



N E V A D A

AGENDA
Regular Meeting
Planning Commission

Wednesday, June 14, 2023 • 5:00 PM

Members

Jenni McCullar - Chairwoman
Angela Lewis - Vice Chair
Jan Hodges - Commissioner
Humayoon Lodhi - Commissioner
Barry Williams Sr. -
Commissioner
Shellie Severa - Commissioner
Cody Wagner - 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](#), 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 the Planning Commission 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 commission members 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: The 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 City Council.

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. GENERAL BUSINESS

- 2.1. Discussion regarding "City of Fernley Planning Commission By-laws".**

3. PUBLIC HEARINGS

- 3.1. (For Possible Action) Discussion and possible action regarding an administrative review appeal (AR22004-APP) submitted by Reno Engineering Corporation on behalf of MOHR Pilot Road LLC, regarding the conditions of approval for a 446,940 square-foot warehouse at 1000 Pilot Road (APN: 021-061-32) on a parcel ±27.83 acres in size in the Industrial zone.**
- 3.2. (For Possible Action) Discussion and possible action on a tentative subdivision map application (TSM23001) submitted by Wood Rodgers on behalf of the Clements Family to allow for the development of a 241-lot single-family detached subdivision named "Clements Ranch" on a ±69.2-acre portion of the larger ±83.90-acre parcel generally located north of Farm District Road at the intersection of Clearwater Parkway (APN: 021-341-18).**
- 3.3. (For Possible Action) Discussion and possible action regarding a conditional use permit (CUP23003) application submitted by Morton & Pitalo on behalf of Fernley QOF, LLC to allow for the development of a 91-room hotel on the ±12.66-acre parcel zoned General Commercial (C2) and generally located southeast of Stanley Drive, north of Newlands Drive East, and west of the Newlands Drive East / Lyon Drive intersection (APN: 021-232-53); this is phase one of the project known as the "Fernley Promenade" and proposed for a 3.5-acre site within the parcel.**
- 3.4. (For Possible Action) Discussion and possible action regarding a conditional use permit (CUP23004) application submitted by Westex Engineers on behalf of Stor-All, LLC for ±32,909 square feet of mini-warehouse storage space on a portion of a parcel zoned General Commercial (C2), ±11.32-acres in size, and generally located west of 95A, south of Shadow Lane, east of White Eagle Lane, and north of Sunshine Lane (APN:021-132-64).**

4. 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.)

5. 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.)

6. ADDRESS REQUEST(S) FOR FUTURE AGENDA ITEMS

7. PUBLIC FORUM

8. ADJOURNMENT

Next Meeting: July 12, 2023 @ 5 pm

**MINUTES OF THE
FERNLEY PLANNING COMMISSION MEETING
APRIL 12, 2023**

Chairwoman McCullar called the Fernley Planning Commission meeting to order at 5:00pm.

1. INTRODUCTORY ITEMS

1.1. Roll Call

Present: Chairwoman Jenni McCullar, Vice-Chair Angela Lewis, Commissioner Jan Hodges, Commissioner Barry Williams, Commissioner Humayoon Lodhi, Commissioner Cody Wagner, Commissioner Shellie Severa. Staff: Deputy City Clerk Brenda Gosser, Administrative Specialist I Sandy Harris, Associate Planner Shay League, Deputy City Manager Lydia Altick, City Attorney Brandi Jensen, City Engineer Derek Starkey.

1.2. Public Forum

No public comments

1.3. (For Possible Action) Approval of Agenda

Motion: I MOVE TO APPROVE THE AGENDA. **Action:** Approved. **Moved by** Commissioner Wagner, **Seconded by** Commissioner Lewis **Vote:** Passed, **Summary:** Yes 7. Chairwoman McCullar, Commissioner Williams, Commissioner Hodges, Commissioner Wagner, Commissioner Lodhi, Commissioner Lewis, Commissioner Severa

1.4. (Possible Action) Approval of Minutes

Motion: MOVE TO APPROVE THE MINUTES FROM March 8, 2023. **Action:** Approved, **Moved by** Commissioner Hodges, **Seconded by** Commissioner Lodhi. **Vote:** Passed, **Summary:** Yes 6, Abstained 1. **Yes:** Commissioner Williams, Commissioner Hodges, Chairwoman McCullar, Commissioner Wagner, Commissioner Severa, Commissioner Lodhi. **Abstain:** Commissioner Lewis

2. PUBLIC HEARINGS

2.1. (For Possible Action) Discussion and possible action regarding application CUP23001 submitted by Endured Builders for the Nevada Pacific Apartments project to request multifamily buildings as a conditional use in the General Commercial (C2) zone on a parcel 5.44 acres in size and generally located north of Emigrant Way, south of Highway 50 Alternate, east of Nevada Pacific Boulevard, and west of Short Cut Drive (APN 021-201-62).

Senior Planner League presented the project stating the 140 apartments will be located behind Fox Peak. She explained the findings for the project. Joe Machado with Endured Builders was available for questions.

Chairwoman McCullar opened public comment.

Sandy Staples, Fernley resident, stated she did not receive any information regarding this project. Ms. Staples stated she had a concern about the 3-story building. She stated the fire department does not have the proper equipment for this type of building.

Randy Staples, Fernley resident, expressed concern regarding the traffic this development will bring. He stated he would be fine with a 1 story apartment complex but did want a 3-story building in his back yard.

Faye Louhela, Fernley resident, stated she did not receive notification regarding the project. She was also concerned about the traffic.

Viola Wood, Fernley resident, stated she purchased her home 5 years ago and does not want to move. She does not want her property value to decrease due to the apartments.

Senior Planner League explained this property was already zoned commercial which allows for this use with a conditional use permit. Planner League further explained upon receipt of the application, residents within 300' were notified including 88 individual property owners.

Sharon Carlson, Fernley resident, stated she lives on Short Cut and did not receive notification of the project.

Rhonda Anderson, Fernley resident, expressed several concerns regarding growth.

Chairwoman McCullar closed public comment at this time.

Commissioner Wagner stated there is public concern with every project that is brought before the commission. He expressed he wanted to be sympathetic to those concerns, but the Planning Commission are to look at facts of the project. He stated there is an Appeal Process to the City Council.

Motion: I MOVE TO APPROVE THE CONDITIONAL USE PERMIT ASSOCIATED WITH CUP23001, 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 21, AS LISTED IN THE STAFF REPORT. **Action:** Approved, **Moved by** Commissioner Wagner, **Seconded by** Commissioner Williams. **Vote:** Passed, **Summary:** Yes 4, No 3, **Yes:** Commission Williams, Commissioner McCullar, Commissioner Lewis, Commissioner Wagner, **No:** Commissioner Hodges, Commissioner Severa, Commissioner Lodhi,

3. CHAIR AND COMMISSION ITEMS

There were none.

4. PLANNING DIRECTOR ITEMS

Senior Planner League stated there will be an Appeal at the next meeting regarding 1000 pilot road. Planner League also stated the By-Laws and Transportation Master Plan will be on upcoming meetings.

6. PUBLIC FORUM

There were none.

7. ADJOURNMENT

There being no further business to come before it, the Fernley Planning Commission meeting adjourned at 5:52 pm.

Approved by the Fernley Planning Commission on June 14, 2023, by a vote of:

AYES _____ NAYS: _____ ABSTENTIONS: _____ ABSENT: _____

Chairwoman Jenni McCullar

ATTEST:



CITY OF FERNLEY

Planning Commission AGENDA REPORT

Meeting Date: June 14, 2023

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:

AGENDA ITEM: (For Possible Action):

Discussion regarding "City of Fernley Planning Commission By-laws".

AGENDA ITEM BRIEF:

During a review of "City of Fernley Planning Commission By-laws" staff determined there are inconsistencies between the bylaws as recorded and as they are currently practiced. Staff wishes to get feedback from Commissioners regarding how best to revise the written bylaws.

RECOMMENDED MOTION:

Discussion only, no motion required at this time.

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:

N/A

BACKGROUND:

At the January 2023 Planning Commission meeting, in response to inconsistent information from staff regarding

election procedures, Vice-Chair Lewis requested that staff determine both the term length Commissioners are supposed to serve and which Commissioners have served in officer positions in recent years. The question of officer positions was addressed at the February 2023 Planning Commission. In accordance with current bylaws, Planning Commissioners serve four-year terms, but may be re-appointed indefinitely. Fernley's City Clerk has kept excellent records regarding re-appointment and all 5 of the 7 Planning Commissioners that have served for longer than 4 years were re-appointed appropriately.

Commission bylaws were originally adopted on November 14, 2001 and were last revised on January 13, 2016. While City of Fernley is in compliance with Commission Officer election and Commissioner term length, staff determined that an update to the bylaws may be due. Please review the attached current bylaws and proposed new bylaws and provide staff with direction regarding any changes desired. Once your feedback is incorporated, and the City Attorney has reviewed them, these will be brought back for adoption.

RELEVANT LAWS, STATUTES, AND REGULATIONS:

[Nevada Revised Statutes \(NRS\) 268.110](#) - 268.220 regarding City Planning Commission

[NRS 278.030 - 278.265](#) regarding Planning Commissions

[NRS 241](#) regarding Meetings of State and Local Agencies (often referred to as "Open Meeting Law")

[Fernley Municipal Code, Chapter 9, Article 1](#) - Boards and Commissions, Planning Commission

FINANCIAL IMPLICATIONS:

N/A

ATTACHMENTS:

1. Current Planning Commission By-Laws
2. Suggested By-Law Update

**CITY OF FERNLEY
PLANNING COMMISSION
BY-LAWS**

Adopted 11/14/2001

Revised 01/13/2016

Article I – The Commission

Section 1. Name of Commission: the name of the commission shall be the Fernley Planning Commission (Hereinafter the Commission).

Section 2. Office of the Commission: The office of the Commission shall be the City of Fernley Planning Department, 595 Silver Lace Boulevard, Fernley, NV 89408.

Article II – Membership

Section 1. The mayor shall appoint, subject to advice and consent by the City Council, the seven members of the Commission. The members shall be residents of the City of Fernley. The mayor, city attorney and city engineer or designee shall be ex-officio members of the Commission.

Section 2. Legal Counsel: The City Attorney's Office shall be the legal counsel for the Commission.

Section 3. Compensation: The Council may provide by resolution for compensation, expenses and subsistence allowances to the Commission members, subject to the limitation of NRS 278.040.

Section 4. Terms of Office: The term of each appointed member shall be four (4) years, or until his/her successor takes office. Members presently serving on the Commission may serve the balance of the term for which they were appointed. Terms of the Commission shall be staggered pursuant to NRS 268.120(2).

Section 5. Removal from the Commission: Members may be removed from office, after a public hearing, by a majority of the City Council for just cause. Removal may be recommended to the City Council by a majority vote of the whole commission for two (2) consecutive unexcused absences and three (3) unexcused absences within a calendar year or for otherwise failing to meet the requirements of office.

Section 6. Vacancies: Vacancies occurring other than through the expiration of terms by the Mayor as provided by NRS 268.120(3).

Article III – Officers and Responsibilities

Section 1. Officers of the Commission: The officers of the Commission shall be a Chairman, Vice-Chairman and Secretary.

A. Chairman:

1. Presides over all meetings of the Commission.
2. Calls special meetings of the Commission in accordance with the By-Laws.
3. Signs certain documents and maps of the Commission such as resolutions, the land use map and official letters from the Commission.

4. Insures that all actions of the Commission are properly taken.
5. Preserves order and decorum, prevents attacks on personalities or the impugning of the members' motives and confines member debate to the question under discussion.

B. Vice Chairman:

1. Presides at any regular or special meeting of the Commission in the absence of the Chairman; and in the event of the resignation or death of the chairman, will perform such duties as are imposed on the Chairman until such time as the Commission shall elect a new Chairman.

C. Secretary:

1. The recording secretary is responsible for keeping an accurate record of all proceedings and may not be a member of the Commission. In addition, the Secretary is responsible to prepare and file with the City Council an annual report at the end of each calendar year.

Section 2. Election of Officers:

- A. The Chairman and vice-Chairman shall be elected from among the members of the Commission by a simple majority vote at the first regular meeting of the Commission at the beginning of each calendar year.
- B. They shall hold office for one (1) year or until their successor(s) are elected and qualified.
- C. Any office may be re-elected but may not serve more than two (2) consecutive terms in a single office.
- D. Following the election, the gavel shall pass to the officers at the existing meeting of the Commission.

Article IV – Meetings

Section 1. Meetings:

- A. Unless otherwise specified, regular meetings shall be held in the Council Chambers on the second Wednesday of the month.
- B. Special meetings may be called by the Chairman when deemed necessary. Members of the Commission shall be notified at least three (3) days prior to the special meeting. Special meetings shall be noticed and agenzized pursuant to the Open Meeting Law.
- C. Executive meetings may be called by the Chairman when deemed necessary. Members of the Commission must be notified at least three (3) days prior to the executive meeting. Such executive meeting shall consider only internal and confidential matters. Neither discussion nor decision shall be made on applications pending before the Commission.
- D. In the event that there is no business to conduct, a notice shall be mailed to the Commission and posted as required by the Open Meeting Law.

- E. Noticing and posting of the agenda shall follow the open meeting law as set forth by NRS.

Section 2. Quorum: A quorum shall consist of four (4) members of the membership of the Commission and shall be empowered to conduct Commission business. However, NRS 278.210 requires that five (5) members of the Commission be present to vote on any adoption, amendment, extension or addition to the master plan.

Section 3. Public Rights

- A. Manner of Addressing the Commission: - Time Limit: Each person addressing the Commission shall step forward to the microphone, shall give his/her name and address in an audible tone of voice for the record and shall limit his/her address to five (5) minutes, unless further time is granted by the Chairman. No person, other than the members of the Commission and the person having the floor, shall be permitted to enter into any discussion, either directly or through the members of the Commission. No questions shall be asked of the Commission members, except through the presiding officer. Except during the public comment period, speakers shall limit their presentation to statements and exhibits relevant to the agenda item under discussion and shall avoid undue repetition of points previously presented to the Commission.
- B. Disruptive Behavior: Any person who willfully disrupts a meeting to the extent that its orderly conduct is made impractical may be requested to leave the meeting.
- C. Presentation of Protests: Interested persons or their authorized representatives may address the Commission for the presentation of protest, petitions or communications relating to any matter over which the Commission has control when the item is under consideration by the Commission.
- D. Written Communication: Written information and materials provided by the project proponent, including graphics, photographs and records of verbal statements, that pertain to Commission meetings, may be submitted to the Commission staff. All such information and materials shall be received a minimum of three (3) working days in advance of the meeting for distribution to all Commission members.

Section 4. Case Number: All materials related to a matter pending before the Commission shall be identified by a specific case number. Materials bearing said number shall constitute the public record of the Commission on the matter.

Section 5. Action Items: In Accordance with the provisions of the Open Meeting Law, action items appearing on the agenda of the Planning Commission shall be (*) designated.

Section 6. Voting: When any vote is called, each member of the Commission shall respond by saying "aye (yes)" or "nay (no)", or abstain, unless a member requests a roll call vote.

Section 7. Tie vote: Any tie vote shall constitute a technical denial of the motion and may be reconsidered by a motion offered by any member who voted on the matter.

Section 8. Conflicts of Interest: A member of the Commission shall not approve, disapprove, vote or otherwise act upon any matter regarding which he has accepted a gift, loan or other financial interest as defined in Article V which would reasonably be effected by his

commitment is his private capacity to the interest of others, or in which he has pecuniary interest, without disclosing the nature and extent of the gift, loan, commitment or interest at the time the matter is considered. A member of the Commission shall consider refraining from approving, disapproving, voting or otherwise acting upon any matter regarding which a member of this immediate family or a relative has accepted a gift, loan or other financial interest as defined in Article V without disclosing the full nature and extent of the gift, loan, commitment or interest at the time the matter is considered. A member of the Commission shall consider refraining from approving, disapproving, voting or otherwise acting upon any matter regarding which a member of this immediate family or a relative has accepted a gift, loan or other financial interest as defined in Article V without disclosing the full nature and extent of the gift, loan, commitment or interest at the time the matter is considered. Any member of the Commission who feels that he has a conflict may request legal advice on how to handle the conflict from the City Attorney's Office, preferably in advance of the meeting.

Section 9. Abstentions: A member who decides to abstain whether because of a conflict of interest or otherwise, must state the reasons for doing so on the record at the time the matter is considered.

Section 10. Rules of Order: All rules of order not herein provided for shall be determined in accordance with Robert's Rules of Order (newly revised).

Article V – Gifts, Loans and Other Financial Interests

Section 1. Gifts or Loans: A gift or loan shall include any gift, loan, service, favor, employment, engagement, emolument or economic opportunity such as sale of goods or services.

Section 2. Financial Interests: Financial interests, which may be direct or indirect, include but are not limited to, owning stock in a corporation, having contract with the City, selling any land, material, supplies or services to the City, or associating with a contractor who supplies the City, which would tend improperly to influence a reasonable person in such a position to depart from the faithful and impartial discharge of public duties.

Article VI – Site Visitations; Neighborhood Meetings

Section 1. Site Visitations: NRS 278.190 (3) permits the Planning Commission to conduct site visitations in the performance of their functions.

Section 2. Neighborhood Meetings: Applicant may hold neighborhood meetings to solicit neighborhood input, provide information to the neighborhood, and attempt to resolve disputes prior to the presentation of their applications. Should the Commissioners wish to attend they shall ensure that the requirements of the Open Meeting Laws are met. The commissioners must also disclose their attendance at the meeting.

Section 3. Procedure: Notice procedures and formal requirements for site visitations by the Commission and neighborhood meetings shall follow those required for a special meeting of the Planning Commission.

Article VII – Amendments of By-Laws

- Section 1. Amendments of By-Laws: The Planning Commission By-Laws may be amended by the Commission as deemed necessary by a majority vote of the Commission members.

Article VIII – Commissioner Attendance at City Council Meetings

- Section 1. Members of the Planning Commission may attend the City Council meetings provided that all requirements of the open meeting law prescribed by NRS Chapter 241 are met.
- Section 2. A member of the Planning Commission shall not comment or express the Opinion of the Planning Commission on Planning Items being considered by the City Council.

City of Fernley

Planning Commission By-Laws

Creation of the Planning Commission

- A. Authorization.** Pursuant to NRS 268.110, the Planning Commission is hereby created and appointed by the City Council. There shall be seven (7) voting members.

Planning Commission Membership

- A. Appointment.** The mayor shall appoint, subject to advice and consent by the City Council, seven members of the Commission, not more than two (2) of whom shall be nonresidents of the city (NRS 268.120). The term “resident” is defined in accordance with the guidelines established in NRS 281.050 for the purposes of eligibility for office. The Mayor, City Attorney, and City Engineer, or designees of these parties, shall be ex-officio members of the Commission.
- B. Legal Counsel.** The City Attorney’s Office shall be the legal counsel for the Commission.
- C. Compensation.** All members of the Commission shall serve without pay or other compensation. The City Council may provide by resolution for compensation, expenses, and subsistence allowances to Commission members, subject to limitation of NRS 278.040.
- D. Term of Office.** The term of each appointed member shall be four (4) years, or until a successor takes office. Terms of the Commission shall be staggered pursuant to NRS 268.120(2).
- E. Absences.** The Planning Director may recommend to the mayor removal of a Commissioner when they miss 33 percent or greater of regularly scheduled meetings per annum due to unexcused absences. An absence is excused if it is (1) due to illness of the Commissioner or a family member, or (2) is unavoidable and the Commissioner provides 24 hours advance notice to the Planning Director at planning@cityoffernley.org or 775-784-9810.
- F. Vacancies.** All vacancies shall be filled by the mayor for the unexpired term.

Election of Officers: Powers and Duties

A. Election of Officers.

1. The Commission shall, at its first regular meeting in January, unless the January meeting is cancelled, in which case at the next regularly scheduled meeting, elect from its membership a Chair and Vice-Chair.
2. Each shall serve for a term of one (1) year or until their successor(s) are elected.
3. Any office may be re-elected but may not serve more than two (2) consecutive terms in a single office.
4. Following the election, the gavel shall be passed to the officers at the existing meeting of the Commission.
5. Should a permanent vacancy occur in the position of Chair or Vice-Chair as determined by a quorum of the members of the Commission, the Commission at its next meeting, shall fill the vacancy by electing a new Chair and/or Vice-Chair from its remaining membership. The term of such election shall expire at the next January meeting, or the next regularly scheduled meeting if the January meeting is cancelled. If a Chair or Vice-Chair serves in the position for six (6) months or less, that individual shall be eligible for two (2) additional one-year terms.

B. Powers and Duties

1. Chair

- a. Preside over all meetings of the Commission.
- b. Ensure that consideration of items on the agenda move along without delay.
- c. Ensure that petitioners, proponents, and opponents are heard but not allowed to disrupt the meeting.
- d. Ensure that decorum is maintained at the meeting.
- e. Recognize members of the Commission, staff, and citizens who wish to speak during meetings.
- f. Call special meetings of the Commission in accordance with the By-Laws.

- g. Sign certain documents and maps of the Commission such as resolutions, the land use map, and official letters from the Commission.
- h. Vote on all matters brought before the Commission, unless absent or abstaining due to conflict of interest.
- i. Ensure that all actions of the Commission are properly taken.
- j. Keep comments relevant to the matter being considered by the Commission.
- k. Call for a recess if orderly conduct of the meeting is disrupted.

2. Vice-Chair

- a. Preside at any meetings of the Commission in the absence of the Chair. In the event of the resignation or permanent vacancy of the Chair, the Vice-Chair will perform such duties as are imposed of the Chair until the Commission shall elect a new Chair.
- b. Should the Chair nor Vice-Chair be present, a temporary Chair shall be elected by a vote of the members present.

3. Planning Commissioners

- a. Arrive on time for all meetings.
- b. Review all meeting material in preparation for Commission meetings and be properly prepared to discuss the items that are on the agenda.
- c. Notify the Chair and Planning Director when unable to attend a meeting.
- d. Wait to speak until acknowledged by the Chair.

Meetings and Conduct

A. Meetings.

- 1. All meetings will be held in the Council Chambers at Fernley City Hall, 595 Silver Lace Boulevard. Meetings will be called to order at 5:00 pm, unless advertised otherwise, canceled, or rescheduled.

2. Regular meetings of the Commission shall be held on the second Wednesday of each month. If the regular meeting date falls on a holiday, the meeting shall then be held on the next business day.
3. Special meetings may be called by the Chair when deemed necessary. Members of the Commission shall be notified at least three (3) days prior to the special meeting. Special meetings shall be noticed and agenzized pursuant to the Open Meeting Law.
4. In the event there is no business to conduct, a notice shall be emailed to the Commissioners and posted as required by Open Meeting Law.
5. Noticing and posting of the agenda shall follow the Open Meeting Law as set forth by NRS.
6. The Chair shall have the authority to eject or cause to be ejected any person(s) whose behavior disturbs or causes unreasonable interruptions to the proceedings of the Commission.
7. All rules of order not herein provided for shall be determined in accordance with Fernley Planning Commission Rules of Procedure and Open Meeting Law.

B. Quorum.

1. A quorum shall consist of four (4) members of the membership of the Commission and shall be empowered to conduct Commission business. However, NRS 278.210 requires that five (5) members of the Commission be present to vote on any adoption, amendment, extension, or addition to the Master Plan.

C. Public Rights.

1. Each person addressing the Commission shall step forward to the microphone, state their name and address for the record, and shall limit their comments to three (3) minutes. No person other than the members of the Commission and the person that has the floor shall be permitted to enter any discussion, either directly or through the members of the Commission. No questions shall be asked of the Commission, except through the presiding officer.
2. Any person who willfully disrupts a meeting to the extent that its orderly conduct is made impractical may be requested to leave the meeting. The Chair may call for a break to notify Lyon County Sheriff's Department to remove any disruptive person(s).

3. Interested person or their authorized representatives may address the Commission for the presentation of protest, petitions, or communications relating to any matter over which the Commission has control when the item is under consideration by the Commission.
4. Written information and materials provided by the project proponent, including graphics, photographs, and records of verbal statements, which pertain to Commission meetings, may be submitted to the Commission staff. All such information and materials shall be received a minimum of (3) three working days in advance of the meeting for distribution to all Commission members and the public.

D. Rules for Voting.

1. Approval of any motion brought before the Commission shall require the affirmative vote of a majority of the members present, unless otherwise specified by law. NRS requires a two-thirds vote of the total membership to the Planning Commission to approve a motion for a Master Plan Amendment.
2. A tie vote results in a failed motion. A tie vote is neither denial nor approval of the motion. A denial and an approval are both “actions”: requiring a majority vote. If there is a tie vote, and there are less than seven (7) Commissioners present, upon consent of the applicant, the matter shall be continued to the next regular meeting of the Commission to allow absent members to vote on the matter. If the applicant does not consent, and the Commission is not sitting as an appellate body, the Commission may make subsequent motions. If the matter involves an appeal and an affirmative vote does not occur, the result is that the decision appealed stands as decided by the decision-maker from which the appeal was taken.
3. Planning Commissioners desiring to abstain on a question shall do so at the time the agenda item is called and shall state the reason for the abstention. With respect to the item, the Commissioner shall move to the public area during the duration of the agenda item’s discussion.

Ethics and Responsibilities of Planning Commissioners

Planning Commissioners shall comply with state and local regulations related to conflict of interest.

A. Conflict of Interest

1. In connection with matters coming before the Commission, NRS 281A.420, as amended, discusses three (3) circumstances where disclosure and abstention may be required. These three (3)

circumstances include when a member of the Commission has: received a gift or loan, a pecuniary interest, or a commitment in a private capacity to others in connection with the matter, (i.e.: familial relationship, business relationship or close personal friendship.

2. If a member of the Commission has an ownership interest in property or a project being considered individually for a master plan amendment, re-zoning, special use permit, variance, tentative map or an entitlement, the member must abstain, but may address the Commission to discuss the facts about the property but must not ask, advocate, or give any reason for or against a vote.
3. The Legislature encourages appointed or elected member of public bodies to vote, not abstain. NRSA.420(4)(b) states: "Because abstention by a public officer disrupts the normal course of representative government and deprives the public and the public officer's constituents of a voice in governmental affairs, the provisions of this section are intended to require abstention only in clear cases where the independence of judgment of a reasonable person in the public officer's situation would be materially affected by the public officer's acceptance of a gift or loan, significant pecuniary interest or commitment in a private capacity to the interests of another person."
4. Planning Commissioners should not accept any gifts from applicants, representatives of applicants, or other people, institutions, associations, or organizations concerned with matters which have either been or are before the Commission. Even a well-intentioned and innocent action has the appearance of a conflict of interest.

On-Site Inspections and Neighborhood Meetings

- A. NRS 278.190(3) permits the Commissioners to conduct site visitations in the performance of their functions.
- B. If the applicant arranges a tour of the property, it is strongly recommended that two (2) or three (3) Commissioners attend jointly.
- C. An applicant may hold neighborhood meetings to solicit neighborhood input, provide information to the neighborhood, and attempt to resolve disputes prior to the presentation of their applications. Should the Commissioners wish to attend they shall ensure that the requirements of the Open Meeting Laws are met. The Commissioners must also disclose their attendance at the meeting.

Amendments to By-Laws

- A. The Commission By-Laws may be amended by the Commission as deemed necessary by a majority vote of the Commission members.
- B. An amendment to the By-Laws shall become effective immediately upon adoption unless the motion to adopt specifies another time for becoming effective.

Attendance at City Council Meetings

- A. Members of the Commission may attend the City Council meetings provided that all requirements of the Open Meeting Law are met.
- B. A member of the Commission shall not comment or express the opinion of the Commission on planning items being considered by the City Council.



CITY OF FERNLEY

Planning Commission AGENDA REPORT

Meeting Date: June 14, 2023

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) Discussion and possible action regarding an administrative review appeal (AR22004-APP) submitted by Reno Engineering Corporation on behalf of MOHR Pilot Road LLC, regarding the conditions of approval for a 446,940 square-foot warehouse at 1000 Pilot Road (APN: 021-061-32) on a parcel ±27.83 acres in size in the Industrial zone.

AGENDA ITEM BRIEF:

The applicant is appealing the following conditions:

30. PILOT ROAD IMPROVEMENTS AND DEDICATION:

IN ACCORDANCE WITH SECTION 32.09.140 OF THE FERNLEY MUNICIPAL CODE, THE EXISTING PILOT ROAD SHALL BE IMPROVED TO A FULL WIDTH PAVEMENT SECTION AND INCLUDE STREET LIGHTING, CURB, GUTTER, AND SIDEWALK. THE IMPROVEMENT SHALL EXTEND FROM THE INTERSECTION OF SR-427 AND PILOT ROAD TO THE WESTERN BOUNDARY OF THE PROJECT SITE. ALL IMPROVEMENTS SHALL BE CONSTRUCTED IN ACCORDANCE WITH CITY OF FERNLEY DESIGN STANDARDS AND SHALL BE SUBSTANTIALLY COMPLETE PRIOR TO THE ISSUANCE OF THE FIRST CERTIFICATE OF OCCUPANCY FOR THE PROJECT.

THE ROADWAY SHALL BE THE CITY'S STANDARD 60 FOOT RIGHT OF WAY STANDARD. ALL REQUIRED RIGHT OF WAY SHALL BE DEDICATED TO THE CITY OF FERNLEY.

31. MAIN STREET/SR-427 AND PILOT ROAD INTERSECTION IMPROVEMENTS:

THE EXISTING TRAFFIC VOLUMES PLUS PROJECT TRAFFIC WILL RESULT IN LEVEL OF SERVICE D ON THE MAIN STREET/SR-427 AND PILOT ROAD INTERSECTION WESTBOUND AND EASTBOUND APPROACHES.

PER THE CITY OF FERNLEY DESIGN STANDARDS SECTION 3.3.3.c.ii, THE DEVELOPER SHALL COMPLETE MITIGATION MEASURES FOR INTERSECTIONS THAT OPERATE AT A LEVEL OF SERVICE D OR LESS. POSSIBLE

MEASURES INCLUDE, BUT ARE NOT LIMITED TO, SIGNALIZATION OR SIGNALIZATION IMPROVEMENTS, CHANNELIZED MEDIANS, TURNING LANES, STORAGE LANE INCREASE, RESTRICTED TURNS AND/OR ADDITIONAL LANES.

THE DECEMBER 2022 TRAFFIC STUDY FROM HEADWAY TRANSPORTATION IDENTIFIED A TRAFFIC SIGNAL AS A LIKELY IMPROVEMENT AT THE INTERSECTION, PENDING APPROVAL FROM THE NDOT, ALONG WITH IMPROVEMENTS TO CORRECT LINE OF SIGHT ISSUES.

THE DEVELOPER SHALL SUBMIT IMPROVEMENT PLANS FOR THE IDENTIFIED MITIGATION MEASURES, PRIOR TO ISSUE OF THE FIRST BUILDING PERMIT FOR THE PROJECT. THE MITIGATION MEASURE WILL NEED TO BE REVIEWED AND APPROVED BY THE ADMINISTRATOR, CITY ENGINEER, PUBLIC WORKS DIRECTOR, AND NEVADA DEPARTMENT OF TRANSPORTATION (NDOT).

THE MITIGATION MEASURES SHALL BE CONSTRUCTED AND ACCEPTED, PRIOR TO ISSUE OF THE CERTIFICATE OF OCCUPANCY FOR THE FIRST BUILDING PERMIT OF THE PROJECT.

THE CITY OF FERNLEY HAS COLLECTED PROPORTIONATE SHARE CONTRIBUTIONS FROM OTHER PROJECTS IN THE AREA AND WOULD BE WILLING TO CONTRIBUTE THEM TO THE PROJECT COST.

32. EMERGENCY ACCESS:

NO SECONDARY ACCESS HAS BEEN PROVIDED BY THE DEVELOPER WITH THE PROJECT APPLICATION.

THE DEVELOPER SHALL BE REQUIRED TO PROVIDE A SECONDARY EMERGENCY ACCESS TO THE PROJECT SITE TO THE APPROVAL OF THE NORTH LYON COUNTY FIRE PROTECTION DISTRICT, PUBLIC WORKS DIRECTOR, CITY ENGINEER, AND THE ADMINISTRATOR.

IN LIEU OF A SECONDARY ACCESS, THE DEVELOPER SHALL INSTALL A TRAFFIC SIGNAL AT THE INTERSECTION OF MAIN STREET/SR 427 AND PILOT ROAD, WIDEN THE PILOT ROAD APPROACH TO THE INTERSECTION TO ADD AN ADDITIONAL LANE OR MEDIAN FOR ACCESS DURING AN EMERGENCY, AND INSTALL A TURNAROUND MEETING FIRE CODE STANDARDS AT THE END OF THE IMPROVEMENTS FOR PILOT ROAD.

RECOMMENDED MOTION:

Approve

Should the Planning Commission determine the approval criteria are still fulfilled when amending the conditions as requested by the applicant:

"I move to approve the appeal related to administrative review AR22004 and amend conditions of approval 30, 31, and 32 as requested by the applicant."

Deny

Should the Planning Commission determine the approval criteria are not fulfilled when amending the conditions as requested by the applicant:

"I move to deny the appeal related to administrative review AR22004 and uphold all conditions of approval as approved by the administrator."

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:

Planning Commission may also choose to amend only 1 or 2 of the appealed conditions of approval.

"I move to approve the appeal related to administrative review AR22004 and amend condition(s) of approval _____, as requested by the applicant. I further uphold condition(s) of approval _____ as approved by the administrator."

Though no further language has been provided, all motions appropriate within City of Fernley Planning Commission parliamentary procedure are permitted.

BACKGROUND:

The applicant has had two previous applications related to this project, a master plan amendment (MPA22001) from Commercial to Industrial and a zoning map amendment (ZMA22001) from General Commercial to Industrial. Planning Commission voted 6-0 to recommend approval of these amendments on March 23, 2021 and City Council approved both items 4-0 on April 20, 2022. The appeal for the administrative review conditions of approval was originally scheduled to be heard May 10, 2023, but was continued to this meeting at the request of the applicant.

Staff attached all materials related to the initial review, sans the application itself, which applies more to application tracking purposes than application review. Staff has further provided all materials related to the appeal. The "Administrator" of an administrative review, is a term the Fernley Municipal Code collectively assigns to officers and employees of the city who are delegated this duty by authority and direction of the city council, mayor or city manager. For these applications, the conditions as approved and issued to the applicant were drafted by the Senior Planner and City Engineer with input from North Lyon County Fire Protection District, City of Fernley Building Department, City of Fernley Public Works Department, and several outside agencies.

The applicant initially provided a rough sketch of the proposed alternate fire secondary access which is included in the attached documents. Since appealing, the applicant has been working with the North Lyon County Fire Protection District Fire Marshal on an ongoing basis. As a result, they intend to bring an updated proposal for secondary access as discussed with the Fire Marshal to present at the public hearing for this item.

APPROVAL CRITERIA:

The proposed development shall not create unsafe traffic conditions or cause a reduction in the level of service on surrounding streets, taking into consideration:

1. Any change in traffic conditions on abutting streets created by additional trips generated by the proposed development;
2. The layout of the site with respect to locations and dimensions of vehicular and pedestrian entrances, exits, drives, walkways, and fire-department access lanes;
3. The arrangement and adequacy of off-street parking;
4. The location, arrangement, and dimensions of truck loading and unloading facilities;
5. The surfacing and lighting of off-street parking;
6. Design of proposed building; and
7. Location of refuse storage and disposal facilities.

RELEVANT LAWS, STATUTES, AND REGULATIONS:

Note: All of the links supplied for relevant laws, statutes, and regulations are correct as of the day of publication. City of Fernley Planning Department will not be monitoring these links for continued applicability and operation beyond the June 12, 2023 Planning Commission.

[Nevada Revised Statutes \(NRS\), Chapter 278 - Planning and Zoning](#)
[Fernley Municipal Code \(FMC\), Title 32 - Development Code](#)
[City of Fernley Comprehensive Master Plan \(Master Plan\)](#)
[City of Fernley Department of Public Works Design Standards & Review Guidelines \(Design Standards\)](#)
[City of Fernley Department of Public Works Standards Details for Public Works Construction \(Design Standard Details\)](#)

Specific References:

[FMC Section 32.03.050](#) (a) - Development Code, Administration, Entitlements, Administrative review
[FMC Section 32.03.090](#) (e) - Development Code, Administrations, Modifications and appeals, Appeals
[FMC Section 32.09.140](#) - Development Code, Development Standards, Streets (roadways)
[FMC Chapter 32.12](#) - Adequate Public Facilities
[Design Standards Section 3.3.3.c.ii](#) - Streets, Traffic Technical Reports, Traffic Analysis, Level-of-Service Analysis (PDF Page 10 of 18)
[Design Standards Details](#), Typical 60' Wide Street Section (PDF Page 79 of 127)

FINANCIAL IMPLICATIONS:

N/A

ATTACHMENTS:

1. Full Conditions of Approval
2. Appeal Narrative
3. Secondary Emergency Access Exhibit 1 - Aerial
4. Secondary Emergency Access Exhibit 2 - Ground View
5. Original Submission Title Page
6. Project Overview
7. Vicinity and Zoning Map
8. Project Impacts Report 2022-08-16
9. Traffic Study 2022-12-19
10. Preliminary Plans
11. Geotechnical Report 2022-08-16
12. Preliminary Drainage Report 2022-08-15
13. Preliminary Sewer Report 2022-08-15
14. Water Demand Calculations 2022-08-16



Planning Department

Permits
Planning
Development Review
Sustainability

March 6, 2023

Justin Farley, PE
Reno Engineering Corporation
Justin.recnv@gmail.com

RE: AR22004 – Administrative Review – Pilot Road

Dear Applicant:

The City of Fernley Development Review Team reviewed your Administrative Review (AR22004) application request to allow for the construction of a 446,940 square foot warehouse building on a site +/- 27.83-acres within the I (Industrial) zoning district, located on APN: 021-061-32 located at approximately 1000 Pilot Road, Fernley, NV.

Based on the approval criteria set forth in Section 32.03.050 of the Fernley Municipal Code, and following careful consideration by the Development Team, your application for this project was approved subject to the Conditions of Approval 1 through 35 as attached hereto. If you wish to appeal this decision or any condition, you may appeal to the Planning Commission within 10 days from the date of this letter. To do so, please contact the City Clerk's Office.

You may not conduct or establish the use for which this application was approved until all conditions of approval have been satisfied to the approval of the Planning Department. A final inspection must be completed by the Planning Department to ensure all conditions of approval have been addressed and a Certificate of Compliance will be issued. If you have any questions concerning this application, please contact the Planning Department at 775 784-9810.

Sincerely,

Lisa Warner

Lisa Warner, MBA
Assistant Planner

Thomas Theobald
Mohr Capital
tom@mohrcap.com

Enclosures: Conditions of Approval for AR22004

Conditions of Approval for AR22004

Administrative Review

1. APPROVAL:

THE APPLICATION IS APPROVED AS SUBMITTED AND CONDITIONED. ANY SUBSTANTIVE CHANGE SHALL BE REVIEWED BY THE ADMINISTRATOR AS AN AMENDMENT TO THIS ADMINISTRATIVE REVIEW.

2. DESIGN STANDARDS:

THE DEVELOPER SHALL COMPLY WITH THE DESIGN STANDARDS AND REGULATIONS AS SET FORTH IN THE CITY'S MUNICIPAL CODE, UNLESS IN CONFLICT WITH OTHER LOCAL OR STATE REGULATIONS, IN WHICH CASE THE MORE STRINGENT REGULATION WILL TAKE PRECEDENCE. DEVELOPER SHALL FOLLOW SEC.32.07.280. MINI-WAREHOUSE REGARDING THE STANDARD APPLICATION OF THE PROJECT.

3. PROJECT DESCRIPTION:

THE PROJECT APPROVAL IS PERTAINING TO THE CONSTRUCTION AND DEVELOPMENT OF ONE WAREHOUSE BUILDING TOTALING 446,940 SQUARE FEET ON 27.83-ACRE PARCEL APN: 021-061-32 WHICH IS ZONED INDUSTRIAL AND LOCATED AT APPROXIMATELY 1000 PILOT RD, FERNLEY, NV.

4. EXPIRATION DATE:

THE ADMINISTRATIVE REVIEW 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 ADMINISTRATIVE REVIEW.

5. 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.

6. NEVADA DIVISION OF ENVIRONMENTAL PROTECTION:

THE DEVELOPER SHALL COMPLY WITH ALL REQUIREMENTS OF THE NEVADA DIVISION OF ENVIRONMENTAL PROTECTION BUREAU OF AIR POLLUTION CONTROL, 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.

THE DEVELOPER SHALL PARTICIPATE IN ANY PROGRAMS ADMINISTERED BY AND SHALL COMPLY WITH ANY OTHER REQUIREMENTS OF THE NEVADA DIVISION OF ENVIRONMENTAL PROTECTION INCLUDING BUT NOT LIMITED TO THE RESOURCE CONSERVATION AND RECOVERY ACT (RCRA) AND THE CHEMICAL ACCIDENT PREVENTION PROGRAM (CAPP).

7. WATER RIGHTS:

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

Conditions of Approval for AR22004

Administrative Review

8. WATER AND SEWER SERVICE:

THE DEVELOPER SHALL COMPLY WITH ALL CITY OF FERNLEY MUNICIPAL CODES REGARDING CONNECTION TO THE CITY'S SANITARY SEWER AND POTABLE WATER SYSTEMS, INCLUDING BUT NOT LIMITED TO, ASSOCIATED FEES, DESIGN STANDARDS, DEVELOPMENT CODE REQUIREMENTS, AND STATE REQUIREMENTS. PRIOR TO THE ISSUANCE OF A BUILDING PERMIT FOR THE PROJECT, THE DEVELOPER SHALL PROVIDE THE CITY WITH A UTILITY PLAN FOR WATER AND SANITARY SEWER THAT IS IN CONFORMANCE WITH THE CITY OF FERNLEY MUNICIPAL CODE AND PUBLIC WORKS DESIGN MANUAL TO THE APPROVAL OF THE CITY ENGINEER, PUBLIC WORKS DIRECTOR, AND ADMINISTRATOR.

9. 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.

10. 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.

11. 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 APPROVAL OF A BUILDING PERMIT FOR THE PROJECT.

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

13. STORM DRAINAGE:

THE DEVELOPER SHALL PROVIDE A FINAL HYDROLOGICAL 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 HYDROLOGICAL REPORT FOR REVIEW AND APPROVAL BY THE CITY ENGINEER SHOWING THE CUMULATIVE EFFECT OF THE DEVELOPED PORTION OF THE PROJECT ALONG WITH THE

Conditions of Approval for AR22004

Administrative Review

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.

14. 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.

15. 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 AN APPROVED SECURITY IN AN AMOUNT EQUAL TO 110% OF THE ENGINEER'S ESTIMATE FOR REGRADING AND RECLAMATION OF THE SITE AS WELL AS PROOF OF A STORM WATER DISCHARGE PERMIT FROM THE NEVADA DEPARTMENT OF ENVIRONMENTAL PROTECTION.

16. LANDSCAPING/IRRIGATION:

THE DEVELOPER SHALL SUBMIT A LANDSCAPING AND IRRIGATION PLAN FOR THE PROJECT IN SUBSTANTIAL CONFORMANCE WITH THE CITY OF FERNLEY DEVELOPMENT CODE 32.09.090 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 THE BUILDING TO THE APPROVAL OF THE ADMINISTRATOR.

17. 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.

18. 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 GRADING PERMIT FOR THE PROJECT.

19. PARKING/LOADING:

THE DEVELOPER SHALL COMPLY WITH THE PARKING AND LOADING REQUIREMENTS AS SET FORTH IN SECTION 32.09.120 OF THE FERNLEY MUNICIPAL CODE TO THE APPROVAL OF THE ADMINISTRATOR.

Conditions of Approval for AR22004

Administrative Review

20. 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 ELEVATIONS SHALL REQUIRE REVIEW AND APPROVAL BY THE ADMINISTRATOR PRIOR TO THE ISSUANCE OF A BUILDING PERMIT FOR THE BUILDINGS.

21. INDUSTRIAL DISCHARGE PERMIT:

THE OWNER SHALL APPLY FOR AN INDUSTRIAL DISCHARGE PERMIT WITH THE CITY OF FERNLEY PUBLIC WORKS DEPARTMENT TO DETERMINE IF ONGOING MONITORING AND/OR TESTING OR FURTHER PRETREATMENT IS REQUIRED TO PROTECT THE PUBLIC SANITARY SEWER SYSTEM PRIOR TO THE ISSUANCE OF A BUILDING PERMIT FOR ANY FUTURE TENANT IMPROVEMENT.

22. 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.

23. 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.

24. 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 SAME MATERIALS AND BE DURABLE MATERIALS 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.

25. 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.

Conditions of Approval for AR22004

Administrative Review

26. ENGINEERING/PUBLIC WORKS/BUILDING DEPARTMENTS:

THE DEVELOPER SHALL COMPLY WITH ALL THE REQUIREMENTS OF THE CITY OF FERNLEY MUNICIPAL CODE AND PUBLIC WORKS DESIGN MANUAL FOR THE CONSTRUCTION OF ANY PUBLIC OR PRIVATE INFRASTRUCTURE TO THE APPROVAL OF THE CITY ENGINEER, PUBLIC WORKS DIRECTOR, AND BUILDING OFFICIAL PRIOR TO THE ISSUANCE OF ANY GRADING/BUILDING PERMIT FOR THE PROJECT.

27. 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 DEVELOPMENT 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.

28. 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.

29. UNITED STATES POSTAL SERVICE:

THE DEVELOPER SHALL COMPLY WITH ALL REQUIREMENTS OF THE UNITED STATES POSTAL SERVICE FOR MAIL DELIVERY AND MAILBOX DESIGN, TO THE APPROVAL OF THE ADMINISTRATOR, PUBLIC WORKS DIRECTOR, AND CITY ENGINEER PRIOR TO THE ISSUANCE OF A BUILDING PERMIT FOR THE PROJECT.

30. PILOT ROAD IMPROVEMENTS AND DEDICATION:

IN ACCORDANCE WITH SECTION 32.09.140 OF THE FERNLEY MUNICIPAL CODE, THE EXISTING PILOT ROAD SHALL BE IMPROVED TO A FULL WIDTH PAVEMENT SECTION AND INCLUDE STREET LIGHTING, CURB, GUTTER, AND SIDEWALK. THE IMPROVEMENT SHALL EXTEND FROM THE INTERSECTION OF SR427 AND PILOT ROAD TO THE WESTERN BOUNDARY OF THE PROJECT SITE. ALL IMPROVEMENTS SHALL BE CONSTRUCTED IN ACCORDANCE WITH CITY OF FERNLEY DESIGN STANDARDS AND SHALL BE SUBSTANTIALLY COMPLETE PRIOR TO THE ISSUANCE OF THE FIRST CERTIFICATE OF OCCUPANCY FOR THE PROJECT.

THE ROADWAY SHALL BE THE CITY'S STANDARD 60 FOOT RIGHT OF WAY STANDARD. ALL REQUIRED RIGHT OF WAY SHALL BE DEDICATED TO THE CITY OF FERNLEY.

31. MAIN STREET/SR-427 AND PILOT ROAD INTERSECTION IMPROVEMENTS:

THE EXISTING TRAFFIC VOLUMES PLUS PROJECT TRAFFIC WILL RESULT IN LEVEL OF SERVICE D ON THE MAIN STREET/SR-427 AND PILOT ROAD INTERSECTION WESTBOUND AND EASTBOUND APPROACHES.

PER THE CITY OF FERNLEY DESIGN STANDARDS SECTION 3.3.3.c.ii, THE DEVELOPER SHALL COMPLETE MITIGATION MEASURES FOR INTERSECTIONS THAT OPERATE AT A LEVEL OF SERVICE D OR LESS. POSSIBLE MEASURES INCLUDE, BUT ARE NOT LIMITED TO, SIGNALIZATION OR SIGNALIZATION IMPROVEMENTS, CHANNELIZED MEDIANS, TURNING LANES, STORAGE LANE INCREASE, RESTRICTED

Conditions of Approval for AR22004

Administrative Review

TURNS AND/OR ADDITIONAL LANES.

THE DECEMBER 2022 TRAFFIC STUDY FROM HEADWAY TRANSPORTATION IDENTIFIED A TRAFFIC SIGNAL AS A LIKELY IMPROVEMENT AT THE INTERSECTION, PENDING APPROVAL FROM THE NDOT, ALONG WITH IMPROVEMENTS TO CORRECT LINE OF SIGHT ISSUES.

THE DEVELOPER SHALL SUBMIT IMPROVEMENT PLANS FOR THE IDENTIFIED MITIGATION MEASURES, PRIOR TO ISSUE OF THE FIRST BUILDING PERMIT FOR THE PROJECT. THE MITIGATION MEASURE WILL NEED TO BE REVIEWED AND APPROVED BY THE ADMINISTRATOR, CITY ENGINEER, PUBLIC WORKS DIRECTOR, AND NEVADA DEPARTMENT OF TRANSPORTATION (NDOT).

THE MITIGATION MEASURES SHALL BE CONSTRUCTED AND ACCEPTED, PRIOR TO ISSUE OF THE CERTIFICATE OF OCCUPANCY FOR THE FIRST BUILDING PERMIT OF THE PROJECT.

THE CITY OF FERNLEY HAS COLLECTED PROPORTIONATE SHARE CONTRIBUTIONS FROM OTHER PROJECTS IN THE AREA AND WOULD BE WILLING TO CONTRIBUTE THEM TO THE PROJECT COST.

32. EMERGENCY ACCESS:

NO SECONDARY ACCESS HAS BEEN PROVIDED BY THE DEVELOPER WITH THE PROJECT APPLICATION.

THE DEVELOPER SHALL BE REQUIRED TO PROVIDE A SECONDARY EMERGENCY ACCESS TO THE PROJECT SITE TO THE APPROVAL OF THE NORTH LYON COUNTY FIRE PROTECTION DISTRICT, PUBLIC WORKS DIRECTOR, CITY ENGINEER, AND THE ADMINISTRATOR.

IN LIEU OF A SECONDARY ACCESS, THE DEVELOPER SHALL INSTALL A TRAFFIC SIGNAL AT THE INTERSECTION OF MAIN STREET/SR 427 AND PILOT ROAD, WIDEN THE PILOT ROAD APPROACH TO THE INTERSECTION TO ADD AN ADDITIONAL LANE OR MEDIAN FOR ACCESS DURING AN EMERGENCY, AND INSTALL A TURNAROUND MEETING FIRE CODE STANDARDS AT THE END OF THE IMPROVEMENTS FOR PILOT ROAD.

33. PILOT SEWER LIFT STATION:

THE DEVELOPER SHALL PROVIDE THE NECESSARY DOCUMENTATION THAT THE EXISTING PRIVATE LIFT STATION SERVING THE PILOT TRAVEL CENTER HAS SUFFICIENT CAPACITY TO SERVE THE DEVELOPMENT. ANY REQUIRED IMPROVEMENTS SHALL BE DESIGNED AND CONSTRUCTED SHALL BE THE RESPONSIBILITY OF THE DEVELOPER SHALL BE COMPLETED PRIOR TO THE ISSUANCE OF A CERTIFICATE OF OCCUPANCY.

34. ON-STREET PARKING

THE DEVELOPER SHALL INSTALL NO PARKING SIGNS AND PAINT RED CURB ALONG BOTH SIDES OF PILOT ROAD TO PREVENT PARKED VEHICLES AND TRUCKS FROM CONSTRICTING ACCESS TO AND FROM THE PROJECT SITE AND OTHER BUSINESSES IN THE AREA.

35. MAINTENANCE AND UPKEEP:

THE APPLICANT SHALL MAINTAIN A HIGH STANDARD OF UPKEEP TO ENSURE THAT THAT ALL CONDITIONS LISTED ABOVE IS TAKEN CARE OF. ONCE APPROVED, THE ADMINISTRATIVE REVIEW

Conditions of Approval for AR22004

Administrative Review

SHALL LAST FOR 1 YEAR; DURING THIS 1-YEAR PROBATION PERIOD, THE CITY WILL HAVE THE AUTHORITY TO INSPECT AND ENSURE THAT THE BUSINESS IS IN ACCORDANCE WITH THE CODES AND CONDITIONS. THE CITY OF FERNLEY WILL THEN DETERMINE WHETHER THE BUSINESS UPHOLDS THE STANDARDS REQUIRED AND WILL BE GIVEN AN EXTENSION OR WILL BE PROVIDED A NEW LIST OF CONDITIONS TO MEET.



RENO ENGINEERING A Development Services Company

Thursday, March 16, 2023

CITY OF FERNLEY: Planning Department

Lisa Warner, MBA, Assistant Planner

696 Silver Lace Blvd ▪ Fernley NV 89408

Phone: 775.784.9810

RE: APPEAL ADMINISTRATIVE REVIEW – AR22004 – 1000 PILOT ROAD

Please find the below narrative in response to the comments for Application AR22004, 1000 Pilot Road.

Department comments are in **black** and our responses are in **blue**.

30. PILOT ROAD IMPROVEMENTS AND DEDICATION:

In accordance with section 32.09.140 of the Fernley Municipal Code, the existing Pilot Road shall be improved to a full width pavement section and include street lighting, curb, gutter, and sidewalk. the improvement shall extend from the intersection of SR427 and Pilot Road to the western boundary of the project site. all improvements shall be constructed in accordance with city of Fernley design standards and shall be substantially complete prior to the issuance of the first certificate of occupancy for the project. the roadway shall be the city's standard 60 foot right of way standard. All required right of way shall be dedicated to the city of Fernley.

Currently, the 30 X 36 foot on the plans aligns better with the existing 50 foot right-of-way. In addition, to build to the 60 foot right we would have to extend the existing roadway into easements that are not attainable and would increase the cost to the project immensely.

31. MAIN STREET/SR-427 AND PILOT ROAD INTERSECTION IMPROVEMENTS:

The existing traffic volumes plus project traffic will result in level of service and on the Main Street/SR-427 and Pilot Road intersection westbound and eastbound approaches. per the city of Fernley design standards section 3.3.3.c.ii, the developer shall complete mitigation measures for intersections that operate at a level of service d or less. possible measures include, but are not limited to, signalization or signalization improvements, channelized medians, turning lanes, storage lane increase, restricted turns and/or additional lanes. the December 2022 traffic study from headway transportation identified a traffic signal as a likely improvement at the intersection, pending approval from the NDOT, along with improvements to correct line of sight issues. the developer shall submit improvement plans for the identified mitigation measures, prior to issue of the first building permit for the project. the mitigation measure will need to be reviewed and approved by the administrator, city engineer, public works director, and Nevada Department of Transportation (NDOT).

The mitigation measures shall be constructed and accepted, prior to issue of the certificate of occupancy for the first building permit of the project. the city of Fernley has collected proportionate share contributions from other projects in the area and would be willing to contribute them to the project cost.

At this time, Nevada Department of Transportation, will not allow the signal to be constructed as it does not meet the traffic loads necessary.

32. EMERGENCY ACCESS:

No secondary access has been provided by the developer with the project application. the developer shall be required to provide a secondary emergency access to the project site to the approval of the North Lyon County fire protection district, public works director, City Engineer, and the Administrator. In lieu of a secondary access, the developer shall install a traffic signal at the intersection of main street/SR427 and Pilot Road, widen the Pilot Road approach to the intersection to add an additional lane or median for access during an emergency, and install a turnaround meeting fire code standards at the end of the improvements for Pilot Road.

At this time, the Nevada Department of Transportation, will not allow a signal to be constructed as it does not meet the traffic loads necessary.

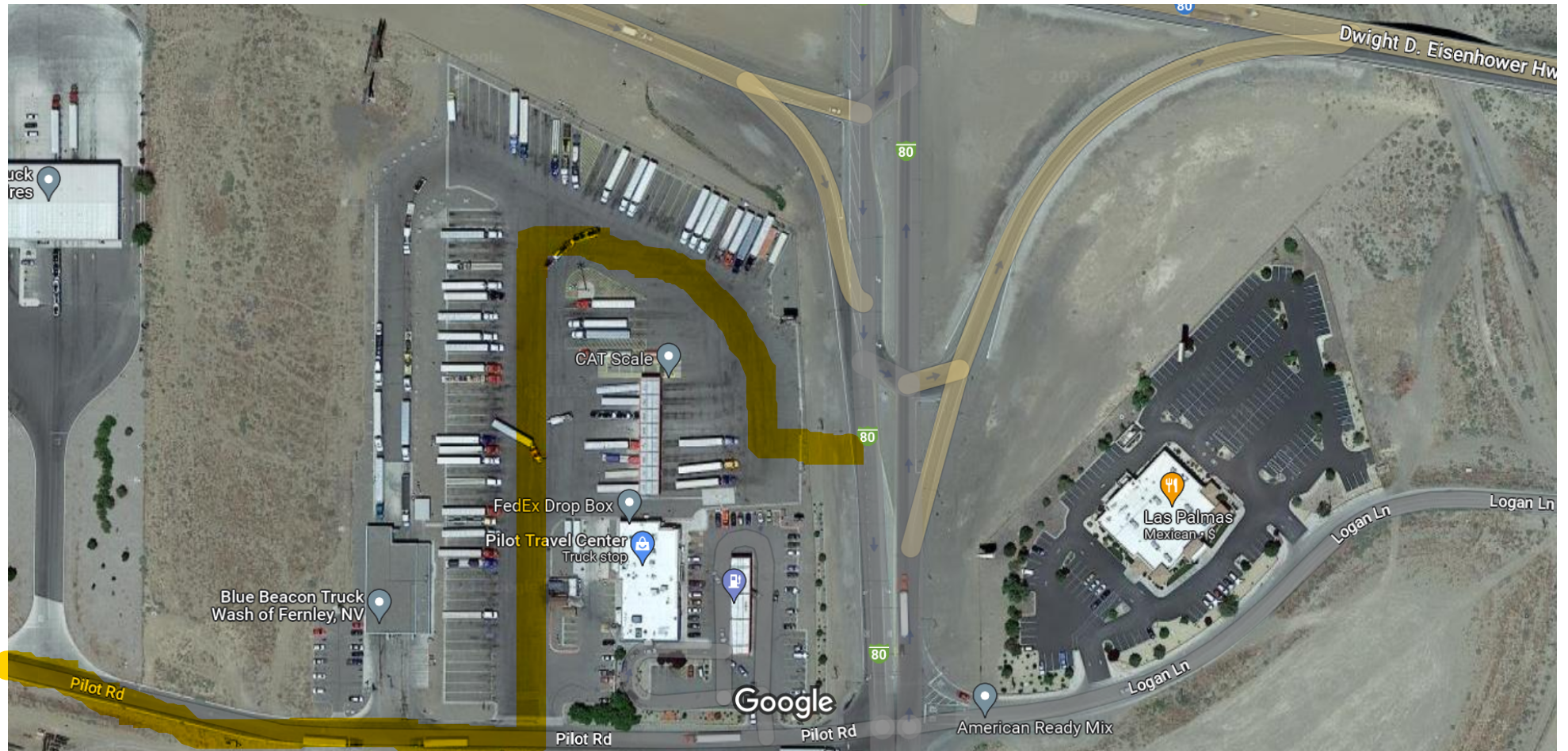
If you have any questions, please do not hesitate to contact me at (775) 815-7172, or at justin.recnv@gmail.com.

Sincerely,

Justin Farley, PE
Reno Engineering Corporation



Secondary Emergency Access to 1000 Pilot Road



Imagery ©2023 CNES / Airbus, Maxar Technologies, U.S. Geological Survey, USDA/FPAC/GEO, Map data ©2023 100 ft

Google Maps NV-427

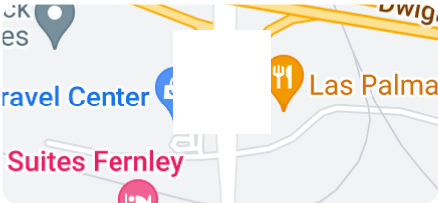


Fernley, Nevada

Google Street View

Sep 2021 See more dates

Image capture: Sep 2021 © 2023 Google



Original Application Materials for AR22004

**Submitted for Review:
August 2022**

Approved: March 6, 2023



RENO ENGINEERING A Development Services Company

Project Overview
1000 Pilot Rd – Mohr Capital
Fernley, NV
Prepared 08/16/2022 for Administrative Review Application

Summary:

The project as proposed is currently located on one parcel of vacant land, APN No. 021-061-32 (1000 Pilot Rd). Current land use and zoning for the parcel is Industrial (I) with approval of the master plan amendment and zoning map amendment processes.

The site totals +/- 27.8 acres of unimproved real property located adjacent to the Speedco Truck Lube and Tires, south of Interstate 80. The project consists of (1) industrial warehouse building; totaling 449,100 GSF. The proposed building will be a cross-dock warehouses with a 36' clear height. Although a single user is planned for the proposed building, the cross-dock facility has been designed to offer a high level of flexibility regarding tenant divisibility. Construction type for the structure is expected to be concrete tilt-up with an ESFR sprinkler system. Specific building specifications, such as roof type, will be developed as the project evolves. Preliminary project site, landscape and grading plans are included for reference.

Primary access to 1000 Pilot Rd will be via Pilot Rd from Highway 80/Main St and the building will have at least (2) points of access via driveways from Pilot Rd. Anticipated end use may include warehousing, storage, logistics, and/or manufacturing. It can be assumed users will fall within ITE codes 150 and/or 152 and trucks accessing the site may range from single-unit trucks to interstate semitrailers. A breakdown of the planned parking for both trucks and autos is detailed below.

Expected use categories for the building will primarily include: Storage (S-1 & S-2) and Business (B).. As design progresses, any grants or easements (public or private) required to facilitate utilities to the project or public right of way will be drafted and agreed to with the appropriate parties. Please refer to the ALTA to review all existing easements.

The site will be mass graded initially, with building construction to follow shortly after. Site and landscape work will be completed simultaneously.

Specific project details outlined below:

Site Acreage: +/- 27.8 Acres

Building SF: Total +/- 449,100 G.S.F.

Parking Summary:

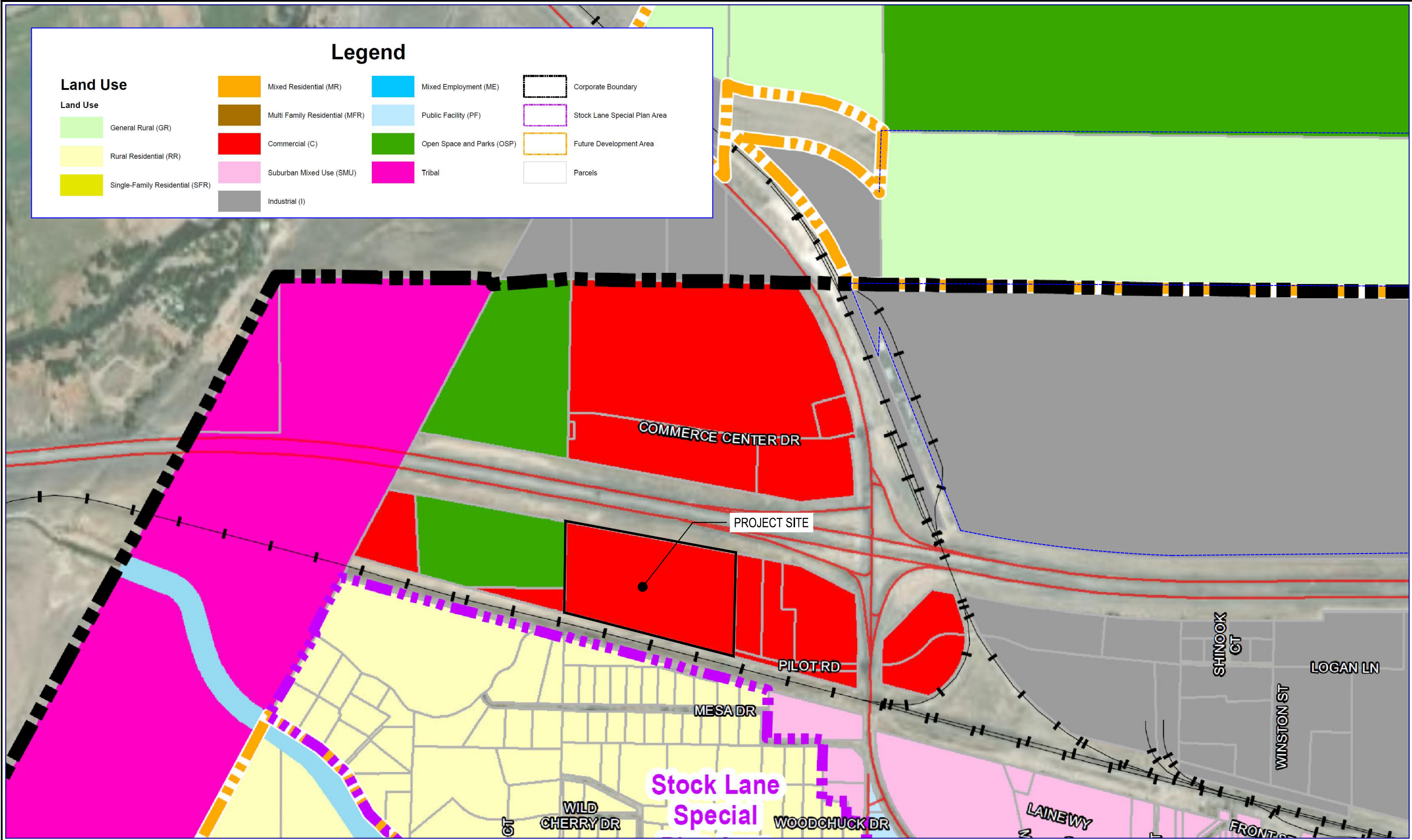
Auto	Trailer
188 stalls	58 spaces

Entitlements and Actions Required:

- Re-zone from Commercial to Industrial Land Use (approved)
- General Plan Amendment (approved)
- Site Plan & Design Review (current application)

Land Use:

- Industrial, proposed building = industrial warehouse

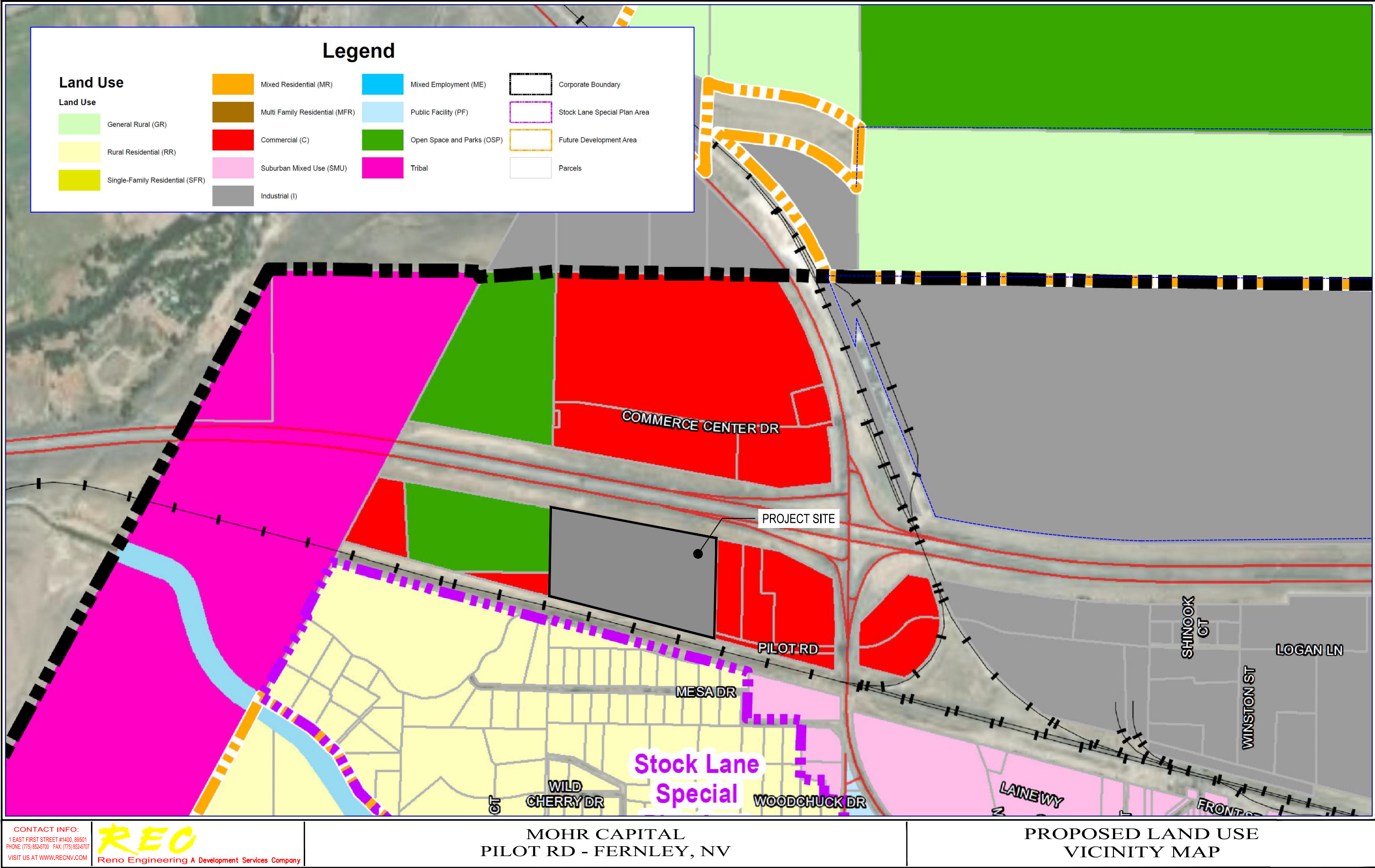


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VISIT US AT WWW.RECNV.COM

REC
Reno Engineering & Development Services Company

MOHR CAPITAL
PILOT ROAD - FERNLEY, NV

EXISTING LAND USE
VICINITY MAP



4. f. (1) Report addressing impacts on existing and planned facilities and infrastructure

The proposed land use change will impact transportation facilities. We can expect a reduction in trip generation with the proposed land use change and an increase in percentage of truck trips.

The Transportation Master Plan (TMP) includes some improvements in the area that are projected for a 10-year horizon in the TMP. Those include the bike lane facilities on Main/SR 427 from Fernley to the County line and the widening of the railroad underpass improvements on Main Street also in the 10-year planning horizon. We understand that this land use change will not impact the timing or nature of those improvements.

We believe any other planned facilities will be minimally impacted with this land use change. The primary facilities impacted by a land use change of this nature are transportation facilities. Others such as school, police, fire, parks will not be materially impacted. The nature of the use will add employment to the amount of commercial space that is not needed in the market. Given the strongly positive fiscal benefits that come with this land use and project at build-out, we understand that some additional facilities may be identified at a later date. Those facilities will benefit from the public finance that is generated by this project.

4.f.(2) Report addressing impacts on existing and planned public services

Public Services that are possibly impacted by this land use change as provided by the City of Fernley are police, fire, public works, and utilities. For police and fire, studies show that industrial development is the least impactful land use compared to residential, retail, and office in terms of total annual calls and impact fees that are sometimes requested. It is therefore our conclusion that while all new developments do impact these public services, the proposed land use change to industrial would do so to a lesser degree than its current commercial use.

The public works and utilities that serve the rest of the city will need to expand regardless of the land use in order to serve the site. However, the extent of which depends highly on energy intensity and water treatment. The types of industrial uses proposed in this land use change – cross-docking and warehousing – are both lighter industrial uses that do not consume as much energy as heavier fabrication or plant types of buildings. The comparison of the impact with the current commercial land use depends on the type of commercial development that would occur, as operational energy use and water treatment can vary.

4.f.(3) Written narrative on the proposed land use in relationship to the existing land uses

The proposed land is Industrial to replace the existing Commercial land use. There is a clear case of any measure of land use compatibility with both uses in relation to the existing adjacent land use.

The site is bordered by the I-80 Freeway to the north, Speedco Truck Lube and Tires to the east, Pilot Travel Center to the east off Main Street, a railroad and residential to the south, and undeveloped private and BLM parcels to the west.

The truck intensive use of the Speedco Truck Lube and Tires and the Pilot Truck Center is entirely compatibility and reciprocal with the proposed use. Certainly, the employment traffic may benefit from the fuel and convenience services provided by that land use.

To the west is Open Space land use which will not be impacted by the proposed land used. Without knowing the specific intent for that land use, as it appears to be a holding designation and not materially different than the current land use.

To the north is the city corporate boundary and Industrial land use in Washoe County. The proposed land use is inherently appropriate and compatible with that existing land use.

The residential to the south is separated from the use by a railroad, however the project is still designed to mitigate any potential impacts on to the area.

TRAFFIC IMPACT STUDY

for

Pilot Road Industrial

December 19, 2022

PREPARED FOR:

Mohr Capital

PREPARED BY:



YOUR QUESTIONS ANSWERED QUICKLY

Why did you perform this study?

This Traffic Impact Study evaluates the potential traffic impacts associated with the development of the proposed Pilot Road Industrial project in Fernley, NV. This study was undertaken to determine the existing and future traffic conditions, quantify traffic volumes generated by the proposed project, identify potential impacts, and develop recommendations to mitigate impacts, if any are found.

What does the project consist of?

The project includes one warehouse building of up to 485,000 square feet. The proposed project is located on the north side of Pilot Road approximately 1,100 feet west of the Main Street (SR 427) / Pilot Road intersection. Primary vehicular access to the project site is proposed via two new driveways located on Pilot Road.

How much traffic will the project generate?

The proposed project is anticipated to generate approximately 829 Daily trips, 82 AM peak hour trips, and 87 PM peak hour trips.

Are there any traffic impacts?

It is anticipated that the Main Street (SR 427) / Pilot Road intersection will operate at poor levels of service with addition of this project. The City of Fernley and NDOT recognize that the Main Street (SR 427) / Pilot Road intersection operates poorly and that a future mitigation will be required. Poor traffic operations are anticipated to be exacerbated by this project and continued regional growth.

Are any improvements recommended?

The following is a list of recommended improvements:

- ▶ The project will provide a fair share contribution toward the future construction a traffic signal at the Main Street (SR 427) / Pilot Road intersection. The pro-rata contribution has been calculated as 28% of an \$800,000 improvement cost for a total contribution of \$224,000. The future traffic signal will be constructed by others, and activated when signal warrant criteria are met, subject to NDOT approval.
- ▶ The project will extend Pilot Road from the existing terminus to the western edge of the project site.
- ▶ The project proposes to install “No Parking” signs and paint red curb along both sides of Pilot Road to prevent parked vehicles and trucks from constricting access to/from the project site.



LIST OF FIGURES

1. Project Location
2. Preliminary Site Plan
3. Baseline Lane Configurations, Controls, and Traffic Volumes
4. Future Lane Configurations, Controls, and Traffic Volumes
5. Project Trip Distribution & Assignment
6. Baseline Plus Project Lane Configurations, Controls, and Traffic Volumes
7. Future Plus Project Lane Configurations, Controls, and Traffic Volumes
8. Mitigated Lane Configurations and Controls

LIST OF APPENDICES

- A. NDOT Crash Data
- B. Baseline Conditions LOS Calculations
- C. Future Conditions LOS Calculations
- D. Baseline Plus Project Conditions LOS Calculations
- E. Future Plus Project Conditions LOS Calculations
- F. Signal Warrant Analysis
- G. Mitigation Options Intersection LOS Calculations
- H. Intersection Stopping Sight Distance



INTRODUCTION

This Traffic Impact Study evaluates the potential traffic impacts associated with development of the proposed Pilot Road Industrial project in Fernley, NV. This study was undertaken to determine the baseline and future (20-year horizon) traffic conditions, quantify traffic volumes generated by the proposed project, identify potential impacts, and develop recommendations to mitigate impacts, if any are found.

Study Area and Evaluated Scenarios

The project site is located on the north side of Pilot Road approximately 1,100 feet west of the Main Street (SR 427) / Pilot Road intersection. All study intersections are shown in **Figure 1**, and a preliminary site plan is shown in **Figure 2**.

The following intersections are included in this study:

- ▶ Main Street (SR 427) / I-80 WB Off-Ramp
- ▶ Main Street (SR 427) / I-80 WB On-Ramp
- ▶ Main Street (SR 427) / I-80 EB Off-Ramp
- ▶ Main Street (SR 427) / I-80 EB On-Ramp
- ▶ Main Street (SR 427) / Pilot 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:

- ▶ Baseline Conditions (includes existing traffic volumes plus the Commerce Center Industrial, Red Hawk Ranch Phase 1, and American Battery Metals projects)
- ▶ Baseline Plus Project
- ▶ Future Conditions (20-year horizon including the Commerce Center Industrial, Red Hawk Ranch Phase 1, and American Battery Metals projects)
- ▶ Future 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

Intersection LOS methodology is established in the *Highway Capacity Manual (HCM) 6th Edition*, published by the Transportation Research Board (TRB). The methodology for signalized intersections determines the LOS by comparing the average control delay for the overall intersection to the delay thresholds in



Table 1. LOS at unsignalized (side-street stop controlled) intersections is determined by comparing the average control delay for the worst movement/approach to the delay thresholds in **Table 1**.

Table 1: Level of Service Definition for Intersections

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

Source: Highway Capacity Manual, Chapters 18 through 21

Level of service calculations were performed using the Synchro 11 software package with results reported in accordance with the current HCM methodology.

Level of Service Policies

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.*”

The LOS 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 LOS 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 LOS policy applies.

Therefore, LOS D for the overall intersection was used as the threshold for evaluating this project. Where intersections are already experiencing LOS beyond the thresholds, conditions should not be exacerbated.

BASELINE CONDITIONS

Roadway Facilities

A brief description of the key roadways in the study area is provided below:

Main Street (SR 427) is classified by NDOT as a Minor Arterial in the project vicinity. The roadway is generally two lanes, one in each direction, near the project site. Main Street has a posted speed limit of 35 mph within the immediate project vicinity.



The *I-80 interchange ramps* (both eastbound and westbound) are offset so that the on and off ramps are not aligned but separate intersections.

Pilot Road is an east-west private road that provides access to Main Street. Pilot Road currently does not have a posted speed limit but has a *prima-facie* speed of 25 mph. Logan Lane extends east from Main Street opposite Pilot Road.

No bicycle lanes or sidewalks exist within the project area.

Crash History

The most recent three years of crash data (2017 – 2019) for the Main Street (SR 427) / Pilot Road intersection was obtained through an NDOT Crash Data request. According to the three years of available data there were nine (9) total crashes at the Main Street (SR 427) / Pilot Road intersection. Six (6) crashes caused property damage only and (3) caused minor injuries. Seven of the nine reported crashes at this intersection were angle type crashes. Additionally, seven of the nine crashes involved vehicles travelling from the side-street approaches (eastbound and westbound directions). The crash data indicates that it may be difficult to enter Main Street from the side-street approaches, particularly for large trucks, and field observations confirmed this. Complete crash history data is provided in **Appendix A**.

Traffic Volumes

Baseline traffic volumes were developed by adding the anticipated Commerce Center Industrial project trips obtained from the *Traffic Impact Study for Commerce Center Industrial* (Headway Transportation, September 2021) to the Existing Plus Project traffic volumes obtained from the *Traffic Impact Study for Red Hawk Ranch Phase 1* (Headway Transportation, November 2021). The Baseline lane configurations, controls, and traffic volumes are shown in **Figure 3**. The Baseline traffic volumes include the Commerce Center Industrial, Red Hawk Ranch Phase 1, and American Battery Metals projects.



Intersection Level of Service

Level of service calculations were performed using the Baseline traffic volumes, lane configurations, and traffic controls. The results are presented in **Table 2** and detailed calculations are provided in **Appendix B**.

Table 2: Baseline Conditions Intersection Level of Service Summary

ID	Intersection Name	Intersection Control	Movement	AM Peak		PM Peak	
				LOS	Delay	LOS	Delay
1	Main Street (SR 427) / WB I-80 Off-Ramp	Side Street STOP	Overall	A	2.6	A	3.1
			Westbound Left	B	13.0	B	13.5
			Westbound Right	B	10.5	A	9.7
2	Main Street (SR 427) / WB I-80 On-Ramp	Side Street STOP	Overall	A	3.5	A	2.6
			Northbound Left	B	10.1	B	10.4
3	Main Street (SR 427) / EB I-80 Off-Ramp	Side Street STOP	Overall	A	2.7	A	1.1
			Eastbound Left	C	20.0	C	17.5
4	Main Street (SR 427) / EB I-80 On-Ramp	Side Street STOP	Overall	A	0.6	A	0.8
			Southbound Left	A	9.4	A	8.8
5	Main Street (SR 427) / Pilot Road	Side Street STOP	Overall	A	4.8	B	16.3
			Eastbound Approach	D	28.1	F	120.7
			Westbound Left	C	22.7	F	55.9
			Westbound Through	C	21.2	D	30.6
			Westbound Right	B	11.6	B	10.8
			Northbound Left	A	8.3	B	10.0
			Southbound Left	A	8.8	A	8.2

Notes: 1. Delay is reported in seconds per vehicle for the worst approach/movement for unsignalized (side-street stop controlled) intersections.

Source: Headway Transportation, 2022

As shown in the table, all study intersections and movements are anticipated to operate within level of service policy under Baseline conditions. However, the Main Street (SR 427) / Pilot Road intersection side-street approaches will function at (LOS "F") during the PM Peak hour. Difficulty entering Main Street from Pilot Road is a known existing issue and confirmed by the calculations.

FUTURE CONDITIONS

Traffic Volumes

Future (20-year horizon) traffic volumes were developed by adding the anticipated Commerce Center Industrial project trips obtained from the *Traffic Impact Study for Commerce Center Industrial* (Headway Transportation, September 2021) to the Future Plus Project traffic volumes obtained from the *Traffic Impact Study for Red Hawk Ranch Phase 1* (Headway Transportation, November 2021). The Future Plus Project traffic volumes from the *Traffic Impact Study for Red Hawk Ranch Phase 1* were developed by applying a 2% annual background growth rate to existing volumes consistent with the *City of Fernley*



Comprehensive Masterplan. Refer to the *Traffic Impact Study for Red Hawk Ranch Phase 1* for detailed methodology and assumptions. The Future lane configurations, controls, and traffic volumes are shown in **Figure 4**. The Future traffic volumes include the Commerce Center Industrial, Red Hawk Ranch Phase 1, and American Battery Metals projects.

Intersection Level of Service Analysis

Table 3 presents the Future Year conditions level of service summary and detailed calculation sheets are provided in **Appendix C**.

Table 3: Future Conditions Level of Service Summary

ID	Intersection Name	Intersection Control	Movement	AM Peak		PM Peak	
				LOS	Delay	LOS	Delay
1	Main Street (SR 427) / WB I-80 Off-Ramp	Side Street STOP	Overall	A	2.8	A	3.8
			Westbound Left	C	15.1	C	17.1
			Westbound Right	B	11.3	B	10.4
2	Main Street (SR 427) / WB I-80 On-Ramp	Side Street STOP	Overall	A	4.6	A	3.5
			Northbound Left	B	12.7	B	13.0
3	Main Street (SR 427) / EB I-80 Off-Ramp	Side Street STOP	Overall	A	4.0	A	1.5
			Eastbound Left	D	34.8	D	26.4
4	Main Street (SR 427) / EB I-80 On-Ramp	Side Street STOP	Overall	A	0.7	A	0.8
			Southbound Left	B	10.4	A	9.7
5	Main Street (SR 427) / Pilot Road	Side Street STOP	Overall	B	17.5	F	94.5
			Eastbound Approach	F	137.9	F	>300
			Westbound Left	E	41.8	F	>300
			Westbound Through	D	34.0	F	60.5
			Westbound Right	B	13.5	B	12.4
			Northbound Left	A	8.8	B	12.0
			Southbound Left	A	9.5	A	8.7

Notes: 1. Delay is reported in seconds per vehicle for the worst approach/movement for unsignalized (side-street stop controlled) intersections.

Source: Headway Transportation, 2022

As shown in the table, all study intersections and movements are anticipated to operate within level of service policy under Future Year conditions except for the Main Street (SR 427) / Pilot Road intersection. The intersection is anticipated to reach overall LOS F in the PM peak hour in the 20-year horizon without the project due to the continued increase in Main Street traffic volumes.

PROJECT GENERATED TRAFFIC

Trip Generation

Trip generation rates from the Institute of Transportation Engineers' (ITE) *Trip Generation Manual*, 11th Edition were used to develop trip generation estimates for the project. The proposed project consists of



up to 485,000 square feet of warehouse space. **Table 4** shows the Daily, AM peak hour, and PM peak hour trip generation estimates.

Table 4: Trip Generation Estimates

Land Use (ITE Code)	Quantity (Sq. Ft.)	Daily	AM			PM		
			Total	In	Out	Total	In	Out
Warehousing (150)	485,000	829	82	63	19	87	24	63

Source: Headway Transportation, 2022

As shown in the table, the proposed project is anticipated to generate approximately 829 Daily trips, 82 AM peak hour trips, and 87 PM peak hour trips.

Project Access

Access to the site is provided via two full access driveways on Pilot Road as shown on **Figure 2**. Access to the local roadway network is provided via the Main Street (SR 427) / Pilot Road intersection.

The project will extend Pilot Road, including curb and gutter) from the existing terminus to the western edge of the project site. The lane configurations and intersection controls along Pilot Road and Main Street under project conditions are unchanged from existing conditions. The project proposes to install “No Parking” signs and paint red curb along both sides of Pilot Road to prevent parked vehicles and trucks from constricting the roadway width and emergency access to/from the project site.

Trip Distribution and Assignment

Traffic generated by the project was distributed to the road network based on the location of the project site, the relative locations of major activity centers, and access connection points to regional roadways.

The following percentages were used for distributing the project traffic:

- 35% to/from the west via I-80
- 35% to/from the south via Main Street (SR 427)
- 25% to/from the east via I-80
- 5% to/from the north via Main Street (SR 427)

Project generated trips were assigned to the adjacent roadway system based on the distributions outlined above. The project trip assignment is shown on **Figure 5**.

BASELINE PLUS PROJECT CONDITIONS

Traffic Volumes

Baseline Plus Project traffic volumes were developed by adding the project generated trips (**Figure 5**) to the Baseline traffic volumes (**Figure 3**) and are shown on **Figure 6**.



Intersection Level of Service Analysis

Table 5 presents the level of service analysis summary for the Baseline Plus Project conditions and detailed calculation sheets are provided in **Appendix D**.

Table 5: Baseline Plus Project Conditions Intersection Level of Service Summary

ID	Intersection Name	Intersection Control	Movement	AM Peak		PM Peak	
				LOS	Delay	LOS	Delay
1	Main Street (SR 427) / WB I-80 Off-Ramp	Side Street STOP	Overall	A	2.8	A	3.2
			Westbound Left	B	13.4	B	13.7
			Westbound Right	B	10.5	A	9.7
2	Main Street (SR 427) / WB I-80 On-Ramp	Side Street STOP	Overall	A	3.5	A	2.8
			Northbound Left	B	10.3	B	10.6
3	Main Street (SR 427) / EB I-80 Off-Ramp	Side Street STOP	Overall	A	2.8	A	1.1
			Eastbound Left	C	20.9	C	18.3
4	Main Street (SR 427) / EB I-80 On-Ramp	Side Street STOP	Overall	A	0.6	A	0.8
			Southbound Left	A	9.4	A	8.9
5	Main Street (SR 427) / Pilot Road	Side Street STOP	Overall	A	6.2	E	43.1
			Eastbound Approach	E	35.4	F	269.4
			Westbound Left	D	25.8	F	68.7
			Westbound Through	C	23.9	D	32.1
			Westbound Right	B	11.6	B	10.8
			Northbound Left	A	8.5	B	10.2
			Southbound Left	A	8.8	A	8.2

Notes: 1. Delay is reported in seconds per vehicle for the worst approach/movement for unsignalized (side-street stop controlled) intersections.

Source: Headway Transportation, 2022

As shown in the table, all study intersections and movements are anticipated to operate within level of service policy under Baseline Plus Project conditions except for the Main Street (SR 427) / Pilot Road intersection. The intersection is anticipated to reach overall LOS E in the PM peak hour with the project, which exceeds LOS policy and indicates a need for mitigation with anticipated development(s).

FUTURE PLUS PROJECT CONDITIONS

Traffic Volumes

Future Plus Project traffic volumes were developed by adding the project generated trips (**Figure 5**) to the Future Year traffic volumes (**Figure 4**) and are shown on **Figure 7**.



Intersection Level of Service Analysis

Level of service calculations were performed using the Future Year Plus Project traffic volumes. Existing lane configurations and controls are assumed to remain unchanged at the study intersections in this analysis. The results are presented in **Table 6** and calculation sheets are provided in **Appendix E**.

Table 6: Future Plus Project Conditions Intersection Level of Service Summary

ID	Intersection Name	Intersection Control	Movement	AM Peak		PM Peak	
				LOS	Delay	LOS	Delay
1	Main Street (SR 427) / WB I-80 Off-Ramp	Side Street STOP	Overall	A	3.1	A	3.9
			Westbound Left	C	15.6	C	17.5
			Westbound Right	B	11.3	B	10.4
2	Main Street (SR 427) / WB I-80 On-Ramp	Side Street STOP	Overall	A	4.7	A	3.7
			Northbound Left	B	13.1	B	13.6
3	Main Street (SR 427) / EB I-80 Off-Ramp	Side Street STOP	Overall	A	4.2	A	1.5
			Eastbound Left	E	37.3	D	27.9
4	Main Street (SR 427) / EB I-80 On-Ramp	Side Street STOP	Overall	A	0.6	A	0.8
			Southbound Left	B	10.4	A	9.9
5	Main Street (SR 427) / Pilot Road	Side Street STOP	Overall	D	28.6	F	171.9
			Eastbound Approach	F	219.9	F	>300
			Westbound Left	E	49.4	F	>300
			Westbound Through	E	39.6	F	>300
			Westbound Right	B	13.5	F	64.1
			Northbound Left	A	9.0	B	12.2
			Southbound Left	A	9.5	A	8.7

Notes: 1. Delay is reported in seconds per vehicle for the worst approach/movement for unsignalized (side-street stop controlled) intersections.

Source: Headway Transportation, 2022

As shown in the table, it is anticipated that the Main Street (SR 427) / Pilot Road intersection will operate at overall LOS F during the PM peak hour under Future Plus Project conditions. All other study intersections and movements are anticipated to operate within level of service policy.

In the 20-year horizon, delay to the eastbound left turn movement at the Main Street (SR 427) / I-80 EB Off-Ramp intersection is anticipated to increase by 2.5 seconds with the addition of this project. The movement operates just outside of LOS "D" and the 95th percentile queue is anticipated to be 3 to 4 vehicles. This is a manageable condition; therefore, no mitigation is recommended at this location.

INTERSECTION CONTROL EVALUATION & RECOMMENDED MITIGATION

As shown in the level of service tables, the Main Street (SR 427) / Pilot Road intersection is anticipated to operate at poor levels of service with or without the project and will require improvement. A basic Intersection Control Evaluation analysis was performed to analyze various types of intersection controls



that would mitigate the project's impacts and to recommend optimal control(s). A roundabout and traffic signal (configurations shown on **Figure 8**) were tested as a part of the Intersection Control Evaluation.

Traffic Signal

For the purposes of this analysis, the lane configurations are assumed to remain the same on the northbound and southbound approaches, the eastbound approach will contain a through-left and exclusive right turn lane, and the westbound approach would be modified for a through-right and exclusive left turn lane. These configurations will address the existing east/west intersection offset. The northbound and southbound left-turns are assumed to operate with protected + permissive phasing, with flashing yellow arrows, and the eastbound and westbound approaches are assumed to operate with permissive phasing consistent with the proposed lane configurations

A preliminary traffic signal warrant analysis was completed for the Main Street (SR 427) / Pilot Road intersection based on nationally accepted standards outlined in the current edition of the Manual on Uniform Traffic Control Devices (MUTCD). The following warrants were evaluated: Warrant 1: Eight-Hour Vehicle Volume, Warrant 2: Four-Hour Vehicle Volume, Warrant 3: Peak-Hour, and Warrant 7: Crash Experience. The warrants were considered using 2 or more lanes (southbound and northbound approaches) and 1 lane (eastbound approach) criteria stated in the MUTCD.

A time of day distribution was calculated based on hourly volumes from NDOT count station 0190025 – Main Street (SR 427), 400 feet south of Pilot Road. Off-peak traffic volumes were developed by factoring the plus project peak hour volumes using the time of day distribution. The highest eight hours were then selected for a signal warrant analysis. Right turn volumes from the side-street approaches were not considered in this analysis consistent with NDOT past typical practice. However, it is our opinion that right turns from Pilot Road (a single lane approach) should be considered given the high volumes, difficulty entering the traffic stream, and challenged sight lines with two southbound lanes.

It is anticipated that the Main Street (SR 427) / Pilot Road intersection would not technically meet the MUTCD Eight Hour, Four Hour, or Peak Hour signal warrant criteria under Baseline Plus Project conditions. However, it is important to note that the warrants do not consider heavy vehicle traffic (15% indicated by prior counts) in which heavy vehicles require larger gaps in the traffic stream. It is anticipated that the MUTCD Eight Hour, Four Hour, and Peak Hour signal warrants will all be met under Future Plus Project conditions.

Regarding crash history, the need for a traffic control signal shall be considered if an engineering study finds that all of the following criteria are met:

- A. Adequate trial of alternatives with satisfactory observance and enforcement has failed to reduce the crash frequency; and
- B. Five or more reported crashes, of types susceptible to correction by a traffic control signal, have occurred within a 12-month period, each crash involving personal injury or property damage apparently exceeding the applicable requirements for a reportable crash; and



C. For each of any 8 hours of an average day, the vehicles per hour (vph) given in both of the 80 percent columns of Condition A in Table 4C-1 (see Section 4C.02), or the vph in both of the 80 percent columns of Condition B in Table 4C-1 exists on the major-street and the higher-volume minor-street approach, respectively, to the intersection. These major-street and minor-street volumes shall be for the same 8 hours. On the minor street, the higher volume shall not be required to be on the same approach during each of the 8 hours.

Regarding Part A, we are not aware of any countermeasures or alternatives that have been tested to reduce accident frequency. In reality, there are few available options that would be effective. Five (5) crashes were reported within a 12-month period (September 2017 to June 2018) and all were classified as angle type crashes. Angle type crashes are generally susceptible to correction by a traffic control signal. Therefore, Part B is met. It is also anticipated that Part C – Condition B will be met under Baseline Plus Project conditions. As stated previously in this report, many of the crashes involve vehicles entering the intersection from the side-street approaches indicating that it may be difficult to enter into the mainline travel lanes. A traffic signal or other safety improvements should be considered.

All reference material and warrant analysis tables are provided in **Appendix F**.

In summary, it is evident that the Main Street Pilot Road intersection is approaching the point of meeting signal warrants now and can be expected to meet multiple warrants by the 20-year horizon. The intersection is a known concern regarding both operations and safety.

Roundabout

For the purposes of this comparative analysis, the lane configurations of the potential roundabout include a single-lane roundabout with a southbound right-turn bypass lane. A future roundabout would require at least a 140 foot Inscribed Circle Diameter to accommodate WB-67 trucks which are prevalent in the intersection. The southbound right-turn lane would be needed to manage the heavy inbound truck movement to Pilot Road and minimize queuing on the southbound approach.

Intersection Level of Service

A traffic operations comparison between the two intersection control types was performed for Baseline Plus Project and Future Plus Project conditions. The results are presented in **Table 7** and detailed calculation sheets are provided in **Appendix G**.



Table 7: Main Street (SR 427) / Pilot Road Level of Service Comparison

Control	Movement	Baseline Plus Project						Future Plus Project					
		AM Peak			PM Peak			AM Peak			PM Peak		
		LOS	Delay	v/c	LOS	Delay	v/c	LOS	Delay	v/c	LOS	Delay	v/c
Traffic Signal	Overall	B	10.7	-	B	15.7	-	B	12.9	-	D	35.4	-
	Eastbound Approach	B	15.1	-	B	19.4	-	C	21.6	-	D	37.8	-
	Westbound Approach	B	15.1	-	C	20.1	-	C	21.1	-	D	36.6	-
	Northbound Approach	B	11.2	-	B	9.5	-	B	13.4	-	B	11.7	-
	Southbound Approach	B	8.0	-	B	16.9	-	A	8.7	-	D	46.4	-
Roundabout	Overall	B	12.9	0.69	C	17.1	0.81	C	24.2	0.93	F	69.8	1.20
	Eastbound Approach	A	8.1	0.23	C	22.6	0.58	B	10.1	0.31	F	52.4	0.84
	Westbound Approach	A	9.3	0.09	A	8.9	0.19	B	11.7	0.13	B	13.2	0.28
	Northbound Approach	C	17.8	0.69	B	10.8	0.48	E	39.0	0.93	C	20.7	0.74
	Southbound Approach	A	8.5	0.41	C	19.3	0.81	B	10.6	0.54	F	101.4	1.20

Source: Headway Transportation, 2022

As shown in the table, both mitigation options are anticipated to operate within level of service policy (LOS "D" or better) under Baseline Plus Project conditions. Under Future Plus Project conditions, it is anticipated that a traffic signal will operate within level of service policy. However, a single lane roundabout with an exclusive southbound right turn lane is anticipated to operate well beyond capacity (LOS "F") under Future Plus Project conditions. Two through movement southbound lanes (the failing movement) is not feasible as there would be inadequate distance prior to the railroad undercrossing to merge the lanes. Further, if two southbound lanes circulated through the roundabout, that movement would take over and truck movements from Pilot Road would continue to be extremely difficult. Therefore, it is unlikely a roundabout alternative will fit the existing conditions or provide a long-term solution.

