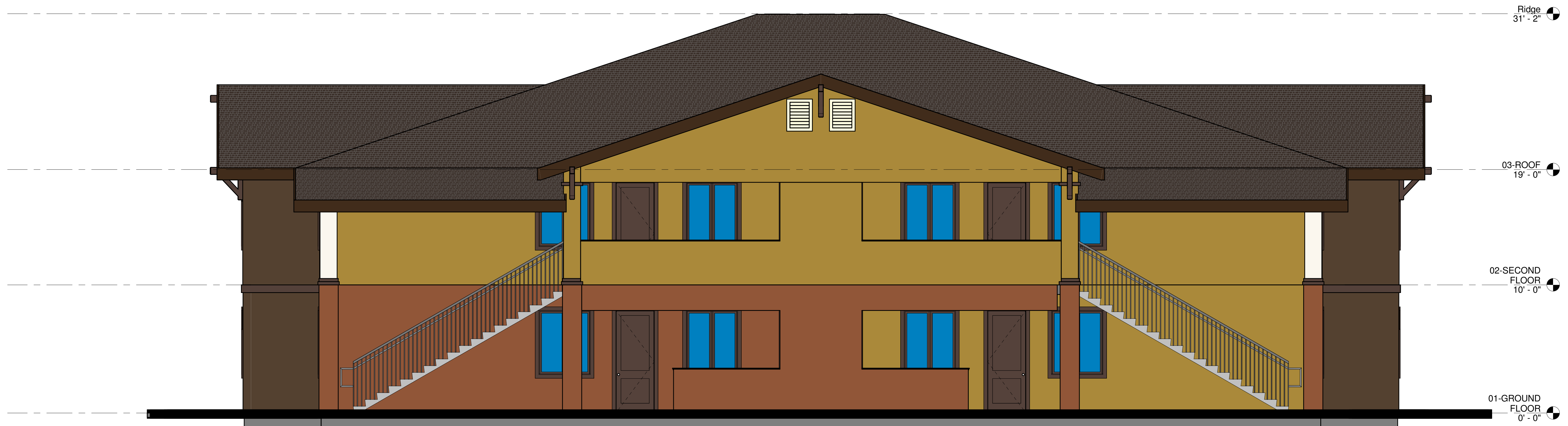
2 Elevation 1 - a
1/4" = 1'-0"



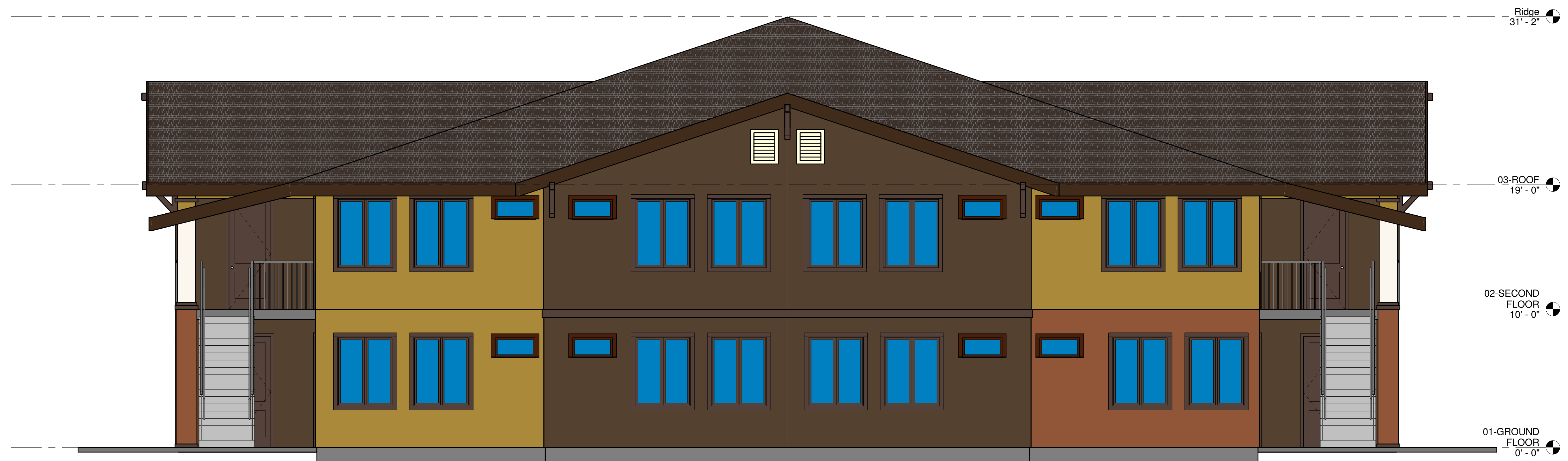
1 THE TRIO- GROUND FLOOR PLAN (3 Bedroom)
3/16" = 1'-0"