Queue Length

A queue length analysis and comparison between the traffic signal and roundabout intersection control types was also performed. **Table 8** shows the comparison of 95th percentile queue lengths. The 95th percentile queue is the maximum back of queue with 95th percentile traffic volumes. In other words, the 95th-percentile queue is the queue length that has only a 5-percent probability of being exceeded during the analysis time period.



Table 8: Main Street / (SR 427) Pilot Road Queuing Comparison (95th Percentile, feet)

Control	Movement	Baseline Plus Project		Future Plus Project	
		AM Peak	PM Peak	AM Peak	PM Peak
Traffic Signal	<i>Eastbound Approach</i>	88	122	135	219
	<i>Westbound Approach</i>	3	42	31	63
	<i>Northbound Approach</i>	290	164	530	264
	<i>Southbound Approach</i>	112	491	182	881
Roundabout	<i>Eastbound Approach</i>	21	71	29	147
	<i>Westbound Approach</i>	7	16	10	25
	<i>Northbound Approach</i>	127	60	411	167
	<i>Southbound Approach</i>	47	201	77	2,745

Source: Headway Transportation, 2022

Consistent with the level of service analysis, the roundabout option is anticipated to create excessive queuing especially during the PM Peak hour (2,745 foot southbound queue) under Future Plus Project conditions. It should be noted that the southbound approach for the traffic signal mitigation is anticipated to be considerable in the 20-year horizon (881 foot queue). Future modifications and/or mitigations may be required beyond the 20-year horizon if background traffic continues to increase and no other transportation improvements are made in the area.

Sight Distance Analysis

The Main Street (SR 427) / Pilot Road intersection currently does not meet the AASHTO sight triangle requirements (Intersection Sight Distance) for the minor (Pilot Road) approach as a STOP control. The Main Street (SR 427) posted 35 mph speed limit requires the minor approach to have a 390 foot sight triangle distance where currently the approach only has 375 feet. This could potentially be resolved with better STOP bar locations. A well designed traffic signal or a roundabout would also alleviate the sight distance concerns.

A sight distance evaluation was also performed for a traffic signal installation at Pilot Road/Main Street and is provided in **Appendix H**. The analysis indicates that signal heads would be adequately visible on the northbound approach through the railroad undercrossing and on all other approaches.

Pro-Rata Calculation

The project's fair share contribution for future signalization of the Main Street (SR 427) / Pilot Road intersection is calculated as follows:

(Project PM peak hour exiting volume from Pilot Road divided by

existing plus project volume exiting Pilot Road) times estimated construction cost = \$ contribution

Calculation: (63 project trips/227 total trips) or 28% x \$800,000 signalization cost = \$224,000



CONCLUSIONS & RECOMMENDATIONS

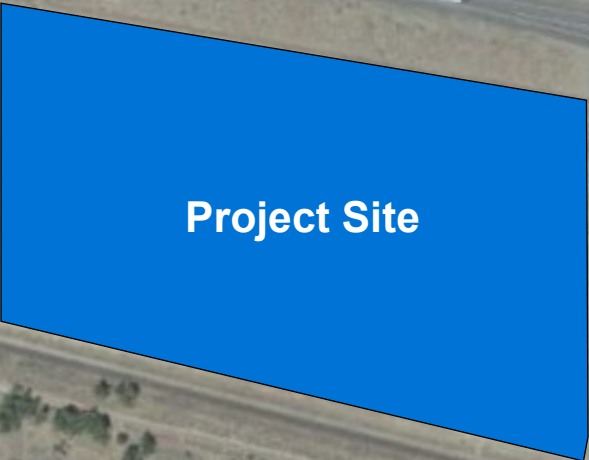
The following is a list of key findings and recommendations:

- ▶ The proposed project is anticipated to generate approximately 829 Daily trips, 82 AM peak hour trips, and 87 PM peak hour trips.
- ▶ Access to the site is provided via two full access driveways on Pilot Road and primary access to the local roadway network is provided via the Main Street (SR 427) / Pilot Road intersection.
- ▶ It is anticipated that the eastbound left turn movement at the Main Street (SR 427) / EB I-80 Off-Ramp intersection will degrade under Future Plus Project conditions. The delay to the eastbound left turn movement is anticipated to increase by 2.5 seconds with addition of this project. The subject movement operates just outside of LOS “D” and the 95th percentile queue is anticipated to be only 3 to 4 vehicles. This is a manageable condition; therefore, no mitigation is needed at this location.
- ▶ The Main Street (SR 427) / Pilot Road intersection operates at poor levels of service under Baseline conditions. It is already known by the City of Fernley and NDOT that this intersection is a concern and that future improvements will be necessary. Poor traffic operations are anticipated to be exacerbated by this project and continued regional growth.
- ▶ A traffic signal is anticipated to operate within level of service policy under Baseline and Future Plus Project conditions. Note that the southbound approach is anticipated to operate near capacity at the 20-year horizon.
- ▶ The Main Street / Pilot Road intersection is approaching the point of meeting signal warrants now and can be expected to meet multiple warrants by the 20-year horizon.
- ▶ Crash data indicates that it may be difficult to perform movements from the side-street approaches. Five angle type crashes were reported within a 12-month period (September 2017 to June 2018) and may be susceptible to correction by a traffic signal.
- ▶ A roundabout was considered at the Main Street/Pilot Road intersection but was found to have both fit and operational issues. A single lane (with southbound right-turn bypass) roundabout is anticipated to have inadequate capacity, causing severe queuing on the I-80 eastbound off-ramp, and operate at unacceptable levels of service under Future Plus Project conditions.
- ▶ The project will provide a fair share contribution toward the future construction a traffic signal at the Main Street (SR 427) / Pilot Road intersection. The pro-rata contribution has been calculated as 28% of an \$800,000 improvement cost for a total contribution of \$224,000. This will mitigate the project’s incremental impact at the subject intersection. The proposed lane configuration is illustrated on **Figure 8**.
- ▶ The future traffic signal will be constructed by others, and activated when signal warrant criteria are met, subject to NDOT approval.
- ▶ The project will extend Pilot Road from the existing terminus to the western edge of the project site.
- ▶ The project proposes to install “No Parking” signs and paint red curb along both sides of Pilot Road to prevent parked vehicles and trucks from constricting access to/from the project site.



Study Locations

- ① Main Street (SR 427) / I-80 Westbound Off-Ramp
- ② Main Street (SR 427) / I-80 Westbound On-Ramp
- ③ Main Street (SR 427) / I-80 Eastbound Off-Ramp
- ④ Main Street (SR 427) / I-80 Eastbound On-Ramp
- ⑤ Main Street (SR 427) / Pilot Road



Project Site

1

2

3

4

5

I-80 Westbound

I-80 Eastbound

Pilot Road

Logan Ln

Main Street (SR 427)

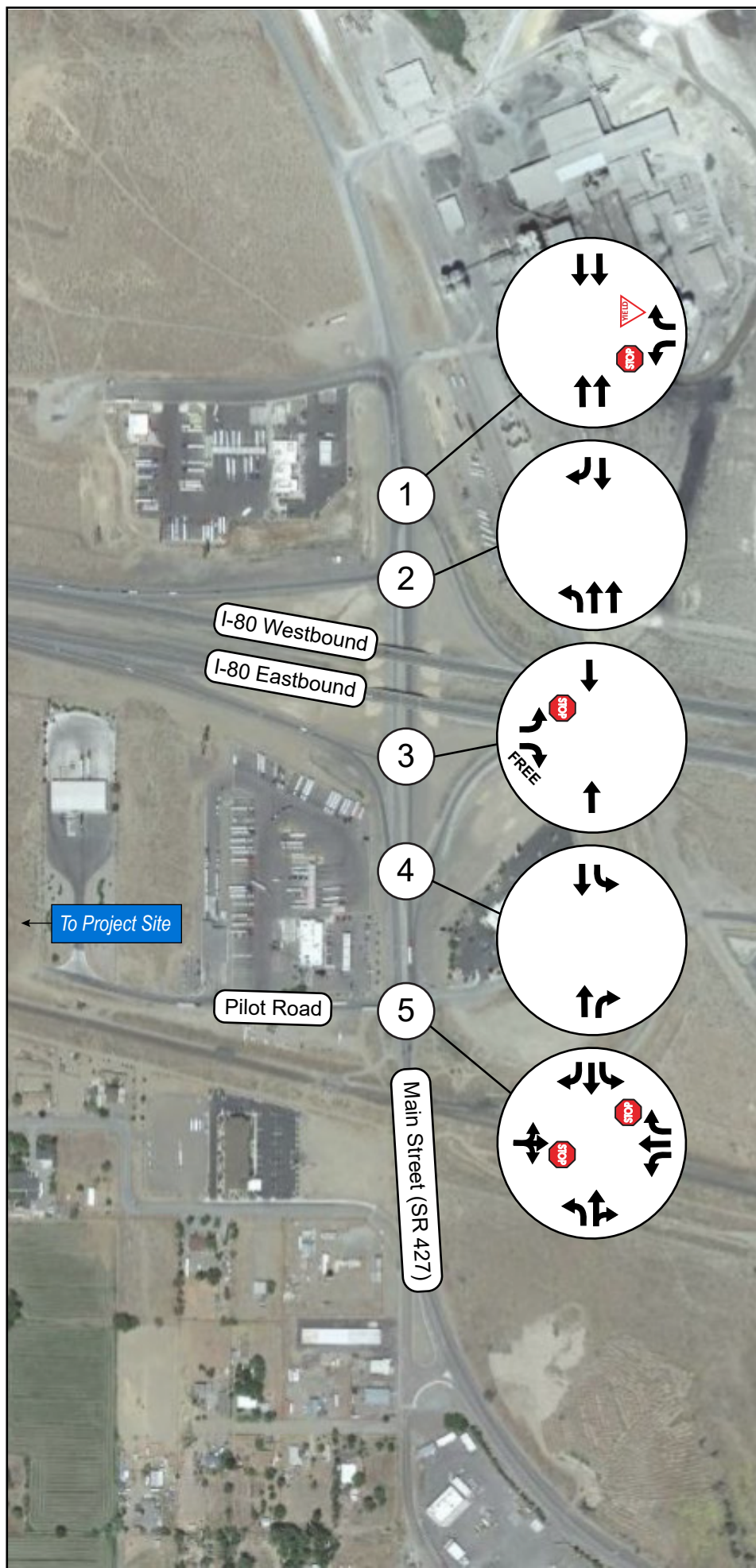


- Project Site

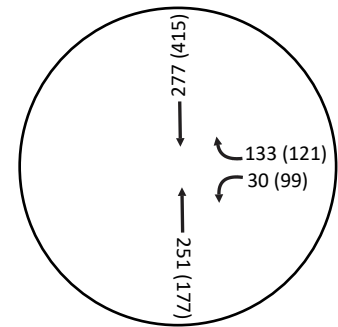


- Study Intersection

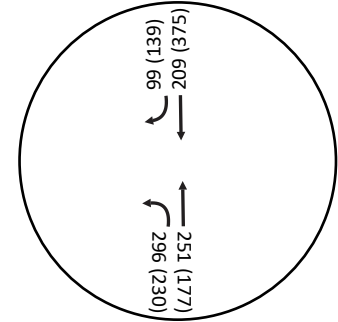




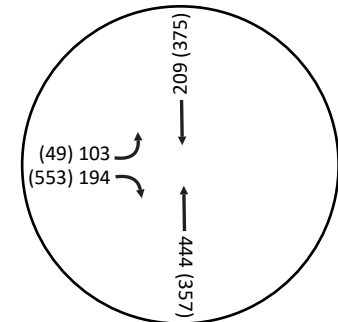
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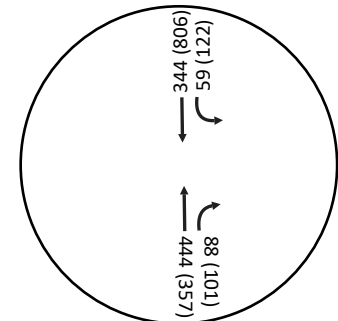
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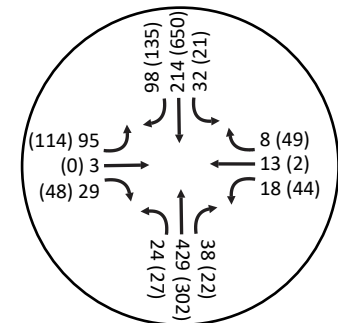
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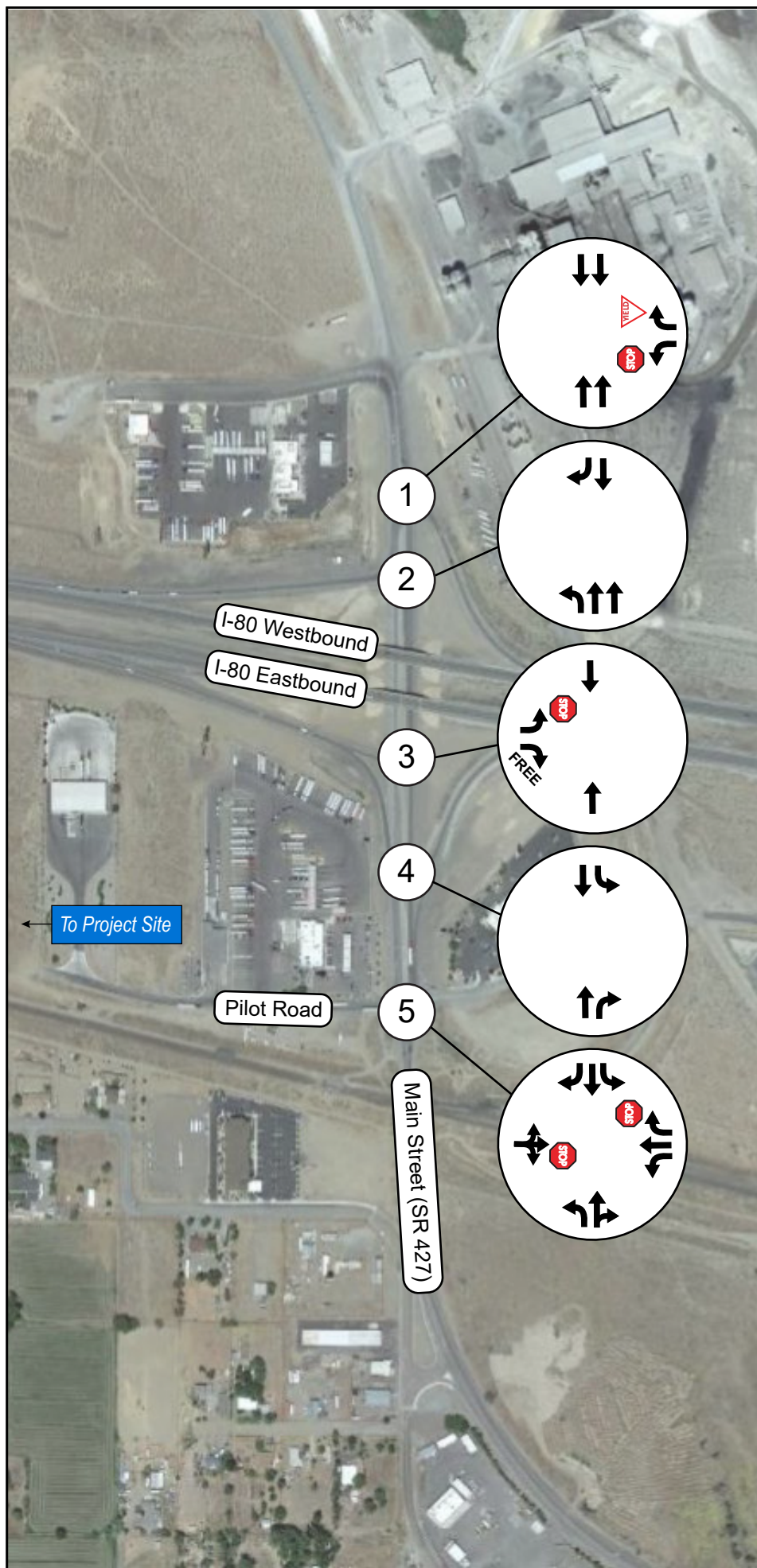


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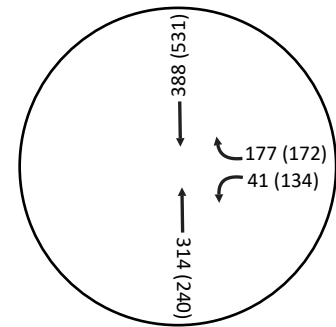


⑤ Main Street (SR 427) / Pilot Road

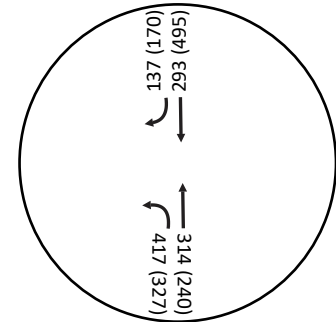




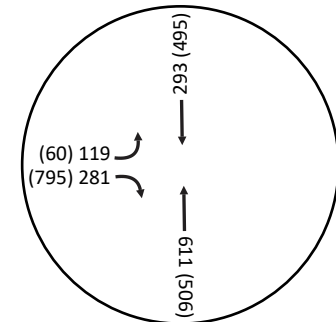
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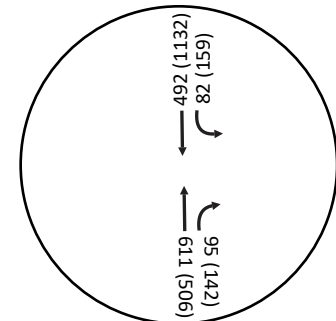
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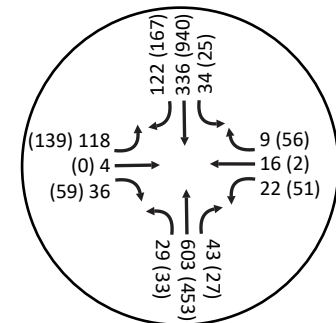
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④ Main Street (SR 427) / I-80 Eastbound On-Ramp

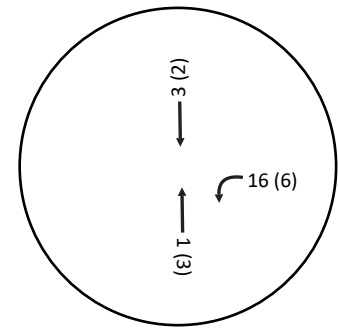


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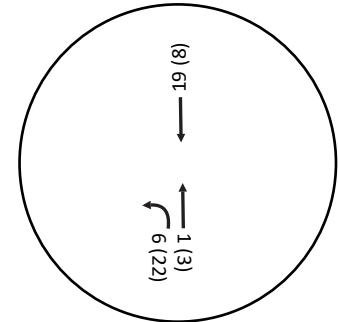




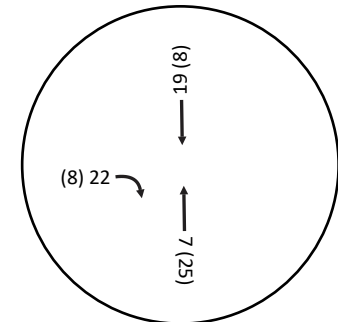
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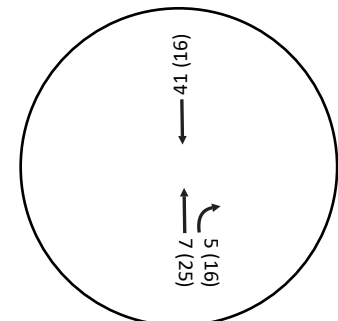
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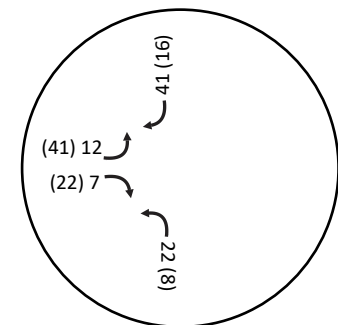
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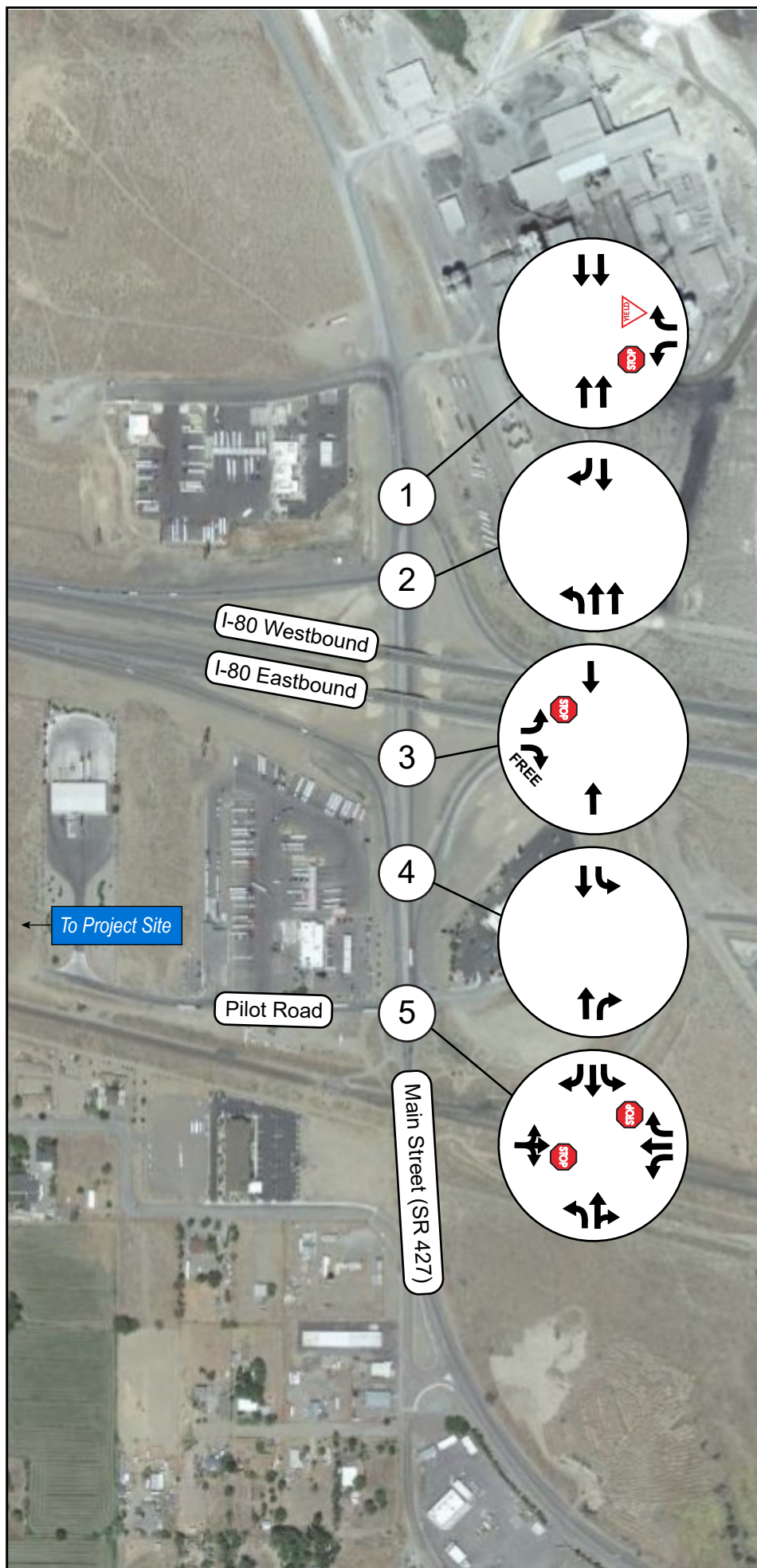


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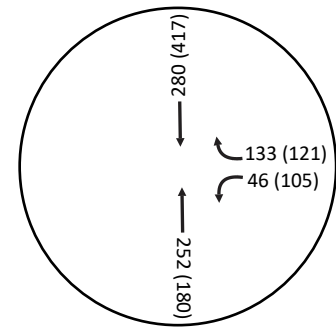


⑤ Main Street (SR 427) / Pilot Road

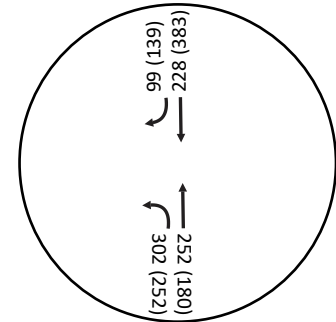




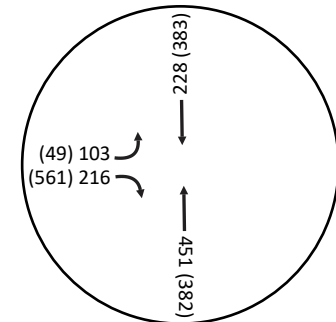
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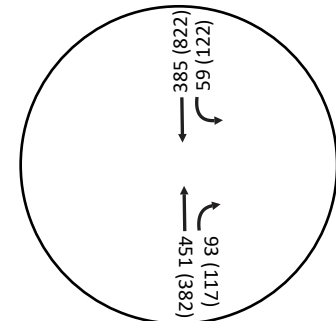
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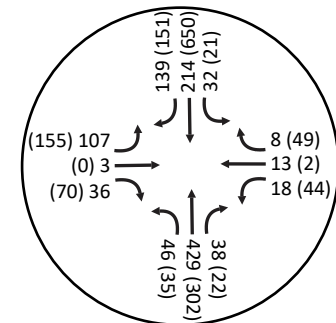
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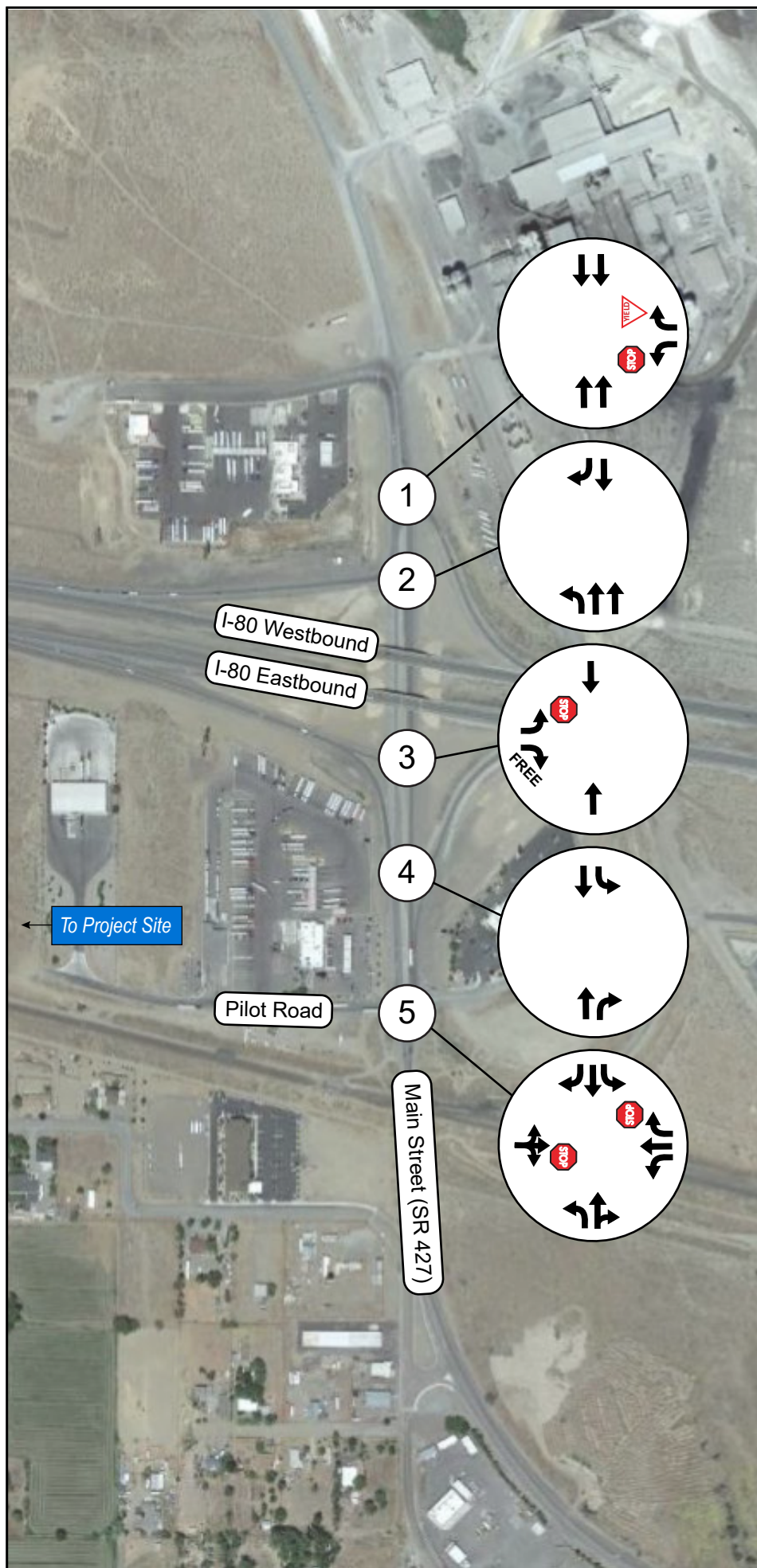


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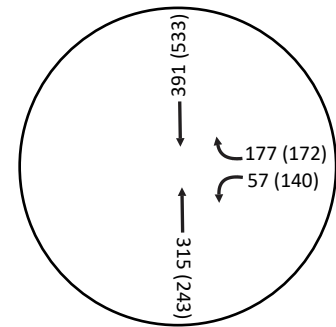


⑤ Main Street (SR 427) / Pilot Road

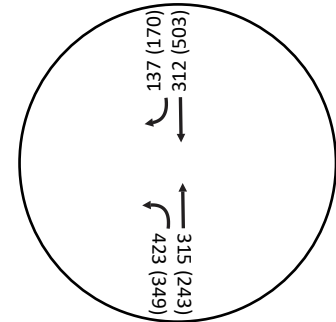




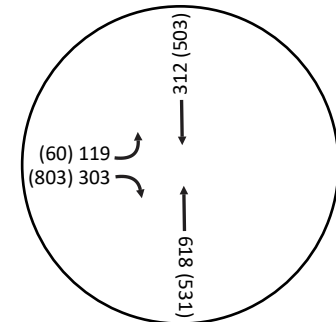
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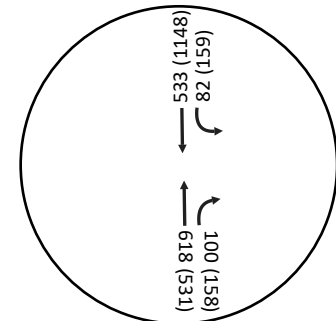
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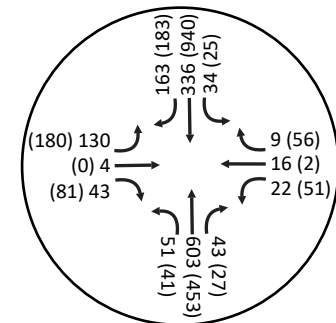
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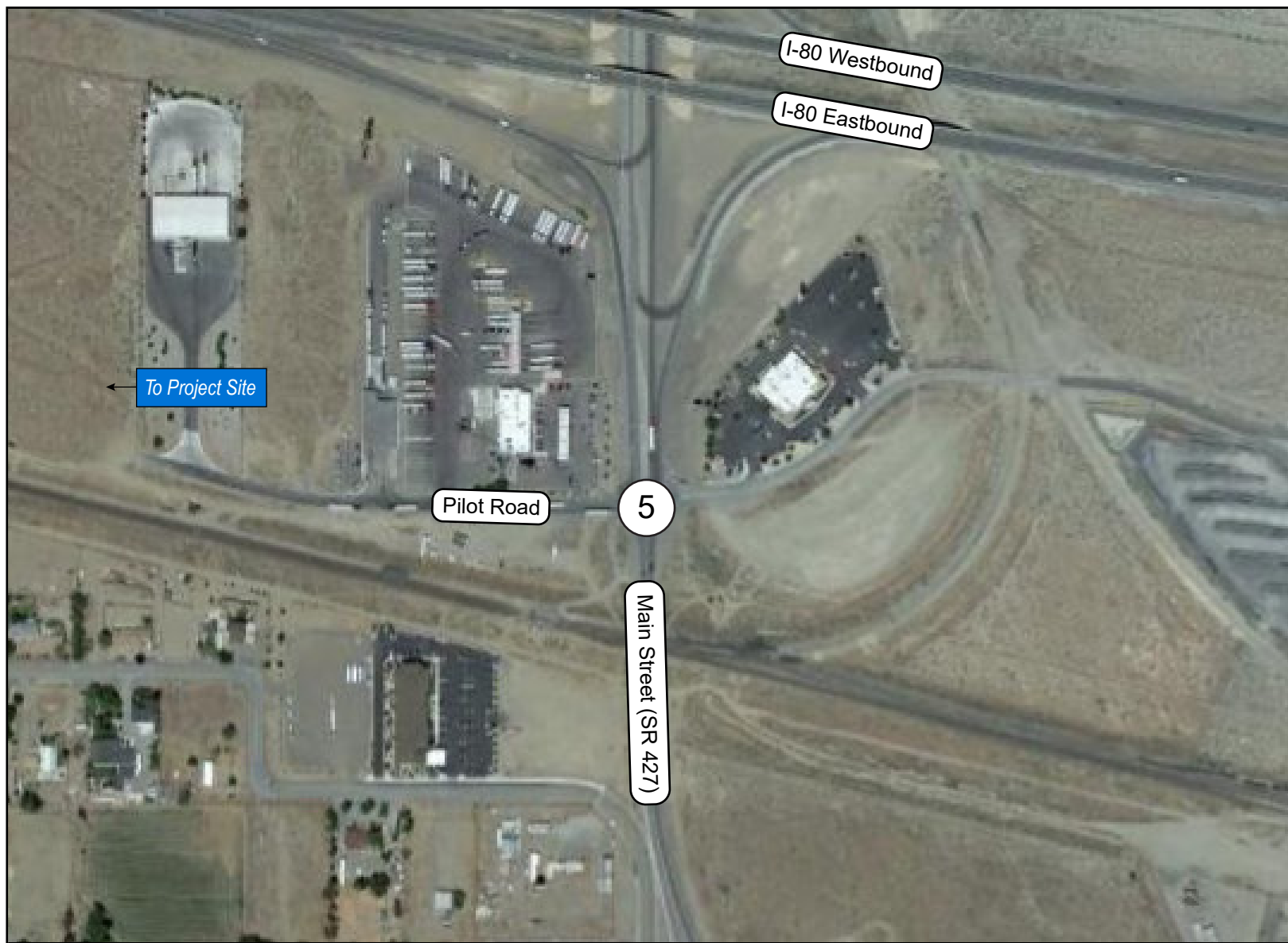


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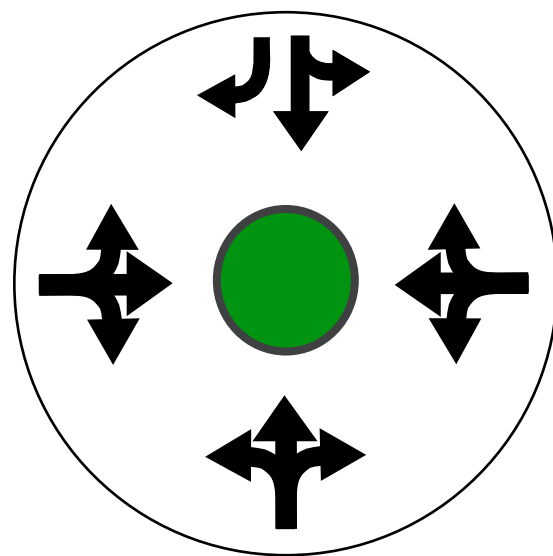
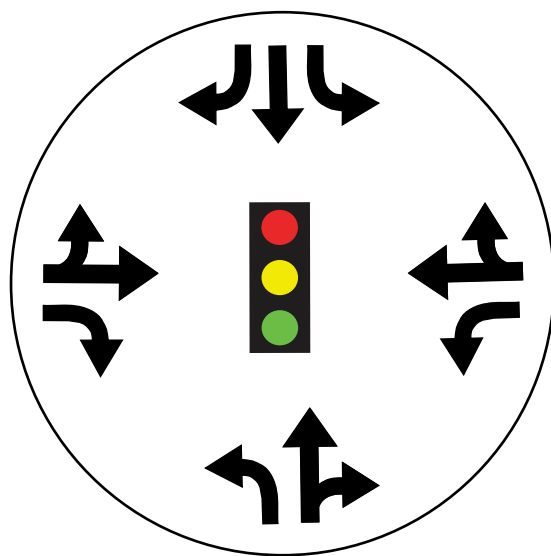


⑤ Main Street (SR 427) / Pilot Road





⑤ Main Street (SR 427 / Pilot Road)



Recommended Configuration

Appendix A

NDOT Crash Data



INTERSECTION DETAIL
SR427 @ PILOT RD/LOGAN LN
01 JAN 17 - 01 JAN 20

COUNTY: WASHOE

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	V1 Type	V1 Dir	V1 Driver Age	V1 Lane Num	V1 Action
PROPERTY DAMAGE ONLY	9-Oct-2019	2019	09:22 PM	PILOT RD	45	E	SR427	CLEAR			PDO		SIDESWIPE, MEETING	2	PICKUP	E	67	L1	TURNING LEFT
PROPERTY DAMAGE ONLY	20-Jun-2017	2017	07:25 AM	PILOT RD		AT INT	SR427	CLEAR			PDO		BACKING	2	SEMI	S	48		BACKING UP
PROPERTY DAMAGE ONLY	6-Sep-2017	2017	11:00 AM	SR427		AT INT	LOGAN LN	CLEAR		2	PDO		ANGLE	2	PICKUP	S			GOING STRAIGHT
INJURY ACCIDENT	30-Nov-2017	2017	07:02 AM	SR427		AT INT	LOGAN LN	CLEAR		1	PDO	C	ANGLE	3	UTILITY	W	21		GOING STRAIGHT
INJURY ACCIDENT	20-Dec-2019	2019	02:45 PM	SR427		AT INT	LOGAN LN	CLOUDY			PDO	B	ANGLE	2	UTILITY	W	18	1	GOING STRAIGHT
PROPERTY DAMAGE ONLY	19-Jan-2017	2017	03:21 PM	SR427		AT INT	PILOT RD	CLEAR			PDO		ANGLE	2	SEDAN, 4 DOOR	E	25		TURNING LEFT
PROPERTY DAMAGE ONLY	22-May-2018	2018	12:40 PM	SR427		AT INT	PILOT RD	CLEAR			PDO		ANGLE	2	SEDAN, 4 DOOR	N	20	1	GOING STRAIGHT
INJURY ACCIDENT	27-Jun-2018	2018	11:05 AM	SR427		AT INT	PILOT RD	CLEAR		1	PDO	C	ANGLE	2	UTILITY	E	28	1	TURNING LEFT
PROPERTY DAMAGE ONLY	2-Oct-2019	2019	01:42 PM	SR427		AT INT	PILOT RD	CLEAR			PDO		SIDESWIPE, MEETING	2	PICKUP	W	57	1	TURNING LEFT
										Sum: 0	Count: 6								
										Count: 0	Sum: 4								
										Count: 3	Count: 9								
										Total:	9								

V1 Driver Factors	V1 Driver Distracted	V1 Vehicle Factors	V1 Most Harmful Event	V1 All Events	V2 Type	V2 Dir	V2 Driver Age	V2 Lane Num	V2 Action	V2 Driver Factors	V2 Driver Distracted
OTHER IMPROPER DRIVING	UNKNOWN	FAILED TO YIELD RIGHT OF WAY	MOTOR VEHICLE IN TRANSPORT	SLOW/STOPPED VEHICLE	PICKUP	N	57	1	GOING STRAIGHT	APPARENTLY NORMAL	
INATTENTION/DISTRACTED		UNSAFE BACKING			REFRIGERATED VAN	N	54		STOPPED	APPARENTLY NORMAL	
APPARENTLY NORMAL					PICKUP	E			GOING STRAIGHT		
APPARENTLY NORMAL		FAILED TO YIELD RIGHT OF WAY			SEDAN	S	36		GOING STRAIGHT	APPARENTLY NORMAL	
APPARENTLY NORMAL		FAILED TO YIELD RIGHT OF WAY	MOTOR VEHICLE IN TRANSPORT		VAN	N	41	1	GOING STRAIGHT	ILLNESS	
OTHER IMPROPER DRIVING		FAILED TO YIELD RIGHT OF WAY			PICKUP	S	31		GOING STRAIGHT	APPARENTLY NORMAL	
APPARENTLY NORMAL		FAILED TO YIELD RIGHT OF WAY	MOTOR VEHICLE IN TRANSPORT		VAN	S	60	1	GOING STRAIGHT	APPARENTLY NORMAL	
APPARENTLY NORMAL		FAILED TO YIELD RIGHT OF WAY	MOTOR VEHICLE IN TRANSPORT		SEMI	N	56	1	GOING STRAIGHT	APPARENTLY NORMAL	
APPARENTLY NORMAL		FAILED TO YIELD RIGHT OF WAY	MOTOR VEHICLE IN TRANSPORT		HATCHBACK, 4 DOOR	E	28	1	GOING STRAIGHT	APPARENTLY NORMAL	

V2 Vehicle Factors		V2 All Events	First Harmful Event	Nonmotorist Factors	Factors Roadway	Lighting	HWY Factors	Agency	Accident Rec Num
UNKNOWN	V2 Most Harmful Event								
DISREGARDED TRAFFIC SIGNS, SIGNALS, ROAD MARKINGS: HIT AND RUN: OTHER IMPROPER DRIVING	MOTOR VEHICLE IN TRANSPORT		MOTOR VEHICLE IN TRANSPORT		DRY	DARK - CONTINUOUS LIGHTING	NONE	NHP	3156036
					DRY	DAYLIGHT	NONE	NHP	2383621
								LYSO	2393557
					DRY	DAYLIGHT	NONE	NHP	2416302
	MOTOR VEHICLE IN TRANSPORT		MOTOR VEHICLE IN TRANSPORT		DRY	DAYLIGHT	NONE	NHP	3157236
UNKNOWN					DRY	DAYLIGHT	NONE	NHP	2358821
	MOTOR VEHICLE IN TRANSPORT		MOTOR VEHICLE IN TRANSPORT		DRY	DAYLIGHT	NONE	NHP	3083331
	MOTOR VEHICLE IN TRANSPORT		MOTOR VEHICLE IN TRANSPORT		DRY	DAYLIGHT	NONE	NHP	3088276
OTHER					DRY	DAWN	NONE	NHP	3156037

Appendix B

Baseline Conditions LOS Calculations



HCM 6th TWSC
1: Main Street & WB off Ramp

01/03/2022

Intersection						
Int Delay, s/veh	2.6					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	30	133	251	0	0	277
Future Vol, veh/h	30	133	251	0	0	277
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Yield	-	None	-	None
Storage Length	75	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	30	30	30	30	30	30
Mvmt Flow	33	148	279	0	0	308
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	433	140	0	-	-	-
Stage 1	279	-	-	-	-	-
Stage 2	154	-	-	-	-	-
Critical Hdwy	7.4	7.5	-	-	-	-
Critical Hdwy Stg 1	6.4	-	-	-	-	-
Critical Hdwy Stg 2	6.4	-	-	-	-	-
Follow-up Hdwy	3.8	3.6	-	-	-	-
Pot Cap-1 Maneuver	485	801	-	0	0	-
Stage 1	666	-	-	0	0	-
Stage 2	781	-	-	0	0	-
Platoon blocked, %			-			-
Mov Cap-1 Maneuver	485	801	-	-	-	-
Mov Cap-2 Maneuver	485	-	-	-	-	-
Stage 1	666	-	-	-	-	-
Stage 2	781	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	11	0	0			
HCM LOS	B					
Minor Lane/Major Mvmt	NBTWBLn1WBLn2		SBT			
Capacity (veh/h)	-	485	801	-	-	-
HCM Lane V/C Ratio	-	0.069	0.184	-	-	-
HCM Control Delay (s)	-	13	10.5	-	-	-
HCM Lane LOS	-	B	B	-	-	-
HCM 95th %tile Q(veh)	-	0.2	0.7	-	-	-

HCM 6th TWSC

3: Main Street & EB off Ramp

01/03/2022

Intersection						
Int Delay, s/veh	2.7					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	103	194	0	444	209	0
Future Vol, veh/h	103	194	0	444	209	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Free	-	None	-	None
Storage Length	150	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	30	30	30	30	30	30
Mvmt Flow	114	216	0	493	232	0
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	725	-	-	0	-	0
Stage 1	232	-	-	-	-	-
Stage 2	493	-	-	-	-	-
Critical Hdwy	6.7	-	-	-	-	-
Critical Hdwy Stg 1	5.7	-	-	-	-	-
Critical Hdwy Stg 2	5.7	-	-	-	-	-
Follow-up Hdwy	3.77	-	-	-	-	-
Pot Cap-1 Maneuver	354	0	0	-	-	0
Stage 1	745	0	0	-	-	0
Stage 2	560	0	0	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	354	-	-	-	-	-
Mov Cap-2 Maneuver	354	-	-	-	-	-
Stage 1	745	-	-	-	-	-
Stage 2	560	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	20	0		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBT	EBLn1	EBLn2	SBT		
Capacity (veh/h)	-	354	-	-		
HCM Lane V/C Ratio	-	0.323	-	-		
HCM Control Delay (s)	-	20	0	-		
HCM Lane LOS	-	C	A	-		
HCM 95th %tile Q(veh)	-	1.4	-	-		

HCM 6th TWSC
5: Main Street & Pilot Road

01/03/2022

Intersection												
Int Delay, s/veh	4.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↕	↕	↕	↕	↕		↕	↕	↕
Traffic Vol, veh/h	95	3	29	18	13	8	24	429	38	32	214	98
Future Vol, veh/h	95	3	29	18	13	8	24	429	38	32	214	98
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	-	-	Stop	-	-	None	-	-	None
Storage Length	-	-	-	100	-	100	75	-	-	135	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	20	20	20	20	20	20	20	20	20	20	20	20
Mvmt Flow	101	3	31	19	14	9	26	456	40	34	228	104

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	831	844	228	893	928	476	332	0	0	496	0	0
Stage 1	296	296	-	528	528	-	-	-	-	-	-	-
Stage 2	535	548	-	365	400	-	-	-	-	-	-	-
Critical Hdwy	7.3	6.7	6.4	7.3	6.7	6.4	4.3	-	-	4.3	-	-
Critical Hdwy Stg 1	6.3	5.7	-	6.3	5.7	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.3	5.7	-	6.3	5.7	-	-	-	-	-	-	-
Follow-up Hdwy	3.68	4.18	3.48	3.68	4.18	3.48	2.38	-	-	2.38	-	-
Pot Cap-1 Maneuver	269	281	769	244	250	554	1133	-	-	981	-	-
Stage 1	675	637	-	502	499	-	-	-	-	-	-	-
Stage 2	498	489	-	619	572	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	242	265	769	222	236	554	1133	-	-	981	-	-
Mov Cap-2 Maneuver	242	265	-	222	236	-	-	-	-	-	-	-
Stage 1	659	615	-	490	488	-	-	-	-	-	-	-
Stage 2	466	478	-	571	552	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	28.1		19.9		0.4		0.8	
HCM LOS	D		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1WBLn2WBLn3	SBL	SBT	SBR
Capacity (veh/h)	1133	-	-	288 222 236 554	981	-	-
HCM Lane V/C Ratio	0.023	-	-	0.469 0.086 0.059 0.015	0.035	-	-
HCM Control Delay (s)	8.3	-	-	28.1 22.7 21.2 11.6	8.8	-	-
HCM Lane LOS	A	-	-	D C C B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	2.4 0.3 0.2 0	0.1	-	-

HCM Unsignalized Intersection Capacity Analysis

2: Main Street & WB on Ramp

01/04/2022

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	296	251	209	99
Future Volume (Veh/h)	0	0	296	251	209	99
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	0	329	279	232	110
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1030	232	342			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1030	232	342			
tC, single (s)	7.4	7.5	4.7			
tC, 2 stage (s)						
tF (s)	3.8	3.6	2.5			
p0 queue free %	100	100	68			
cM capacity (veh/h)	128	691	1035			
Direction, Lane #	NB 1	NB 2	NB 3	SB 1	SB 2	
Volume Total	329	140	140	232	110	
Volume Left	329	0	0	0	0	
Volume Right	0	0	0	0	110	
cSH	1035	1700	1700	1700	1700	
Volume to Capacity	0.32	0.08	0.08	0.14	0.06	
Queue Length 95th (ft)	34	0	0	0	0	
Control Delay (s)	10.1	0.0	0.0	0.0	0.0	
Lane LOS	B					
Approach Delay (s)	5.5			0.0		
Approach LOS						
Intersection Summary						
Average Delay			3.5			
Intersection Capacity Utilization			35.7%	ICU Level of Service		A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

4: Main Street & EB on Ramp

01/04/2022

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	0	444	88	59	344
Future Volume (Veh/h)	0	0	444	88	59	344
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	0	493	98	66	382
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None		None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	816	493			493	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	816	493			493	
tC, single (s)	7.4	7.5			4.7	
tC, 2 stage (s)						
tF (s)	3.8	3.6			2.5	
p0 queue free %	100	100			93	
cM capacity (veh/h)	245	454			893	
Direction, Lane #	NB 1	NB 2	SB 1	SB 2	SB 3	
Volume Total	493	98	66	191	191	
Volume Left	0	0	66	0	0	
Volume Right	0	98	0	0	0	
cSH	1700	1700	893	1700	1700	
Volume to Capacity	0.29	0.06	0.07	0.11	0.11	
Queue Length 95th (ft)	0	0	6	0	0	
Control Delay (s)	0.0	0.0	9.4	0.0	0.0	
Lane LOS			A			
Approach Delay (s)	0.0		1.4			
Approach LOS						
Intersection Summary						
Average Delay			0.6			
Intersection Capacity Utilization			33.4%	ICU Level of Service		A
Analysis Period (min)			15			

HCM 6th TWSC
1: Main Street & WB off Ramp

01/03/2022

Intersection						
Int Delay, s/veh	3.1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	99	121	177	0	0	415
Future Vol, veh/h	99	121	177	0	0	415
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Yield	-	None	-	None
Storage Length	75	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	17	17	17	17	17	17
Mvmt Flow	106	130	190	0	0	446

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	413	95	0	-	-	-
Stage 1	190	-	-	-	-	-
Stage 2	223	-	-	-	-	-
Critical Hdwy	7.14	7.24	-	-	-	-
Critical Hdwy Stg 1	6.14	-	-	-	-	-
Critical Hdwy Stg 2	6.14	-	-	-	-	-
Follow-up Hdwy	3.67	3.47	-	-	-	-
Pot Cap-1 Maneuver	530	897	-	0	0	-
Stage 1	780	-	-	0	0	-
Stage 2	750	-	-	0	0	-
Platoon blocked, %			-			-
Mov Cap-1 Maneuver	530	897	-	-	-	-
Mov Cap-2 Maneuver	530	-	-	-	-	-
Stage 1	780	-	-	-	-	-
Stage 2	750	-	-	-	-	-

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

Minor Lane/Major Mvmt	NBTWBLn1WBLn2	SBT
Capacity (veh/h)	- 530 897	-
HCM Lane V/C Ratio	- 0.201 0.145	-
HCM Control Delay (s)	- 13.5 9.7	-
HCM Lane LOS	- B A	-
HCM 95th %tile Q(veh)	- 0.7 0.5	-

HCM 6th TWSC

3: Main Street & EB off Ramp

01/03/2022

Intersection						
Int Delay, s/veh	1.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	49	553	0	357	375	0
Future Vol, veh/h	49	553	0	357	375	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Free	-	None	-	None
Storage Length	150	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	17	17	17	17	17	17
Mvmt Flow	53	595	0	384	403	0
Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	787	-	-	0	-	0
Stage 1	403	-	-	-	-	-
Stage 2	384	-	-	-	-	-
Critical Hdwy	6.57	-	-	-	-	-
Critical Hdwy Stg 1	5.57	-	-	-	-	-
Critical Hdwy Stg 2	5.57	-	-	-	-	-
Follow-up Hdwy	3.653	-	-	-	-	-
Pot Cap-1 Maneuver	340	0	0	-	-	0
Stage 1	644	0	0	-	-	0
Stage 2	657	0	0	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	340	-	-	-	-	-
Mov Cap-2 Maneuver	340	-	-	-	-	-
Stage 1	644	-	-	-	-	-
Stage 2	657	-	-	-	-	-
Approach	EB	NB	SB			
HCM Control Delay, s	17.5	0	0			
HCM LOS	C					
Minor Lane/Major Mvmt	NBT	EBLn1	EBLn2	SBT		
Capacity (veh/h)	-	340	-	-		
HCM Lane V/C Ratio	-	0.155	-	-		
HCM Control Delay (s)	-	17.5	0	-		
HCM Lane LOS	-	C	A	-		
HCM 95th %tile Q(veh)	-	0.5	-	-		

HCM 6th TWSC
5: Main Street & Pilot Road

01/03/2022

Intersection												
Int Delay, s/veh	16.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↕	↕	↕	↕	↕		↕	↕	↕
Traffic Vol, veh/h	114	0	48	44	2	49	27	302	22	21	650	135
Future Vol, veh/h	114	0	48	44	2	49	27	302	22	21	650	135
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	-	-	Stop	-	-	None	-	-	None
Storage Length	-	-	-	100	-	100	75	-	-	135	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	11	11	11	11	11	11	11	11	11	11	11	11
Mvmt Flow	125	0	53	48	2	54	30	332	24	23	714	148

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1165	1176	714	1265	1312	344	862	0	0	356	0	0
Stage 1	760	760	-	404	404	-	-	-	-	-	-	-
Stage 2	405	416	-	861	908	-	-	-	-	-	-	-
Critical Hdwy	7.21	6.61	6.31	7.21	6.61	6.31	4.21	-	-	4.21	-	-
Critical Hdwy Stg 1	6.21	5.61	-	6.21	5.61	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.21	5.61	-	6.21	5.61	-	-	-	-	-	-	-
Follow-up Hdwy	3.599	4.099	3.399	3.599	4.099	3.399	2.299	-	-	2.299	-	-
Pot Cap-1 Maneuver	164	184	417	140	152	679	743	-	-	1154	-	-
Stage 1	385	402	-	606	584	-	-	-	-	-	-	-
Stage 2	605	577	-	338	342	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	143	173	417	117	143	679	743	-	-	1154	-	-
Mov Cap-2 Maneuver	143	173	-	117	143	-	-	-	-	-	-	-
Stage 1	370	394	-	582	561	-	-	-	-	-	-	-
Stage 2	532	554	-	289	335	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	120.7		32.1		0.8		0.2	
HCM LOS	F		D					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1WBLn2WBLn3	SBL	SBT	SBR
Capacity (veh/h)	743	-	-	178 117 143 679 1154	-	-	-
HCM Lane V/C Ratio	0.04	-	-	1 0.413 0.015 0.079 0.02	-	-	-
HCM Control Delay (s)	10	-	-	120.7 55.9 30.6 10.8 8.2	-	-	-
HCM Lane LOS	B	-	-	F F D B A	-	-	-
HCM 95th %tile Q(veh)	0.1	-	-	8.2 1.8 0 0.3 0.1	-	-	-

HCM Unsignalized Intersection Capacity Analysis

2: Main Street & WB on Ramp

01/04/2022

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	230	177	375	139
Future Volume (Veh/h)	0	0	230	177	375	139
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	0	0	247	190	403	149
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	992	403	552			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	992	403	552			
tC, single (s)	7.1	7.2	4.4			
tC, 2 stage (s)						
tF (s)	3.7	3.5	2.4			
p0 queue free %	100	100	73			
cM capacity (veh/h)	159	557	917			
Direction, Lane #	NB 1	NB 2	NB 3	SB 1	SB 2	
Volume Total	247	95	95	403	149	
Volume Left	247	0	0	0	0	
Volume Right	0	0	0	0	149	
cSH	917	1700	1700	1700	1700	
Volume to Capacity	0.27	0.06	0.06	0.24	0.09	
Queue Length 95th (ft)	27	0	0	0	0	
Control Delay (s)	10.4	0.0	0.0	0.0	0.0	
Lane LOS	B					
Approach Delay (s)	5.9			0.0		
Approach LOS						
Intersection Summary						
Average Delay			2.6			
Intersection Capacity Utilization			60.6%	ICU Level of Service		B
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

4: Main Street & EB on Ramp

01/04/2022

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						 
Traffic Volume (veh/h)	0	0	357	101	122	806
Future Volume (Veh/h)	0	0	357	101	122	806
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	0	0	384	109	131	867
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None		None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1080	384			384	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1080	384			384	
tC, single (s)	7.1	7.2			4.4	
tC, 2 stage (s)						
tF (s)	3.7	3.5			2.4	
p0 queue free %	100	100			88	
cM capacity (veh/h)	167	573			1071	
Direction, Lane #	NB 1	NB 2	SB 1	SB 2	SB 3	
Volume Total	384	109	131	434	434	
Volume Left	0	0	131	0	0	
Volume Right	0	109	0	0	0	
cSH	1700	1700	1071	1700	1700	
Volume to Capacity	0.23	0.06	0.12	0.26	0.26	
Queue Length 95th (ft)	0	0	10	0	0	
Control Delay (s)	0.0	0.0	8.8	0.0	0.0	
Lane LOS			A			
Approach Delay (s)	0.0		1.2			
Approach LOS						
Intersection Summary						
Average Delay			0.8			
Intersection Capacity Utilization			32.2%	ICU Level of Service		A
Analysis Period (min)			15			

Appendix C

Future Conditions LOS Calculations



HCM 6th TWSC
1: Main Street & WB off Ramp

01/03/2022

Intersection						
Int Delay, s/veh	2.8					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	41	177	314	0	0	388
Future Vol, veh/h	41	177	314	0	0	388
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Yield	-	None	-	None
Storage Length	75	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	30	30	30	30	30	30
Mvmt Flow	45	192	341	0	0	422
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	552	171	0	-	-	-
Stage 1	341	-	-	-	-	-
Stage 2	211	-	-	-	-	-
Critical Hdwy	7.4	7.5	-	-	-	-
Critical Hdwy Stg 1	6.4	-	-	-	-	-
Critical Hdwy Stg 2	6.4	-	-	-	-	-
Follow-up Hdwy	3.8	3.6	-	-	-	-
Pot Cap-1 Maneuver	402	762	-	0	0	-
Stage 1	615	-	-	0	0	-
Stage 2	726	-	-	0	0	-
Platoon blocked, %			-			-
Mov Cap-1 Maneuver	402	762	-	-	-	-
Mov Cap-2 Maneuver	402	-	-	-	-	-
Stage 1	615	-	-	-	-	-
Stage 2	726	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	12	0	0			
HCM LOS	B					
Minor Lane/Major Mvmt	NBTWBLn1WBLn2		SBT			
Capacity (veh/h)	-	402	762	-	-	-
HCM Lane V/C Ratio	-	0.111	0.252	-	-	-
HCM Control Delay (s)	-	15.1	11.3	-	-	-
HCM Lane LOS	-	C	B	-	-	-
HCM 95th %tile Q(veh)	-	0.4	1	-	-	-

HCM 6th TWSC

3: Main Street & EB off Ramp

01/03/2022

Intersection						
Int Delay, s/veh	4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	119	281	0	611	293	0
Future Vol, veh/h	119	281	0	611	293	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Free	-	None	-	None
Storage Length	150	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	30	30	30	30	30	30
Mvmt Flow	129	305	0	664	318	0
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	982	-	-	0	-	0
Stage 1	318	-	-	-	-	-
Stage 2	664	-	-	-	-	-
Critical Hdwy	6.7	-	-	-	-	-
Critical Hdwy Stg 1	5.7	-	-	-	-	-
Critical Hdwy Stg 2	5.7	-	-	-	-	-
Follow-up Hdwy	3.77	-	-	-	-	-
Pot Cap-1 Maneuver	246	0	0	-	-	0
Stage 1	679	0	0	-	-	0
Stage 2	463	0	0	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	246	-	-	-	-	-
Mov Cap-2 Maneuver	246	-	-	-	-	-
Stage 1	679	-	-	-	-	-
Stage 2	463	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	34.8	0		0		
HCM LOS	D					
Minor Lane/Major Mvmt	NBT	EBLn1	EBLn2	SBT		
Capacity (veh/h)	-	246	-	-		
HCM Lane V/C Ratio	-	0.526	-	-		
HCM Control Delay (s)	-	34.8	0	-		
HCM Lane LOS	-	D	A	-		
HCM 95th %tile Q(veh)	-	2.8	-	-		

HCM 6th TWSC
5: Main Street & Pilot Road

01/03/2022

Intersection												
Int Delay, s/veh	17.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↔	↔	↔	↔	↔		↔	↔	↔
Traffic Vol, veh/h	118	4	36	22	16	9	29	603	43	34	336	122
Future Vol, veh/h	118	4	36	22	16	9	29	603	43	34	336	122
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	-	-	Stop	-	-	None	-	-	None
Storage Length	-	-	-	100	-	100	75	-	-	135	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	20	20	20	20	20	20	20	20	20	20	20	20
Mvmt Flow	126	4	38	23	17	10	31	641	46	36	357	130

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1164	1178	357	1241	1285	664	487	0	0	687	0	0
Stage 1	429	429	-	726	726	-	-	-	-	-	-	-
Stage 2	735	749	-	515	559	-	-	-	-	-	-	-
Critical Hdwy	7.3	6.7	6.4	7.3	6.7	6.4	4.3	-	-	4.3	-	-
Critical Hdwy Stg 1	6.3	5.7	-	6.3	5.7	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.3	5.7	-	6.3	5.7	-	-	-	-	-	-	-
Follow-up Hdwy	3.68	4.18	3.48	3.68	4.18	3.48	2.38	-	-	2.38	-	-
Pot Cap-1 Maneuver	158	176	648	139	152	431	989	-	-	828	-	-
Stage 1	570	554	-	389	404	-	-	-	-	-	-	-
Stage 2	384	394	-	511	483	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	132	163	648	121	141	431	989	-	-	828	-	-
Mov Cap-2 Maneuver	132	163	-	121	141	-	-	-	-	-	-	-
Stage 1	552	530	-	377	391	-	-	-	-	-	-	-
Stage 2	348	382	-	456	462	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	137.9		33.7		0.4		0.7	
HCM LOS	F		D					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1WBLn2WBLn3	SBL	SBT	SBR
Capacity (veh/h)	989	-	-	162 121 141 431	828	-	-
HCM Lane V/C Ratio	0.031	-	-	1.038 0.193 0.121 0.022	0.044	-	-
HCM Control Delay (s)	8.8	-	-	137.9 41.8 34 13.5	9.5	-	-
HCM Lane LOS	A	-	-	F E D B A	-	-	-
HCM 95th %tile Q(veh)	0.1	-	-	8.3 0.7 0.4 0.1	0.1	-	-

HCM Unsignalized Intersection Capacity Analysis

2: Main Street & WB on Ramp

01/04/2022



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations			↰	↱↱	↱	↰
Traffic Volume (veh/h)	0	0	417	314	293	137
Future Volume (Veh/h)	0	0	417	314	293	137
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	453	341	318	149
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1394	318	467			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1394	318	467			
tC, single (s)	7.4	7.5	4.7			
tC, 2 stage (s)						
tF (s)	3.8	3.6	2.5			
p0 queue free %	100	100	51			
cM capacity (veh/h)	52	602	916			
Direction, Lane #	NB 1	NB 2	NB 3	SB 1	SB 2	
Volume Total	453	170	170	318	149	
Volume Left	453	0	0	0	0	
Volume Right	0	0	0	0	149	
cSH	916	1700	1700	1700	1700	
Volume to Capacity	0.49	0.10	0.10	0.19	0.09	
Queue Length 95th (ft)	70	0	0	0	0	
Control Delay (s)	12.7	0.0	0.0	0.0	0.0	
Lane LOS	B					
Approach Delay (s)	7.2			0.0		
Approach LOS						
Intersection Summary						
Average Delay			4.6			
Intersection Capacity Utilization			45.4%	ICU Level of Service		A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

4: Main Street & EB on Ramp

01/04/2022

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						 
Traffic Volume (veh/h)	0	0	611	95	82	492
Future Volume (Veh/h)	0	0	611	95	82	492
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	664	103	89	535
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1110	664			664	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1110	664			664	
tC, single (s)	7.4	7.5			4.7	
tC, 2 stage (s)						
tF (s)	3.8	3.6			2.5	
p0 queue free %	100	100			88	
cM capacity (veh/h)	145	343			755	
Direction, Lane #	NB 1	NB 2	SB 1	SB 2	SB 3	
Volume Total	664	103	89	268	268	
Volume Left	0	0	89	0	0	
Volume Right	0	103	0	0	0	
cSH	1700	1700	755	1700	1700	
Volume to Capacity	0.39	0.06	0.12	0.16	0.16	
Queue Length 95th (ft)	0	0	10	0	0	
Control Delay (s)	0.0	0.0	10.4	0.0	0.0	
Lane LOS			B			
Approach Delay (s)	0.0		1.5			
Approach LOS						
Intersection Summary						
Average Delay			0.7			
Intersection Capacity Utilization			43.4%	ICU Level of Service		A
Analysis Period (min)			15			

HCM 6th TWSC
1: Main Street & WB off Ramp

01/03/2022

Intersection						
Int Delay, s/veh	3.8					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	134	172	240	0	0	531
Future Vol, veh/h	134	172	240	0	0	531
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Yield	-	None	-	None
Storage Length	75	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	17	17	17	17	17	17
Mvmt Flow	143	183	255	0	0	565

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	538	128	0	-	-	-
Stage 1	255	-	-	-	-	-
Stage 2	283	-	-	-	-	-
Critical Hdwy	7.14	7.24	-	-	-	-
Critical Hdwy Stg 1	6.14	-	-	-	-	-
Critical Hdwy Stg 2	6.14	-	-	-	-	-
Follow-up Hdwy	3.67	3.47	-	-	-	-
Pot Cap-1 Maneuver	438	852	-	0	0	-
Stage 1	721	-	-	0	0	-
Stage 2	697	-	-	0	0	-
Platoon blocked, %			-			-
Mov Cap-1 Maneuver	438	852	-	-	-	-
Mov Cap-2 Maneuver	438	-	-	-	-	-
Stage 1	721	-	-	-	-	-
Stage 2	697	-	-	-	-	-

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

Minor Lane/Major Mvmt	NBTWBLn1WBLn2	SBT
Capacity (veh/h)	- 438 852	-
HCM Lane V/C Ratio	- 0.325 0.215	-
HCM Control Delay (s)	- 17.1 10.4	-
HCM Lane LOS	- C B	-
HCM 95th %tile Q(veh)	- 1.4 0.8	-

HCM 6th TWSC

3: Main Street & EB off Ramp

01/03/2022

Intersection						
Int Delay, s/veh	1.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	60	795	0	506	495	0
Future Vol, veh/h	60	795	0	506	495	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Free	-	None	-	None
Storage Length	150	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	17	17	17	17	17	17
Mvmt Flow	64	846	0	538	527	0
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1065	-	-	0	-	0
Stage 1	527	-	-	-	-	-
Stage 2	538	-	-	-	-	-
Critical Hdwy	6.57	-	-	-	-	-
Critical Hdwy Stg 1	5.57	-	-	-	-	-
Critical Hdwy Stg 2	5.57	-	-	-	-	-
Follow-up Hdwy	3.653	-	-	-	-	-
Pot Cap-1 Maneuver	231	0	0	-	-	0
Stage 1	563	0	0	-	-	0
Stage 2	556	0	0	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	231	-	-	-	-	-
Mov Cap-2 Maneuver	231	-	-	-	-	-
Stage 1	563	-	-	-	-	-
Stage 2	556	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	26.4	0		0		
HCM LOS	D					
Minor Lane/Major Mvmt	NBT	EBLn1	EBLn2	SBT		
Capacity (veh/h)	-	231	-	-		
HCM Lane V/C Ratio	-	0.276	-	-		
HCM Control Delay (s)	-	26.4	0	-		
HCM Lane LOS	-	D	A	-		
HCM 95th %tile Q(veh)	-	1.1	-	-		

HCM 6th TWSC
5: Main Street & Pilot Road

01/03/2022

Intersection												
Int Delay, s/veh	94.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	139	0	59	51	2	56	33	453	27	25	940	167
Future Vol, veh/h	139	0	59	51	2	56	33	453	27	25	940	167
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	-	-	Stop	-	-	None	-	-	None
Storage Length	-	-	-	100	-	100	75	-	-	135	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	15	15	15	15	15	15	15	15	15	15	15	15
Mvmt Flow	148	0	63	54	2	60	35	482	29	27	1000	178
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1622	1635	1000	1742	1799	497	1178	0	0	511	0	0
Stage 1	1054	1054	-	567	567	-	-	-	-	-	-	-
Stage 2	568	581	-	1175	1232	-	-	-	-	-	-	-
Critical Hdwy	7.25	6.65	6.35	7.25	6.65	6.35	4.25	-	-	4.25	-	-
Critical Hdwy Stg 1	6.25	5.65	-	6.25	5.65	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.25	5.65	-	6.25	5.65	-	-	-	-	-	-	-
Follow-up Hdwy	3.635	4.135	3.435	3.635	4.135	3.435	2.335	-	-	2.335	-	-
Pot Cap-1 Maneuver	~ 77	94	279	63	74	548	549	-	-	991	-	-
Stage 1	258	287	-	486	487	-	-	-	-	-	-	-
Stage 2	485	479	-	220	235	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	~ 62	86	279	~ 45	67	548	549	-	-	991	-	-
Mov Cap-2 Maneuver	~ 62	86	-	~ 45	67	-	-	-	-	-	-	-
Stage 1	241	279	-	455	456	-	-	-	-	-	-	-
Stage 2	403	448	-	166	229	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s\$	835.8		168.8		0.8		0.2					
HCM LOS	F		F									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1WBLn2WBLn3	SBL	SBT	SBR					
Capacity (veh/h)	549	-	-	81 45 67 548 991	-	-	-					
HCM Lane V/C Ratio	0.064	-	-	2.6 1.206 0.032 0.109 0.027	-	-	-					
HCM Control Delay (s)	12	-	-	\$ 835.8\$ 344.7 60.5 12.4 8.7	-	-	-					
HCM Lane LOS	B	-	-	F F F B A	-	-	-					
HCM 95th %tile Q(veh)	0.2	-	-	20.1 5.1 0.1 0.4 0.1	-	-	-					
Notes												
~: Volume exceeds capacity		\$: Delay exceeds 300s		+: Computation Not Defined				*: All major volume in platoon				

HCM Unsignalized Intersection Capacity Analysis

2: Main Street & WB on Ramp

01/04/2022

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	327	240	495	170
Future Volume (Veh/h)	0	0	327	240	495	170
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	0	0	348	255	527	181
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1350	527	708			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1350	527	708			
tC, single (s)	7.1	7.2	4.4			
tC, 2 stage (s)						
tF (s)	3.7	3.5	2.4			
p0 queue free %	100	100	56			
cM capacity (veh/h)	70	458	794			
Direction, Lane #	NB 1	NB 2	NB 3	SB 1	SB 2	
Volume Total	348	128	128	527	181	
Volume Left	348	0	0	0	0	
Volume Right	0	0	0	0	181	
cSH	794	1700	1700	1700	1700	
Volume to Capacity	0.44	0.07	0.07	0.31	0.11	
Queue Length 95th (ft)	56	0	0	0	0	
Control Delay (s)	13.0	0.0	0.0	0.0	0.0	
Lane LOS	B					
Approach Delay (s)	7.5			0.0		
Approach LOS						
Intersection Summary						
Average Delay			3.5			
Intersection Capacity Utilization			81.9%	ICU Level of Service		D
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

4: Main Street & EB on Ramp

01/04/2022

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	0	506	142	159	1132
Future Volume (Veh/h)	0	0	506	142	159	1132
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	0	0	538	151	169	1204
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1478	538			538	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1478	538			538	
tC, single (s)	7.1	7.2			4.4	
tC, 2 stage (s)						
tF (s)	3.7	3.5			2.4	
p0 queue free %	100	100			82	
cM capacity (veh/h)	83	451			929	
Direction, Lane #	NB 1	NB 2	SB 1	SB 2	SB 3	
Volume Total	538	151	169	602	602	
Volume Left	0	0	169	0	0	
Volume Right	0	151	0	0	0	
cSH	1700	1700	929	1700	1700	
Volume to Capacity	0.32	0.09	0.18	0.35	0.35	
Queue Length 95th (ft)	0	0	17	0	0	
Control Delay (s)	0.0	0.0	9.7	0.0	0.0	
Lane LOS			A			
Approach Delay (s)	0.0		1.2			
Approach LOS						
Intersection Summary						
Average Delay			0.8			
Intersection Capacity Utilization			42.1%	ICU Level of Service		A
Analysis Period (min)			15			

Appendix D

Baseline Plus Project LOS Calculations



HCM 6th TWSC
1: Main Street & WB off Ramp

01/03/2022

Intersection						
Int Delay, s/veh	2.8					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	46	133	252	0	0	280
Future Vol, veh/h	46	133	252	0	0	280
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Yield	-	None	-	None
Storage Length	75	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	30	30	30	30	30	30
Mvmt Flow	51	148	280	0	0	311
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	436	140	0	-	-	-
Stage 1	280	-	-	-	-	-
Stage 2	156	-	-	-	-	-
Critical Hdwy	7.4	7.5	-	-	-	-
Critical Hdwy Stg 1	6.4	-	-	-	-	-
Critical Hdwy Stg 2	6.4	-	-	-	-	-
Follow-up Hdwy	3.8	3.6	-	-	-	-
Pot Cap-1 Maneuver	482	801	-	0	0	-
Stage 1	665	-	-	0	0	-
Stage 2	779	-	-	0	0	-
Platoon blocked, %			-			-
Mov Cap-1 Maneuver	482	801	-	-	-	-
Mov Cap-2 Maneuver	482	-	-	-	-	-
Stage 1	665	-	-	-	-	-
Stage 2	779	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	11.2	0	0			
HCM LOS	B					
Minor Lane/Major Mvmt	NBTWBLn1WBLn2		SBT			
Capacity (veh/h)	-	482	801	-	-	-
HCM Lane V/C Ratio	-	0.106	0.184	-	-	-
HCM Control Delay (s)	-	13.4	10.5	-	-	-
HCM Lane LOS	-	B	B	-	-	-
HCM 95th %tile Q(veh)	-	0.4	0.7	-	-	-

HCM 6th TWSC

3: Main Street & EB off Ramp

01/03/2022

Intersection						
Int Delay, s/veh	2.8					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	103	216	0	451	228	0
Future Vol, veh/h	103	216	0	451	228	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Free	-	None	-	None
Storage Length	150	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	30	30	30	30	30	30
Mvmt Flow	114	240	0	501	253	0
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	754	-	-	0	-	0
Stage 1	253	-	-	-	-	-
Stage 2	501	-	-	-	-	-
Critical Hdwy	6.7	-	-	-	-	-
Critical Hdwy Stg 1	5.7	-	-	-	-	-
Critical Hdwy Stg 2	5.7	-	-	-	-	-
Follow-up Hdwy	3.77	-	-	-	-	-
Pot Cap-1 Maneuver	339	0	0	-	-	0
Stage 1	728	0	0	-	-	0
Stage 2	555	0	0	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	339	-	-	-	-	-
Mov Cap-2 Maneuver	339	-	-	-	-	-
Stage 1	728	-	-	-	-	-
Stage 2	555	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	20.9	0		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBT	EBLn1	EBLn2	SBT		
Capacity (veh/h)	-	339	-	-		
HCM Lane V/C Ratio	-	0.338	-	-		
HCM Control Delay (s)	-	20.9	0	-		
HCM Lane LOS	-	C	A	-		
HCM 95th %tile Q(veh)	-	1.5	-	-		

HCM 6th TWSC
5: Main Street & Pilot Road

01/03/2022

Intersection												
Int Delay, s/veh	6.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	107	3	36	18	13	8	46	429	38	32	214	139
Future Vol, veh/h	107	3	36	18	13	8	46	429	38	32	214	139
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	-	-	Stop	-	-	None	-	-	None
Storage Length	-	-	-	100	-	100	75	-	-	135	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	20	20	20	20	20	20	20	20	20	20	20	20
Mvmt Flow	114	3	38	19	14	9	49	456	40	34	228	148
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	877	890	228	965	1018	476	376	0	0	496	0	0
Stage 1	296	296	-	574	574	-	-	-	-	-	-	-
Stage 2	581	594	-	391	444	-	-	-	-	-	-	-
Critical Hdwy	7.3	6.7	6.4	7.3	6.7	6.4	4.3	-	-	4.3	-	-
Critical Hdwy Stg 1	6.3	5.7	-	6.3	5.7	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.3	5.7	-	6.3	5.7	-	-	-	-	-	-	-
Follow-up Hdwy	3.68	4.18	3.48	3.68	4.18	3.48	2.38	-	-	2.38	-	-
Pot Cap-1 Maneuver	250	264	769	217	221	554	1090	-	-	981	-	-
Stage 1	675	637	-	474	475	-	-	-	-	-	-	-
Stage 2	469	465	-	599	546	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	220	243	769	192	204	554	1090	-	-	981	-	-
Mov Cap-2 Maneuver	220	243	-	192	204	-	-	-	-	-	-	-
Stage 1	645	615	-	453	454	-	-	-	-	-	-	-
Stage 2	428	444	-	547	527	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	35.4		22.3		0.8		0.7					
HCM LOS	E		C									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1WBLn2WBLn3	SBL	SBT	SBR					
Capacity (veh/h)	1090	-	-	268	192	204	554	981	-	-		
HCM Lane V/C Ratio	0.045	-	-	0.58	0.1	0.068	0.015	0.035	-	-		
HCM Control Delay (s)	8.5	-	-	35.4	25.8	23.9	11.6	8.8	-	-		
HCM Lane LOS	A	-	-	E	D	C	B	A	-	-		
HCM 95th %tile Q(veh)	0.1	-	-	3.3	0.3	0.2	0	0.1	-	-		

HCM Unsignalized Intersection Capacity Analysis

2: Main Street & WB on Ramp

01/04/2022

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	302	252	228	99
Future Volume (Veh/h)	0	0	302	252	228	99
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	0	336	280	253	110
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1065	253	363			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1065	253	363			
tC, single (s)	7.4	7.5	4.7			
tC, 2 stage (s)						
tF (s)	3.8	3.6	2.5			
p0 queue free %	100	100	67			
cM capacity (veh/h)	118	668	1014			
Direction, Lane #	NB 1	NB 2	NB 3	SB 1	SB 2	
Volume Total	336	140	140	253	110	
Volume Left	336	0	0	0	0	
Volume Right	0	0	0	0	110	
cSH	1014	1700	1700	1700	1700	
Volume to Capacity	0.33	0.08	0.08	0.15	0.06	
Queue Length 95th (ft)	37	0	0	0	0	
Control Delay (s)	10.3	0.0	0.0	0.0	0.0	
Lane LOS	B					
Approach Delay (s)	5.6			0.0		
Approach LOS						
Intersection Summary						
Average Delay			3.5			
Intersection Capacity Utilization			36.1%	ICU Level of Service		A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

4: Main Street & EB on Ramp

01/04/2022

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	0	451	93	59	385
Future Volume (Veh/h)	0	0	451	93	59	385
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	0	501	103	66	428
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None		None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	847	501			501	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	847	501			501	
tC, single (s)	7.4	7.5			4.7	
tC, 2 stage (s)						
tF (s)	3.8	3.6			2.5	
p0 queue free %	100	100			93	
cM capacity (veh/h)	233	448			886	
Direction, Lane #	NB 1	NB 2	SB 1	SB 2	SB 3	
Volume Total	501	103	66	214	214	
Volume Left	0	0	66	0	0	
Volume Right	0	103	0	0	0	
cSH	1700	1700	886	1700	1700	
Volume to Capacity	0.29	0.06	0.07	0.13	0.13	
Queue Length 95th (ft)	0	0	6	0	0	
Control Delay (s)	0.0	0.0	9.4	0.0	0.0	
Lane LOS			A			
Approach Delay (s)	0.0		1.3			
Approach LOS						
Intersection Summary						
Average Delay			0.6			
Intersection Capacity Utilization			33.7%	ICU Level of Service		A
Analysis Period (min)			15			

HCM 6th TWSC
1: Main Street & WB off Ramp

01/03/2022

Intersection						
Int Delay, s/veh	3.2					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	105	121	180	0	0	417
Future Vol, veh/h	105	121	180	0	0	417
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Yield	-	None	-	None
Storage Length	75	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	17	17	17	17	17	17
Mvmt Flow	113	130	194	0	0	448

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	418	97	0	-	-	-
Stage 1	194	-	-	-	-	-
Stage 2	224	-	-	-	-	-
Critical Hdwy	7.14	7.24	-	-	-	-
Critical Hdwy Stg 1	6.14	-	-	-	-	-
Critical Hdwy Stg 2	6.14	-	-	-	-	-
Follow-up Hdwy	3.67	3.47	-	-	-	-
Pot Cap-1 Maneuver	526	894	-	0	0	-
Stage 1	777	-	-	0	0	-
Stage 2	749	-	-	0	0	-
Platoon blocked, %			-			-
Mov Cap-1 Maneuver	526	894	-	-	-	-
Mov Cap-2 Maneuver	526	-	-	-	-	-
Stage 1	777	-	-	-	-	-
Stage 2	749	-	-	-	-	-

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

Minor Lane/Major Mvmt	NBTWBLn1WBLn2	SBT
Capacity (veh/h)	- 526 894	-
HCM Lane V/C Ratio	- 0.215 0.146	-
HCM Control Delay (s)	- 13.7 9.7	-
HCM Lane LOS	- B A	-
HCM 95th %tile Q(veh)	- 0.8 0.5	-

HCM 6th TWSC

3: Main Street & EB off Ramp

01/03/2022

Intersection						
Int Delay, s/veh	1.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	49	561	0	382	383	0
Future Vol, veh/h	49	561	0	382	383	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Free	-	None	-	None
Storage Length	150	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	17	17	17	17	17	17
Mvmt Flow	53	603	0	411	412	0
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	823	-	-	0	-	0
Stage 1	412	-	-	-	-	-
Stage 2	411	-	-	-	-	-
Critical Hdwy	6.57	-	-	-	-	-
Critical Hdwy Stg 1	5.57	-	-	-	-	-
Critical Hdwy Stg 2	5.57	-	-	-	-	-
Follow-up Hdwy	3.653	-	-	-	-	-
Pot Cap-1 Maneuver	324	0	0	-	-	0
Stage 1	637	0	0	-	-	0
Stage 2	638	0	0	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	324	-	-	-	-	-
Mov Cap-2 Maneuver	324	-	-	-	-	-
Stage 1	637	-	-	-	-	-
Stage 2	638	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	18.3	0		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBT	EBLn1	EBLn2	SBT		
Capacity (veh/h)	-	324	-	-		
HCM Lane V/C Ratio	-	0.163	-	-		
HCM Control Delay (s)	-	18.3	0	-		
HCM Lane LOS	-	C	A	-		
HCM 95th %tile Q(veh)	-	0.6	-	-		

HCM 6th TWSC
5: Main Street & Pilot Road

01/03/2022

Intersection												
Int Delay, s/veh	43.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	155	0	70	44	2	49	35	302	22	21	650	151
Future Vol, veh/h	155	0	70	44	2	49	35	302	22	21	650	151
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	-	-	Stop	-	-	None	-	-	None
Storage Length	-	-	-	100	-	100	75	-	-	135	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	11	11	11	11	11	11	11	11	11	11	11	11
Mvmt Flow	170	0	77	48	2	54	38	332	24	23	714	166
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1181	1192	714	1302	1346	344	880	0	0	356	0	0
Stage 1	760	760	-	420	420	-	-	-	-	-	-	-
Stage 2	421	432	-	882	926	-	-	-	-	-	-	-
Critical Hdwy	7.21	6.61	6.31	7.21	6.61	6.31	4.21	-	-	4.21	-	-
Critical Hdwy Stg 1	6.21	5.61	-	6.21	5.61	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.21	5.61	-	6.21	5.61	-	-	-	-	-	-	-
Follow-up Hdwy	3.599	4.099	3.399	3.599	4.099	3.399	2.299	-	-	2.299	-	-
Pot Cap-1 Maneuver	~ 160	180	417	132	145	679	731	-	-	1154	-	-
Stage 1	385	402	-	594	574	-	-	-	-	-	-	-
Stage 2	593	567	-	329	336	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 138	167	417	102	135	679	731	-	-	1154	-	-
Mov Cap-2 Maneuver	~ 138	167	-	102	135	-	-	-	-	-	-	-
Stage 1	365	394	-	563	544	-	-	-	-	-	-	-
Stage 2	516	538	-	263	329	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	269.4		38.1		1		0.2					
HCM LOS	F		E									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1WBLn2WBLn3	SBL	SBT	SBR					
Capacity (veh/h)	731	-	-	174 102 135 679 1154	-	-	-					
HCM Lane V/C Ratio	0.053	-	-	1.421 0.474 0.016 0.079 0.02	-	-	-					
HCM Control Delay (s)	10.2	-	-	269.4 68.7 32.1 10.8 8.2	-	-	-					
HCM Lane LOS	B	-	-	F F D B A	-	-	-					
HCM 95th %tile Q(veh)	0.2	-	-	15.2 2.1 0.1 0.3 0.1	-	-	-					
Notes												
~: Volume exceeds capacity		\$: Delay exceeds 300s		+: Computation Not Defined				*: All major volume in platoon				

HCM Unsignalized Intersection Capacity Analysis

2: Main Street & WB on Ramp

01/04/2022

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	252	180	383	139
Future Volume (Veh/h)	0	0	252	180	383	139
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	0	0	271	194	412	149
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1051	412	561			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1051	412	561			
tC, single (s)	7.1	7.2	4.4			
tC, 2 stage (s)						
tF (s)	3.7	3.5	2.4			
p0 queue free %	100	100	70			
cM capacity (veh/h)	140	549	909			
Direction, Lane #	NB 1	NB 2	NB 3	SB 1	SB 2	
Volume Total	271	97	97	412	149	
Volume Left	271	0	0	0	0	
Volume Right	0	0	0	0	149	
cSH	909	1700	1700	1700	1700	
Volume to Capacity	0.30	0.06	0.06	0.24	0.09	
Queue Length 95th (ft)	31	0	0	0	0	
Control Delay (s)	10.6	0.0	0.0	0.0	0.0	
Lane LOS	B					
Approach Delay (s)	6.2			0.0		
Approach LOS						
Intersection Summary						
Average Delay			2.8			
Intersection Capacity Utilization			61.6%	ICU Level of Service		B
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

4: Main Street & EB on Ramp

01/04/2022

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations			↑	↑	↑	↑↑
Traffic Volume (veh/h)	0	0	382	117	122	822
Future Volume (Veh/h)	0	0	382	117	122	822
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	0	0	411	126	131	884
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None		None	
Median storage veh						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1115	411			411	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1115	411			411	
tC, single (s)	7.1	7.2			4.4	
tC, 2 stage (s)						
tF (s)	3.7	3.5			2.4	
p0 queue free %	100	100			87	
cM capacity (veh/h)	157	550			1044	
Direction, Lane #	NB 1	NB 2	SB 1	SB 2	SB 3	
Volume Total	411	126	131	442	442	
Volume Left	0	0	131	0	0	
Volume Right	0	126	0	0	0	
cSH	1700	1700	1044	1700	1700	
Volume to Capacity	0.24	0.07	0.13	0.26	0.26	
Queue Length 95th (ft)	0	0	11	0	0	
Control Delay (s)	0.0	0.0	8.9	0.0	0.0	
Lane LOS			A			
Approach Delay (s)	0.0		1.2			
Approach LOS						
Intersection Summary						
Average Delay			0.8			
Intersection Capacity Utilization			33.5%	ICU Level of Service		A
Analysis Period (min)			15			

Appendix E

Future Plus Project LOS Calculations



HCM 6th TWSC
1: Main Street & WB off Ramp

01/03/2022

Intersection						
Int Delay, s/veh	3.1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	57	177	315	0	0	391
Future Vol, veh/h	57	177	315	0	0	391
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Yield	-	None	-	None
Storage Length	75	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	30	30	30	30	30	30
Mvmt Flow	62	192	342	0	0	425
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	555	171	0	-	-	-
Stage 1	342	-	-	-	-	-
Stage 2	213	-	-	-	-	-
Critical Hdwy	7.4	7.5	-	-	-	-
Critical Hdwy Stg 1	6.4	-	-	-	-	-
Critical Hdwy Stg 2	6.4	-	-	-	-	-
Follow-up Hdwy	3.8	3.6	-	-	-	-
Pot Cap-1 Maneuver	400	762	-	0	0	-
Stage 1	614	-	-	0	0	-
Stage 2	724	-	-	0	0	-
Platoon blocked, %			-			-
Mov Cap-1 Maneuver	400	762	-	-	-	-
Mov Cap-2 Maneuver	400	-	-	-	-	-
Stage 1	614	-	-	-	-	-
Stage 2	724	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	12.3	0	0			
HCM LOS	B					
Minor Lane/Major Mvmt	NBTWBLn1WBLn2		SBT			
Capacity (veh/h)	-	400	762	-		
HCM Lane V/C Ratio	-	0.155	0.252	-		
HCM Control Delay (s)	-	15.6	11.3	-		
HCM Lane LOS	-	C	B	-		
HCM 95th %tile Q(veh)	-	0.5	1	-		

HCM 6th TWSC

3: Main Street & EB off Ramp

01/03/2022

Intersection						
Int Delay, s/veh	4.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	119	303	0	618	312	0
Future Vol, veh/h	119	303	0	618	312	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Free	-	None	-	None
Storage Length	150	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	30	30	30	30	30	30
Mvmt Flow	129	329	0	672	339	0
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1011	-	-	0	-	0
Stage 1	339	-	-	-	-	-
Stage 2	672	-	-	-	-	-
Critical Hdwy	6.7	-	-	-	-	-
Critical Hdwy Stg 1	5.7	-	-	-	-	-
Critical Hdwy Stg 2	5.7	-	-	-	-	-
Follow-up Hdwy	3.77	-	-	-	-	-
Pot Cap-1 Maneuver	236	0	0	-	-	0
Stage 1	663	0	0	-	-	0
Stage 2	459	0	0	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	236	-	-	-	-	-
Mov Cap-2 Maneuver	236	-	-	-	-	-
Stage 1	663	-	-	-	-	-
Stage 2	459	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	37.3	0		0		
HCM LOS	E					
Minor Lane/Major Mvmt	NBT	EBLn1	EBLn2	SBT		
Capacity (veh/h)	-	236	-	-		
HCM Lane V/C Ratio	-	0.548	-	-		
HCM Control Delay (s)	-	37.3	0	-		
HCM Lane LOS	-	E	A	-		
HCM 95th %tile Q(veh)	-	3	-	-		

HCM 6th TWSC
5: Main Street & Pilot Road

01/03/2022

Intersection												
Int Delay, s/veh	28.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	130	4	43	22	16	9	51	603	43	34	336	163
Future Vol, veh/h	130	4	43	22	16	9	51	603	43	34	336	163
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	-	-	Stop	-	-	None	-	-	None
Storage Length	-	-	-	100	-	100	75	-	-	135	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	20	20	20	20	20	20	20	20	20	20	20	20
Mvmt Flow	138	4	46	23	17	10	54	641	46	36	357	173
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1210	1224	357	1313	1374	664	530	0	0	687	0	0
Stage 1	429	429	-	772	772	-	-	-	-	-	-	-
Stage 2	781	795	-	541	602	-	-	-	-	-	-	-
Critical Hdwy	7.3	6.7	6.4	7.3	6.7	6.4	4.3	-	-	4.3	-	-
Critical Hdwy Stg 1	6.3	5.7	-	6.3	5.7	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.3	5.7	-	6.3	5.7	-	-	-	-	-	-	-
Follow-up Hdwy	3.68	4.18	3.48	3.68	4.18	3.48	2.38	-	-	2.38	-	-
Pot Cap-1 Maneuver	147	165	648	124	134	431	952	-	-	828	-	-
Stage 1	570	554	-	366	384	-	-	-	-	-	-	-
Stage 2	362	375	-	494	461	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 119	149	648	104	121	431	952	-	-	828	-	-
Mov Cap-2 Maneuver	~ 119	149	-	104	121	-	-	-	-	-	-	-
Stage 1	538	530	-	345	362	-	-	-	-	-	-	-
Stage 2	318	354	-	436	441	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	219.9		39.2		0.7		0.6					
HCM LOS	F		E									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1WBLn2WBLn3	SBL	SBT	SBR					
Capacity (veh/h)	952	-	-	149	104	121	431	828	-	-		
HCM Lane V/C Ratio	0.057	-	-	1.264	0.225	0.141	0.022	0.044	-	-		
HCM Control Delay (s)	9	-	-	219.9	49.4	39.6	13.5	9.5	-	-		
HCM Lane LOS	A	-	-	F	E	E	B	A	-	-		
HCM 95th %tile Q(veh)	0.2	-	-	11.2	0.8	0.5	0.1	0.1	-	-		
Notes												
~: Volume exceeds capacity		\$: Delay exceeds 300s		+: Computation Not Defined				*: All major volume in platoon				

HCM Unsignalized Intersection Capacity Analysis

2: Main Street & WB on Ramp

01/04/2022

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	423	315	312	137
Future Volume (Veh/h)	0	0	423	315	312	137
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	460	342	339	149
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1430	339	488			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1430	339	488			
tC, single (s)	7.4	7.5	4.7			
tC, 2 stage (s)						
tF (s)	3.8	3.6	2.5			
p0 queue free %	100	100	49			
cM capacity (veh/h)	47	582	898			
Direction, Lane #	NB 1	NB 2	NB 3	SB 1	SB 2	
Volume Total	460	171	171	339	149	
Volume Left	460	0	0	0	0	
Volume Right	0	0	0	0	149	
cSH	898	1700	1700	1700	1700	
Volume to Capacity	0.51	0.10	0.10	0.20	0.09	
Queue Length 95th (ft)	75	0	0	0	0	
Control Delay (s)	13.1	0.0	0.0	0.0	0.0	
Lane LOS	B					
Approach Delay (s)	7.5			0.0		
Approach LOS						
Intersection Summary						
Average Delay			4.7			
Intersection Capacity Utilization			46.5%	ICU Level of Service		A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

4: Main Street & EB on Ramp

01/04/2022

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	0	618	100	82	533
Future Volume (Veh/h)	0	0	618	100	82	533
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	672	109	89	579
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None		None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1140	672			672	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1140	672			672	
tC, single (s)	7.4	7.5			4.7	
tC, 2 stage (s)						
tF (s)	3.8	3.6			2.5	
p0 queue free %	100	100			88	
cM capacity (veh/h)	138	339			749	
Direction, Lane #	NB 1	NB 2	SB 1	SB 2	SB 3	
Volume Total	672	109	89	290	290	
Volume Left	0	0	89	0	0	
Volume Right	0	109	0	0	0	
cSH	1700	1700	749	1700	1700	
Volume to Capacity	0.40	0.06	0.12	0.17	0.17	
Queue Length 95th (ft)	0	0	10	0	0	
Control Delay (s)	0.0	0.0	10.4	0.0	0.0	
Lane LOS			B			
Approach Delay (s)	0.0		1.4			
Approach LOS						
Intersection Summary						
Average Delay			0.6			
Intersection Capacity Utilization			43.7%	ICU Level of Service		A
Analysis Period (min)			15			

HCM 6th TWSC
1: Main Street & WB off Ramp

01/03/2022

Intersection						
Int Delay, s/veh	3.9					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	140	172	243	0	0	533
Future Vol, veh/h	140	172	243	0	0	533
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Yield	-	None	-	None
Storage Length	75	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	17	17	17	17	17	17
Mvmt Flow	149	183	259	0	0	567
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	543	130	0	-	-	-
Stage 1	259	-	-	-	-	-
Stage 2	284	-	-	-	-	-
Critical Hdwy	7.14	7.24	-	-	-	-
Critical Hdwy Stg 1	6.14	-	-	-	-	-
Critical Hdwy Stg 2	6.14	-	-	-	-	-
Follow-up Hdwy	3.67	3.47	-	-	-	-
Pot Cap-1 Maneuver	435	850	-	0	0	-
Stage 1	718	-	-	0	0	-
Stage 2	696	-	-	0	0	-
Platoon blocked, %			-			-
Mov Cap-1 Maneuver	435	850	-	-	-	-
Mov Cap-2 Maneuver	435	-	-	-	-	-
Stage 1	718	-	-	-	-	-
Stage 2	696	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	13.6	0	0			
HCM LOS	B					
Minor Lane/Major Mvmt	NBTWBLn1WBLn2		SBT			
Capacity (veh/h)	-	435	850	-	-	-
HCM Lane V/C Ratio	-	0.342	0.215	-	-	-
HCM Control Delay (s)	-	17.5	10.4	-	-	-
HCM Lane LOS	-	C	B	-	-	-
HCM 95th %tile Q(veh)	-	1.5	0.8	-	-	-

HCM 6th TWSC

3: Main Street & EB off Ramp

01/03/2022

Intersection						
Int Delay, s/veh	1.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	60	803	0	531	503	0
Future Vol, veh/h	60	803	0	531	503	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Free	-	None	-	None
Storage Length	150	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	17	17	17	17	17	17
Mvmt Flow	64	854	0	565	535	0
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1100	-	-	0	-	0
Stage 1	535	-	-	-	-	-
Stage 2	565	-	-	-	-	-
Critical Hdwy	6.57	-	-	-	-	-
Critical Hdwy Stg 1	5.57	-	-	-	-	-
Critical Hdwy Stg 2	5.57	-	-	-	-	-
Follow-up Hdwy	3.653	-	-	-	-	-
Pot Cap-1 Maneuver	220	0	0	-	-	0
Stage 1	558	0	0	-	-	0
Stage 2	540	0	0	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	220	-	-	-	-	-
Mov Cap-2 Maneuver	220	-	-	-	-	-
Stage 1	558	-	-	-	-	-
Stage 2	540	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	27.9	0		0		
HCM LOS	D					
Minor Lane/Major Mvmt	NBT	EBLn1	EBLn2	SBT		
Capacity (veh/h)	-	220	-	-		
HCM Lane V/C Ratio	-	0.29	-	-		
HCM Control Delay (s)	-	27.9	0	-		
HCM Lane LOS	-	D	A	-		
HCM 95th %tile Q(veh)	-	1.2	-	-		

HCM 6th TWSC
5: Main Street & Pilot Road

01/03/2022

Intersection												
Int Delay, s/veh	171.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	180	0	81	51	2	56	41	453	27	25	940	183
Future Vol, veh/h	180	0	81	51	2	56	41	453	27	25	940	183
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	-	-	Stop	-	-	None	-	-	None
Storage Length	-	-	-	100	-	100	75	-	-	135	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	15	15	15	15	15	15	15	15	15	15	15	15
Mvmt Flow	191	0	86	54	2	60	44	482	29	27	1000	195
Major/Minor	Minor2		Minor1			Major1			Major2			
Conflicting Flow All	1640	1653	1000	1780	1834	497	1195	0	0	511	0	0
Stage 1	1054	1054	-	585	585	-	-	-	-	-	-	-
Stage 2	586	599	-	1195	1249	-	-	-	-	-	-	-
Critical Hdwy	7.25	6.65	6.35	7.25	6.65	6.35	4.25	-	-	4.25	-	-
Critical Hdwy Stg 1	6.25	5.65	-	6.25	5.65	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.25	5.65	-	6.25	5.65	-	-	-	-	-	-	-
Follow-up Hdwy	3.635	4.135	3.435	3.635	4.135	3.435	2.335	-	-	2.335	-	-
Pot Cap-1 Maneuver	~ 75	92	279	59	71	548	541	-	-	991	-	-
Stage 1	258	287	-	475	477	-	-	-	-	-	-	-
Stage 2	474	470	-	214	231	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	~ 60	82	279	~ 37	63	548	541	-	-	991	-	-
Mov Cap-2 Maneuver	~ 60	82	-	~ 37	63	-	-	-	-	-	-	-
Stage 1	237	279	-	437	438	-	-	-	-	-	-	-
Stage 2	386	432	-	144	225	-	-	-	-	-	-	-
Approach	EB		WB			NB			SB			
HCM Control Delay, \$	1242.6		232.8			1			0.2			
HCM LOS	F		F									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1WBLn2WBLn3	SBL	SBT	SBR					
Capacity (veh/h)	541	-	-	79 37 63 548	991	-	-					
HCM Lane V/C Ratio	0.081	-	-	3.515 1.466 0.034 0.109 0.027	-	-	-					
HCM Control Delay (s)	12.2	-	-	\$ 1242.6\$ 481.5 64.1 12.4 8.7	-	-	-					
HCM Lane LOS	B	-	-	F F F B A	-	-	-					
HCM 95th %tile Q(veh)	0.3	-	-	28.5 5.7 0.1 0.4 0.1	-	-	-					
Notes												
~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon												

HCM Unsignalized Intersection Capacity Analysis

2: Main Street & WB on Ramp

01/04/2022

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	349	243	503	170
Future Volume (Veh/h)	0	0	349	243	503	170
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	0	0	371	259	535	181
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1406	535	716			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1406	535	716			
tC, single (s)	7.1	7.2	4.4			
tC, 2 stage (s)						
tF (s)	3.7	3.5	2.4			
p0 queue free %	100	100	53			
cM capacity (veh/h)	60	453	788			
Direction, Lane #	NB 1	NB 2	NB 3	SB 1	SB 2	
Volume Total	371	130	130	535	181	
Volume Left	371	0	0	0	0	
Volume Right	0	0	0	0	181	
cSH	788	1700	1700	1700	1700	
Volume to Capacity	0.47	0.08	0.08	0.31	0.11	
Queue Length 95th (ft)	64	0	0	0	0	
Control Delay (s)	13.6	0.0	0.0	0.0	0.0	
Lane LOS	B					
Approach Delay (s)	8.0			0.0		
Approach LOS						
Intersection Summary						
Average Delay			3.7			
Intersection Capacity Utilization			82.9%	ICU Level of Service		E
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

4: Main Street & EB on Ramp

01/04/2022

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	0	531	158	159	1148
Future Volume (Veh/h)	0	0	531	158	159	1148
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	0	0	565	168	169	1221
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None		None	
Median storage veh						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1514	565			565	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1514	565			565	
tC, single (s)	7.1	7.2			4.4	
tC, 2 stage (s)						
tF (s)	3.7	3.5			2.4	
p0 queue free %	100	100			81	
cM capacity (veh/h)	78	432			906	
Direction, Lane #	NB 1	NB 2	SB 1	SB 2	SB 3	
Volume Total	565	168	169	610	610	
Volume Left	0	0	169	0	0	
Volume Right	0	168	0	0	0	
cSH	1700	1700	906	1700	1700	
Volume to Capacity	0.33	0.10	0.19	0.36	0.36	
Queue Length 95th (ft)	0	0	17	0	0	
Control Delay (s)	0.0	0.0	9.9	0.0	0.0	
Lane LOS			A			
Approach Delay (s)	0.0		1.2			
Approach LOS						
Intersection Summary						
Average Delay			0.8			
Intersection Capacity Utilization			43.4%	ICU Level of Service		A
Analysis Period (min)			15			

Appendix F

Signal Warrant Analysis



Nevada Department of Transportation

Short-term Hourly Traffic Volume for 07/12/2021 through 07/19/2021



Site names: 01900025,SR427
 County: Lyon
 Location: 400ft S of Pilot Rd

Seasonal Factor Grp: 01
 Daily Factor Grp: 01
 Axle Factor Grp: 03
 Growth Factor Grp: 03

	Sun, Jul 11, 2021			Mon, Jul 12, 2021			Tue, Jul 13, 2021			Wed, Jul 14, 2021			Thu, Jul 15, 2021			Fri, Jul 16, 2021			Sat, Jul 17, 2021		
	Road	S	N	Road	S	N	Road	S	N	Road	S	N	Road	S	N	Road	S	N	Road	S	N
00:00							112			125			99			137			163		
01:00							83			84			96			78			85		
02:00							74			122			70			86			78		
03:00							132			171			145			127			101		
04:00							354			322			315			317			158		
05:00							591			577			627			550			235		
06:00							570			631			720			657			322		
07:00							622			645			650			587			363		
08:00							540			518			590			619			393		
09:00							575			512			590			567			454		
10:00							656			558			626			640			559		
11:00							686			620			706			714			627		
12:00				623			659			657			707			697			610		
13:00				581			682			633			658			676			587		
14:00				632			654			731			733			735			598		
15:00				780			815			866			816			890			592		
16:00				950			1,121			1,009			969			896			614		
17:00				838			883			857			877			798			640		
18:00				616			642			707			720			783			518		
19:00				451			459			474			506			594			457		
20:00				314			327			356			451			391			390		
21:00				283			319			309			302			362			312		
22:00				205			218			222			230			280			240		
23:00				133			156			134			183			201			182		
Total				6,406			11,930			11,840			12,386			12,382			9,278		
AM Peak Vol							733			684			759			714			654		
AM Peak Fct							.959			.91			.917			.902			.908		
AM Peak Hr							10:30			6:30			6:15			11:00			10:45		
PM Peak Vol				958			1,180			1,025			994			945			662		
PM Peak Fct				.89			.922			.884			.967			.926			.925		
PM Peak Hr				16:30			16:15			16:30			16:15			16:15			16:45		
Seasonal Fct				.941			.941			.941			.941			.941			.941		
Daily Fct				.976			.945			.928			.914			.907			1.160		
Axle Fct				.455			.455			.455			.455			.455			.455		
Pulse Fct				2.000			2.000			2.000			2.000			2.000			2.000		

Nevada Department of Transportation



Short-term Hourly Traffic Volume for 07/12/2021 through 07/19/2021

Site names: 0190025,SR427
 County: Lyon
 Location: 400ft S of Pilot Rd

Seasonal Factor Grp: 01
 Daily Factor Grp: 01
 Axle Factor Grp: 03
 Growth Factor Grp: 03

	Sun, Jul 18, 2021			Mon, Jul 19, 2021			Tue, Jul 20, 2021			Wed, Jul 21, 2021			Thu, Jul 22, 2021			Fri, Jul 23, 2021			Sat, Jul 24, 2021		
	Road	S	N	Road	S	N	Road	S	N	Road	S	N	Road	S	N	Road	S	N	Road	S	N
00:00	119			79																	
01:00	95			59																	
02:00	38			80																	
03:00	50			125																	
04:00	116			329																	
05:00	180			522																	
06:00	223			588																	
07:00	282			631																	
08:00	329			518																	
09:00	351			540																	
10:00	415			585																	
11:00	468																				
12:00	531																				
13:00	557																				
14:00	510																				
15:00	495																				
16:00	527																				
17:00	579																				
18:00	514																				
19:00	432																				
20:00	342																				
21:00	292																				
22:00	151																				
23:00	127																				
Total	7,723			4,056																	
AM Peak Vol	468																				
AM Peak Fct	.848																				
AM Peak Hr	11: 00																				
PM Peak Vol	584																				
PM Peak Fct	.864																				
PM Peak Hr	16: 45																				
Seasonal Fct	.941			.941																	
Daily Fct	1.303			.976																	
Axle Fct	.455			.455																	
Pulse Fct	2.000			2.000																	

Pilot Road NDOT Counts

Thursday, July 15, 2021

Time	NDOT Count	% of Peak
00:00 - 00:59	99	14%
01:00 - 01:59	96	13%
02:00 - 02:59	70	10%
03:00 - 03:59	145	20%
04:00 - 04:59	315	44%
05:00 - 05:59	627	87%
06:00 - 06:59	720	100%
07:00 - 07:59	650	90%
08:00 - 08:59	590	82%
09:00 - 09:59	590	82%
10:00 - 10:59	626	87%
11:00 - 11:59	706	98%
12:00 - 12:59	707	73%
13:00 - 13:59	658	68%
14:00 - 14:59	733	76%
15:00 - 15:59	816	84%
16:00 - 16:59	969	100%
17:00 - 17:59	877	91%
18:00 - 18:59	720	74%
19:00 - 19:59	506	52%
20:00 - 20:59	451	47%
21:00 - 21:59	302	31%
22:00 - 22:59	230	24%
23:00 - 23:59	183	19%
Daily	12,386	--

AM Peak
PM Peak

Existing Plus Project Volumes for Signal Warrants

NB Approach	SB Approach	EB Approach	WB Approach
71	53	15	6
68	51	15	6
50	37	11	4
103	78	22	9
224	168	48	20
447	335	96	40
513	385	110	46
463	348	99	42
420	315	90	38
420	315	90	38
446	335	96	40
503	378	108	45
262	600	113	37
244	558	105	35
272	622	117	39
302	692	131	43
359	822	155	51
325	744	140	46
267	611	115	38
187	429	81	27
167	383	72	24
112	256	48	16
85	195	37	12
68	155	29	10

Plus Project Traffic Volumes From Study
Plus Project Traffic Volumes From Study
AM Peak Hours Included in Warrant Analysis
PM Peak Hours Included in Warrant Analysis

STUDY AND ANALYSIS INFORMATION

Municipality:
 County:
 PennDOT Engineering District:

Analysis Date:
 Conducted By:
 Agency/Company Name:

Analysis Information

Data Collection Date:
 Day of the Week:

Is the intersection in a built-up area of an isolated community of <10,000 population?

Major Street Information

Major Street Name and Route Number:
 Major Street Approach #1 Direction:
 Major Street Approach #2 Direction:

Number of Lanes for Moving Traffic on Each Major Street Approach: LANE(S)
 Speed Limit or 85th Percentile Speed on the Major Street: MPH

Minor Street Information

Minor Street Name and Route Number:
 Minor Street Approach #1 Direction:
 Minor Street Approach #2 Direction:

Number of Lanes for Moving Traffic on Each Minor Street Approach: LANE(S)

TRAFFIC SIGNAL WARRANT ANALYSIS FINDINGS

	Applicable?	Warrant Met?
Warrant 1, Eight-Hour Vehicular Volume	Yes	No
Warrant 2, Four-Hour Vehicular Volume	Yes	No
Warrant 3, Peak Hour	Yes	No
Warrant 4, Pedestrian Volume	No	N/A
Warrant 5, School Crossing	No	N/A
Warrant 6, Coordinated Signal System	No	N/A
Warrant 7, Crash Experience	Yes	No
Warrant 8, Roadway Network	No	N/A
Warrant 9, Intersection Near a Grade Crossing	No	N/A
Warrant PA-1, ADT Volume Warrant	No	N/A
Warrant PA-2, Midblock and Trail Crossings	No	N/A

ENTER VOLUME DATA PER 15 MINUTE INTERVAL, PER APPROACH						
Time Interval		Major Street Approach #1 (N-Bound)	Major Street Approach #2 (S-Bound)	Major Street Combined	Minor Street Approach #1 (E-Bound)	Minor Street Approach #2 (W-Bound)
Begin At	End Of	Volume	Volume	Total Volume	Volume	Volume
12:00 AM	12:14 AM			0		
12:15 AM	12:29 AM			0		
12:30 AM	12:44 AM			0		
12:45 AM	12:59 AM			0		
1:00 AM	1:14 AM			0		
1:15 AM	1:29 AM			0		
1:30 AM	1:44 AM			0		
1:45 AM	1:59 AM			0		
2:00 AM	2:14 AM			0		
2:15 AM	2:29 AM			0		
2:30 AM	2:44 AM			0		
2:45 AM	2:59 AM			0		
3:00 AM	3:14 AM			0		
3:15 AM	3:29 AM			0		
3:30 AM	3:44 AM			0		
3:45 AM	3:59 AM			0		
4:00 AM	4:14 AM			0		
4:15 AM	4:29 AM			0		
4:30 AM	4:44 AM			0		
4:45 AM	4:59 AM			0		
5:00 AM	5:14 AM	447	335	782	96	40
5:15 AM	5:29 AM			0		
5:30 AM	5:44 AM			0		
5:45 AM	5:59 AM			0		
6:00 AM	6:14 AM	513	385	898	110	46
6:15 AM	6:29 AM			0		
6:30 AM	6:44 AM			0		
6:45 AM	6:59 AM			0		
7:00 AM	7:14 AM	463	348	811	99	42
7:15 AM	7:29 AM			0		
7:30 AM	7:44 AM			0		
7:45 AM	7:59 AM			0		
8:00 AM	8:14 AM			0		
8:15 AM	8:29 AM			0		
8:30 AM	8:44 AM			0		
8:45 AM	8:59 AM			0		
9:00 AM	9:14 AM			0		
9:15 AM	9:29 AM			0		
9:30 AM	9:44 AM			0		
9:45 AM	9:59 AM			0		
10:00 AM	10:14 AM			0		
10:15 AM	10:29 AM			0		
10:30 AM	10:44 AM			0		
10:45 AM	10:59 AM			0		
11:00 AM	11:14 AM			0		
11:15 AM	11:29 AM			0		
11:30 AM	11:44 AM			0		
11:45 AM	11:59 AM			0		

ENTER VOLUME DATA PER 15 MINUTE INTERVAL, PER APPROACH						
Time Interval		Major Street Approach #1 (N-Bound)	Major Street Approach #2 (S-Bound)	Major Street Combined	Minor Street Approach #1 (E-Bound)	Minor Street Approach #2 (W-Bound)
Begin At	End Of	Volume	Volume	Total Volume	Volume	Volume
12:00 PM	12:14 PM			0		
12:15 PM	12:29 PM			0		
12:30 PM	12:44 PM			0		
12:45 PM	12:59 PM			0		
1:00 PM	1:14 PM			0		
1:15 PM	1:29 PM			0		
1:30 PM	1:44 PM			0		
1:45 PM	1:59 PM			0		
2:00 PM	2:14 PM	272	622	894	117	39
2:15 PM	2:29 PM			0		
2:30 PM	2:44 PM			0		
2:45 PM	2:59 PM			0		
3:00 PM	3:14 PM	302	692	994	131	43
3:15 PM	3:29 PM			0		
3:30 PM	3:44 PM			0		
3:45 PM	3:59 PM			0		
4:00 PM	4:14 PM	359	822	1181	155	51
4:15 PM	4:29 PM			0		
4:30 PM	4:44 PM			0		
4:45 PM	4:59 PM			0		
5:00 PM	5:14 PM	325	744	1069	140	46
5:15 PM	5:29 PM			0		
5:30 PM	5:44 PM			0		
5:45 PM	5:59 PM			0		
6:00 PM	6:14 PM	267	611	878	115	38
6:15 PM	6:29 PM			0		
6:30 PM	6:44 PM			0		
6:45 PM	6:59 PM			0		
7:00 PM	7:14 PM			0		
7:15 PM	7:29 PM			0		
7:30 PM	7:44 PM			0		
7:45 PM	7:59 PM			0		
8:00 PM	8:14 PM			0		
8:15 PM	8:29 PM			0		
8:30 PM	8:44 PM			0		
8:45 PM	8:59 PM			0		
9:00 PM	9:14 PM			0		
9:15 PM	9:29 PM			0		
9:30 PM	9:44 PM			0		
9:45 PM	9:59 PM			0		
10:00 PM	10:14 PM			0		
10:15 PM	10:29 PM			0		
10:30 PM	10:44 PM			0		
10:45 PM	10:59 PM			0		
11:00 PM	11:14 PM			0		
11:15 PM	11:29 PM			0		
11:30 PM	11:44 PM			0		
11:45 PM	11:59 PM			0		
Approach Totals:		2948	4559	7507	963	345

MUTCD WARRANT 1, EIGHT-HOUR VEHICULAR VOLUME

Number of Lanes for Moving Traffic on Each Approach	
Major Street:	2 or More Lanes
Minor Street:	1 Lane

Built-up Isolated Community With Less Than 10,000 Population or Above 40 MPH on Major Street?	No
---	----

Combination of Conditions A and B Necessary?*: No

**Only applicable for Warrant 1 if after an adequate trial of other alternatives that could cause less delay and inconvenience to traffic has failed to solve the traffic problems. See Section 4C.02 of the 2009 MUTCD for application.*

Condition A - Minimum Vehicular Volume									
Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)				Vehicles per hour on higher-volume minor street approach (one direction only)			
Major Street	Minor Street	100%	80%	70%	56%	100%	80%	70%	56%
1	1	500	400	350	280	150	120	105	84
2 or More	1	600	480	420	336	150	120	105	84
2 or More	2 or More	600	480	420	336	200	160	140	112
1	2 or More	500	400	350	280	200	160	140	112

Condition B - Interruption of Continuous Traffic									
Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)				Vehicles per hour on higher-volume minor street approach (one direction only)			
Major Street	Minor Street	100%	80%	70%	56%	100%	80%	70%	56%
1	1	750	600	525	420	75	60	53	42
2 or More	1	900	720	630	504	75	60	53	42
2 or More	2 or More	900	720	630	504	100	80	70	56
1	2 or More	750	600	525	420	100	80	70	56

Condition A Evaluation

Number of Unique Hours Met: 1

Condition A Satisfied? No

Condition B Evaluation

Number of Unique Hours Met: 3

Condition B Satisfied? No

Combination of Condition A and Condition B Evaluation

Number of Unique Hours Met for Condition A: N/A

Number of Unique Hours Met for Condition B: N/A

Combination of Condition A and Condition B Satisfied? N/A

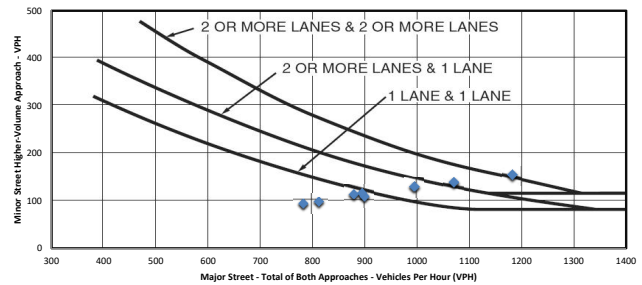
MUTCD WARRANT 2, FOUR-HOUR VEHICULAR VOLUME

Number of Lanes for Moving Traffic on Each Approach	Total Number of Unique Hours Met On Figure 4C-1
Major Street: 2 or More Lanes	2
Minor Street: 1 Lane	

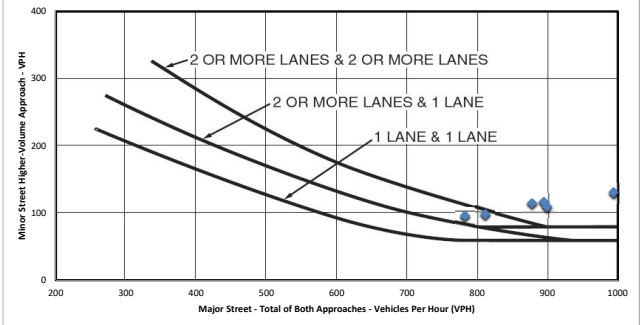
Built-up Isolated Community With Less Than 10,000 Population or Above 40 MPH on Major Street?	No
---	----

Hour Interval	Hourly Vehicular Volume		Hour Met?
	Major Street Combined Vehicles Per Hour (VPH)	Highest Minor Street Approach Vehicles Per Hour (VPH)	
12:00 AM	0	0	
12:15 AM	0	0	
12:30 AM	0	0	
12:45 AM	0	0	
1:00 AM	0	0	
1:15 AM	0	0	
1:30 AM	0	0	
1:45 AM	0	0	
2:00 AM	0	0	
2:15 AM	0	0	
2:30 AM	0	0	
2:45 AM	0	0	
3:00 AM	0	0	
3:15 AM	0	0	
3:30 AM	0	0	
3:45 AM	0	0	
4:00 AM	0	0	
4:15 AM	782	96	
4:30 AM	782	96	
4:45 AM	782	96	
5:00 AM	782	96	
5:15 AM	898	110	
5:30 AM	898	110	
5:45 AM	898	110	
6:00 AM	898	110	
6:15 AM	811	99	
6:30 AM	811	99	
6:45 AM	811	99	
7:00 AM	811	99	
7:15 AM	0	0	
7:30 AM	0	0	
7:45 AM	0	0	
8:00 AM	0	0	
8:15 AM	0	0	
8:30 AM	0	0	
8:45 AM	0	0	
9:00 AM	0	0	
9:15 AM	0	0	
9:30 AM	0	0	
9:45 AM	0	0	
10:00 AM	0	0	
10:15 AM	0	0	
10:30 AM	0	0	
10:45 AM	0	0	
11:00 AM	0	0	
11:15 AM	0	0	
11:30 AM	0	0	
11:45 AM	0	0	
12:00 PM	0	0	
12:15 PM	0	0	
12:30 PM	0	0	
12:45 PM	0	0	
1:00 PM	0	0	
1:15 PM	894	117	
1:30 PM	894	117	
1:45 PM	894	117	
2:00 PM	894	117	
2:15 PM	994	131	
2:30 PM	994	131	
2:45 PM	994	131	
3:00 PM	994	131	
3:15 PM	1181	155	Met
3:30 PM	1181	155	Met
3:45 PM	1181	155	Met
4:00 PM	1181	155	Met
4:15 PM	1069	140	Met
4:30 PM	1069	140	Met
4:45 PM	1069	140	Met
5:00 PM	1069	140	Met
5:15 PM	878	115	
5:30 PM	878	115	
5:45 PM	878	115	
6:00 PM	878	115	
6:15 PM	0	0	
6:30 PM	0	0	
6:45 PM	0	0	
7:00 PM	0	0	
7:15 PM	0	0	
7:30 PM	0	0	
7:45 PM	0	0	
8:00 PM	0	0	
8:15 PM	0	0	
8:30 PM	0	0	
8:45 PM	0	0	
9:00 PM	0	0	
9:15 PM	0	0	
9:30 PM	0	0	
9:45 PM	0	0	
10:00 PM	0	0	
10:15 PM	0	0	
10:30 PM	0	0	
10:45 PM	0	0	
11:00 PM	0	0	

MUTCD Figure 4C-1. Warrant 2, Four-Hour Vehicular Volume



MUTCD Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor)



MUTCD WARRANT 3, PEAK HOUR

Number of Lanes for Moving Traffic on Each Approach	
Major Street:	2 or More Lanes
Minor Street:	1 Lane

Built-up isolated Community With Less Than 10,000 Population or Above 40 MPH on Major Street?	No
---	----

Is this signal warrant being applied for an unusual case, such as office complexes, manufacturing plants, industrial complexes, or high-occupancy vehicle facilities that attract or discharge large numbers of vehicles over a short time?

No

Indicate whether all three of the following conditions for the same 1 hour (any four consecutive 15-minute periods) of an average day are present*

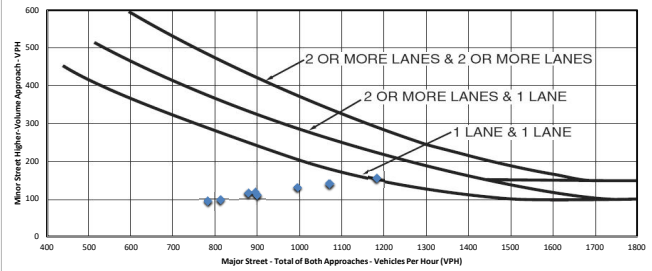
Does the total stopped time delay experienced by the traffic on one minor-street approach (one direction only) controlled by a STOP sign equal or exceed 4 vehicle-hours for a one-lane approach or 5 vehicle-hours for a two-lane approach?	No
Does the volume on the same minor-street approach (one direction only) equal or exceed 100 vehicles per hour for one moving lane of traffic or 150 vehicles per hour for two moving lanes?	No
Does the total entering volume serviced during the hour equal or exceed 650 vehicles per hour for intersection with three approaches or 800 vehicles per hour for intersections with four or more approaches?	No

*If applicable, attach all supporting calculations and documentation.

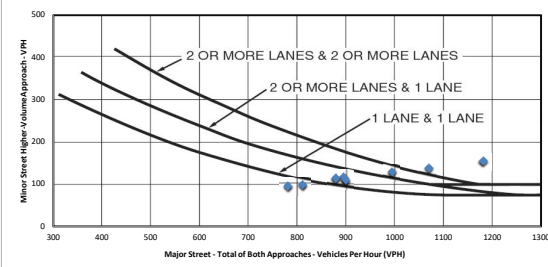
Total Number of Unique Hours Met On Figure 4C-3	0
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Hour Interval Beginning At	Hourly Vehicular Volume		Hour Met?
	Major Street Combined Vehicles Per Hour (VPH)	Highest Minor Street Approach Vehicles Per Hour (VPH)	
12:00 AM	0	0	
12:15 AM	0	0	
12:30 AM	0	0	
12:45 AM	0	0	
1:00 AM	0	0	
1:15 AM	0	0	
1:30 AM	0	0	
1:45 AM	0	0	
2:00 AM	0	0	
2:15 AM	0	0	
2:30 AM	0	0	
2:45 AM	0	0	
3:00 AM	0	0	
3:15 AM	0	0	
3:30 AM	0	0	
3:45 AM	0	0	
4:00 AM	0	0	
4:15 AM	782	96	
4:30 AM	782	96	
4:45 AM	782	96	
5:00 AM	782	96	
5:15 AM	898	110	
5:30 AM	898	110	
5:45 AM	898	110	
6:00 AM	898	110	
6:15 AM	811	99	
6:30 AM	811	99	
6:45 AM	811	99	
7:00 AM	811	99	
7:15 AM	0	0	
7:30 AM	0	0	
7:45 AM	0	0	
8:00 AM	0	0	
8:15 AM	0	0	
8:30 AM	0	0	
8:45 AM	0	0	
9:00 AM	0	0	
9:15 AM	0	0	
9:30 AM	0	0	
9:45 AM	0	0	
10:00 AM	0	0	
10:15 AM	0	0	
10:30 AM	0	0	
10:45 AM	0	0	
11:00 AM	0	0	
11:15 AM	0	0	
11:30 AM	0	0	
11:45 AM	0	0	
12:00 PM	0	0	
12:15 PM	0	0	
12:30 PM	0	0	
12:45 PM	0	0	
1:00 PM	0	0	
1:15 PM	894	117	
1:30 PM	894	117	
1:45 PM	894	117	
2:00 PM	894	117	
2:15 PM	994	131	
2:30 PM	994	131	
2:45 PM	994	131	
3:00 PM	994	131	
3:15 PM	1181	155	
3:30 PM	1181	155	
3:45 PM	1181	155	
4:00 PM	1181	155	
4:15 PM	1069	140	
4:30 PM	1069	140	
4:45 PM	1069	140	
5:00 PM	1069	140	
5:15 PM	878	115	
5:30 PM	878	115	
5:45 PM	878	115	
6:00 PM	878	115	
6:15 PM	0	0	
6:30 PM	0	0	
6:45 PM	0	0	
7:00 PM	0	0	
7:15 PM	0	0	
7:30 PM	0	0	
7:45 PM	0	0	
8:00 PM	0	0	
8:15 PM	0	0	
8:30 PM	0	0	
8:45 PM	0	0	
9:00 PM	0	0	
9:15 PM	0	0	
9:30 PM	0	0	
9:45 PM	0	0	
10:00 PM	0	0	
10:15 PM	0	0	
10:30 PM	0	0	
10:45 PM	0	0	
11:00 PM	0	0	

MUTCD Figure 4C-3. Warrant 3, Peak Hour



MUTCD Figure 4C-4. Warrant 3, Peak Hour (70% Factor)



MUTCD WARRANT 7, CRASH EXPERIENCE
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Built-up Isolated Community With Less Than 10,000 Population or Above 40 MPH on Major Street?	No
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Number of Lanes for Moving Traffic on Each Approach	
Major Street:	2 or More Lanes
Minor Street:	1 Lane

Has adequate trial of alternatives with satisfactory observance and enforcement failed to reduce the crash frequency?

N/A

Five or more reportable and/or non-reportable crashes, of types susceptible to correction by a traffic control signal, have occurred within a 12-month period during the most recent 3 years of available crash data.*

Yes

**If applicable, attach a summary of the crash data analysis used for this criterion.*

For each of any 8 hours of an average day, the vehicles per hour given in both the 80% columns of Condition A in Table 4C-1 exists on the major-street and the higher-volume minor-street approach, respectively, to the intersection.

No

For each of any 8 hours of an average day, the vehicles per hour given in both the 80% columns of Condition B in Table 4C-1 exists on the major-street and the higher-volume minor-street approach, respectively, to the intersection.

Yes

The volume of pedestrian traffic is not less than 80% of the requirements specified in Warrant 4, the Pedestrian Volume warrant.*

N/A

**If applicable, attach all supporting calculations and documentation.*

Pilot Road NDOT Counts

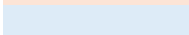
Thursday, July 15, 2021

Time	NDOT Count	% of Peak
00:00 - 00:59	99	14%
01:00 - 01:59	96	13%
02:00 - 02:59	70	10%
03:00 - 03:59	145	20%
04:00 - 04:59	315	44%
05:00 - 05:59	627	87%
06:00 - 06:59	720	100%
07:00 - 07:59	650	90%
08:00 - 08:59	590	82%
09:00 - 09:59	590	82%
10:00 - 10:59	626	87%
11:00 - 11:59	706	98%
12:00 - 12:59	707	73%
13:00 - 13:59	658	68%
14:00 - 14:59	733	76%
15:00 - 15:59	816	84%
16:00 - 16:59	969	100%
17:00 - 17:59	877	91%
18:00 - 18:59	720	74%
19:00 - 19:59	506	52%
20:00 - 20:59	451	47%
21:00 - 21:59	302	31%
22:00 - 22:59	230	24%
23:00 - 23:59	183	19%
Daily	12,386	--

 AM Peak
 PM Peak

Future Plus Project Volumes for Signal Warrants

NB Approach	SB Approach	EB Approach	WB Approach
96	73	18	5
93	71	18	5
68	52	13	4
140	107	27	8
305	233	59	17
607	464	117	33
697	533	134	38
629	481	121	34
571	437	110	31
571	437	110	31
606	463	117	33
683	523	131	37
380	838	131	39
354	780	122	36
394	868	136	40
439	967	152	45
521	1,148	180	53
472	1,039	163	48
387	853	134	39
272	599	94	28
242	534	84	25
162	358	56	17
124	272	43	13
98	217	34	10

 Plus Project Traffic Volumes From Study
 Plus Project Traffic Volumes From Study
 AM Peak Hours Included in Warrant Analysis
 PM Peak Hours Included in Warrant Analysis

STUDY AND ANALYSIS INFORMATION

Municipality:
 County:
 PennDOT Engineering District:

Analysis Date:
 Conducted By:
 Agency/Company Name:

Analysis Information

Data Collection Date:
 Day of the Week:

Is the intersection in a built-up area of an isolated community of <10,000 population?

Major Street Information

Major Street Name and Route Number:
 Major Street Approach #1 Direction:
 Major Street Approach #2 Direction:

Number of Lanes for Moving Traffic on Each Major Street Approach: LANE(S)
 Speed Limit or 85th Percentile Speed on the Major Street: MPH

Minor Street Information

Minor Street Name and Route Number:
 Minor Street Approach #1 Direction:
 Minor Street Approach #2 Direction:

Number of Lanes for Moving Traffic on Each Minor Street Approach: LANE(S)

TRAFFIC SIGNAL WARRANT ANALYSIS FINDINGS

	Applicable?	Warrant Met?
Warrant 1, Eight-Hour Vehicular Volume	Yes	Yes
Warrant 2, Four-Hour Vehicular Volume	Yes	Yes
Warrant 3, Peak Hour	Yes	No
Warrant 4, Pedestrian Volume	No	N/A
Warrant 5, School Crossing	No	N/A
Warrant 6, Coordinated Signal System	No	N/A
Warrant 7, Crash Experience	Yes	No
Warrant 8, Roadway Network	No	N/A
Warrant 9, Intersection Near a Grade Crossing	No	N/A
Warrant PA-1, ADT Volume Warrant	No	N/A
Warrant PA-2, Midblock and Trail Crossings	No	N/A

ENTER VOLUME DATA PER 15 MINUTE INTERVAL, PER APPROACH						
Time Interval		Major Street Approach #1 (N-Bound)	Major Street Approach #2 (S-Bound)	Major Street Combined	Minor Street Approach #1 (E-Bound)	Minor Street Approach #2 (W-Bound)
Begin At	End Of	Volume	Volume	Total Volume	Volume	Volume
12:00 AM	12:14 AM			0		
12:15 AM	12:29 AM			0		
12:30 AM	12:44 AM			0		
12:45 AM	12:59 AM			0		
1:00 AM	1:14 AM			0		
1:15 AM	1:29 AM			0		
1:30 AM	1:44 AM			0		
1:45 AM	1:59 AM			0		
2:00 AM	2:14 AM			0		
2:15 AM	2:29 AM			0		
2:30 AM	2:44 AM			0		
2:45 AM	2:59 AM			0		
3:00 AM	3:14 AM			0		
3:15 AM	3:29 AM			0		
3:30 AM	3:44 AM			0		
3:45 AM	3:59 AM			0		
4:00 AM	4:14 AM			0		
4:15 AM	4:29 AM			0		
4:30 AM	4:44 AM			0		
4:45 AM	4:59 AM			0		
5:00 AM	5:14 AM	607	464	1071	117	33
5:15 AM	5:29 AM			0		
5:30 AM	5:44 AM			0		
5:45 AM	5:59 AM			0		
6:00 AM	6:14 AM	697	533	1230	134	38
6:15 AM	6:29 AM			0		
6:30 AM	6:44 AM			0		
6:45 AM	6:59 AM			0		
7:00 AM	7:14 AM	629	481	1110	121	34
7:15 AM	7:29 AM			0		
7:30 AM	7:44 AM			0		
7:45 AM	7:59 AM			0		
8:00 AM	8:14 AM			0		
8:15 AM	8:29 AM			0		
8:30 AM	8:44 AM			0		
8:45 AM	8:59 AM			0		
9:00 AM	9:14 AM			0		
9:15 AM	9:29 AM			0		
9:30 AM	9:44 AM			0		
9:45 AM	9:59 AM			0		
10:00 AM	10:14 AM			0		
10:15 AM	10:29 AM			0		
10:30 AM	10:44 AM			0		
10:45 AM	10:59 AM			0		
11:00 AM	11:14 AM			0		
11:15 AM	11:29 AM			0		
11:30 AM	11:44 AM			0		
11:45 AM	11:59 AM			0		

ENTER VOLUME DATA PER 15 MINUTE INTERVAL, PER APPROACH						
Time Interval		Major Street Approach #1 (N-Bound)	Major Street Approach #2 (S-Bound)	Major Street Combined	Minor Street Approach #1 (E-Bound)	Minor Street Approach #2 (W-Bound)
Begin At	End Of	Volume	Volume	Total Volume	Volume	Volume
12:00 PM	12:14 PM			0		
12:15 PM	12:29 PM			0		
12:30 PM	12:44 PM			0		
12:45 PM	12:59 PM			0		
1:00 PM	1:14 PM			0		
1:15 PM	1:29 PM			0		
1:30 PM	1:44 PM			0		
1:45 PM	1:59 PM			0		
2:00 PM	2:14 PM	394	868	1262	136	40
2:15 PM	2:29 PM			0		
2:30 PM	2:44 PM			0		
2:45 PM	2:59 PM			0		
3:00 PM	3:14 PM	439	967	1406	152	45
3:15 PM	3:29 PM			0		
3:30 PM	3:44 PM			0		
3:45 PM	3:59 PM			0		
4:00 PM	4:14 PM	521	1148	1669	180	53
4:15 PM	4:29 PM			0		
4:30 PM	4:44 PM			0		
4:45 PM	4:59 PM			0		
5:00 PM	5:14 PM	472	1039	1511	163	48
5:15 PM	5:29 PM			0		
5:30 PM	5:44 PM			0		
5:45 PM	5:59 PM			0		
6:00 PM	6:14 PM	387	853	1240	134	39
6:15 PM	6:29 PM			0		
6:30 PM	6:44 PM			0		
6:45 PM	6:59 PM			0		
7:00 PM	7:14 PM			0		
7:15 PM	7:29 PM			0		
7:30 PM	7:44 PM			0		
7:45 PM	7:59 PM			0		
8:00 PM	8:14 PM			0		
8:15 PM	8:29 PM			0		
8:30 PM	8:44 PM			0		
8:45 PM	8:59 PM			0		
9:00 PM	9:14 PM			0		
9:15 PM	9:29 PM			0		
9:30 PM	9:44 PM			0		
9:45 PM	9:59 PM			0		
10:00 PM	10:14 PM			0		
10:15 PM	10:29 PM			0		
10:30 PM	10:44 PM			0		
10:45 PM	10:59 PM			0		
11:00 PM	11:14 PM			0		
11:15 PM	11:29 PM			0		
11:30 PM	11:44 PM			0		
11:45 PM	11:59 PM			0		
Approach Totals:		4146	6353	10499	1137	330

MUTCD WARRANT 1, EIGHT-HOUR VEHICULAR VOLUME

Number of Lanes for Moving Traffic on Each Approach	
Major Street:	2 or More Lanes
Minor Street:	1 Lane

Built-up Isolated Community With Less Than 10,000 Population or Above 40 MPH on Major Street?	No
---	----

Combination of Conditions A and B Necessary?*: No

**Only applicable for Warrant 1 if after an adequate trial of other alternatives that could cause less delay and inconvenience to traffic has failed to solve the traffic problems. See Section 4C.02 of the 2009 MUTCD for application.*

Condition A - Minimum Vehicular Volume									
Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)				Vehicles per hour on higher-volume minor street approach (one direction only)			
Major Street	Minor Street	100%	80%	70%	56%	100%	80%	70%	56%
1	1	500	400	350	280	150	120	105	84
2 or More	1	600	480	420	336	150	120	105	84
2 or More	2 or More	600	480	420	336	200	160	140	112
1	2 or More	500	400	350	280	200	160	140	112

Condition B - Interruption of Continuous Traffic									
Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)				Vehicles per hour on higher-volume minor street approach (one direction only)			
Major Street	Minor Street	100%	80%	70%	56%	100%	80%	70%	56%
1	1	750	600	525	420	75	60	53	42
2 or More	1	900	720	630	504	75	60	53	42
2 or More	2 or More	900	720	630	504	100	80	70	56
1	2 or More	750	600	525	420	100	80	70	56

Condition A Evaluation

Number of Unique Hours Met: 3

Condition A Satisfied? No

Condition B Evaluation

Number of Unique Hours Met: 8

Condition B Satisfied? Yes

Combination of Condition A and Condition B Evaluation

Number of Unique Hours Met for Condition A: N/A

Number of Unique Hours Met for Condition B: N/A

Combination of Condition A and Condition B Satisfied? N/A

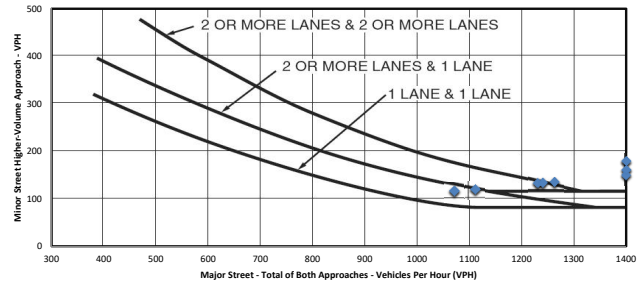
MUTCD WARRANT 2, FOUR-HOUR VEHICULAR VOLUME

Number of Lanes for Moving Traffic on Each Approach	Total Number of Unique Hours Met On Figure 4C-1
Major Street: 2 or More Lanes	6
Minor Street: 1 Lane	

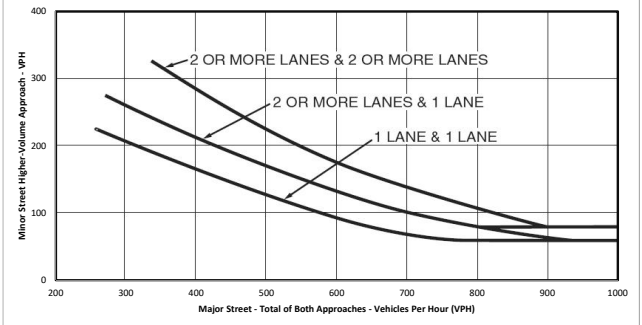
Built-up Isolated Community With Less Than 10,000 Population or Above 40 MPH on Major Street?	No
---	----

Hour Interval Beginning At	Hourly Vehicular Volume		Hour Met?
	Major Street Combined Vehicles Per Hour (VPH)	Highest Minor Street Approach Vehicles Per Hour (VPH)	
12:00 AM	0	0	
12:15 AM	0	0	
12:30 AM	0	0	
12:45 AM	0	0	
1:00 AM	0	0	
1:15 AM	0	0	
1:30 AM	0	0	
1:45 AM	0	0	
2:00 AM	0	0	
2:15 AM	0	0	
2:30 AM	0	0	
2:45 AM	0	0	
3:00 AM	0	0	
3:15 AM	0	0	
3:30 AM	0	0	
3:45 AM	0	0	
4:00 AM	0	0	
4:15 AM	1071	117	
4:30 AM	1071	117	
4:45 AM	1071	117	
5:00 AM	1071	117	
5:15 AM	1230	134	Met
5:30 AM	1230	134	Met
5:45 AM	1230	134	Met
6:00 AM	1230	134	Met
6:15 AM	1110	121	
6:30 AM	1110	121	
6:45 AM	1110	121	
7:00 AM	1110	121	
7:15 AM	0	0	
7:30 AM	0	0	
7:45 AM	0	0	
8:00 AM	0	0	
8:15 AM	0	0	
8:30 AM	0	0	
8:45 AM	0	0	
9:00 AM	0	0	
9:15 AM	0	0	
9:30 AM	0	0	
9:45 AM	0	0	
10:00 AM	0	0	
10:15 AM	0	0	
10:30 AM	0	0	
10:45 AM	0	0	
11:00 AM	0	0	
11:15 AM	0	0	
11:30 AM	0	0	
11:45 AM	0	0	
12:00 PM	0	0	
12:15 PM	0	0	
12:30 PM	0	0	
12:45 PM	0	0	
1:00 PM	0	0	
1:15 PM	1262	136	Met
1:30 PM	1262	136	Met
1:45 PM	1262	136	Met
2:00 PM	1262	136	Met
2:15 PM	1400	152	Met
2:30 PM	1400	152	Met
2:45 PM	1400	152	Met
3:00 PM	1400	152	Met
3:15 PM	1400	180	Met
3:30 PM	1400	180	Met
3:45 PM	1400	180	Met
4:00 PM	1400	180	Met
4:15 PM	1400	163	Met
4:30 PM	1400	163	Met
4:45 PM	1400	163	Met
5:00 PM	1400	163	Met
5:15 PM	1240	134	Met
5:30 PM	1240	134	Met
5:45 PM	1240	134	Met
6:00 PM	1240	134	Met
6:15 PM	0	0	
6:30 PM	0	0	
6:45 PM	0	0	
7:00 PM	0	0	
7:15 PM	0	0	
7:30 PM	0	0	
7:45 PM	0	0	
8:00 PM	0	0	
8:15 PM	0	0	
8:30 PM	0	0	
8:45 PM	0	0	
9:00 PM	0	0	
9:15 PM	0	0	
9:30 PM	0	0	
9:45 PM	0	0	
10:00 PM	0	0	
10:15 PM	0	0	
10:30 PM	0	0	
10:45 PM	0	0	
11:00 PM	0	0	

MUTCD Figure 4C-1. Warrant 2, Four-Hour Vehicular Volume



MUTCD Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor)



MUTCD WARRANT 3, PEAK HOUR

Number of Lanes for Moving Traffic on Each Approach	
Major Street:	2 or More Lanes
Minor Street:	1 Lane

Built-up Isolated Community With Less Than 10,000 Population or Above 40 MPH on Major Street?	No
---	----

Is this signal warrant being applied for an unusual case, such as office complexes, manufacturing plants, industrial complexes, or high-occupancy vehicle facilities that attract or discharge large numbers of vehicles over a short time?

No

Indicate whether all three of the following conditions for the same 1 hour (any four consecutive 15-minute periods) of an average day are present*

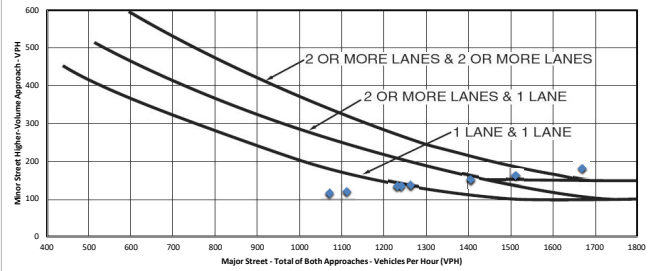
Does the total stopped time delay experienced by the traffic on one minor-street approach (one direction only) controlled by a STOP sign equal or exceed 4 vehicle-hours for a one-lane approach or 5 vehicle-hours for a two-lane approach?	No
Does the volume on the same minor-street approach (one direction only) equal or exceed 100 vehicles per hour for one moving lane of traffic or 150 vehicles per hour for two moving lanes?	No
Does the total entering volume serviced during the hour equal or exceed 650 vehicles per hour for intersection with three approaches or 800 vehicles per hour for intersections with four or more approaches?	No

*If applicable, attach all supporting calculations and documentation.

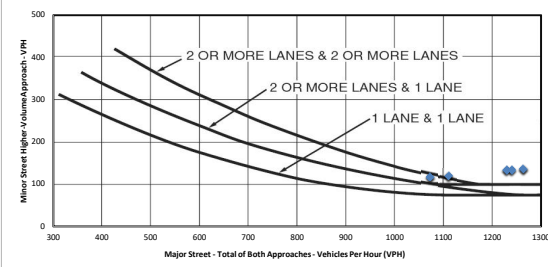
Total Number of Unique Hours Met On Figure 4C-3	2
---	---

Hour Interval Beginning At	Hourly Vehicular Volume		Hour Met?
	Major Street Combined Vehicles Per Hour (VPH)	Highest Minor Street Approach Vehicles Per Hour (VPH)	
12:00 AM	0	0	
12:15 AM	0	0	
12:30 AM	0	0	
12:45 AM	0	0	
1:00 AM	0	0	
1:15 AM	0	0	
1:30 AM	0	0	
1:45 AM	0	0	
2:00 AM	0	0	
2:15 AM	0	0	
2:30 AM	0	0	
2:45 AM	0	0	
3:00 AM	0	0	
3:15 AM	0	0	
3:30 AM	0	0	
3:45 AM	0	0	
4:00 AM	0	0	
4:15 AM	1071	117	
4:30 AM	1071	117	
4:45 AM	1071	117	
5:00 AM	1071	117	
5:15 AM	1230	134	
5:30 AM	1230	134	
5:45 AM	1230	134	
6:00 AM	1230	134	
6:15 AM	1110	121	
6:30 AM	1110	121	
6:45 AM	1110	121	
7:00 AM	1110	121	
7:15 AM	0	0	
7:30 AM	0	0	
7:45 AM	0	0	
8:00 AM	0	0	
8:15 AM	0	0	
8:30 AM	0	0	
8:45 AM	0	0	
9:00 AM	0	0	
9:15 AM	0	0	
9:30 AM	0	0	
9:45 AM	0	0	
10:00 AM	0	0	
10:15 AM	0	0	
10:30 AM	0	0	
10:45 AM	0	0	
11:00 AM	0	0	
11:15 AM	0	0	
11:30 AM	0	0	
11:45 AM	0	0	
12:00 PM	0	0	
12:15 PM	0	0	
12:30 PM	0	0	
12:45 PM	0	0	
1:00 PM	0	0	
1:15 PM	1262	136	
1:30 PM	1262	136	
1:45 PM	1262	136	
2:00 PM	1262	136	
2:15 PM	1406	152	
2:30 PM	1406	152	
2:45 PM	1406	152	
3:00 PM	1406	152	
3:15 PM	1669	180	Met
3:30 PM	1669	180	Met
3:45 PM	1669	180	Met
4:00 PM	1669	180	Met
4:15 PM	1511	163	Met
4:30 PM	1511	163	Met
4:45 PM	1511	163	Met
5:00 PM	1511	163	Met
5:15 PM	1240	134	
5:30 PM	1240	134	
5:45 PM	1240	134	
6:00 PM	1240	134	
6:15 PM	0	0	
6:30 PM	0	0	
6:45 PM	0	0	
7:00 PM	0	0	
7:15 PM	0	0	
7:30 PM	0	0	
7:45 PM	0	0	
8:00 PM	0	0	
8:15 PM	0	0	
8:30 PM	0	0	
8:45 PM	0	0	
9:00 PM	0	0	
9:15 PM	0	0	
9:30 PM	0	0	
9:45 PM	0	0	
10:00 PM	0	0	
10:15 PM	0	0	
10:30 PM	0	0	
10:45 PM	0	0	
11:00 PM	0	0	

MUTCD Figure 4C-3, Warrant 3, Peak Hour



MUTCD Figure 4C-4, Warrant 3, Peak Hour (70% Factor)



MUTCD WARRANT 7, CRASH EXPERIENCE
--

Built-up Isolated Community With Less Than 10,000 Population or Above 40 MPH on Major Street?	No
--	----

Number of Lanes for Moving Traffic on Each Approach	
Major Street:	2 or More Lanes
Minor Street:	1 Lane

Has adequate trial of alternatives with satisfactory observance and enforcement failed to reduce the crash frequency?

N/A

Five or more reportable and/or non-reportable crashes, of types susceptible to correction by a traffic control signal, have occurred within a 12-month period during the most recent 3 years of available crash data.*

Yes

**If applicable, attach a summary of the crash data analysis used for this criterion.*

For each of any 8 hours of an average day, the vehicles per hour given in both the 80% columns of Condition A in Table 4C-1 exists on the major-street and the higher-volume minor-street approach, respectively, to the intersection.

No

For each of any 8 hours of an average day, the vehicles per hour given in both the 80% columns of Condition B in Table 4C-1 exists on the major-street and the higher-volume minor-street approach, respectively, to the intersection.

Yes

The volume of pedestrian traffic is not less than 80% of the requirements specified in Warrant 4, the Pedestrian Volume warrant.*

N/A

**If applicable, attach all supporting calculations and documentation.*

Appendix G

Mitigation Options Intersection LOS Calculations



Queues

5: Main Street & Pilot Road

01/05/2022

									
Lane Group	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	117	38	19	23	49	496	34	228	148
v/c Ratio	0.44	0.10	0.08	0.07	0.08	0.55	0.07	0.25	0.18
Control Delay	25.1	0.5	19.3	15.3	5.8	14.8	5.9	10.9	3.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.1	0.5	19.3	15.3	5.8	14.8	5.9	10.9	3.2
Queue Length 50th (ft)	19	0	3	2	5	68	3	26	0
Queue Length 95th (ft)	88	0	21	21	20	#290	15	112	30
Internal Link Dist (ft)	455			367		116		287	
Turn Bay Length (ft)		150	100		75		135		
Base Capacity (vph)	477	631	455	633	654	1076	507	1086	970
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.25	0.06	0.04	0.04	0.07	0.46	0.07	0.21	0.15

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

HCM 2010 Signalized Intersection Summary

5: Main Street & Pilot Road

01/05/2022

																				
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR								
Lane Configurations																				
Traffic Volume (veh/h)	107	3	36	18	13	8	46	429	38	32	214	139								
Future Volume (veh/h)	107	3	36	18	13	8	46	429	38	32	214	139								
Number	7	4	14	3	8	18	5	2	12	1	6	16								
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0								
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00								
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
Adj Sat Flow, veh/h/ln	1900	1583	1583	1583	1583	1900	1583	1583	1900	1583	1583	1583								
Adj Flow Rate, veh/h	114	3	38	19	14	9	49	456	40	34	228	148								
Adj No. of Lanes	0	1	1	1	1	0	1	1	0	1	1	1								
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94								
Percent Heavy Veh, %	20	20	20	20	20	20	20	20	20	20	20	20								
Cap, veh/h	356	7	207	252	139	89	510	582	51	342	625	531								
Arrive On Green	0.15	0.15	0.15	0.15	0.15	0.15	0.04	0.41	0.41	0.03	0.39	0.39								
Sat Flow, veh/h	1053	42	1346	1156	902	580	1508	1435	126	1508	1583	1346								
Grp Volume(v), veh/h	117	0	38	19	0	23	49	0	496	34	228	148								
Grp Sat Flow(s),veh/h/ln	1095	0	1346	1156	0	1481	1508	0	1561	1508	1583	1346								
Q Serve(g_s), s	3.4	0.0	0.9	0.6	0.0	0.5	0.7	0.0	10.2	0.5	3.7	2.7								
Cycle Q Clear(g_c), s	3.9	0.0	0.9	4.5	0.0	0.5	0.7	0.0	10.2	0.5	3.7	2.7								
Prop In Lane	0.97		1.00	1.00		0.39	1.00		0.08	1.00		1.00								
Lane Grp Cap(c), veh/h	362	0	207	252	0	228	510	0	633	342	625	531								
V/C Ratio(X)	0.32	0.00	0.18	0.08	0.00	0.10	0.10	0.00	0.78	0.10	0.36	0.28								
Avail Cap(c_a), veh/h	760	0	660	641	0	726	733	0	1276	582	1294	1100								
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00								
Uniform Delay (d), s/veh	15.0	0.0	13.5	16.9	0.0	13.3	6.2	0.0	9.5	7.5	7.9	7.6								
Incr Delay (d2), s/veh	0.5	0.0	0.4	0.1	0.0	0.2	0.1	0.0	2.2	0.1	0.4	0.3								
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0								
%ile BackOfQ(50%),veh/ln	1.2	0.0	0.4	0.2	0.0	0.2	0.3	0.0	4.7	0.2	1.6	1.0								
LnGrp Delay(d),s/veh	15.5	0.0	13.9	17.0	0.0	13.5	6.3	0.0	11.7	7.7	8.2	7.8								
LnGrp LOS	B		B	B		B	A		B	A	A	A								
Approach Vol, veh/h	155					42		545		410										
Approach Delay, s/veh	15.1					15.1		11.2		8.0										
Approach LOS	B					B		B		A										
Timer	1	2	3	4	5	6	7	8												
Assigned Phs	1	2	4		5	6	8													
Phs Duration (G+Y+Rc), s	6.2	19.9	10.7		6.6	19.5	10.7													
Change Period (Y+Rc), s	5.0	5.0	5.0		5.0	5.0	5.0													
Max Green Setting (Gmax), s	7.0	30.0	18.0		7.0	30.0	18.0													
Max Q Clear Time (g_c+I1), s	2.5	12.2	5.9		2.7	5.7	6.5													
Green Ext Time (p_c), s	0.0	2.7	0.5		0.0	1.7	0.1													
Intersection Summary																				
HCM 2010 Ctrl Delay																				
HCM 2010 LOS																				

Queues

5: Main Street & Pilot Road

01/05/2022

									
Lane Group	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	170	77	48	56	38	356	23	714	166
v/c Ratio	0.62	0.19	0.19	0.15	0.11	0.39	0.04	0.77	0.19
Control Delay	31.7	5.3	21.6	8.1	5.9	11.3	5.3	21.5	2.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.7	5.3	21.6	8.1	5.9	11.3	5.3	21.5	2.8
Queue Length 50th (ft)	49	0	12	1	4	51	3	142	0
Queue Length 95th (ft)	122	23	42	26	16	164	11	#491	29
Internal Link Dist (ft)	455			367		116		287	
Turn Bay Length (ft)		150	100		75		135		
Base Capacity (vph)	397	532	359	508	353	975	598	982	905
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.43	0.14	0.13	0.11	0.11	0.37	0.04	0.73	0.18

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

HCM 6th Signalized Intersection Summary

5: Main Street & Pilot Road

01/05/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	155	0	70	44	2	49	35	302	22	21	650	151
Future Volume (veh/h)	155	0	70	44	2	49	35	302	22	21	650	151
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1737	1737	1737	1737	1737	1737	1737	1737	1737	1737	1737	1737
Adj Flow Rate, veh/h	170	0	77	48	2	54	38	332	24	23	714	166
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	11	11	11	11	11	11	11	11	11	11	11	11
Cap, veh/h	387	0	342	229	12	332	250	775	56	503	823	698
Arrive On Green	0.23	0.00	0.23	0.23	0.23	0.23	0.03	0.48	0.48	0.02	0.47	0.47
Sat Flow, veh/h	1089	0	1472	1228	53	1427	1654	1600	116	1654	1737	1472
Grp Volume(v), veh/h	170	0	77	48	0	56	38	0	356	23	714	166
Grp Sat Flow(s),veh/h/ln	1089	0	1472	1228	0	1480	1654	0	1716	1654	1737	1472
Q Serve(g_s), s	6.7	0.0	2.3	2.0	0.0	1.6	0.6	0.0	7.2	0.4	19.7	3.6
Cycle Q Clear(g_c), s	8.3	0.0	2.3	10.3	0.0	1.6	0.6	0.0	7.2	0.4	19.7	3.6
Prop In Lane	1.00		1.00	1.00		0.96	1.00		0.07	1.00		1.00
Lane Grp Cap(c), veh/h	387	0	342	229	0	344	250	0	832	503	823	698
V/C Ratio(X)	0.44	0.00	0.23	0.21	0.00	0.16	0.15	0.00	0.43	0.05	0.87	0.24
Avail Cap(c_a), veh/h	517	0	495	356	0	497	382	0	1025	653	1038	880
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	19.7	0.0	16.6	23.8	0.0	16.4	10.5	0.0	9.0	7.3	12.6	8.4
Incr Delay (d2), s/veh	0.8	0.0	0.3	0.5	0.0	0.2	0.3	0.0	0.3	0.0	6.6	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	0.0	0.7	0.6	0.0	0.5	0.2	0.0	1.9	0.1	6.7	0.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	20.5	0.0	17.0	24.2	0.0	16.6	10.8	0.0	9.3	7.4	19.2	8.5
LnGrp LOS	C	A	B	C	A	B	B	A	A	A	B	A
Approach Vol, veh/h	247			104			394			903		
Approach Delay, s/veh	19.4			20.1			9.5			16.9		
Approach LOS	B			C			A			B		
Timer - Assigned Phs	1	2	4		5	6	8					
Phs Duration (G+Y+Rc), s	5.2	31.0	17.4		5.7	30.4	17.4					
Change Period (Y+Rc), s	4.0	5.0	5.0		4.0	5.0	5.0					
Max Green Setting (Gmax), s	6.0	32.0	18.0		6.0	32.0	18.0					
Max Q Clear Time (g_c+I1), s	2.4	9.2	10.3		2.6	21.7	12.3					
Green Ext Time (p_c), s	0.0	1.9	0.7		0.0	3.7	0.2					
Intersection Summary												
HCM 6th Ctrl Delay	15.7											
HCM 6th LOS	B											

MOVEMENT SUMMARY

 **Site: Main Street / Pilot Road AM (Base PP)**

Baseline Plus Project AM
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Main St NB											
3	L2	49	20.0	0.695	17.8	LOS C	4.4	127.1	0.54	0.44	27.9
8	T1	456	20.0	0.695	17.8	LOS C	4.4	127.1	0.54	0.44	28.1
18	R2	40	20.0	0.695	17.8	LOS C	4.4	127.1	0.54	0.44	27.5
Approach		546	20.0	0.695	17.8	LOS C	4.4	127.1	0.54	0.44	28.1
East: Pilot Rd WB											
1	L2	19	20.0	0.093	9.3	LOS A	0.3	7.3	0.56	0.56	30.5
6	T1	14	20.0	0.093	9.3	LOS A	0.3	7.3	0.56	0.56	30.8
16	R2	9	20.0	0.093	9.3	LOS A	0.3	7.3	0.56	0.56	30.1
Approach		41	20.0	0.093	9.3	LOS A	0.3	7.3	0.56	0.56	30.5
North: Main St SB											
7	L2	34	20.0	0.405	9.1	LOS A	1.6	47.2	0.28	0.17	31.3
4	T1	228	20.0	0.405	9.1	LOS A	1.6	47.2	0.28	0.17	31.6
14	R2	148	20.0	0.405	7.5	LOS A	1.6	47.2	0.29	0.17	31.7
Approach		410	20.0	0.405	8.5	LOS A	1.6	47.2	0.28	0.17	31.6
West: Pilot Rd EB											
5	L2	114	20.0	0.231	8.1	LOS A	0.7	21.3	0.44	0.38	30.6
2	T1	3	20.0	0.231	8.1	LOS A	0.7	21.3	0.44	0.38	30.8
12	R2	38	20.0	0.231	8.1	LOS A	0.7	21.3	0.44	0.38	30.1
Approach		155	20.0	0.231	8.1	LOS A	0.7	21.3	0.44	0.38	30.5
All Vehicles		1152	20.0	0.695	12.9	LOS B	4.4	127.1	0.44	0.34	29.6

Level of Service (LOS) Method: Delay & v/c (HCM 2010).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).

Roundabout Capacity Model: US HCM 2010.

HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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**SIDRA
INTERSECTION 6**

MOVEMENT SUMMARY

 **Site: Main Street / Pilot Road PM (Base PP)**

Baseline Plus Project PM
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Main St NB											
3	L2	38	11.0	0.481	10.8	LOS B	2.2	60.1	0.47	0.37	30.8
8	T1	332	11.0	0.481	10.8	LOS B	2.2	60.1	0.47	0.37	31.0
18	R2	24	11.0	0.481	10.8	LOS B	2.2	60.1	0.47	0.37	30.3
Approach		395	11.0	0.481	10.8	LOS B	2.2	60.1	0.47	0.37	30.9
East: Pilot Rd WB											
1	L2	48	11.0	0.187	8.9	LOS A	0.6	16.2	0.55	0.55	31.0
6	T1	2	11.0	0.187	8.9	LOS A	0.6	16.2	0.55	0.55	31.2
16	R2	54	11.0	0.187	8.9	LOS A	0.6	16.2	0.55	0.55	30.5
Approach		104	11.0	0.187	8.9	LOS A	0.6	16.2	0.55	0.55	30.7
North: Main St SB											
7	L2	23	11.0	0.810	22.3	LOS C	7.4	201.2	0.58	0.37	26.7
4	T1	714	11.0	0.810	22.3	LOS C	7.4	201.2	0.58	0.37	26.9
14	R2	166	11.0	0.810	6.3	LOS A	7.4	201.2	0.19	0.09	32.6
Approach		903	11.0	0.810	19.3	LOS C	7.4	201.2	0.51	0.32	27.7
West: Pilot Rd EB											
5	L2	170	11.0	0.584	22.6	LOS C	2.6	70.6	0.75	0.85	25.8
2	T1	1	11.0	0.584	22.6	LOS C	2.6	70.6	0.75	0.85	26.0
12	R2	77	11.0	0.584	22.6	LOS C	2.6	70.6	0.75	0.85	25.5
Approach		248	11.0	0.584	22.6	LOS C	2.6	70.6	0.75	0.85	25.7
All Vehicles		1651	11.0	0.810	17.1	LOS C	7.4	201.2	0.54	0.42	28.3

Level of Service (LOS) Method: Delay & v/c (HCM 2010).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).

Roundabout Capacity Model: US HCM 2010.

HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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**SIDRA
INTERSECTION 6**

Queues

5: Main Street & Pilot Road

01/05/2022

									
Lane Group	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	142	46	23	27	54	687	36	357	173
v/c Ratio	0.59	0.13	0.11	0.09	0.09	0.69	0.09	0.36	0.19
Control Delay	40.0	2.7	28.8	21.7	5.5	19.0	5.6	11.9	2.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.0	2.7	28.8	21.7	5.5	19.0	5.6	11.9	2.5
Queue Length 50th (ft)	61	0	9	6	7	254	5	98	0
Queue Length 95th (ft)	135	9	31	29	21	#530	16	182	29
Internal Link Dist (ft)	455			367		116		287	
Turn Bay Length (ft)			100		75		135		
Base Capacity (vph)	382	513	356	514	613	1167	410	1176	1044
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.37	0.09	0.06	0.05	0.09	0.59	0.09	0.30	0.17

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

HCM 6th Signalized Intersection Summary

5: Main Street & Pilot Road

01/05/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	130	4	43	22	16	9	51	603	43	34	336	163
Future Volume (veh/h)	130	4	43	22	16	9	51	603	43	34	336	163
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1604	1604	1604	1604	1604	1604	1604	1604	1604	1604	1604	1604
Adj Flow Rate, veh/h	138	4	5	23	17	10	54	641	46	36	357	93
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	20	20	20	20	20	20	20	20	20	20	20	20
Cap, veh/h	321	7	237	196	165	97	485	749	54	269	795	674
Arrive On Green	0.17	0.17	0.17	0.17	0.17	0.17	0.04	0.51	0.51	0.03	0.50	0.50
Sat Flow, veh/h	1060	41	1359	1206	947	557	1527	1478	106	1527	1604	1359
Grp Volume(v), veh/h	142	0	5	23	0	27	54	0	687	36	357	93
Grp Sat Flow(s),veh/h/ln	1101	0	1359	1206	0	1503	1527	0	1585	1527	1604	1359
Q Serve(g_s), s	5.8	0.0	0.2	1.0	0.0	0.8	0.9	0.0	19.7	0.6	7.5	1.9
Cycle Q Clear(g_c), s	6.6	0.0	0.2	7.6	0.0	0.8	0.9	0.0	19.7	0.6	7.5	1.9
Prop In Lane	0.97		1.00	1.00		0.37	1.00		0.07	1.00		1.00
Lane Grp Cap(c), veh/h	329	0	237	196	0	263	485	0	802	269	795	674
V/C Ratio(X)	0.43	0.00	0.02	0.12	0.00	0.10	0.11	0.00	0.86	0.13	0.45	0.14
Avail Cap(c_a), veh/h	578	0	521	448	0	577	627	0	1459	426	1476	1251
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	20.8	0.0	17.8	24.1	0.0	18.1	6.4	0.0	11.2	9.7	8.5	7.1
Incr Delay (d2), s/veh	0.9	0.0	0.0	0.3	0.0	0.2	0.1	0.0	2.8	0.2	0.4	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	0.0	0.0	0.3	0.0	0.3	0.2	0.0	5.0	0.1	1.8	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	21.7	0.0	17.9	24.4	0.0	18.3	6.5	0.0	14.0	9.9	8.9	7.2
LnGrp LOS	C	A	B	C	A	B	A	A	B	A	A	A
Approach Vol, veh/h	147		50			741			486			
Approach Delay, s/veh	21.6		21.1			13.4			8.7			
Approach LOS	C		C			B			A			
Timer - Assigned Phs	1	2	4		5	6	8					
Phs Duration (G+Y+Rc), s	6.6	31.4	14.1		7.2	30.9	14.1					
Change Period (Y+Rc), s	5.0	5.0	5.0		5.0	5.0	5.0					
Max Green Setting (Gmax), s	7.0	48.0	20.0		7.0	48.0	20.0					
Max Q Clear Time (g_c+I1), s	2.6	21.7	8.6		2.9	9.5	9.6					
Green Ext Time (p_c), s	0.0	4.7	0.5		0.0	2.4	0.1					
Intersection Summary												
HCM 6th Ctrl Delay	12.9											
HCM 6th LOS	B											

Queues

5: Main Street & Pilot Road

01/05/2022

	→	↘	↙	←	↖	↑	↗	↓	↘
Lane Group	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	191	86	54	62	44	511	27	1000	195
v/c Ratio	0.84	0.25	0.35	0.19	0.22	0.49	0.05	0.99	0.21
Control Delay	65.8	9.3	37.5	10.6	7.5	11.5	4.9	46.5	2.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	65.8	9.3	37.5	10.6	7.5	11.5	4.9	46.5	2.1
Queue Length 50th (ft)	104	0	27	1	7	112	4	~647	1
Queue Length 95th (ft)	#219	38	63	34	17	264	12	#881	29
Internal Link Dist (ft)	455			367		116		287	
Turn Bay Length (ft)		150	100		75		135		
Base Capacity (vph)	247	360	170	341	204	1052	523	1012	934
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.77	0.24	0.32	0.18	0.22	0.49	0.05	0.99	0.21

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

HCM 6th Signalized Intersection Summary

5: Main Street & Pilot Road

01/05/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	180	0	81	51	2	56	41	453	27	25	940	183
Future Volume (veh/h)	180	0	81	51	2	56	41	453	27	25	940	183
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1678	1678	1678	1678	1678	1678	1678	1678	1678	1678	1678	1678
Adj Flow Rate, veh/h	191	0	34	54	2	60	44	482	29	27	1000	115
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	15	15	15	15	15	15	15	15	15	15	15	15
Cap, veh/h	294	0	299	107	10	291	133	928	56	447	980	831
Arrive On Green	0.21	0.00	0.21	0.21	0.21	0.21	0.03	0.59	0.59	0.02	0.58	0.58
Sat Flow, veh/h	997	0	1422	1233	46	1383	1598	1566	94	1598	1678	1422
Grp Volume(v), veh/h	191	0	34	54	0	62	44	0	511	27	1000	115
Grp Sat Flow(s),veh/h/ln	997	0	1422	1233	0	1429	1598	0	1661	1598	1678	1422
Q Serve(g_s), s	13.3	0.0	1.7	1.6	0.0	3.1	0.9	0.0	15.5	0.6	50.0	3.1
Cycle Q Clear(g_c), s	16.4	0.0	1.7	18.0	0.0	3.1	0.9	0.0	15.5	0.6	50.0	3.1
Prop In Lane	1.00		1.00	1.00		0.97	1.00		0.06	1.00		1.00
Lane Grp Cap(c), veh/h	294	0	299	107	0	300	133	0	984	447	980	831
V/C Ratio(X)	0.65	0.00	0.11	0.50	0.00	0.21	0.33	0.00	0.52	0.06	1.02	0.14
Avail Cap(c_a), veh/h	294	0	299	107	0	300	215	0	984	543	980	831
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.7	0.0	27.3	42.5	0.0	27.9	21.1	0.0	10.3	8.1	17.8	8.1
Incr Delay (d2), s/veh	5.0	0.0	0.2	3.8	0.0	0.3	1.5	0.0	0.5	0.1	34.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.2	0.0	0.6	1.2	0.0	1.1	0.5	0.0	4.7	0.2	24.2	0.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	39.6	0.0	27.5	46.2	0.0	28.2	22.6	0.0	10.8	8.1	51.8	8.1
LnGrp LOS	D	A	C	D	A	C	C	A	B	A	F	A
Approach Vol, veh/h		225			116			555			1142	
Approach Delay, s/veh		37.8			36.6			11.7			46.4	
Approach LOS		D			D			B			D	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.9	55.7		23.0	7.6	55.0		23.0				
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0				
Max Green Setting (Gmax), s	7.0	50.0		18.0	7.0	50.0		18.0				
Max Q Clear Time (g_c+I1), s	2.6	17.5		18.4	2.9	52.0		20.0				
Green Ext Time (p_c), s	0.0	3.2		0.0	0.0	0.0		0.0				
Intersection Summary												
HCM 6th Ctrl Delay			35.4									
HCM 6th LOS			D									

MOVEMENT SUMMARY

 **Site: Main Street / Pilot Road AM (Fut PP)**

Future Plus Project AM
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Main St NB											
3	L2	54	15.0	0.927	39.0	LOS E	14.7	411.2	0.86	0.95	22.2
8	T1	641	15.0	0.927	39.0	LOS E	14.7	411.2	0.86	0.95	22.3
18	R2	46	15.0	0.927	39.0	LOS E	14.7	411.2	0.86	0.95	21.9
Approach		741	15.0	0.927	39.0	LOS E	14.7	411.2	0.86	0.95	22.3
East: Pilot Rd WB											
1	L2	23	15.0	0.133	11.7	LOS B	0.4	10.4	0.65	0.65	29.7
6	T1	17	15.0	0.133	11.7	LOS B	0.4	10.4	0.65	0.65	29.9
16	R2	10	15.0	0.133	11.7	LOS B	0.4	10.4	0.65	0.65	29.3
Approach		50	15.0	0.133	11.7	LOS B	0.4	10.4	0.65	0.65	29.7
North: Main St SB											
7	L2	36	15.0	0.542	11.5	LOS B	2.7	76.6	0.36	0.23	30.4
4	T1	357	15.0	0.542	11.5	LOS B	2.7	76.6	0.36	0.23	30.7
14	R2	173	15.0	0.542	8.4	LOS A	2.7	76.6	0.33	0.21	31.4
Approach		567	15.0	0.542	10.6	LOS B	2.7	76.6	0.35	0.22	30.9
West: Pilot Rd EB											
5	L2	138	15.0	0.310	10.1	LOS B	1.0	29.3	0.54	0.54	29.9
2	T1	4	15.0	0.310	10.1	LOS B	1.0	29.3	0.54	0.54	30.1
12	R2	46	15.0	0.310	10.1	LOS B	1.0	29.3	0.54	0.54	29.5
Approach		188	15.0	0.310	10.1	LOS B	1.0	29.3	0.54	0.54	29.8
All Vehicles		1547	15.0	0.927	24.2	LOS C	14.7	411.2	0.63	0.62	25.9

Level of Service (LOS) Method: Delay & v/c (HCM 2010).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).

Roundabout Capacity Model: US HCM 2010.

HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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SIDRA
INTERSECTION 6

MOVEMENT SUMMARY

 **Site: Main Street / Pilot Road PM (Fut PP)**

Future Plus Project PM
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Main St NB											
3	L2	44	20.0	0.761	22.7	LOS C	5.7	166.6	0.66	0.67	26.3
8	T1	482	20.0	0.761	22.7	LOS C	5.7	166.6	0.66	0.67	26.5
18	R2	29	20.0	0.761	22.7	LOS C	5.7	166.6	0.66	0.67	26.0
Approach		554	20.0	0.761	22.7	LOS C	5.7	166.6	0.66	0.67	26.5
East: Pilot Rd WB											
1	L2	54	20.0	0.291	14.2	LOS B	0.9	25.1	0.64	0.66	28.6
6	T1	2	20.0	0.291	14.2	LOS B	0.9	25.1	0.64	0.66	28.9
16	R2	60	20.0	0.291	14.2	LOS B	0.9	25.1	0.64	0.66	28.3
Approach		116	20.0	0.291	14.2	LOS B	0.9	25.1	0.64	0.66	28.4
North: Main St SB											
7	L2	27	20.0	1.229	131.9	LOS F	94.7	2745.3	1.00	2.12	11.6
4	T1	1000	20.0	1.229	131.9	LOS F	94.7	2745.3	1.00	2.12	11.6
14	R2	195	20.0	0.218	6.3	LOS A	0.7	21.4	0.17	0.07	32.4
Approach		1221	20.0	1.229	111.9	LOS F	94.7	2745.3	0.87	1.79	12.9
West: Pilot Rd EB											
5	L2	191	20.0	0.861	56.8	LOS F	5.1	147.2	0.87	1.20	18.5
2	T1	1	20.0	0.861	56.8	LOS F	5.1	147.2	0.87	1.20	18.6
12	R2	86	20.0	0.861	56.8	LOS F	5.1	147.2	0.87	1.20	18.3
Approach		279	20.0	0.861	56.8	LOS F	5.1	147.2	0.87	1.20	18.4
All Vehicles		2170	20.0	1.229	76.8	LOS F	94.7	2745.3	0.80	1.37	16.1

Level of Service (LOS) Method: Delay & v/c (HCM 2010).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).

Roundabout Capacity Model: US HCM 2010.

HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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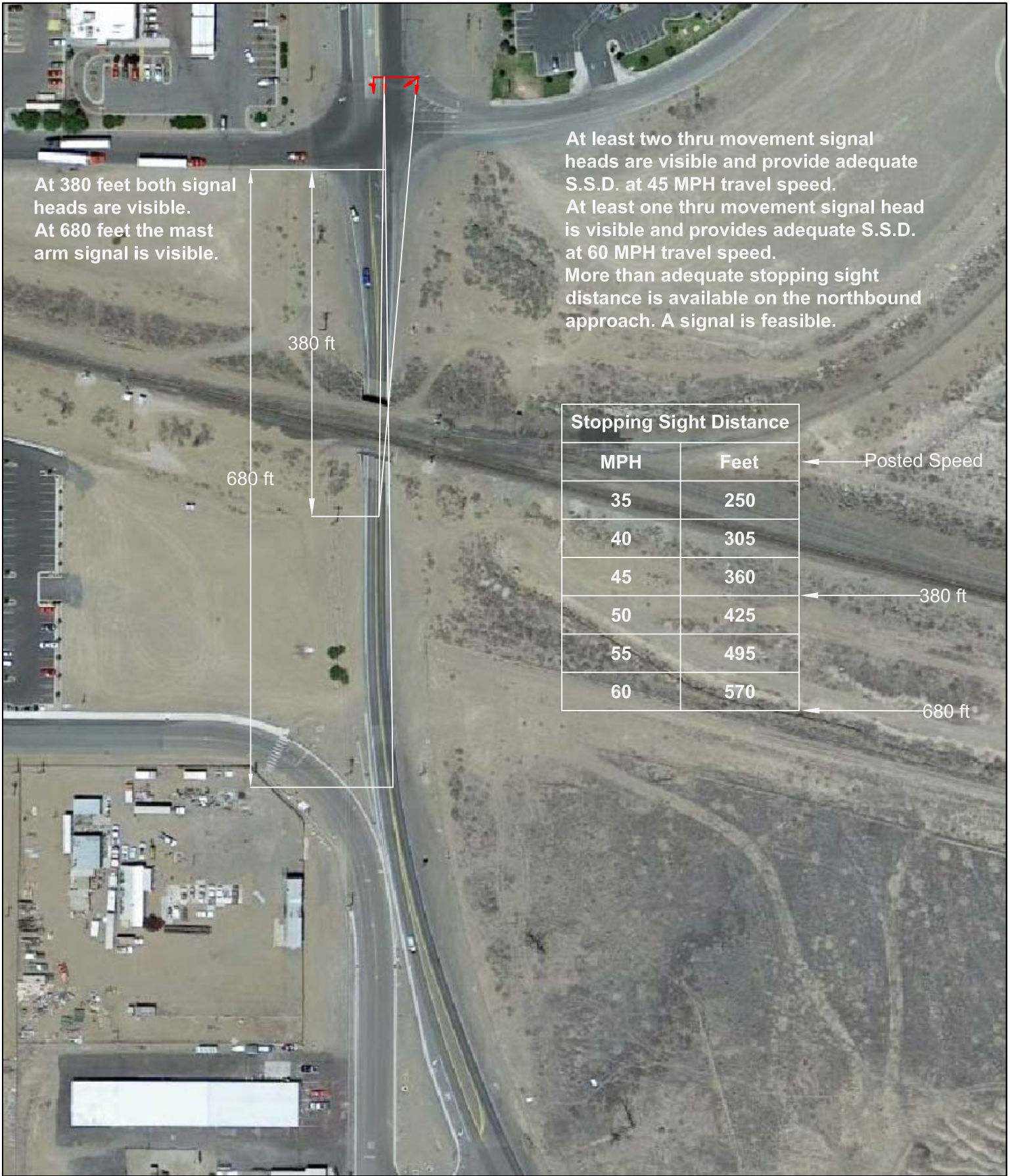
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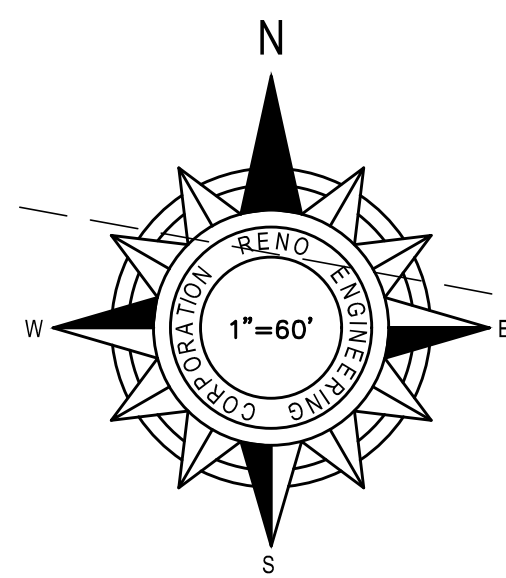
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INTERSECTION 6**

Appendix H

Intersection Stopping Sight Distance

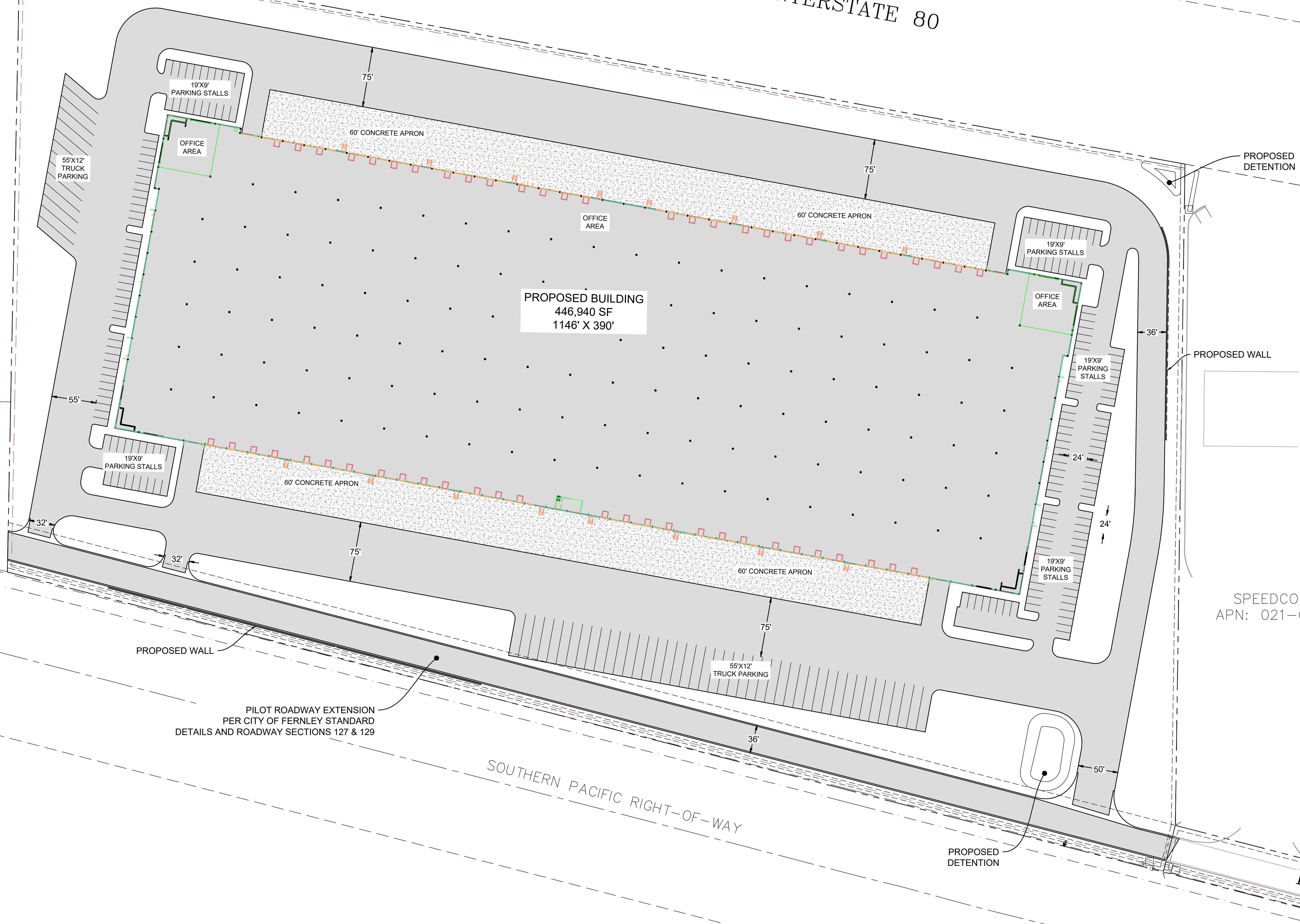






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PRELIMINARY SITE PLAN

C1

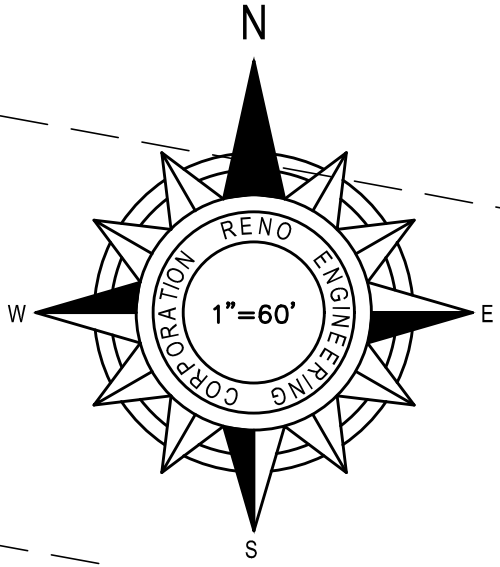
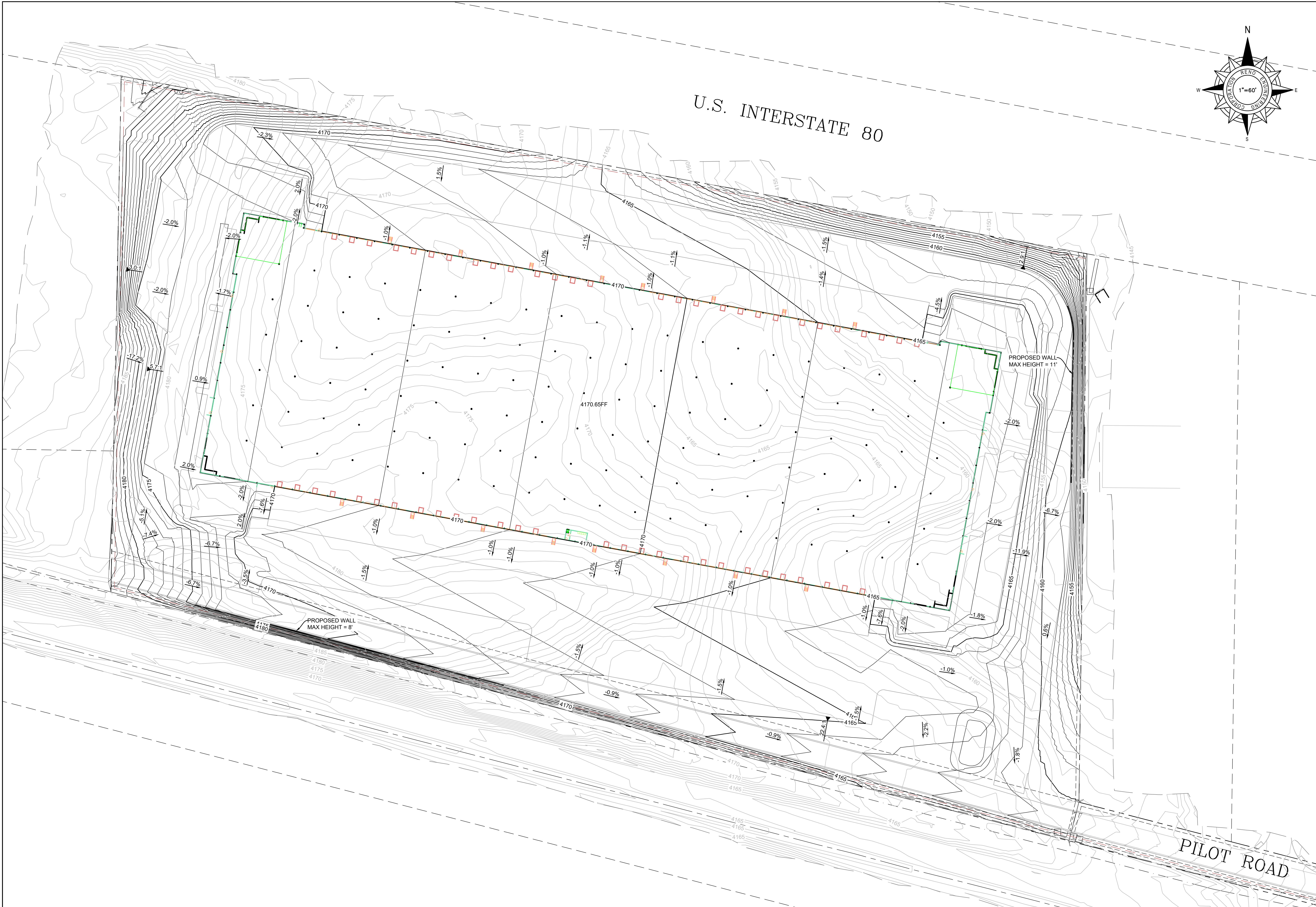
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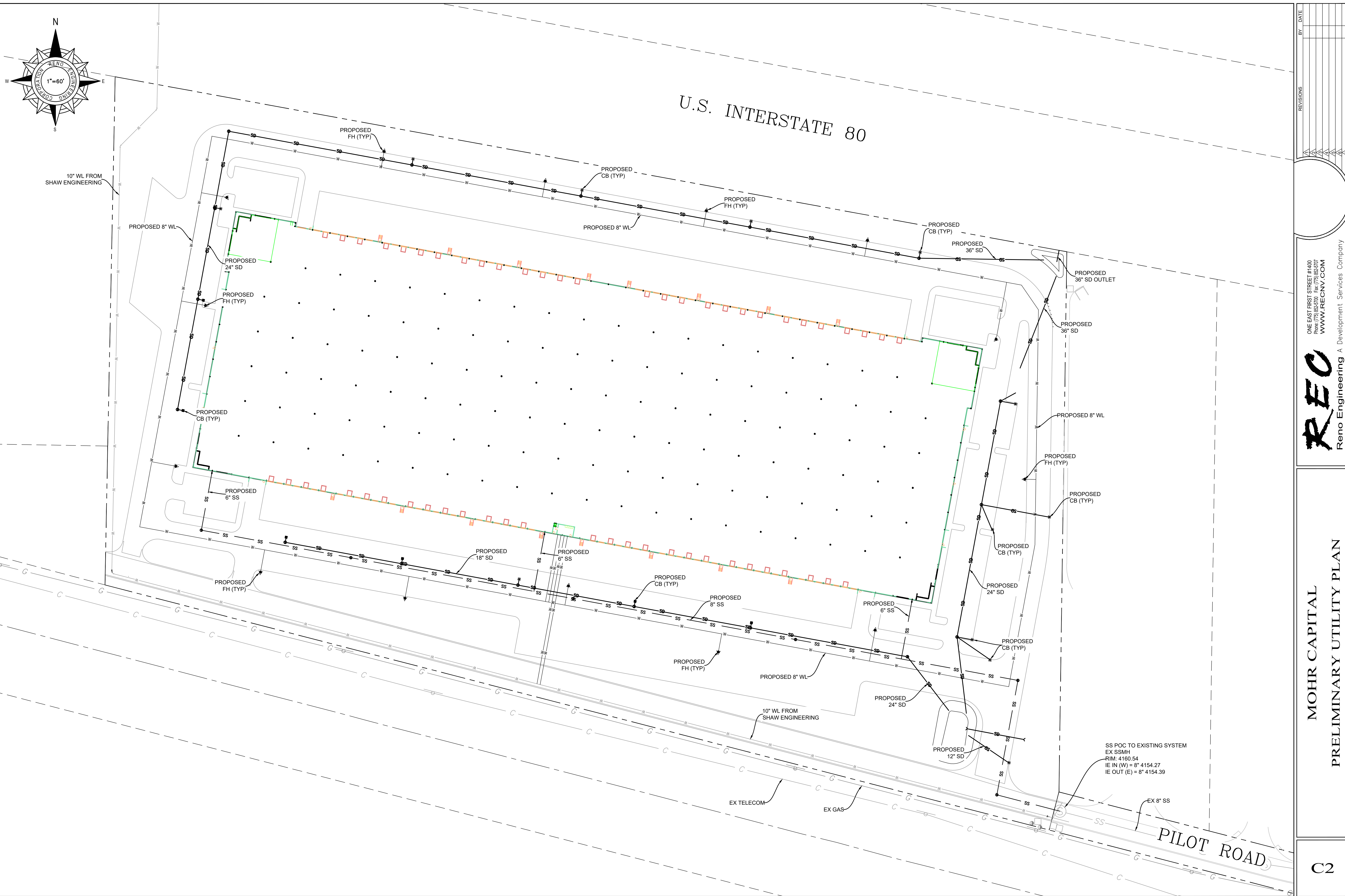
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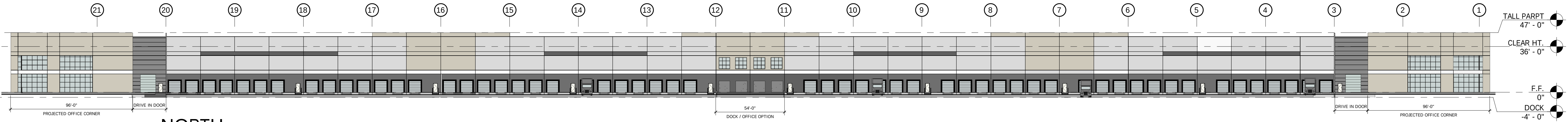
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C3



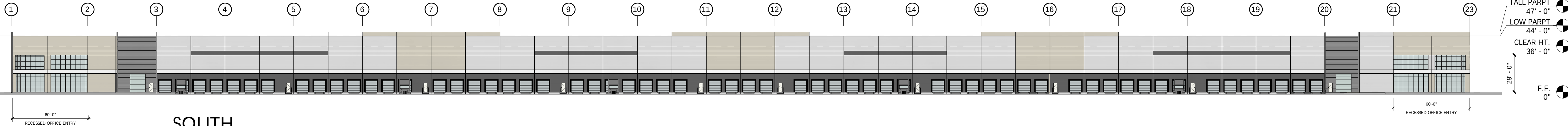
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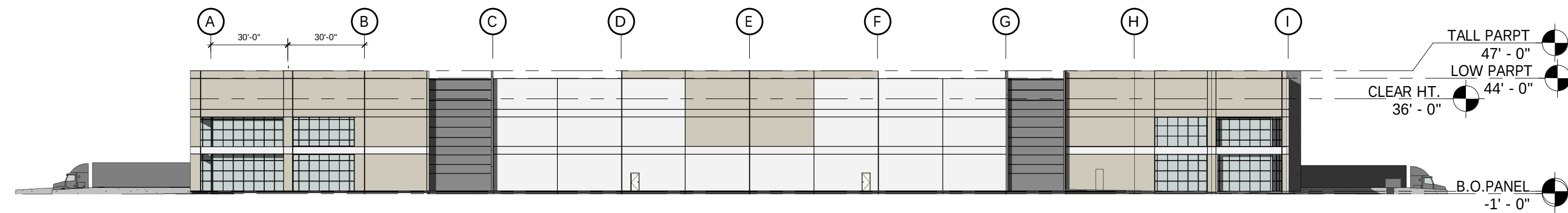
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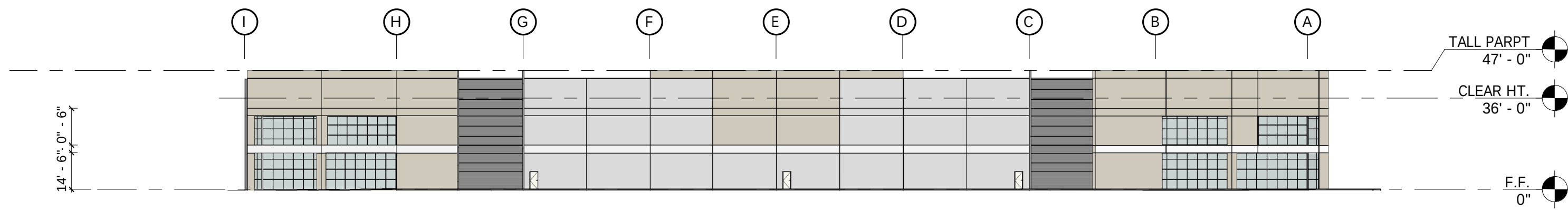
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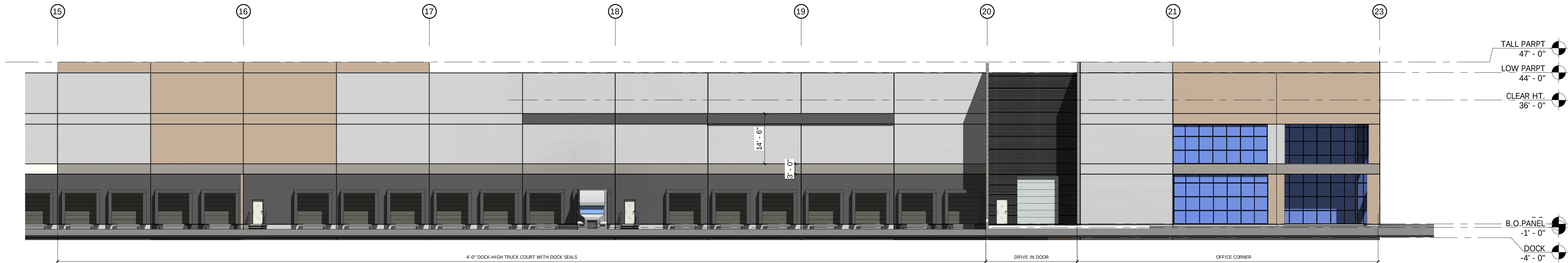
WEST

SCALE: 1" = 40'-0"



EAST

NOT TO SCALE



ELEVATION CONCEPT- NORTH SIDE

SCALE: 1/16" = 1'-0"

PROJECT INFORMATION:

REVISIONS		
REV #	DESCRIPTION	DATE

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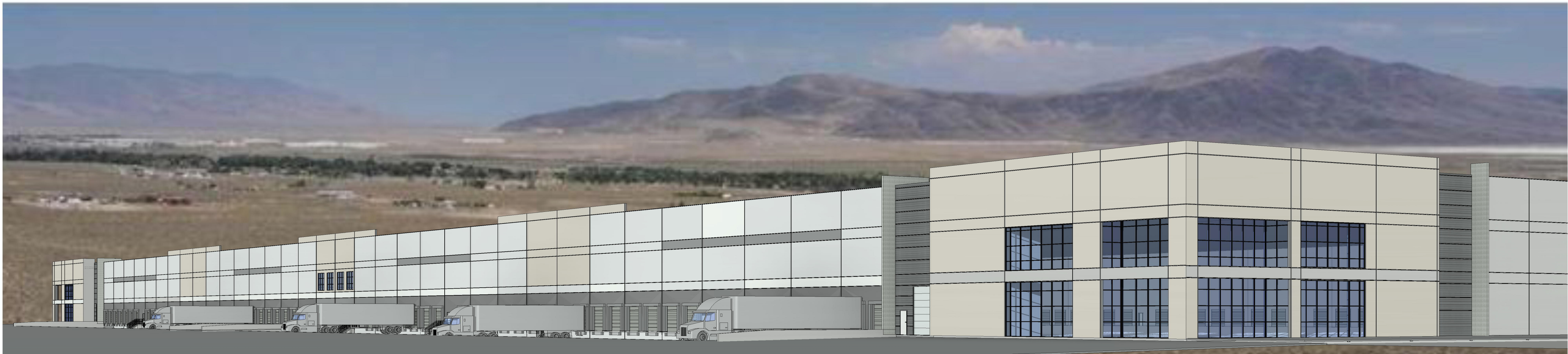
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CHECKED:
PROJECT NO: 20210044
SCALE: As Noted
DATE: 01/05/2022
SHEET TITLE:

**EXTERIOR
ELEVATIONS**

AHJ APPROVAL:

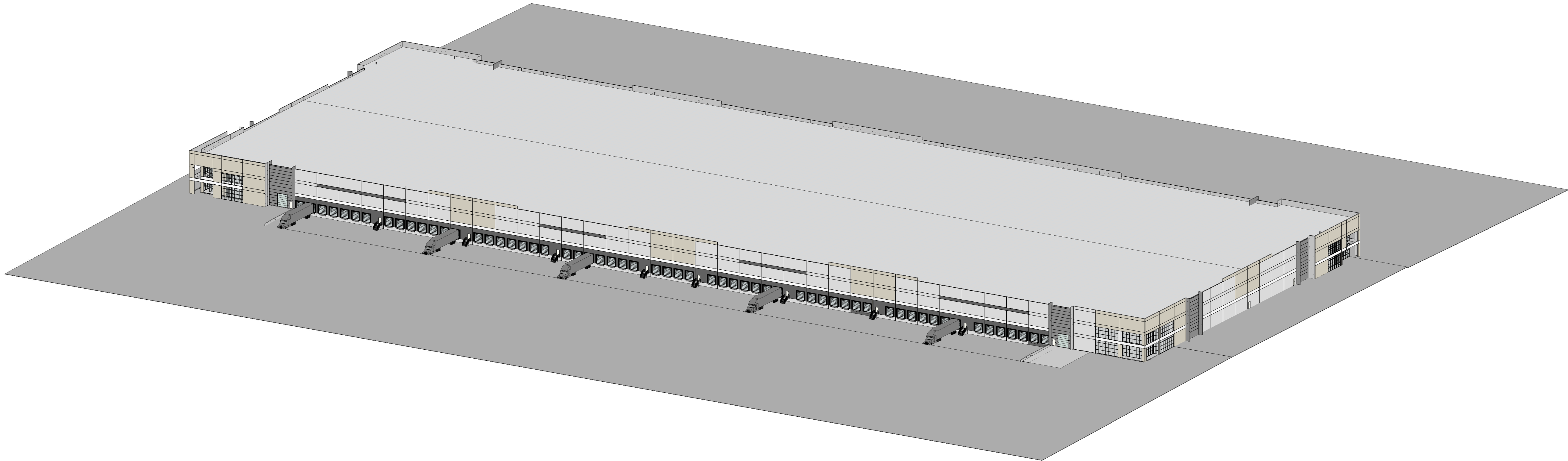
SHEET

A6.1



NORTH WEST CORNER

SCALE:



BIRDS EYE SITE LOOKING SOUTH-WEST

SCALE:

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REV #	DESCRIPTION	DATE

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ELEVATIONS AND
PERSPECTIVE**

AHJ APPROVAL:

SHEET

A6.2



GEOTECHNICAL INVESTIGATION

Mohr Capital

Fernley, Lyon County, Nevada

Submitted To

Mr. Tom Theobald

Mohr Capital

14643 Dallas Parkway Suite 1000

Dallas, TX 75254

Project No.