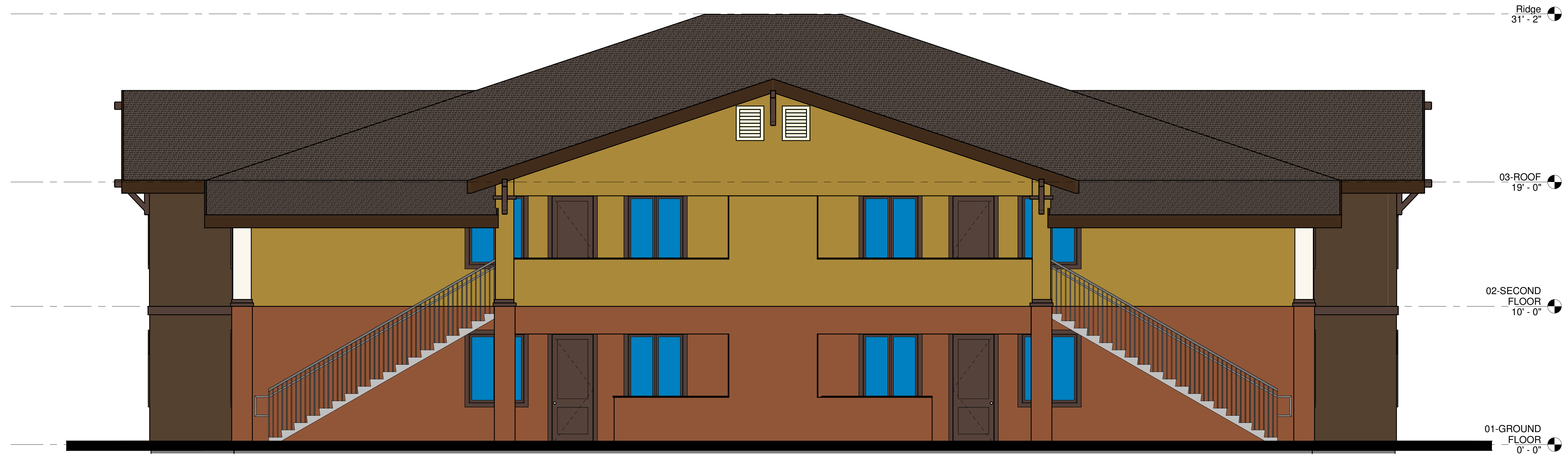
1 SECOND FLOOR PLAN
3/16" = 1'-0"