2645019

March 2022

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by Justin
McDougal
Date: 2022.03.02
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Justin M. McDougal, PE
PE Number -24474 (NV)



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EXECUTIVE SUMMARY

The project is located approximately a quarter mile west of the Pilot Road and West Main Street intersection in Fernley, Nevada. The property is bordered by the Union Pacific Railroad to the south, undeveloped land to the west, Interstate 80 to the north, and a truck service station to the east. The property is gently rolling and generally slopes at a gradient of approximately 2-percent toward the east. Site drainage is anticipated to primarily consist of infiltration and localized sheet flow. Vegetation is light to moderate and consists of mature sage brush, grasses, and invasive weeds. A dirt road transects the western extents of the property. Total project area is approximately 28 acres.

The current development plan consists of constructing an approximately 480,000 square foot warehouse with associated loading docks, parking, and drive areas. Access to the site is from Pilot Road. The warehouse is anticipated to be one story in height, with mezzanine, incorporating concrete tilt-up-panel construction supported by standard spread foundations. Foundation loads are anticipated to be moderate. Based on the Mohr Capital Preliminary Grading Plan, provided by Reno Engineering, cuts and fills are anticipated to approach 10-feet and 25-feet in thickness, respectively.

The soils encountered in our explorations were consistent with the geologic map and primarily consisted of eolian windblown sand deposits (SM/SP) up to an estimated maximum of six feet in thickness capping lacustrine thinly bedded silt (ML) and sand (SM/SP). Based on the Nevada Division of Water Resources (NDWR) well logs, groundwater is located at approximate 58-feet below the ground surface within the project area.

The International Building Code (IBC) requires that structures in the Fernley area be evaluated for potential geologic and seismic hazards including surface rupture or displacement due to faulting, liquefaction including the potential for seismically induced spreading or lateral flow, slope instability, and seismic induced settlement. United States Geological Survey's interactive fault map did not indicate any faults having been mapped crossing, intersecting, or trending through the property. A prior field-based fault study presented that no major fault structures were observed during the field exploration phase of their investigation (Hubbard, 2014). Due to the depth to groundwater, liquefaction and seismically induced spreading or lateral flow are not modeled to occur.

The site will be graded cut-to-fill with the requirement for subgrade soils to be moisture conditioned and compacted with large (Caterpillar 815, or equal) vibratory equipment. The requirement for subgrade preparation and subsequent fill placement requirements is integral to the design and modeled performance of the completed building pad and therefore both must be verified through special inspection as part of the grading process. Once the site has been fine graded, standard spread foundations are recommended for structural support.

Several alternatives are presented for structural pavements. Without the benefit of actual traffic loading, these recommendations should be considered preliminary and closer evaluation would be prudent once site use is more definitively known.

Special concrete provisions are recommended based on chemical test results of the native soils.

1.0 INTRODUCTION

Presented herein are the results of Wood Rodgers' geotechnical exploration, laboratory testing, and associated geotechnical design recommendations for the proposed industrial development located in Fernley Nevada. The assessments and recommendations presented in this geotechnical report have been framed, 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 methods and geotechnical investigations for similar type projects. The proposed structures, topography, grading design, soils, and bedrock are all unique; therefore, the engineering judgment employed by those in responsible charge of geotechnical design considerations, as defined by the State of Nevada, is considered the established and accepted standard of care for evaluation and analyses associated with this report.

This report has been prepared in consideration of the applicable provisions set forth in the International Building Code (IBC, 2018), ASCE 7, and the amendments and modifications adopted by the City of Fernley and/or Lyon County. 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, fire safety and livability for inhabitants of new and existing structures. Geotechnical considerations for public improvements have been formulated around the requirements of the City of Fernley Design Standards 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.

1. Explore, test, and assess general soil, geology, and ground water conditions pertaining to design and construction considerations for the proposed development.
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.

Project location is indicated on Plate A-1a in Appendix A. The area specifically covered by this report is shown in Figure 1 and on Plate A-1b (Site Map) in Appendix A. 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.

2.0 PROJECT DESCRIPTION

The project currently consists of constructing an approximately 480,000 square foot warehouse structure with associated parking and drive areas. Access for the site will be from Pilot Road. The warehouse is anticipated to be one story in height, consisting of steel-frame and concrete tilt-up-panel construction supported by standard spread foundations. Foundation loads are anticipated to be moderate.

Based on the Mohr Capital Preliminary Grading Plan, provided by Reno Engineering, cuts and fills are on the order of 10-feet and 25-feet in thickness, respectively.

Street improvements are privately dedicated, and underground utilities will be provided by a variety of public and private companies.



FIGURE 1 - PROJECT DEVELOPMENT AREA

3.0 SITE CONDITIONS

As shown in Figure 1, the project is located approximately a quarter mile west of the Pilot Road and West Main Street intersection in Fernley, Nevada. The property is bordered by the Union Pacific Railroad to the south, undeveloped land to the west, Interstate 80 to the north, and a truck service station to the east. The site is relatively flat to gently rolling and generally sloping towards the east. Site drainage appears to consist of sheet flows. Vegetation is light to moderate and consists of mature sage brush, grasses, and invasive weeds. A dirt road transects the western extents of the property. Site area is approximately 28 acres.

4.0 EXPLORATION

The project was explored on January 14, 2022, by advancing a series of eight test pits to a maximum depth of 20-feet below the existing ground surface using a Volvo 355 Excavator track mounted excavator and advancing three Dynamic Cone Penetrometer (DCP) tests in TP-1. DCP testing was performed to assess the consistency of existing native eolian deposits. The approximate locations of the test pits are shown on Plate A-1b – Site Map and Approximate Exploration Locations. Bulk samples for index testing were collected from targeted depths within the soil horizon.

Wood Rodgers' personnel examined and classified soils in the field in general accordance with ASTM D2488 (Description and Identification of Soils). During exploration, representative bulk samples were placed in sealed plastic bags and returned to our Reno, Nevada laboratory for testing. Additional soil

classifications, as well as verification of the field classifications, were subsequently performed in accordance with ASTM D2487 (Unified Soil Classification System [USCS]) upon completion of laboratory testing as described below in the Laboratory Testing section. Logs of the explorations are presented as Plate A-2. A USCS chart of soil unit symbols and related descriptions has been included as Plate A-3 - Unified Soil Classification and Key to Soil Descriptions.

Geophysical surveying utilizing the Refraction Micro-tremor (ReMi™) method was performed during the January 2022 geotechnical investigation. Shear wave velocity measurements have been relied upon to aid in the determination of an appropriate Site Classification (IBC, ASCE 7). Plate A-5 presents the geophysical profile.

5.0 LABORATORY TESTING

Soil testing performed in the Wood Rodgers' laboratory is conducted in 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 their in-situ moisture contents (ASTM D2216), grain size distributions (ASTM D6913), plasticity indices (ASTM D4318), maximum dry densities (ASTM D1557), and direct shear (ASTM D3080). Results of the testing is presented in Appendix A on Plates A-4a through A-4e. Table 1 also presents a summary of the test data. The test results were used to classify the soils according the USCS (ASTM D2487) and to verify the field logs, which were then updated.

Table 1 - Summary of Test Data

Test Pit	Depth (Ft.)	Moisture (%)	% +3 -Inch	%Gravel (+ #4)*	% Sand (#4-#200)	%Fines (-#200)	Liquid Limit	Plastic Index	USCS
ASTM Standard		D2216	D6913				D4318		D2487
TP-1	6.0 – 7.0	17.6	0.0	0.0	14.4	85.6	40	9	ML
TP-1	8.5 – 9.5	3.6	0.0	0.1	90.5	9.4	NP	NP	SP-SM
TP-2	1.0 – 3.0	2.3	---	---	---	6.4	NP	NP	SP-SM
TP-2	8.0 – 10.0	3.7	0.0	0.0	96.0	4.0	NP	NP	SP
TP-3	9.0 – 10.0	2.8	---	---	---	0.6	NP	NP	SP
TP-4 Combo	0.0 – 2.0 4.0 – 6.0 9.0 – 10.0	3.8	0.0	0.0	91.8	8.2	NP	NP	SP-SM
TP-8	0.0 – 1.5	5.5	0.0	0.0	92.5	7.5	NP	NP	SP-SM

Additional testing included chemical testing to indicate the potential for corrosion to concrete and steel elements which is presented as Plate A-4f.

6.0 GEOLOGIC AND GENERAL SOIL AND GROUNDWATER CONDITIONS

Based on the preliminary geologic map of the Fernley West quadrangle, Lyon, Storey, and Washoe counties, Nevada (Faulds, Ramelli, & Henry, 2008), presented in Figure 2, the site is mapped in an area of Lake Lahontan Deposits (Qe & Qsm) consisting of silt and sand as well as near surface eolian deposits (Qfe) comprised of sands.

The soil units encountered in our explorations were consistent with the geologic map and primarily consisted of two to six feet of eolian windblown sands (SM/SP) overlying low plasticity silt (ML) and sand (SM/SP) of Lake Lahontan.

Based on the Nevada Division of Water Resources (NDWR) well logs, groundwater can be encountered approximately 58-feet below the ground surface within the project area (Well Log #9281, 2/10/22).

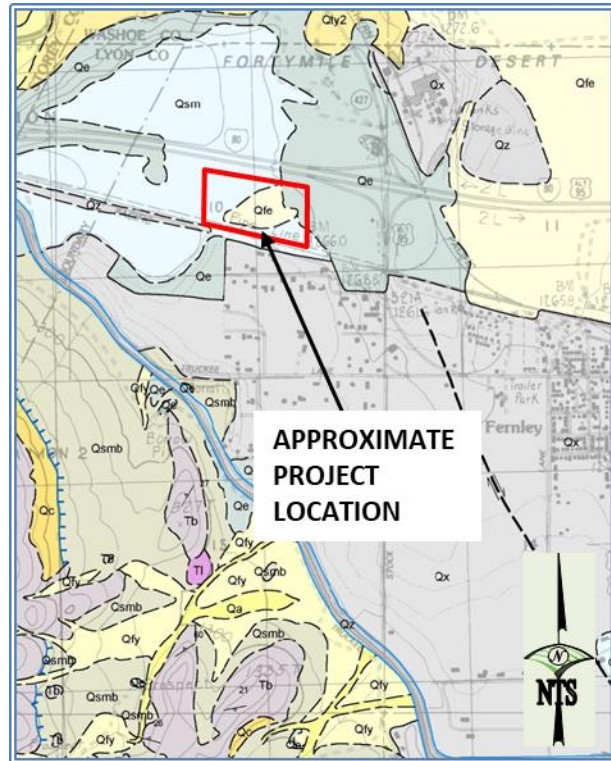


FIGURE 2 - GEOLOGIC MAP

7.0 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, liquefaction including the potential for seismically induced spreading or lateral flow, slope instability, and seismic induced settlement. The following sections present our discussions and assessments of the stipulated hazards. Discussions regarding total and differential settlement are incorporated with the foundation design considerations (Section 8.7).

7.1 Surface Rupture

7.1.1 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; and 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:

- 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 with regard to fault-structure location are presented.

7.1.2 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 through the property. A prior field-based fault study presented that no major fault structures were observed during the field exploration phase of their investigation (Hubbard, 2014).

7.2 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). Liquefaction potential is considered to be low on the project site due to the historical depth to groundwater (58-feet, 1966) and measured shear wave velocities deeper than 25-feet (~1,000 fps, Plate A-5).

7.3 Slope Instability

The site and surrounding existing topography, and planned cut slopes, are such that the potential for slope instability at the site due to gravitational or seismic activity is considered low provided final site grading recommendations are incorporated in cut and fill slope designs.

7.4 Seismic Induced Settlement

Seismic compression is the accrual of contractive volumetric strains that occur in unsaturated soils during strong shaking from earthquakes. Seismic compression has been identified as a major cause of seismically induced damage. Seismic induced settlement was evaluated based on the procedure presented in CUREE Publication No. EDA-05, Seismic Compression of As-Compacted Fill Soils with Variable Levels of Fines

Content and Fines Plasticity. Based on this analysis procedure, seismic compression of 1-inch was modeled for the mass graded building pad. Because the thickness of susceptible zones is fairly consistent across the site, differential settlement due to seismic compression is not considered to be significant (CUREE, 2004).

8.0 DISCUSSION AND RECOMMENDATIONS

8.1 General Information

The following definitions characterize terms utilized in this report:

- 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.
- Rock-fill presents less than 70-percent of the soil passes the #200-sieve and presents a maximum nominal particle size of 4-inches.

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

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. 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.

Recommendations for paved parking and drive improvements are consistent with City of Fernley Design Standards. Underground utilities will be provided by a variety of public and private companies; trenching and backfill recommendations will be consistent with OSHA and City of Fernley requirements, respectively.

Test pits were advanced at the approximate locations shown on the site map. Each test pit was backfilled upon completion of the field portion of our study. 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 are to be 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.

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.

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 exist 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 structural area. All compaction requirements presented in this report are relative to ASTM D 1557 (ASTM 2014).

8.2 Soil Profile Type Amplification Factors

In accordance with ASCE 7 (ASCE, 2022) and the Northern Nevada Amendments of the 2018 IBC, Site Class D ($V_{s100} = 922$ fps) has been assigned to the project. Seismic design values were determined based on a representative latitude and longitude of 39.6153°N and -119.2719°E, respectively. The ASCE 7 Hazards reports for both Risk Category II and III are presented in Appendix B for consideration by the Structural Engineer.

8.3 Site Preparation

All vegetation and topsoil shall be cleared and grubbed from structural areas. A minimum stripping depth of 0.3 to 0.5 feet is anticipated. Localized deeper areas may be required in areas of large brush or where large root balls are encountered. 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. It is recommended that the organic materials be broken up using a large sheep's foot roller or chipped prior to blending with soil and moisture conditioning.

Any undocumented fill material encountered within structural areas should be removed in its entirety and replaced with structural fill in accordance with the recommendations presented in the Grading and Filling section of this report.

Prior to placing fill or constructing improvements, the exposed subgrade shall be scarified for a minimum depth of 12-inches, moisture conditioned to within 3-percent of optimum (ASTM D1557) and compacted to not less than 90-percent of the soil's maximum dry density with a large vibratory compactor. Due to relatively low moisture contents of native soils, moisture conditioning may take repeated wetting and

turning or scarification of these soils. Compaction limits shall extend at least five feet beyond the edges of structural improvements or to property line, whichever is less.

If encountered, pumping soils may be scarified and allowed to dry or removed and replaced with a layer of compacted structural fill. Alternatively, in cases of severe yielding, angular, 12-inch minus stabilizing angular rock fill may be utilized. The size of the rock could vary depending on the soil's consistency and depth of soft, saturated soils. Depending on the size of rock, the minimum stabilization layer thickness should be a minimum of 1 ½ times the largest diameter rock. Subgrade stabilization is a trial-and-error process, and it is recommended that a test section of suitable depth and length be conducted if any extensive pumping zones are created or develop during site development. 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. For the design considerations presented in this report, 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.

8.4 Grading and Filling

Granular soil and fine-grained soil generated on-site that is substantially free of vegetation, organic matter and other deleterious material may be placed as structural fill. If import structural fill is required, it should be free of vegetation, organic matter, and other deleterious material and meet the requirements of Table 2.

Table 2 - Guideline Specification for Import Structural Fill

Sieve Size (ASTM D6913)	Percent by Weight Passing Sieve
6 Inch	100
4 Inch	90 - 100
¾ Inch	70 - 100
No. 40	15-70
No. 200	5-30
Maximum Liquid Limit (ASTM D4318) ⁽¹⁾	40
Maximum Plasticity Index (ASTM D4318) ⁽¹⁾	15
Soluble Sulfate Level (ACI 318, Table 4.3.1)	Negligible
R-Value (ASTM D2844)	30 Min.

1. Dry Method

Adjustments to the recommended limits presented in Table 2 can be provided to allow the use of other granular, non-expansive material, including rock fill. Any such adjustments must be made and approved by the Geotechnical Engineer, in writing, prior to importing fill to the site. Modifications in site grading and placement verification protocols may be required for rock fill as part of the approval process.

Structural fill should be placed in maximum 12-inch thick (loose) level lifts, compacted utilizing 15-ton or larger vibratory compaction equipment, and densified to at least 90 percent relative compaction (ASTM D1557). All structural fill soils should have moisture contents within 3 percent of optimum moisture (ASTM D1557) prior to densification. To facilitate compaction, higher moisture contents may be required when compacting clean sands. Where structural fills exceed five feet in thickness, the minimum compaction requirement shall be increased to 95 percent. Where structural fill is exposed to freezing conditions, that lift should be verified that the compaction level has not been reduced due to the freezing environment prior to placing additional fill or constructing improvements.

Care should be exercised that embankment surfaces 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.

8.5 Testing and Observation

Verification of fills shall be performed by a firm AMRL accredited in ASTM E329. Special inspection of fill soils is required during mass grading of the project; the Special Inspector shall be ICC certified in soils or NAQTC certified in sampling and density.

Density testing of all fills shall 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) unless rockfill is approved which will then be subject to performance based full time field observation. Subgrade, structural fill, nonstructural fill, bedding and backfill shall be density tested.

For soils meeting ASTM gradations that allow for density testing by nuclear methods, testing frequency shall be prescribed herein. Subgrade shall be density tested approximately every 500 square yards or per footing for foundations not supported by fill. Fill shall be density tested once for every 1,000 square yards per lift of material placed during mass grading and one test per 200 feet of footing trenches. Bedding and backfill shall be density tested per foot of thickness, the more restrictive of one test between manholes or valves, or one test every 500 lineal feet, including laterals. One density test shall 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. The testing frequency shall be increased if the contractor is having difficulty achieving and maintaining the required moisture levels. Nonstructural fills shall be density tested for every 1,000 yards or for every 2-feet of fill for smaller, localized fill zones.

8.6 Trenching and Excavation

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. Based on the results of our exploration program, it is our opinion the bulk of the site consists of Type C soil. All fills should be

considered Type C. All trenching should be performed and stabilized in accordance with local, state, and OSHA standards. Bank stability is the responsibility of the contractor, who is present at the site, able to observe changes in ground conditions, and has control over personnel and equipment.

Sands present at the site will cause excavations utility trenches to slough or cave and must be adequately considered and planned for by the contractor.

Trench bedding and backfill shall be consistent with the requirements of the City of Fernley Public Works Design Standards and the requirements of the private utilities. Based on our testing program, the on-site soils tested do not meet the requirements of Class E backfill.

8.7 Foundations

Provided the foundation soils have been prepared in accordance with the recommendations of this report, the bearing pressures presented in Table 3 can be utilized for design.

Table 3 - Allowable Foundation Bearing Pressures

Loading Condition	Maximum Net Allowable Bearing Pressure (PSF) ¹
Dead Load Plus Full Time Live Load	4,000
Dead Load Plus Live Loads, Plus Transient Wind or Seismic Loads	5,200

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

For frost protection, footings should all be founded at least 18-inches below adjacent outside or unheated interior finish grades. 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.

Lateral loads, such as wind or seismic, may be resisted by passive soil pressure and friction on the bottom of the footing. The recommended coefficient of base friction is 0.45. Design values for active and passive equivalent fluid pressures are 35 and 375 pounds per square foot per foot of depth, respectively. In designing for passive pressure, the upper one foot of the soil profile should not be included unless confined by a concrete slab or pavement. These design values are based on spread footings bearing on native granular soils, native fine-grained soils, or structural fill and poured neat or backfilled with structural fill.

Loose, soft, or disturbed soils are encountered at the foundation subgrade should be removed and backfilled with compacted structural fill or subgrade stabilized as previously discussed. The base of all excavations should be dry and free of loose and deleterious materials at the time of concrete placement. Settlement for the structure is anticipated to be on the order of 1-inch, or less; this does not include approximately 1-inch of settlement caused by cyclic densification during a seismic event. Since cyclic densification during a seismic event is anticipated to be relatively uniform, unless a near surface condition presents significant variance across the site (which would not be the case for a mass graded pad), differential settlement between foundations with similar loads and sizes is anticipated to be approximately ½-inch across a distance of 40-feet.

8.8 Retaining Walls

Recommended lateral earth pressures for consideration in the design of retaining structures are presented in Table 4. We have 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 4 do not consider hydrostatic pressures or surcharge loading (structural, traffic, or slopes). Traffic loading should be modeled by increasing the wall backfill load by an additional height of two feet when developing design loads. Per Section 1803.5.12 of the IBC, dynamic seismic lateral earth pressures on retaining and foundation walls do not need to be considered for walls supporting 6-feet, or less, of backfill height (without additional surcharge).

Table 4 - Lateral Earth Pressures

Condition	Active (psf/f)	Passive (psf/f)	Active (psf/f)	Passive (psf/f)	At Rest (psf/f)
	Static	Static	Pseudostatic	Pseudostatic	
Level	35	375	68	275	55

Unless confined by slab or pavement, the surface foot of soil should be ignored when considering passive resistance.

Excessive retaining wall pressures can be developed due to heavy compaction equipment proximate to the wall during backfill placement. Large vibratory compaction should be avoided for compacting retaining wall backfill. Therefore, due care during placement and compaction of backfill is required. Backfill behind retaining structures should be compacted to not less than 90 percent of the soils' maximum dry density. French drains, encased in a drainage backfill geotextile such as Mirafi 140 N, or a pre-manufactured drain system such as Tensar® DC1200 may be utilized if buildup of hydrostatic pressure is possible. Soil preparation for retaining wall foundations and allowable bearing capacities shall be consistent with the Site Preparation, Grading and Filling, and Foundations sections of this report.

Any retaining walls in excess of ten feet or any retaining walls supporting a sloping backslope should be reviewed by the geotechnical engineer, and design values provided, on a case-by-case basis.

8.9 Slope Stability and Erosion Control

Stability of cut and filled surfaces involves two separate aspects. The first concerns slope stability related to mass wasting, landslides or the surficial downward movement (or slumping) of soil or rock. Cut and fill slopes, with gradients of 2H:1V (horizontal to vertical) or flatter, are suitable for the project soils. The specified slope is based on an overall slope average. It is not intended to imply that localized sculpting of the slope face, resulting in limited minor increases to slope gradient at isolated locations, would be considered inconsistent with the global stability considerations of this report.

The second aspect of slope stability involves erosion potential and is dependent on numerous factors involving grain size distribution, cohesion, moisture content, slope angle and the velocity of the water or wind on the ground surface. Slope stabilization shall be consistent with the requirements of Section 3.4.9 of the City of Fernley Design Standards.

Temporary (during construction) and permanent (after construction) erosion control will be required for all disturbed areas. 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. The project specifications should include an indemnification by the contractor of the owner and engineer for any dust generation during the construction period. The owner will be responsible for mitigation of dust after acceptance of the project.

8.10 Site Drainage

Adequate surface drainage must be constructed and maintained away from the structures. The permanent finish slopes away from the structure should be constructed to allow water to drain away quickly from and prevent any ponding of water adjacent to the structure per code requirements. All runoff should be collected within permanent drainage paths that can convey water off the property or to designated collection zones. A system of roof gutters and downspouts is recommended to collect roof drainage and direct it away from the foundations. If final design grades are such that drainage is directed away from the structures, additional subdrain systems will not be required.

Footings shall be poured neat, or foundation backfill be densified to at least 90 percent relative compaction in accordance with the fill placement requirements presented 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.

8.11 Concrete

Concrete placement and curing should be performed in accordance with procedures outlined by the American Concrete Institute. Special considerations, as specified in ACI 318, should be given to concrete placed and cured during windy, low humidity, hot or cold weather conditions.

8.11.1 Concrete Material Requirements

Sulfate testing on the native soils resulted in sulfate levels in both the negligible and severe ranges (< 0.01 and 0.26% by weight, respectively). Because the site will be mass graded, sulfate concentrations will be mixed and blended resulting in a buffering of sulfate concentrations. However, because sulfates are soluble, over the life of the development they can go into solution during irrigation and precipitation and concentrate and redeposit in evaporative zones. Therefore, we recommend concrete for the project (flatwork, curbs, ditches and structures) be designed to offer sulfate resistance.

Type II cement with fly ash (25 to 35% by mass of the total cementitious material), pozzolan, or slag as an additive silicate component is required to address the required sulfate resistance. For all flat work and foundations, the concrete should have a specified minimum compressive strength of 4,000 psi, be air entrained (6%), and have a low water to cementitious ratio (0.45 or less). In addition, exterior concrete and flatwork should be placed and finished in accordance with ACI-318 recommendations for concrete subject to freeze thaw conditions. The use of water reducing super plasticizer is strongly recommended to maintain the low water cement ratio and facilitate finishing of slabs.

When considering chlorides, ACI 318-11, Table 4.2.1 rates the severity of corrosion as Moderate or Exposure Class C1 for *concrete exposed to moisture but not to external sources of chlorides.* External sources of chlorides include exposure to deicing chemicals. ACI indicates that this chloride exposure would elevate the exposure class to Severe or Exposure Class C2 which would require a minimum compressive strength of 5,000 psi and a maximum water to cement ratio of 0.40 for exterior slabs-on-grade. The Standard Specification for Public Works Construction, Section 337.10.01.03, presents concrete requirements for public improvements when considering freeze-thaw cycles, salt and sulfates. These considerations should be extended to include private improvements.

As a courtesy, resistivity, pH, chlorides, oxidation-reduction potential, sulfides and moisture were tested to aid others in the assessment of potential corrosivity to ductile iron pipe and/or steel reinforcement; refer to Appendix A, Plate A-4d for test methods and results. 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.

8.11.2 Concrete Slabs-on-Grade

A 4-inch minimum base course (Type 2, Class B, Standard Specifications for Public Works Construction), compacted to 95% relative compaction, is recommended beneath interior or exterior concrete slabs-on-grade subject solely to foot traffic. The recommended base course section should be increased to 6-inches where vehicle traffic is anticipated. All dedicated and public easement improvements shall be constructed in accordance with the City of Fernley Design Standards and the Standard Specifications for Public Works Construction.

Wood Rodgers does not practice in the field of moisture vapor transmission evaluation/mitigation. Therefore, if a vapor retarder/barrier system more rigorous than the requirements of the IBC 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. This person/firm should provide recommendations for mitigation of potential adverse impact of moisture vapor transmission on various components of the structure as deemed appropriate. If special conditions do not exist, 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.

Proper control joints and reinforcing should be provided to minimize any damage resulting from shrinkage. 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 other US regions. Proper sub-grade preparation and placement of reinforcement are imperative. 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 will often reflect through overlying improvements even if adequate substrate preparation has occurred.

Conventional concrete slab-on-grade recommendations presented herein are intended to reduce the potential for cracking of slabs as a result of differential movement. However, even with the incorporation of the recommendations presented herein, slabs-on-grade will still exhibit some degree of curling and/or cracking. The occurrence of concrete shrinkage cracks is independent of the soil supporting characteristics. Their occurrence may be reduced and/or controlled by limiting the slump of concrete, the use of crack control joints and proper concrete placing and curing practices including ACI 318 provisions for areas subject to freeze thaw conditions.

8.12 Structural Pavement Sections

Table 5 presents the recommended minimum structural pavement sections for the development based on planned use. These sections have been developed with the expectation that the site preparation and grading requirements have been satisfied. Aggregate base used to support pedestrian and flexible or concrete pavements should be compacted to a minimum of 95% relative compaction.

Table 5 - Structural Pavement Sections

Condition	Pavement Thickness (In.)	Pavement Type ¹	Type II Class B Base Course Thickness (In.) ²
Main Access & Truck Drives ³	4	2" Type 3 + Lime / 2" Type 2	8
Automobile Parking	3	Type 3 + Lime	6
Exterior Truck Ramps, Loading Docks, Aprons, Dolly Pads	6 to 10 ⁶	Portland Cement Concrete ⁵	6

Table 5 - Structural Pavement Sections

Condition	Pavement Thickness (In.)	Pavement Type ¹	Type II Class B Base Course Thickness (In.) ²
Dumpster Aprons ⁴	6	Portland Cement Concrete ⁵	6

¹ Per the Standard Specifications for Public Works Construction

² Base Course thickness is in addition to structural fill separation requirements.

³ Based on a maximum ESAL of 450,000.

⁴ Dumpster aprons should extend far enough from the trash enclosure so that the wheel loads are confined to the reinforced concrete pad.

⁵ Reinforcement is at the discretion of the Owner and Structural Engineer.

⁶ Subject to truck frequency, distribution, and load. Site specific traffic and loading patterns are required.

The minimum structural section for roadways within the City of Fernley is 3 inches of asphaltic concrete capping 6 inches of aggregate base. However, when considering anticipated performance and maintenance requirements for main access drives, 4 inches of asphalt concrete capping 8 inches of aggregate base has been recommended for main access drives.

Pavement construction shall be in accordance with the approved plans, the Standard Specifications for Public Works Construction, and the City of Fernley's Design Standards. Roadway subgrade shall be prepared in accordance with the requirements of this report. The Contractor should submit a pavement mix design to the Owner or Engineer, for approval, at least 5 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.

8.13 Asphalt Concrete 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. As such, in areas where saturation of the subgrade soils beneath asphaltic pavement may occur, we strongly recommend 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.

It is recommended that the use of PG 64-28 NV (polymerized asphalt oil) be considered by the owner as we have found that it substantially reduces cracking due to thermal stresses prevalent in the freeze thaw environment. The savings in long term maintenance of the pavement including crack sealing is in our opinion worth the extra expense. However, this asphalt oil recommendation should be considered optional in that it is relative to frequency of maintenance only and does not affect structural calculations. The cost associated with proper maintenance is generally much less than the cost for reconstruction due to the premature failure of the pavement. Therefore, since pavement quality is an integral consideration in the formulation of our design recommendations, we strongly recommend the owner/project manager implement a pavement management program.

9.0 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 all phases of construction. Prior to construction, the owner/project manager should schedule a pre-job conference including, but not limited to, 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, and recommendations presented in this report, and discuss applicable material quality and mix design requirements. All quality control reports should be submitted to the owner/project manager for review and distributed to the appropriate parties.

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 in fact just 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.

10.0 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. 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 their obligation to perform sound and reliable work as described herein and as described in the Standard Specifications for Public Works Construction.

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.

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 Mohr Capital and their duly assigned agents or other responsible parties. The material in it reflects Wood Rodgers' best judgment in light of 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 as a result of decisions made by third parties or actions based on this report without consultation with Wood Rodgers and written approval for such actions.

11.0 REFERENCES

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APPENDIX A GEOTECHNICAL PLATES



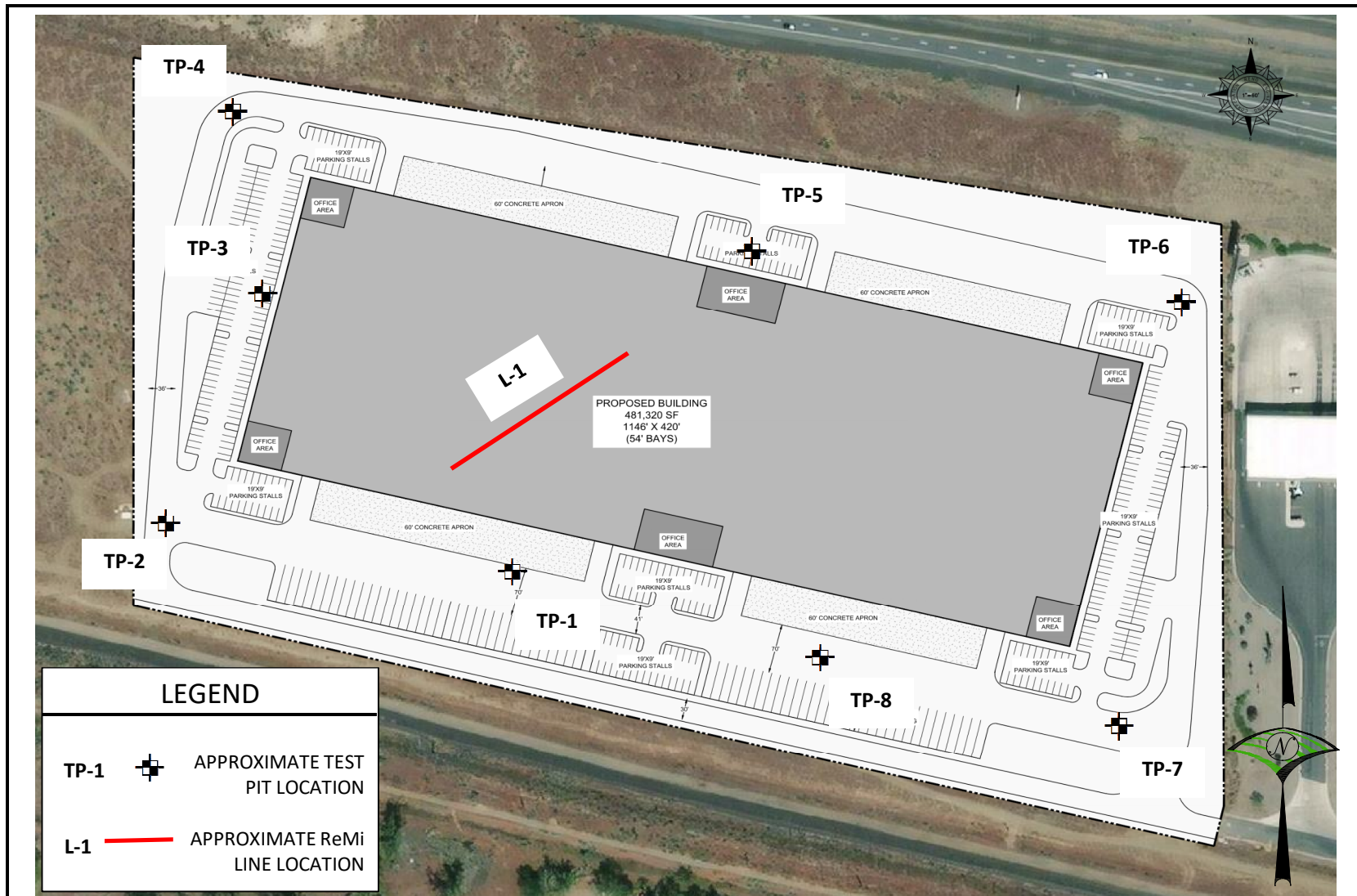
Image Reference: Google Earth, Imagery Date: 6/7/2019, Accessed 1/17/2022


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VICINITY MAP

Geotechnical Investigation
Mohr Capital - Pilot Road
APN 021-061-32
Fernley, Lyon County, Nevada
 Project No.: 2645019
 Date: 01/17/22

PLATE
A-1a



1361 Corporate Boulevard, Reno, NV 89502
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SITE MAP AND APPROXIMATE EXPLORATION LOCATIONS

Geotechnical Investigation
Mohr Capital - Pilot Road
APN 021-061-32
Fernley, Lyon County, Nevada

Project No.: 2645019
Date: 01/17/22

PLATE
A-1b



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TEST PIT NUMBER TP-1

PAGE 1 OF 1

CLIENT Mohr Capital

PROJECT NAME Mohr Capital - Pilot Road

PROJECT NUMBER 2645019

PROJECT LOCATION Fernley, Lyon County, Nevada

DATE STARTED 1/14/22 **COMPLETED** 1/14/22

GROUND ELEVATION _____ **TEST PIT SIZE** 36 inches

EXCAVATION CONTRACTOR Joy Engineering

GROUND WATER LEVELS:

EXCAVATION METHOD Volvo 355 Excavator

AT TIME OF EXCAVATION --- NO FREE WATER ENCOUNTERED

LOGGED BY Jackson Beadell **CHECKED BY** Justin McDougal

AT END OF EXCAVATION --- NO FREE WATER ENCOUNTERED

NOTES: _____

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		POORLY GRADED SAND WITH SILT, (SP-SM) medium dense, moist, brown, nonplastic	GB 1A									
		Slightly moist, tan	GB 1B									
5		SILT, (ML) stiff, dry, tan, slightly plastic to low plasticity	GB 1C					17.6	40	31	9	85.6
		POORLY GRADED SAND WITH SILT, (SP-SM) medium dense, slightly moist, tan, nonplastic	GB 1D					3.6	NP	NP	NP	9.4
10												
		SILT, (ML) stiff, dry, tan, low plasticity										
15		POORLY GRADED SAND, (SP) medium dense, slightly moist, tan brown, nonplastic										

Bottom of Test Pit at 17.0 Feet.

Sloughing From 0' - 17'



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TEST PIT NUMBER TP-2

PAGE 1 OF 1

CLIENT Mohr Capital **PROJECT NAME** Mohr Capital - Pilot Road
PROJECT NUMBER 2645019 **PROJECT LOCATION** Fernley, Lyon County, Nevada
DATE STARTED 1/14/22 **COMPLETED** 1/14/22 **GROUND ELEVATION** 4182 ft **TEST PIT SIZE** 36 inches
EXCAVATION CONTRACTOR Joy Engineering **GROUND WATER LEVELS:**
EXCAVATION METHOD Volvo 355 Excavator **AT TIME OF EXCAVATION** --- NO FREE WATER ENCOUNTERED
LOGGED BY Jackson Beadell **CHECKED BY** Justin McDougal **AT END OF EXCAVATION** --- NO FREE WATER ENCOUNTERED
NOTES: Elevations: Mohr Capital Preliminary Grading Plan, Provided by REC **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		POORLY GRADED SAND WITH SILT, (SP-SM) medium dense, moist, brown, nonplastic										
		Dry, tan	GB 2A					2.3	NP	NP	NP	6.4
5												
		POORLY GRADED SAND, (SP) medium dense, slightly moist, tan brown, nonplastic	GB 2B					3.7	NP	NP	NP	4.0
10												
		Dry to slightly moist, mottling observed	GB 2C									
15												

Bottom of Test Pit at 18.0 Feet.

Sloughing From 0' - 18'



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TEST PIT NUMBER TP-3

PAGE 1 OF 1

CLIENT Mohr Capital
PROJECT NUMBER 2645019
DATE STARTED 1/14/22 **COMPLETED** 1/14/22
EXCAVATION CONTRACTOR Joy Engineering
EXCAVATION METHOD Volvo 355 Excavator
LOGGED BY Jackson Beadell **CHECKED BY** Justin McDougal
NOTES: _____

PROJECT NAME Mohr Capital - Pilot Road
PROJECT LOCATION Fernley, Lyon County, Nevada
GROUND ELEVATION _____ **TEST PIT SIZE** 36 inches
GROUND WATER LEVELS:
AT TIME OF EXCAVATION --- NO FREE WATER ENCOUNTERED
AT END OF EXCAVATION --- NO FREE WATER ENCOUNTERED
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												
		POORLY GRADED SAND WITH SILT, (SP-SM) medium dense to loose, moist, brown, nonplastic	GB 3A									
		Dry, tan										
5			GB 3B									
		POORLY GRADED SAND, (SP) medium dense to loose, slightly moist, gray, nonplastic										
10			GB 3C					2.8	NP	NP	NP	0.6
		Tan										
15			GB 3D									

Bottom of Test Pit at 18.5 Feet.
Sloughing From 0' - 18.5'



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TEST PIT NUMBER TP-4

PAGE 1 OF 1

CLIENT Mohr Capital
PROJECT NUMBER 2645019
DATE STARTED 1/14/22 **COMPLETED** 1/14/22
EXCAVATION CONTRACTOR Joy Engineering
EXCAVATION METHOD Volvo 355 Excavator
LOGGED BY Jackson Beadell **CHECKED BY** Justin McDougal
NOTES: _____

PROJECT NAME Mohr Capital - Pilot Road
PROJECT LOCATION Fernley, Lyon County, Nevada
GROUND ELEVATION _____ **TEST PIT SIZE** 36 inches
GROUND WATER LEVELS:
AT TIME OF EXCAVATION --- NO FREE WATER ENCOUNTERED
AT END OF EXCAVATION --- NO FREE WATER ENCOUNTERED
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												
		POORLY GRADED SAND WITH SILT, (SP-SM) loose to medium dense, moist, brown, nonplastic	GB 4A					3.8	NP	NP	NP	8.2
		Dry, tan										
5			GB 4B									
10		Medium dense	GB 4C									
15			GB 4D									

Bottom of Test Pit at 17.0 Feet.

Sloughing From 0' - 17'



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TEST PIT NUMBER TP-5

PAGE 1 OF 1

CLIENT <u>Mohr Capital</u>	PROJECT NAME <u>Mohr Capital - Pilot Road</u>
PROJECT NUMBER <u>2645019</u>	PROJECT LOCATION <u>Fernley, Lyon County, Nevada</u>
DATE STARTED <u>1/14/22</u> COMPLETED <u>1/14/22</u>	GROUND ELEVATION _____ TEST PIT SIZE <u>36 inches</u>
EXCAVATION CONTRACTOR <u>Joy Engineering</u>	GROUND WATER LEVELS:
EXCAVATION METHOD <u>Volvo 355 Excavator</u>	AT TIME OF EXCAVATION <u>--- NO FREE WATER ENCOUNTERED</u>
LOGGED BY <u>Jackson Beadell</u> CHECKED BY <u>Justin McDougal</u>	AT END OF EXCAVATION <u>--- NO FREE WATER ENCOUNTERED</u>
NOTES: _____	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		POORLY GRADED SAND WITH SILT, (SP-SM) loose to medium dense, moist, brown, nonplastic	GB 5A									
		Dry, tan	GB 5B									
5			GB 5C									
10		SILT, (ML) stiff, slightly moist, white tan with orange, low plasticity	GB 5D									
15		POORLY GRADED SAND, (SP) medium dense, slightly moist, tan brown, nonplastic	GB 5E									
20												

Bottom of Test Pit at 20.0 Feet.
Sloughing From 0' - 11' & 15' - 20'



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TEST PIT NUMBER TP-6

PAGE 1 OF 1

CLIENT Mohr Capital
PROJECT NUMBER 2645019
DATE STARTED 1/14/22 **COMPLETED** 1/14/22
EXCAVATION CONTRACTOR Joy Engineering
EXCAVATION METHOD Volvo 355 Excavator
LOGGED BY Jackson Beadell **CHECKED BY** Justin McDougal
NOTES: _____

PROJECT NAME Mohr Capital - Pilot Road
PROJECT LOCATION Fernley, Lyon County, Nevada
GROUND ELEVATION _____ **TEST PIT SIZE** 36 inches
GROUND WATER LEVELS:
AT TIME OF EXCAVATION --- NO FREE WATER ENCOUNTERED
AT END OF EXCAVATION --- NO FREE WATER ENCOUNTERED
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		POORLY GRADED SAND WITH SILT, (SP-SM) loose to medium dense, moist, brown, nonplastic	GB 6A									
		Dry, tan										
		SILT, (ML) stiff, dry, white tan, low plasticity	GB 6B									
5												
		POORLY GRADED SAND, (SP) loose to medium dense, dry, tan, nonplastic	GB 6C									
10			GB 6E									
15												

Bottom of Test Pit at 15.0 Feet.

Sloughing From 0' - 15'

GEOTECH BH COLUMNS PLATE - GINT STD US LAB.GDT - 2/8/22 14:06 - \\WOODRODGERS.LOC\PRODUCTION\DATA\JOBS-RENO\JOBS\2645 - RENO ENGINEERING CORP\019 MOHR CAPITAL\GEOTECH\GEOCH04 GINT\MOHR CAPITAL.GPJ



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TEST PIT NUMBER TP-7

PAGE 1 OF 1

CLIENT <u>Mohr Capital</u>	PROJECT NAME <u>Mohr Capital - Pilot Road</u>
PROJECT NUMBER <u>2645019</u>	PROJECT LOCATION <u>Fernley, Lyon County, Nevada</u>
DATE STARTED <u>1/14/22</u> COMPLETED <u>1/14/22</u>	GROUND ELEVATION _____ TEST PIT SIZE <u>36 inches</u>
EXCAVATION CONTRACTOR <u>Joy Engineering</u>	GROUND WATER LEVELS:
EXCAVATION METHOD <u>Volvo 355 Excavator</u>	AT TIME OF EXCAVATION <u>--- NO FREE WATER ENCOUNTERED</u>
LOGGED BY <u>Jackson Beadell</u> CHECKED BY <u>Justin McDougal</u>	AT END OF EXCAVATION <u>--- NO FREE WATER ENCOUNTERED</u>
NOTES: _____	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		POORLY GRADED SAND WITH SILT, (SP-SM) loose to medium dense, moist, brown, nonplastic										
5		Dry, tan	GB 7A									
10		SILTY FINE SAND, (SM) medium dense, moist, tan with orange, nonplastic	GB 7B									
15		POORLY GRADED SAND, (SP) medium dense, dry, gray, nonplastic										

Bottom of Test Pit at 16.0 Feet.

Sloughing From 0' - 16'

GEOTECH BH COLUMNS PLATE - GINT STD US LAB.GDT - 2/8/22 14:06 - \\WOODRODGERS.LOC\PRODUCTION\DATA\JOBS-RENO\JOBS\2645 - RENO ENGINEERING CORP\019 MOHR CAPITAL\GEOTECH\GEOCH04 GINT\MOHR CAPITAL.GPJ



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TEST PIT NUMBER TP-8

PAGE 1 OF 1

CLIENT Mohr Capital **PROJECT NAME** Mohr Capital - Pilot Road

PROJECT NUMBER 2645019 **PROJECT LOCATION** Fernley, Lyon County, Nevada

DATE STARTED 1/14/22 **COMPLETED** 1/14/22 **GROUND ELEVATION** _____ **TEST PIT SIZE** 36 inches

EXCAVATION CONTRACTOR Joy Engineering **GROUND WATER LEVELS:**

EXCAVATION METHOD Volvo 355 Excavator **AT TIME OF EXCAVATION** --- NO FREE WATER ENCOUNTERED

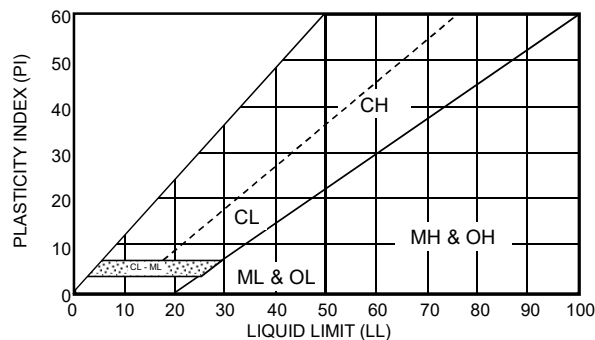
LOGGED BY Jackson Beadell **CHECKED BY** Justin McDougal **AT END OF EXCAVATION** --- NO FREE WATER ENCOUNTERED

NOTES: _____ **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		POORLY GRADED SAND WITH SILT, (SP-SM) loose to medium dense, moist, brown, nonplastic	GB 8A					5.5	NP	NP	NP	7.5
		Dry, tan										
5		SILTY SAND TO SANDY SILT, (SM-ML) medium dense to stiff, light tan, slightly plastic	GB 8B									
10		POORLY GRADED SAND, (SP) medium dense to dense, dry, tan brown, nonplastic	GB 8C									
15												

Bottom of Test Pit at 17.0 Feet.
Sloughing From 0' - 17'

MAJOR DIVISION					TYPICAL NAMES
COARSED-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
		SANDS WITH OVER 12% FINES		SP	POORLY GRADED SAND WITH OR WITHOUT GRAVEL, LITTLE OR NO 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		



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	MEDIUM 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.

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
COBBLES	ABOVE 3 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



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

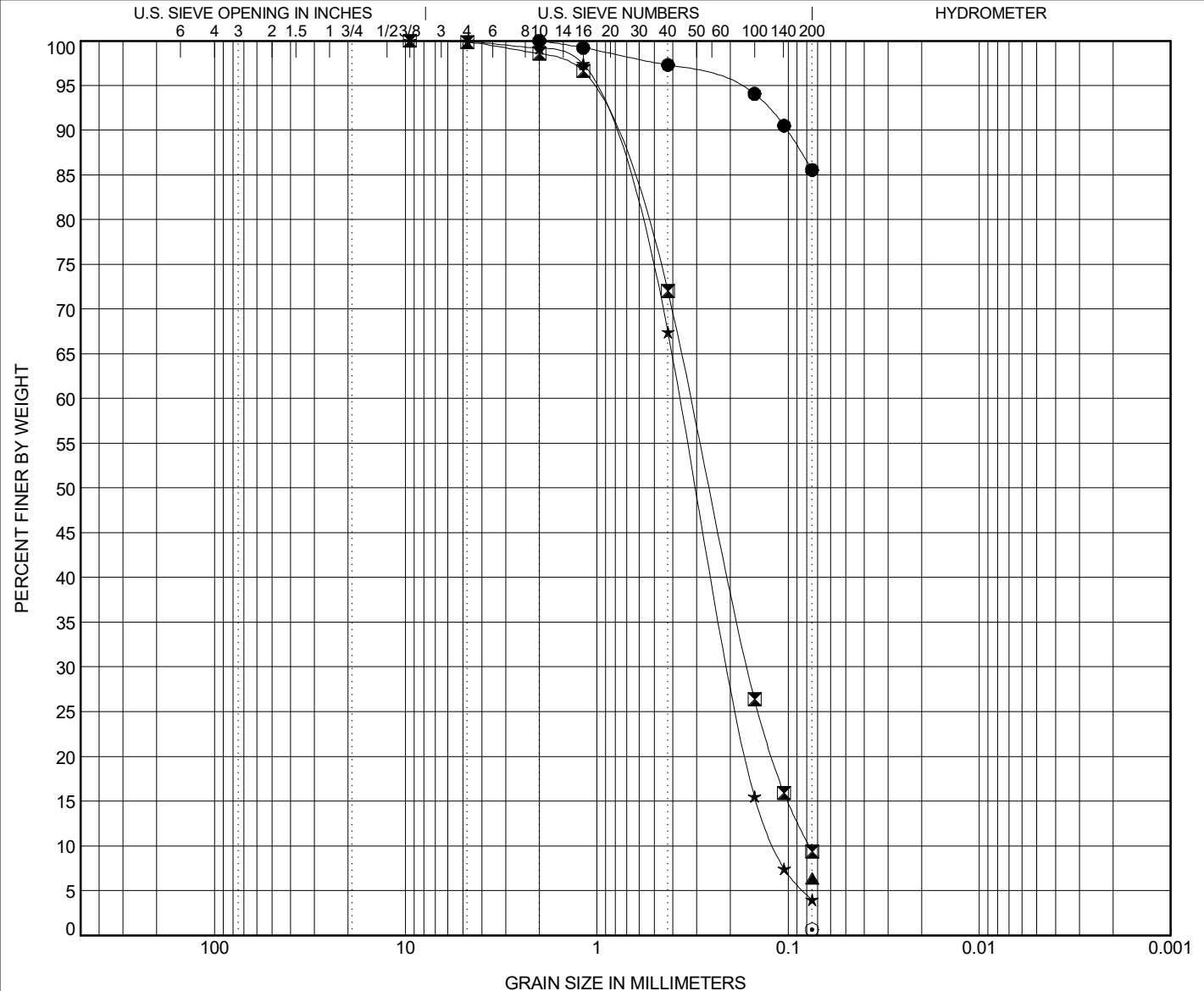
GRAIN SIZE DISTRIBUTION

CLIENT Mohr Capital

PROJECT NAME Mohr Capital - Pilot Road

PROJECT NUMBER 2645019

PROJECT LOCATION Fernley, Lyon County, Nevada



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

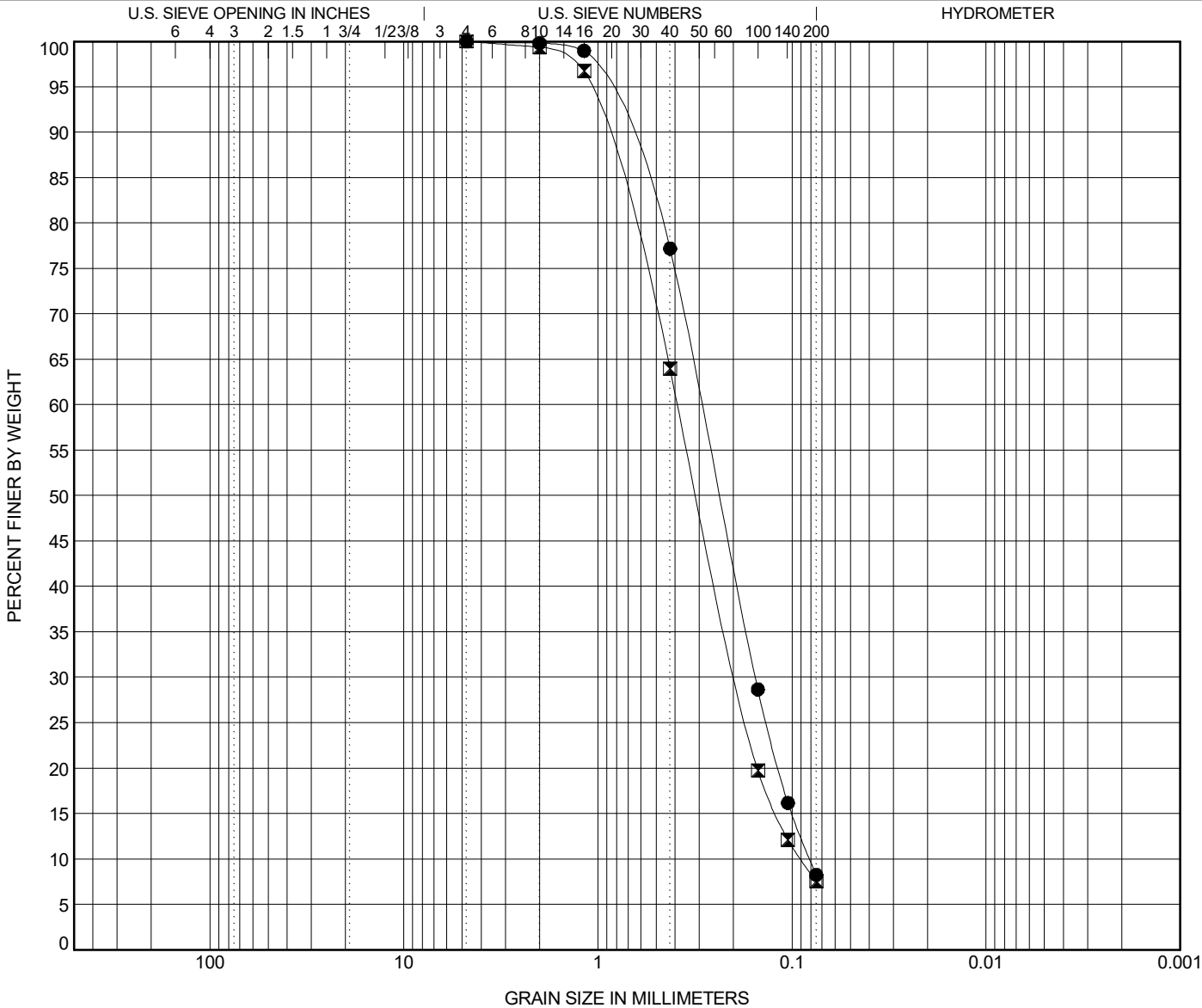
TEST PIT	MID-DEPTH	Classification					LL	PL	PI	Cc	Cu
● TP-1	6.0	SILT(ML)					40	31	9		
☒ TP-1	8.5	POORLY GRADED SAND with SILT(SP-SM)					NP	NP	NP	1.06	4.17
▲ TP-2	1.0	POORLY GRADED SAND with SILT(SP-SM)					NP	NP	NP		
★ TP-2	8.0	POORLY GRADED SAND(SP)					NP	NP	NP	0.93	3.11
⊙ TP-3	9.0	POORLY GRADED SAND(SP)					NP	NP	NP		
TEST PIT	MID-DEPTH	D100	D60	D30	D10	%Gravel	%Sand	%Silt		%Clay	
● TP-1	6.0	2				0.0	14.4	85.6			
☒ TP-1	8.5	9.5	0.323	0.163	0.078	0.1	90.5	9.4			
▲ TP-2	1.0	0.075						6.4			
★ TP-2	8.0	9.5	0.366	0.201	0.118	0.0	96.0	4.0			
⊙ TP-3	9.0	0.075						0.6			



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GRAIN SIZE DISTRIBUTION

CLIENT Mohr Capital PROJECT NAME Mohr Capital - Pilot Road
PROJECT NUMBER 2645019 PROJECT LOCATION Fernley, Lyon County, Nevada



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

TEST PIT	MID-DEPTH	Classification					LL	PL	PI	Cc	Cu
● TP-4	0.0	POORLY GRADED SAND with SILT(SP-SM)					NP	NP	NP	1.00	3.63
☒ TP-8	0.0	POORLY GRADED SAND with SILT(SP-SM)					NP	NP	NP	1.05	4.30
TEST PIT	MID-DEPTH	D100	D60	D30	D10	%Gravel	%Sand	%Silt		%Clay	
● TP-4	0.0	4.75	0.294	0.154	0.081	0.0	91.8	8.2			
☒ TP-8	0.0	4.75	0.387	0.191	0.09	0.0	92.5	7.5			



CLIENT Mohr Capital

PROJECT NAME Mohr Capital - Pilot Road

PROJECT NUMBER 2645019

PROJECT LOCATION Fernley, Lyon County, Nevada

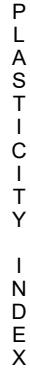


Plate A-4c
Page 191 of 528



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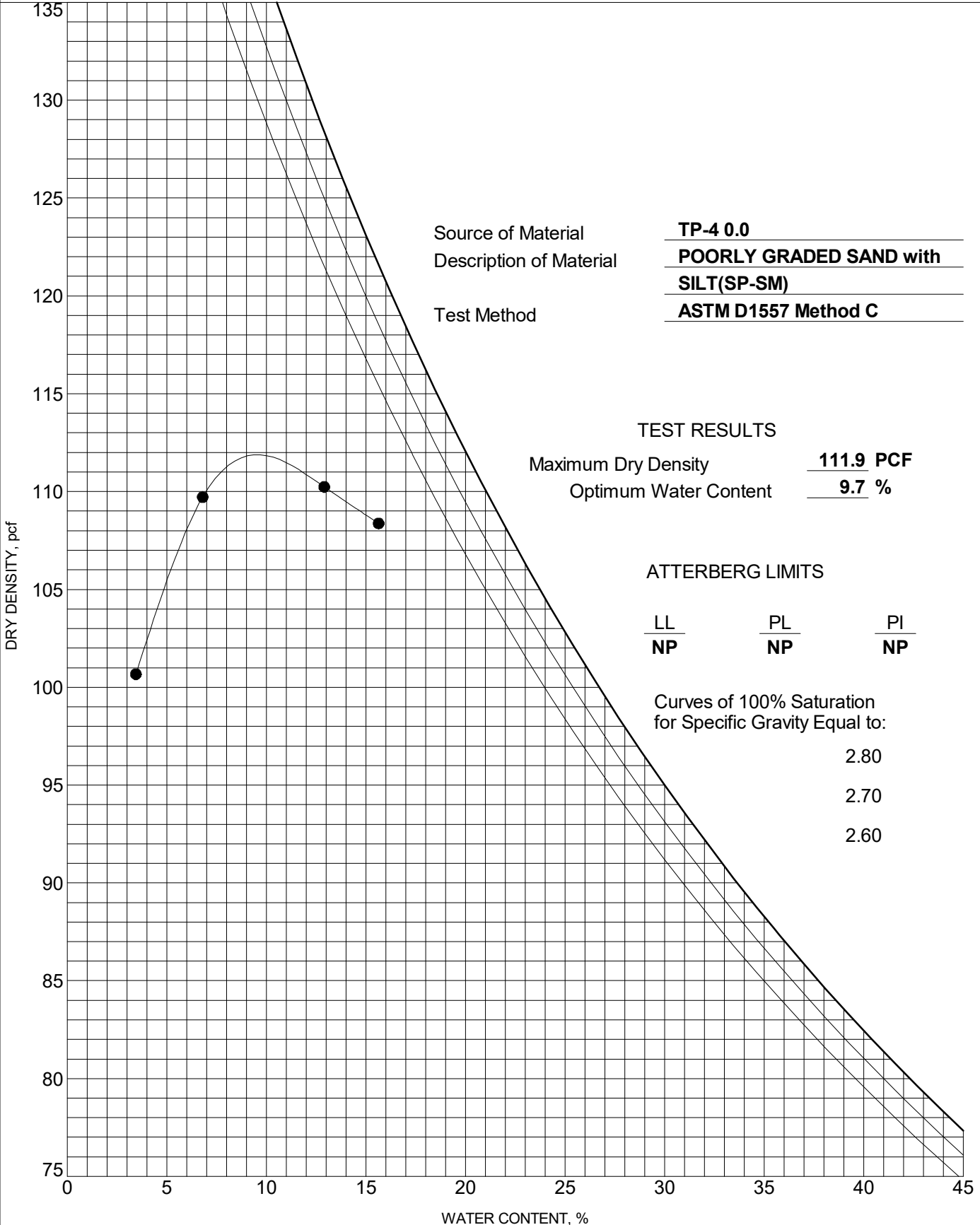
MOISTURE-DENSITY RELATIONSHIP

CLIENT Mohr Capital

PROJECT NAME Mohr Capital - Pilot Road

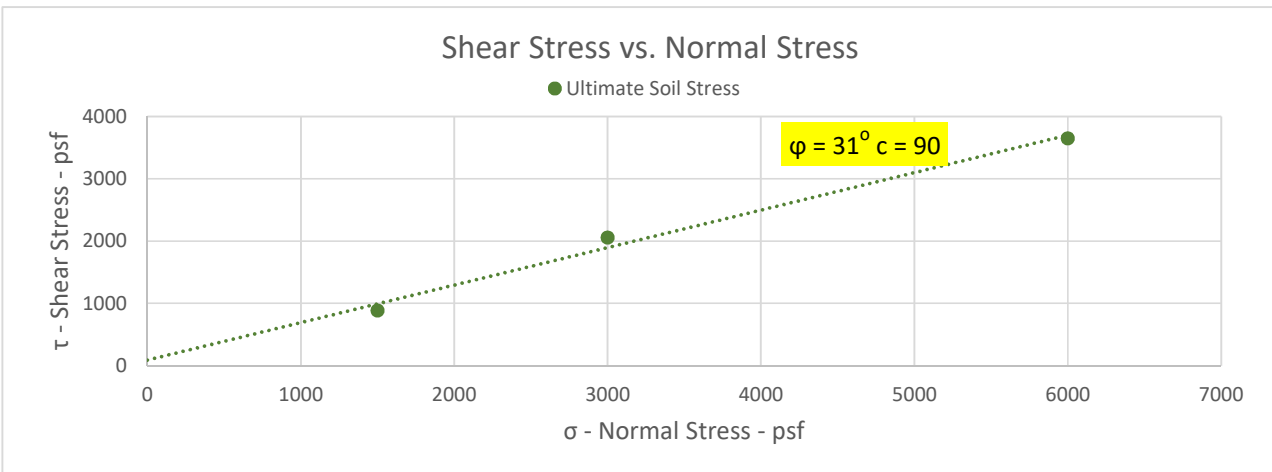
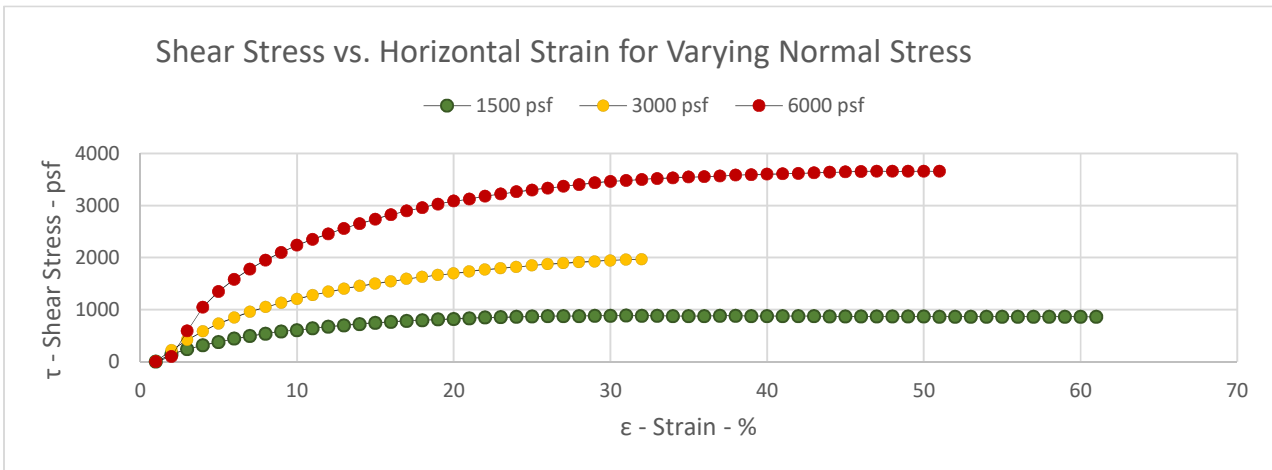
PROJECT NUMBER 2645019

PROJECT LOCATION Fernley, Lyon County, Nevada



PROJECT NAME:	Mohr Capital
SOURCE:	TP - 2 @ 8' - 10
MATERIAL (USCS):	0

PROJECT NUMBER:	2645019
LAB LOG NO:	6214
DATE SAMPLED:	1/20/2022



Normal Stress (psf)	1500	3000	6000
Ultimate Shear Stress (psf)	886	2054	3647
Friction Angle (ϕ)	31°		
Deformation Rate (in/min)	0.0484	0.0484	0.0484
Initial Sample Height (in)	0.9975	0.9975	0.9975
Area (in ²)	4.60	4.60	4.60
Initial Moisture Content (%)	3.7	3.7	3.7
Initial Void Ratio	0.6753	0.6753	0.6753
Dry Density at Test (pcf)	97.4	100.1	101.4
Final Void Ratio	0.6938	0.6436	0.6220
Saturation at Test (%)	100.86	101.64	101.69
Soil Height at Shearing, (in)	1.0085	0.9811	0.9682
Final Moisture Content (%)	26.7	24.3	23.2



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

Analytical Report

Workorder#: 22010860
Date Reported: 1/31/2022

Client: Wood Rodgers
Project Name: 2645019/ Mohr Capital/
PO #: LAB 3961

Sampled By: Client

Laboratory Accreditation Number: NV015/CA2990

Laboratory ID	Client Sample ID	Date/Time Sampled	Date Received
22010860-01	TP-3 0 - 5'	01/17/2022 12:00	1/19/2022

Parameter	Method	Result	Units	PQL	Analyst	Date/Time Analyzed	Data Flag
Chloride	EPA 9056	9	mg/Kg	5	CTR	01/27/2022 10:34	
Oxidation-Reduction Potential	SM 2580B	109	mV		AC	01/28/2022 8:50	
pH	SW-846 9045D	7.98	pH Units		AC	01/26/2022 10:02	
pH Temperature	SW-846 9045D	20.0	°C		AC	01/26/2022 10:02	
Resistivity	AASHTO T288	5500	Ohms-cm		AC	01/25/2022 11:02	
Sodium	ASTM D2791	< 0.01	%	0.01	AC	01/28/2022 11:25	
Sodium Sulfate as Na2SO4	Calculation	< 0.01	%	0.01	AC	01/28/2022 14:48	
Sulfate	SM4500 SO4E	< 0.01	%	0.01	AC	01/31/2022 9:02	
Sulfide	AWWA C105	Negative	POS/NEG		AC	01/28/2022 9:37	

Laboratory Accreditation Number: NV015/CA2990

Laboratory ID	Client Sample ID	Date/Time Sampled	Date Received
22010860-02	TP-6 3 - 5'	01/17/2022 12:00	1/19/2022

Parameter	Method	Result	Units	PQL	Analyst	Date/Time Analyzed	Data Flag
Sodium	ASTM D2791	< 0.01	%	0.01	AC	01/28/2022 11:25	
Sodium Sulfate as Na2SO4	Calculation	< 0.01	%	0.01	AC	01/28/2022 14:48	
Sulfate	SM4500 SO4E	< 0.01	%	0.01	AC	01/31/2022 9:02	

Laboratory Accreditation Number: NV015/CA2990

Laboratory ID	Client Sample ID	Date/Time Sampled	Date Received
22011017-01	TP-4 @ 16' - 17'	01/20/2022 9:27	1/21/2022

Parameter	Method	Result	Units	PQL	Analyst	Date/Time Analyzed	Data Flag
Chloride	EPA 9056	370	mg/Kg	5	CTR	01/27/2022 7:21	
Oxidation-Reduction Potential	SM 2580B	160	mV		AC	01/28/2022 8:50	
pH	SW-846 9045D	7.46	pH Units		AC	01/26/2022 10:02	
pH Temperature	SW-846 9045D	20.0	°C		AC	01/26/2022 10:02	
Resistivity	AASHTO T288	620	Ohms-cm		AC	01/25/2022 11:02	
Sodium	ASTM D2791	< 0.01	%	0.01	AC	01/28/2022 11:25	
Sodium Sulfate as Na2SO4	Calculation	< 0.01	%	0.01	AC	01/28/2022 14:48	
Sulfate	SM4500 SO4E	0.26	%	0.01	AC	01/31/2022 9:02	
Sulfide	AWWA C105	Negative	POS/NEG		AC	01/28/2022 9:37	


WOOD RODGERS
1361 Corporate Boulevard, Reno, NV 89502
Phone 775.823.4068 Fax 775.823.4066

CHEMICAL TESTING RESULTS

Geotechnical Investigation

Mohr Capital - Pilot Road

APN 021-061-32

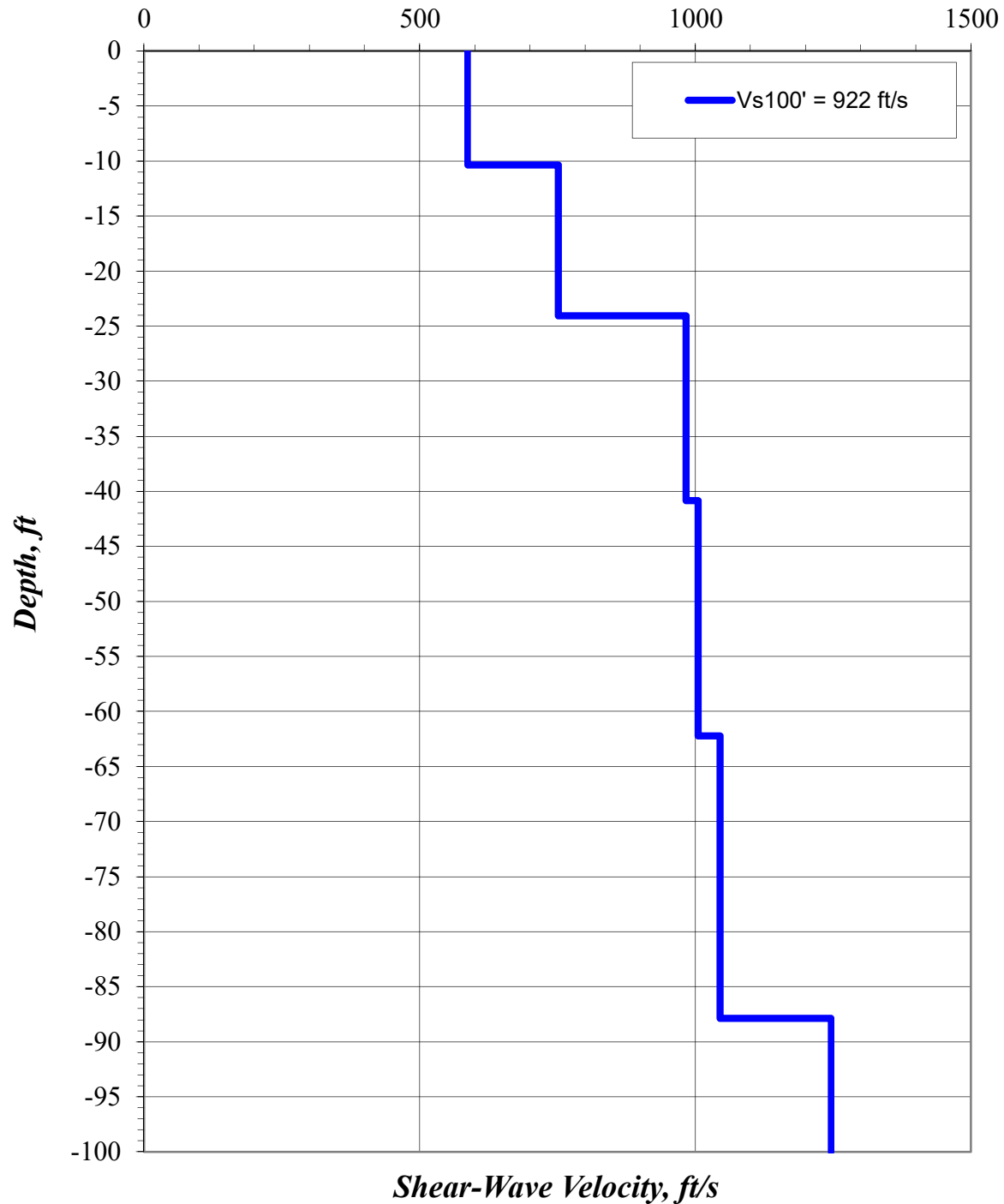
Fernley, Lyon County, Nevada

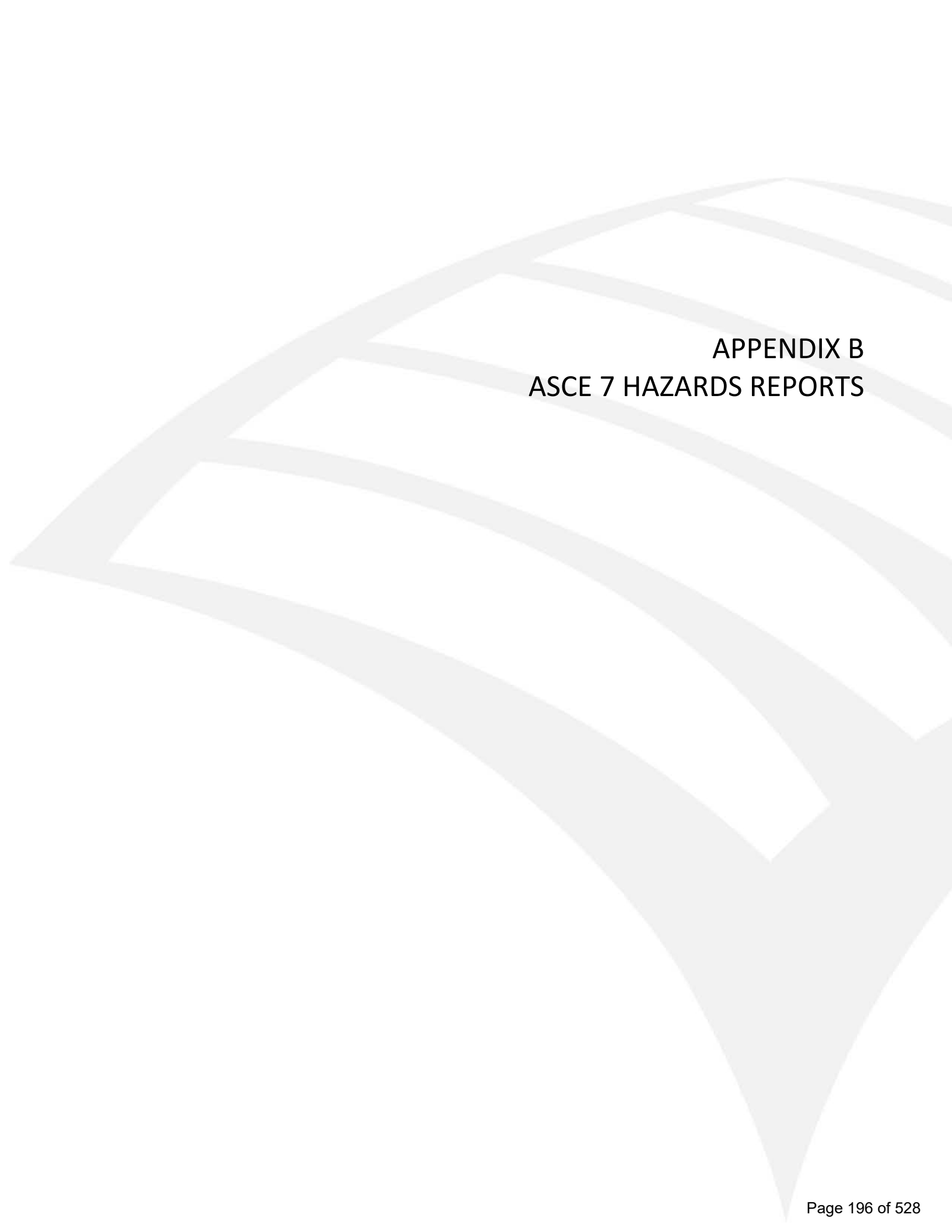
Project No.: 2645019

Date: 01/17/22

PLATE
A-4f

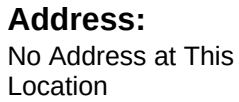
Mohr Capital, 300S: Vs Model



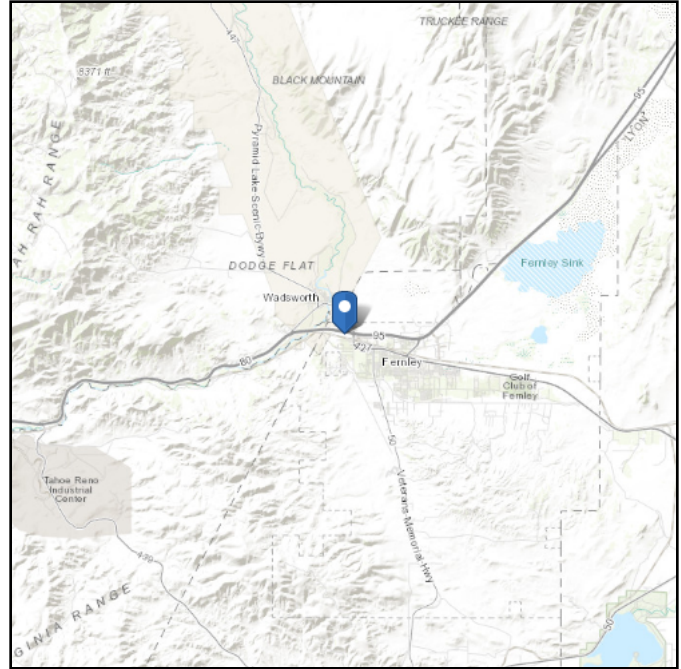


APPENDIX B

ASCE 7 HAZARDS REPORTS



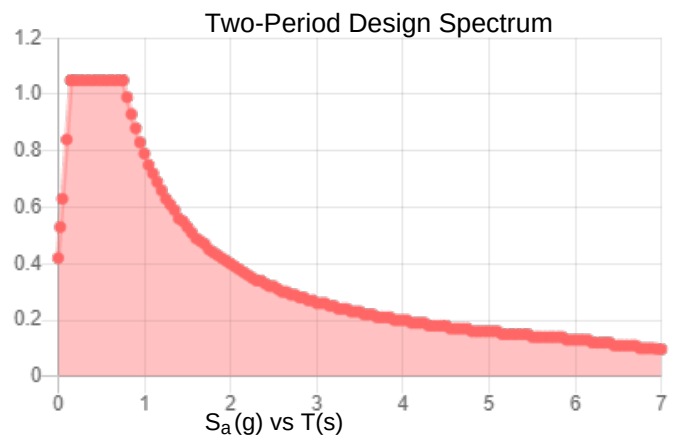
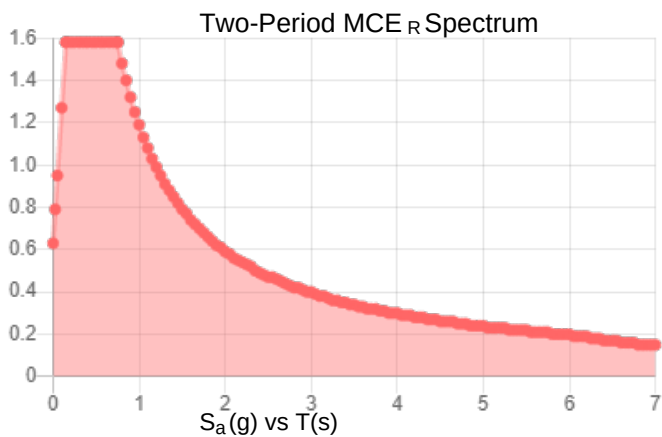
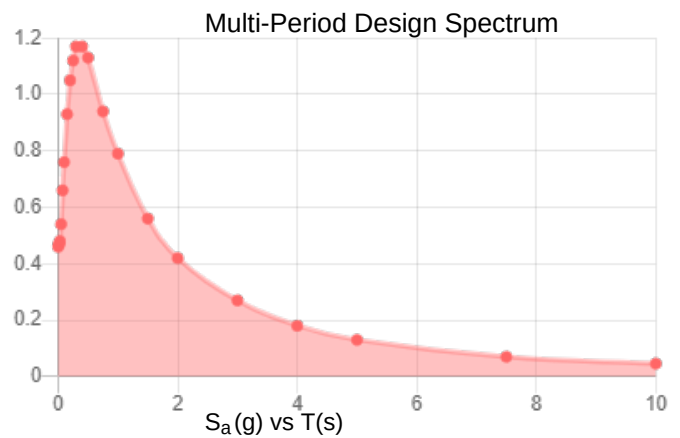
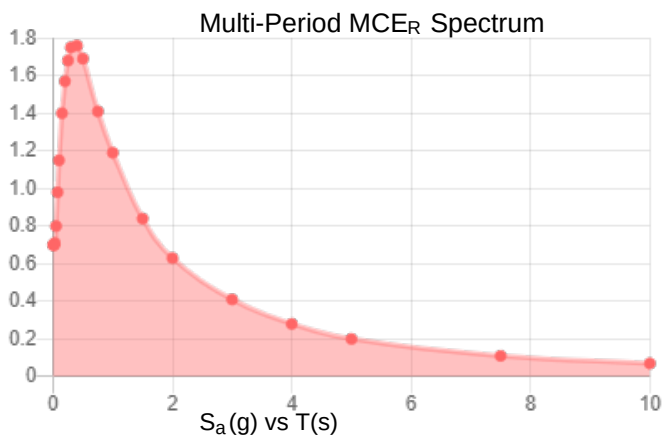
Standard:	ASCE/SEI 7-22	Elevation:	4180.87 ft (NAVD 88)
Risk Category:	II	Latitude:	39.6153
Soil Class:	D - Stiff Soil	Longitude:	-119.2719



Site Soil Class:

Results:

PGA _M :	0.65	T _L :	6
S _{MS} :	1.58	S _S :	1.53
S _{M1} :	1.19	S ₁ :	0.51
S _{DS} :	1.05	S _{DC} :	
S _{D1} :	0.79	V _{S30} :	260



MCE_R Vertical Response Spectrum
Vertical ground motion data has not yet been made available by USGS.

Design Vertical Response Spectrum
Vertical ground motion data has not yet been made available by USGS.

Data Accessed: Tue Mar 01 2022

Date Source:

USGS Seismic Design Maps based on ASCE/SEI 7-22 and ASCE/SEI 7-22 Table 1.5-2. Additional data for site-specific ground motion procedures in accordance with ASCE/SEI 7-22 Ch. 21 are available from USGS.

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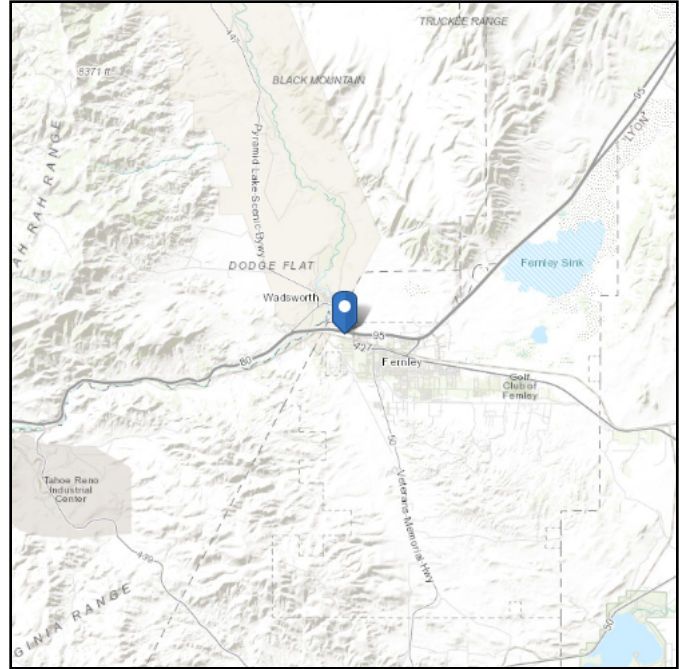
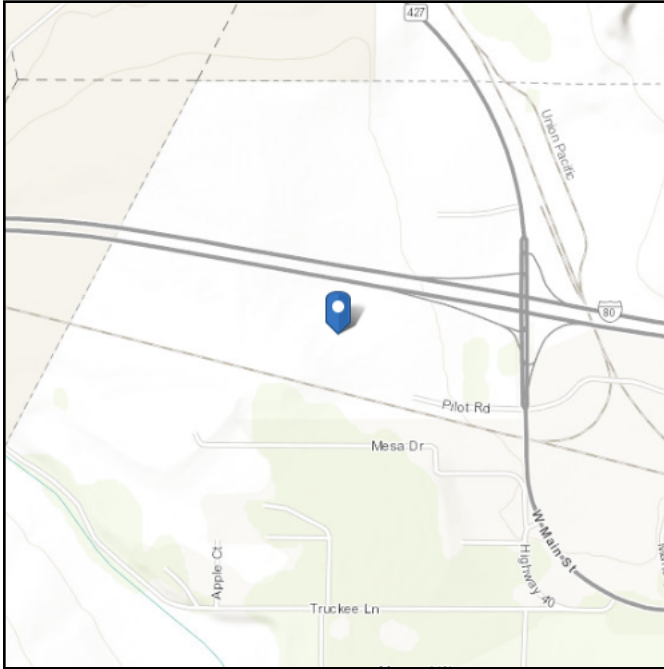
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ASCE 7 Hazards Report

Address:
No Address at This
Location

Standard: ASCE/SEI 7-22
Risk Category: III
Soil Class: D - Stiff Soil

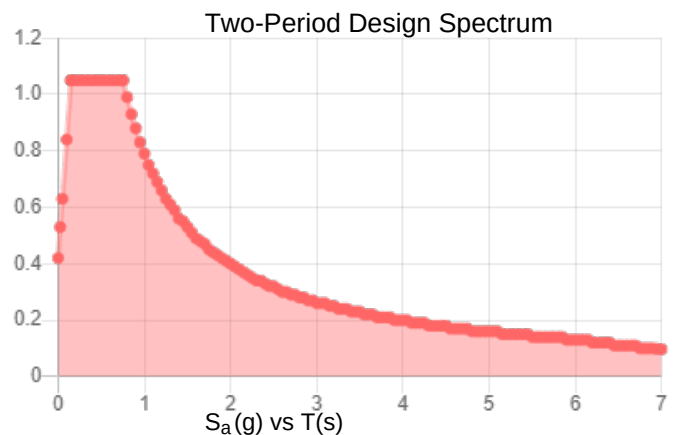
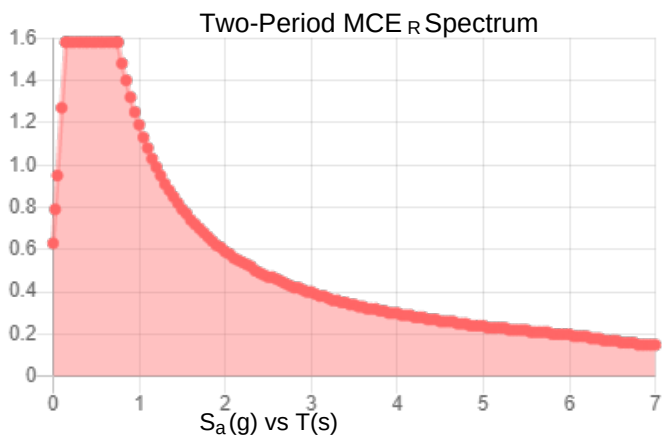
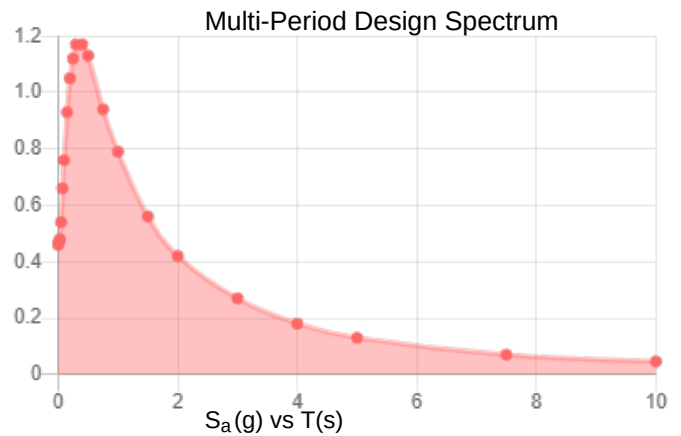
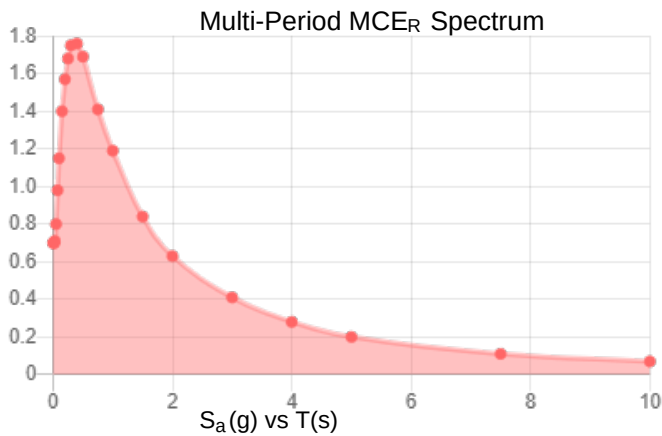
Elevation: 4180.87 ft (NAVD 88)
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Results:

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**MOHR CAPITAL
CITY OF FERNLEY, NEVADA**

PRELIMINARY DRAINAGE DESIGN REPORT

Prepared by:
Reno Engineering Corporation
Justin Farley, PE
One East First Street, Ste 1400 • Reno, Nevada 89501

August 15th, 2022

PREFACE

This preliminary report determines required storm drain improvements for the proposed design of one warehouse building on APN:021-061-32. The warehouse building is proposed to encompass 446,940 square feet.



The entirety of the proposed site is located within FEMA Flood Zone X per FEMA FIRM Panels 32019C0082E dated January 16, 2009.