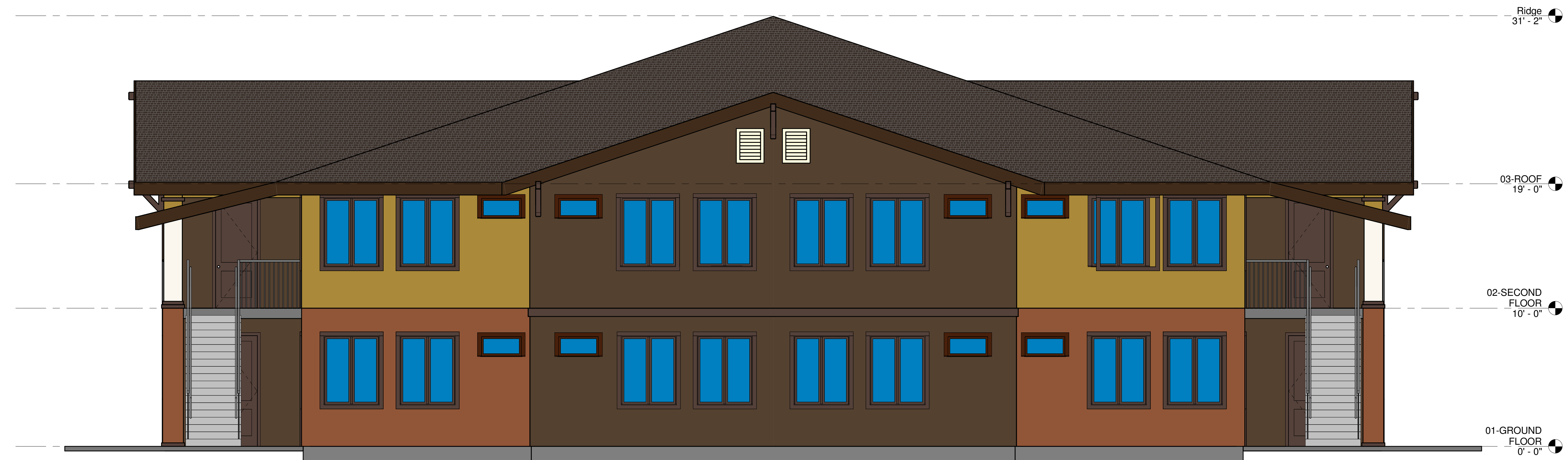
1 SOUTH ELEVATION
1/4" = 1'-0"



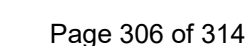
2 EAST ELEVATION
1/4" = 1'-0"