This report is prepared in compliance with City of Fernley Public Works Design Standards.

The following narrative details the drainage design concepts, and the assumptions made to complete the design.

PROJECT DESCRIPTION

The proposed development consists of one warehouse building totaling 446,940 SF and requisite site improvements to serve the warehouse buildings. The total parcel area is 27.83 acres. Development surrounding the parcel includes the Speedco Truck Lube and Tires to the east, Pilot Travel Center to the east off Main Street, residential housing south of the site and undeveloped private and BLM parcels to the west. Currently the site is undeveloped, and the parcel generally slopes west to east at an approximate 2.4% grade.

Proposed private storm drainage infrastructure will be the discharge points of all runoff contributed by the proposed development. Peak runoff is expected to increase based on the addition of impervious surfaces for the development, which will be mitigated by proposed onsite detention/retention.

A preliminary soils investigation has been included from the NRCS database and shows a large majority of the site consists of loamy sands with patna sands also included. Based on the preliminary investigation, copious soil infiltration rates are expected. Final design to defer to onsite geotechnical report for site composition.

ONSITE RUNOFF AND DRAINAGE SYSTEM IMPROVEMENTS

The contributing area to the proposed detention/retention area was evaluated in the existing and proposed area for the 5, 25 & 100-year event and the detention structure sized to accommodate the post development flow increase. The existing condition has been calculated based on an undeveloped site. Based on the preliminary grading plan, NOAA Atlas 14 values and a rational coefficient of 0.90 for the proposed warehouse use, contributories are increased in the proposed condition and are assumed to be mitigated by the proposed onsite detention basin. Refer to attached calculations for further analysis.

Onsite flows are designed to convey to the proposed detention/retention facility which have been sized to accommodate the increase in 100-year runoff from the existing condition. The existing condition 100-year flow rate has been calculated at 17.2 cfs with the proposed calculated at 60.0 cfs. The proposed onsite detention has been sized to detain the increase in calculated 100-year design flow (42.8 cfs) and is designed to have a minimum volume of 1,480 cy with 1' of freeboard.

Onsite storm drainage shall be based on either the 5-year or 25-year flow, depending on the inlet condition. On grade conditions are typically sized to the 5-year event, while sag conditions without 25-year releases are sized for the 25-year event flow.

EXISTING DRAINAGE FACILITIES

The existing site condition includes an undeveloped parcel with what appears to be runoff from adjacent undeveloped parcels to the west. Onsite runoff is proposed to be collected in the proposed detention/retention basin with storm events up to and including the 100-year event detained prior to discharging into the existing runoff pattern running north along Main St towards the Truckee River, thus no adverse effects are anticipated on the downstream storm system. Refer to attached calculations for further analysis.

LOW IMPACT DEVELOPMENT

Low Impact Development will be addressed with the final drainage report. The proposed detention/retention basins may double as a low impact development feature and will be designed as such with the final drainage report, if feasible. In addition, ditches and swales shall be used to divert surface flows through open space areas where applicable.

IMPACTS OF DEVELOPMENT CONCLUSIONS AND RECOMMENDATIONS.

- The proposed development would increase peak flow. Total peak flow for the site is estimated at: 5-year, 7.6 cfs (ex) 25.8 cfs (prop), 25-year, 11.9 cfs (ex) 41.1 cfs (prop), 100-year, 17.2 (prop) 60.0 (prop).
- The proposed detention/retention basins are designed to detain the increase in flows from the project site based on the increase in impervious surfaces.
- Preliminary analysis of the onsite drainage system has been conducted and included with this report.
- LID features shall be included in the final design.

Exhibits and Supports Information

- **NOAA Atlas 14 Data**
- **NRCS Soils Data**
- **Drainage summary calculation.** Runoff Summary. Preliminary hydrology calculations for onsite runoff of the 5, 25 and 100-year events.

NOAA ATLAS 14



NOAA Atlas 14, Volume 1, Version 5
Location name: Fernley, Nevada, USA*
Latitude: 39.6149°, Longitude: -119.2694°
Elevation: 4170.77 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	1.22 (0.996-1.49)	1.54 (1.25-1.87)	2.05 (1.68-2.53)	2.53 (2.05-3.11)	3.30 (2.60-4.13)	4.02 (3.08-5.05)	4.84 (3.61-6.16)	5.83 (4.19-7.61)	7.39 (5.04-10.0)	8.81 (5.74-12.3)
10-min	0.930 (0.756-1.13)	1.16 (0.948-1.43)	1.57 (1.28-1.92)	1.93 (1.55-2.37)	2.51 (1.98-3.14)	3.05 (2.35-3.85)	3.68 (2.74-4.69)	4.43 (3.19-5.78)	5.62 (3.84-7.64)	6.70 (4.37-9.33)
15-min	0.772 (0.628-0.932)	0.964 (0.784-1.18)	1.29 (1.06-1.59)	1.59 (1.28-1.96)	2.08 (1.63-2.59)	2.52 (1.94-3.18)	3.04 (2.27-3.88)	3.66 (2.63-4.78)	4.64 (3.17-6.32)	5.54 (3.61-7.71)
30-min	0.518 (0.422-0.628)	0.648 (0.528-0.794)	0.872 (0.710-1.07)	1.07 (0.866-1.32)	1.40 (1.10-1.75)	1.70 (1.31-2.14)	2.05 (1.53-2.61)	2.47 (1.77-3.22)	3.13 (2.14-4.26)	3.73 (2.43-5.19)
60-min	0.321 (0.261-0.388)	0.401 (0.326-0.491)	0.539 (0.439-0.661)	0.663 (0.536-0.815)	0.866 (0.681-1.08)	1.05 (0.808-1.32)	1.27 (0.945-1.61)	1.53 (1.10-1.99)	1.94 (1.32-2.63)	2.31 (1.51-3.21)
2-hr	0.201 (0.168-0.248)	0.252 (0.210-0.308)	0.326 (0.268-0.401)	0.388 (0.316-0.478)	0.482 (0.382-0.600)	0.564 (0.438-0.709)	0.668 (0.505-0.850)	0.795 (0.584-1.03)	1.00 (0.706-1.33)	1.20 (0.811-1.63)
3-hr	0.153 (0.129-0.185)	0.191 (0.162-0.233)	0.241 (0.202-0.294)	0.282 (0.234-0.346)	0.340 (0.278-0.416)	0.392 (0.314-0.484)	0.458 (0.360-0.572)	0.541 (0.416-0.685)	0.677 (0.505-0.897)	0.800 (0.582-1.09)
6-hr	0.096 (0.081-0.115)	0.120 (0.101-0.145)	0.151 (0.127-0.184)	0.176 (0.146-0.213)	0.207 (0.171-0.253)	0.231 (0.187-0.283)	0.257 (0.205-0.317)	0.295 (0.232-0.369)	0.358 (0.275-0.454)	0.414 (0.311-0.554)
12-hr	0.056 (0.048-0.065)	0.071 (0.061-0.083)	0.090 (0.077-0.106)	0.105 (0.090-0.124)	0.125 (0.105-0.149)	0.141 (0.117-0.169)	0.157 (0.129-0.190)	0.173 (0.139-0.212)	0.194 (0.152-0.242)	0.219 (0.167-0.277)
24-hr	0.034 (0.029-0.038)	0.042 (0.037-0.048)	0.054 (0.048-0.062)	0.064 (0.056-0.072)	0.077 (0.067-0.087)	0.088 (0.076-0.100)	0.099 (0.085-0.112)	0.110 (0.094-0.126)	0.126 (0.106-0.145)	0.139 (0.116-0.160)
2-day	0.019 (0.016-0.021)	0.024 (0.021-0.027)	0.030 (0.027-0.035)	0.036 (0.031-0.040)	0.043 (0.037-0.049)	0.049 (0.043-0.056)	0.056 (0.048-0.064)	0.062 (0.053-0.071)	0.072 (0.060-0.083)	0.079 (0.065-0.092)
3-day	0.013 (0.012-0.015)	0.017 (0.015-0.019)	0.022 (0.019-0.025)	0.026 (0.023-0.029)	0.031 (0.027-0.036)	0.036 (0.031-0.041)	0.041 (0.035-0.046)	0.046 (0.039-0.052)	0.052 (0.044-0.060)	0.058 (0.048-0.067)
4-day	0.011 (0.009-0.012)	0.014 (0.012-0.016)	0.018 (0.016-0.020)	0.021 (0.018-0.024)	0.025 (0.022-0.029)	0.029 (0.025-0.033)	0.033 (0.028-0.038)	0.037 (0.031-0.042)	0.043 (0.036-0.049)	0.047 (0.039-0.055)
7-day	0.007 (0.006-0.008)	0.009 (0.008-0.010)	0.012 (0.010-0.013)	0.014 (0.012-0.016)	0.017 (0.014-0.019)	0.019 (0.016-0.022)	0.022 (0.018-0.025)	0.024 (0.020-0.028)	0.028 (0.023-0.033)	0.031 (0.025-0.037)
10-day	0.005 (0.005-0.006)	0.007 (0.006-0.008)	0.009 (0.008-0.011)	0.011 (0.009-0.013)	0.013 (0.011-0.015)	0.015 (0.012-0.017)	0.017 (0.014-0.019)	0.019 (0.015-0.022)	0.021 (0.017-0.025)	0.023 (0.019-0.028)
20-day	0.003 (0.003-0.004)	0.004 (0.004-0.005)	0.005 (0.005-0.006)	0.006 (0.006-0.007)	0.008 (0.007-0.009)	0.009 (0.007-0.010)	0.010 (0.008-0.011)	0.011 (0.009-0.012)	0.012 (0.010-0.014)	0.013 (0.011-0.015)
30-day	0.002 (0.002-0.003)	0.003 (0.003-0.004)	0.004 (0.004-0.005)	0.005 (0.004-0.005)	0.006 (0.005-0.007)	0.006 (0.005-0.007)	0.007 (0.006-0.008)	0.008 (0.007-0.009)	0.009 (0.007-0.010)	0.009 (0.008-0.011)
45-day	0.002 (0.002-0.002)	0.002 (0.002-0.003)	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)	0.007 (0.005-0.008)	0.007 (0.006-0.008)
60-day	0.002 (0.001-0.002)	0.002 (0.002-0.002)	0.003 (0.002-0.003)	0.003 (0.003-0.004)	0.004 (0.003-0.004)	0.004 (0.003-0.005)	0.004 (0.004-0.005)	0.005 (0.004-0.005)	0.005 (0.004-0.006)	0.006 (0.005-0.006)

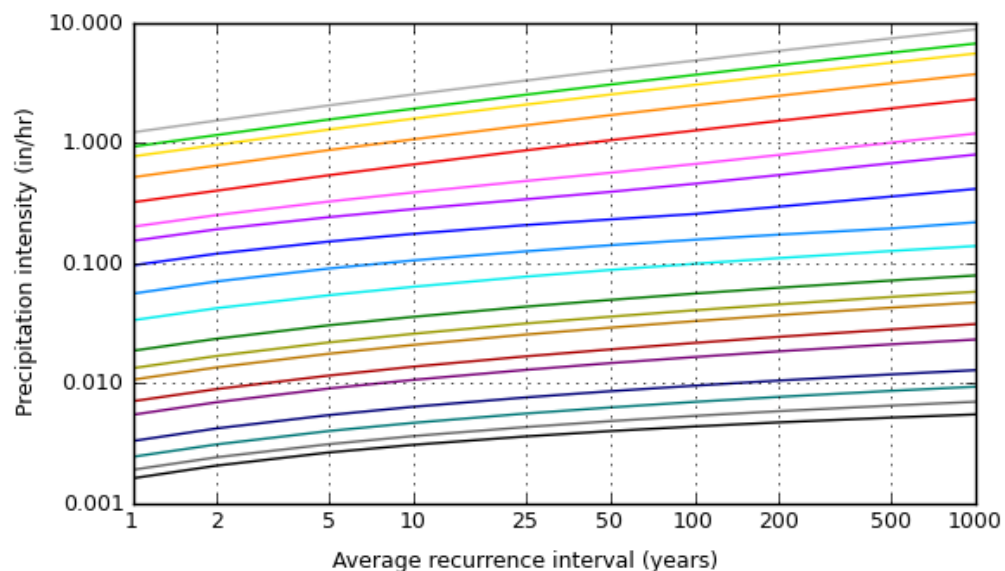
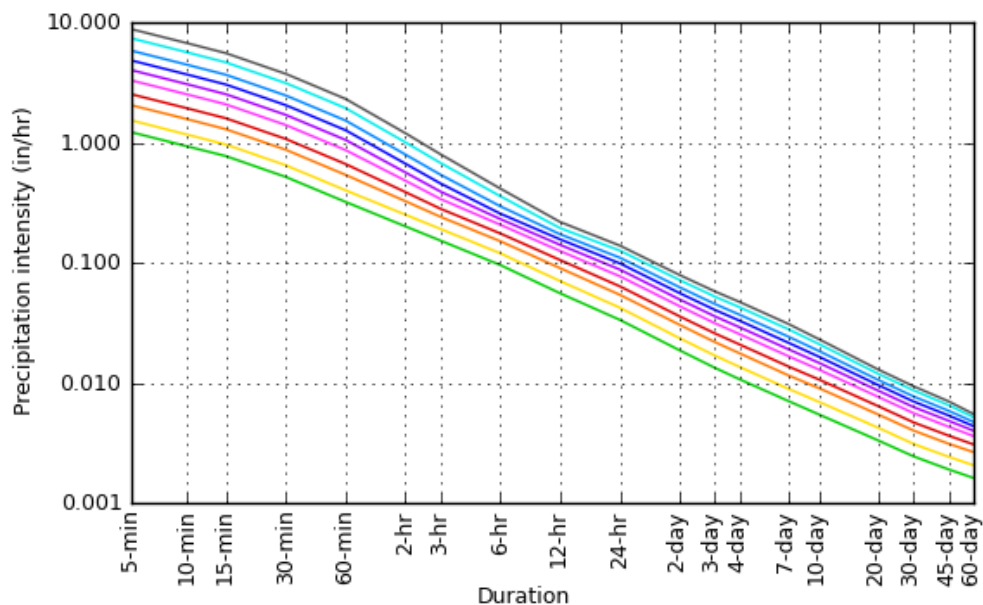
¹ Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).
Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average 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

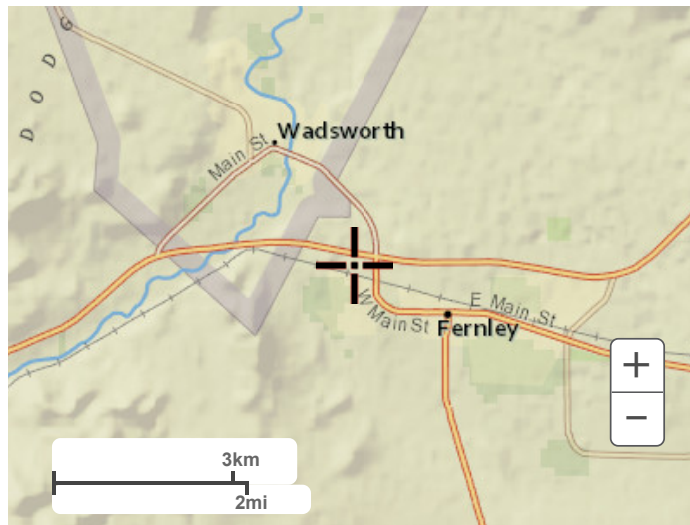
PDS-based intensity-duration-frequency (IDF) curves

Latitude: 39.6149°, Longitude: -119.2694°



Maps & aerials

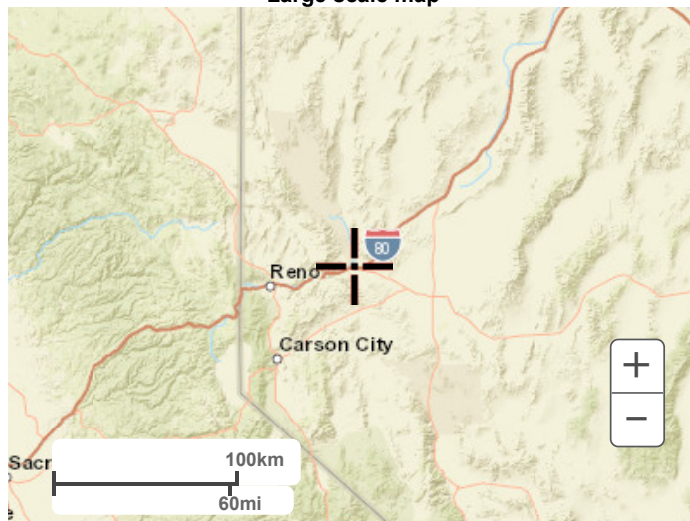
Small scale terrain



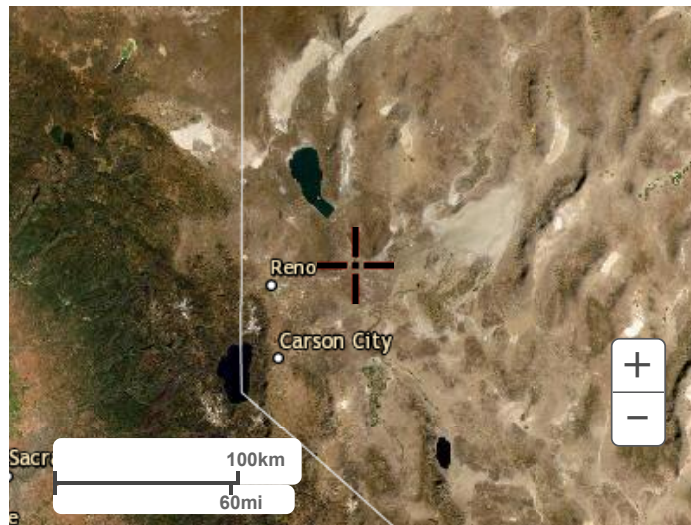
Large scale terrain



Large scale map



Large scale aerial



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NRCS Soils Report



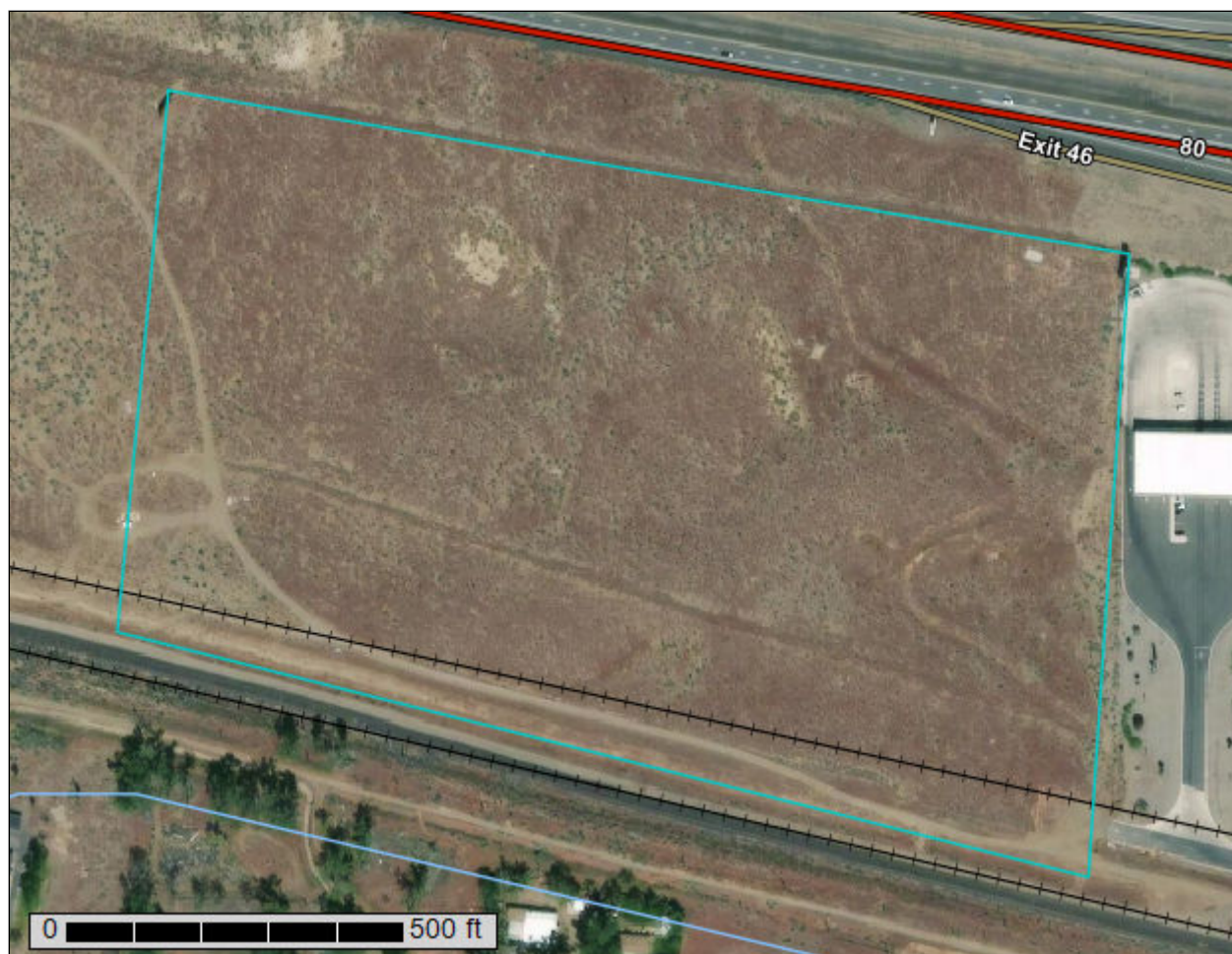
United States
Department of
Agriculture

NRCS

Natural
Resources
Conservation
Service

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

Custom Soil Resource Report for Fallon-Fernley Area, Nevada, Parts of Churchill, Lyon, Storey and Washoe Counties



Preface

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

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

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

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

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

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

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How Soil Surveys Are Made

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

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

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

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

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

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

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

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

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

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

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

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

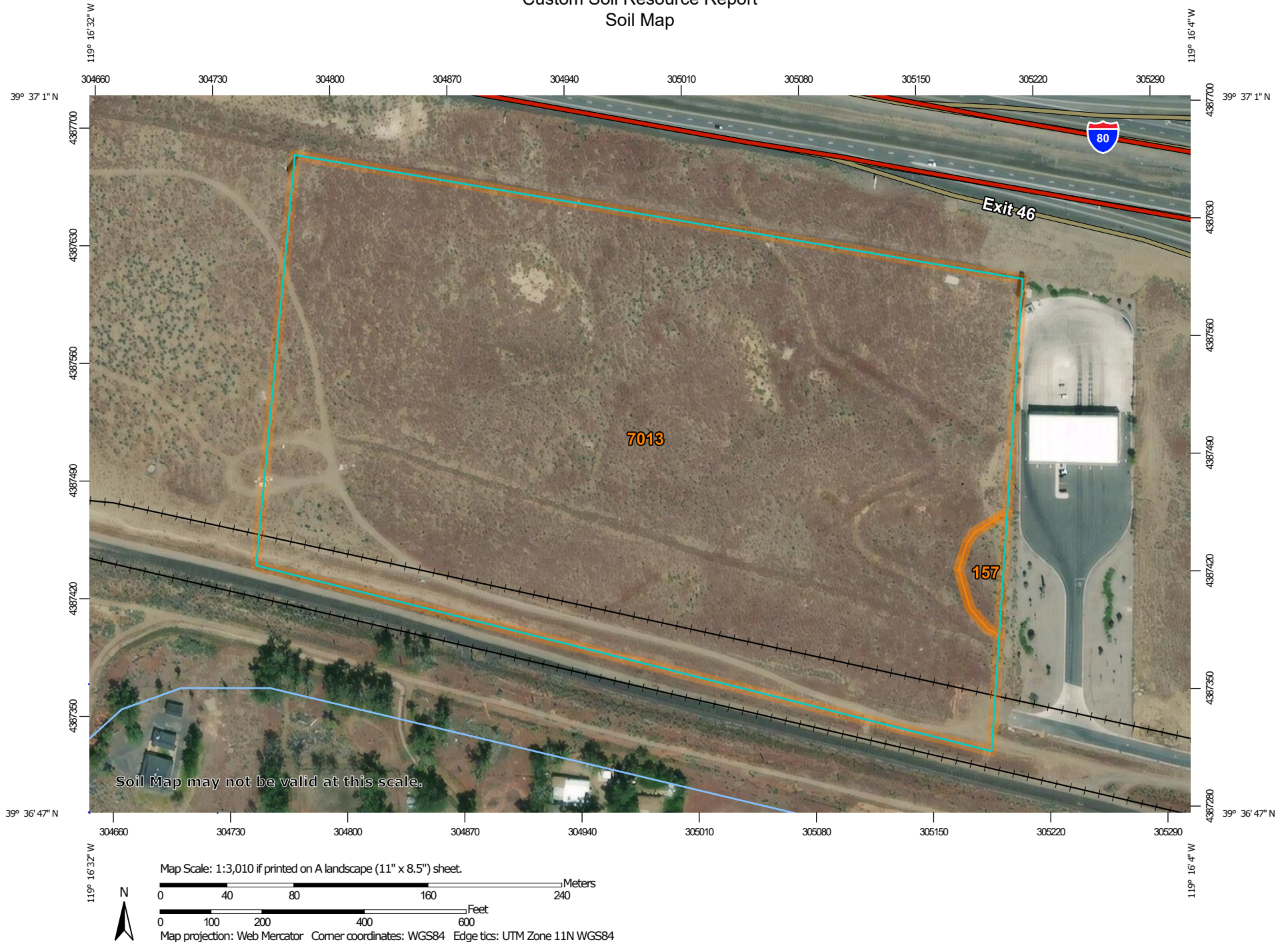
Custom Soil Resource Report

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

Soil Map

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

Custom Soil Resource Report Soil Map



MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

 Soil Map Unit Polygons

 Soil Map Unit Lines

 Soil Map Unit Points

Special Point Features

 Blowout

 Borrow Pit

 Clay Spot

 Closed Depression

 Gravel Pit

 Gravelly Spot

 Landfill

 Lava Flow

 Marsh or swamp

 Mine or Quarry

 Miscellaneous Water

 Perennial Water

 Rock Outcrop

 Saline Spot

 Sandy Spot

 Severely Eroded Spot

 Sinkhole

 Slide or Slip

 Sodic Spot

 Spoil Area

 Stony Spot

 Very Stony Spot

 Wet Spot

 Other

 Special Line Features

Water Features

 Streams and Canals

Transportation

 Rails

 Interstate Highways

 US Routes

 Major Roads

 Local Roads

Background

 Aerial Photography

MAP INFORMATION

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

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

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

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

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

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

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

Soil Survey Area: Fallon-Fernley Area, Nevada, Parts of Churchill, Lyon, Storey and Washoe Counties
Survey Area Data: Version 17, Sep 9, 2021

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

Date(s) aerial images were photographed: Dec 31, 2009—Sep 11, 2017

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background

MAP LEGEND

MAP INFORMATION

imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
157	Hawsley sand, 0 to 2 percent slopes	0.3	1.1%
7013	Hawsley loamy sand, 2 to 8 percent slopes	28.6	98.9%
Totals for Area of Interest		28.9	100.0%

Map Unit Descriptions

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

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

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

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

onsite investigation is needed to define and locate the soils and miscellaneous areas.

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

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

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

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

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

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

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

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

Fallon-Fernley Area, Nevada, Parts of Churchill, Lyon, Storey and Washoe Counties

157—Hawsley sand, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: plzv
Elevation: 4,020 to 4,230 feet
Mean annual precipitation: 4 to 6 inches
Mean annual air temperature: 51 to 55 degrees F
Frost-free period: 120 to 140 days
Farmland classification: Not prime farmland

Map Unit Composition

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

Description of Hawsley

Setting

Landform: Sand sheets
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from mixed and/or eolian sands derived from mixed

Typical profile

H1 - 0 to 8 inches: sand
H2 - 8 to 42 inches: stratified coarse sand to fine sand
H3 - 42 to 60 inches: sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Very high (19.98 to 99.90 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 9.0
Available water supply, 0 to 60 inches: Low (about 4.2 inches)

Interpretive groups

Land capability classification (irrigated): 4s
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: A
Ecological site: R027XY009NV - SANDY 5-8 P.Z.
Hydric soil rating: No

Minor Components

Appian

Percent of map unit: 6 percent
Landform: Lake terraces
Down-slope shape: Linear
Across-slope shape: Convex
Ecological site: R027XY024NV - SODIC TERRACE
Hydric soil rating: No

Hawsley

Percent of map unit: 5 percent
Landform: Sand sheets
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R027XY009NV - SANDY 5-8 P.Z.
Hydric soil rating: No

Swingler

Percent of map unit: 4 percent
Landform: Lake terraces
Down-slope shape: Linear
Across-slope shape: Convex
Ecological site: R027XY012NV - SODIC SANDS
Hydric soil rating: No

7013—Hawsley loamy sand, 2 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2n9zz
Elevation: 3,940 to 4,590 feet
Mean annual precipitation: 5 to 8 inches
Mean annual air temperature: 48 to 54 degrees F
Frost-free period: 100 to 140 days
Farmland classification: Not prime farmland

Map Unit Composition

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

Description of Hawsley

Setting

Landform: Sand sheets
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy eolian sands derived from mixed over sandy alluvium
derived from mixed

Typical profile

A1 - 0 to 4 inches: sand
A2 - 4 to 8 inches: sand
C - 8 to 23 inches: sand
Ck1 - 23 to 42 inches: sand
Ck2 - 42 to 62 inches: sand

Properties and qualities

Slope: 2 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Very high (19.98 to 99.90 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 8 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 45.0
Available water supply, 0 to 60 inches: Low (about 4.2 inches)

Interpretive groups

Land capability classification (irrigated): 4s
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: A
Ecological site: R027XY009NV - SANDY 5-8 P.Z.
Hydric soil rating: No

Minor Components

Bluewing

Percent of map unit: 7 percent
Landform: — error in exists on —
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Convex
Ecological site: R027XY050NV - COARSE GRAVELLY LOAM 4-8 P.Z.
Hydric soil rating: No

Mazuma

Percent of map unit: 4 percent
Landform: Fan skirts
Landform position (three-dimensional): Tread, talf
Down-slope shape: Linear
Across-slope shape: Convex
Ecological site: R027XY024NV - SODIC TERRACE
Other vegetative classification: SODIC TERRACE (027XY024NV_1)
Hydric soil rating: No

Isolde

Percent of map unit: 2 percent
Landform: Dunes
Landform position (three-dimensional): Riser
Down-slope shape: Convex

Custom Soil Resource Report

Across-slope shape: Convex
Ecological site: R027XY016NV - SODIC DUNES
Other vegetative classification: SODIC DUNES (027XY016NV_3)
Hydric soil rating: No

Bluewing

Percent of map unit: 2 percent
Landform: — error in exists on —
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Convex
Ecological site: R027XY022NV - VALLEY WASH
Hydric soil rating: No

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Custom Soil Resource Report

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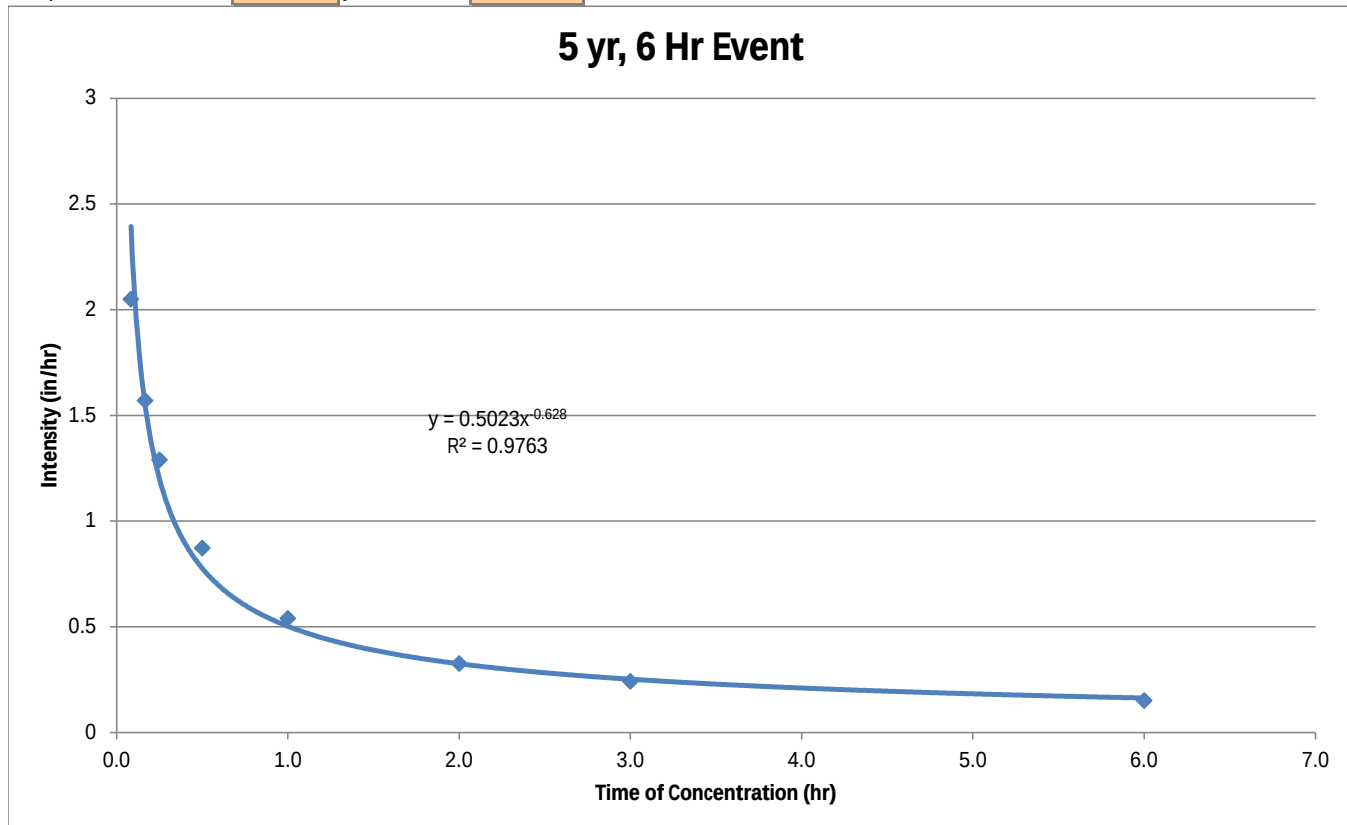
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DRAINAGE CALCULATIONS

Client **MOHR CAPITAL**Project **MOHR CAPITAL**Calcs By **JH**Checked By **JF**

PRECIPITATION FREQUENCY ESTIMATES

by duration for ARI:	1	2	5	10	25	50	100	200	500	1000
0.1	1.22	1.54	2.05	2.53	3.3	4.02	4.84	5.83	7.39	8.81
0.2	0.93	1.16	1.57	1.93	2.51	3.05	3.68	4.43	5.62	6.7
0.3	0.772	0.964	1.29	1.59	2.08	2.52	3.04	3.66	4.64	5.54
0.5	0.518	0.648	0.872	1.07	1.4	1.7	2.05	2.47	3.13	3.73
1.0	0.321	0.401	0.539	0.663	0.866	1.05	1.27	1.53	1.94	2.31
2.0	0.201	0.252	0.326	0.388	0.482	0.565	0.668	0.795	1	1.2
3.0	0.153	0.191	0.241	0.282	0.34	0.392	0.458	0.541	0.677	0.8
6.0	0.096	0.12	0.151	0.176	0.207	0.231	0.257	0.295	0.358	0.414
12.0	0.056	0.071	0.09	0.105	0.125	0.141	0.157	0.173	0.194	0.219
24.0	0.034	0.042	0.054	0.064	0.077	0.088	0.099	0.11	0.126	0.139
46.7	0.019	0.024	0.03	0.036	0.043	0.049	0.056	0.062	0.072	0.079
72.0	0.013	0.017	0.022	0.026	0.031	0.036	0.041	0.046	0.052	0.058
93.3	0.011	0.014	0.018	0.021	0.025	0.029	0.033	0.037	0.043	0.047
168.0	0.007	0.009	0.012	0.014	0.017	0.019	0.022	0.024	0.028	0.031
240.0	0.005	0.007	0.009	0.011	0.013	0.015	0.017	0.019	0.021	0.023
480.0	0.003	0.004	0.005	0.006	0.008	0.009	0.01	0.011	0.012	0.013
720.0	0.002	0.003	0.004	0.005	0.006	0.006	0.007	0.008	0.009	0.009
1080.0	0.002	0.002	0.003	0.004	0.004	0.005	0.005	0.006	0.007	0.007
1440.0	0.002	0.002	0.003	0.003	0.004	0.004	0.004	0.005	0.005	0.006

Graph the : **5** yr, **6** Hr Storm

Client : **MOHR CAPITAL**
 Project : **MOHR CAPITAL**

Calced By : **JH**
 Checked By : **JF**

IDF Storm Event: **5 yr, 6 Hr Event**

IDF Parameters: b : **0.5023** m : **-0.6285** $i = b \cdot (x^m)$

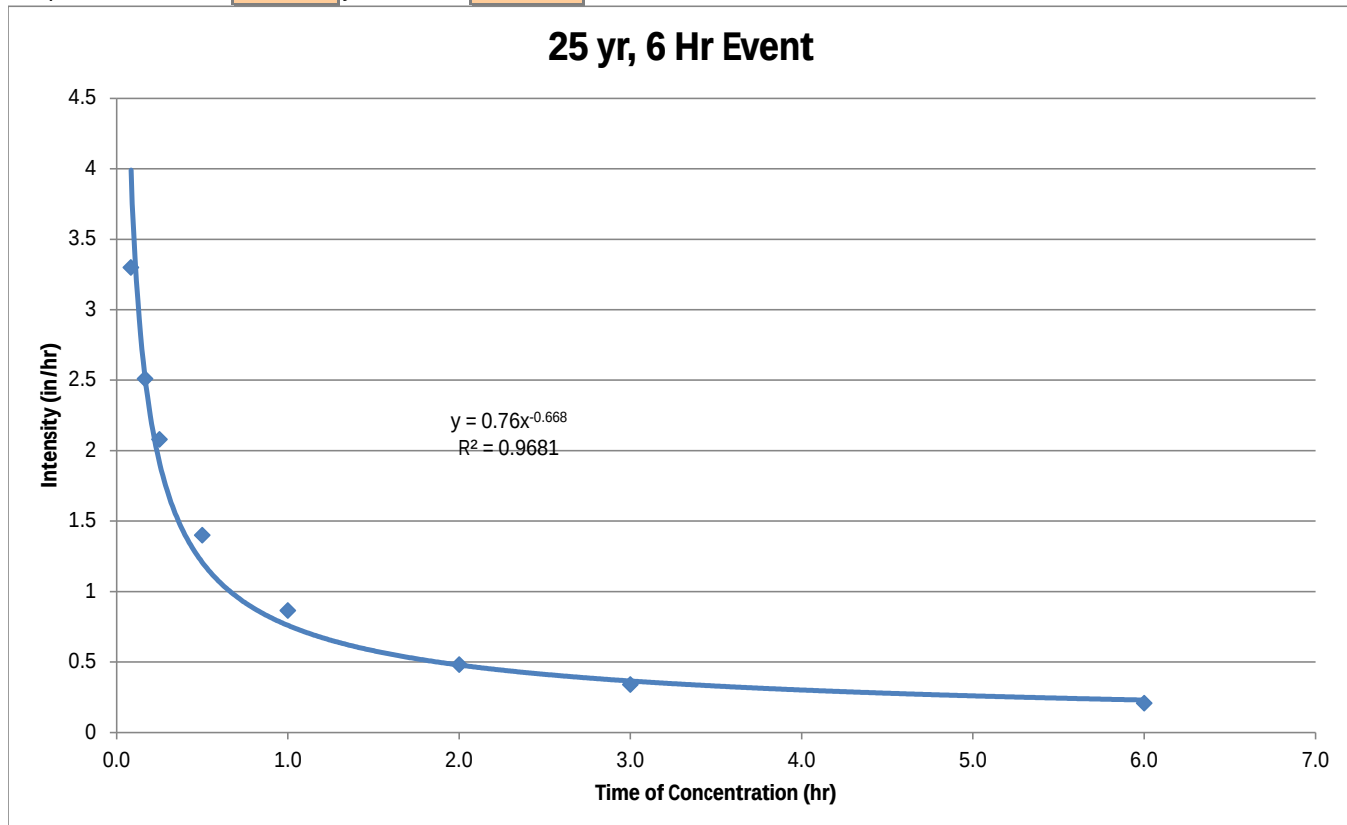
Storm Factor : **1**

Basin ID	A (ac.)	C	ToC (hr)	i (in/hr)	A*C	Q (cfs)
EXISTING	27.8	0.30	0.17	1.55	8.349	12.9
PROPOSED - OS	5.1	0.30	0.17	1.55	1.53	2.4
PROPOSED - DEV	22.7	0.90	0.17	1.55	20.43	31.6
PROPOSED - TOTAL	27.8	0.79	0.17	1.55	21.962	34.0

Client **MOHR CAPITAL**Project **MOHR CAPITAL**Calcs By **JH**Checked By **JF**

PRECIPITATION FREQUENCY ESTIMATES

by duration for ARI:	1	2	5	10	25	50	100	200	500	1000
0.1	1.22	1.54	2.05	2.53	3.3	4.02	4.84	5.83	7.39	8.81
0.2	0.93	1.16	1.57	1.93	2.51	3.05	3.68	4.43	5.62	6.7
0.3	0.772	0.964	1.29	1.59	2.08	2.52	3.04	3.66	4.64	5.54
0.5	0.518	0.648	0.872	1.07	1.4	1.7	2.05	2.47	3.13	3.73
1.0	0.321	0.401	0.539	0.663	0.866	1.05	1.27	1.53	1.94	2.31
2.0	0.201	0.252	0.326	0.388	0.482	0.565	0.668	0.795	1	1.2
3.0	0.153	0.191	0.241	0.282	0.34	0.392	0.458	0.541	0.677	0.8
6.0	0.096	0.12	0.151	0.176	0.207	0.231	0.257	0.295	0.358	0.414
12.0	0.056	0.071	0.09	0.105	0.125	0.141	0.157	0.173	0.194	0.219
24.0	0.034	0.042	0.054	0.064	0.077	0.088	0.099	0.11	0.126	0.139
46.7	0.019	0.024	0.03	0.036	0.043	0.049	0.056	0.062	0.072	0.079
72.0	0.013	0.017	0.022	0.026	0.031	0.036	0.041	0.046	0.052	0.058
93.3	0.011	0.014	0.018	0.021	0.025	0.029	0.033	0.037	0.043	0.047
168.0	0.007	0.009	0.012	0.014	0.017	0.019	0.022	0.024	0.028	0.031
240.0	0.005	0.007	0.009	0.011	0.013	0.015	0.017	0.019	0.021	0.023
480.0	0.003	0.004	0.005	0.006	0.008	0.009	0.01	0.011	0.012	0.013
720.0	0.002	0.003	0.004	0.005	0.006	0.006	0.007	0.008	0.009	0.009
1080.0	0.002	0.002	0.003	0.004	0.004	0.005	0.005	0.006	0.007	0.007
1440.0	0.002	0.002	0.003	0.003	0.004	0.004	0.004	0.005	0.005	0.006

Graph the : **25** yr, **6** Hr Storm

Client : **MOHR CAPITAL**
 Project : **MOHR CAPITAL**

Calced By : **JH**
 Checked By : **JF**

IDF Storm Event: **25 yr, 6 Hr Event**

IDF Parameters: b : **0.76** m : **-0.6675** $i = b \cdot (x^m)$

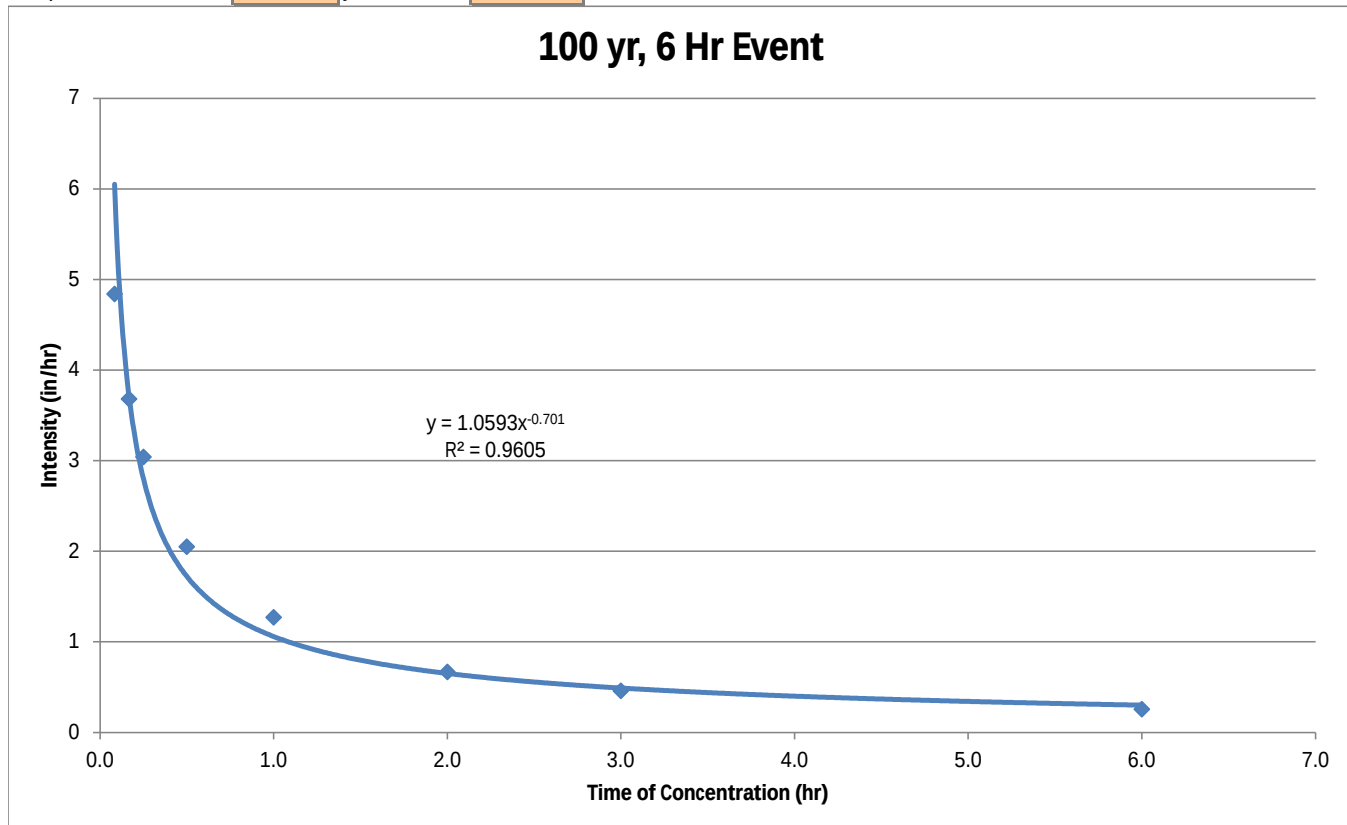
Storm Factor : **1**

Basin ID	A (ac.)	C	ToC (hr)	i (in/hr)	A*C	Q (cfs)
EXISTING	27.8	0.30	0.17	2.51	8.349	21.0
PROPOSED - OS	5.1	0.30	0.17	2.51	1.53	3.8
PROPOSED - DEV	22.7	0.90	0.17	2.51	20.43	51.3
PROPOSED - TOTAL	27.8	0.79	0.17	2.51	21.962	55.1

Client **MOHR CAPITAL**Project **MOHR CAPITAL**Calcs By **JH**Checked By **JF**

PRECIPITATION FREQUENCY ESTIMATES

by duration for ARI:	1	2	5	10	25	50	100	200	500	1000
0.1	1.22	1.54	2.05	2.53	3.3	4.02	4.84	5.83	7.39	8.81
0.2	0.93	1.16	1.57	1.93	2.51	3.05	3.68	4.43	5.62	6.7
0.3	0.772	0.964	1.29	1.59	2.08	2.52	3.04	3.66	4.64	5.54
0.5	0.518	0.648	0.872	1.07	1.4	1.7	2.05	2.47	3.13	3.73
1.0	0.321	0.401	0.539	0.663	0.866	1.05	1.27	1.53	1.94	2.31
2.0	0.201	0.252	0.326	0.388	0.482	0.565	0.668	0.795	1	1.2
3.0	0.153	0.191	0.241	0.282	0.34	0.392	0.458	0.541	0.677	0.8
6.0	0.096	0.12	0.151	0.176	0.207	0.231	0.257	0.295	0.358	0.414
12.0	0.056	0.071	0.09	0.105	0.125	0.141	0.157	0.173	0.194	0.219
24.0	0.034	0.042	0.054	0.064	0.077	0.088	0.099	0.11	0.126	0.139
46.7	0.019	0.024	0.03	0.036	0.043	0.049	0.056	0.062	0.072	0.079
72.0	0.013	0.017	0.022	0.026	0.031	0.036	0.041	0.046	0.052	0.058
93.3	0.011	0.014	0.018	0.021	0.025	0.029	0.033	0.037	0.043	0.047
168.0	0.007	0.009	0.012	0.014	0.017	0.019	0.022	0.024	0.028	0.031
240.0	0.005	0.007	0.009	0.011	0.013	0.015	0.017	0.019	0.021	0.023
480.0	0.003	0.004	0.005	0.006	0.008	0.009	0.01	0.011	0.012	0.013
720.0	0.002	0.003	0.004	0.005	0.006	0.006	0.007	0.008	0.009	0.009
1080.0	0.002	0.002	0.003	0.004	0.004	0.005	0.005	0.006	0.007	0.007
1440.0	0.002	0.002	0.003	0.003	0.004	0.004	0.004	0.005	0.005	0.006

Graph the : **100** yr, **6** Hr Storm

Client : **MOHR CAPITAL**
 Project : **MOHR CAPITAL**

Calced By : **JH**
 Checked By : **JF**

IDF Storm Event: **100 yr, 6 Hr Event**

IDF Parameters: b : **1.0593** m : **-0.7015** $i = b \cdot (x^m)$

Storm Factor : **1**

Basin ID	A (ac.)	C	ToC (hr)	i (in/hr)	A*C	Q (cfs)
EXISTING	27.8	0.30	0.17	3.72	8.349	31.0
PROPOSED - OS	5.1	0.30	0.17	3.72	1.53	5.7
PROPOSED - DEV	22.7	0.90	0.17	3.72	20.43	75.9
PROPOSED - TOTAL	27.8	0.79	0.17	3.72	21.962	81.6

**MOHR CAPITAL
CITY OF FERNLEY, NEVADA**

PRELIMINARY SEWAGE DESIGN REPORT

Prepared by:
Reno Engineering Corporation
Justin Farley, PE
One East First Street, Ste 1400 • Reno, Nevada 89501

August 15th, 2022

PREFACE

This report determines necessary on-site private sewer improvements for the proposed design of one warehouse building on APN:021-061-32. The warehouse building is proposed to encompass 446,940 square feet.



The following narrative details the sewage design concepts, and the assumptions made to complete the design.

PROJECT DESCRIPTION

The proposed development consists of one warehouse building totaling 446,940 SF and requisite site improvements to serve the warehouse buildings. The total parcel area is 27.83 acres. Development surrounding the parcel includes the Speedco Truck Lube and Tires to the east, Pilot Travel Center to the east off Main Street, residential housing south of the site and undeveloped private and BLM parcels to the west. Currently the site is undeveloped, and the parcel generally slopes west to east at an approximate 2.4% grade.

New private sewer mains will convey onsite developed sewage flow to the existing public main located within Pilot Road.

This report summarizes design considerations and conclusions for the onsite private system and estimates impacts on the public main utilized by this project.

SANITARY SEWER PEAK DEMAND

The expected overall onsite sewage peak flow from the proposed project is calculated based on standard estimation values for the development type. The proposed warehouse development group, consisting of 3,000 gal. per acre, per day.

$$\frac{3,000 \text{ gal/day}}{\text{acre}} * 27.83 \text{ acres} = 0.083 \text{ mgd} = 0.13 \text{ cfs}$$

The actual flow is likely lower than this as a warehouse use. The above calculated value will be used for a conservative preliminary design, final sizing determinations will be based on fixture unit calculations provided by the MEP design team during design for construction drawings.

Onsite generated sewage flows will be conveyed through an on-site system, connecting to existing infrastructure within Pilot Road.

SANITARY SEWER ON SITE SYSTEM SIZING

Onsite main and lateral sizing will be determined per plumbing code requirements. For the largest onsite main, an 8" main at an assumed minimum 1.0% slope and a Manning's value of 0.014, the expected peak flow depth is 0.16ft with a peak velocity of 2.0 fps. Lateral sizes have been estimated at 6" with a minimum slope of 1.0%. The main and lateral sizes will be confirmed with plumbing code requirements during final design.

CONNECTION TO EXISTING PRIVATE AND PUBLIC MAINS

The proposed onsite mains connect to an existing 8" public main in Pilot Road. The 8" main at 2.4% grade has a half full capacity of 0.86 cfs, thus the proposed project is 15.1% of the existing pipe capacity

based on conservative estimations. Final MEP fixture unit design will most likely reduce the estimated sewer flow with final design.

The other known parcels served by the existing main is the Speedco and Pilot Travel Center which based on the same estimation methodology provided above has an estimated peak flow of 0.16 cfs (10,000 gal/day per acre over 9.1 acres for the travel center and 3,000 gal/day per acre over 4.4 acres for Speedco Inc.). With the estimated capacity of half full capacity 0.86 cfs and the calculated combined peak flow of the proposed project and the travel stop, the pipe is estimated at 37.2% of the calculated half full capacity.

CONCLUSIONS

- The proposed warehouse project has a total calculated peak flow of 0.13 cfs, based on standard estimation values for the development type.
- Existing main has been checked for capacity and appears to be adequately sized for proposed conservative development peak flows.

Estimated Water Demand (Domestic)

Rate = 0.02 gpd / SF for Warehouse Use

Proposed Project = 446,940 SF ← building area

$$\text{Estimated Demand} = 446,940 \text{ SF} \times \frac{0.02 \text{ gpd}}{1 \text{ SF}} = 8,938 \text{ gpd}$$

$$8,938 \text{ gpd} = 10.01 \frac{\text{Ac-ft}}{\text{yr}}$$

Estimated Water Demand (Irrigation)

Rate = 0.5 AFY / LS Acre for landscaped area

Proposed Project = 27.83 Ac × 0.2 LS = 5.56 Landscaped Acres

Estimated Demand = 5.56 Ac × 0.5 AFY / Landscape Acre

$$= 2.78 \frac{\text{Ac-ft}}{\text{yr}}$$

Estimated Sewage Demand

Rate = 3,000 gallons per acre per day

Proposed Project = 446,940 SF / 43560 $\frac{\text{SF}}{\text{Ac}}$ = 10.26 Acres

$$\text{Estimated Demand} = 10.26 \text{ Ac} \times 3000 \frac{\text{gal-day}}{\text{acre}} = 30,780 \text{ gpd}$$



CITY OF FERNLEY

Planning Commission AGENDA REPORT

Meeting Date: June 14, 2023

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) Discussion and possible action on a tentative subdivision map application (TSM23001) submitted by Wood Rodgers on behalf of the Clements Family to allow for the development of a 241-lot single-family detached subdivision named "Clements Ranch" on a ± 69.2 -acre portion of the larger ± 83.90 -acre parcel generally located north of Farm District Road at the intersection of Clearwater Parkway (APN: 021-341-18).

AGENDA ITEM BRIEF:

The proposed development consists of a 241-lot single family residential subdivision on approximately 69.2 acres of the larger ± 83.90 -acre Clements parcel. Lots within the SF6 zone may be as small as 6,000 square feet, but the developer has offered larger lots around the perimeter as part of the development agreement in order to provide buffering for neighboring developments.

RECOMMENDED MOTION:

Approval

"I move to forward a recommendation of approval to City Council for the tentative subdivision map associated with TSM23001 based on findings TM1 through TM11 and subject to the conditions of approval as presented by staff."

Denial

"Based on information received in written materials and at the public hearings on this matter, I move to forward a recommendation of denial to City Council for the tentative subdivision map associated with TSM23001 because I have determined the proposed changes are detrimental to the public's health, safety, and general welfare and am unable to make the following required findings: I am unable to make the finding(s) _____ as it relates to _____. Therefore, I cannot approve the tentative subdivision map."

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:

Note: Though further specific language has not been provided, all other motions acceptable under Planning Commission parliamentary procedure are possible.

BACKGROUND:

This project has had three prior applications which were approved by City Council by a vote of 5-0 on December 21, 2022. MPA22003 was a master plan amendment request to change ±15.5-acres from Single Family Residential to Mixed Residential. ZMA22008 was a zoning map amendment to change that same ±15.5-acre portion of the project site from Rural Residential, 1-acre minimum lot size to Medium Density Residential, 14 dwelling units per acre maximum and the remaining parcel to Single-Family Residential, 6,000 square foot minimum lot size. Finally, DA22003 is a development agreement regarding design standards. The recorded development agreement is attached as a supplemental document for your reference.

APPROVAL CRITERIA:

Recommendations and decisions on tentative maps shall be based on consideration of all of the following criteria:

1. Compliance with environmental and health laws and regulations concerning water and air pollution, solid waste disposal, water supply facilities, community or public sewage disposal, and, where applicable, individual systems for sewage disposal;
2. Availability of water that meets applicable health standards and is sufficient for the reasonably foreseeable needs of the subdivision;
3. Availability and accessibility of utilities;
4. Availability and accessibility of public services such as schools, police and fire protection, transportation, recreation facilities, and parks;
5. Consistency with the zoning district regulations;
6. Conformity with the master streets and highways plan;
7. Effect of the proposed subdivision on existing public streets and the need for new streets or highways to serve the subdivision;
8. Physical land characteristics, such as floodplain, slope, soil, and elevation differentials with abutting properties;
9. Recommendations and comments of review bodies;
10. Conformity to the master sewer and water utility plan; and
11. Compliance with this Code and all other applicable regulations.

STAFF RECOMMENDATIONS AND ANALYSIS:

Due to staffing issues within the City of Fernley development team, staff is not prepared to provide a detailed analysis and recommendation regarding this project at the time of agenda publication. Wood Rogers has prepared a very thorough report regarding the merits and challenges of this project, and staff recommends Commissioners familiarize themselves with the project through that document. On a related note, the final 153 pages of the attached document pertain to the traffic report. If a less in-depth overview of traffic concerns is desired, staff recommends reviewing only page i of i of Section 4 that summarizes the traffic engineer's findings.

Staff cannot delay presentation to the Planning Commission of this item due to statutory requirements regarding action timelines required of the Planning Commission, which may be found in NRS 278.330. Staff will be prepared on the day of the Planning Commission meeting with a detailed analysis, a recommendation, and conditions of approval for this item.

RELEVANT LAWS, STATUTES, AND REGULATIONS:

Note: All of the links supplied for relevant laws, statutes, and regulations are correct as of the day of publication. City of Fernley Planning Department will not be monitoring these links for continued applicability and operation beyond the June 12, 2023 Planning Commission.

[Nevada Revised Statutes \(NRS\), Chapter 278 - Planning and Zoning](#)
[Fernley Municipal Code \(FMC\), Title 32 - Development Code](#)
[City of Fernley Comprehensive Master Plan, August 2018](#)

Specific References:

[NRS 278.330 - 278.353](#) regarding Subdivision of Land: Tentative Maps
[FMC Section 32.03.060](#) (f)(1) - Development Code, Administration, Land division applications, Subdivision maps, Tentative subdivision maps
[FMC Section 32.06.070](#) - Development Code, Zoning Districts, Residential - Single-family (SF20, SF12, SF9, SF6)
[FMC Chapter 32.09](#) - Development Code, Development Standards

FINANCIAL IMPLICATIONS:

N/A

ATTACHMENTS:

1. Development Agreement
2. Application Booklet Provided by Wood Rodgers

APN# 021-341-18

Recording Requested by:

Name: City of Fernley

Address: 595 Silver Lace Blvd

City/State/Zip: Fernley, NV 89408

Mail Tax Statements to:

Name: _____

Address: _____

City/State/Zip: _____

DOC #: 666752

02/10/2023 01:28 PM Page: 1 of 14

OFFICIAL RECORD

Requested By:
CITY OF FERNLEY

Lyon County, NV
Anita Talbot, Recorder

Fee: \$0.00 RPTT: \$0.00
Recorded By: blathrop



DA22003 Clements Ranching, LLC

Title of Document

(Required Field)

FILL IN ALL THAT APPLY:

The Undersigned Hereby Affirms That This Document Submitted For Recording Contains Personal Information As Required By Law*:

Specify Law* _____

Signature _____

Specify Law* _____

Print Name _____

Title _____

*If there is no applicable State or Federal Law, Personal Information must be removed prior to recording.

If this document is a re-record or correction, fill out below:

Correcting Document#: _____ Amending: _____

Reason for re-record: _____

(For Re-records, all pages from original document must be included, \$25 Non-conforming Fee may apply)

If legal description is in metes & bounds, indicate where it was obtained:

_____ (Document Title), Book _____ Page _____or

Document # _____ recorded _____(date) in the

Lyon County Recorder's Office.

-OR-

If prepared by a surveyor, provide name and address:

"Personal information" means a natural person's first name or first initial and last name in combination with any one or more of the following data elements:

1. Social security number.
2. Driver's license number or identification card number.
3. Account number, credit card number or debit card number, in combination with any required security code, access code or password .

When recorded, mail to:
City Clerk
City of Fernley
595 Silver Lace Boulevard
Fernley, NV 89408

DEVELOPMENT AGREEMENT

ARTICLE 1. PARTIES, DEFINITIONS AND PROPERTY DESCRIPTIONS.

This Development Agreement (“**Agreement**”) is by and between:

“Developer” **Clements Ranching, LLC,**
a Nevada limited liability company
3000 Farm District Road
Fernley, NV 89408
Email: mattpclements@gmail.com

“City” **City of Fernley,**
a Nevada municipal corporation
595 Silver Lace Boulevard
Fernley, NV 89408
Email: laltick@cityoffernley.org

Key definitions in this Agreement are:

“Affiliate” means an entity, partnership or corporation which Developer controls, or in which Developer has a controlling interest or which controls Developer. For purposes of this definition, “control” when used with respect to any entity, means the power to direct the management and policies of such entity, directly or indirectly, whether through the ownership of voting securities, partnership interests, by contract or otherwise; and the terms “controlling” and “controlled” have meanings correlative to the foregoing.

“Approvals” means the zoning, land use, and mapping approvals and authorizations relating to the Project Property, together with applicable conditions, as granted by the City through the normal approval process. This includes MPA22003, ZMA22008, and any future entitlements requested and/or required for the Project.

“Building Permit” shall mean an official document or certificate issued by the Building Official (as defined in the Code from time-to-time) authorizing the construction of a residence or commercial building within the Project Property. This includes standard plan permits, model permits and production permits.

“Code” means the City of Fernley Municipal Code, as may be amended from time to time, including all rules, regulations, standards, criteria, manuals and other references adopted therein.

“Project” means the Master Plan Map Amendment (MPA22003) and Zoning Map Amendment (ZMA22008) submitted to the City of Fernley, Nevada (the **“City”**) on July 19, 2022, and any future residential project located on the Project Property.

“Project Property” means that real property consisting of approximately 83.9 acres located in the City of Fernley, County of Lyon, State of Nevada, more particularly described as **Exhibit A** attached hereto, having Lyon County Assessor’s Parcel Number (**“APN”**) 021-341-18.

“Record”, “Recording”, “Recordation”, or “Recorded”: To file, the filing, or filed of record with the Office of the County Recorder of Lyon County, Nevada. The date of Recording shall refer to that time at which a document or map is Recorded.

ARTICLE 2. RECITALS.

- A. Developer is the current owner of the Project Property and anticipates proposing residential development on the Project Property.
- B. On July 19, 2022, Developer submitted applications to the City for a Master Plan Map Amendment and Zoning Map Amendment for the Project Property.
- C. Developer has proposed certain buffering standards along the west and east property boundary of the subject parcel consistent with the City’s Development Code (**“Code”**) standards for adjacency (Code §32.09.030(D)), and a limitation on the total number of units which may be provided.
- D. The City is authorized, pursuant to NRS 278.360, NRS 278.0201 through 278.0207, inclusive, and Code §32.03.100(a), to enter into binding development agreements with any person having a legal or equitable interest in land concerning the development of that land provided that such agreement is consistent with the City of Fernley Comprehensive Master Plan August 2018 (**“Master Plan”**).
- E. The Master Plan includes the following goals:
 - 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. Master Plan §HP.1.1.
 - Encourage housing that supports sustainable development patterns by promoting the efficient use of land [...and] easy access to services and public facilities[...]. Master Plan §HP.1.2.
 - Strive for viable mixed income neighborhoods throughout Fernley that collectively reflect the diversity of housing types and tenure (rental and ownership). Master Plan §HP.1.3.

- Provide a spectrum of high-quality housing to meet the City's need. §HP1.6.
- Encourage new development in areas where adequate public services and facilities can be provided efficiently. Master Plan §LU.1.1
- Promote infill development. Master Plan §LU.1.5.

F. By entering into this Agreement, the City will ensure the orderly development of the Project in accordance with the Conditions, and consistent with the City's goals set forth in the Master Plan as identified in Recital E above. As such, approval of this Agreement is consistent with the Master Plan, as required by NRS 278.0203 and Code §32.03.100(A)(6)(a).

G. Acknowledging the foregoing, the parties desire to enter into this Agreement to provide for the matters set forth herein.

NOW, THEREFORE, in exchange for mutual considerations, the sufficiency of which is hereby acknowledged, the parties agree as follows:

ARTICLE 3. DEVELOPMENT MATTERS.

Section 3.1 Development Standards.

The permitted uses of the Project Property, the density or intensity of its use, the maximum height and size of the proposed buildings, and any dedication of any portion of the Project Property to the City for public use shall be as provided in this Agreement, the Code, and any future Approvals issued by the City for the Project or the Project Property, as the same may hereafter be revised, modified or amended from time to time in accordance with applicable law.

Section 3.2 Limitation.

Except as otherwise provided in this Agreement, the provisions of NRS 278.0201 shall apply to this Agreement to the extent that any rules, regulations, ordinances, laws, and official policies promulgated or enacted after the Effective Date conflict with the terms and conditions of this Agreement or the Approvals. Notwithstanding the foregoing, any development on the Project Property shall be subject to: (i) any rules, regulations, ordinances, laws, and official policies promulgated or enacted after the Effective Date that are not in conflict with Approvals or the terms of this Agreement; (ii) the Building Codes in effect at the time of issuance of the permit for the particular development activity; and (iii) other construction standards applicable to all developers other than Developer if such changes or additional standards are required in order to prevent a condition dangerous to the health or safety of City residents. Nothing in this Agreement shall preclude application of new or changed ordinances, regulations, plans or policies specifically mandated and required by changes in state or federal laws or regulations.

Section 3.3 Standards for Residential Adjacency; Limitation on Number of Dwelling Units.

The City and Developer agree that if the City approves the Master Plan Map Amendment (MPA22003) and Zoning Map Amendment (ZMA22008) submitted by the Developer on July 19, 2022, the Project Property and all future permits and Approvals considered by the City in connection therewith, shall require the following development standards and impose the following development constraints upon the Project Property:

(i) Along the western boundary of the Project Property, residential lots shall provide a minimum 0.40-acre lot area with lot width matching, a 30-foot rear setback, and all residential structures shall be limited to a single story;

(ii) Along the eastern boundary of the Project Property and along the boundary line shared between the Project Property and APN 021-341-13, residential lots shall provide a minimum of 14,000 square feet lot area with lot width matching, a 30-foot rear setback, and all residential structures shall be limited to a single story; and

(iii) The maximum density allowed on the Project Property shall not exceed 400 residential units.

The development standards set forth above shall survive the termination of this Agreement and are deemed a permanent part of the zoning established by ZMA22008. Any development standards not addressed above shall be governed by the Code and any conditions of the Approvals.

Section 3.4 Further Requirements

The Developer acknowledges that further Approvals will be necessary to develop the Project including, but not limited to, tentative and final subdivision maps. All future Approvals required or requested by the Developer in connection with the Project shall be reviewed and considered for approval in accordance with the terms of this Agreement and applicable law.

ARTICLE 4. GENERAL TERMS.

Section 4.1 Effective Date; approved by ordinance.

This Agreement is not effective until it has been approved by ordinance by the City Council for the City of Fernley ("City Council") and Recorded (the date of Recording being referred to herein as the "Effective Date").

Section 4.2 Term; Cancellation.

This Agreement shall continue in full force and effect for 10 years from the Effective Date, unless cancelled or extended in accordance with the terms of NRS 278.0205. A cancellation of this Agreement is not effective or binding until approved by ordinance of the City Council and Recorded in accordance with NRS 278.0205.

Section 4.3 Modifications and Amendments.

Modifications and amendments to this Agreement are not effective or binding until approved by ordinance of the City Council and Recorded in accordance with NRS 278.0205.

Section 4.4 Breach.

A violation of this Agreement by a party shall be a breach of this Agreement by that party if, within 60 days after receipt of notice of such violation delivered in accordance with Section 4.7 below by the non-violating party, the party in violation fails to cure such violation. If the material breach is not corrected within 60-day cure period, the defaulting Party is in default, and the Party alleging material breach may elect any one or more of the following courses:

A. Amendment or Termination by City. After proper notice and the expiration of the above-referenced period for Developer to correct the alleged material breach, the City may give notice of intent to amend or terminate this Agreement as authorized by NRS Chapter 278. Following any such notice of intent to amend or terminate, the matter shall be scheduled and noticed as required by law for consideration and review solely by the City Council. Following consideration of the evidence presented before the City Council and a finding that a material breach has occurred by Developer and remains uncured, City may amend or terminate this Agreement. Developer shall have twenty-five (25) days after receipt of written notice of termination to institute legal action pursuant to this Section.

B. Termination by Developer. In the event City materially defaults under this Agreement, Developer shall have the right to terminate this Agreement after providing notice and an opportunity to cure as set forth in this Section. Developer shall have the option, in its discretion, to maintain this Agreement in effect and seek to enforce all of City's obligations by pursuing an action for specific performance or other appropriate judicial remedy.

Section 4.5 Entire Agreement.

With respect to the matters addressed herein (including the recitals), this Agreement integrates all of the terms and conditions mentioned herein or incidental hereto, and supersedes all negotiations or previous agreements between the parties.

Section 4.6 Assignments; Transfer of rights.

A. To an Affiliate of Developer. The rights of Developer under this Agreement may be freely transferred or assigned to an Affiliate of Developer provided that such entity shall assume in writing all obligations of Developer hereunder, and provide substitute security in form and amount acceptable to the City for any security previously provided by Developer in compliance with the Code, if any.

B. To a Third Party. If Developer sells or transfers more than fifty percent (50%) of the Project Property to a party other than an Affiliate, Developer shall be relieved of its obligations under this Agreement, provided that such transferee assumes all duties and obligations of Developer then unsatisfied and provides substitute security, in form and amount acceptable to City, for any of Developer's previous obligations for which Developer provided performance security, if any.

C. Transfer Not to Relieve Developer of its Obligation. Except as expressly provided herein, no assignment or transfer of any portion of the Project Property shall relieve Developer of its obligations hereunder as to the portion of the Project Property so assigned or transferred, and such assignment or transfer shall be subject to all of the terms and conditions of this Agreement, provided, however, that no such transferee shall be deemed to be the Developer hereunder unless such transferee expressly assumes such obligations and duties of Developer. This subsection shall have no effect upon the validity of obligations recorded as covenants, conditions, restrictions or liens against parcels of real property.

D. In Connection with Financing Transactions. Developer has full discretion and authority to transfer, assign or encumber the Project Property or portions thereof, in connection with financing transactions, without limitation to the size or nature of any such transaction, the amount of land involved or the use of the proceeds therefrom, and may enter into such transactions at any time and from time to time without permission of or notice to City. All such financing transactions shall be subject to the terms and conditions of this Agreement.

Section 4.7 Notices; when deemed sufficiently given.

A. Formal notices, demands and communications between the City and Developer must be in writing and must be sent to the addresses or facsimile numbers stated in Article 1 above and to each successor or assign of Developer to the address given by such party in writing and if no written notice is given, then to the address stated in subsequent agreements, and/or to any address or number subsequently communicated to the sending party in writing.

B. If notice is sent by registered or certified mail to the correct address, postage prepaid, it will be deemed sufficiently given the earlier of when actually received by the addressee or three business days after it is received by the U.S. Post Office as indicated on the receipt.

C. If notice is sent by courier, or overnight delivery service (Federal Express, UPS Overnight, U.S. Postal Priority Mail), and is properly addressed, it will be deemed sufficiently given when delivered as indicated in the records of the courier or service.

D. If notice is sent by facsimile, properly addressed to the addressee specified in Article 1 above and is actually sent to the correct facsimile number, it will be deemed sufficiently given when receipt is confirmed by either the receiving or sending facsimile machine, provided that that confirmation is in writing and sufficiently identifies the document, and indicates the time and date that the document was received by the receiving facsimile machine.

Section 4.8 Further documents.

Each party agrees to honor any reasonable requests by the other party to complete, execute, and deliver any document necessary to accomplish the purposes hereof.

Section 4.9 Legal Actions.

The City and Developer agree that they would not have entered into this Agreement if either were to be liable for damages under or with respect to this Agreement that would be greater than without this Agreement. Accordingly, the City and Developer may pursue any course of

action or equity available for breach, except that neither party shall be liable to the other or to any other person for any monetary damages for a breach of this Agreement. If any party hereto institutes any action or proceeding (including arbitration, if authorized or mutually agreed upon) against the other or others arising out of or relating to this Agreement, the prevailing party shall be awarded attorney's fees and costs by the other party.

Section 4.10 Time of Essence.

Time is of the essence in the performance of this Agreement.

Section 4.11 Governing law.

The laws of the State of Nevada, without regard to conflicts of law principles, shall govern the interpretation and enforcement of this Agreement.

Section 4.12 Severability of invalid or unenforceable provisions.

If any provision contained in this Agreement is held to be unenforceable by a court of law or equity, this Agreement shall be construed as if such provision did not exist and the non-enforceability of such provision shall not be held to render any other provision or provisions of this Agreement unenforceable.

Section 4.13 Binding effect; successors and assigns; assignment/delegation.

This Agreement shall be binding upon and inure to the benefit of the heirs, executors, administrators, and permitted successors and assigns of the parties hereto. To the extent that any assignment of any right under this Agreement changes the duty of either party, increases the burden or risk involved, impairs the chances of obtaining the performance of this Agreement, attempts to operate as novation, or includes a waiver or abrogation of any defense to payment by the City, such offending portion of the assignment shall be void, and shall be a breach of this Agreement.

Section 4.14 No third-party beneficiaries intended.

Unless otherwise specifically identified in this Agreement, there are no third-party beneficiaries intended by this Agreement and no third parties have any standing to enforce any of the provisions of this Agreement.

Section 4.15 Representation and warranties by persons who sign this Agreement.

Each person who signs this Agreement represents and warrants to each other person who signs this Agreement that he or she is an authorized agent of and has actual authority to execute this Agreement on behalf of the party for whom he or she is signing, and that all required approvals and actions have been taken to authorize the execution of this Agreement with the intent and effect of binding the party to this Agreement.

Section 4.16 Counterparts.

This Agreement may be executed in any number of counterparts, each of which when so executed and delivered shall be deemed an original; and such counterparts shall constitute one and the same Agreement. Any signature page of the Agreement may be detached from any counterpart without impairing the legal effect of any signatures, and may be attached to another counterpart identical in form. This Agreement may be executed by signatures provided by facsimile or email, and such signatures shall be as binding and effective as original signatures.

Section 4.17 Construction.

This Agreement is the product of joint collaboration and negotiations among the parties and their counsel. The terms and conditions of this Agreement shall be construed as a whole according to their fair meaning, and not strictly for or against any party. Further, any ambiguities are to be resolved according to their fair meaning, and not construed against the drafting party.

[Signature Pages Follows]

EXECUTED on the dates indicated:

City:

CITY OF FERNLEY,

a Nevada municipal corporation

Dated February 1, 2023

By: Neal E McIntyre
Mayor Neal E. McIntyre

Its: Mayor
Attest: Kim Swanson

Kim Swanson

City Clerk

Developer:

CLEMENTS RANCHING, LLC
a Nevada limited liability company

Dated January 30, 2022²³

By: Holly G. Wolf
Name Holly G. Wolf
Its: Manager

State of Nevada
County of Washoe

This instrument was acknowledged before me on January 30, 2023 by
Holly Wolf as Manager of CLEMENTS RANCHING,
LLC, a Nevada limited liability company.

(Signature of notarial officer)

(Seal, if any)

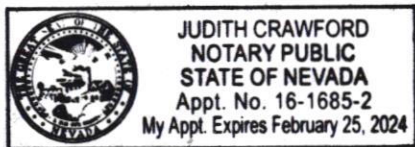


EXHIBIT A
LEGAL DESCRIPTION

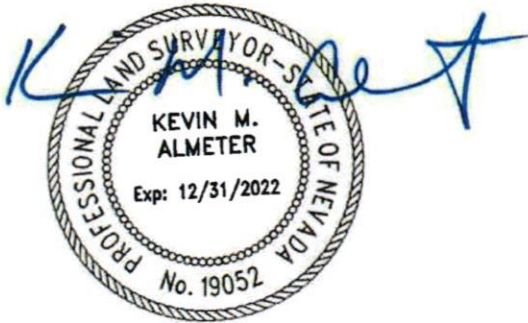
EXHIBIT A
LEGAL DESCRIPTION FOR PROJECT PROPERTY

All that certain real property situate within a portion of the Northeast One-Quarter (NE 1/4) of Section Twenty-One (21) and a portion of the Northwest One-Quarter (NW 1/4) of Section Twenty-Two (22), Township Twenty (20) North, Range Twenty-Five (25) East, Mount Diablo Meridian, City of Fernley, County of Lyon, State of Nevada, and being more particularly described as follows:

BEING Parcel 2-A of the Parcel Map for "Clements Ranching, LLC", recorded on December 8, 2017, as File No. 573596, filed in the Official Records of Lyon County, Nevada.

APN: 021-341-18

Prepared by:
Wood Rodgers, Inc.
1361 Corporate Blvd.
Reno, NV 89502



8-11-22

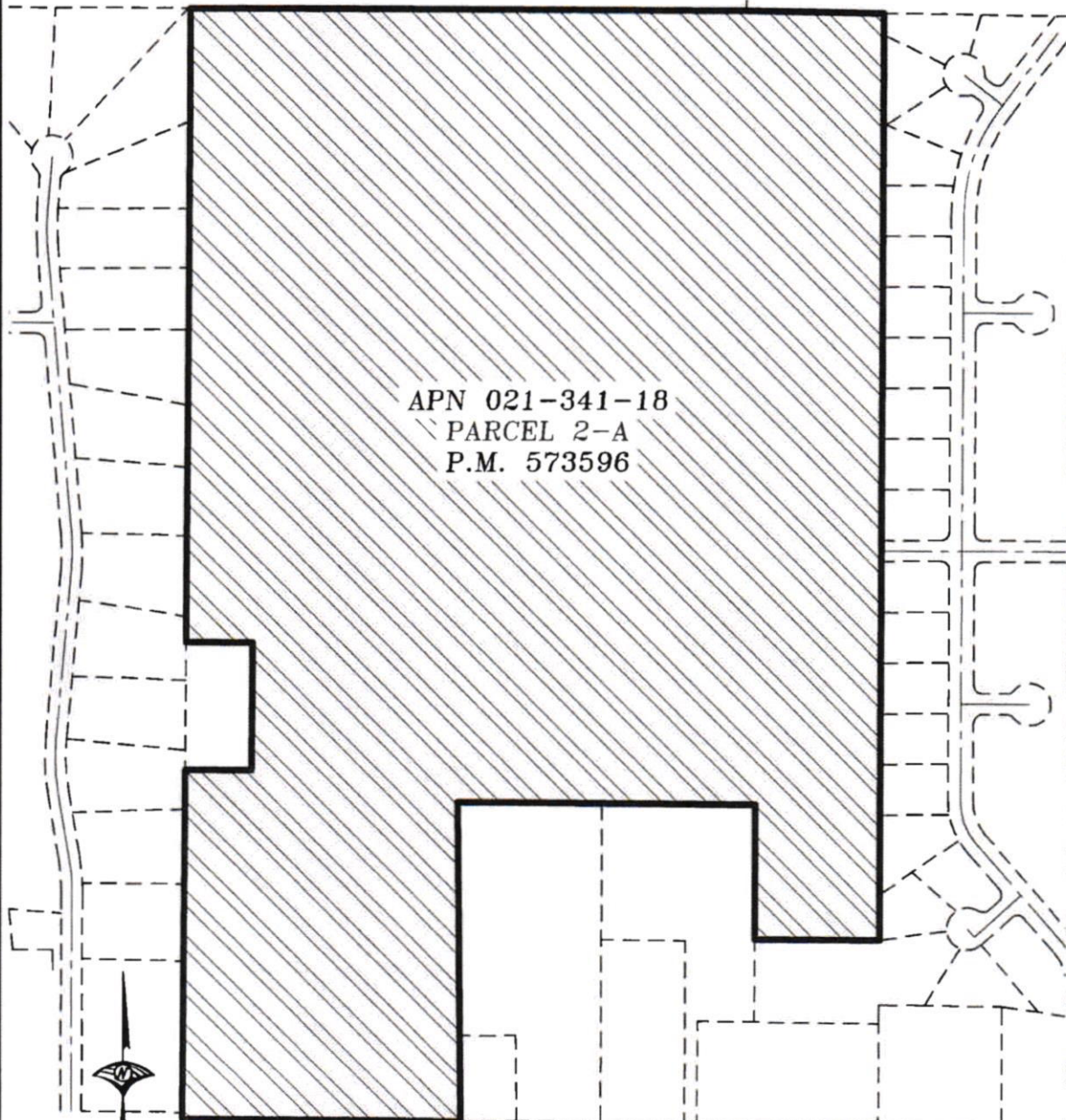
Kevin M. Almeter, P.L.S.
Nevada Certificate No. 19052

EXHIBIT A-1

PLAT TO ACCOMPANY

PROJECT PROPERTY

PORTIONS OF THE NE 1/4 OF SECTION 21 &
THE NW 1/4 OF SECTION 22
TOWNSHIP 20 NORTH, RANGE 25 EAST, M.D.M.
FERNLEY LYON COUNTY NEVADA



APN 021-341-18
PARCEL 2-A
P.M. 573596

1" = 400'

FARM DISTRICT ROAD

JOB NO. 3460004
SHEET 1 OF 1



WOOD RODGERS
BUILDING RELATIONSHIPS ONE PROJECT AT A TIME

1361 Corporate Blvd
Reno, NV 89502

Tel 775.823.4068
Fax 775.823.4068

J:\Jobs\3460_Clements Ranch\OA\Geomatics\legals_exhibits\DEV AGREEMENT Exhibit A-1.dwg 8/11/2022 4:21 PM McKenzie Jones

Tentative Subdivision Map Clements Ranch

Submitted to City of Fernley
April 18, 2023

Prepared for

Clements Ranching LLC
3040 Farm District Road
Fernley, NV 89408

Prepared by



WOOD RODGERS

BUILDING RELATIONSHIPS ONE PROJECT AT A TIME
1361 Corporate Blvd • Reno, NV 89502 • Tel: 775.823.4068 • www.woodrogers.com

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Map Pocket

- ❖ Tentative Map

Section 1



Planning Department
595 Silver Lace Blvd, Fernley, NV 89408
Land Division Application

APPLICATIONS, PLANS, AND/OR SUPPORTING DOCUMENTATION THAT ARE INCOMPLETE OR ILLEGIBLE WILL NOT BE ACCEPTED.

Please complete all sections that apply to you and/or your project. Various applications are only accepted on the application deadline dates. Please call before you submit to verify that someone will be available to assist you at (775) 784-9810.

☐ TENTATIVE PARCEL MAP(TPM)	☐ REVERSION TO ACREAGE(RTA)
☐ FINAL PARCEL MAP(FPM)	☐ TYPE I VACATIONS(T1V)
☒ TENTATIVE SUBDIVISION MAP(TSM)	☐ TYPE II VACATIONS(T2V)
☐ FINAL SUBDIVISION MAP(FSM)	☐ TENTATIVE DIVISION OF LAND INTO LARGE PARCELS (TDLLP)
☐ BOUNDARY LINE ADJUSTMENT(BLA)	☐ FINAL DIVISION OF LAND INTO LARGE PARCELS (FDLLP)

Holy Wolf		(See attached LOA)		No
Applicant's Name				
Signature				
Primary Contact?				
Company Name: Clements Family 1992 Trust				
Address: 3000 Farm District Road				
City: Fernley	State: Nevada	Zip Code: 89408	Email: coyoteswolf@netscape.net	
Phone No.: 775-575-5601	Cell No.: N/A	Fax No.: N/A		

Clements Ranching LLC				No
Property Owners Name				
Primary Contact?				
Company Name: Clements Ranching, LLC				
Address: 3040 Farm District Road				
City: Fernley	State: NV	Zip Code 89408	Email: Same as applicant	
Phone No.: Same as applicant	Cell No.: N/A	Fax No.: N/A		

Derek Kirkland, AICP				Yes
Engineer / Representative				
Primary Contact?				
Company Name: Wood Rodgers, Inc.				
Address: 1361 Corporate Boulevard				
City: Reno	State: NV	Zip Code 89502	Email: dkirkland@woodrodgers.com	
Phone No.: 775-828-7742	Cell No.: N/A	Fax No.: N/A		

Brief Project Type/Description (Attach Detailed Project Type / Description):
Wood Rodgers is submitting a request for a 241-lot tentative subdivision map for the Clements Ranch Property (APN 021-341-18). See project description for more details.

Subdivision/Project Name And/Or Phase: Clements Ranch Property	
Project Location (Street Address): 0 Farm District Road	
Assessor's Parcel Number(s): 021-341-18	

Current Zoning: SF6 (68.4 acres) and MDR-14 (15.5 acres)	Comprehensive Plan Land Use Designation	SFR (68.4 acres) and MR (15.5 acres)
Total Project Acreage: +/- 83.90	% Commercial: 0	CITY UTILITIES
Number of Parcels Proposed: 241	% Open Space: 0	Water: ☐ Currently Served ☒ Proposed
		Sewer ☐ Currently Served ☒ Proposed

Previous Applications For This Site? ☒ Yes ☐ No
List Previous Application No(s) And Names:
1998 Flood Zone Designation: ☐ A ☐ AE ☐ AH ☐ AO ☐ A99 ☒ X ☐ D
FEMA Map No.: <i>Incl. Photocopy</i>

Office Use Only		
Application Filing Date:	Development Review:	Application Fee:
Application No.:	☐ Yes ☐ No	Outsource Fee:
Application Intake By:	Date: April 18, 2023	Noticing Fee:
Planner:	Time:	Total Due:

TENTATIVE SUBDIVISION MAP

APPLICATION CHECKLIST City of Fernley, Nevada

The following items shall be submitted as a part of the Tentative Subdivision Map application:

- ✓ 1. **Application Fee:** A check or money order payable to the "City of Fernley" for the application fee. **The application fee is due at the time of the application submittal.** See **FEE SCHEDULE** for correct amount.
- ✓ 2. **Proof of Ownership: Must be original signatures or the application may be rejected.** If the person signing the owner's affidavit is not listed as the property owner in the most recent records of the Lyon County Assessor, proof of ownership acceptable to the administrator must be submitted with the application. If the signer is an agent of the owner, written documentation of that fact acceptable to the administrator must be submitted. If in Corporate ownership, a list of all Corporate Officers must be provided.
- ✓ 3. **Review Packet: 1 (one) UNBOUND, original hardcopy containing the following:**
 - ✓ a. Completed LAND DIVISION APPLICATION form
 - ✓ b. Completed Residential or Non-Residential Project Data Sheet
 - ✓ c. A Tentative Subdivision Map prepared to the attached specifications and in accordance with Development Code Section 32.03.060.
 - ✓ d. **If drawings larger than 8½" x 11" are included with the application, one 8½" x 11" or 11" x 17". MUST be provided. Please fold oversized drawings - No rolled plans accepted.**
 - ✓ e. Vicinity Map depicting the respective site and including surrounding roadways
 - ✓ f. A copy of a preliminary Title Report, prepared within 30 days of application submittal, which includes the names and addresses of all property owners; a legal description of the property, and a description of all liens, easements, and deed restrictions.
 - ✓ g. Legal Access
 - N/A ☐ h. A letter of approval from the City of Fernley listing all street names shown on the Tentative Subdivision Map
 - ✓ i. Demonstrate that city services can be provided at an acceptable service level.
- ✓ 4. **Technical Analyses (Two (2) copies of each):** Items outlined in Appendix A-5 of the City of Fernley's Development Code in a form consistent with the adopted policies and design manuals.
 - ✓ a. Traffic Study: A complete traffic study as required by the City Engineer.
 - ✓ b. A preliminary hydrology and drainage report prepared by a Nevada registered Civil Engineer addressing the 5-year and 100-year return frequency storms and the 5-year and 100-year flows entering and leaving the site.
 - ✓ c. A preliminary sewer report prepared by a Nevada registered Civil Engineer.
 - ✓ d. A preliminary geotechnical report prepared by an Engineer licensed in the State of Nevada.
 - ✓ e. All projects over 20 acres in size shall demonstrate the project is fiscally positive to the city for a period of at least 20 years.
 - ✓ f. Any other report as may be necessary to enable the approving agency to determine that the application complies with the standards for approval
- ✓ 5. **Original PDF documents of the application, broken down into individual sections, including all documents, maps, plans, and technical analyses, shall be provided on a USB flash drive or alternative method as determined by the Administrator. Please note scanned images of the submittal will not be accepted and may result in the delayed processing of the application.**

NOTE: Applications filed under Chapter 32.03 of the City of Fernley's Development Code must include the information required by Appendix A of the development code and is not complete until all required items are submitted. The Planning Department or other reviewing departments or agencies may request that additional application materials be submitted depending on the specific project request. The application materials required above shall serve as the minimum requirements necessary to make application submittal to the City of Fernley Planning Department.

RESIDENTIAL PROJECT DATA SHEET

City of Fernley, Nevada

1. Number of Dwelling Units

Single Family Detached 241

Duplexes 0

Multi-Family Attached 0

Single Family Attached 0

TOTAL 45 Ac. 53.6%

3. Gross Density

241 / 83.9 = 3.3

Total # of Dwellings Total Area in Acres Gross Density (DU/AC)

5. Estimated Sewage to be Generated

40,750 GPD

(Attach Calculations)

7. Flood Hazard

Portion of site subject to inundation By
100 year flood:

0 Ac. 0 %

9. Lot Sizes

6,382 Sq. Ft. minimum (corner)

6,000 Sq. Ft. minimum (interior)

42,855 Sq. Ft. maximum

8,136 Sq. Ft. average

11. Portion of Site within the Following Slope Categories:

0% - 10% 83.9 Ac. 100 %

10% + Ac. %

13. Maximum Building Height

35 Feet 2 Stories

15. Single Family & Two-Family Parking

Garage 2 Spaces/Unit

Carport Spaces/Unit

Open 2 Spaces/Unit

Total 4 Spaces/Unit

2. Site Area Breakdown

Lots or Buildings 45 Ac. 53.6 %

Public Right-of-Way 21.6 Ac. 25.7 %

Common Area 2.6 Ac. 3.1 %

4. Schools Serving Project

Elementary School Fernley Elementary School

Middle School Fernley Intermediate School

High School Fernley High School

6. Traffic

Average Daily Trips 2,273 Trips

Peak Hour Trips 227 Trips

(Attach Calculations)

8. Estimated Water Demand (Attach Calculations)

Domestic 270 AFY

Irrigation TBD AFY

TOTAL 270 + TBD Irrigation AFY

Source of water supply: Water rights available

10. Minimum Building Setbacks

15 Feet (Front Property Line to Dwelling)

20 Feet (Front Property Line to Garage)

10 Feet (Exterior Side Property Line to Dwelling)

5 Feet (Interior Side Property Line to Dwelling)

10 Feet (Rear Property Line to Dwelling)

12. Unit Sizes

 Sq. Ft. N/A Bedrooms

 Sq. Ft. Bedrooms

 Sq. Ft. Bedrooms

 Sq. Ft. Bedrooms

 Sq. Ft. Bedrooms

14. Coverage of Lot by Structure

Maximum N/A %

16. Multi-Family Parking

Units N/A x 2.0 = Spaces

Covered Spaces Units x 1.0 = Spaces

Guest Parking Units x 0.25 = Spaces

Total Required = Spaces

Total Provided = Spaces

LETTER OF AUTHORIZATION

This letter shall serve to notify and verify the I/we am/are the legal owner(s) of the property being considered under this application and do hereby authorize the above representative to file and represent my/our interest in this application.

I/we am/are the legal owner(s) of said property; have read the foregoing "Letter of Authorization" and know the contents thereof; and so hereby certify (or declare) under penalty of perjury under the laws of the State of Nevada that the information contained in this application is true and correct.

OWNER(S) OF RECORD: *(Include all signatures-provide extra sheets if necessary)*

<u>Holly B. Wolf</u> (Print Name)	<u>Holly B. Wolf</u> (Signature)	<u>April 6, 2023</u> (Date)
<u>Mattew P Clements</u> (Print Name)	<u>[Signature]</u> (Signature)	<u>4-6-2023</u> (Date)

I certify under penalty of perjury that I am the applicant and that the foregoing statements and answers contained herein and the information herein submitted, are in all respects true and correct. I grant permission to City staff and officials to enter the property to conduct inspections/site visits necessary for the review of the project. I also certify that all plans and submittal requirements are in accordance with the Nevada Revised Statutes and City Code, have been drawn to a standard engineering scale (e.g. 1"=20', 1"=50', 1"=100') or architectural scale (e.g. 1/4"=1', 1/8"=1') that is appropriate to the project size, and clearly define and identify all of the required information.

APPLICANT:

<u>Holly B. Wolf</u> (Print Name)	<u>Holly B. Wolf</u> (Signature)	<u>April 11, 2023</u> (Date)
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APPLICANT'S ENGINEER/REPRESENTATIVE:

<u>Derek Kirkland, AICP</u> (Print Name)	<u>[Signature]</u> (Signature)	<u>4/18/23</u> (Date)
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City of Fernley Development Code, Section 32.03.030, Common Review Procedures: The City will not process incomplete applications. Review for completeness of application forms is solely to determine whether preliminary information required for submission with the application is sufficient to allow further processing. A determination of completeness shall not constitute a decision as to whether an application complies with the City's Development Code.

Note: Development review meetings are preliminary nature and comments expressed by staff should not be construed as being Conditions of Approval for any project application.

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OWNER(S) OF RECORD: *(Include all signatures-provide extra sheets if necessary)*

<u>* DANIEL G. Clements</u> (Print Name)	<u>David S. Clements</u> (Signature)	<u>4-7-23</u> (Date)
_____	_____	_____
(Print Name)	(Signature)	(Date)

I certify under penalty of perjury that I am the applicant and that the foregoing statements and answers contained herein and the information herein submitted, are in all respects true and correct. I grant permission to City staff and officials to enter the property to conduct inspections/site visits necessary for the review of the project. I also certify that all plans and submittal requirements are in accordance with the Nevada Revised Statutes and City Code, have been drawn to a standard engineering scale (e.g. 1"=20', 1"=50', 1"=100') or architectural scale (e.g. 1/4"=1', 1/8"=1') that is appropriate to the project size, and clearly define and identify all of the required information.

APPLICANT:

<u>Holly G. Wolf</u> (Print Name)	<u>Holly G. Wolf</u> (Signature)	<u>April 11 2023</u> (Date)
--------------------------------------	-------------------------------------	--------------------------------

APPLICANT'S ENGINEER/REPRESENTATIVE:

_____	_____	_____
(Print Name)	(Signature)	(Date)

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OWNER(S) OF RECORD: *(Include all signatures-provide extra sheets if necessary)*

Tierra Darling

(Print Name)

X

Tierra Darling

(Signature)

4/6/23

(Date)

(Print Name)

(Signature)

(Date)

I certify under penalty of perjury that I am the applicant and that the foregoing statements and answers contained herein and the information herein submitted, are in all respects true and correct. I grant permission to City staff and officials to enter the property to conduct inspections/site visits necessary for the review of the project. I also certify that all plans and submittal requirements are in accordance with the Nevada Revised Statutes and City Code, have been drawn to a standard engineering scale (e.g. 1"=20', 1"=50', 1"=100') or architectural scale (e.g. 1/4"=1', 1/8"=1') that is appropriate to the project size, and clearly define and identify all of the required information.

APPLICANT:

Holly G Wolf

(Print Name)

Holly G. Wolf

(Signature)

April 11, 2023

(Date)

APPLICANT'S ENGINEER/REPRESENTATIVE:

(Print Name)

(Signature)

(Date)

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OWNER(S) OF RECORD: *(Include all signatures-provide extra sheets if necessary)*

<u>x Michael E. Clements</u> (Print Name)	<u>Michael E. Clements</u> (Signature)	<u>4-6-2023</u> (Date)
<u>x John E. Clements</u> (Print Name)	<u>John E. Clements</u> (Signature)	<u>4-6-2023</u> (Date)

I certify under penalty of perjury that I am the applicant and that the foregoing statements and answers contained herein and the information herein submitted, are in all respects true and correct. I grant permission to City staff and officials to enter the property to conduct inspections/site visits necessary for the review of the project. I also certify that all plans and submittal requirements are in accordance with the Nevada Revised Statutes and City Code, have been drawn to a standard engineering scale (e.g. 1"=20', 1"=50', 1"=100') or architectural scale (e.g. 1/4"=1', 1/8"=1') that is appropriate to the project size, and clearly define and identify all of the required information.

APPLICANT:

<u>Holly G. Wolf</u> (Print Name)	<u>Holly G. Wolf</u> (Signature)	<u>April 11 2023</u> (Date)
--------------------------------------	-------------------------------------	--------------------------------

APPLICANT'S ENGINEER/REPRESENTATIVE:

_____ (Print Name)	_____ (Signature)	_____ (Date)
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PRELIMINARY REPORT - 1st Amendment

PROPERTY ADDRESS: 3000 and 3040 Farm District Road, Fernley, NV

Title Office:
Ticor Title of Nevada, Inc.
307 West Winnie Lane Suite 1
Carson City, NV 89703
Phone: (775) 883-7513 Fax: (775) 887-5065

Order No.: 01606332-TO

**The information contained in this report is through the date of
March 23, 2017 at 7:30 a.m.**

*In response to the application for a policy of title insurance referenced herein, **Ticor Title of Nevada, Inc.** hereby reports that it is prepared to issue, or cause to be issued, as of the date hereof, a policy or policies of title insurance describing the land and the estate or interest therein hereinafter set forth, insuring against loss which may be sustained by reason of any defect, lien or encumbrance not shown or referred to as an exception herein or not excluded from coverage pursuant to the printed Schedules, Conditions and Stipulations or Conditions of said policy forms.*

The printed Exceptions and Exclusions from the coverage and Limitations on Covered Risks of said policy or policies are set forth in Attachment One. The policy to be issued may contain an arbitration clause. When the Amount of Insurance is less than that set forth in the arbitration clause, all arbitrable matters shall be arbitrated at the option of either the Company or the Insured as the exclusive remedy of the parties. Limitations on Covered Risks applicable to the CLTA and ALTA Homeowner's Policies of Title Insurance which establish a Deductible Amount and a Maximum Dollar Limit of Liability for certain coverages are also set forth in Attachment One. Copies of the policy forms should be read. They are available from the office which issued this report.

This report (and any supplements or amendments hereto) is issued solely for the purpose of facilitating the issuance of a policy of title insurance and no liability is assumed hereby. If it is desired that liability be assumed prior to the issuance of a policy of title insurance, a Binder or Commitment should be requested.

*The policy(s) of title insurance to be issued hereunder will be policy(s) of **Chicago Title Insurance Company.***

Please read the exceptions shown or referred to herein and the exceptions and exclusions set forth in Attachment One of this report carefully. The exceptions and exclusions are meant to provide you with notice of matters which are not covered under the terms of the title insurance policy and should be carefully considered.

It is important to note that this preliminary report is not a written representation as to the condition of title and may not list all liens, defects and encumbrances affecting title to the land.

A handwritten signature in cursive script that reads 'Tammy L. May'.

Tammy L. May, Title Officer

**THE FOLLOWING REQUIREMENTS MUST BE MET PRIOR TO CLOSE
OF ESCROW:**

NONE AT THIS TIME

SCHEDULE A

The estate or interest in the land hereinafter described or referred to covered by this report is:

FEE

Title to said estate or interest at the date hereof is vested in:

David Scott Wolf and Holly G. Wolf, Trustees of the Wolf Family 2016 Trust as to Parcel 1

Clements Ranching LLC, a Nevada limited liability company as to Parcel 2

The land referred to in this Report is situate in the State of Nevada, County of Lyon and described as follows:

SEE EXHIBIT "A" ATTACHED HERETO AND MADE A PART HEREOF.

SCHEDULE B

At the date hereof Exceptions to coverage in addition to the printed exceptions and exclusions in said policy form would be as follows:

1. (a) Taxes or assessments that are not shown as existing liens by the records of any taxing authority that levies taxes or assessments on real property or by the Public Records; (b) proceedings by a public agency that may result in taxes or assessments, or notices of such proceedings, whether or not shown by the records of such agency or by the Public Records.
2. Any facts, rights, interests, or claims that are not shown by the Public Records but that could be ascertained by inspection of the Land or that may be asserted by persons in possession of the Land.
3. Easements, liens or encumbrances, or claims thereof, not shown by the Public Records.
4. Any encroachment, encumbrance, violation, variation, or adverse circumstance affecting the Title that would be disclosed by an accurate and complete land survey of the Land and not shown by the Public Records.
5. (a) Unpatented mining claims; (b) reservations or exceptions in patents or in Acts authorizing the issuance thereof, (c) water rights, claims or title to water, whether or not the matters excepted under (a), (b) or (c) are shown by the Public Records.
6. Any lien or right to lien for services, labor or material not shown in the Public Records.

THE FOLLOWING EXCEPTIONS AFFECT PARCEL 1

7. General and special State, County and/or City property taxes, including any personal property taxes and any assessments collected with taxes, payable in four (4) quarterly installments (due on or before 3rd Monday in August and 1st Monday in October, January and March, respectively) are as follows:

Assessor's Parcel No.:	021-341-08
Fiscal Year:	2016-2017
Total Taxes:	\$1,456.01
1st Installment:	\$367.01 PAID
2nd Installment:	\$363.00 PAID
3rd Installment:	\$367.00 PAID
4th Installment:	\$367.00 PAID
8. The lien, if any, for taxes for improvements completed or in progress, but which were not shown on the tax bill for the current year.
9. Liens levied by the Truckee-Carson Irrigation District, by reason that subject property is located within said district.
10. Any liens, charges or assessments levied by the City of Fernley by reason that the Land is located within said district
11. Rights of way for any existing roads, trails, canals, ditches, flumes, conduits, pipe, pole or transmission lines on, under, over, through or across said premises.
12. This report makes no representations as to water, water rights, mineral or mineral rights and no reliance may be made upon this report or a resulting title policy for such rights or ownership.

13. Reservation(s) contained in Deed,
- Reserved by: Central Pacific Railway Company, a corporation
Recording Date: January 10, 1914
Recording No.: Book S, Page 349, as Document No. [11488](#), Deed Records
14. Reservations, exceptions and provisions contained in the patent from the United States of America, and in the acts authorizing the issuance thereof.

Recording Date: April 25, 1935
Recording No: Book 28, Page 250, as Document No. [41710](#), Official Records

15. Reservation(s) contained in Deed,
- Reserved by: The Federal Land Bank of Berkeley, a corporation
Recording Date: November 8, 1943
Recording No.: Book 32, Page 473, as Document No. [50911](#), Deed Records

16. Easement as set forth in document,
- Purpose: Ingress and egress
Recording Date: May 18, 1973
Recording No: Instrument No. [14434](#), of Official Records

17. A deed of trust to secure an indebtedness in the amount shown below,
- Amount: \$57,899.00
Dated: June 21, 2011
Trustor/Grantor: D. Scott Wolf and Holy G. Wolf, husband and wife
Trustee: Dennis J. Gudenau
Beneficiary: USAA Federal Saving Bank
Recording Date: July 11, 2011
Recording No: Instrument No. [478994](#), of Official Records

18. A homestead declaration
- Executed by: David Scott Wolf and Holly G. Wolf, Trustees of the Wolf Family 2016 Trust
Recording Date: August 25, 2016
Recording No: Instrument No. [554530](#), of Official Records

THE FOLLOWING EXCEPTIONS AFFECT PARCEL 2

19. General and special State, County and/or City property taxes, including any personal property taxes and any assessments collected with taxes, payable in four (4) quarterly installments (due on or before 3rd Monday in August and 1st Monday in October, January and March, respectively) are as follows:

Assessor's Parcel No.: 021-341-14
Fiscal Year: 2016-2017
Total Taxes: \$5,237.27
1st Installment: \$1,310.27 PAID
2nd Installment: \$1,309.00 PAID
3rd Installment: \$1,309.00 PAID
4th Installment: \$1,309.00 PAID

20. Personal property taxes, payable in four (4) quarterly installments (due on or before 3rd Monday in August and 1st Monday in October, January and March, respectively) are as follows:
- | | | |
|------------------|-----------|------|
| Account No.: | MH-010103 | |
| Fiscal Year: | 2016-2017 | |
| Total Taxes: | \$175.44 | |
| 1st Installment: | \$ 43.86 | PAID |
| 2nd Installment: | \$ 43.86 | PAID |
| 3rd Installment: | \$ 43.86 | PAID |
| 4th Installment: | \$ 43.86 | PAID |

21. The Land lies within the boundaries of an Agricultural or Open Space Use Assessment District and is potentially subject to deferred real property taxes, the amount is undetermined until the time of conversion.
22. Any liens, charges or assessments levied by the Truckee-Carson Irrigation District by reason that the Land is located within said district.
23. Any liens, charges or assessments levied by the City of Fernley by reason that the Land is located within said district.
24. Any unpaid charges for Waste Management, plus any interest and/or penalties, which would create a lien and attach to said Land, pursuant to Nevada Revised Statutes.
25. Subject to any rights and/or provisions of the General Highway Act for improvements, repair or landscaping to the public highway located along the boundary of the Land.
26. Any water rights, claims or title to water, on or under the land, together with any irrigation and drainage ditches, flumes, pipe lines or other conduits over and across the said lands as may be necessary for the irrigation or drainage of land, together with any rights of ingress and egress thereto, whether or not shown by the public records.

NOTE: This report makes no representation as to water, water rights, minerals or mineral rights and no reliance can be made upon this report or a resulting title policy for such rights or ownership.

27. Reservation(s) contained in Deed,
- | | |
|-----------------|--|
| Reserved by: | Central Pacific Railway Company, a corporation |
| Recording Date: | January 10, 1914 |
| Recording No.: | Book S, Page 349, as Document No. 11488 , Deed Records |
28. Waiver of any claims for damages to said Land by reason of the location, construction, landscaping or maintenance of the street or highway adjoining said Land, as contained in the deed to
- | | |
|----------------------------|--|
| Name of Street or Highway: | Farm District Road |
| Recording Date: | March 19, 1924 |
| Recording No.: | Book W, Page 555, Document No. 31966 , of Official Records |
29. Reservations, exceptions and provisions contained in the patent from the United States of America, and in the acts authorizing the issuance thereof.
- | | |
|-----------------|---|
| Recording Date: | April 25, 1935 |
| Recording No: | Book 28, Page 250, as Document No. 41710 , Official Records |
30. Reservation(s) contained in Deed,

Reserved by: The Federal Land Bank of Berkeley, a corporation
Recording Date: November 8, 1943
Recording No.: Book 32, Page 473, as Document No. [50911](#), Deed Records

31. Easement(s) for the purpose(s) shown below and rights incidental thereto as set forth in a document:

In favor of: D. Scott Wolf and Holly G. Wolf
Purpose: ingress and egress
Recording Date: May 18, 1973
Recording No: [14434](#), Official Records
Affects: a portion of said land

32. Easement(s) for the purpose(s) shown below and rights incidental thereto, as granted in a document:

Granted to: Sierra Pacific Power Company, a Nevada corporation and Bell Telephone Company of Nevada, a corporation
Purpose: a right of way with the right, privilege and authority to construct, operate and maintain overhead and underground electric power and communication lines and other appurtenances
Recording Date: July 29, 1974
Recording No: [19425](#), Official Records
Affects: A portion of said land

33. A homestead declaration

Executed by: Gilbert E. Clements and Alice R. Clements
Dated: July 27, 1992
Recording Date: August 26, 1992
Recording No: [154532](#), Official Records

34. Easement(s) and rights incidental thereto as delineated or as offered for dedication on Record of Survey Map

Recording Date: September 25, 2002
Recording No: [283160](#), Official Records

35. Easement(s) and rights incidental thereto as delineated or as offered for dedication on Record of Survey Map

Recording Date: April 2, 2003
Recording No: [293706](#), Official Records

36. Terms, provisions and conditions as contained in an instrument

Entitled: Conditional Grant of Easement Agreement
Executed by: Gilbert E. Clements and Alice R. Clements as Co-Trustees of the Clements Family 1992 Trust dated August 21, 1992 and Bobby Joe Holman, an unmarried man
Recording Date: May 27, 2004
Recording No: [321770](#), Official Records

37. Terms, provisions and conditions as contained in an instrument
- Entitled: Grant of Easement (Irrigation Ditch)
Executed by: Bobby Joe Holman, Gilbert E. Clements and Alice R. Clements, as Trustees of the Clements Family 1992 Trust dated August 21, 1992
Recording Date: May 27, 2004
Recording No: [321771](#), Official Records
38. Easement(s) for the purpose(s) shown below and rights incidental thereto, as granted in a document:
- Granted to: Bobby Joe Holman
Purpose: access permitting ingress, egress and right-of-way
Recording Date: May 27, 2004
Recording No: [321772](#), Official Records
Affects: A portion of said land
39. Terms, provisions and conditions as contained in an instrument
- Entitled: Grant of Easement (Private Driveway)
Executed by: Gilbert E. Clements and Alice R Clements as Trustees of the Clements Family 1992 Trust dated August 21, 1992 and Bobby Joe Holman
Recording Date: May 27, 2004
Recording No: [321772](#), Official Records
40. Deferred tax liens for Agricultural or Open Space, the last of which was,
- Recording Date: January 23, 2017
Recording No: [560070](#), Official Records
41. Rights and claims of parties in possession by reason of unrecorded leases, if any, that would be disclosed by an inquiry of the parties or by an inspection of said Land.
42. Please be advised that our search did not disclose any open Deeds of Trust of record. If you should have knowledge of any outstanding obligation, please contact the Title Department immediately for further review prior to closing.

Order No.: 01606332-TO

EXHIBIT A

All that certain real property situate in the County of Lyon, State of Nevada, described as follows:

PARCEL 1

A parcel of land located in the W 1/2 of the SE 1/4 of the NE 1/4 of Section 21, T. 20 N., R. 25 E., M.D.B.&M., more particularly described as follows:

Beginning at the East 1/4 corner, witness corner G.L.O. brass cap of Section 21, T. 20 N., R. 25 E., M.D.B.&M., thence along the East section S 00°07' E., 27.72 feet to the East 1/4 corner of said Section 21; thence along the 1/4 section line at a bearing of S 89°51'30" W., 1331.11 feet to the Southwest corner of the W 1/2 of the SE 1/4 of the NE 1/4 of Section 21, T. 20 N., R. 25 E., M.D.B.&M.; thence N 0°04' E., 856.00 feet to the true point of beginning; thence N 0°04' E., 290.40 feet; thence S 89°56' E., 150.00 feet; thence S 0°04' W., 290.40 feet; thence N 89°56' W., 150.00 feet to The True Point of Beginning.

Together with ingress and egress in and over 20.00 feet along the westerly Clements property line from the existing Farm District Road to the above herein described property.

Note: Legal description previously contained in Document No. [554529](#), recorded August 25, 2016, Official Records of Lyon County, State of Nevada.

Assessor's Parcel No. 021-341-08

PARCEL 2

Description of Clements Lot (A.P.N. 21-341-12) within the W 1/2 of the NW 1/4 of Section 22 and the NE 1/4 of Section 21, T. 20 N., R. 25 E., M.D.B.&M., Lyon county, Nevada, More Particularly described as follows:

BEGINNING AT A POINT which is the Northwest corner of said Section 22 and the Northeast corner of said Section 21 and the TRUE POINT OF BEGINNING;

THENCE N 89° 57' 19" W a distance of 1323.81 feet to a POINT;

THENCE S 00° 02' 45" W a distance of 1500.77 feet to a POINT;

THENCE S 89° 57' 15" E a distance of 150.00 feet to a POINT;

THENCE S 00° 02' 45" W a distance of 290.40 feet to a POINT;

THENCE N 89° 57' 15" W a distance of 150.00 feet to a POINT;

THENCE S 00° 02' 45" W a distance of 842.81 feet to a POINT;

THENCE S 89° 43' 53" E a distance of 663.70 feet to a POINT;

THENCE N 00° 58' 53" W a distance of 206.81 feet to a POINT;

THENCE S 89° 43' 53" E a. distance of 133.00 feet to a POINT;

THENCE S 00° 58' 53" E a distance of 206.81 feet to a POINT;
THENCE S 89° 43' 53" E a distance of 201.38 feet to a POINT;
THENCE N 00° 07' 00" E a distance of 761.01 feet to a POINT;
THENCE S 89° 43' 53" E a distance of 363 .22 feet to a POINT;
THENCE S 00° 07' 16" E a distance of 5 16.00 feet to a POINT;
THENCE S 89° 43' 53" E a distance of 328.90 feet to a POINT;
THENCE N 00° 06' 51" E a distance of 2393.66 feet to a POINT;
THENCE N 89° 38' 23" W a distance of 329.00 feet to a POINT;
and the TRUE POINT OF BEGINNING.

Note: Legal description previously contained in Document No. [347383](#), recorded April 6, 2005, Official Records of Lyon County, State of Nevada.

Assessor's Parcel No. 021-341-14

EXHIBIT A

All that certain real property situate in the County of Lyon, State of Nevada, described as follows:

PARCEL 1

A parcel of land located in the W 1/2 of the SE 1/4 of the NE 1/4 of Section 21, T. 20 N., R. 25 E., M.D.B.&M., more particularly described as follows:

Beginning at the East 1/4 corner, witness corner G.L.O. brass cap of Section 21, T. 20 N., R. 25 E., M.D.B.&M., thence along the East section S 00°07' E., 27.72 feet to the East 1/4 corner of said Section 21; thence along the 1/4 section line at a bearing of S 89°51'30" W., 1331.11 feet to the Southwest corner of the W 1/2 of the SE 1/4 of the NE 1/4 of Section 21, T. 20 N., R. 25 E., M.D.B.&M.; thence N 0°04' E., 856.00 feet to the true point of beginning; thence N 0°04' E., 290.40 feet; thence S 89°56' E., 150.00 feet; thence S 0°04' W., 290.40 feet; thence N 89°56' W., 150.00 feet to The True Point of Beginning.

Together with ingress and egress in and over 20.00 feet along the westerly Clements property line from the existing Farm District Road to the above herein described property.

Note: Legal description previously contained in Document No. [554529](#), recorded August 25, 2016, Official Records of Lyon County, State of Nevada.

Assessor's Parcel No. 021-341-08

PARCEL 2

Description of Clements Lot (A.P.N. 21-341-12) within the W 1/2 of the NW 1/4 of Section 22 and the NE 1/4 of Section 21, T. 20 N., R. 25 E., M.D.B.&M., Lyon county, Nevada, More Particularly described as follows:

BEGINNING AT A POINT which is the Northwest corner of said Section 22 and the Northeast corner of said Section 21 and the TRUE POINT OF BEGINNING;

THENCE N 89° 57' 19" W a distance of 1323.81 feet to a POINT;

THENCE S 00° 02' 45" W a distance of 1500.77 feet to a POINT;

THENCE S 89° 57' 15" E a distance of 150.00 feet to a POINT;

THENCE S 00° 02' 45" W a distance of 290.40 feet to a POINT;

THENCE N 89° 57' 15" W a distance of 150.00 feet to a POINT;

THENCE S 00° 02' 45" W a distance of 842.81 feet to a POINT;

THENCE S 89° 43' 53" E a distance of 663.70 feet to a POINT;

THENCE N 00° 58' 53" W a distance of 206.81 feet to a POINT;

THENCE S 89° 43' 53" E a distance of 133.00 feet to a POINT;

THENCE S 00° 58' 53" E a distance of 206.81 feet to a POINT;

THENCE S 89° 43' 53" E a distance of 201.38 feet to a POINT;
THENCE N 00° 07' 00" E a distance of 761.01 feet to a POINT;
THENCE S 89° 43' 53" E a distance of 363 .22 feet to a POINT;
THENCE S 00° 07' 16" E a distance of 5 16.00 feet to a POINT;
THENCE S 89° 43' 53" E a distance of 328.90 feet to a POINT;
THENCE N 00° 06' 51" E a distance of 2393.66 feet to a POINT;
THENCE N 89° 38' 23" W a distance of 329.00 feet to a POINT;
and the TRUE POINT OF BEGINNING.

Note: Legal description previously contained in Document No. [347383](#), recorded April 6, 2005, Official Records of Lyon County, State of Nevada.

Assessor's Parcel No. 021-341-14

ATTACHMENT ONE (Revised 05-06-16)

CALIFORNIA LAND TITLE ASSOCIATION STANDARD COVERAGE POLICY – 1990

EXCLUSIONS FROM COVERAGE

The following matters are expressly excluded from the coverage of this policy and the Company will not pay loss or damage, costs, attorneys' fees or expenses which arise by reason of:

1. (a) Any law, ordinance or governmental regulation (including but not limited to building or zoning laws, ordinances, or regulations) restricting, regulating, prohibiting or relating (i) the occupancy, use, or enjoyment of the land; (ii) the character, dimensions or location of any improvement now or hereafter erected on the land; (iii) a separation in ownership or a change in the dimensions or area of the land or any parcel of which the land is or was a part; or (iv) environmental protection, or the effect of any violation of these laws, ordinances or governmental regulations, except to the extent that a notice of the enforcement thereof or a notice of a defect, lien, or encumbrance resulting from a violation or alleged violation affecting the land has been recorded in the public records at Date of Policy.
- (b) Any governmental police power not excluded by (a) above, except to the extent that a notice of the exercise thereof or notice of a defect, lien or encumbrance resulting from a violation or alleged violation affecting the land has been recorded in the public records at Date of Policy.
2. Rights of eminent domain unless notice of the exercise thereof has been recorded in the public records at Date of Policy, but not excluding from coverage any taking which has occurred prior to Date of Policy which would be binding on the rights of a purchaser for value without knowledge.
3. Defects, liens, encumbrances, adverse claims or other matters:
 - (a) whether or not recorded in the public records at Date of Policy, but created, suffered, assumed or agreed to by the insured claimant;
 - (b) not known to the Company, not recorded in the public records at Date of Policy, but known to the insured claimant and not disclosed in writing to the Company by the insured claimant prior to the date the insured claimant became an insured under this policy;
 - (c) resulting in no loss or damage to the insured claimant;
 - (d) attaching or created subsequent to Date of Policy; or
 - (e) resulting in loss or damage which would not have been sustained if the insured claimant had paid value for the insured mortgage or for the estate or interest insured by this policy.
4. Unenforceability of the lien of the insured mortgage because of the inability or failure of the insured at Date of Policy, or the inability or failure of any subsequent owner of the indebtedness, to comply with the applicable doing business laws of the state in which the land is situated.
5. Invalidity or unenforceability of the lien of the insured mortgage, or claim thereof, which arises out of the transaction evidenced by the insured mortgage and is based upon usury or any consumer credit protection or truth in lending law.
6. Any claim, which arises out of the transaction vesting in the insured the estate or interest insured by this policy or the transaction creating the interest of the insured lender, by reason of the operation of federal bankruptcy, state insolvency or similar creditors' rights laws.

EXCEPTIONS FROM COVERAGE - SCHEDULE B, PART I

This policy does not insure against loss or damage (and the Company will not pay costs, attorneys' fees or expenses) which arise by reason of:

1. Taxes or assessments which are not shown as existing liens by the records of any taxing authority that levies taxes or assessments on real property or by the public records.
Proceedings by a public agency which may result in taxes or assessments, or notices of such proceedings, whether or not shown by the records of such agency or by the public records.
2. Any facts, rights, interests, or claims which are not shown by the public records but which could be ascertained by an inspection of the land or which may be asserted by persons in possession thereof.
3. Easements, liens or encumbrances, or claims thereof, not shown by the public records.
4. Discrepancies, conflicts in boundary lines, shortage in area, encroachments, or any other facts which a correct survey would disclose, and which are not shown by the public records.
5. (a) Unpatented mining claims; (b) reservations or exceptions in patents or in Acts authorizing the issuance thereof; (c) water rights, claims or title to water, whether or not the matters excepted under (a), (b) or (c) are shown by the public records.
6. Any lien or right to a lien for services, labor or material not shown by the public records.

CLTA HOMEOWNER'S POLICY OF TITLE INSURANCE (12-02-13) ALTA HOMEOWNER'S POLICY OF TITLE INSURANCE

EXCLUSIONS

In addition to the Exceptions in Schedule B, You are not insured against loss, costs, attorneys' fees, and expenses resulting from:

1. Governmental police power, and the existence or violation of those portions of any law or government regulation concerning:
 - a. building;
 - b. zoning;
 - c. land use;
 - d. improvements on the Land;
 - e. land division; and
 - f. environmental protection.
 This Exclusion does not limit the coverage described in Covered Risk 8.a., 14, 15, 16, 18, 19, 20, 23 or 27.
2. The failure of Your existing structures, or any part of them, to be constructed in accordance with applicable building codes. This Exclusion does not limit the coverage described in Covered Risk 14 or 15.
3. The right to take the Land by condemning it. This Exclusion does not limit the coverage described in Covered Risk 17.
4. Risks:
 - a. that are created, allowed, or agreed to by You, whether or not they are recorded in the Public Records;
 - b. that are Known to You at the Policy Date, but not to Us, unless they are recorded in the Public Records at the Policy Date;
 - c. that result in no loss to You; or
 - d. that first occur after the Policy Date - this does not limit the coverage described in Covered Risk 7, 8.e., 25, 26, 27 or 28.
5. Failure to pay value for Your Title.
6. Lack of a right:
 - a. to any land outside the area specifically described and referred to in paragraph 3 of Schedule A; and
 - b. in streets, alleys, or waterways that touch the Land.
 This Exclusion does not limit the coverage described in Covered Risk 11 or 21.
7. The transfer of the Title to You is invalid as a preferential transfer or as a fraudulent transfer or conveyance under federal bankruptcy, state insolvency, or similar creditors' rights laws.
8. Contamination, explosion, fire, flooding, vibration, fracturing, earthquake, or subsidence.
9. Negligence by a person or an Entity exercising a right to extract or develop minerals, water, or any other substances.

LIMITATIONS ON COVERED RISKS

Your insurance for the following Covered Risks is limited on the Owner's Coverage Statement as follows:

- For Covered Risk 16, 18, 19, and 21 Your Deductible Amount and Our Maximum Dollar Limit of Liability shown in Schedule A.

The deductible amounts and maximum dollar limits shown on Schedule A are as follows:

	Your Deductible Amount	Our Maximum Dollar Limit of Liability
Covered Risk 16:	1.00% of Policy Amount Shown in Schedule A or \$2,500.00 (whichever is less)	\$ 10,000.00
Covered Risk 18:	1.00% of Policy Amount Shown in Schedule A or \$5,000.00 (whichever is less)	\$ 25,000.00
Covered Risk 19:	1.00% of Policy Amount Shown in Schedule A or \$5,000.00 (whichever is less)	\$ 25,000.00
Covered Risk 21:	1.00% of Policy Amount Shown in Schedule A or \$2,500.00 (whichever is less)	\$ 5,000.00

2006 ALTA LOAN POLICY (06-17-06)

EXCLUSIONS FROM COVERAGE

The following matters are expressly excluded from the coverage of this policy, and the Company will not pay loss or damage, costs, attorneys' fees, or expenses that arise by reason of:

1. (a) Any law, ordinance, permit, or governmental regulation (including those relating to building and zoning) restricting, regulating, prohibiting, or relating to
 - (i) the occupancy, use, or enjoyment of the Land;
 - (ii) the character, dimensions, or location of any improvement erected on the Land;
 - (iii) the subdivision of land; or
 - (iv) environmental protection;
 or the effect of any violation of these laws, ordinances, or governmental regulations. This Exclusion 1(a) does not modify or limit the coverage provided under Covered Risk 5.
- (b) Any governmental police power. This Exclusion 1(b) does not modify or limit the coverage provided under Covered Risk 6.

2. Rights of eminent domain. This Exclusion does not modify or limit the coverage provided under Covered Risk 7 or 8.
3. Defects, liens, encumbrances, adverse claims, or other matters
 - (a) created, suffered, assumed, or agreed to by the Insured Claimant;
 - (b) not Known to the Company, not recorded in the Public Records at Date of Policy, but Known to the Insured Claimant and not disclosed in writing to the Company by the Insured Claimant prior to the date the Insured Claimant became an Insured under this policy;
 - (c) resulting in no loss or damage to the Insured Claimant;
 - (d) attaching or created subsequent to Date of Policy (however, this does not modify or limit the coverage provided under Covered Risk 11, 13 or 14); or
 - (e) resulting in loss or damage that would not have been sustained if the Insured Claimant had paid value for the Insured Mortgage.
4. Unenforceability of the lien of the Insured Mortgage because of the inability or failure of an Insured to comply with applicable doing-business laws of the state where the Land is situated.
5. Invalidity or unenforceability in whole or in part of the lien of the Insured Mortgage that arises out of the transaction evidenced by the Insured Mortgage and is based upon usury or any consumer credit protection or truth-in-lending law.
6. Any claim, by reason of the operation of federal bankruptcy, state insolvency, or similar creditors' rights laws, that the transaction creating the lien of the Insured Mortgage, is
 - (a) a fraudulent conveyance or fraudulent transfer, or
 - (b) a preferential transfer for any reason not stated in Covered Risk 13(b) of this policy.
7. Any lien on the Title for real estate taxes or assessments imposed by governmental authority and created or attaching between Date of Policy and the date of recording of the Insured Mortgage in the Public Records. This Exclusion does not modify or limit the coverage provided under Covered Risk 11(b).

The above policy form may be issued to afford either Standard Coverage or Extended Coverage. In addition to the above Exclusions from Coverage, the Exceptions from Coverage in a Standard Coverage policy will also include the following Exceptions from Coverage:

EXCEPTIONS FROM COVERAGE

{Except as provided in Schedule B - Part II, { t{or T}his policy does not insure against loss or damage, and the Company will not pay costs, attorneys' fees or expenses, that arise by reason of:

{PART I

{The above policy form may be issued to afford either Standard Coverage or Extended Coverage. In addition to the above Exclusions from Coverage, the Exceptions from Coverage in a Standard Coverage policy will also include the following Exceptions from Coverage:

1. (a) Taxes or assessments that are not shown as existing liens by the records of any taxing authority that levies taxes or assessments on real property or by the Public Records; (b) proceedings by a public agency that may result in taxes or assessments, or notices of such proceedings, whether or not shown by the records of such agency or by the Public Records.
2. Any facts, rights, interests, or claims that are not shown by the Public Records but that could be ascertained by an inspection of the Land or that may be asserted by persons in possession of the Land.
3. Easements, liens or encumbrances, or claims thereof, not shown by the Public Records.
4. Any encroachment, encumbrance, violation, variation, or adverse circumstance affecting the Title that would be disclosed by an accurate and complete land survey of the Land and not shown by the Public Records.
5. (a) Unpatented mining claims; (b) reservations or exceptions in patents or in Acts authorizing the issuance thereof; (c) water rights, claims or title to water, whether or not the matters excepted under (a), (b), or (c) are shown by the Public Records.
6. Any lien or right to a lien for services, labor or material not shown by the Public Records.}

PART II

In addition to the matters set forth in Part I of this Schedule, the Title is subject to the following matters, and the Company insures against loss or damage sustained in the event that they are not subordinate to the lien of the Insured Mortgage:}

2006 ALTA OWNER'S POLICY (06-17-06)

EXCLUSIONS FROM COVERAGE

The following matters are expressly excluded from the coverage of this policy, and the Company will not pay loss or damage, costs, attorneys' fees, or expenses that arise by reason of:

1. (a) Any law, ordinance, permit, or governmental regulation (including those relating to building and zoning) restricting, regulating, prohibiting, or relating to
 - (i) the occupancy, use, or enjoyment of the Land;
 - (ii) the character, dimensions, or location of any improvement erected on the Land;
 - (iii) the subdivision of land; or
 - (iv) environmental protection;

- or the effect of any violation of these laws, ordinances, or governmental regulations. This Exclusion 1(a) does not modify or limit the coverage provided under Covered Risk 5.
- (b) Any governmental police power. This Exclusion 1(b) does not modify or limit the coverage provided under Covered Risk 6.
2. Rights of eminent domain. This Exclusion does not modify or limit the coverage provided under Covered Risk 7 or 8.
 3. Defects, liens, encumbrances, adverse claims, or other matters
 - (a) created, suffered, assumed, or agreed to by the Insured Claimant;
 - (b) not Known to the Company, not recorded in the Public Records at Date of Policy, but Known to the Insured Claimant and not disclosed in writing to the Company by the Insured Claimant prior to the date the Insured Claimant became an Insured under this policy;
 - (c) resulting in no loss or damage to the Insured Claimant;
 - (d) attaching or created subsequent to Date of Policy (however, this does not modify or limit the coverage provided under Covered Risk 9 and 10); or
 - (e) resulting in loss or damage that would not have been sustained if the Insured Claimant had paid value for the Title.
 4. Any claim, by reason of the operation of federal bankruptcy, state insolvency, or similar creditors' rights laws, that the transaction vesting the Title as shown in Schedule A, is
 - (a) a fraudulent conveyance or fraudulent transfer; or
 - (b) a preferential transfer for any reason not stated in Covered Risk 9 of this policy.
 5. Any lien on the Title for real estate taxes or assessments imposed by governmental authority and created or attaching between Date of Policy and the date of recording of the deed or other instrument of transfer in the Public Records that vests Title as shown in Schedule A.

The above policy form may be issued to afford either Standard Coverage or Extended Coverage. In addition to the above Exclusions from Coverage, the Exceptions from Coverage in a Standard Coverage policy will also include the following Exceptions from Coverage:

EXCEPTIONS FROM COVERAGE

This policy does not insure against loss or damage, and the Company will not pay costs, attorneys' fees or expenses, that arise by reason of:

{The above policy form may be issued to afford either Standard Coverage or Extended Coverage. In addition to the above Exclusions from Coverage, the Exceptions from Coverage in a Standard Coverage policy will also include the following Exceptions from Coverage:

1. (a) Taxes or assessments that are not shown as existing liens by the records of any taxing authority that levies taxes or assessments on real property or by the Public Records; (b) proceedings by a public agency that may result in taxes or assessments, or notices of such proceedings, whether or not shown by the records of such agency or by the Public Records.
2. Any facts, rights, interests, or claims that are not shown in the Public Records but that could be ascertained by an inspection of the Land or that may be asserted by persons in possession of the Land.
3. Easements, liens or encumbrances, or claims thereof, not shown by the Public Records.
4. Any encroachment, encumbrance, violation, variation, or adverse circumstance affecting the Title that would be disclosed by an accurate and complete land survey of the Land and that are not shown by the Public Records.
5. (a) Unpatented mining claims; (b) reservations or exceptions in patents or in Acts authorizing the issuance thereof; (c) water rights, claims or title to water, whether or not the matters excepted under (a), (b), or (c) are shown by the Public Records.
6. Any lien or right to a lien for services, labor or material not shown by the Public Records. }
7. {Variable exceptions such as taxes, easements, CC&R's, etc. shown here. }

ALTA EXPANDED COVERAGE RESIDENTIAL LOAN POLICY – ASSESSMENTS PRIORITY (04-02-15)

EXCLUSIONS FROM COVERAGE

The following matters are expressly excluded from the coverage of this policy and the Company will not pay loss or damage, costs, attorneys' fees or expenses which arise by reason of:

1. (a) Any law, ordinance, permit, or governmental regulation (including those relating to building and zoning) restricting, regulating, prohibiting, or relating to
 - (i) the occupancy, use, or enjoyment of the Land;
 - (ii) the character, dimensions, or location of any improvement erected on the Land;
 - (iii) the subdivision of land; or
 - (iv) environmental protection;
 or the effect of any violation of these laws, ordinances, or governmental regulations. This Exclusion 1(a) does not modify or limit the coverage provided under Covered Risk 5, 6, 13(c), 13(d), 14 or 16.
 - (b) Any governmental police power. This Exclusion 1(b) does not modify or limit the coverage provided under Covered Risk 5, 6, 13(c), 13(d), 14 or 16.
2. Rights of eminent domain. This Exclusion does not modify or limit the coverage provided under Covered Risk 7 or 8.
3. Defects, liens, encumbrances, adverse claims, or other matters

- (a) created, suffered, assumed, or agreed to by the Insured Claimant;
 - (b) not Known to the Company, not recorded in the Public Records at Date of Policy, but Known to the Insured Claimant and not disclosed in writing to the Company by the Insured Claimant prior to the date the Insured Claimant became an Insured under this policy;
 - (c) resulting in no loss or damage to the Insured Claimant;
 - (d) attaching or created subsequent to Date of Policy (however, this does not modify or limit the coverage provided under Covered Risk 11, 16, 17, 18, 19, 20, 21, 22, 23, 24, 27 or 28); or
 - (e) resulting in loss or damage that would not have been sustained if the Insured Claimant had paid value for the Insured Mortgage.
- 4. Unenforceability of the lien of the Insured Mortgage because of the inability or failure of an Insured to comply with applicable doing-business laws of the state where the Land is situated.
 - 5. Invalidity or unenforceability in whole or in part of the lien of the Insured Mortgage that arises out of the transaction evidenced by the Insured Mortgage and is based upon usury, or any consumer credit protection or truth-in-lending law. This Exclusion does not modify or limit the coverage provided in Covered Risk 26.
 - 6. Any claim of invalidity, unenforceability or lack of priority of the lien of the Insured Mortgage as to Advances or modifications made after the Insured has Knowledge that the vestee shown in Schedule A is no longer the owner of the estate or interest covered by this policy. This Exclusion does not modify or limit the coverage provided in Covered Risk 11.
 - 7. Any lien on the Title for real estate taxes or assessments imposed by governmental authority and created or attaching subsequent to Date of Policy. This Exclusion does not modify or limit the coverage provided in Covered Risk 11(b) or 25.
 - 8. The failure of the residential structure, or any portion of it, to have been constructed before, on or after Date of Policy in accordance with applicable building codes. This Exclusion does not modify or limit the coverage provided in Covered Risk 5 or 6.
 - 9. Any claim, by reason of the operation of federal bankruptcy, state insolvency, or similar creditors' rights laws, that the transaction creating the lien of the Insured Mortgage, is
 - (a) a fraudulent conveyance or fraudulent transfer, or
 - (b) a preferential transfer for any reason not stated in Covered Risk 27(b) of this policy.
 - 10. Contamination, explosion, fire, flooding, vibration, fracturing, earthquake, or subsidence.
 - 11. Negligence by a person or an Entity exercising a right to extract or develop minerals, water, or any other substances.

Note: Notice of Available Title Insurance and Escrow Discounts

Your transaction may qualify for one of the discounts shown below. In order to receive these discounts, you will need to contact your escrow officer or a company representative to determine if you qualify and to request the discount. Your escrow officer or company representative will provide a full description of the terms, conditions and requirements associated with each discount.

Available Title Insurance Discounts (These discounts will apply to all transactions where the company is issuing a policy of title insurance, including such transactions where the company is not providing escrow closing services.)

CREDIT FOR PRELIMINARY TITLE REPORTS AND/OR COMMITMENT CANCELLATION CHARGES ON SUBSEQUENT POLICIES

Where an order was cancelled and no major change in the title has occurred since the issuance of the original report or commitment, and the order is reopened within 24 - 36 months, all or a portion of the charge previously paid upon the cancellation of the report or commitment may be credited on a subsequent policy charge.

SHORT TERM RATE

The Short Term Rate is a reduction of the applicable insurance rate which is allowable only when the current order is placed within 60 months from the date of issuance of a prior policy of title insurance to the vested owner or an assignee of the interest insured. The short term rate is 80% of the Basic Rate. Unless otherwise stated, the reduction only applies to policies priced at 80% or greater of the basic rate. This reduction does not apply to Short Sale transactions or to any surcharge calculated on the basic rate.

PRIOR POLICY DISCOUNT (APPLICABLE TO ZONE 2, DIRECT OPERATIONS ONLY)

The Prior Policy Discount will apply when a seller or borrower provides a copy of their owner's policy upon opening escrow. The prior policy rate is 70% of the applicable owner's title premium. This discount may not be used in combination with any other discount and can only be used in transactions involving property located in Zone 2 (Zone 2 includes all Nevada counties except Clark, Lincoln and Nye) that are handled by a direct operation of the FNF Family of Companies.

CHURCHES OR CHARITABLE NON-PROFIT ORGANIZATIONS

On properties used as a church or for charitable purposes within the scope of the normal activities of such entities the charge for a policy shall be 50% to 70% of the appropriate title insurance rate, depending on the type of coverage selected. This discount shall not apply to charges for loan policies issued concurrently with an owner's policy.

EMPLOYEE RATE

No charge shall be made to employees of the Company, its subsidiary or affiliated companies (including employees on approved retirement) for policies issued in connection with financing, refinancing, sale or purchase of the employee's bonafide home property. Waiver of such charges is authorized only in connection with those costs which the employee would be obligated to pay, by established custom, as a party to the transaction.

INVESTOR RATE

This rate is available for individuals, groups of individuals or entities customarily engaged in real estate investments. The parties must provide reasonable proof that they currently hold title to or have transferred title to three (3) or more investment properties in the State of Nevada within the past twelve (12) months to qualify for this rate. On a sale transaction, the investor rate is 70% of the basic rate. This reduction does not apply to any surcharge calculated on the basic rate. On a refinance transaction or where the investor is obtaining a loan subsequent to a purchase, the rate shall be 85% of the applicable rate with a minimum charge of \$385.00. The loan discount shall only apply to transactions priced under Section 5.1 B (1b) of the title insurance rate manual. This rate is available upon request only.

Available Escrow Discounts These discounts will apply only to the escrow fee portion of your settlement charges, and the discounts will apply only if the company is issuing a policy of title insurance in conjunction with providing escrow services.

SENIOR CITIZEN RATE

If a valid identification is provided, principals to a given transaction who qualify as Senior Citizens (55 year of age and over) shall be charged 70% of their portion of the escrow fee wherein a valid identification is provided. This discount shall only apply on residential resale transactions wherein the principal resides in the subject property. This discount may not be used in combination with any other escrow rate discount. This rate is available upon request only.

MILITARY DISCOUNT

Any person on active military duty or a Veteran of the U.S. Armed Forces shall be charged 80% of their portion of the escrow fee. A copy of a current military identification card or a copy of the DD-214 (Certificate of Release or Discharge from Active Duty) must be provided. This discount may not be used in combination with any other discount. This rate is for sale transaction and it is available upon request only.

FIRST TIME HOMEBUYER RATE (APPLICABLE TO ZONE 2 ONLY)

A first time homebuyer of an owner-occupied residential property shall be charged 75% of their portion of the escrow fee, provided reasonable evidence is presented that this is their first home. Applies to all counties **except** Clark, Lincoln and Nye. This discount may not be used in combination with any other discount. This rate is for sale transactions and it is available upon request only.

EMPLOYEE RATES

An employee will not be charged an escrow fee for the purchase, sale or refinance of the employee's primary residence. The employee must be a principal to the transaction and the request for waiver of fees must be submitted to Management prior to approval.

INVESTOR RATE

This rate is available for individuals, groups of individuals or entities customarily engaged in real estate transactions. The parties must provide reasonable proof that they currently hold title to or have transferred title to three (3) or more investment properties within the State of Nevada within the past twelve (12) months to qualify for this rate. The charge is 70% of their portion of the escrow fee. This discount may not be used in combination with any other discount. This rate is for sale transactions and it is available upon request, only.

FIDELITY NATIONAL FINANCIAL PRIVACY NOTICE

At Fidelity National Financial, Inc. and its majority-owned subsidiary companies (collectively, “FNF”, “our” or “we”), we value the privacy of our customers. This Privacy Notice explains how we collect, use, and protect your information and explains the choices you have regarding that information. A summary of our privacy practices is below. We also encourage you to read the complete Privacy Notice following the summary.

Types of Information Collected. You may provide us with certain personal information, like your contact information, social security number (SSN), driver’s license, other government ID numbers, and/or financial information. We may also receive information from your Internet browser, computer and/or mobile device.	How Information is Collected. We may collect personal information directly from you from applications, forms, or communications we receive from you, or from other sources on your behalf, in connection with our provision of products or services to you. We may also collect browsing information from your Internet browser, computer, mobile device or similar equipment. This browsing information is generic and reveals nothing personal about the user.
Use of Your Information. We may use your information to provide products and services to you (or someone on your behalf), to improve our products and services, and to communicate with you about our products and services. We do not give or sell your personal information to parties outside of FNF for their use to market their products or services to you.	Security Of Your Information. We utilize a combination of security technologies, procedures and safeguards to help protect your information from unauthorized access, use and/or disclosure. We communicate to our employees about the need to protect personal information.
Choices With Your Information. Your decision to submit personal information is entirely up to you. You can opt-out of certain disclosures or use of your information or choose to not provide any personal information to us.	When We Share Information. We may disclose your information to third parties providing you products and services on our behalf, law enforcement agencies or governmental authorities, as required by law, and to parties with whom you authorize us to share your information.
Information From Children. We do not knowingly collect information from children under the age of 13, and our websites are not intended to attract children.	Privacy Outside the Website. We are not responsible for the privacy practices of third parties, even if our website links to those parties’ websites.
Access and Correction. If you desire to see the information collected about you and/or correct any inaccuracies, please contact us in the manner specified in this Privacy Notice.	Do Not Track Disclosures. We do not recognize “do not track” requests from Internet browsers and similar devices.
The California Online Privacy Protection Act. Certain FNF websites collect information on behalf of mortgage loan servicers. The mortgage loan servicer is responsible for taking action or making changes to any consumer information submitted through those websites.	International Use. By providing us with your information, you consent to the transfer, processing and storage of such information outside your country of residence, as well as the fact that we will handle such information consistent with this Privacy Notice.
Your Consent To This Privacy Notice. By submitting information to us and using our websites, you are accepting and agreeing to the terms of this Privacy Notice.	Contact FNF. If you have questions or wish to contact us regarding this Privacy Notice, please use the contact information provided at the end of this Privacy Notice.

FIDELITY NATIONAL FINANCIAL, INC. PRIVACY NOTICE

FNF respects and is committed to protecting your privacy. We pledge to take reasonable steps to protect your Personal Information (as defined herein) and to ensure your information is used in compliance with this Privacy Notice.

This Privacy Notice is only in effect for information collected and/or owned by or on behalf of FNF, including collection through any FNF website or online services offered by FNF (collectively, the “Website”), as well as any information collected offline (e.g., paper documents). The provision of this Privacy Notice to you does not create any express or implied relationship, nor create any express or implied duty or other obligation, between FNF and you.

Types of Information Collected

We may collect two types of information: Personal Information and Browsing Information.

Personal Information. The types of personal information FNF collects may include, but are not limited to:

- contact information (e.g., name, address, phone number, email address);
- social security number (SSN), driver’s license, and other government ID numbers; and
- financial account or loan information.

Browsing Information. The types of browsing information FNF collects may include, but are not limited to:

- Internet Protocol (or IP) address or device ID/UDID, protocol and sequence information;
- browser language;
- browser type;
- domain name system requests;
- browsing history;
- number of clicks;
- hypertext transfer protocol headers; and
- application client and server banners.

How Information is Collected

In the course of our business, we may collect *Personal Information* about you from the following sources:

- applications or other forms we receive from you or your authorized representative, whether electronic or paper;
- communications to us from you or others;
- information about your transactions with, or services performed by, us, our affiliates or others; and
- information from consumer or other reporting agencies and public records that we either obtain directly from those entities, or from our affiliates or others.

We may collect *Browsing Information* from you as follows:

- **Browser Log Files.** Our servers automatically log, collect and record certain Browsing Information about each visitor to the Website. The Browsing Information includes only generic information and reveals nothing personal about the user.
- **Cookies.** From time to time, FNF may send a “cookie” to your computer when you visit the Website. A cookie is a

small piece of data that is sent to your Internet browser from a web server and stored on your computer’s hard drive. When you visit the Website again, the cookie allows the Website to recognize your computer, with the goal of providing an optimized user experience. Cookies may store user preferences and other information. You can choose not to accept cookies by changing the settings of your Internet browser. If you choose not to accept cookies, then some functions of the Website may not work as intended.

Use of Collected Information

Information collected by FNF is used for three main purposes:

- To provide products and services to you, or to one or more third party service providers who are performing services on your behalf or in connection with a transaction involving you;
- To improve our products and services; and
- To communicate with you and to inform you about FNF’s products and services.

When We Share Information

We may share your Personal Information (excluding information we receive from consumer or other credit reporting agencies) and Browsing Information with certain individuals and companies, as permitted by law, without first obtaining your authorization. Such disclosures may include, without limitation, the following:

- to agents, representatives, or others to provide you with services or products you have requested, and to enable us to detect or prevent criminal activity, fraud, or material misrepresentation or nondisclosure;
- to third-party contractors or service providers who provide services or perform other functions on our behalf;
- to law enforcement or other governmental authority in connection with an investigation, or civil or criminal subpoenas or court orders; and/or
- to other parties authorized to receive the information in connection with services provided to you or a transaction involving you.

We may disclose Personal Information and/or Browsing Information when required by law or in the good-faith belief that such disclosure is necessary to:

- comply with a legal process or applicable laws;
- enforce this Privacy Notice;
- investigate or respond to claims that any information provided by you violates the rights of a third party; or
- protect the rights, property or personal safety of FNF, its users or the public.

We make efforts to ensure third party contractors and service providers who provide services or perform functions on our behalf protect your information. We limit use of your information to the purposes for which the information was provided. We do not give or sell your information to third parties for their own direct marketing use.

We reserve the right to transfer your Personal Information, Browsing Information, as well as any other information, in connection with the sale or other disposition of all or part of the

FNF business and/or assets, or in the event of our bankruptcy, reorganization, insolvency, receivership or an assignment for the benefit of creditors. You expressly agree and consent to the use and/or transfer of this information in connection with any of the above-described proceedings. We cannot and will not be responsible for any breach of security by any third party or for any actions of any third party that receives any of the information that is disclosed to us.

Choices With Your Information

Whether you submit your information to FNF is entirely up to you. If you decide not to submit your information, FNF may not be able to provide certain products or services to you. You may choose to prevent FNF from using your information under certain circumstances (“opt out”). You may opt out of receiving communications from us about our products and/or services.

Security And Retention Of Information

FNF is committed to protecting the information you share with us and utilizes a combination of security technologies, procedures and safeguards to help protect it from unauthorized access, use and/or disclosure. FNF trains its employees on privacy practices and on FNF’s privacy and information security policies. FNF works hard to retain information related to you only as long as reasonably necessary for business and/or legal purposes.

Information From Children

The Website is meant for adults. The Website is not intended or designed to attract children under the age of thirteen (13). We do not collect Personal Information from any person that we know to be under the age of thirteen (13) without permission from a parent or guardian.

Privacy Outside the Website

The Website may contain links to other websites, including links to websites of third party service providers. FNF is not and cannot be responsible for the privacy practices or the content of any of those other websites.

International Users

Because FNF’s headquarters is located in the United States, we may transfer your Personal Information and/or Browsing Information to the United States. By using our website and providing us with your Personal Information and/or Browsing Information, you understand and consent to the transfer, processing and storage of such information outside your country of residence, as well as the fact that we will handle such information consistent with this Privacy Notice.

Do Not Track Disclosures

Currently, our policy is that we do not recognize “do not track” requests from Internet browsers and similar devices.

The California Online Privacy Protection Act

For some websites which FNF or one of its companies owns, such as the Customer CareNet (“CCN”), FNF is acting as a third party service provider to a mortgage loan servicer. In those

instances, we may collect certain information on behalf of that mortgage loan servicer, including:

- first and last name;
- property address;
- user name and password;
- loan number;
- social security number - masked upon entry;
- email address;
- security questions and answers; and
- IP address.

The information you submit is then transferred to your mortgage loan servicer by way of CCN. **The mortgage loan servicer is responsible for taking action or making changes to any consumer information submitted through this website. For example, if you believe that your payment or user information is incorrect, you must contact your mortgage loan servicer.**

CCN does not share consumer information with third parties, other than those with which the mortgage loan servicer has contracted to interface with the CCN application. All sections of this Privacy Notice apply to your interaction with CCN, except for the sections titled Choices with Your Information, and Access and Correction. If you have questions regarding the choices you have with regard to your personal information or how to access or correct your personal information, contact your mortgage loan servicer.

Access and Correction

To access your Personal Information in the possession of FNF and correct any inaccuracies, please contact us by email at privacy@fnf.com or by mail at:

Fidelity National Financial, Inc.
601 Riverside Avenue
Jacksonville, Florida 32204
Attn: Chief Privacy Officer

Your Consent To This Privacy Notice

By submitting Personal Information and/or Browsing Information to FNF, you consent to the collection and use of information by FNF in compliance with this Privacy Notice. We reserve the right to make changes to this Privacy Notice. If we change this Privacy Notice, we will post the revised version on the Website.

Contact FNF

Please send questions and/or comments related to this Privacy Notice by email at privacy@fnf.com or by mail at:

Fidelity National Financial, Inc.
601 Riverside Avenue
Jacksonville, Florida 32204
Attn: Chief Privacy Officer

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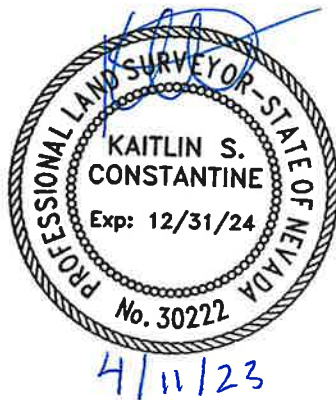
EFFECTIVE AS OF APRIL 1, 2016

**LEGAL DESCRIPTION FOR
CLEMENTS RANCH TENTATIVE MAP**

All that certain real property situate within a portion of the Northeast One-Quarter (NE 1/4) of Section Twenty-One (21) and the Northwest One-Quarter (NW 1/4) of Section Twenty-Two (22), Township Twenty (20) North, Range Twenty-Five (25) East, M.D.M., City of Fernley, Lyon County, State of Nevada, more particularly described as follows:

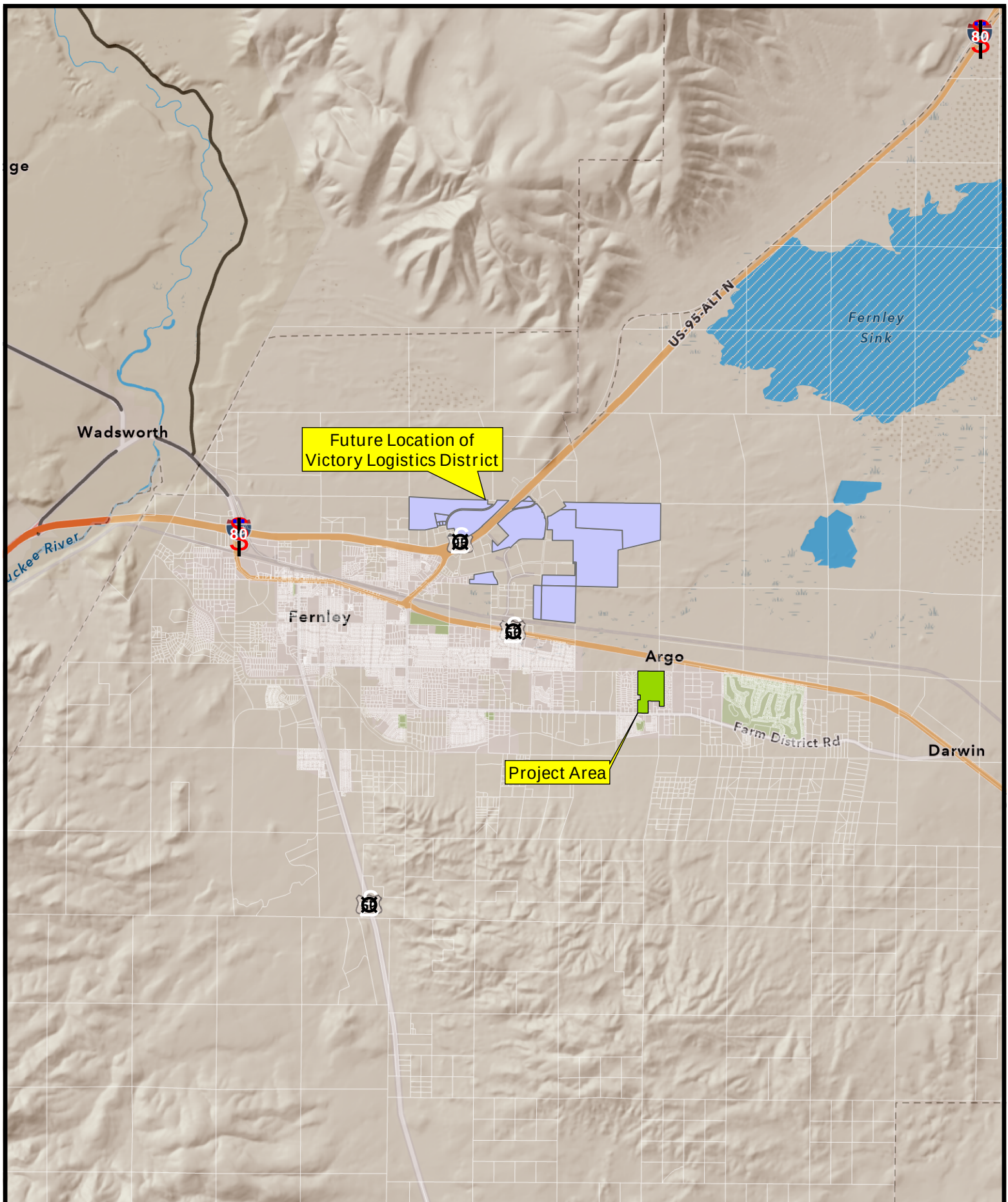
BEING Parcel 2-A of Parcel Map No. 573596, recorded on December 8, 2017, in the Official Records of Lyon County, Nevada.

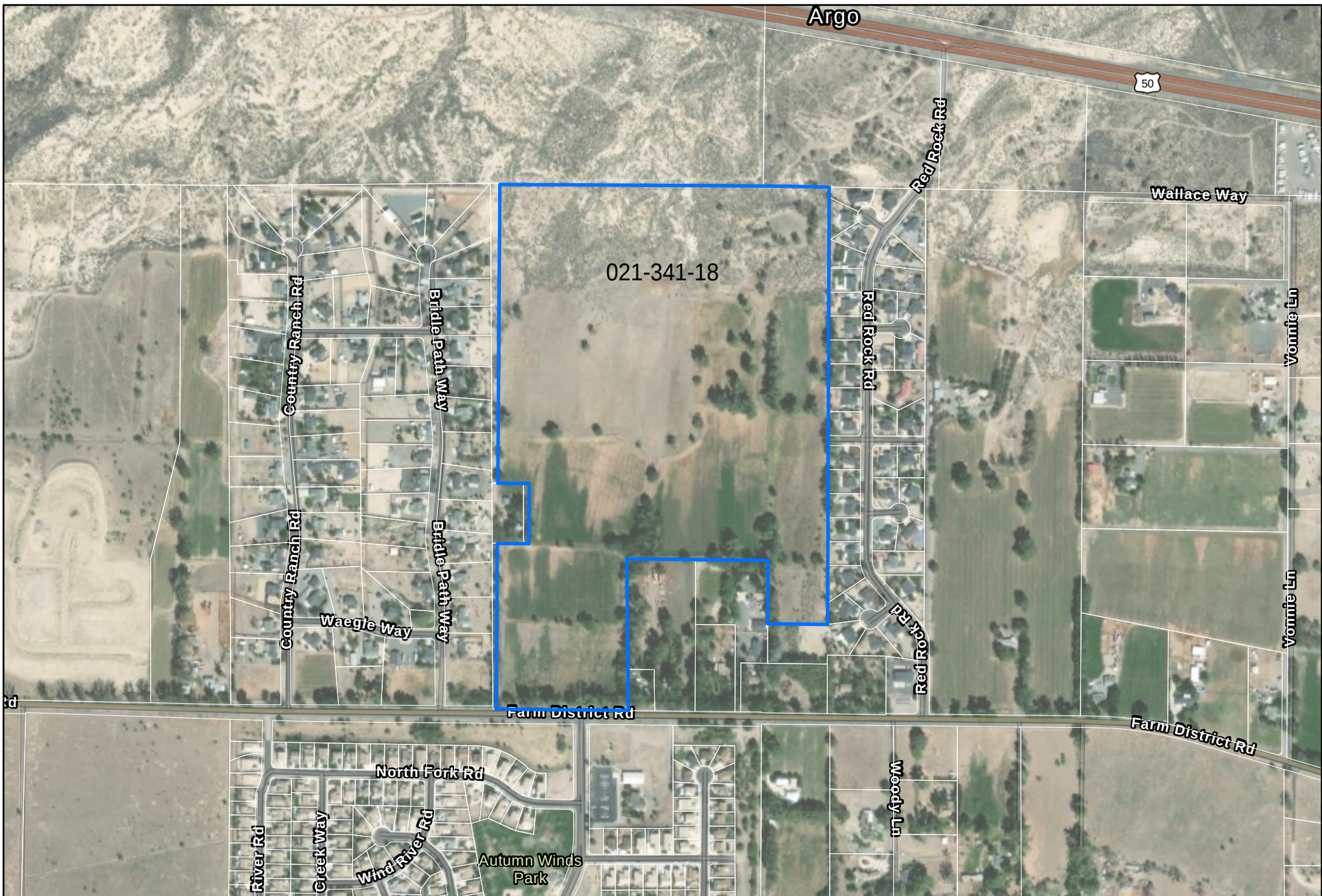
Prepared by:
Wood Rodgers, Inc.
1361 Corporate Blvd,
Reno, NV 89502

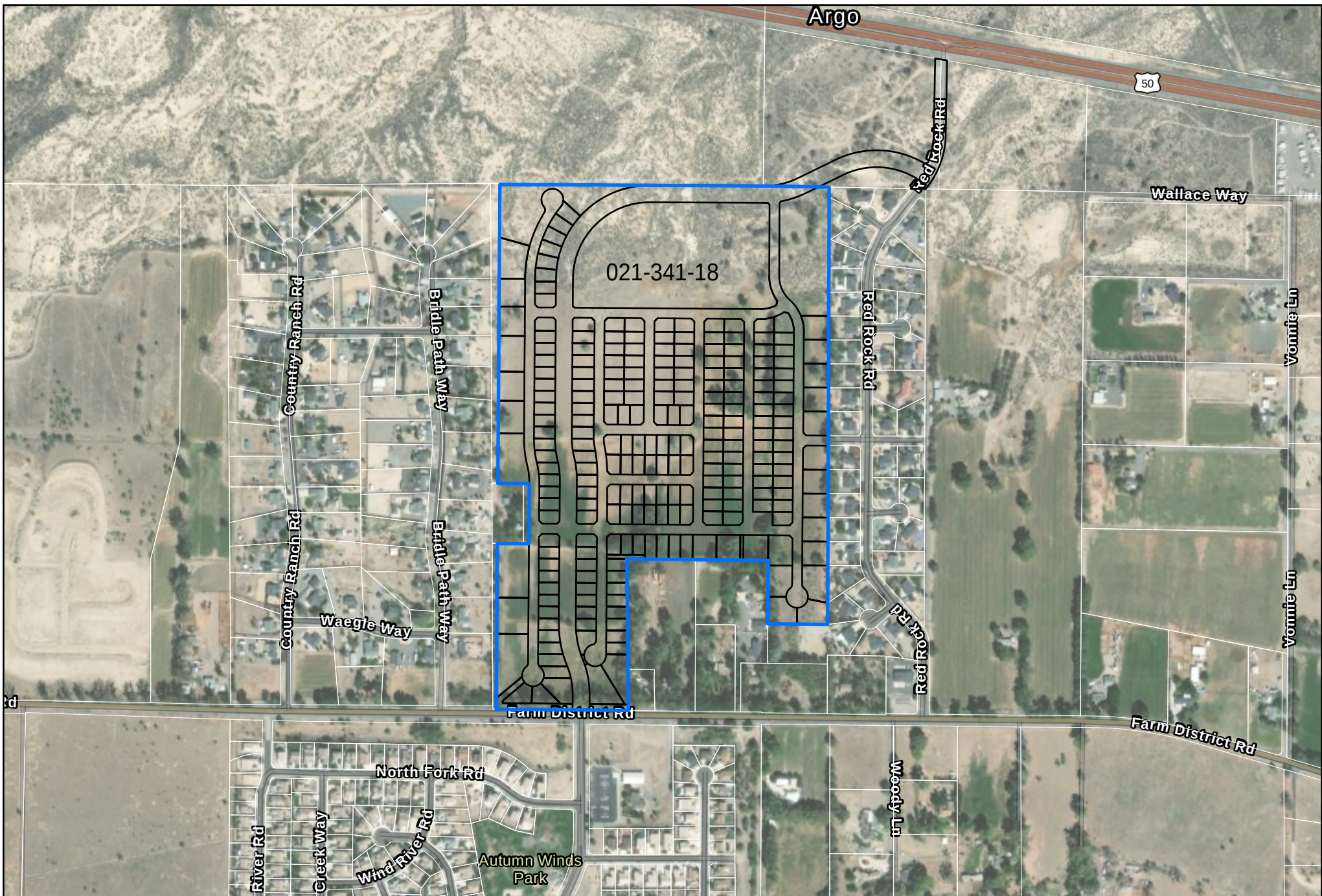


Kaitlin S. Constantine, P.L.S.
Nevada Certificate No. 30222

Section 2







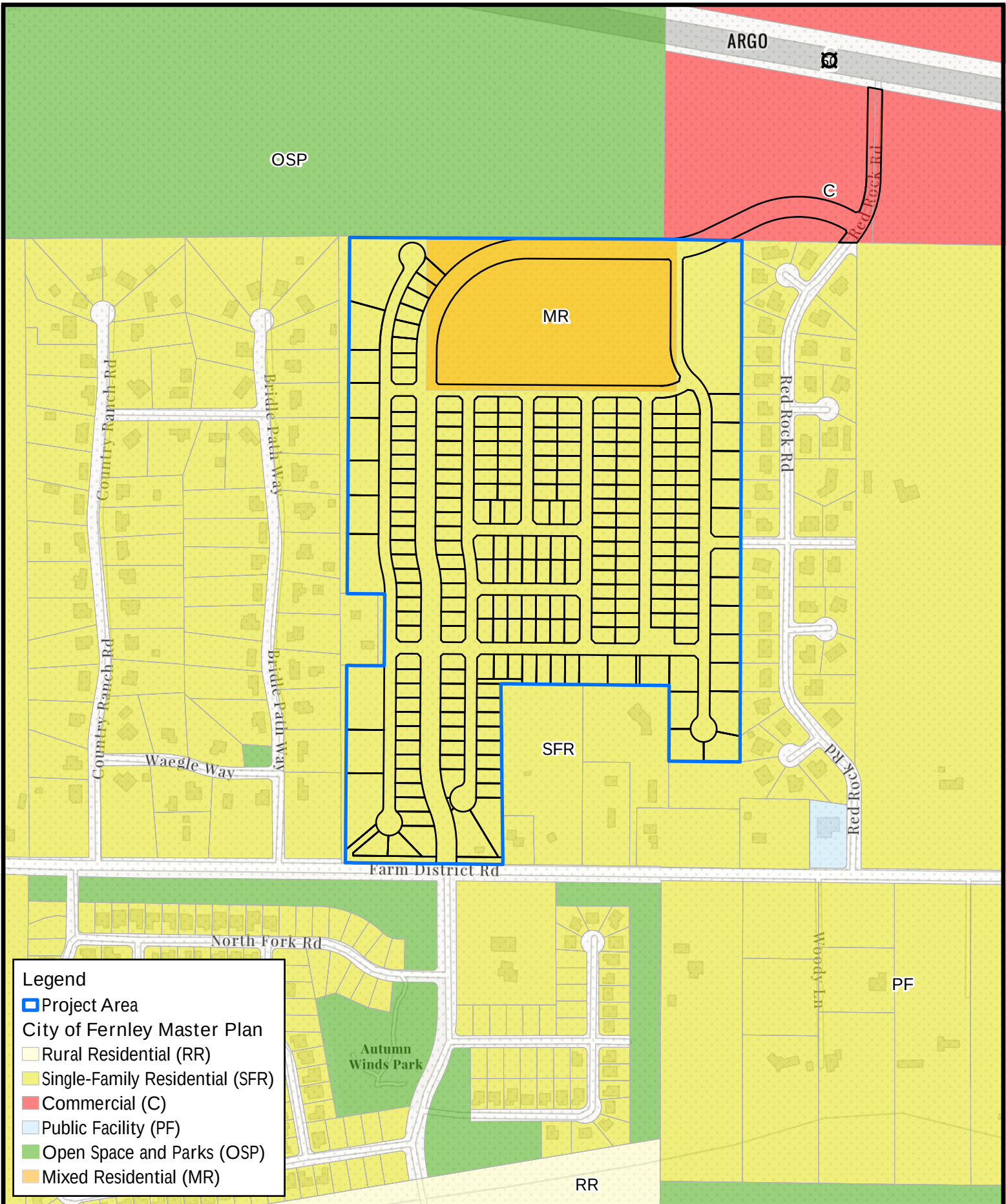
0 455 910
Feet

Aerial Map Site Plan

Clements Ranch Property TM

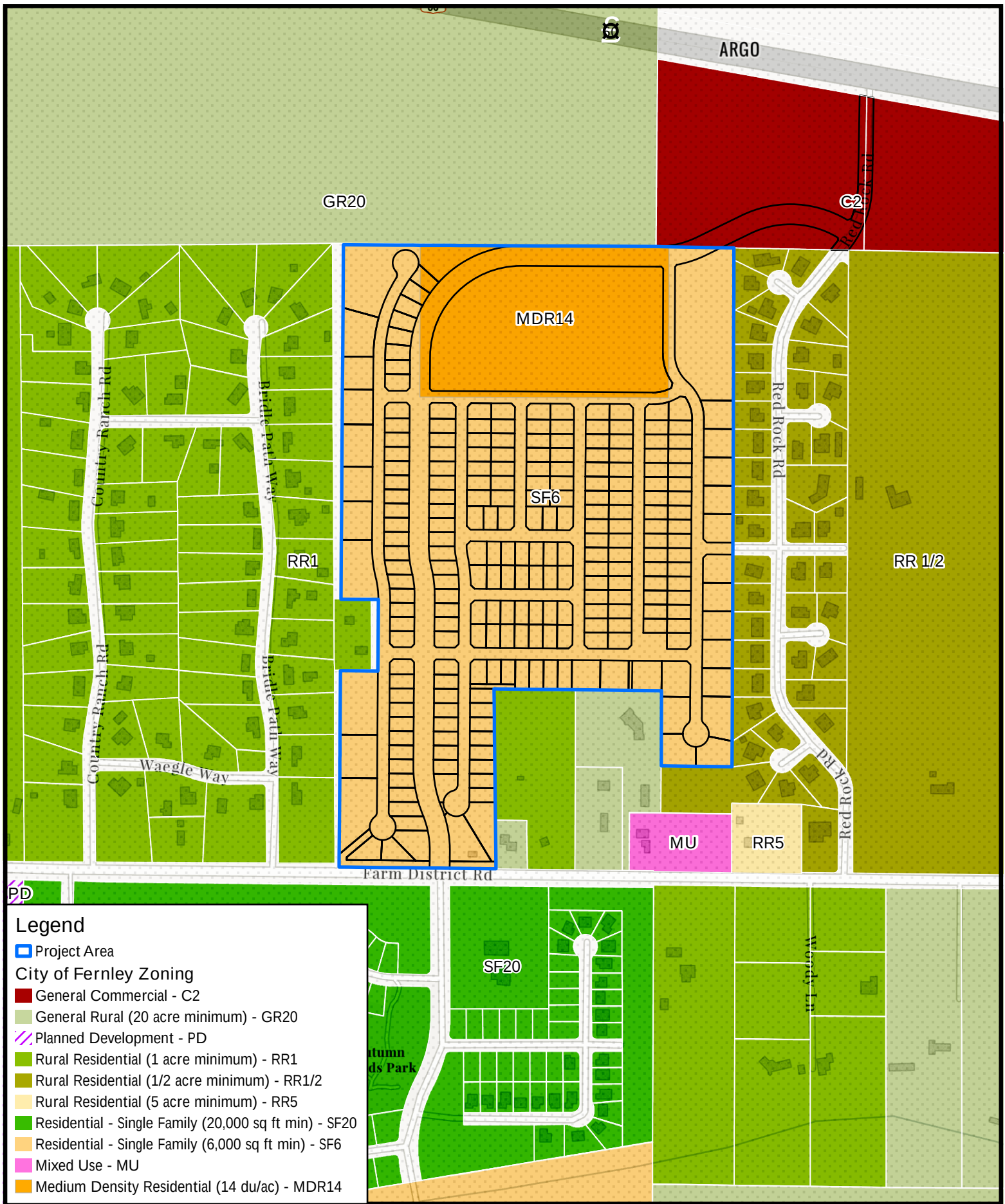
April 2023

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



Master Plan Clements Ranch Property TM April 2023

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

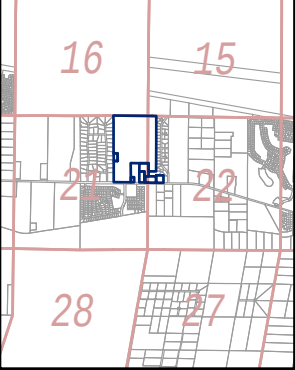
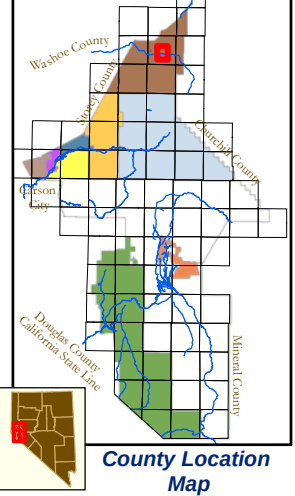
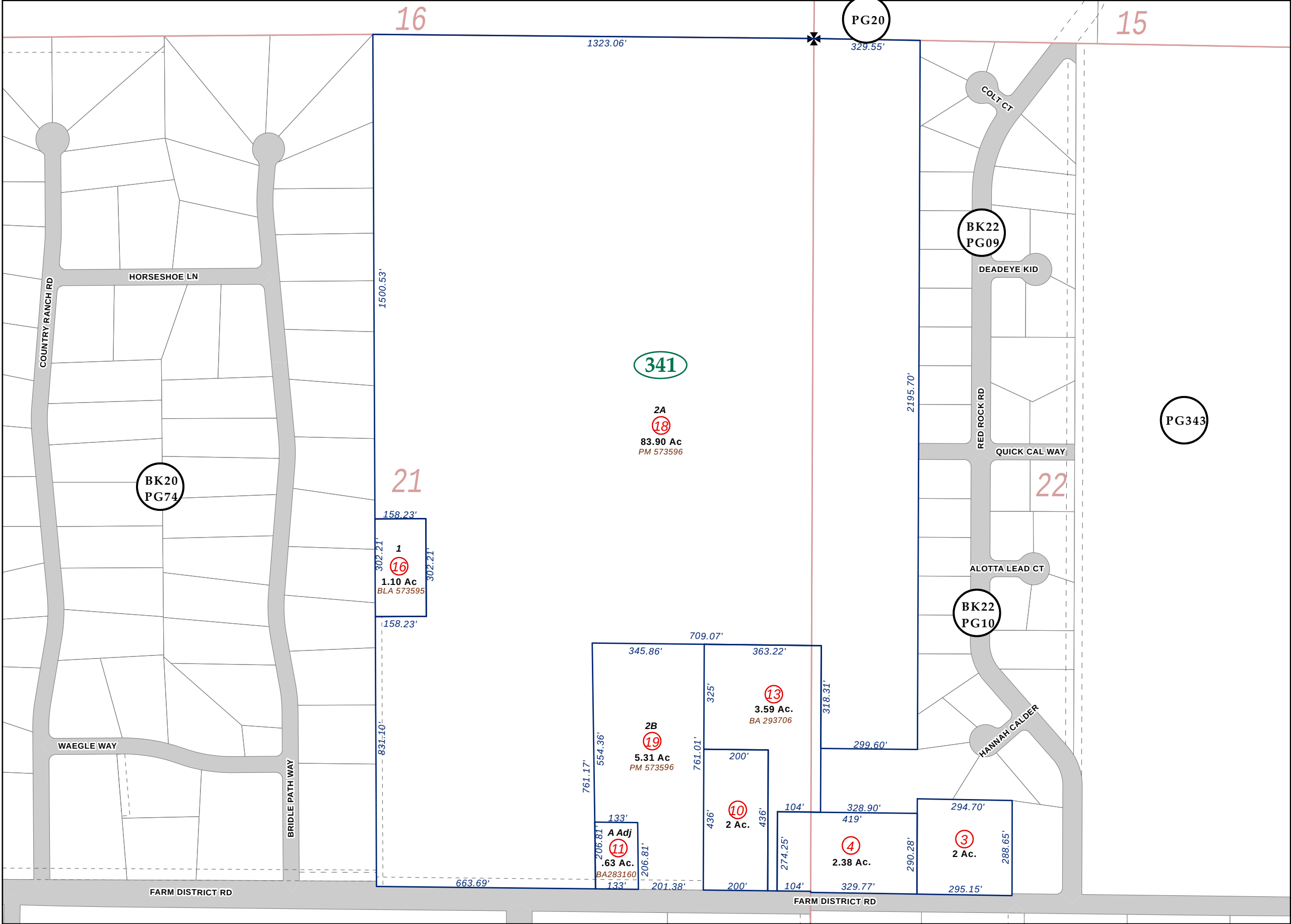


Zoning **Clements Ranch Property TM** April 2023

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

E1/2 NE1/4 Section 21 T20N - R25E, MD&M

21-34



Map Elements

- 1/4 Corner Section
- Section Ties
- Dimensions
- Parcel Lot
- Parcel Number
- 0.13 Ac. Acreage of Parcel
- PM 136149 Recorded Map Image
- Parcel Boundaries
- Block Number
- Parcel Book & Page Number
- Page Number

Cities & Townships

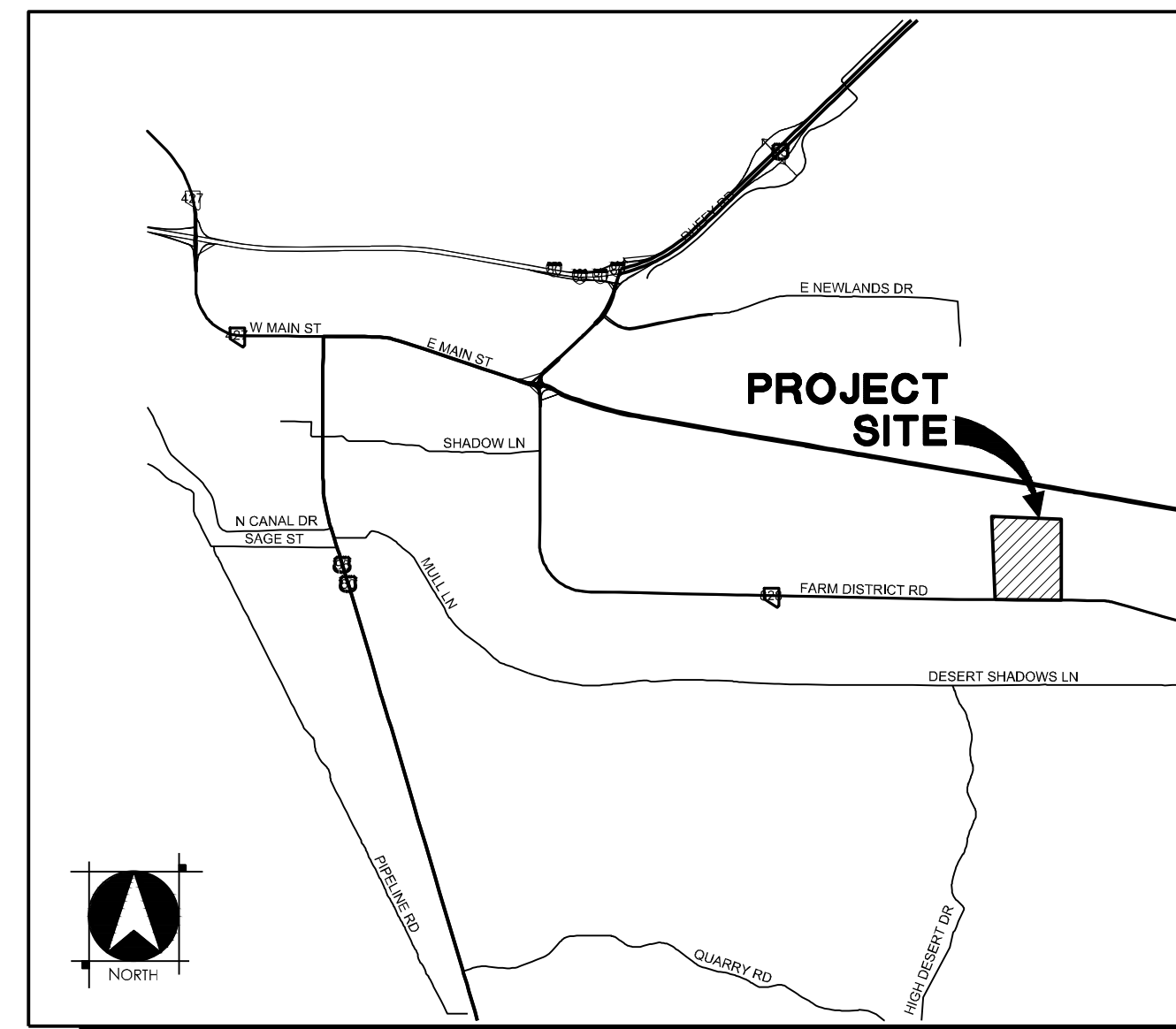
- Dayton
- Dayton Valley
- Fernley
- Mark Twain
- Mason Valley
- Mound House
- Silver City
- Silver Springs
- Smith Valley
- Stagecoach
- Yerington

Scale: 1" = 300'
Revised: December 9, 2017

NOTE: This is for assessment use only and does not represent a survey. No liability is assumed as to the accuracy of the data delineated hereon. Use of this plat for other than assessment purposes is forbidden unless approved by the Lyon County Assessor's Office.

CLEMENTS RANCH

TENTATIVE SUBDIVISION MAP
TITLE SHEET



VICINITY MAP
NOT TO SCALE

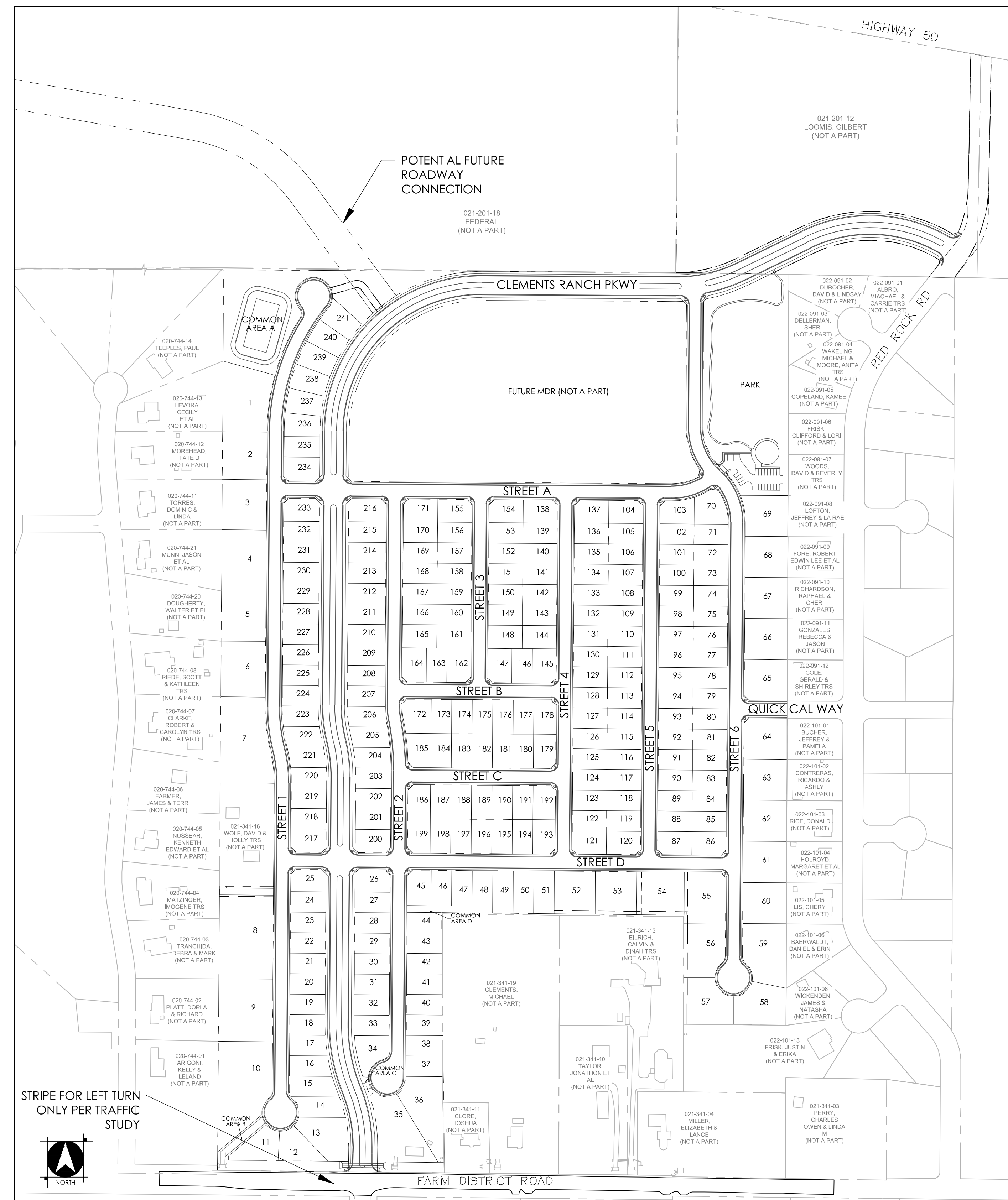
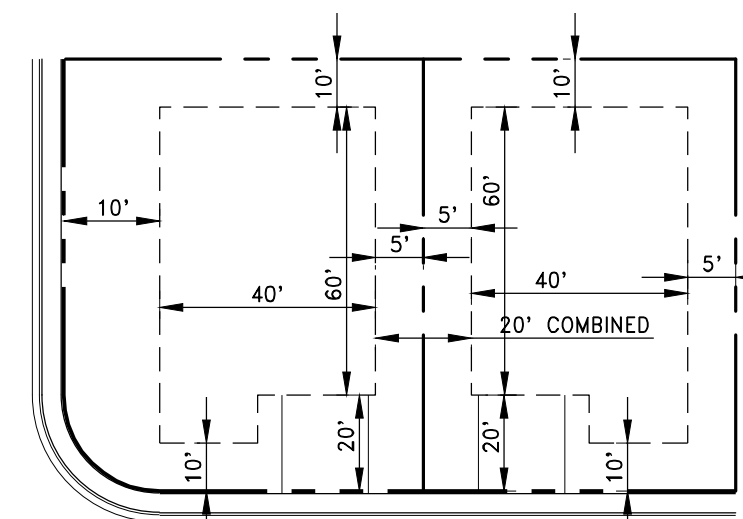
OWNER/DEVELOPER:
CLEMENTS RANCHING, LLC
ATTN: MATT CLEMENTS
3040 FARM DISTRICT ROAD
FERNLEY, NV 89408

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 WITH CORRECTIONS TRANSMITTED BY THE NORTHERN NEVADA COOPERATIVE REAL TIME NETWORK (NRTN) (NAD83 GPS). THE BEARING BETWEEN GPS REFERENCE STATION MONUMENT "COPF1" - LYNSMOON001 FERNLEY AND NGS MONUMENT "C 439"-KR1411 IS TAKEN AS SOUTH 78°48'41" EAST, ALL DIMENSIONS SHOWN ARE GROUND DISTANCES. COMBINED GRID-TO-GROUND FACTOR = 1.0002450.

BASIS OF ELEVATION

PROJECT BENCHMARK IN NAVD88 BEING A USC&G DISK STAMPED "Y 339 1953" PER NGS DATA SHEET "Y 339". PID-KR0586. NV/LYON. USGS QUAD-FERNLEY WEST(1985). LOCATED AT THE SOUTHWEST CORNER OF THE TRAIN UNDERPASS AT WEST FERNLEY EXIT. WITH A PUBLISHED NATIONAL GEODETIC SURVEY ELEVATION OF NAVD88 (4157.15')



SITE PLAN
NOT TO SCALE

SITE INFORMATION:

SITE INFORMATION:

LOT COUNT: 241 LOTS
 TOTAL PARCEL AREA: 83.9± AC
 FUTURE MDR [NOT A PART]: 11.4± AC
 TOTAL SITE AREA: 72.6± AC
 ONSITE ROW AREA: 21.6± AC
 LOT AREA: 45.1± AC
 COMMON AREA: 2.6± AC
 PARK AREA: 3.3± AC
 OFFSITE ROW AREA: 2.2± AC

PROJECT DENSITY:

PROJECT DENSITY:
GROSS DENSITY: 3.5± DU/AC
NET DENSITY: 5.4± DU/AC

LOT SUMMARY

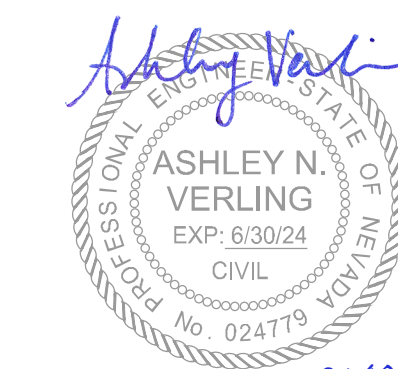
MINIMUM LOT SIZE: 6,000± SF
MAXIMUM LOT SIZE: 42,855± SF
AVERAGE LOT SIZE: 8,136± SF

ASSESSOR PARCEL NUMBER

021-341-18

ENGINEERS STATEMENT:

I, ASHLEY N. VERLING, DO HEREBY CERTIFY THAT THIS PLAN HAS BEEN PREPARED BY ME OR UNDER MY SUPERVISION AND WAS COMPLETED ON THE 18th DAY OF APRIL, 2023.