1 NORTH ELEVATION
1/4" = 1'-0"

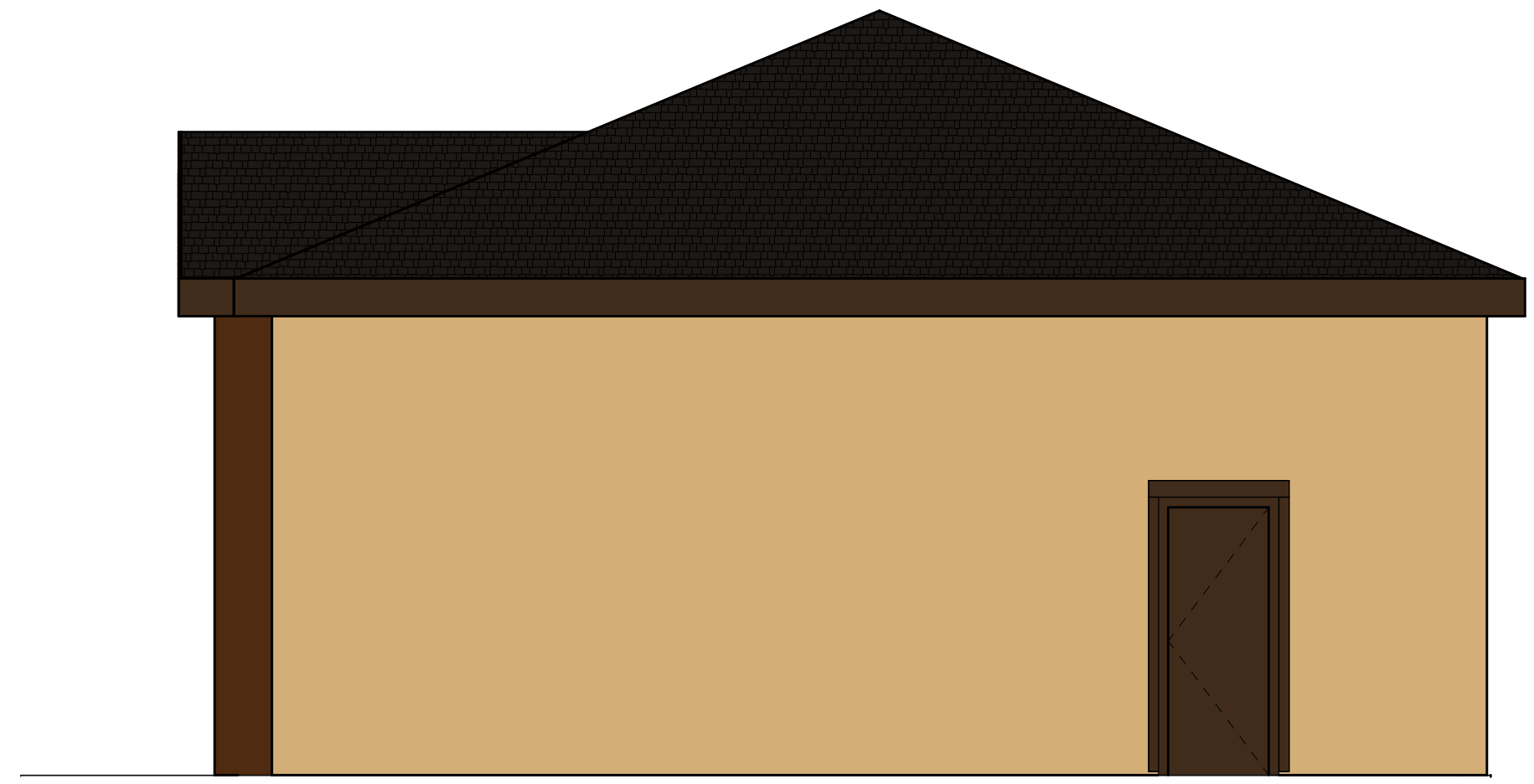


2 WEST ELEVATION
1/4" = 1'-0"

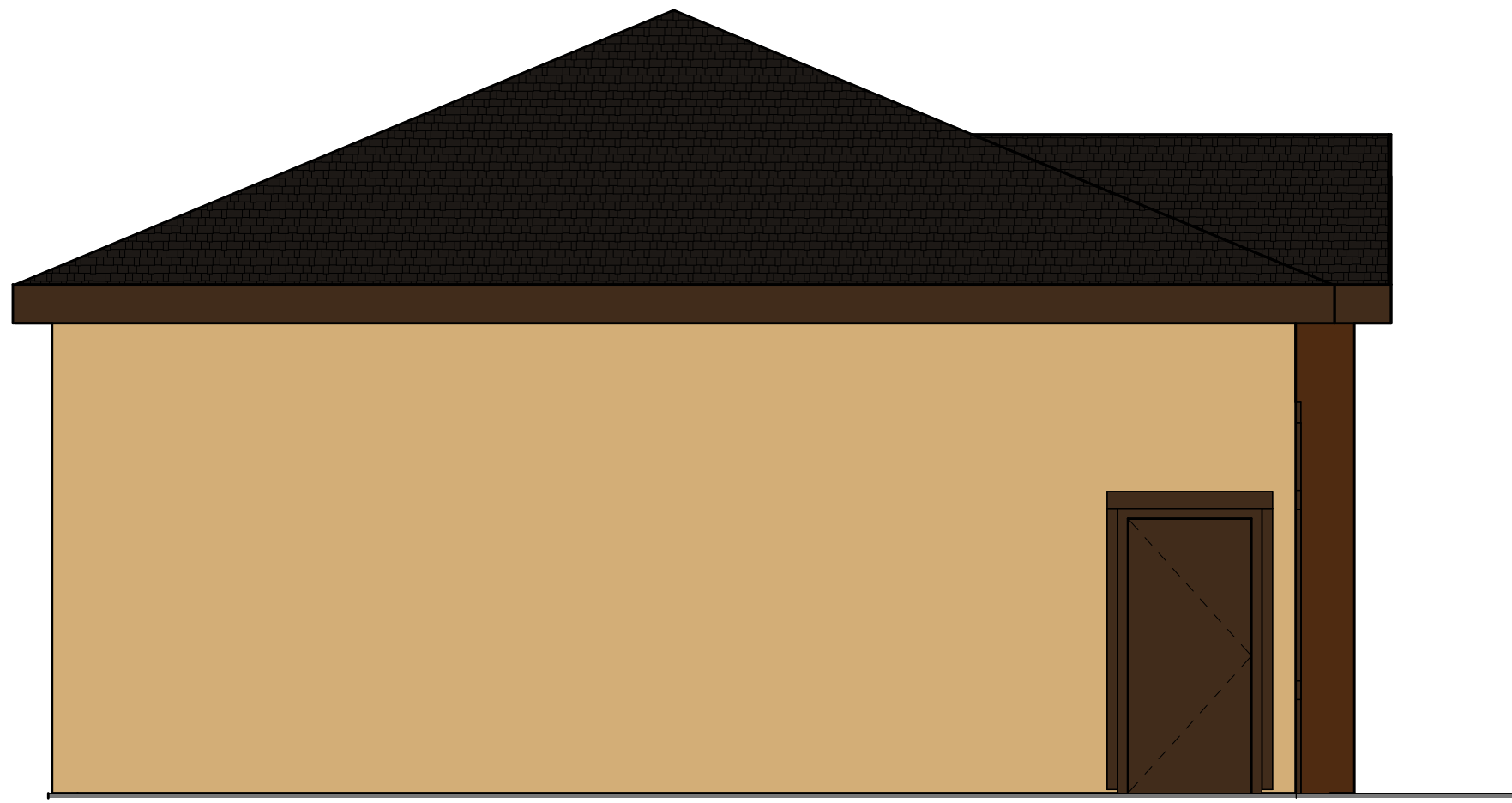




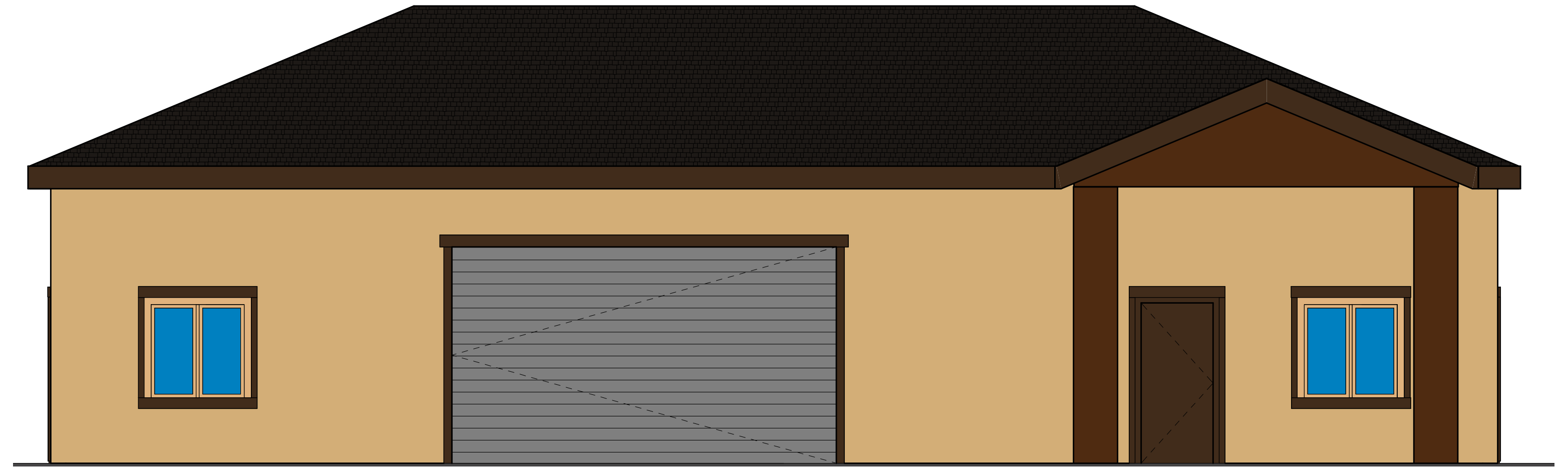
2 NORTH PRESENTATION
1/4" = 1'-0"



1 EAST PRESENTATION
1/4" = 1'-0"



4 WEST PRESENTATION
1/4" = 1'-0"



3 SOUTH PRESENTATION
1/4" = 1'-0"



CITY OF FERNLEY

Planning Commission AGENDA REPORT

Meeting Date: December 14, 2022

REPORT TO: Fernley Planning Commission

REPORT FROM: Lydia Altick, Deputy City Manager

FINANCIAL IMPACT:	CURRENTLY BUDGETED:	FUND/ACCOUNT:
Yes: No: X	Yes: No: X	N/A

ACTION REQUESTED: Motion

AGENDA ITEM: (For Possible Action):

(For Possible Action) Consideration and possible action on a type 1 vacation request (T1VAC22001) by Phelps Engineering Services, Inc. to abandon the public street right of way known as "Delores Court", generally located north of Fremont Street between Vine Street and Wildwood Street (APNs: 021-092-46, 021-092-47, 021-092-54, and 021-092-55) to facilitate the development of a project called Sherwood Villages.