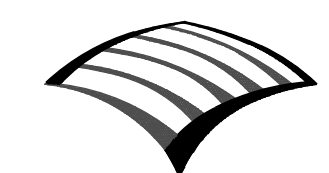
04/18/2023

ASHLEY N. VERLING P.E. #024779

SHEET INDEX

SHEET NO.	DWG ID	DRAWING DESCRIPTION
1	T-1	TITLE SHEET
2	L8-1	PRELIMINARY LOT AND BLOCK PLAN
3	L8-2	PRELIMINARY LOT AND BLOCK PLAN
4	L8-3	PRELIMINARY LOT AND BLOCK PLAN
5	L8-4	PRELIMINARY LOT AND BLOCK PLAN
6	U-1	PRELIMINARY UTILITY PLAN
7	U-2	PRELIMINARY UTILITY PLAN
8	U-3	PRELIMINARY UTILITY PLAN
9	U-4	PRELIMINARY UTILITY PLAN
10	G-1	PRELIMINARY GRADING PLAN
11	G-2	PRELIMINARY GRADING PLAN
12	G-3	PRELIMINARY GRADING PLAN
13	G-4	PRELIMINARY GRADING PLAN
14	LS-1	PRELIMINARY LANDSCAPE PLAN
15	LS-2	PRELIMINARY LANDSCAPE PLAN
16	LS-3	PRELIMINARY LANDSCAPE PLAN
17	LS-4	PRELIMINARY LANDSCAPE PLAN

CLEMENTS RANCH
TITLE SHEET



WOOD RODGERS
BUILDING RELATIONSHIPS ONE PROJECT AT A TIME

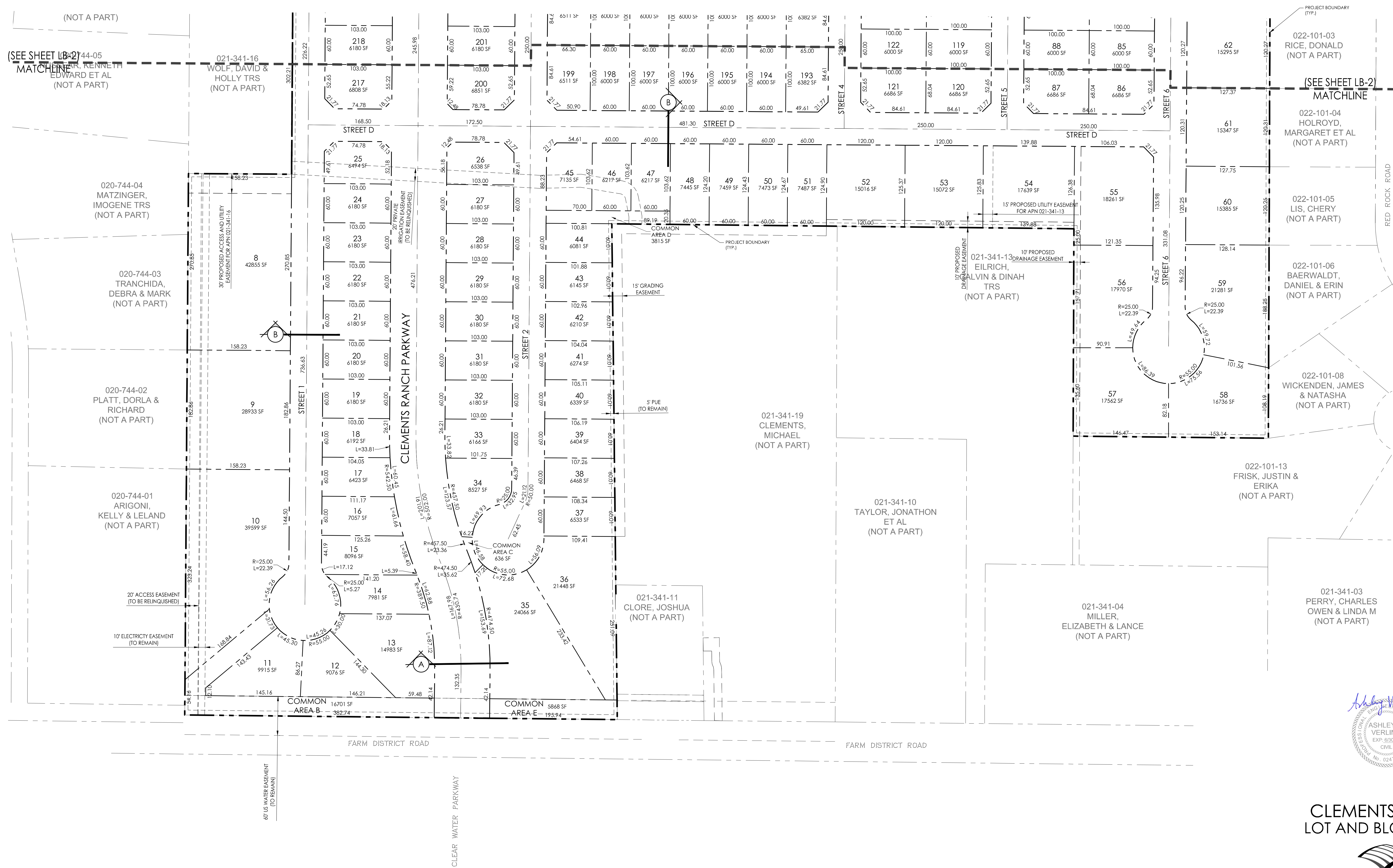
1361 Corporate Boulevard Tel 775.823.4068
Reno, NV 89502 Fax 775.823.4066

3460.004

APRIL, 2023

SHEET T-1 OF 17

CLEMENTS RANCH
TENTATIVE SUBDIVISION MAP
LOT AND BLOCK PLAN

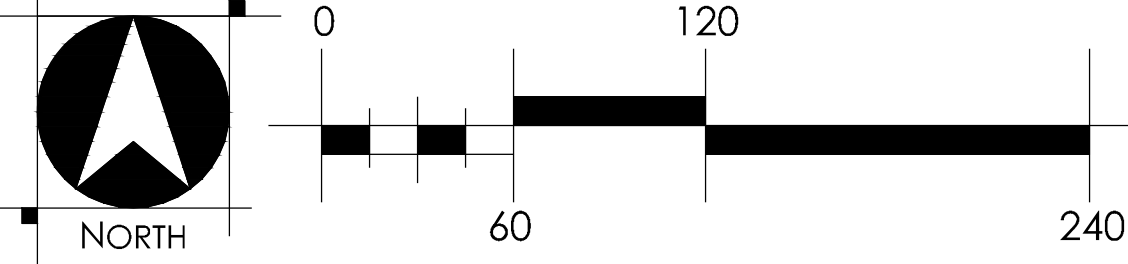


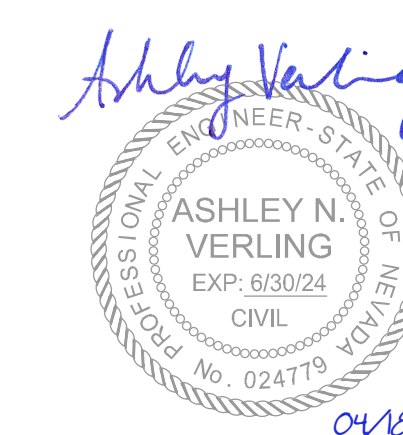
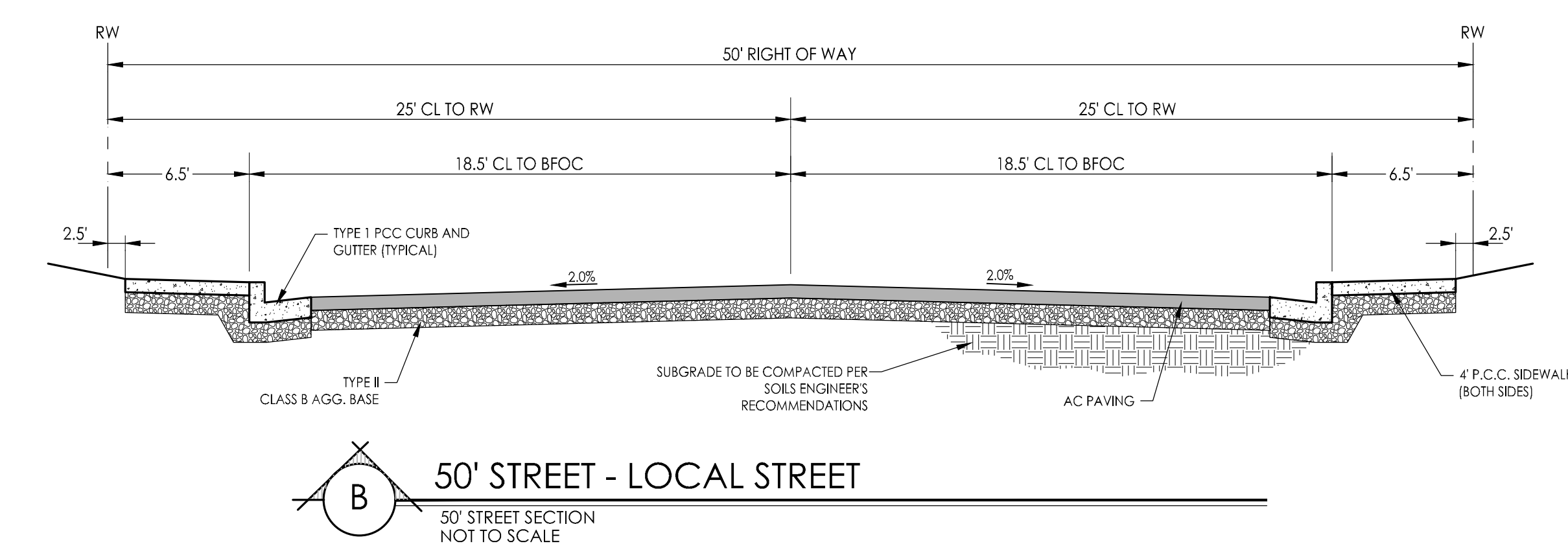
CLEMENTS RANCH
LOT AND BLOCK PLAN

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

GENERAL NOTES:
ALL STREETS ARE PUBLIC UNLESS OTHERWISE NOTED

3460.004 APRIL, 2023
SHEET LB-1 OF 17

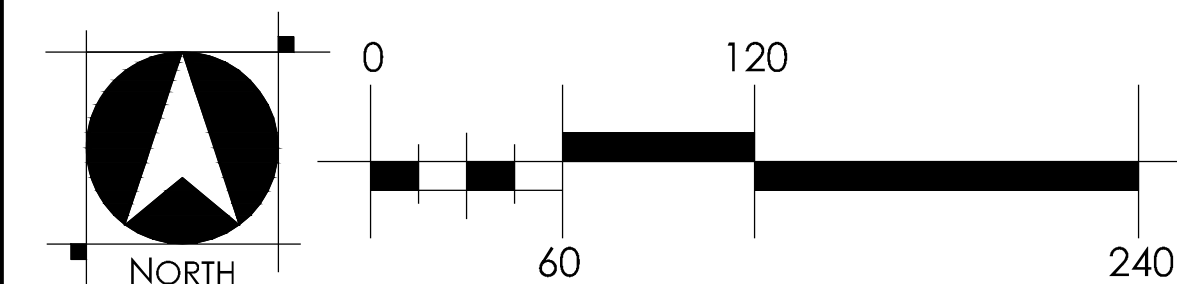


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3460.004

APRIL, 2023

SHEET LB-2 OF 17

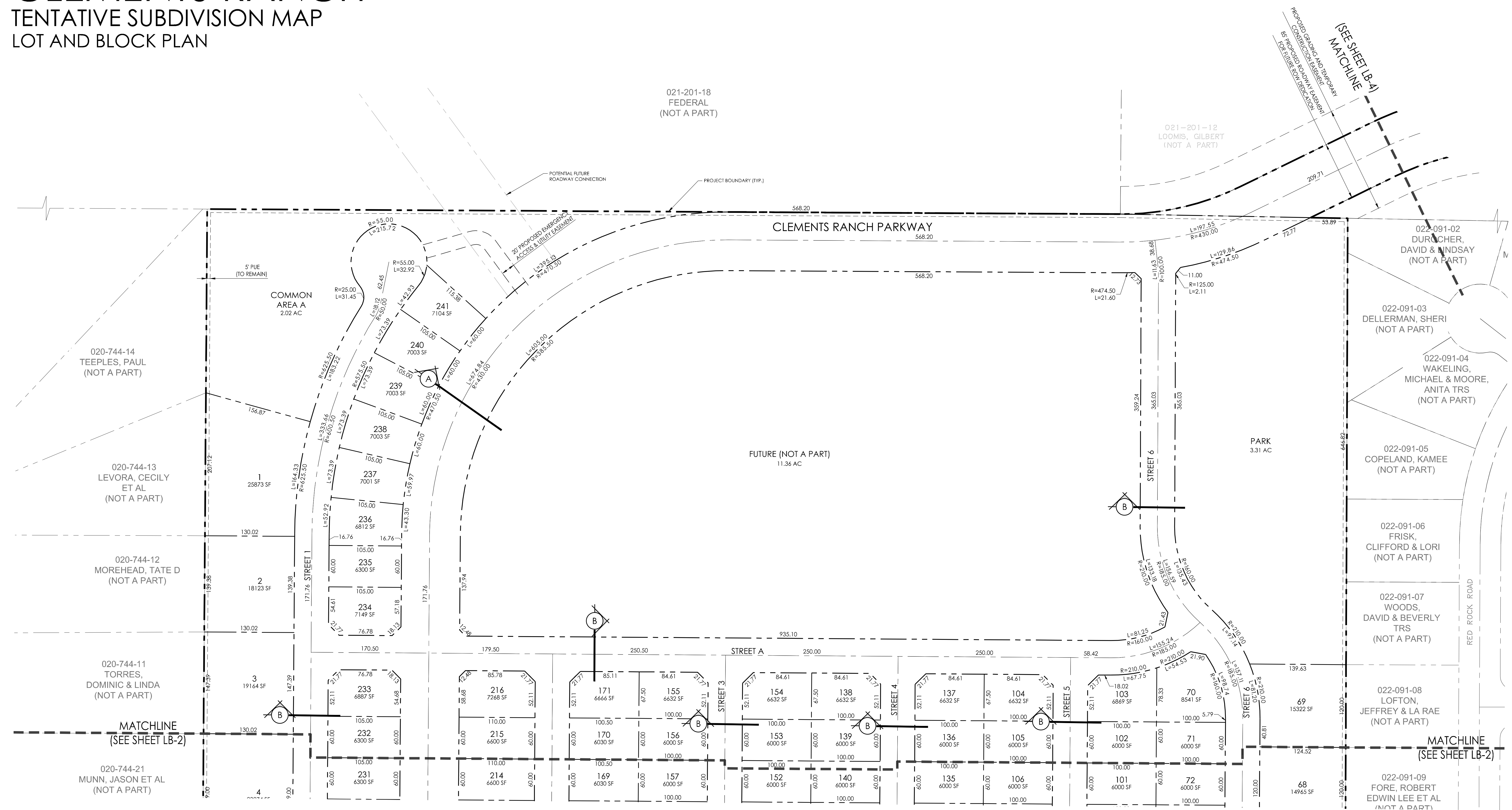


GENERAL NOTES:
ALL STREETS ARE PUBLIC UNLESS OTHERWISE NOTED

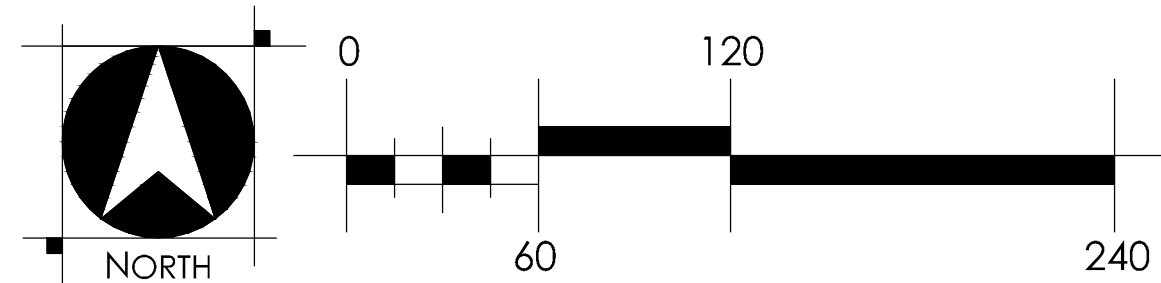
CLEMENTS RANCH

TENTATIVE SUBDIVISION MAP

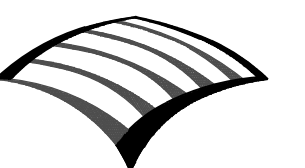
LOT AND BLOCK PLAN



GENERAL NOTES:
ALL STREETS ARE PUBLIC UNLESS OTHERWISE NOTED



CLEMENTS RANCH
LOT AND BLOCK PLAN



WOOD RODGERS
BUILDING RELATIONSHIPS ONE PROJECT AT A TIME

1361 Corporate Boulevard Tel 775.823.4068
Reno, NV 89502 Fax 775.823.4066

3460.004

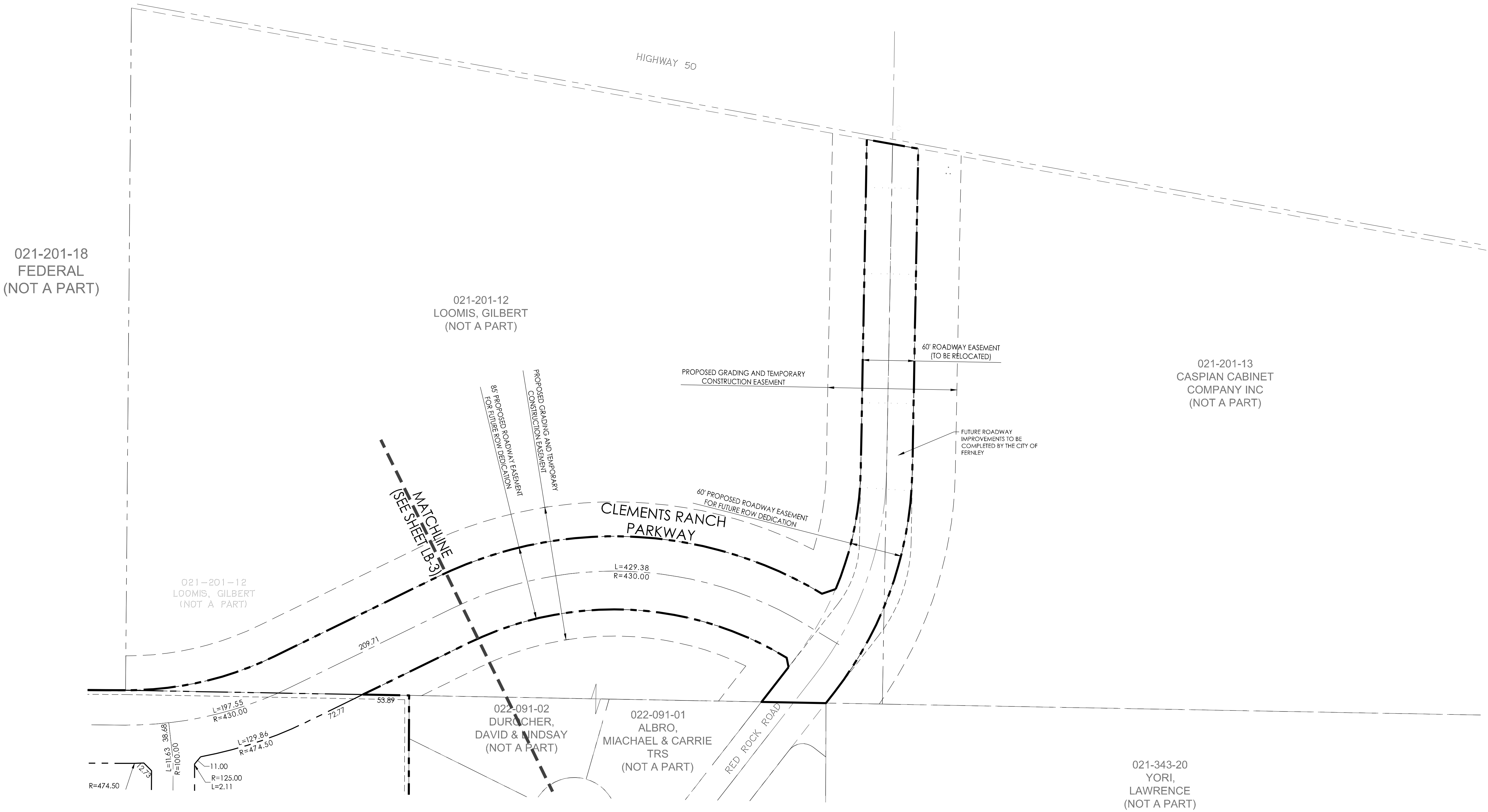
APRIL, 2023

SHEET LB-3 OF 17

CLEMENTS RANCH

TENTATIVE SUBDIVISION MAP

LOT AND BLOCK PLAN



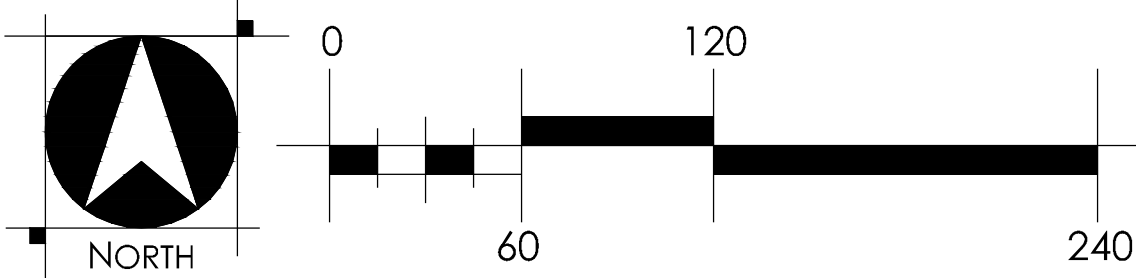
GENERAL NOTES:
ALL STREETS ARE PUBLIC UNLESS OTHERWISE NOTED



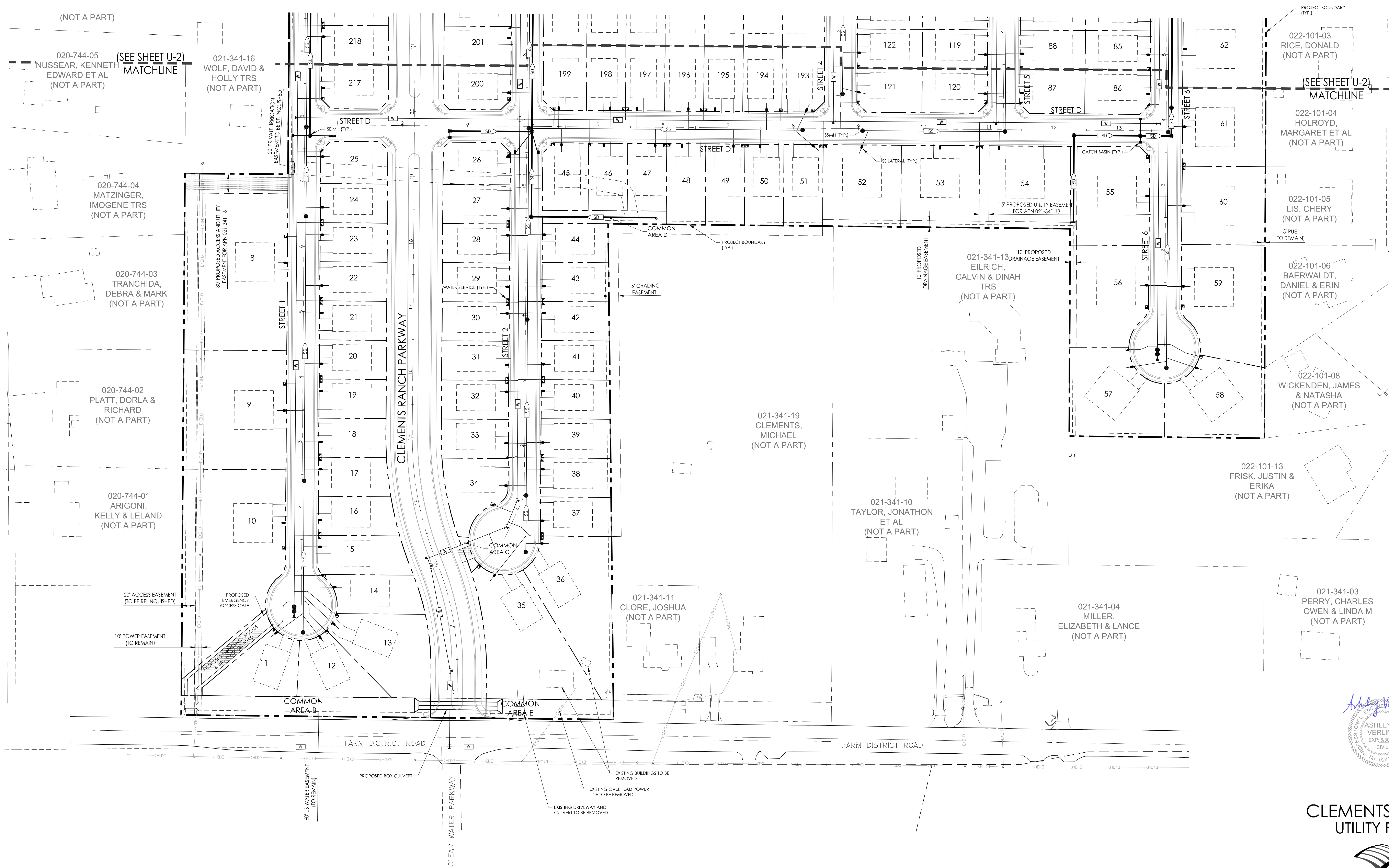
CLEMENTS RANCH LOT AND BLOCK PLAN

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

3460.004 APRIL, 2023
SHEET LB-4 OF 17



CLEMENTS RANCH
TENTATIVE SUBDIVISION MAP
UTILITY PLAN



ASHLEY N. VERLING
EXP. 6/30/24
CIVIL
No. 024779
04/18/2023

CLEMENTS RANCH
UTILITY PLAN

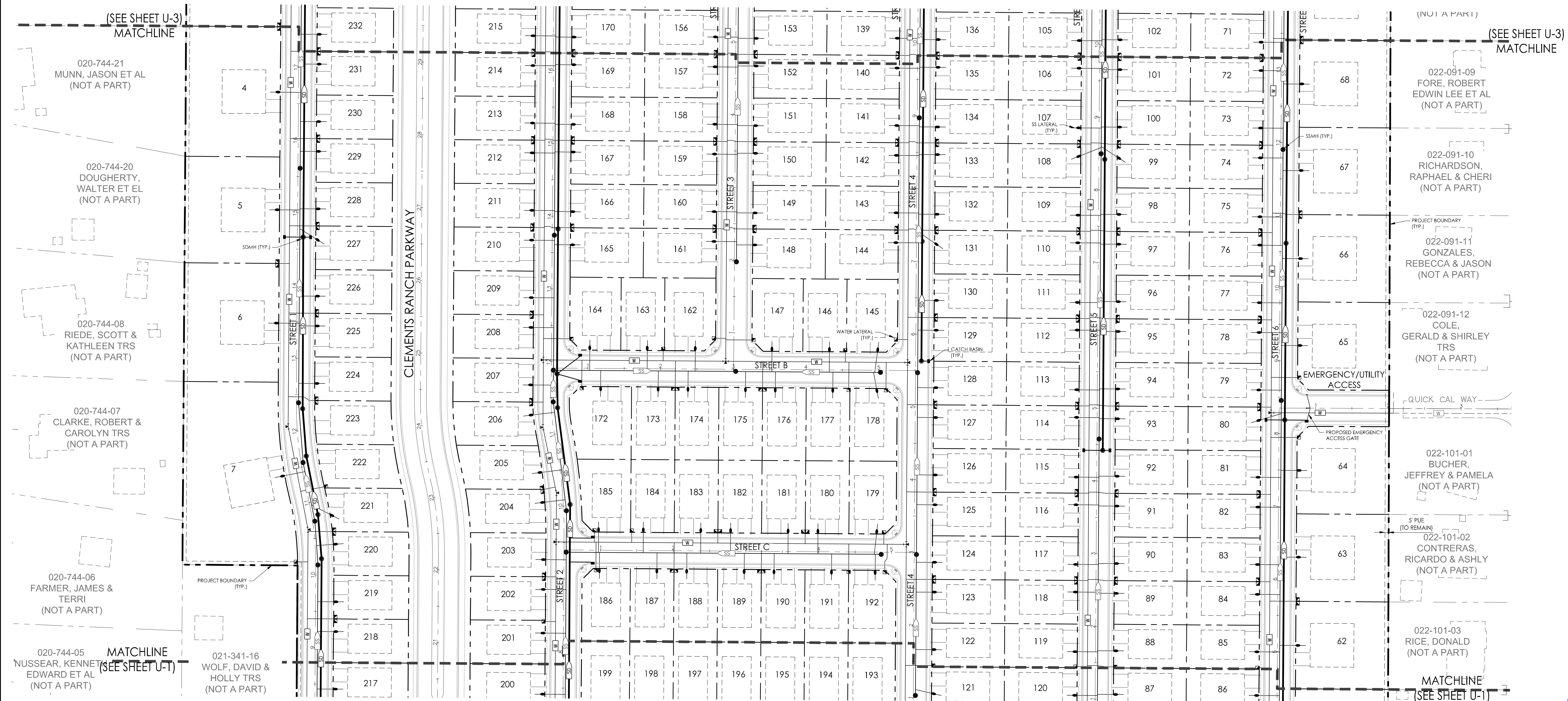


WOOD RODGERS
BUILDING RELATIONSHIPS ONE PROJECT AT A TIME
1361 Corporate Boulevard
Reno, NV 89502
Tel 775.823.4068
Fax 775.823.4066

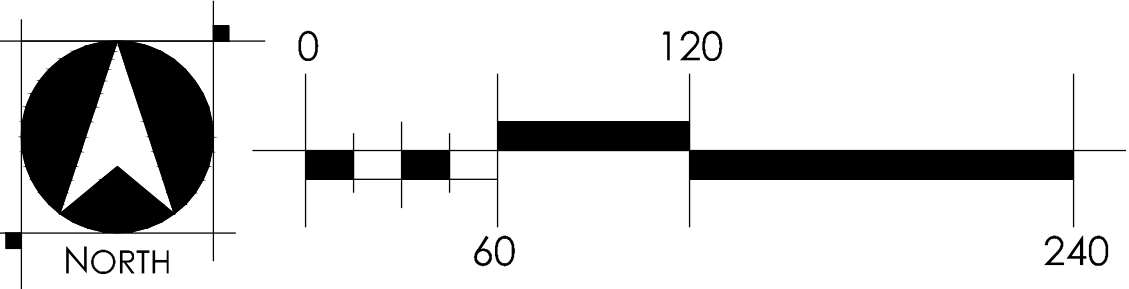
GENERAL NOTES:
ALL STREETS ARE PUBLIC UNLESS OTHERWISE NOTED
ALL SANITARY SEWER AND STORM DRAIN ARE PUBLIC
UNLESS OTHERWISE NOTED.

3460.004
APRIL, 2023
SHEET U-1 OF 17

CLEMENTS RANCH
TENTATIVE SUBDIVISION MAP
UTILITY PLAN



GENERAL NOTES:
ALL STREETS ARE PUBLIC UNLESS OTHERWISE NOTED
ALL SANITARY SEWER AND STORM DRAIN ARE PUBLIC
UNLESS OTHERWISE NOTED.



CLEMENTS RANCH
UTILITY PLAN

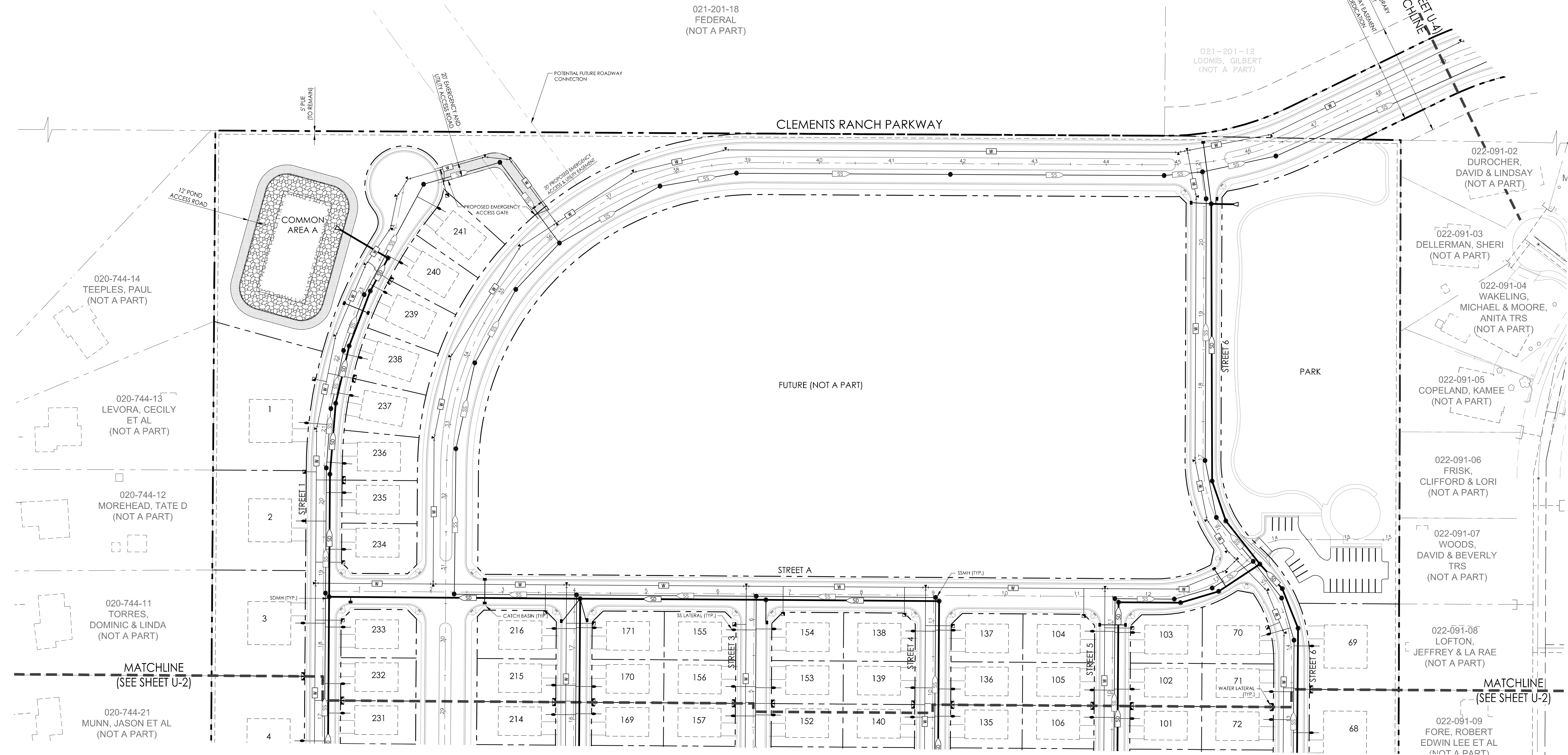
WOOD RODGERS
BUILDING RELATIONSHIPS ONE PROJECT AT A TIME
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Reno, NV 89502 Fax 775.823.4066

3460.004 APRIL, 2023
SHEET U-2 OF 17

CLEMENTS RANCH

TENTATIVE SUBDIVISION MAP

UTILITY PLAN

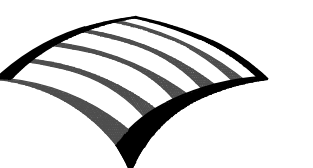


Ashley Verling



04/18/2023

CLEMENTS RANCH UTILITY PLAN



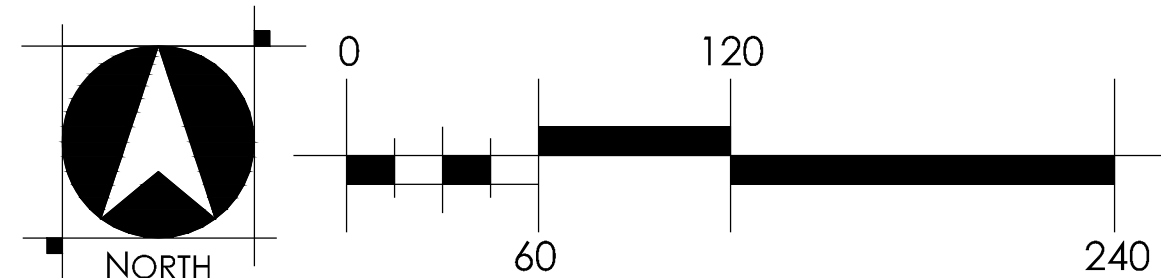
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SHEET U-3 OF 17



GENERAL NOTES:

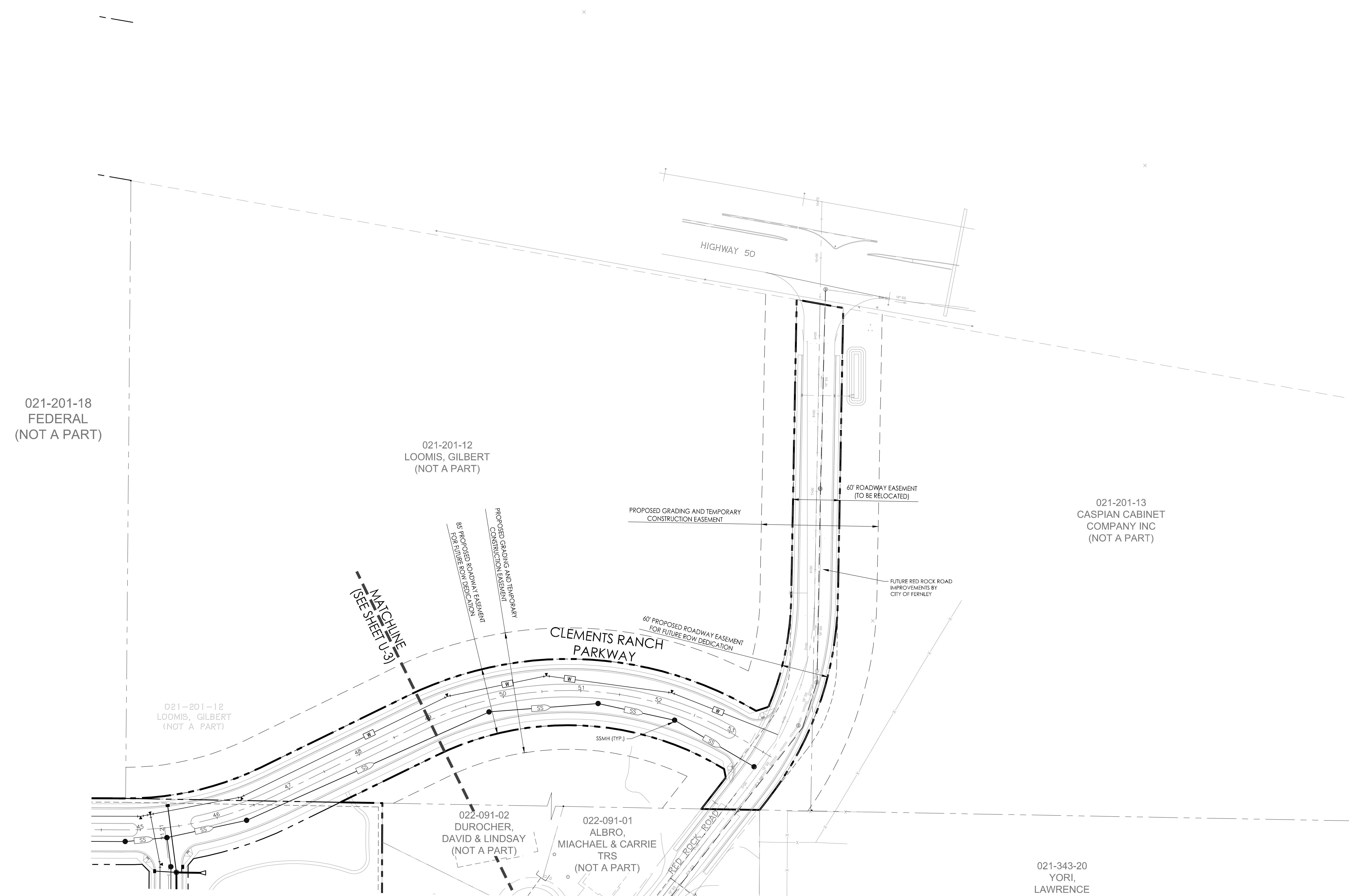
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ALL SANITARY SEWER AND STORM DRAIN ARE PUBLIC
UNLESS OTHERWISE NOTED.

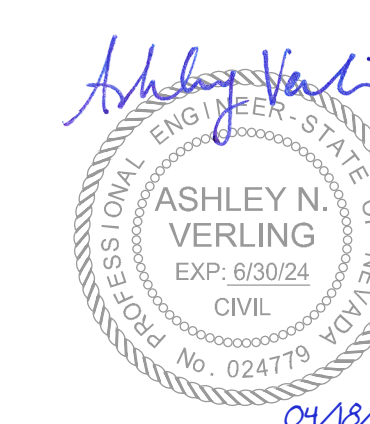
CLEMENTS RANCH

TENTATIVE SUBDIVISION MAP

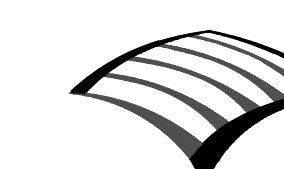
UTILITY PLAN



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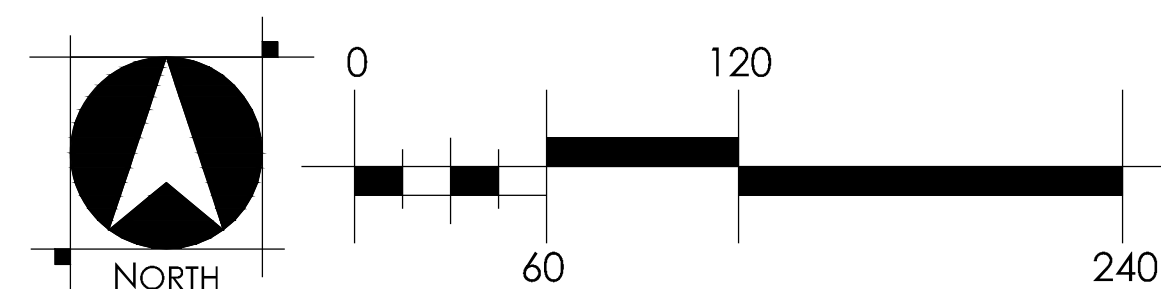


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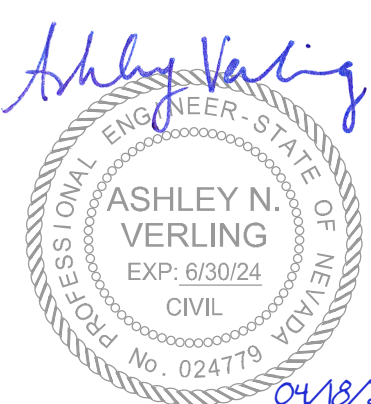
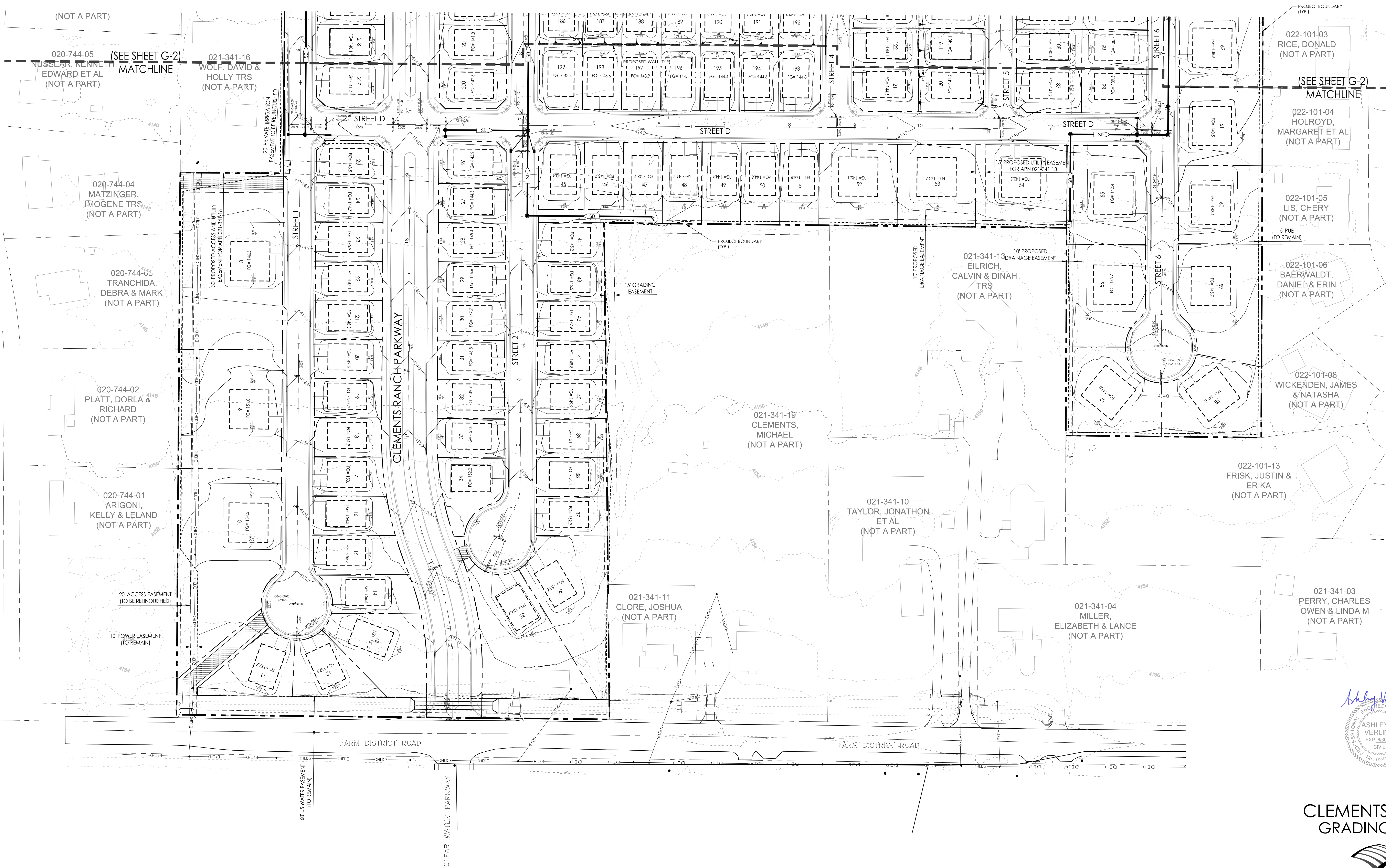


CLEMENTS RANCH

TENTATIVE SUBDIVISION MAP

GRADING PLAN

GENERAL NOTES:
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ADD 4000 TO ALL ELEVATIONS.

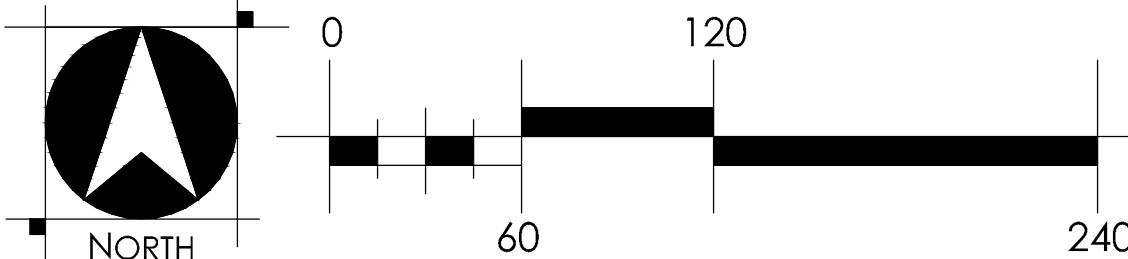


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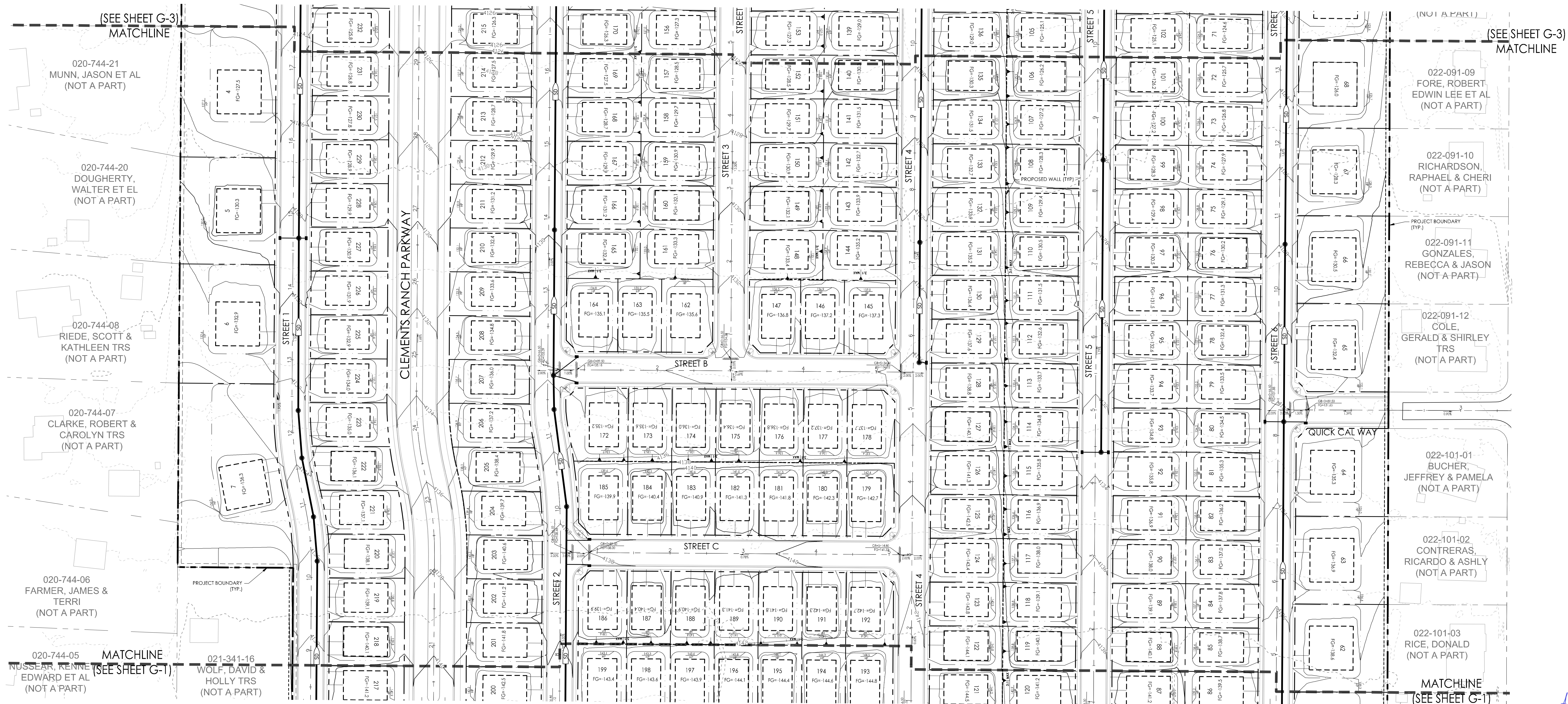
GRADING PLAN

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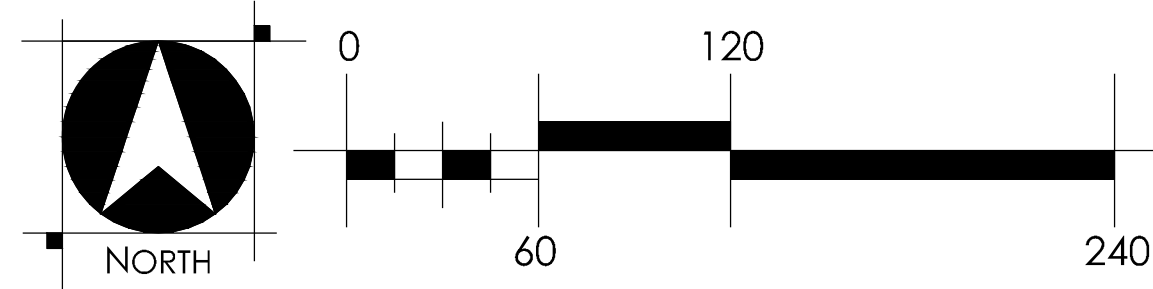
3460.004 APRIL, 2023
SHEET G-1 OF 17



CLEMENTS RANCH
TENTATIVE SUBDIVISION MAP
GRADING PLAN



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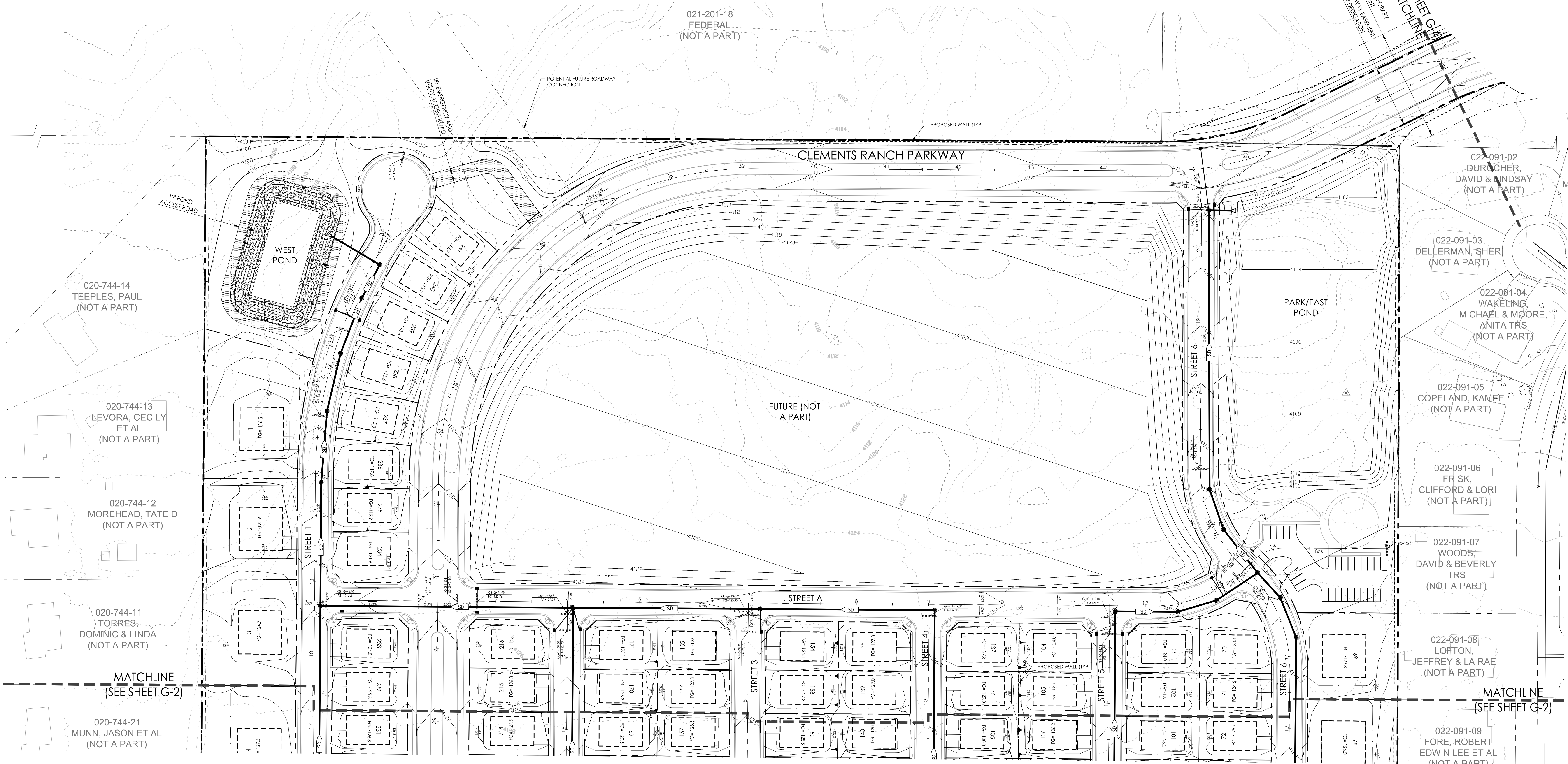


CLEMENTS RANCH
GRADING PLAN

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SHEET G-2 OF 17

CLEMENTS RANCH
TENTATIVE SUBDIVISION MAP
GRADING PLAN



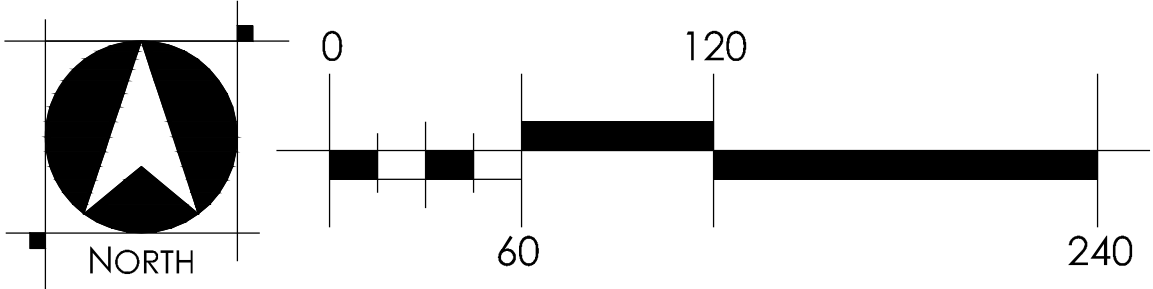
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Ashley N. Verling
ASHLEY N. VERLING
EXP. 03/02/24
CIVIL
No. 024779

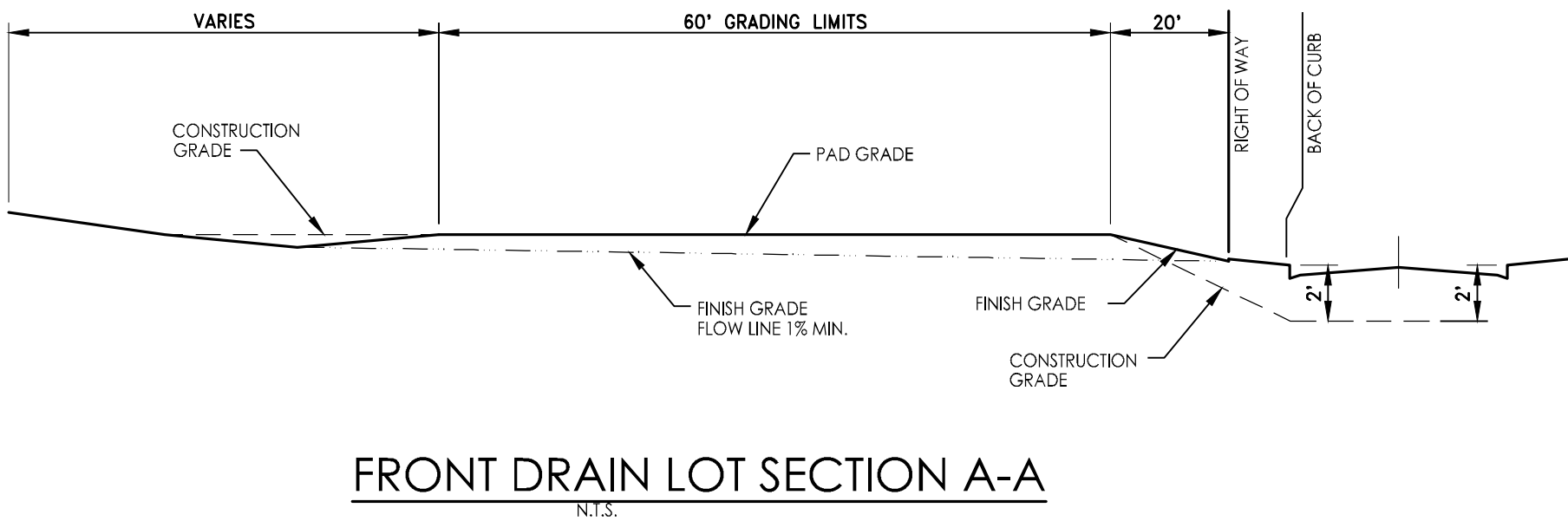
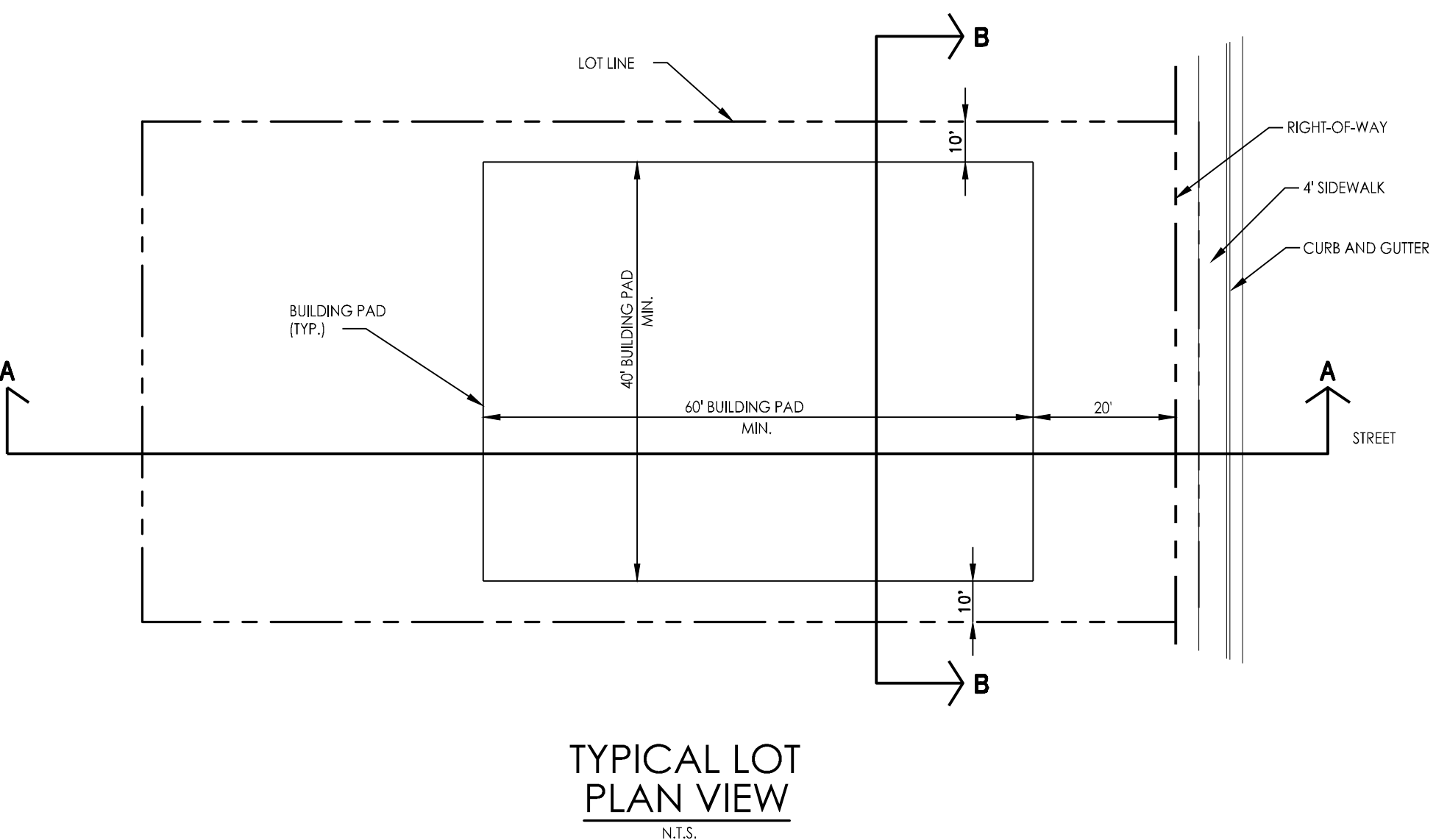
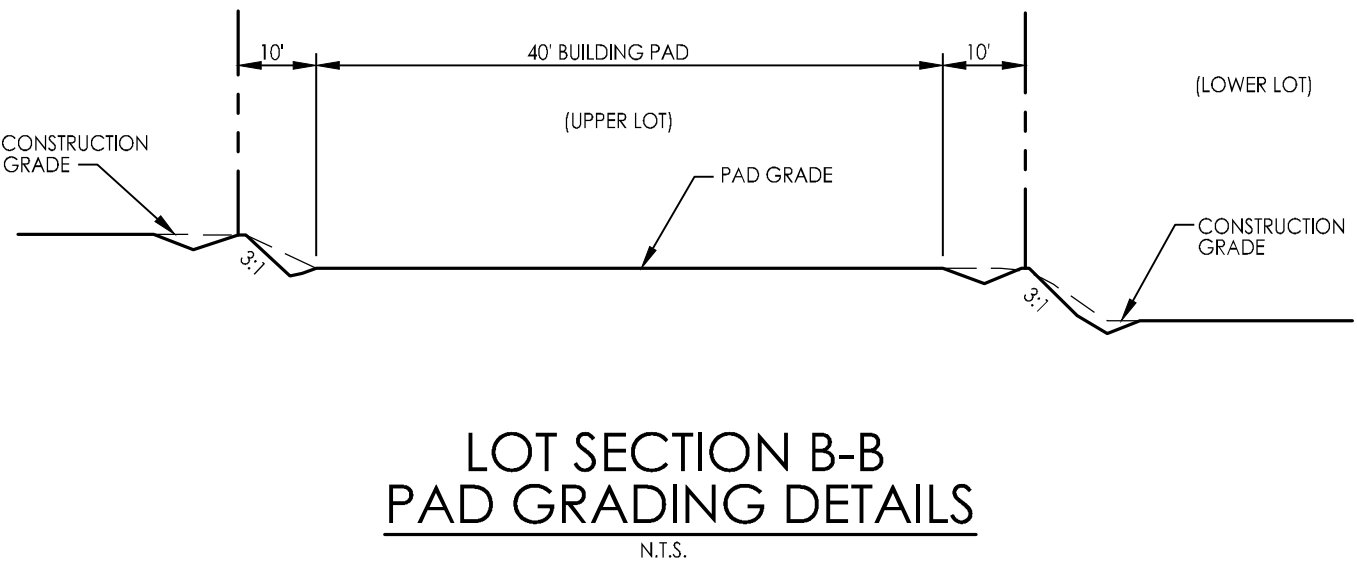
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APRIL, 2023
SHEET G-3 OF 17



CLEMENTS RANCH
TENTATIVE SUBDIVISION MAP
GRADING PLAN



021-201-18
FEDERAL
(NOT A PART)

021-201-12
LOOMIS, GILBERT
(NOT A PART)

021-201-13
CASPIAN CABINET
COMPANY INC
(NOT A PART)

MATCHLINE
(SEE SHEET G-3)

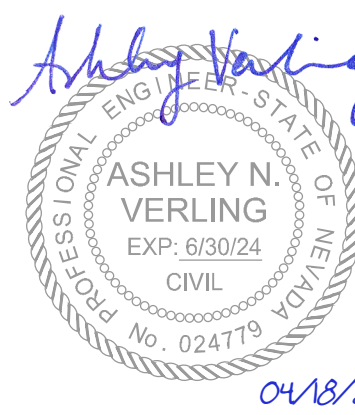
CLEMENTS RANCH
PARKWAY

022-091-02
DURACHER,
DAVID & WINDSAY
(NOT A PART)

022-091-01
ALBRO,
MICHAEL & CARRIE
TRS
(NOT A PART)

021-343-20
YORI,
LAWRENCE
(NOT A PART)

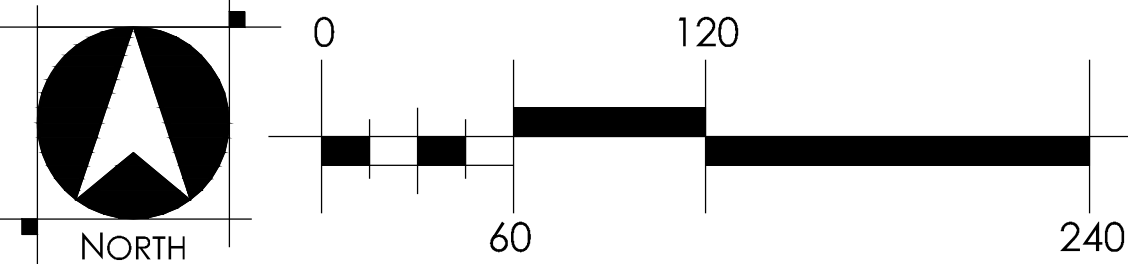
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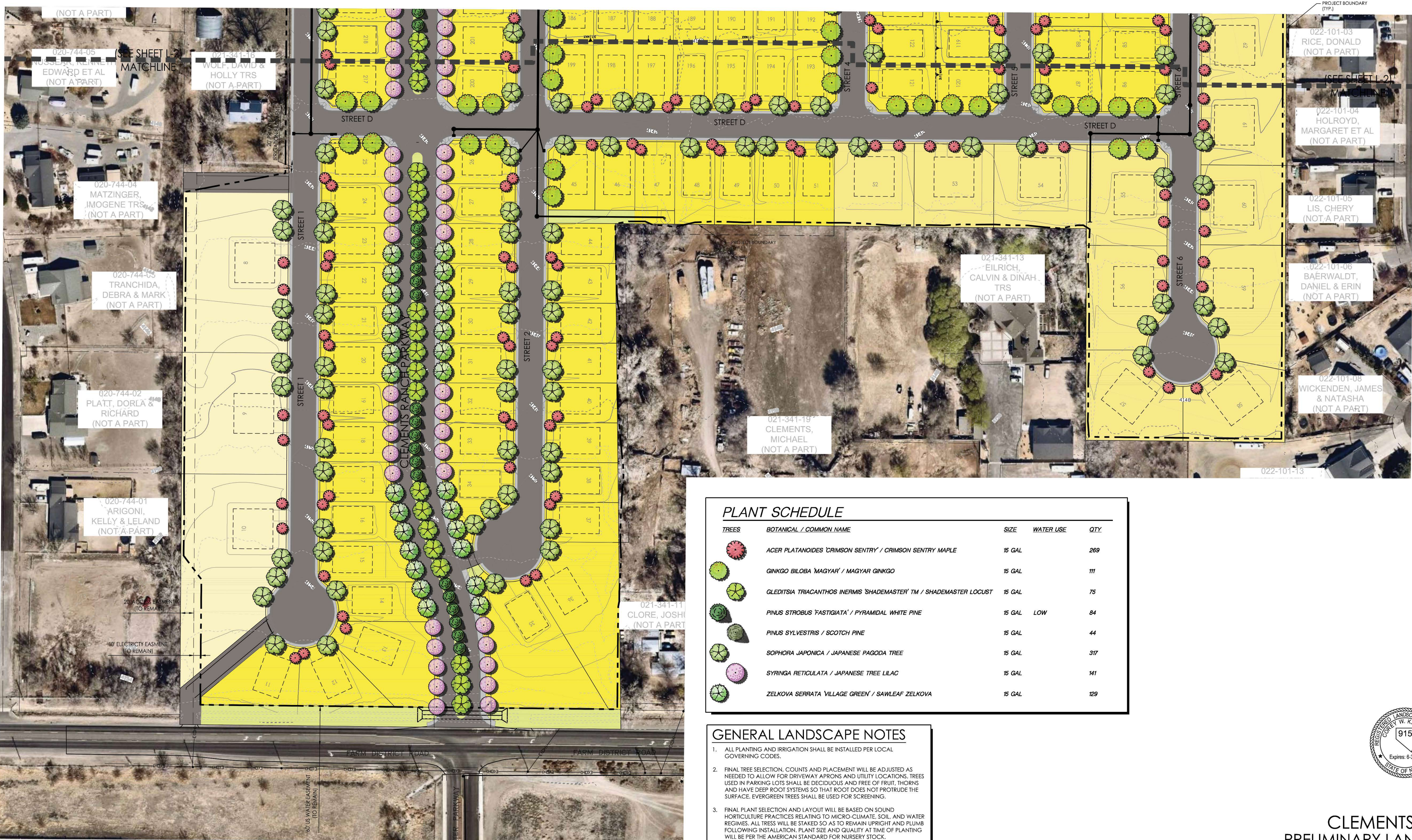
CLEMENTS RANCH
GRADING PLAN

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3460.004 APRIL, 2023
SHEET G-4 OF 17



CLEMENTS RANCH
TENTATIVE SUBDIVISION MAP
PRELIMINARY LANDSCAPE PLAN



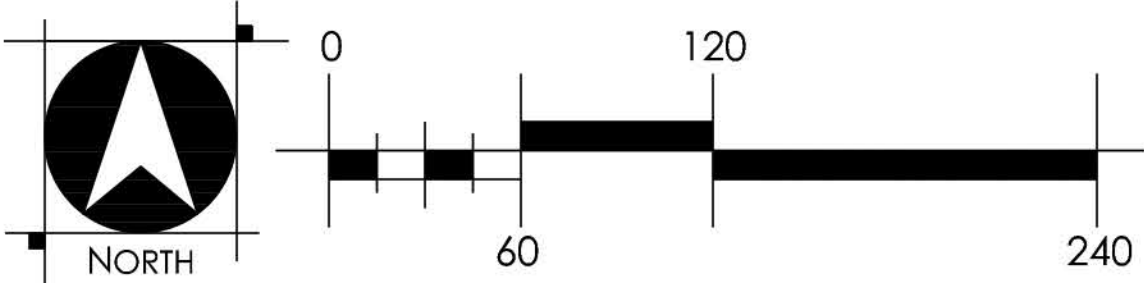
PLANT SCHEDULE				
TREES	BOTANICAL / COMMON NAME	SIZE	WATER USE	QTY
	ACER PLATANOIDES 'CRIMSON SENTRY' / CRIMSON SENTRY MAPLE	15 GAL		269
	GINKGO BILOBA 'MAGYAR' / MAGYAR GINKGO	15 GAL		111
	GLEDITSIA TRIACANTHOS INERMIS 'SHADEMASTER' TM / SHADEMASTER LOCUST	15 GAL		75
	PINUS STROBUS 'FASTIGIATA' / PYRAMIDAL WHITE PINE	15 GAL	LOW	84
	PINUS SYLVESTRIS / SCOTCH PINE	15 GAL		44
	SOPHORA JAPONICA / JAPANESE PAGODA TREE	15 GAL		317
	SYRINGA RETICULATA / JAPANESE TREE LILAC	15 GAL		141
	ZELKOVA SERRATA 'VILLAGE GREEN' / SAWLEAF ZELKOVA	15 GAL		129

- GENERAL LANDSCAPE NOTES**
- ALL PLANTING AND IRRIGATION SHALL BE INSTALLED PER LOCAL GOVERNING CODES.
 - FINAL TREE SELECTION, COUNTS AND PLACEMENT WILL BE ADJUSTED AS NEEDED TO ALLOW FOR DRIVEWAY APRONS AND UTILITY LOCATIONS. TREES USED IN PARKING LOTS SHALL BE DECIDUOUS AND FREE OF FRUIT, THORNS AND HAVE DEEP ROOT SYSTEMS SO THAT ROOT DOES NOT PROTRUDE THE SURFACE. EVERGREEN TREES SHALL BE USED FOR SCREENING.
 - FINAL PLANT SELECTION AND LAYOUT WILL BE BASED ON SOUND HORTICULTURE 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.
 - ALL TREES SHALL BE 15 GALLON OR LARGER AND ALL SHRUBS SHALL BE 5 GALLON OR LARGER.
 - ALL PLANTER BEDS WILL RECEIVE 4" TOP-DRESSING OF MULCH (RIVER ROCK, DECOMPOSED GRANITE, BARK, ETC.)
 - ALL LANDSCAPE IRRIGATION WILL BE CONTROLLED BY AN AUTOMATIC SMART CONTROLLER. TURF GRASS WILL BE IRRIGATED USING LOW ANGLE SPRAY, ROTARY, AND/OR IMPACT HEADS TO REDUCE WIND DRIFT. CONTAINER PLANTINGS WILL BE IRRIGATED BY DRIP EMITTERS OR POINT SOURCE BUBBLERS BASED ON THE SPECIFIC HORTICULTURE REQUIREMENTS OF EACH SPECIES. THE IRRIGATION SYSTEM WILL BE DESIGNED TO ALLOW FULL IRRIGATION OF THE SITE BASED ON A THREE-DAY WEEKLY WATERING SCHEDULE. A REDUCED-PRESSURE-TYPE BACKFLOW PREVENTER (RBP) WILL BE PROVIDED ON THE IRRIGATION SYSTEM AS REQUIRES PER CODE.

CLEMENTS RANCH
PRELIMINARY LANDSCAPE PLAN

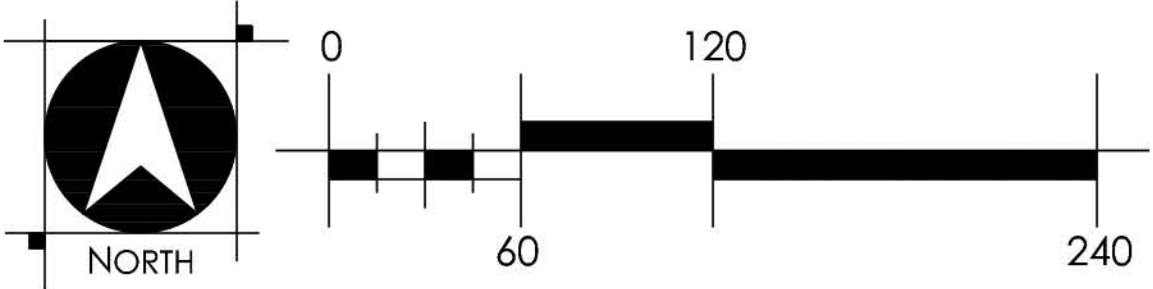
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APRIL, 2023
SHEET L-1 OF 17



CLEMENTS RANCH

TENTATIVE SUBDIVISION MAP
PRELIMINARY LANDSCAPE PLAN



CLEMENTS RANCH PRELIMINARY LANDSCAPE PLAN



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SEE SHEET L-1 FOR
LEGEND AND NOTES

3460.004 APRIL, 2023
SHEET L-2 OF 17

CLEMENTS RANCH

TENTATIVE SUBDIVISION MAP
PRELIMINARY LANDSCAPE PLAN



CLEMENTS RANCH
PRELIMINARY LANDSCAPE PLAN

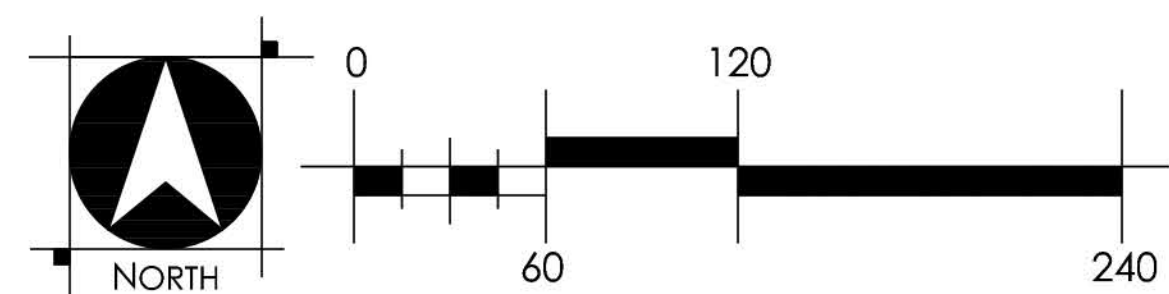


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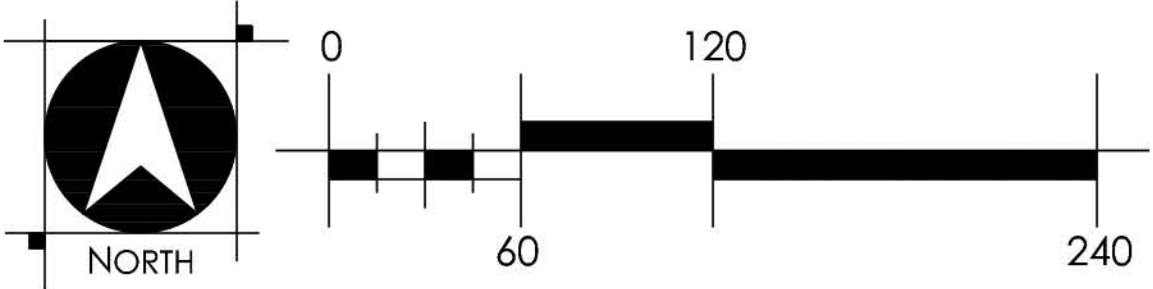
APRIL, 2023

SHEET L-3 OF 17



SEE SHEET L-1 FOR
LEGEND AND NOTES

CLEMENTS RANCH
TENTATIVE SUBDIVISION MAP
PRELIMINARY LANDSCAPE PLAN



SEE SHEET L-1 FOR
LEGEND AND NOTES



CLEMENTS RANCH
PRELIMINARY LANDSCAPE PLAN


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SHEET L-4 OF 17

Section 3

EXECUTIVE SUMMARY

Project Name:	Clements Ranch Tentative Subdivision Map
Site Location:	±83.9-acre parcel located at O Farm District Road north of the intersection of Farm District Road and Clearwater Parkway in Fernley, NV.
APN Numbers:	021-341-18
Applicant:	Clements Ranching LLC
Applicant's Representative:	Wood Rodgers, Inc., Attention: Derek Kirkland, AICP
Owner:	Clements Ranching LLC
Proposed Action:	This application is a request for: 1) A 241-lot Tentative Subdivision Map
Land Use Classification:	Single-Family Residential (SFR) [±68.4 acres] and Mixed-Residential (MR) [±15.5 acres]
Zoning:	Residential - Single-Family (6,000 sf min.) [SF6] {±68.4 acres} and Residential - Medium Density Residential (14 du/ac max) [MDR-14] {±15.5 acres}
Flood Zone Designation:	Zone X
Gross Site Area	±83.9 acres

PROJECT ANALYSIS

Background and Existing Conditions

The Clements Ranch Property, APN 021-341-18 (±83.9 acres) is located north of Farm District Road, between Bridle Path Way and Red Rock Road (*Vicinity map provided in Section 3 of this application package*). The subject parcel (APN 021-341-18) is currently used for agriculture purposes, which the Clements family has operated for the past 60+ years. However, due to several challenges such as aging out of the business, irrigation restrictions, and high operating costs farming in the valley is no longer a viable long-term option. As a result, the Clements family wants to create a master-planned community that can serve Fernley for generations to come.

The first step of creating a master planned community was completed earlier this year through the approval of the master plan and zoning map amendments, and associated development agreement to document some of the buffering standards for the adjacent subdivisions. These approvals included the Zone Change (ZMA 22008 – February 2023) and Master Plan amendment (MPA 22003 – February 2023), which changed the zoning on a ±68.4-acre portion of the site from RR1 to ±68.4 acres of SF6 (Single-Family Residential – 6,000 square foot minimum lot size), the Master Plan Land Use designation on a portion of the site from ±15.5 acres of Single-Family Residential (SFR) to ±15.5 acres of Mixed Residential (MR), and the zoning of the ±15.5-acre portion of the site to coincide with the proposed Master Plan Amendment from ±15.5 acres of RR1 to ±15.5 acres of MDR14 (Medium Density Residential – 14 dwelling units per acre maximum). A Development Agreement (DA 22003 – February 2023) was also approved at the time of the zone change and Master Plan amendment requiring certain buffering and density standards along the western and eastern boundaries of the subject parcel and a limitation on the total number of units which may be provided (*A copy of the DA is provided in Section 4 of this application packet*).

Project Request

Wood Rodgers on behalf of the Clements family is now submitting a request for a 241-lot tentative subdivision map for the Clements Ranch Property (APN 021-341-18) on the portion of the site zoned SF6 in order to develop the property and address the housing demand in Fernley due to employment growth. The proposed map includes various lot sizes of single-family detached residences and honors the development agreement.

The remainder of the Project Site zoned MDR-14 is not part of this tentative map application. This remainder area will be part of future development applications and will include additional improvements that are necessary to serve those specific projects. This future site has been included in the overall infrastructure planning for Clements Ranch as outlined in the traffic study and sewer report.

Justification for Request

The proposed Tentative Map fits within the recently approved zoning while also providing larger perimeter lots for buffering as required by the recently approved Development Agreement (DA 22003).

Comprehensive Master Plan and Zoning Designations

The Comprehensive Master Plan land use designation for the subject property is Single-Family Residential (SFR) [±68.4 acres], which allows single-family detached residences, and Mixed Residential (MR) [±15.5 acres], which allows single-family detached residences, small-lot single-family detached residences, single-family attached residences, triplexes, townhomes, condos, and manufactured/mobile home parks.

The zoning designation for the subject property is Residential - Single-Family (6,000 sf min.) [SF6] {±68.4 acres} and Residential - Medium Density Residential (14 du/ac max) [MDR-14] {±15.5 acres}. The SF6 zoning designation allows up to 7.26 dwelling units per acre, or 496 units within the SF 6 zoning. However, the Applicant will adhere to the terms of the Development Agreement and will not exceed more than 400 residential units on the overall Project Property. The current request is 241 units, limiting the future MDR-14 remainder area with approximately 159 units total.

Adjacent Land Use and Zoning		
Adjacent Properties	Current Zoning District	Comprehensive Plan Land Use Designation
North Vacant Commercial Land / US 50 / Bureau of Reclamation Parcel in the process to be acquired by the City of Fernley	C2/R20	C/OSP
West Existing Subdivision	RR1	SFR
East Existing Subdivision	RR 1/2	SFR
South Existing Subdivision	SF20	SFR

Compatibility and Adjacency Standards

To be compatible with the surrounding area while providing housing to support the economic growth at the nearby Victory Logistics employment center the Applicant worked with the neighbors and City of Fernley through the Master Plan and Zoning Map Amendment process to develop compatibility and adjacency standards for the future project. These project adjacency standards (also noted in Section 32.09.030 of the City of Fernley municipal code) were established and approved by the City of Fernley through a Development Agreement (DA 22003), which have been applied through this Tentative Map and are identified below:

- (i) *Along the western boundary of the Project Property, residential lots shall provide a minimum 0.40-acre lot area with lot width matching, a 30-foot rear setback, and all residential structures shall be limited to a single story;*
- (ii) *Along the eastern boundary of the Project Property and along the boundary line shared between the Project Property and APN 021-341-13, residential lots shall provide a minimum 14,000 square feet lot area with lot width matching, a 30-foot rear setback, and all residential structures shall be limited to a single story; and*
- (iii) *The maximum density allowed on the Project Property shall not exceed 400 residential units.*

Tentative Map Design Standards

The proposed development will comply with the development standards outlined in Section 32.06.070 of the City of Fernley municipal code for Residential - Single-family districts (SF20, SF12, SF9, SF6). The tentative subdivision map is designed to meet the density and lot size requirements of the SF6 zoning district, as well as specified in Development Agreement DA22003. It is important to note that no dwelling units are currently proposed for the Multiple-Family Residential district (MDR14) at this time. The average lot size for the proposed project is 8,136 square feet. Specific development standards proposed for the project are as follows:

Minimum Setbacks:

Front Yard Setback (livable space or side load garage) =	15 feet
Front Yard Setback (garage/carport) =	20 feet
Side Yard Setback =	5 feet
Side Yard Setback (combined) =	20 feet
Exterior Side Yard Setback =	10 feet
Rear Yard Setback =	10 feet (30 feet as noted per DA 22003)
Maximum Stories =	2-story (single story as noted per DA 22003)

Development Statistics Summary

The following is a summary of the development statistics of the site:

Total Site Area:	±83.9 acres
Total Dwelling Units:	241 single-family residences
Net Density:	±2.87 dwelling units/acre
Total Lot Area:	±45 acres (53.6%)
Average Lot Size:	±8,136 square feet
Maximum Lot Size:	±42,855 square feet
Minimum Lot Size:	±6,000 square feet
Minimum Lot Width:	60 feet
Minimum Lot Width (corner):	65 feet
Sq. Ft. Minimum (corner)	6,382 square feet
Sq. Ft. Minimum (interior)	6,000 square feet
Total Onsite Right of Way Area:	±21.6 acres (25.7%)
Total Offsite Right of Way Area:	±2.2 acres
Total Common Area:	±2.6 acres (3.1%)
Park:	±3.3 acres (3.9%)

Grading

The project site is a ±83.9-acre site that is vacant land use for agricultural purposes. From the northern portion of project area, the site slopes upward to the south at approximately 2-percent. The southern portion of the site is abandoned pasture, and undeveloped land is in the north. Vegetation in the undeveloped area consists of native grasses and brush.

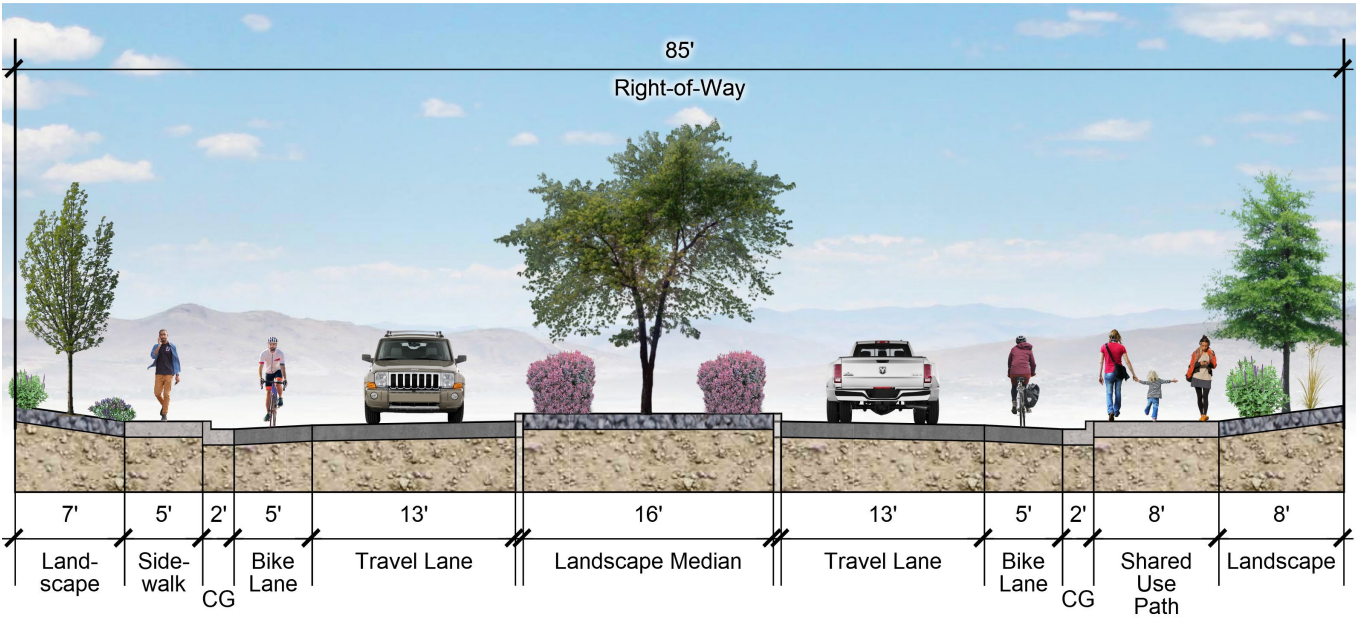
Site grading has been designed to protect the existing residential properties to the west, east, and south as well as direct drainage flows toward a retention pond in the northwest corner to capture onsite flows. *(A grading plan is provided in the Tentative Map Plan Set in Section 4 and Map Pocket of this submittal packet).*

The proposed storm retention basin will have side slopes of 2:1 (H:V). Slopes steeper than 3:1 (H:V) are typically addressed with a combination of revegetation and localize armoring or the incorporation of landscape retaining walls.

The future MDR-14 zoned area will be graded as part of this tentative map due to the connecting roadways that will be built as part of the proposed project. The pad will be graded as a super pad and reveged.

Traffic and Circulation

The proposed project includes Clements Ranch Parkway backbone roadway that will provide a connection between Farm District Rd and Red Rock Rd to support the overall Clements Ranch Development and provide a vital connection for the broader community. A Traffic Impact Study is provided in *Section 4 of this application packet*. Clements Ranch Parkway will be designed as a collector roadway per the cross section below:



Currently, the subject property has access to Farm District Road via the Clements Ranch Pkwy intersection in the southwestern portion of the property. Additionally, the property has access to Quick Cal Way within the adjacent subdivision to the east, which will be limited to a gated emergency access as part of this project. To improve access in this area Clements Ranch Parkway will connect Farm District Road to Red Rock Road as a collector street providing a new access point to U.S. 50 to the north, including an extension of the Farm District Road shared use path. In addition to the proposed shared use path Clements Ranch Parkway will also include a sidewalk on the opposite side of the shared use path and will include bike lanes.

Traffic generated from the project is not anticipated to have a significant impact to the surrounding infrastructure or Farm District Road. The proposed 241 lots will only generate 169 AM and 227 PM peak hour trips (ITE Manual 11th Edition Land Use 210 Single Family Detached). The study intersections currently operate at overall acceptable levels of service and are expected to continue to operate acceptably under Opening Year / Baseline Plus Project conditions and Future Year Plus Project conditions. Traffic generation from this request is minimal and Farm District Road and Red Rock Road can adequately serve the proposed lots. *(A Traffic Impact Study (TIS) was completed for the proposed development and is included in Section 4 of this application packet).*

As a result of listening to neighbor concerns of cut through traffic on Red Rock Rd, and to avoid further impacts to Farm District Rd, Clements Ranch Parkway will be constructed from Red Rock Rd into the initial phase of the development with primary access for the proposed development from U.S. 50. The connection to Farm District Rd will be made in the later phases of the development.

Landscaping

Although the City of Fernley municipal code exempts single-family detached uses from landscaping requirements, the Proposed Project will provide front yard landscaping as well as landscaping along proposed roadways, except for adjacent to the future MDR-14 zoned area and the commercial property to the north as that landscaping would be included with those future developments. Common areas, which include the retention pond, park, and other areas adjacent to Clements Ranch Parkway, would be landscaped to enhance the quality of the residential environment. All landscaping would be in accordance with City of Fernley Code requirements and would include drought-tolerant plants and street trees to encourage water-efficient irrigation. 1-inch drain rock would be applied on cut and fill slopes. All common areas including landscaping and fencing will be owned and maintained by a Homeowners Association (HOA) that will be established at final map. It is intended that the park will be constructed by the Proposed Project through Residential Construction Tax (RCT) collected and will be offered for dedication to the City with an agreement for the HOA to maintain the park. The park will be designed prior to the final map which includes the 241st unit in coordination with the City of Fernley and will be constructed prior to close of occupancy of the 241st unit.

Fencing

Fencing will be proposed on side and rear property boundaries and will be a 6-foot-tall wood good neighbor fencing to create privacy and visual screening. Fencing details will be determined at final map stage. Residential Fencing along Clements Ranch Parkway is proposed to be 6-foot wood fence with decorative pilasters and will be maintained by the HOA. A concept of the residential fencing along Clements Ranch Parkway is provided below:



Signage

Signage is not included at this time. Project entry monument signage details will be provided during the final map process.

Sewer, Water, and Utilities

There is adequate capacity for utilities to support future development. A future project would provide all necessary backbone infrastructure and utility connections.

Sewer

The proposed project will generate an average flow rate of 40,750 gallons per day (GPD) or 28.29 gallons per minute (GPM) with a peak hour flow rate of 122,250 GPD (84.90 GPM).

There is an existing sewer main in Red Rock Road that the proposed project will connect to which heads north to the wastewater treatment plant using the Highway 50 Lift Station. An easement and access road(s) per the design standards will be required for the portion of sewer main crossing the property to the Northeast (*A Sanitary Sewer Report is provided in Section 4 of the application packet*).

Water

The City of Fernley operates an 18-inch-diameter water main on the south side of Farm District Road and is capable of providing water service from the existing gravity pressure zone 1. The proposed project will connect to these existing water mains (*A Water Discovery report is provided in Section 4 of the application packet*).

Gas/Electric/Communications/Cable TV

Dry utilities (natural gas, power, communications, cable TV) are available on the north side of the highway. Additionally, these utilities are also available on the Quick Cal Way street stub to the east (i.e., off Red Rock Road). Southwest Gas and NV Energy will provide gas and electrical service, respectively, to the new development at the project site. Telephone service will be provided by AT&T and cable television will be from Charter Communications.

Schools

The closest schools to the subject parcels are East Valley Elementary School, located approximately 2 miles east, and Silverland Middle School, located less than 2 miles west of the site. Fernley High School is located approximately 3.5 miles west. According to the Lyon County School District's 2016 Facilities Plan, all the Fernley schools are currently under capacity and are planned to be within adequate utilization through 2025, except for one elementary school. The School District's 10-year capital program identifies a new elementary school that is planned to be built in the next 4 to 6 years, which would address elementary school capacity. A future project would provide additional tax benefits for the school district.

Police & Fire

Police protection is provided by the Lyon County Sheriff's office. Fire protection is provided by the North Lyon County Fire Protection District Station 62, located less than ¼ mile east of the parcel. The subject site is located in a developed area near existing development that is already served by these agencies.

Parks/Recreation

The subject property is located approximately 550 feet north of Autumn Winds Park and less than one mile west of the Fernley Golf Club. The City of Fernley Parks Master Plan does not call for an additional park in this area; however, it does identify a shortage of flat fields. To help address the flat field shortage and provide green space for the proposed development the Applicant is proposing an approximately 3.3-acre park in the northeast portion of the Project Site that will include a large flat field area, parking lot, and a tot-lot.

It is intended that the park will be constructed by the Proposed Project through Residential Construction Tax (RCT) collected and will be offered for dedication to the City with an agreement for the HOA to maintain the park. The park will be designed prior to the final map which includes the 241st unit in coordination with the City of Fernley and will be constructed prior to certificate of occupancy of the 241st unit.

Positive Fiscal Support

The subject parcel is an infill parcel located in an area surrounded by existing older residential development adjacent to existing infrastructure. The current agricultural use is no longer viable and does not provide any financial benefit for the City of Fernley. One of the challenges the City of Fernley is facing is the inability of the previous larger lot developments to cover the costs of the infrastructure, which has led to a continual increase in utility fees. Given the presence of a large employment center (Victory Logistics) currently under construction less than 2 miles away, this infill site provides an opportunity to provide quality housing for those future employees while taking advantage of existing infrastructure in the area.

The proposed tentative subdivision map will take advantage of the existing infrastructure helping provide fees that will support the City of Fernley's ongoing utility and public service costs for this area and will provide for more efficient use of the land going forward. The additional residential housing units supported by the tentative subdivision map will provide additional impact fees and tax revenues that will support the City of Fernley schools, parks, roads, and public services while also providing more obtainable housing options that can help attract more workers to the area and support the local economy.

TENTATIVE SUBDIVISION MAP FINDINGS

1. Compliance with environmental and health laws and regulations concerning water and air pollution, solid waste disposal, water supply facilities, community or public sewage disposal, and where applicable, individual systems for sewage disposal.

Response:

This project has been designed to meet all environmental and health laws/regulations, as required by local, state, and federal regulations. Water and sewer will be provided and treated by the City of Fernley municipal water and wastewater systems. A utility plan is included in the Map Pocket of this submittal packet. Solid waste disposal will be provided by Waste Management. This is a residential project and this use is not anticipated to contribute significantly to air pollution.

2. Availability of water that meets applicable health standards and is sufficient for the reasonably foreseeable needs of the subdivision.

Response:

The required water is approximately 270 acre-feet with an Average Daily Demand (ADD) of approximately ± 164.6 GPM. Actual demand will be calculated with the site improvement plans prior to recordation of the final subdivision map. The Applicant has sufficient water rights for the proposed tentative map. A utility plan is included in the Map Pocket of this submittal packet indicating the location of existing City of Fernley services to serve the project.

3. Availability and accessibility of utilities.

Response:

There is adequate capacity for utilities to support future development. A future project would provide all necessary backbone infrastructure and utility connections. The proposed water and sewer systems will be operated by the City of Fernley. Preliminary sewer and water studies are included in Section 4 of this submittal packet, which indicate that the City of Fernley has sufficient system capacity to serve the project.

Sewer

The City of Fernley can offer sewage service starting from the site and direct it northeast towards the existing sewer main in Red Rock Road to reach the wastewater treatment plant located to the east, using the Highway 50

Lift Station. An easement and access road(s) per the design standards will be required for the portion of sewer main crossing the property to the Northeast.

Water

The City of Fernley operates an 18-inch-diameter water main on the south side of Farm District Road and is capable of providing water service from the existing gravity pressure zone 1.

Gas/Electric/Communications/Cable TV

Dry utilities (natural gas, power, communications, cable TV) are available on the north side of the highway. Additionally, these utilities are also available on the Quick Cal Way street stub to the east (i.e., off Red Rock Road). Southwest Gas and NV Energy will provide gas and electrical service, respectively, to the new development at the project site. Telephone service will be provided by AT&T and cable television will be from Charter Communications.

4. Availability and accessibility of public services such as schools, police and fire protection, transportation, recreation facilities, and parks.

Response:

Schools

The closest schools to the subject parcels are East Valley Elementary School, located approximately 2 miles east, and Silverland Middle School, located less than 2 miles west of the site. Fernley High School is located approximately 3.5 miles west. According to the Lyon County School District's 2016 Facilities Plan, all the Fernley schools are currently under capacity and are planned to be within adequate utilization through 2025, except for one elementary school. The School District's 10-year capital program identifies a new elementary school that is planned to be built in the next 4 to 6 years, which would address elementary school capacity. A future project would provide additional tax benefits for the school district. This could potentially lead to further improvements and expansions of the school system in the future.

Police and Fire Service

The project site is located in an area already served by police and fire services. Police protection is provided by the Lyon County Sheriff's office. Fire protection is provided by the North Lyon County Fire Protection District Station 62, located less than ¼ mile east of the parcel. The subject site is located in a developed area near existing development that is already served by these agencies.

Parks

There is an approximately 3.3 acre park proposed in the northeast portion of the Project Site as part of the future development. Build out of the proposed park will be completed with future phases of the Clements Ranch development.

Several recreational amenities are available in this area. The subject property is located approximately 550 feet north of Autumn Winds Park and less than one mile west of the Fernley Golf Club. A future project would incorporate recreational opportunities and connections to existing parks and pedestrian amenities.

5. Consistency with the zoning district regulations.

Response:

The project site has land use designations of SFR (±68.4 acres) and MR (±15.5 acres) and zoning designations of SF6 (±68.4 acres) and MDR14 (±15.5 acres). This tentative subdivision map request seeks to create 241 single family lots, ranging from 6,000 to 42,855 square feet with an average of 8,136 sq. ft. The proposed project is entirely consistent with all minimum standards of the zoning district regulations.

6. Conformity with the Master Streets and Highways Plan.

Response:

The request conforms with the Master Streets and Highways Plan. Currently, the property is accessed via Farm District Rd. Proposed access to the site will be improved to provide an 85-foot-wide collector roadway, Clements Ranch Parkway, which would run north of Farm District Road to connect to Red Rock Road, which provides connection to U.S. 50. Clements Ranch Parkway will provide a new connection between Farm District and Red Rock Rd which will help alleviate cut through traffic on Red Rock Rd through the existing subdivision. Additionally, the property will maintain a gated emergency access via Quick Cal Way through its connection with Red Rock Road. Local roads within the subdivision would connect to Clements Ranch Parkway.

7. Effect of the proposed subdivision on existing public streets and the need for new streets or highways to serve the subdivision.

Response:

The Applicant is proposing to build the northern portion of Clements Ranch Parkway with connection to Red Rock Rd with primary access from U.S. 50 as the first phase to avoid further impacts to Farm District Rd. As such traffic generated from the project is not anticipated to significantly impact the surrounding infrastructure, Farm District Road, or Red Rock Road. The proposed 241 lots will only generate 169 AM and 227 PM peak hour trips (ITE Manual 11th Edition Land Use 210 Single Family Detached).

8. Physical land characteristics, such as floodplain, slope, soil and elevation differentials with abutting properties.

Response:

This project is not within a floodplain. A grading plan is included in the Map Pocket of this submittal packet completed in compliance with all applicable grading, slope, soil, and elevation differential standards of the City of Fernley.

9. Recommendations and comments of review bodies.

Response:

Any recommendations and comments of review bodies will be considered in the project design and engineering processes.

10. Conformity to the Master Sewer and Water Utility Plan.

Response:

A preliminary sewer report is included within Section 4 of this submittal packet. The reports consulted with the Master Sewer and Water Utility Plans and include discussion of how the City of Fernley sewer and water infrastructure and supply has sufficient capacity to meet the projected demand of this project.

This project also conforms to the following Water/Wastewater Goals of the City of Fernley Comprehensive Master Plan:

- *PSF.1.1.4 - Areas planned for urban or suburban development (residential densities of one or more dwelling units per acre or comparable non-residential development will be served by a community water supply system consistent with adopted policies in the Land Use Chapter of the Fernley Comprehensive Master Plan.*
 - **Comment:** *This project will connect to the municipal water system. A utility plan is included within Section 4 of this submittal packet and modeling for demand will be done at final map.*

- *PSF.1.4 - Reduce water demand through xeriscape project landscaping, reclamation and reuse of treated wastewater for golf courses, medians, parkways and other appropriate application uses.*
 - **Comment:** *Although there is minimal landscaping required with this plan xeriscaping will be utilized where feasible with this project to reduce water demand. Section 4 of this submittal packet includes a landscape plan.*
- *PSF.2.1.1 - All new development within the City limits with lot sizes equal to or smaller than 1.0 acre shall be required to connect to the municipal sewer system. New development with residential densities lower than one dwelling unit per acre shall be allowed to utilize individual septic systems with acceptable sub-surface disposal if sewer is not available.*
 - **Comment:** *This project will connect to the municipal sewer system. A utility plan and a preliminary sewer report are included within Section 4 of this submittal packet.*

11. Compliance with the Code and all other applicable regulations.

Response:

All Fernley code sections have been met with the proposed tentative map. Other code and development requirements relevant to the Project specifically addressed include:

- *Adjacency Standards (Section 32.09.030)*
 - **Comment:** *Residential adjacency standards apply to the west, south, and east property lines of the project. The Applicant entered into a Development Agreement (DA 22003) with the City of Fernley to specifically address Residential Adjacency Standards. The proposed tentative map is in compliance with that agreement and includes the following:*
 - (i) *Along the western boundary of the Project Property, residential lots shall provide a minimum 0.40-acre lot area with lot width matching, a 30-foot rear setback, and all residential structures shall be limited to a single story;*
 - (ii) *Along the eastern boundary of the Project Property and along the boundary line shared between the Project Property and APN 021-341-13, residential lots shall provide a minimum 14,000 square feet lot area with lot width matching, a 30-foot rear setback, and all residential structures shall be limited to a single story; and*
 - (iii) *The maximum density allowed on the Project Property shall not exceed 400 residential units.*

Section 4

TRAFFIC IMPACT STUDY FOR CLEMENTS RANCH

April 17, 2023

PREPARED FOR:
Wood Rodgers

PREPARED BY:



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YOUR QUESTIONS ANSWERED QUICKLY

Why did you perform this study?

This Traffic Impact Study evaluates the potential traffic impacts associated with the proposed Clements Ranch project in Fernley, Nevada. This study was undertaken to determine the baseline and future traffic conditions, quantify traffic volumes generated by the proposed project, identify potential impacts, and develop recommendations to mitigate impacts, if any are found.

What does the project consist of?

The project consists of 159 single-family attached and 241 single-family detached dwelling units. The site is located west of Red Rock Road between Farm District Road and US 50A in Fernley, NV. The project includes access points on Farm District Road and on Red Rock Road. The regional project location is shown in **Figure 1** and the project site location is shown in **Figure 2**. A preliminary site plan is shown in **Figure 3**.

How much traffic will the project generate?

The project is anticipated to generate approximately 3,418 Daily, 245 AM peak hour, and 318 PM peak hour trips to the external roadway network.

How will project traffic affect the roadway network?

The study intersections are expected to operate at acceptable overall levels of service under Opening Year (Baseline) Plus Project and Future Year Plus Project conditions.

Are any improvements recommended?

It is recommended that a dedicated eastbound left-turn lane be striped in place of the two-way left-turn lane (TWLTL) on Farm District Road at Clements Ranch Parkway. Based on NDOT's *Access Management System and Standards*, the eastbound left-turn lane should be at least 350 feet long (300 feet of pocket, plus 50 feet open, with existing TWLTL beyond that).

The project should extend Clements Ranch Parkway to Red Rock Road.



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INTRODUCTION

This Traffic Impact Study (TIS) evaluates the potential traffic impacts associated with the proposed Clements Ranch project. This study was undertaken to determine the baseline and future (20-year horizon) traffic conditions, quantify traffic volumes generated by the proposed project, identify potential impacts, and develop recommendations to mitigate impacts, if any are found.

Proposed Project

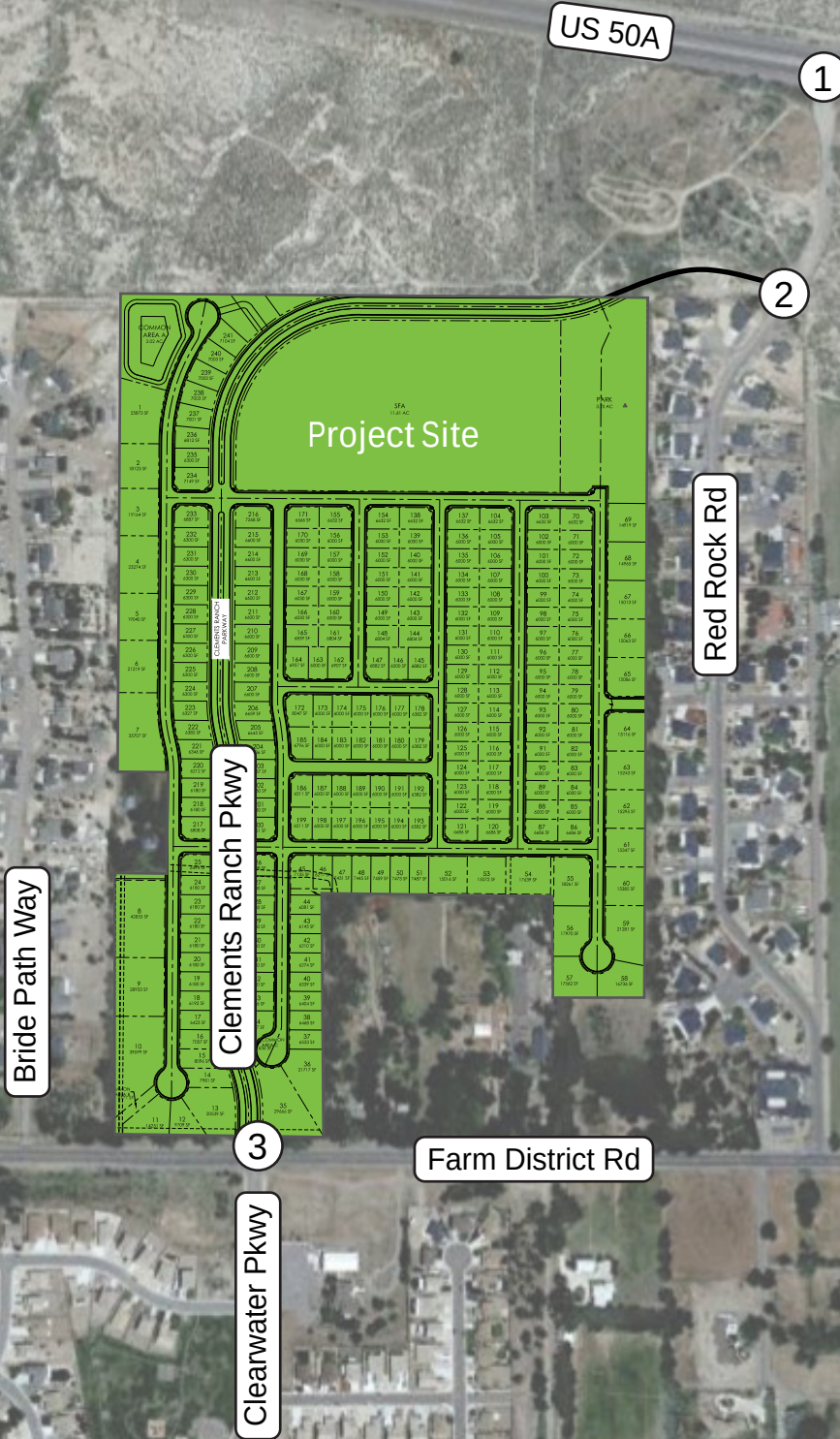
The project is located in Fernley, NV and consists of approximately 159 single-family attached and 241 single-family detached dwelling units. The site is located west of Red Rock Road between Farm District Road and US 50A on parcels APN: (021-341-18 & 021-341-19). The regional project location can be seen in **Figure 1**, the project site location along with the study intersections are shown in **Figure 2**. A preliminary site plan is shown in **Figure 3**.





Study Intersections

- ① US 50A / Red Rock Rd
- ② Clements Ranch Pkwy (Project Access) / Red Rock Rd
- ③ Clearwater Pkwy / Clements Ranch Pkwy (Project Access) / Farm District Rd



FERNLEY, NEVADA
APRIL 2023

FERNLEY, NEVADA
APRIL 2023



Study Area and Evaluated Scenarios

The following intersections are included in this study:

1. Red Rock Road / US 50A
2. Red Rock Road / Clements Ranch Parkway (Plus Project only)
3. Farm District Road / Clearwater Parkway / Clements Ranch Parkway

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
- ▶ Opening Year / Baseline (5-Year) Conditions
- ▶ Opening Year / Baseline (5-Year) Plus Project Conditions
- ▶ Future Year (20-year horizon background) Conditions
- ▶ Future Year (20-year horizon background) 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 and Highway Capacity Software (HCS) with analysis and results reported in accordance with HCM methodology.

Level of Service Policy

City of Fernley

The *City of Fernley Comprehensive Master Plan* (August 15, 2018) includes the following level of service policy:

The minimum Level of Service on all city-maintained roadways shall be LOS D. The City will work with representatives from NDOT to ensure timely improvements are planned when NDOT roadways are forecast to fall below LOS D.

Nevada Department of Transportation

The Nevada Department of Transportation (NDOT) *Traffic Impact Study Requirements* publication states:

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.

LOS "D" was used as the threshold criteria for this analysis.

Traffic engineering practitioners recognize that LOS E/F conditions for the side-street approach, during the peak hour(s), does not indicate an intersection failure or the need for mitigation. This condition (LOS E/F for a minor side-street approach) commonly exists throughout urban and suburban areas and is manageable in most cases.



EXISTING CONDITIONS

Roadway Facilities

A brief description of the key roadways in the study area are provided below:

US 50A is classified as a principal arterial that runs east-west and connects I-80 in Fernley to US 50 in Fallon. In the immediate project vicinity, US 50A has two lanes in each direction and has a posted speed limit of 65 MPH.

Red Rock Road is classified as a minor collector and runs north-south connecting Farm District Road and US 50A. Red Rock Road has two lanes (one lane in each direction) and has a posted speed limit of 25 MPH. The northmost segment is currently gravel surface. The City of Fernley is in the design process to pave and improve Red Rock Road to city standards. These improvements are anticipated to be completed before the Clements Ranch project constructs homes.

Farm District Road (SR 828) is classified as a minor arterial that runs east-west and connects to US 50A east and west of Fernley. In the immediate project vicinity Farm District Road has a TWLTL and a posted speed limit of 45 MPH. Farm District Road is considered a conventional road (one lane in each direction).

Bicycle & Pedestrian Facilities

There are no bicycle and pedestrian facilities on US 50A, Farm District Road, or Red Rock Road.

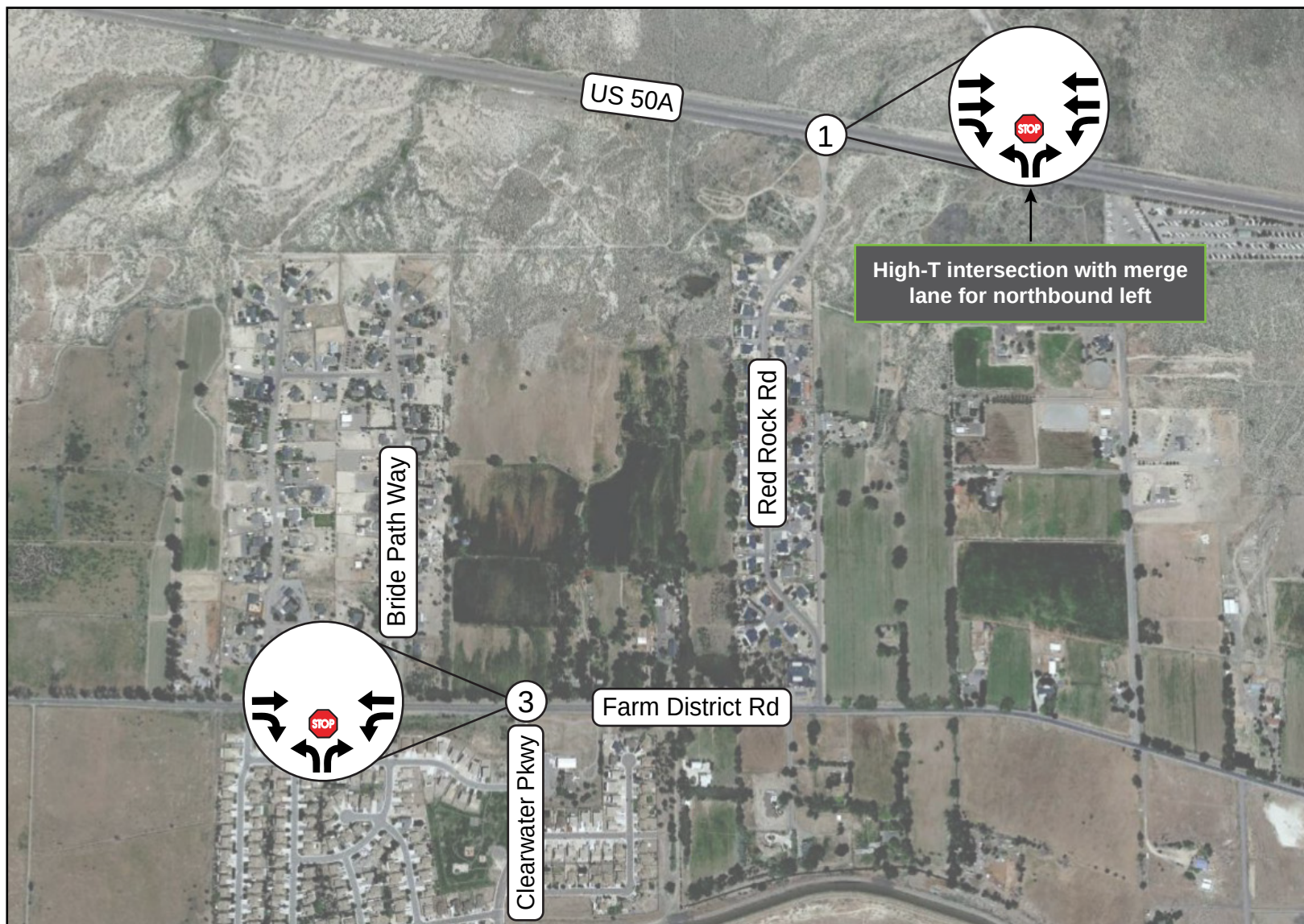
Crash History

Five-year (2016-2021) vehicle crash data for US 50A / Red Rock Road and Farm District Road / Clearwater Way was obtained from NDOT. The intersection of US 50A / Red Rock Road experienced a total of 11 crashes: 5 rear-end, 2 side swipes/overtaking, 1 non-collision, and 3 angle crashes. The majority of the crashes resulted in property damage only. The intersection of Farm District Road / Clearwater Way experienced 1 rear-end crash with injury. The available crash data is found in **Appendix A**.

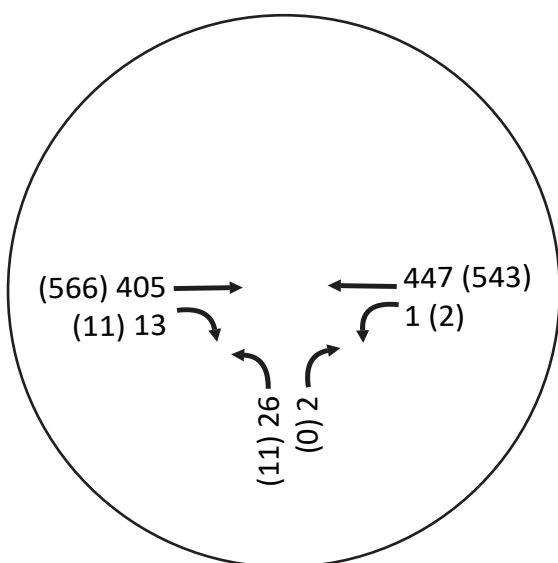
Traffic Volumes

Peak period, AM (6:00 AM to 9:00 AM) and PM (3:00 PM to 6:00 PM), intersection turning movement volumes were collected at the study intersections on a mid-weekday in October 2021, with schools in regular session. The peak hours for the intersection of Farm District Road / Clearwater Way were generally identified as 6:30-7:30 AM and 3:00-4:00 PM. The peak hours for the intersection of US 50A / Red Rock Road were generally identified as 7:00-8:00 AM and 4:30-5:30 PM. The traffic data sheets are provided in **Appendix B**. The existing AM and PM peak hour intersection turning movements and mainline volumes are shown on **Figure 4**.

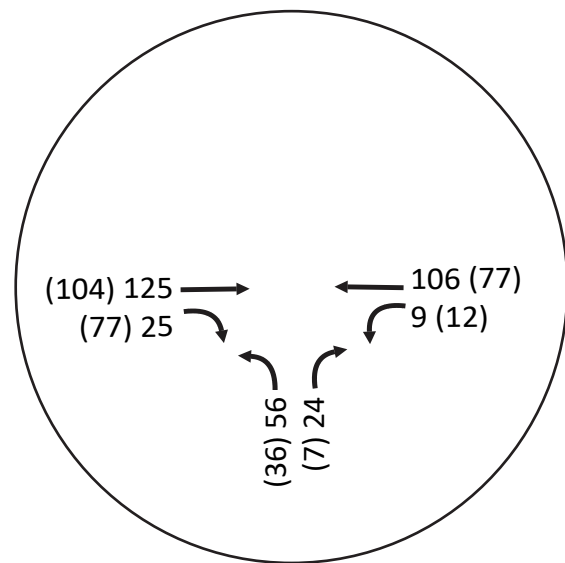




① US 50A /
Red Rock Rd



③ Clearwater Pkwy /
Farm District Rd



Intersection Level of Service Analysis

Existing weekday AM and PM peak hour intersection level of service analysis was performed for the study intersections using Synchro 11 analysis software. The existing intersection lane configurations and controls are shown on **Figure 4**. The US 50A / Red Rock Road intersection was analyzed as a “High-T” with the northbound left entering a merge lane and merging with westbound traffic downstream. The analysis was conducted in two parts, with the merge analyzed using Highway Capacity Software (HCS). **Table 2** shows the existing conditions level of service results and the technical calculations are provided in **Appendix C**.

Table 2: Existing Intersection Level of Service

Int. ID	Intersection	Control	AM		PM	
			Delay ¹	LOS	Delay ¹	LOS
1	US 50A / Red Rock Rd	High-T with Side Street Stop				
	Overall Intersection		0.7	A	0.3	A
	NB Left		11.8	B	13.4	B
	NB Right		9.6	A	0.0	A
	WB Left		8.2	A	8.8	A
	NB Left Merge with WB Through		-	A	-	A
3	Clearwater Pkwy / Farm District Rd	Side Street Stop				
	Overall Intersection		2.7	A	1.6	A
	NB Left		11.1	B	9.9	A
	NB Right		9.4	A	8.8	A
	WB Left		7.7	A	7.6	A

Notes: 1. Delay is reported in seconds per vehicle for the overall intersection for signalized intersections, and for the worst approach/movement for side street stop-controlled intersections. Delay is not reported for the NB to WB merge at US 50A / Red Rock Rd.

Source: Headway Transportation, 2023

As shown in **Table 2**, the study intersections currently operate within the level of service policy.

TRAFFIC VOLUME FORECASTS

Historical traffic volume data collected by NDOT and the City of Fernley’s *Comprehensive Master Plan* was used to inform an annual growth rate. **Table 3** shows the historical traffic volume data.



Table 3: NDOT Historical Traffic Volume Data

Location	AADT ¹										Annual Growth Rate ²
	2011	2012	2013	2014	2015	2016	2017	2018	2019	2021	
US 50A – East of E. Main Street (Station 0190034)	9,100	9,000	11,000	10,500	11,000	12,000	12,000	12,700	13,000	12,600	3.3%
Farm District Road (SR 828) – South of E. Main St (Station 0190033)	9,500	8,900	9,200	9,100	7,800	7,700	8,300	10,300	9,900	9,900	0.4%

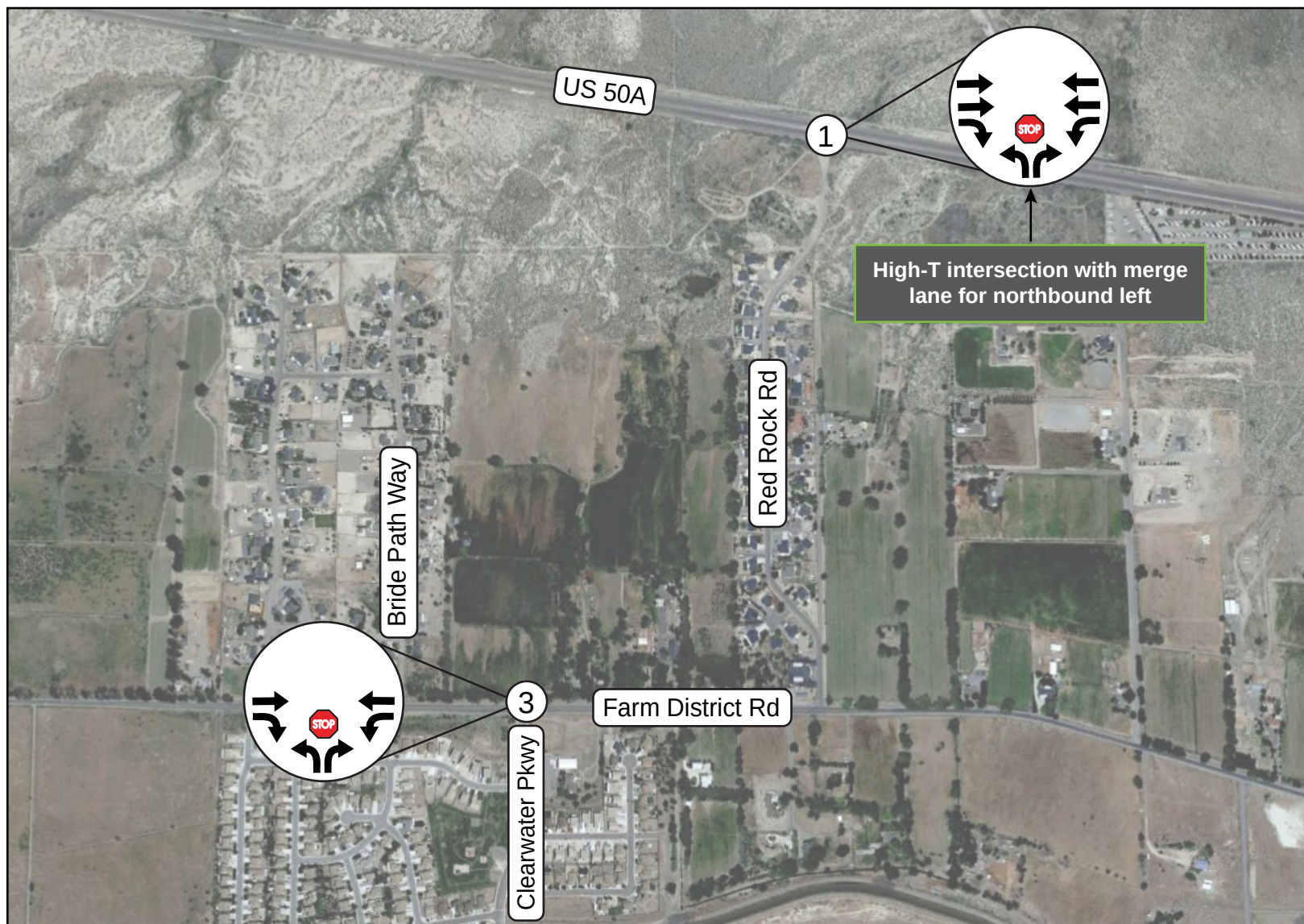
Notes: 1. AADT = Annual Average Daily Traffic
2. Compounding annual growth rate calculated
Source: Traffic Records Information Access, NDOT

As shown in **Table 3**, the exponential annual growth rate for US 50A is approximately 3.3 percent per year and was used to forecast volumes on mainline US 50A. The growth is conservative considering that several roadway connections and extensions are planned with the goal of alleviating future congestion along US 50A, per the Fernley Master Plan. The exponential annual growth rate for Farm District Road is approximately 0.4 percent. To be conservative and consistent with the City of Fernley's *Comprehensive Master Plan*, a compounding growth rate of 2 percent per year was applied to all existing volumes with the exception of mainline US 50A.

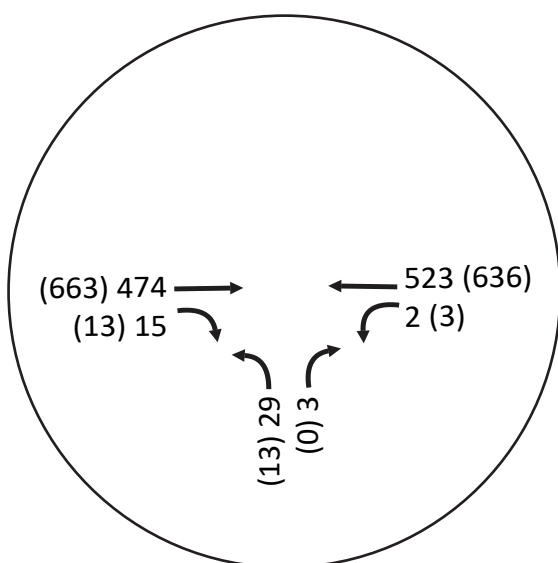
BASELINE (OPENING YEAR) CONDITIONS

The Baseline conditions approximate the full build-out opening year for the project, a 5-year horizon. Baseline (5-Year No Project) background traffic volumes were developed using a regional exponential annual growth rate of 3.3 percent for US 50A and 2 percent for other movements. **Figure 5** shows the Baseline (5-Year) No Project background traffic volumes at the study intersections.

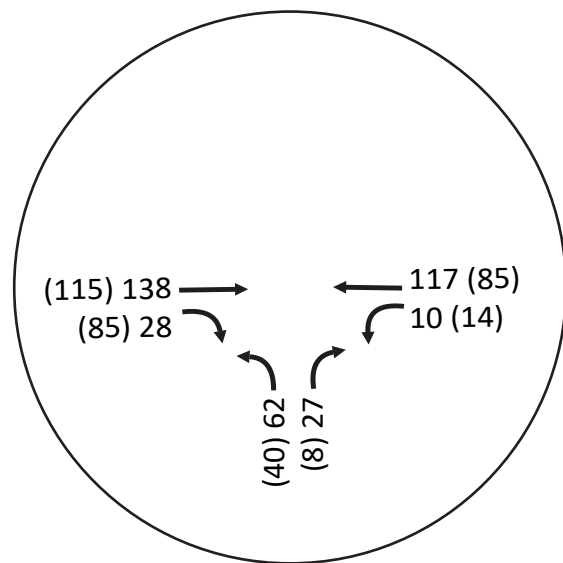




① US 50A /
Red Rock Rd



③ Clearwater Pkwy /
Farm District Rd



Intersection Level of Service

Table 4 shows the level of service results, and the technical calculations are provided in **Appendix D**.

Table 4: Baseline (Opening Year) Intersection Level of Service

Int. ID	Intersection	Control	AM		PM	
			Delay ¹	LOS	Delay ¹	LOS
1	US 50A / Red Rock Rd	High-T with Side Street Stop				
	Overall Intersection		0.8	A	0.3	A
	NB Left		12.5	B	14.6	B
	NB Right		9.8	A	0.0	A
	WB Left		8.5	A	9.2	A
	NB Left Merge with WB Through		-	A	-	A
3	Clearwater Pkwy / Farm District Rd	Side Street Stop				
	Overall Intersection		2.7	A	1.7	A
	NB Left		11.4	B	10.1	B
	NB Right		9.5	A	8.9	A
	WB Left		7.8	A	7.7	A

Notes: 1. Delay is reported in seconds per vehicle for the overall intersection for signalized intersections, and for the worst approach/movement for side street stop-controlled intersections. Delay is not reported for the NB to WB merge at US 50A / Red Rock Rd.

Source: Headway Transportation, 2023

As shown in **Table 4**, the study intersections are expected to operate within the level of service policy.

PROJECT CONDITIONS

Trip Generation

Trip generation rates from the Institute of Transportation Engineers' (ITE) *Trip Generation Manual*, 11th Edition were used to develop trip generation estimates for the project. The project consists of approximately 159 single-family attached and 241 single-family detached dwelling units. **Table 5** shows the Daily, AM peak hour, and PM peak hour trip generation estimates.



Table 5: Trip Generation Estimates

Land Use (ITE Code)	Size ¹	Trips ²				
		Daily	AM In/Out	Total AM	PM In/Out	Total PM
Single-Family Attached (215)	159 du	1,145	19 / 57	76	53 / 38	91
Single-Family Detached (210)	241 du	2,273	42 / 127	169	143 / 84	227
TOTAL	400 du	3,418	61 / 184	245	196 / 122	318

Notes: 1. du = dwelling units

2. Trips were calculated based on the following rates per du:

Single-Family Attached: Daily – 7.20; AM – 0.48 (25% in / 75% out); PM – 0.57 (59% in / 41% out)

Single-Family Detached: Daily – 9.43; AM – 0.70 (25% in / 75% out); PM – 0.94 (63% in / 37% out)

Source: Headway Transportation, 2023

As shown in **Table 5**, the project is expected to generate 3,418 Daily, 245 AM peak hour, and 318 PM peak hour trips.

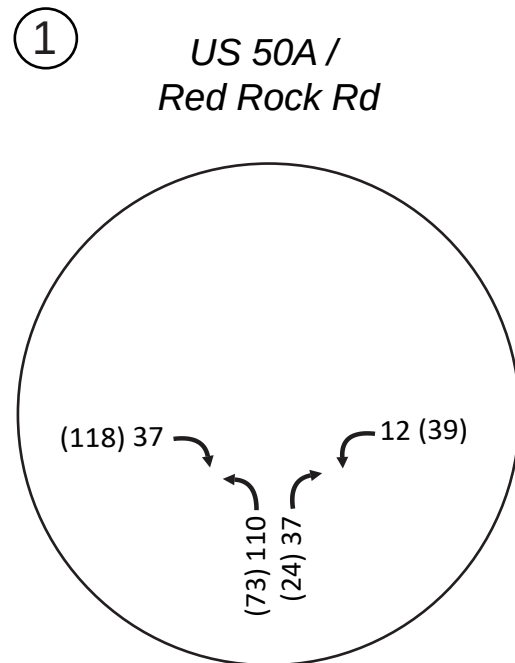
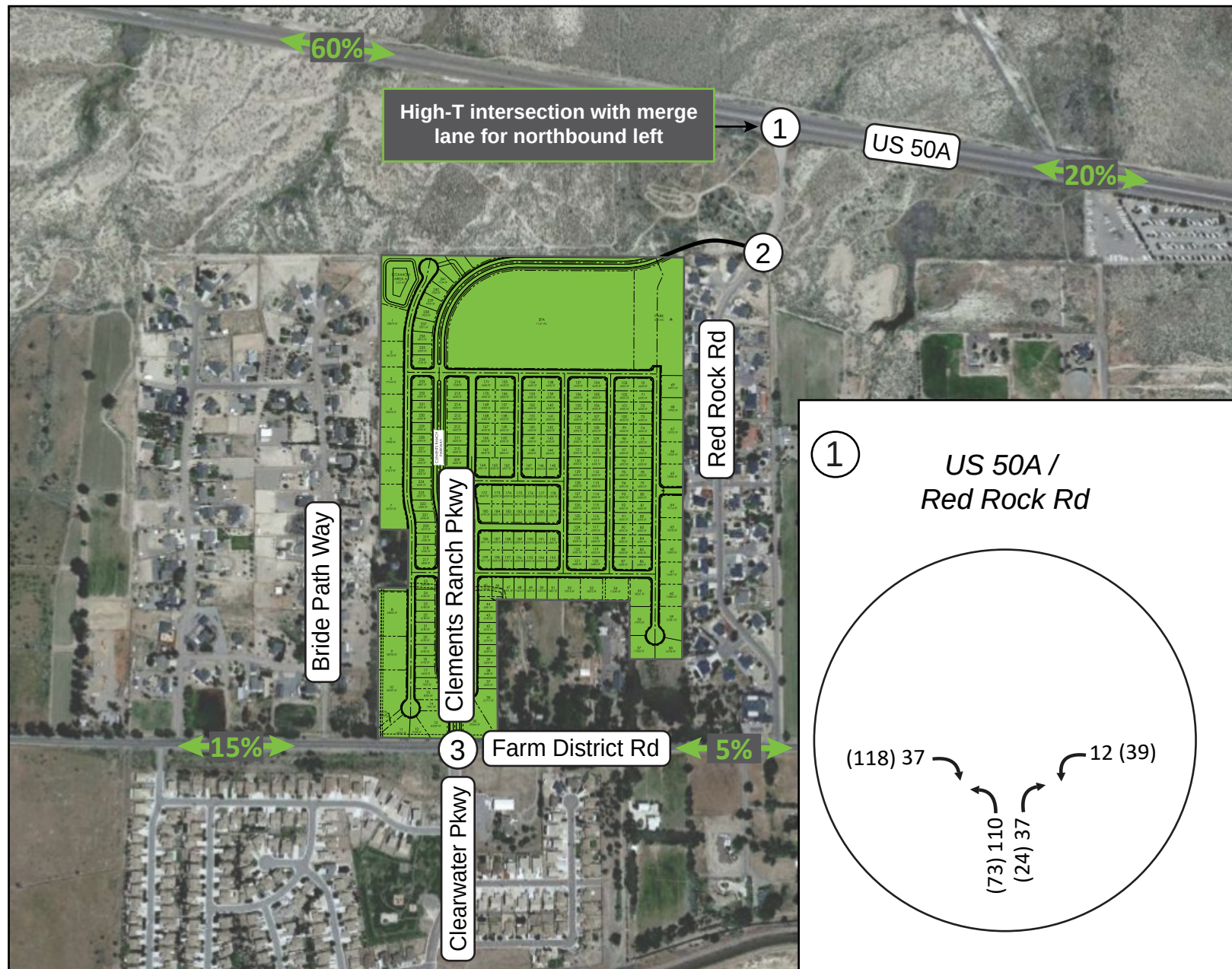
Trip Distribution

Project generated traffic was distributed to the surrounding roadway network based on existing traffic volumes and travel patterns and the location of the project in relation to complimentary land uses, major activity centers, and local roadway connections. The following trip distribution percentages were used:

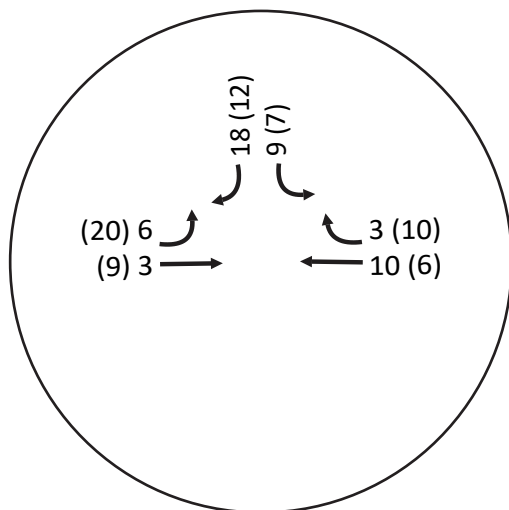
- 60% to/from the west via US 50A
- 20% to/from the east via US 50A
- 15% to/from the west via Farm District Road
- 5% to/from the east via Farm District Road

Figure 6 shows the Project Trip Distribution and Assignment.

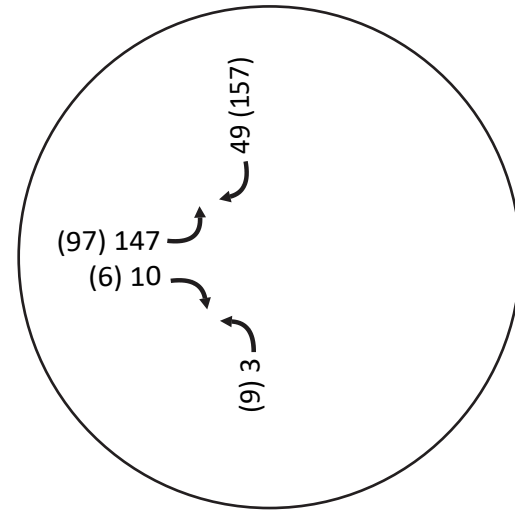




③ Clearwater Pkwy / Clements Ranch Pkwy (Project Access) / Farm District Rd



② Clements Ranch Pkwy (Project Access) / Red Rock Rd



Project Access and Access Management

Access to the project is proposed via Farm District Road with a new fourth leg (Clements Ranch Parkway) to the Farm District Road / Clearwater Parkway intersection. A second access is proposed on Red Rock Road just south of US 50A. An emergency access will be provided from the east via a connection to Quick Cal Way. **Figure 3** shows the site access locations, and **Figure 7** shows the recommended lane configuration at the project access intersections.

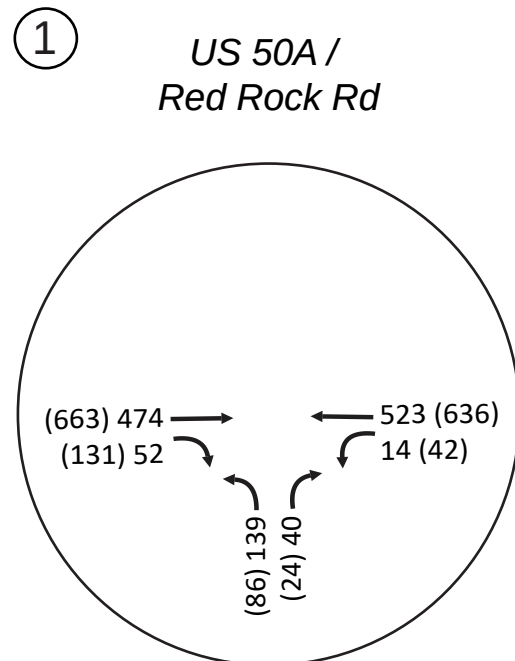
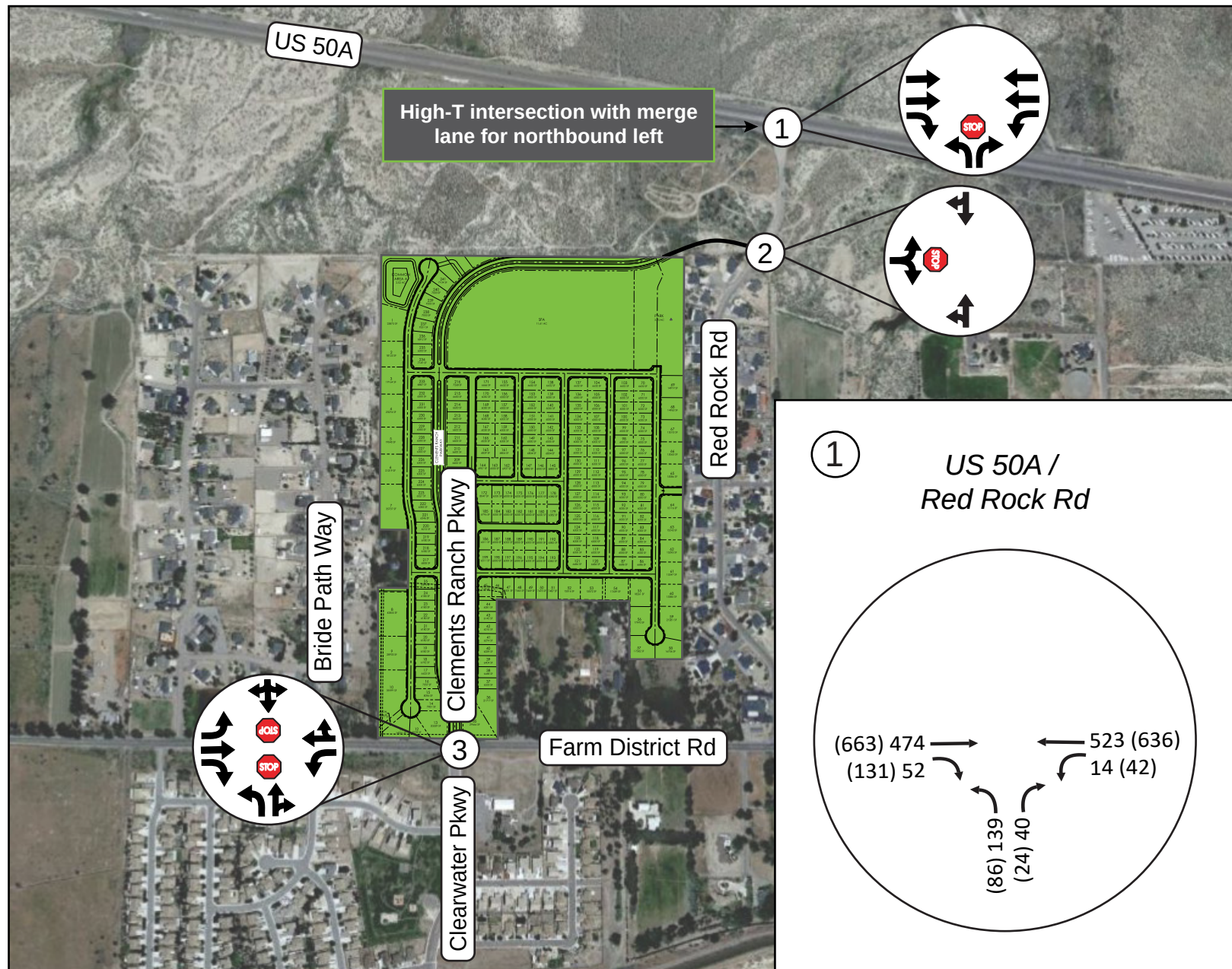
NDOT's *Access Management System and Standards (AMSS)* provides criteria for intersections along state roadways. Tables 4-12 and 4-16 provide criteria for the left-turn and right-turn deceleration lanes on Farm District Road / Clearwater Parkway / Clements Ranch Parkway. Based on the Baseline Plus Project volumes, an eastbound left-turn lane is warranted on Farm District Road at Clements Ranch Parkway. A left-turn lane on Farm District Road would simply be striped in place of the existing TWLTL. A westbound right-turn lane is not justified at Clements Ranch Parkway. Left and right-turn lanes already exist along US 50A at the intersection with Red Rock Road.

BASELINE (OPENING YEAR) PLUS PROJECT CONDITIONS

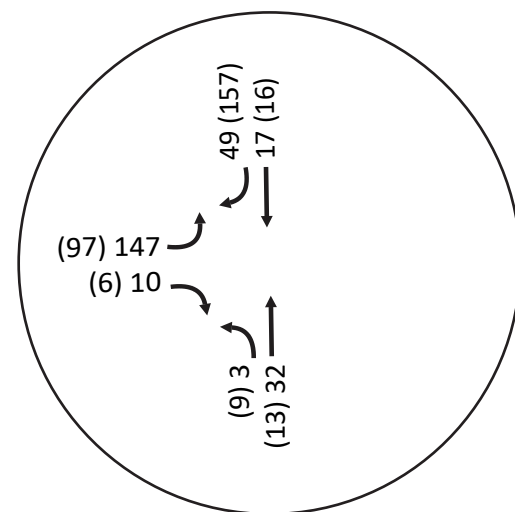
Traffic Volumes

Project trips (**Figure 6**) were added to the Baseline (5-Year) No Project (**Figure 5**) traffic volumes to develop the Baseline (5-Year) Plus Project conditions traffic volumes, shown on **Figure 7**.

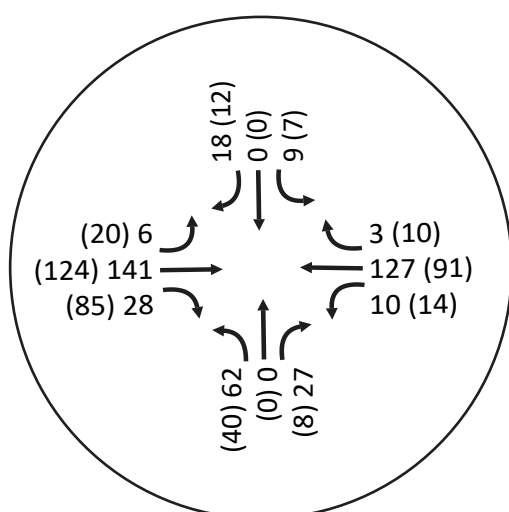




② Clements Ranch Pkwy (Project Access) / Red Rock Rd



③ Clearwater Pkwy / Clements Ranch Pkwy (Project Access) / Farm District Rd



Intersection Level of Service

AM and PM peak hour intersection level of service analysis was performed for the study intersections based on the Baseline (5-Year) Plus Project traffic volumes and can be seen on **Figure 7**. **Table 6** shows the level of service results, and the technical calculations are provided in **Appendix E**. This analysis was conducted in order to show the expected completion of a full build-out development.

Table 6: Baseline (Opening Year) Plus Project Intersection Level of Service

Int. ID	Intersection	Control	AM		PM	
			Delay ¹	LOS	Delay ¹	LOS
1	US 50A / Red Rock Rd	High-Tee with Side Street Stop				
	Overall Intersection		3.6	A	2.4	A
	NB Left		15.0	C	18.1	C
	NB Right		10.1	B	11.0	B
	WB Left		8.6	A	10.0	B
	NB Left Merge with WB Through		-	A	-	A
2	Clements Ranch Pkwy (Project Access) / Red Rock Rd	Side Street Stop				
	Overall Intersection		6.0	A	3.6	A
	EB Approach		9.8	A	9.8	A
	NB Left		7.4	A	7.6	A
3	Clearwater Pkwy / Clements Ranch Pkwy (Project Access) / Farm District Rd	Side Street Stop				
	Overall Intersection		3.4	A	2.4	A
	NB Left		13.5	B	11.2	B
	NB Right		9.5	A	8.9	A
	EB Left		7.6	A	7.5	A
	WB Left		7.8	A	7.7	A
	SB Approach		10.5	B	9.8	A

Notes: 1. Delay is reported in seconds per vehicle for the overall intersection for signalized intersections, and for the worst approach/movement for side street stop-controlled intersections. Delay is not reported for the NB to WB merge at US 50A / Red Rock Rd.

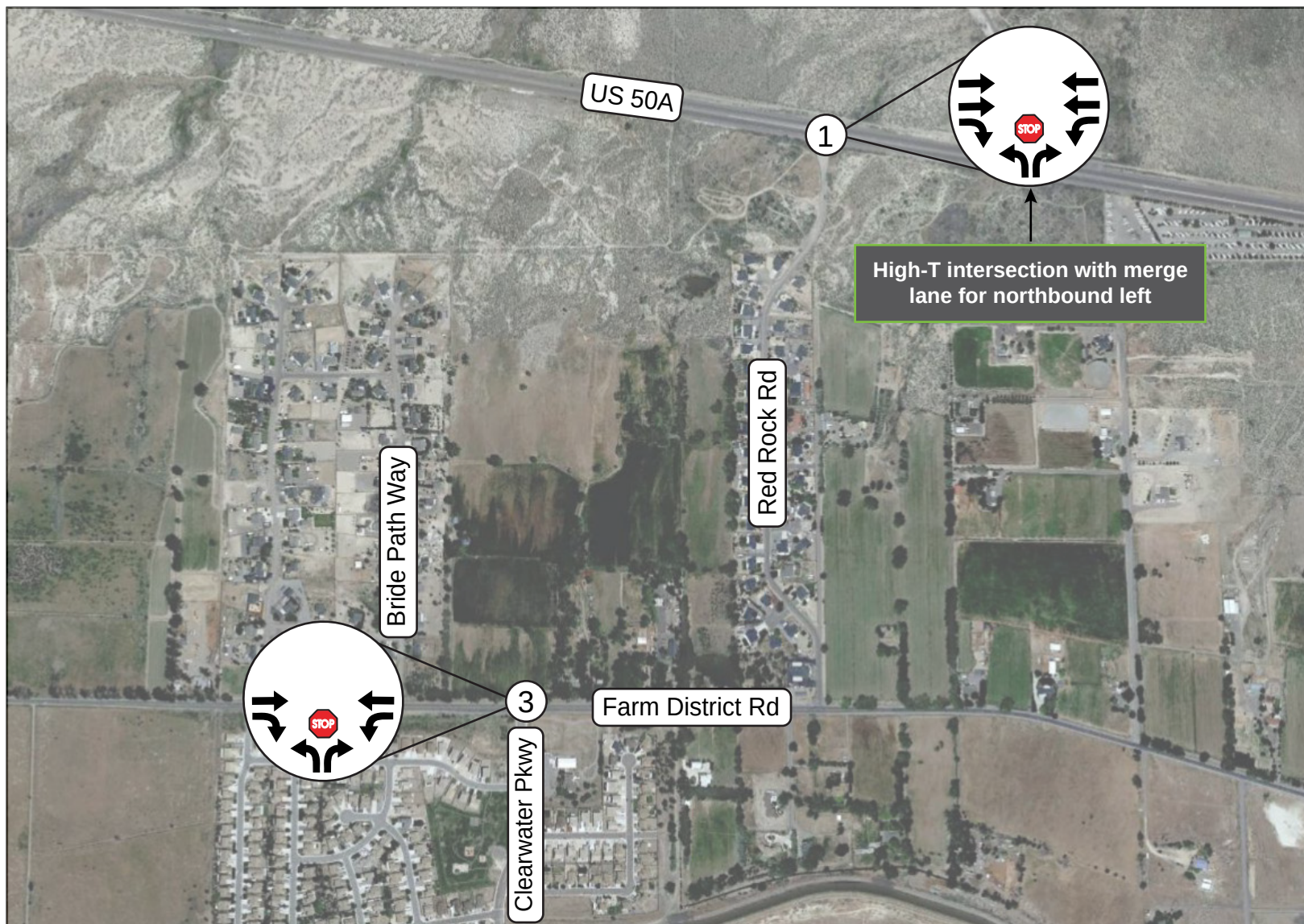
Source: Headway Transportation, 2023

As shown in **Table 6**, the study intersections and site accesses are expected to operate within the level of service policy with the controls and lane configurations shown in **Figure 7**. No additional turn lanes or improvements are needed based on the operation.

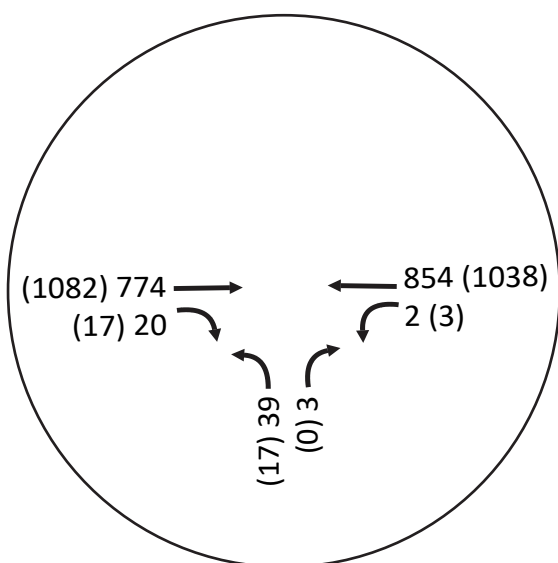
FUTURE YEAR CONDITIONS

The Future Year analysis estimates operating conditions for the 20-year horizon. The Future Year background traffic volumes were developed using a compounded annual growth rate of 3.3 percent per year for US 50A and 2 percent per year for all other movements. **Figure 8** shows the Future Year (No Project) traffic volumes at the study intersection.

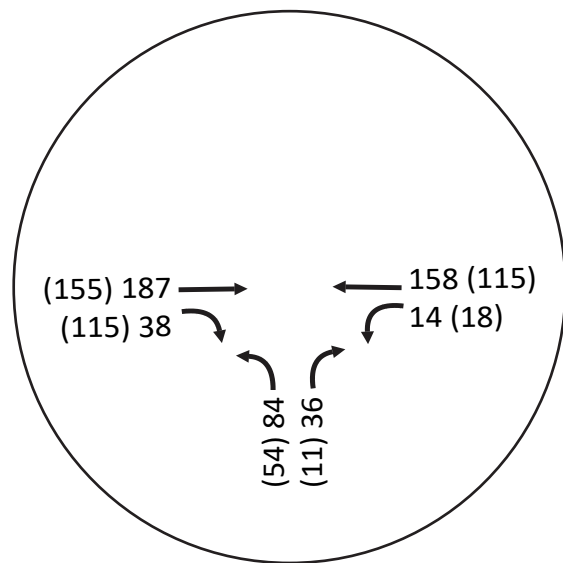




① US 50A /
Red Rock Rd



③ Clearwater Pkwy /
Farm District Rd



Planned Roadway Improvements

Other than the paving of Red Rock Road, there are no planned roadway improvements within the study area. Several roadway extensions and connectors are planned, but do not directly impact the study area. The City of Fernley's *Comprehensive Master Plan* references that a consistent 3-lane cross section with a TWLTL should be provided on Farm District Road (SR 828) as development occurs; the roadway has this cross section near the project site. The report also discusses potential trails and bicycle lanes on Farm District Road.

Intersection Level of Service

AM and PM peak hour intersection level of service analysis was performed for the study intersections using Synchro analysis software. **Table 7** shows the Future Year conditions level of service results, and the technical calculations are provided in **Appendix F**.

Table 7: Future Year Intersection Level of Service

Int. ID	Intersection	Control	AM		PM	
			Delay ¹	LOS	Delay ¹	LOS
1	US 50A / Red Rock Rd	High-T with Side Street Stop				
	Overall Intersection		0.8	A	0.4	A
	NB Left		16.7	C	22.9	C
	NB Right		11.1	B	0.0	A
	WB Left		9.6	A	11.4	B
	NB Left Merge with WB Through		-	A	-	A
3	Clearwater Pkwy / Farm District Rd	Side Street Stop				
	Overall Intersection		3.0	A	1.7	A
	NB Left		12.9	B	10.6	B
	NB Right		10.0	B	9.1	A
	WB Left		8.0	A	7.8	A

Notes: 1. Delay is reported in seconds per vehicle for the overall intersection for signalized intersections, and for the worst approach/movement for side street stop-controlled intersections. Delay is not reported for the NB to WB merge at US 50A / Red Rock Rd.

Source: Headway Transportation, 2023

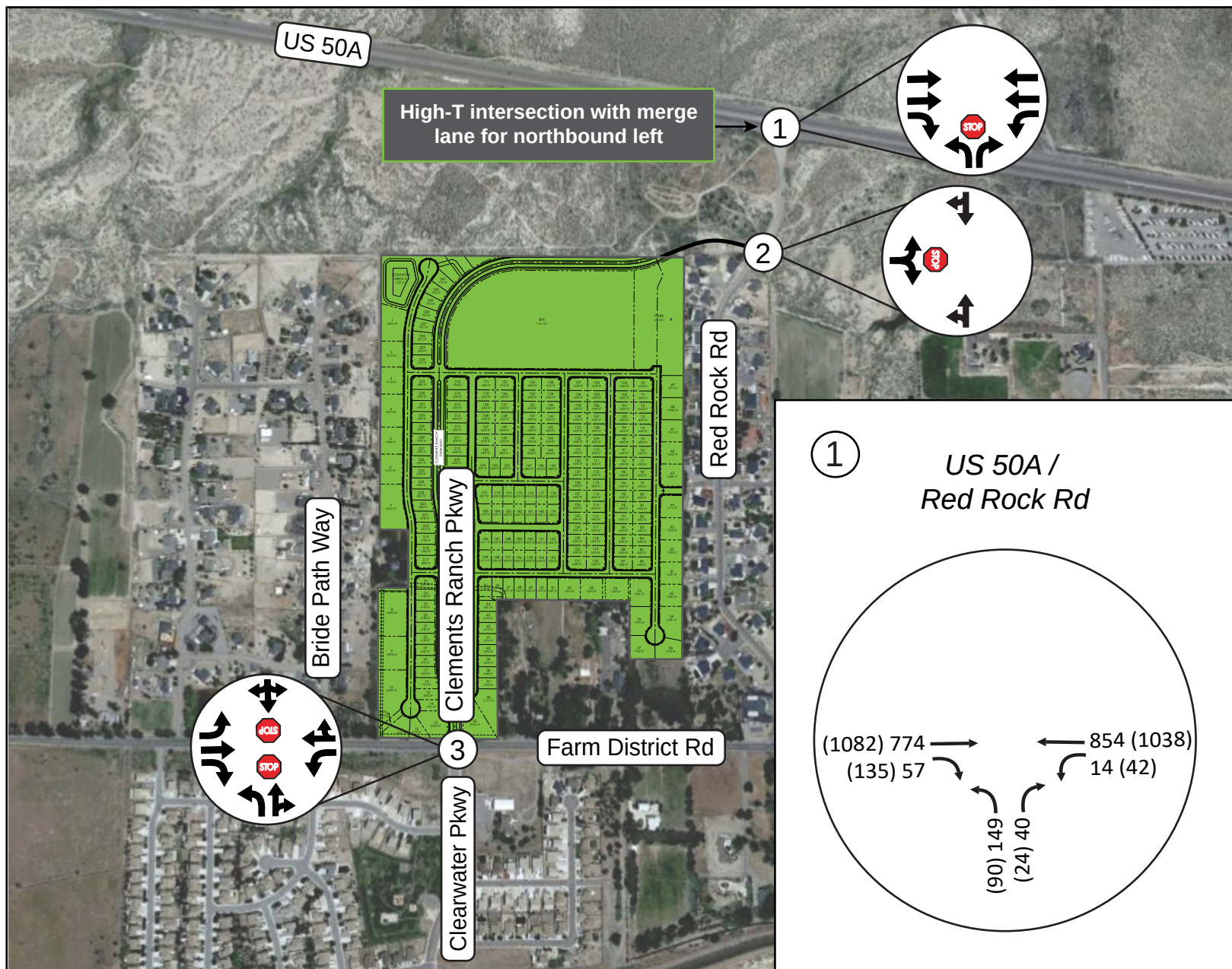
As shown in **Table 7**, the study intersections are expected to operate within the level of service policy.

FUTURE YEAR PLUS PROJECT CONDITIONS

Traffic Volumes

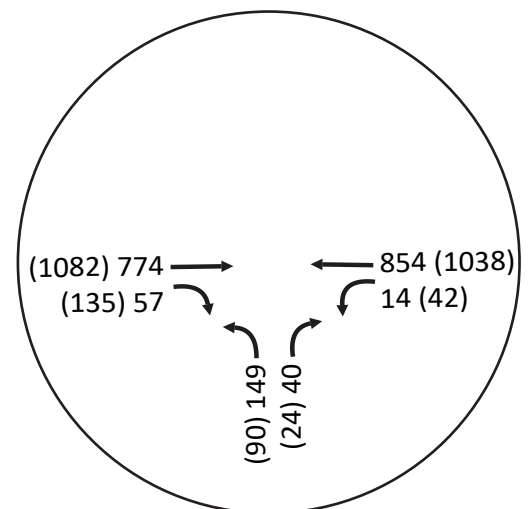
Project trips (**Figure 6**) were added to the Future Year traffic volumes (**Figure 8**) to develop the Future Year Plus Project conditions traffic volumes, shown on **Figure 9**.





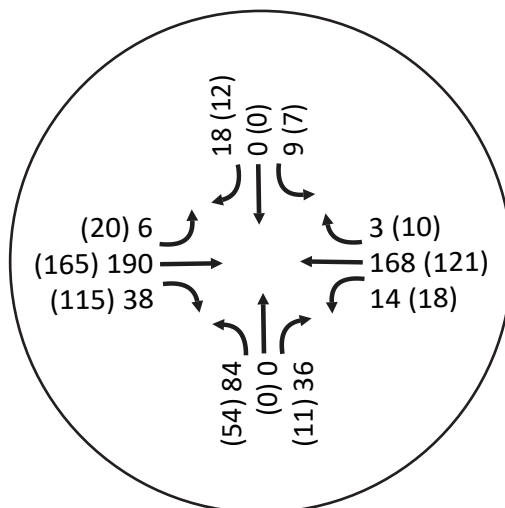
①

US 50A /
Red Rock Rd



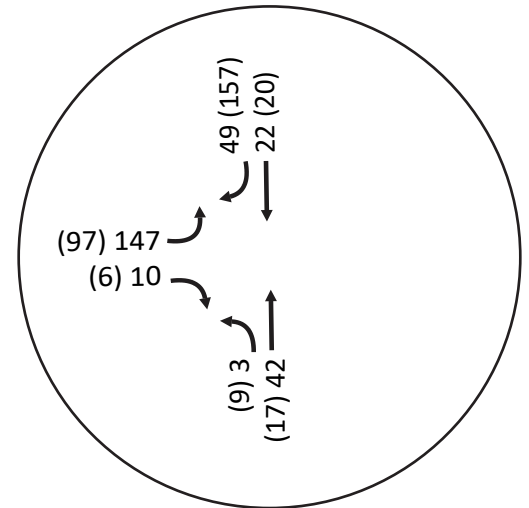
③

Clearwater Pkwy /
Clements Ranch Pkwy (Project Access) /
Farm District Rd



②

Clements Ranch Pkwy
(Project Access) /
Red Rock Rd



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 8** shows the level of service results, and the technical calculations are provided in **Appendix G**.

Table 8: Future Year Plus Project Intersection Level of Service

Int. ID	Intersection	Control	AM		PM	
			Delay ¹	LOS	Delay ¹	LOS
1	US 50A / Red Rock Rd	High-Tee with Side Street Stop				
	Overall Intersection		4.0	A	3.0	A
	NB Left		23.9	C	36.3	E
	NB Right		11.6	B	13.6	B
	WB Left		9.8	A	12.9	B
	NB Left Merge with WB Through		-	A	-	A
2	Clements Ranch Pkwy (Project Access) / Red Rock Rd	Side Street Stop				
	Overall Intersection		5.8	A	3.6	A
	EB Approach		9.9	A	9.9	A
	NB Left		7.4	A	7.6	A
3	Clearwater Pkwy / Clements Ranch Pkwy (Project Access) / Farm District Rd	Side Street Stop				
	Overall Intersection		4.0	A	2.4	A
	NB Left		17.3	C	12.4	B
	NB Right		10.1	B	9.2	A
	EB Left		7.7	A	7.5	A
	WB Left		8.0	A	7.9	A
	SB Approach		11.6	B	10.3	B

Notes: 1. Delay is reported in seconds per vehicle for the overall intersection for signalized intersections, and for the worst approach/movement for side street stop-controlled intersections. Delay is not reported for the NB to WB merge at US 50A / Red Rock Rd.

Source: Headway Transportation, 2023

As shown in **Table 8**, the study intersections and site accesses are expected to operate overall within the level of service policy. The northbound left-turn movement at the intersection of US 50A / Red Rock Road is expected to operate at a LOS E, however, this does not indicate an exceedance of LOS policy or warrant mitigations.

Project Access (via Farm District Road) Turn Lane Lengths

The NDOT AMSS standards provide minimum lengths for left-turn and right-turn deceleration lanes in Table 4-20. Deceleration lane lengths are determined based on the following:



$$\text{Minimum Length of Deceleration Lane} = \text{Deceleration Length} + \text{Queue Storage Length}$$

The deceleration length (including the taper length) for a 45 MPH speed limit is 350 feet.

Queue analysis (included in **Appendix G**) indicated no queues for the left-turn movement (zero storage). Therefore, an eastbound left-turn lane with at least 350 feet for deceleration should be striped into the existing TWLTL.

CONCLUSIONS & RECOMMENDATIONS

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

- ▶ The proposed project includes approximately 159 single-family attached and 241 single-family detached dwelling units and is anticipated to generate approximately 3,418 Daily, 245 AM peak hour, and 318 PM peak hour trips on the external roadway network.
- ▶ The study intersections currently operate at overall acceptable levels of service and are expected to continue to operate acceptably under Opening Year / Baseline Plus Project conditions and Future Year Plus Project conditions. The northbound left-turn movement at the intersection of US 50A / Red Rock Road is expected to operate at a LOS E, however, this does not indicate an exceedance of LOS policy or warrant mitigations.
- ▶ It is recommended that an eastbound left-turn lane be striped in place of the existing TWLTL on Farm District Road at Clements Ranch Parkway. Based on based on NDOT's *Access Management System and Standards*, the eastbound left-turn lane should be at least 350 feet long (300 feet of pocket, plus 50 feet opening, followed by the existing TWLTL).
- ▶ The project should extend Clements Ranch Parkway to Red Rock Road.



Appendix A

NDOT Crash Data



INTERSECTION DETAIL
 SR828E @ CLEAR WATER PKWY
 01 JAN 16 - 01 JAN 21

COUNTY: LYON

Crash Severity	Crash Date	Crash Year	Crash Time	Primary Street	Distance	Dir	Secondary Street	Weather	Fatalities	Injured	Property Damage Only
INJURY ACCIDENT	7-Dec-2018	2018	04:48 PM	SR828E		AT INT	CLEAR WATER PKWY	CLOUDY		1	
									Sum: 0	Sum: 1	Count: 0
									Count: 0	Count: 1	
									Total:	1	

Injury Type	Crash Type	Total Vehicles	V1 Type	V1 Dir	V1 Driver Age	V1 Lane Num	V1 Action	V1 Driver Factors
C	REAR-END	2	SEDAN, 4 DOOR	E	20	1	GOING STRAIGHT	APPARENTLY NORMAL

INTERSECTION DETAIL
US50E @ RED ROCK RD
01 JAN 16 - 01 JAN 21

COUNTY: CARSON CITY

Crash Severity	Crash Date	Crash Year	Crash Time	Primary Street	Distance	Dir	Secondary Street	Weather	Fatalities	Injured	Property Damage Only
PROPERTY DAMAGE ONLY	19-Oct-2016	2016	07:42 PM	US50E	200	E	RED ROCK RD	CLEAR			PDO
PROPERTY DAMAGE ONLY	25-Aug-2018	2018	09:13 PM	US50E	100	E	RED ROCK RD	CLEAR			PDO
INJURY ACCIDENT	4-May-2020	2020	03:30 PM	US50E	100	E	RED ROCK RD	CLEAR		2	
PROPERTY DAMAGE ONLY	11-Dec-2018	2018	06:34 PM	US50E	70	E	RED ROCK RD	CLEAR			PDO
PROPERTY DAMAGE ONLY	17-Mar-2020	2020	06:30 PM	US50E		AT INT	RED ROCK RD	CLOUDY			PDO
INJURY ACCIDENT	17-Feb-2020	2020	10:31 AM	US50E		AT INT	RED ROCK RD	CLEAR		1	
PROPERTY DAMAGE ONLY	4-Dec-2018	2018	04:45 PM	US50E	10	W	RED ROCK RD	FOG, SMOG, SMOKE			PDO
INJURY ACCIDENT	25-Aug-2018	2018	08:46 PM	US50E	15	W	RED ROCK RD	CLEAR		2	
INJURY ACCIDENT	19-Feb-2018	2018	02:27 PM	US50E	50	W	RED ROCK RD	CLEAR		2	
PROPERTY DAMAGE ONLY	29-Mar-2016	2016	06:15 AM	US50E	240	W	RED ROCK RD	CLOUDY			PDO
INJURY ACCIDENT	9-Feb-2018	2018	01:45 PM	RED ROCK RD		AT INT	US50E	CLEAR		1	
									Sum: 0	Sum: 8	Count: 6
									Count: 0	Count: 5	
									Total:	11	

Injury Type	Crash Type	Total Vehicles	V1 Type	V1 Dir	V1 Driver Age	V1 Lane Num	V1 Action	V1 Driver Factors
	REAR-END	2	UTILITY	E	42	1	GOING STRAIGHT	APPARENTLY NORMAL
	SIDESWIPE, OVE	2	STATION W	W	77	1	ENTERING LANE	APPARENTLY NORMAL
C	SIDESWIPE, OVE	2	STATION W	W	79	1	TURNING LEFT	APPARENTLY NORMAL
	NON-COLLISION	1	CARRY-AL	W	73	2	GOING STRAIGHT	APPARENTLY NORMAL
	ANGLE	2	SEDAN, 4 D	S	19	1	TURNING LEFT	APPARENTLY NORMAL
C	ANGLE	2	STATION W	S	18	1	TURNING LEFT	APPARENTLY NORMAL
	REAR-END	2	CARRY-AL	E	47	CL	GOING STRAIGHT	APPARENTLY NORMAL
C	ANGLE	2	SEDAN	E	56	CL	TURNING LEFT	INATTENTION/DISTRACTED
B	REAR-END	2	SEDAN	E	76		GOING STRAIGHT	OTHER IMPROPER DRIVING
	REAR-END	1	CARRY-AL	W	25	1	GOING STRAIGHT	APPARENTLY NORMAL
C	REAR-END	2	SEDAN, 4 D	S	29		TURNING RIGHT	APPARENTLY NORMAL

Appendix B

Traffic Count Data Sheets



Farm District Rd and Clearwater AM
Fernley NV
Thursday, October 14, 2021
AM Peak Hour

Time	Southbound						Westbound						Northbound						Eastbound						VEHICLE TOTAL
	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	<i>Vehicle Approach Total</i>	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	<i>Vehicle Approach Total</i>	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	<i>Vehicle Approach Total</i>	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	<i>Vehicle Approach Total</i>	
6:30 AM	0	0	0	0	0	0	0	2	16	0	0	18	0	9	0	4	0	13	0	0	28	9	0	37	68
6:45 AM	0	0	0	0	0	0	0	2	10	0	0	12	0	21	0	5	0	26	0	0	25	3	0	28	66
7:00 AM	0	0	0	0	0	0	0	1	17	0	0	18	0	15	0	7	0	22	0	0	42	8	0	50	90
7:15 AM	0	0	0	0	0	0	0	4	63	0	0	67	0	11	0	8	0	19	0	0	30	5	0	35	121
Peak Hour Total PHF	0	0	0	0	0	0	0	9	106	0	0	115	0	56	0	24	0	80	0	0	125	25	0	150	345
	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.563	0.421	0.000	0.000	0.429	0.000	0.667	0.000	0.750	0.000	0.769	0.000	0.000	0.744	0.694	0.000	0.750	0.713

PM Peak Hour

Time	Southbound						Westbound						Northbound						Eastbound						VEHICLE TOTAL
	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	<i>Vehicle Approach Total</i>	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	<i>Vehicle Approach Total</i>	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	<i>Vehicle Approach Total</i>	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	<i>Vehicle Approach Total</i>	
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour Total PHF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Total Vehicles On Leg			0		
Vehicles Entering Intersection 0			Vehicles Exiting Intersection 0		
Southbound					
Cars	0	0	0	0	0
Heavy	0	0	0	0	0
Total	0	0	0	0	0



Total Vehicles on Leg 523	Vehicles Entering Intersection 230	Eastbound	Cars	Heavy	Total
			0	0	0
			0	0	0
	Vehicles Exiting Intersection 293		0	0	0
			177	10	187
			41	2	43



Daily Volumes

Cars	Heavy	Total	Westbound	Vehicles Entering Intersection 197	Total Vehicles on Leg 428
0	0	0			
173	9	182			
14	1	15			
0	0	0		Vehicles Exiting Intersection 231	
0	0	0			



Cars	0	0	108	0	43
Heavy	0	0	3	0	1
Total	0	0	111	0	44
Northbound					
Vehicles Entering Intersection 155			Vehicles Exiting Intersection 58		
Total Vehicles On Leg			213		



**Farm District Rd and Clearwater PM
Fernley NV**

Thursday, October 14, 2021

AM Peak Hour

Time	Southbound						Westbound						Northbound						Eastbound						VEHICLE TOTAL
	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	Vehicle Approach Total	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	Vehicle Approach Total	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	Vehicle Approach Total	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	Vehicle Approach Total	
12:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour Total PHF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

PM Peak Hour

Time	Southbound						Westbound						Northbound						Eastbound						VEHICLE TOTAL
	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	Vehicle Approach Total	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	Vehicle Approach Total	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	Vehicle Approach Total	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	Vehicle Approach Total	
3:00 PM	0	0	0	0	0	0	0	3	19	0	0	22	0	8	0	3	0	11	0	0	29	18	0	47	80
3:15 PM	0	0	0	0	0	0	0	3	20	0	0	23	0	12	0	1	0	13	0	0	23	24	0	47	83
3:30 PM	0	0	0	0	0	0	0	3	19	0	0	22	0	7	0	1	0	8	0	0	29	13	0	42	72
3:45 PM	0	0	0	0	0	0	0	3	19	0	0	22	0	9	0	2	0	11	0	0	23	22	0	45	78
Peak Hour Total PHF	0	0	0	0	0	0	0	12	77	0	0	89	0	36	0	7	0	43	0	0	104	77	0	181	313
	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.000	0.963	0.000	0.000	0.967	0.000	0.750	0.000	0.583	0.000	0.827	0.000	0.000	0.897	0.802	0.000	0.963	0.943

Total Vehicles On Leg			0		
Vehicles Entering Intersection 0			Vehicles Exiting Intersection 0		
Southbound					
Cars	0	0	0	0	0
Heavy	0	0	0	0	0
Total	0	0	0	0	0

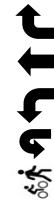


Total Vehicles on Leg 568	Vehicles Entering Intersection 330	Eastbound	Cars	Heavy	Total
			0	0	0
			0	0	0
	Vehicles Exiting Intersection 238		0	0	0
			182	1	183
			147	0	147



Daily Volumes

Cars	Heavy	Total	Westbound	Vehicles Entering Intersection 169	Total Vehicles on Leg 365
0	0	0			
144	1	145			
24	0	24			
0	0	0		Vehicles Exiting Intersection 196	
0	0	0			



Cars	0	0	93	0	13
Heavy	0	0	0	0	0
Total	0	0	93	0	13
Northbound					
Vehicles Entering Intersection 106			Vehicles Exiting Intersection 171		
Total Vehicles On Leg			277		



Hwy 50 and Red Rock Rd AM

Fernley NV

Thursday, October 14, 2021

AM Peak Hour

Time	Southbound						Westbound						Northbound						Eastbound						VEHICLE TOTAL
	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	<i>Vehicle Approach Total</i>	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	<i>Vehicle Approach Total</i>	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	<i>Vehicle Approach Total</i>	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	<i>Vehicle Approach Total</i>	
7:00 AM	0	0	0	0	0	0	0	0	112	0	0	112	0	5	0	0	0	5	0	0	83	2	0	85	202
7:15 AM	0	0	0	0	0	0	1	0	129	0	0	130	0	6	0	0	0	6	0	0	108	2	0	110	246
7:30 AM	0	0	0	0	0	0	0	0	108	0	0	108	0	6	0	1	0	7	0	0	116	6	0	122	237
7:45 AM	0	0	0	0	0	0	0	0	128	0	0	128	0	9	0	1	0	10	0	0	98	3	0	101	239
Peak Hour Total PHF	0	0	0	0	0	0	1	0	477	0	0	478	0	26	0	2	0	28	0	0	405	13	0	418	924
	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.924	0.000	0.000	0.919	0.000	0.722	0.000	0.500	0.000	0.700	0.000	0.000	0.873	0.542	0.000	0.857	0.939

PM Peak Hour

Time	Southbound						Westbound						Northbound						Eastbound						VEHICLE TOTAL
	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	<i>Vehicle Approach Total</i>	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	<i>Vehicle Approach Total</i>	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	<i>Vehicle Approach Total</i>	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	<i>Vehicle Approach Total</i>	
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour Total PHF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Total Vehicles On Leg			0		
Vehicles Entering Intersection 0			Vehicles Exiting Intersection 0		
Southbound					
Cars	0	0	0	0	0
Heavy	0	0	0	0	0
Total	0	0	0	0	0

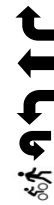


Total Vehicles on Leg 1695	Vehicles Entering Intersection 726	Eastbound	Cars	Heavy	Total
			0	0	0
			0	0	0
	Vehicles Exiting Intersection 969		624	79	703
			23	0	23



Daily Volumes

Cars	Heavy	Total	Westbound	Vehicles Entering Intersection 919	Total Vehicles on Leg 1626
0	0	0			
811	106	917			
1	0	1		Vehicles Exiting Intersection 707	
1	0	1			
0	0	0			



Cars	0	0	51	0	3
Heavy	0	0	1	0	0
Total	0	0	52	0	3
Northbound					
Vehicles Entering Intersection 55			Vehicles Exiting Intersection 24		
Total Vehicles On Leg			79		



Hwy 50 and Red Rock Rd PM

Fernley NV

Thursday, October 14, 2021

AM Peak Hour

Time	Southbound						Westbound						Northbound						Eastbound						VEHICLE TOTAL
	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	Vehicle Approach Total	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	Vehicle Approach Total	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	Vehicle Approach Total	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	Vehicle Approach Total	
12:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour Total PHF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

PM Peak Hour

Time	Southbound						Westbound						Northbound						Eastbound						VEHICLE TOTAL
	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	Vehicle Approach Total	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	Vehicle Approach Total	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	Vehicle Approach Total	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	Vehicle Approach Total	
4:30 PM	0	0	0	0	0	0	1	0	145	0	0	146	0	1	0	0	0	1	0	0	134	2	0	136	283
4:45 PM	0	0	0	0	0	0	0	0	142	0	0	142	0	1	0	0	0	1	0	0	126	1	0	127	270
5:00 PM	0	0	0	0	0	0	0	0	107	0	0	107	0	6	0	0	0	6	0	0	151	2	0	153	266
5:15 PM	0	0	0	0	0	0	0	1	149	0	0	150	0	3	0	0	0	3	0	0	155	6	0	161	314
Peak Hour Total PHF	0	0	0	0	0	0	1	1	543	0	0	545	0	11	0	0	0	11	0	0	566	11	0	577	1133
	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.250	0.911	0.000	0.000	0.908	0.000	0.458	0.000	0.000	0.000	0.458	0.000	0.000	0.913	0.458	0.000	0.896	0.902

Total Vehicles On Leg			0		
Vehicles Entering Intersection 0			Vehicles Exiting Intersection 0		
Southbound					
Cars	0	0	0	0	0
Heavy	0	0	0	0	0
Total	0	0	0	0	0

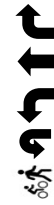


Total Vehicles on Leg 2193	Vehicles Entering Intersection 1145	Eastbound	Cars	Heavy	Total
			0	0	0
			0	0	0
	Vehicles Exiting Intersection 1048		0	0	0
			1058	50	1108
			37	0	37



Daily Volumes

Cars	Heavy	Total	Westbound	Vehicles Entering Intersection 1023	Total Vehicles on Leg 2133
0	0	0			
956	64	1020			
2	0	2			
1	0	1		Vehicles Exiting Intersection 1110	
0	0	0			



Cars	0	0	28	0	1
Heavy	0	0	0	0	0
Total	0	0	28	0	1
Northbound					
Vehicles Entering Intersection 29			Vehicles Exiting Intersection 39		
Total Vehicles On Leg			68		



Appendix C

Existing LOS Calculations



1: Red Rock Rd & US 50A

Intersection						
Int Delay, s/veh	0.7					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↑	↑↑	↑	↑
Traffic Vol, veh/h	405	13	1	0	26	2
Future Vol, veh/h	405	13	1	0	26	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	380	500	-	100	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	10	2	2	10	2	2
Mvmt Flow	431	14	1	0	28	2
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	445	0	433	216
Stage 1	-	-	-	-	431	-
Stage 2	-	-	-	-	2	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	1112	-	551	789
Stage 1	-	-	-	-	623	-
Stage 2	-	-	-	-	1020	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1112	-	550	789
Mov Cap-2 Maneuver	-	-	-	-	560	-
Stage 1	-	-	-	-	623	-
Stage 2	-	-	-	-	1019	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		8.2		11.6	
HCM LOS	B					
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	560	789	-	-	1112	-
HCM Lane V/C Ratio	0.049	0.003	-	-	0.001	-
HCM Control Delay (s)	11.8	9.6	-	-	8.2	-
HCM Lane LOS	B	A	-	-	A	-
HCM 95th %tile Q(veh)	0.2	0	-	-	0	-

HCS Freeway Merge Report

Project Information

Analyst		Date	4/4/2023
Agency		Analysis Year	2023
Jurisdiction		Time Analyzed	AM Existing
Project Description	US 50A/ Red Rock AM Ex	Units	U.S. Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	65.0	20.0
Segment Length (L) / Acceleration Length (LA), ft	1500	1500
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Highway/CD Roadway	Left-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Proportion of CAVs in Traffic Stream	0	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000
Capacity Adjustment Factor for CAVs, CAFCAV	1.000	-
Final Capacity Adjustment Factor (CAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi), veh/h	447	26
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	0.00	0.00
Heavy Vehicle Adjustment Factor (fHV)	1.000	1.000
Flow Rate (vi), pc/h	476	28
Capacity (cmd), pc/h	4400	1900
Adjusted Capacity (cmda), pc/h	4400	1900
Volume-to-Capacity Ratio (v/c)	0.11	0.01

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (VOA), pc/h/ln	-
Downstream Equilibrium Distance (LEQ), ft	-	On-Ramp Influence Area Speed (SR), mi/h	58.9
Flow in Lanes 1 and 2 (v12), pc/h	476	Outer Lanes Freeway Speed (SO), mi/h	65.0
Flow Entering Ramp-Infl. Area (vR12), pc/h	504	Ramp Junction Speed (S), mi/h	58.9
Number of Outer Lanes on Freeway (NO), ln	0	Average Density (D), pc/mi/ln	4.3
Level of Service (LOS)	A	Density in Ramp Influence Area (DR), pc/mi/ln	0.1

3: Clearwater Pkwy & Farm District Rd

Intersection						
Int Delay, s/veh	2.7					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↘	↑	↘	↗
Traffic Vol, veh/h	125	25	9	106	56	24
Future Vol, veh/h	125	25	9	106	56	24
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	300	200	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	71	71	71	71	71	71
Heavy Vehicles, %	6	6	6	6	6	6
Mvmt Flow	176	35	13	149	79	34
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	211	0	351	176
Stage 1	-	-	-	-	176	-
Stage 2	-	-	-	-	175	-
Critical Hdwy	-	-	4.16	-	6.46	6.26
Critical Hdwy Stg 1	-	-	-	-	5.46	-
Critical Hdwy Stg 2	-	-	-	-	5.46	-
Follow-up Hdwy	-	-	2.254	-	3.554	3.354
Pot Cap-1 Maneuver	-	-	1336	-	638	857
Stage 1	-	-	-	-	845	-
Stage 2	-	-	-	-	846	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1336	-	632	857
Mov Cap-2 Maneuver	-	-	-	-	672	-
Stage 1	-	-	-	-	845	-
Stage 2	-	-	-	-	838	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		0.6		10.6	
HCM LOS	B					
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	672	857	-	-	1336	-
HCM Lane V/C Ratio	0.117	0.039	-	-	0.009	-
HCM Control Delay (s)	11.1	9.4	-	-	7.7	-
HCM Lane LOS	B	A	-	-	A	-
HCM 95th %tile Q(veh)	0.4	0.1	-	-	0	-

1: Red Rock Rd & US 50A

Intersection						
Int Delay, s/veh	0.3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↑	↑↑	↑	↑
Traffic Vol, veh/h	566	11	2	0	11	0
Future Vol, veh/h	566	11	2	0	11	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	380	500	-	100	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	6	2	2	6	2	2
Mvmt Flow	629	12	2	0	12	0
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	641	0	633	315
Stage 1	-	-	-	-	629	-
Stage 2	-	-	-	-	4	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	939	-	412	681
Stage 1	-	-	-	-	494	-
Stage 2	-	-	-	-	1018	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	939	-	411	681
Mov Cap-2 Maneuver	-	-	-	-	442	-
Stage 1	-	-	-	-	494	-
Stage 2	-	-	-	-	1016	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		8.8		13.4	
HCM LOS					B	
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	442	-	-	-	939	-
HCM Lane V/C Ratio	0.028	-	-	-	0.002	-
HCM Control Delay (s)	13.4	0	-	-	8.8	-
HCM Lane LOS	B	A	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	-	0	-

2. Existing Conditions PM

HCS Freeway Merge Report

Project Information

Analyst		Date	4/4/2023
Agency		Analysis Year	2023
Jurisdiction		Time Analyzed	PM Existing
Project Description	US 50A/ Red Rock PM Ex	Units	U.S. Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	65.0	20.0
Segment Length (L) / Acceleration Length (LA), ft	1500	1500
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Highway/CD Roadway	Left-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Proportion of CAVs in Traffic Stream	0	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000
Capacity Adjustment Factor for CAVs, CAFCAV	1.000	-
Final Capacity Adjustment Factor (CAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi), veh/h	543	11
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	0.00	0.00
Heavy Vehicle Adjustment Factor (fHV)	1.000	1.000
Flow Rate (vi), pc/h	578	12
Capacity (cmd), pc/h	4400	1900
Adjusted Capacity (cmda), pc/h	4400	1900
Volume-to-Capacity Ratio (v/c)	0.13	0.01

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (VOA), pc/h/ln	-
Downstream Equilibrium Distance (LEQ), ft	-	On-Ramp Influence Area Speed (SR), mi/h	58.8
Flow in Lanes 1 and 2 (v12), pc/h	578	Outer Lanes Freeway Speed (SO), mi/h	65.0
Flow Entering Ramp-Infl. Area (vR12), pc/h	590	Ramp Junction Speed (S), mi/h	58.8
Number of Outer Lanes on Freeway (NO), ln	0	Average Density (D), pc/mi/ln	5.0
Level of Service (LOS)	A	Density in Ramp Influence Area (DR), pc/mi/ln	0.7

3: Clearwater Pkwy & Farm District Rd

Intersection						
Int Delay, s/veh	1.6					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↖	↑	↖	↗
Traffic Vol, veh/h	104	77	12	77	36	7
Future Vol, veh/h	104	77	12	77	36	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	300	200	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	1	0	0	1	0	0
Mvmt Flow	111	82	13	82	38	7
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	193	0	219	111
Stage 1	-	-	-	-	111	-
Stage 2	-	-	-	-	108	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1392	-	774	948
Stage 1	-	-	-	-	919	-
Stage 2	-	-	-	-	921	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1392	-	767	948
Mov Cap-2 Maneuver	-	-	-	-	768	-
Stage 1	-	-	-	-	919	-
Stage 2	-	-	-	-	913	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		1		9.7	
HCM LOS					A	
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	768	948	-	-	1392	-
HCM Lane V/C Ratio	0.05	0.008	-	-	0.009	-
HCM Control Delay (s)	9.9	8.8	-	-	7.6	-
HCM Lane LOS	A	A	-	-	A	-
HCM 95th %tile Q(veh)	0.2	0	-	-	0	-

2. Existing Conditions PM

Appendix D

Baseline Conditions LOS Calculations



1: Red Rock Rd & US 50A

Intersection						
Int Delay, s/veh	0.8					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↑	↑↑	↑	↑
Traffic Vol, veh/h	474	15	2	0	29	3
Future Vol, veh/h	474	15	2	0	29	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	380	500	-	100	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	10	2	2	10	2	2
Mvmt Flow	504	16	2	0	31	3
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	520	0	508	252
Stage 1	-	-	-	-	504	-
Stage 2	-	-	-	-	4	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	1042	-	494	748
Stage 1	-	-	-	-	572	-
Stage 2	-	-	-	-	1018	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1042	-	493	748
Mov Cap-2 Maneuver	-	-	-	-	513	-
Stage 1	-	-	-	-	572	-
Stage 2	-	-	-	-	1016	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		8.5		12.2	
HCM LOS	B					
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	513	748	-	-	1042	-
HCM Lane V/C Ratio	0.06	0.004	-	-	0.002	-
HCM Control Delay (s)	12.5	9.8	-	-	8.5	-
HCM Lane LOS	B	A	-	-	A	-
HCM 95th %tile Q(veh)	0.2	0	-	-	0	-

3. Baseline (Opening Year) Conditions AM

HCS Freeway Merge Report

Project Information

Analyst		Date	4/4/2023
Agency		Analysis Year	2023
Jurisdiction		Time Analyzed	AM Base
Project Description	US 50A/ Red Rock AM Base	Units	U.S. Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	65.0	20.0
Segment Length (L) / Acceleration Length (LA), ft	1500	1500
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Highway/CD Roadway	Left-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Proportion of CAVs in Traffic Stream	0	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000
Capacity Adjustment Factor for CAVs, CAFCAV	1.000	-
Final Capacity Adjustment Factor (CAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi), veh/h	523	29
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	0.00	0.00
Heavy Vehicle Adjustment Factor (fHV)	1.000	1.000
Flow Rate (vi), pc/h	556	31
Capacity (cmd), pc/h	4400	1900
Adjusted Capacity (cmda), pc/h	4400	1900
Volume-to-Capacity Ratio (v/c)	0.13	0.02

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (VOA), pc/h/ln	-
Downstream Equilibrium Distance (LEQ), ft	-	On-Ramp Influence Area Speed (SR), mi/h	58.8
Flow in Lanes 1 and 2 (v12), pc/h	556	Outer Lanes Freeway Speed (SO), mi/h	65.0
Flow Entering Ramp-Infl. Area (vR12), pc/h	587	Ramp Junction Speed (S), mi/h	58.8
Number of Outer Lanes on Freeway (NO), ln	0	Average Density (D), pc/mi/ln	5.0
Level of Service (LOS)	A	Density in Ramp Influence Area (DR), pc/mi/ln	0.7

3: Clearwater Pkwy & Farm District Rd

Intersection						
Int Delay, s/veh	2.7					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↘	↑	↘	↗
Traffic Vol, veh/h	138	28	10	117	62	27
Future Vol, veh/h	138	28	10	117	62	27
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	300	200	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	71	71	71	71	71	71
Heavy Vehicles, %	6	6	6	6	6	6
Mvmt Flow	194	39	14	165	87	38
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	233	0	387	194
Stage 1	-	-	-	-	194	-
Stage 2	-	-	-	-	193	-
Critical Hdwy	-	-	4.16	-	6.46	6.26
Critical Hdwy Stg 1	-	-	-	-	5.46	-
Critical Hdwy Stg 2	-	-	-	-	5.46	-
Follow-up Hdwy	-	-	2.254	-	3.554	3.354
Pot Cap-1 Maneuver	-	-	1311	-	609	837
Stage 1	-	-	-	-	829	-
Stage 2	-	-	-	-	830	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1311	-	602	837
Mov Cap-2 Maneuver	-	-	-	-	651	-
Stage 1	-	-	-	-	829	-
Stage 2	-	-	-	-	821	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		0.6		10.8	
HCM LOS	B					
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	651	837	-	-	1311	-
HCM Lane V/C Ratio	0.134	0.045	-	-	0.011	-
HCM Control Delay (s)	11.4	9.5	-	-	7.8	-
HCM Lane LOS	B	A	-	-	A	-
HCM 95th %tile Q(veh)	0.5	0.1	-	-	0	-

Note: Due to the unique nature of the High-Tee configuration, the analysis is conducted in 2 parts. The northbound left turn merge with the westbound through is analyzed using HCS software.

1: Red Rock Rd & US 50A

Intersection						
Int Delay, s/veh	0.3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↑	↑↑	↑	↑
Traffic Vol, veh/h	663	13	3	0	13	0
Future Vol, veh/h	663	13	3	0	13	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	380	500	-	100	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	6	2	2	6	2	2
Mvmt Flow	737	14	3	0	14	0
Major/Minor	Major1	Major2	Minor1			
Conflicting Flow All	0	0	751	0	743	369
Stage 1	-	-	-	-	737	-
Stage 2	-	-	-	-	6	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	854	-	351	628
Stage 1	-	-	-	-	434	-
Stage 2	-	-	-	-	1016	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	854	-	350	628
Mov Cap-2 Maneuver	-	-	-	-	388	-
Stage 1	-	-	-	-	434	-
Stage 2	-	-	-	-	1012	-
Approach	EB	WB	NB			
HCM Control Delay, s	0	9.2	14.6			
HCM LOS	B					
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	388	-	-	-	854	-
HCM Lane V/C Ratio	0.037	-	-	-	0.004	-
HCM Control Delay (s)	14.6	0	-	-	9.2	-
HCM Lane LOS	B	A	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	-	0	-

4. Baseline (Opening Year) Conditions PM

HCS Freeway Merge Report

Project Information

Analyst		Date	4/4/2023
Agency		Analysis Year	2023
Jurisdiction		Time Analyzed	PM Base
Project Description	US 50A/ Red Rock PM Base	Units	U.S. Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	65.0	20.0
Segment Length (L) / Acceleration Length (LA), ft	1500	1500
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Highway/CD Roadway	Left-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Proportion of CAVs in Traffic Stream	0	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000
Capacity Adjustment Factor for CAVs, CAFCAV	1.000	-
Final Capacity Adjustment Factor (CAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi), veh/h	636	13
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	0.00	0.00
Heavy Vehicle Adjustment Factor (fHV)	1.000	1.000
Flow Rate (vi), pc/h	677	14
Capacity (cmd), pc/h	4400	1900
Adjusted Capacity (cmda), pc/h	4400	1900
Volume-to-Capacity Ratio (v/c)	0.16	0.01

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (VOA), pc/h/ln	-
Downstream Equilibrium Distance (LEQ), ft	-	On-Ramp Influence Area Speed (SR), mi/h	58.8
Flow in Lanes 1 and 2 (v12), pc/h	677	Outer Lanes Freeway Speed (SO), mi/h	65.0
Flow Entering Ramp-Infl. Area (vR12), pc/h	691	Ramp Junction Speed (S), mi/h	58.8
Number of Outer Lanes on Freeway (NO), ln	0	Average Density (D), pc/mi/ln	5.9
Level of Service (LOS)	A	Density in Ramp Influence Area (DR), pc/mi/ln	1.5

3: Clearwater Pkwy & Farm District Rd

Intersection						
Int Delay, s/veh	1.7					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↘	↑	↘	↗
Traffic Vol, veh/h	115	85	14	85	40	8
Future Vol, veh/h	115	85	14	85	40	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	300	200	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	1	0	0	1	0	0
Mvmt Flow	122	90	15	90	43	9
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	212	0	242	122
Stage 1	-	-	-	-	122	-
Stage 2	-	-	-	-	120	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1370	-	751	935
Stage 1	-	-	-	-	908	-
Stage 2	-	-	-	-	910	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1370	-	743	935
Mov Cap-2 Maneuver	-	-	-	-	752	-
Stage 1	-	-	-	-	908	-
Stage 2	-	-	-	-	900	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		1.1		9.9	
HCM LOS					A	
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	752	935	-	-	1370	-
HCM Lane V/C Ratio	0.057	0.009	-	-	0.011	-
HCM Control Delay (s)	10.1	8.9	-	-	7.7	-
HCM Lane LOS	B	A	-	-	A	-
HCM 95th %tile Q(veh)	0.2	0	-	-	0	-

4. Baseline (Opening Year) Conditions PM

Appendix E

Baseline Plus Project Conditions LOS Calculations



Note: Due to the unique nature of the High-Tee configuration, the analysis is conducted in 2 parts. The northbound left turn merge with the westbound through is analyzed using HCS software.

1: Red Rock Rd & US 50A

Intersection						
Int Delay, s/veh	3.6					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↗	↖	↑↑	↖	↗
Traffic Vol, veh/h	474	52	14	0	139	40
Future Vol, veh/h	474	52	14	0	139	40
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	380	500	-	100	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	10	2	2	10	2	2
Mvmt Flow	504	55	15	0	148	43
Major/Minor	Major1	Major2		Minor1		
Conflicting Flow All	0	0	559	0	534	252
Stage 1	-	-	-	-	504	-
Stage 2	-	-	-	-	30	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	1008	-	476	748
Stage 1	-	-	-	-	572	-
Stage 2	-	-	-	-	989	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1008	-	469	748
Mov Cap-2 Maneuver	-	-	-	-	506	-
Stage 1	-	-	-	-	572	-
Stage 2	-	-	-	-	974	-
Approach	EB	WB		NB		
HCM Control Delay, s	0	8.6		13.9		
HCM LOS	B					
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	506	748	-	-	1008	-
HCM Lane V/C Ratio	0.292	0.057	-	-	0.015	-
HCM Control Delay (s)	15	10.1	-	-	8.6	-
HCM Lane LOS	C	B	-	-	A	-
HCM 95th %tile Q(veh)	1.2	0.2	-	-	0	-

HCS Freeway Merge Report

Project Information

Analyst		Date	4/4/2023
Agency		Analysis Year	2023
Jurisdiction		Time Analyzed	AM Base PP
Project Description	US 50A/ Red Rock AM Base PP	Units	U.S. Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	65.0	20.0
Segment Length (L) / Acceleration Length (LA), ft	1500	1500
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Highway/CD Roadway	Left-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Proportion of CAVs in Traffic Stream	0	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000
Capacity Adjustment Factor for CAVs, CAFCAV	1.000	-
Final Capacity Adjustment Factor (CAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi), veh/h	523	139
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	0.00	0.00
Heavy Vehicle Adjustment Factor (fHV)	1.000	1.000
Flow Rate (vi), pc/h	556	148
Capacity (cmd), pc/h	4400	1900
Adjusted Capacity (cmda), pc/h	4400	1900
Volume-to-Capacity Ratio (v/c)	0.16	0.08

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (VOA), pc/h/ln	-
Downstream Equilibrium Distance (LEQ), ft	-	On-Ramp