AGENDA ITEM BRIEF:

Staff received an application for a Type I Right-of-Way Vacation from the owners of the properties with APNs 021-092-46, 021-092-47, 021-092-54, and 021-092-55 .

The easement in question is a 25-foot Right-of-Way (a.k.a. Dolores Court) in width and crosses properties from east to west.

Delores Court is a public Right-of-Way that was dedicated to the City of Fernley through a previous parcel map of Kenneth D. Horton and Jimmie Dale Horton, filed in Lyon County on June 13, 1995. Delores Court is within the Sherwood Villages project area and requires an abandonment (vacation) to be recorded with the City and County.

The 25-foot Right-of-Way is east of Vine Street and became invalidated upon completion of the Eagle's Nest subdivision, thus becoming a dead end.

The easement is being requested to be abandoned as part of an approved Conditional Use Permit number 20003 for the Sherwood Villages project. The project will install and dedicate right of way or utility easements for the new infrastructure as needed.

Analysis:

The Nevada Revised Statutes require staff to make two findings in order to approve or approve with conditions a Type I:

1. The easement has been superseded by relocation or is no longer needed by the city; and
2. The abandonment will not substantially, unduly or unreasonably impair the access of any owners of property.

Finding 1:

Staff has determined that there are no existing water mains within the easement; however there may be existing inactive laterals that served APNs 021-092-47 and 021-092-46. The department does not object to the vacation, but the improvement plans shall indicate how the existing services will be properly abandoned when construction begins.

The Right-of-Way does not currently serve any access, but was meant as access as part of the previous Kenneth D. Horton and Jimmie Dale Horton parcel map, and which is not utilized or needed.

Given this information, Staff has determined that the easement is no longer needed by the City of Fernley.

Finding 2:

The easement is not for public access and therefore abandoning the easement would not impair the access of any owners of property.

The easement crosses parcels that are under ownership of Fernley Sherwood QOZB, LLC which is also the applicant requesting the abandonment of the easement. The owners have acquired a parcel along Fremont Street that will provide access to their site.

Given this information, staff has determined that abandoning the easement would not impair the access of any owners of property.

RECOMMENDED MOTION:

"I move to recommend City Council approve the type 1 vacation associated with T1VAC22001."

BUSINESS IMPACT (per NRS Chapter 237):

A Business Impact Statement is not required because this is not a rule (term excludes vehicles by which legislative powers are exercised under NRS Chapters 271, 278, 278A, or 278B).

See attached report for background, analysis, alternatives.

ALTERNATIVES:

All motions appropriate in accordance with City of Fernley Planning Commission parliamentary procedure are possible, to include: tabling, denial, approval with conditions, and so forth.

BACKGROUND:

On May 12, 2021, the Planning Commission approved the Conditional Use Permit (CUP20003) for Sherwood (the "Entitlement") subject to Conditions of Approval. On May 11, 2022, the Planning Commission approved an extension of the Entitlement to May 12, 2023. On November 2, 2022, the City Council approved a Type I

vacation easement for a 20-wide utility easement within the Sherwood Villages project area.

RELEVANT LAWS, STATUTES, AND REGULATIONS:

The process for a Type I vacations are outlined in the City of Fernley Development Code section 32.03.080(a) and Nevada Revised Statutes Chapter 278 – Planning and Zoning – Section 278.480.11.

FINANCIAL IMPLICATIONS:

N/A

ATTACHMENTS:

1. Proposed Order of Abandonment

APN: None

Adjacent APNs: 021-092-46, 021-092-47,
021-092-54, 021-092-55

Recording requested by
When recorded, return to:
City of Fernley
595 Silver Lace Blvd.
Fernley, NV 89408

Mail Tax Statement To:
Fernley Sherwood QOZB, LLC
3522 S. Emerson Street
Englewood, CO 80113

Notice Per NRS 239B.030, this document does not contain personal information as defined in
NRS 603A.040

ORDER OF ABANDONMENT

Dolores Court per Parcel Map 183107

WHEREAS:

- A) A petition to vacate or abandon a public right-of-way was filed with the City Clerk of the City of Fernley by the owner of all the real property containing the road offer of dedication further described in **Exhibit "A"** & graphically depicted on **Exhibit "A1"**;
- B) A duly noticed public hearing was held by the City Council for the City of Fernley on _____, 2022, for the purposes of considering the proposed vacation and abandonment, and it was duly moved, seconded & passed by the City Council of the City of Fernley that the public road offer of dedication described in **Exhibit "A"**, & graphically depicted on **Exhibit "A1"**, be vacated & abandoned;
- C) Based on information received in the written staff report & at the public hearing, this Council finds that the abandonment will not result in a material injury to the public;

NOW, THEREFORE, IT IS HEREBY ORDERED by the City Council of the City of Fernley

- 1) That the public right away more particularly described in **Exhibit "A"**, & graphically depicted on **Exhibit "A1"**, hereto vacated & abandoned pursuant to the laws of the State of Nevada & title to said property shall revert & vest in the abutting property owner. Abutting properties owner being **Fernley Sherwood QOZB, LLC**, owner of Parcel "A", Parcel "B" & Parcel "C", as shown on the Official Plat of KENNETH D HORTON & JIMMIE DALE HORTON, filed in the Office of the County Recorder of Lyon County, State of Nevada, on June 13th, 1995, as Document No. 183107, Official Records, also known as APNs 021-092-46, 021-092-47, & 021-092-54.

RESERVING THEREFROM, over, under, across & through the abandoned area, a blanket public utilities & access easement for the benefit of all public utilities for the operation, maintenance, repair & reconstruction & upgrade of existing public utility facilities, & access thereto. Such easements are relocatable & resizable with future development & approval of the impacted utility & the City Engineer.

- 2) This Order shall be recorded in the County Recorder's office, Lyon County, Nevada.

DATED: This day of _____ day of _____, 2022.

City of Fernley, a municipal corporation

By: _____
Roy Edgington Jr., Mayor

STATE OF NEVADA }
 }SS Acknowledgement in a representative capacity
 }

This instrument was acknowledged before me on _____, 2022
By Roy Edgington Jr. as Mayor of the City of Fernley.

Notary Public

EXHIBIT "A"
VACATION OF 25' WIDE RIGHT-OF-WAY (a.k.a. DOLORES COURT)
Adjacent APNs: 021-092-46, 021-092-47, 021-092-54, & 021-092-55

A PART OF THE WEST HALF (W½) OF THE SOUTHEAST QUARTER (SE¼) OF SECTION 12, TOWNSHIP 20 NORTH, RANGE 24 EAST, MOUNT DIABLO MERIDIAN, SITUATE IN THE CITY OF FERNLEY, LYON COUNTY, NEVADA, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

ALL OF THAT CERTAIN PUBLIC RIGHT-OF-WAY KNOWN AS "**DOLORES COURT**", AS SHOWN ON THE PARCEL MAP FOR "**KENNETH D. HORTON & JIMMIE DALE HORTON**", RECORDED ON JUNE 13TH, 1995, IN DOCUMENT NO. 183107, PUBLIC RECORDS OF LYON COUNTY, NEVADA.

CONTAINING 14,106 SQUARE FEET, MORE OR LESS.

BEARING BASE: THE NORTH AMERICAN DATUM OF 1983, 1994 ADJUSTMENT (NAD 83/94), NEVADA STATE PLANE WEST COORDINATE SYSTEM. GRID BEARINGS FROM TRUCKEE MEADOWS REGIONAL GLOBAL POSITIONING SYSTEM (GPS) NETWORK, COMBINED SCALE FACTOR OF 1.000258. THE SOUTH LINE OF THE WEST HALF (W½) OF THE SOUTHEAST QUARTER (SE¼) OF SECTION 12, TOWNSHIP 20 NORTH, RANGE 24 EAST, MOUNT DIABLO MERIDIAN, COMPUTES TO A BEARING OF NORTH 89°43'31" EAST.

For the firm, by:
Richard A. Pedraza

PLS #21076

State of Nevada



155 Country Estates Circle
Reno, NV 89511

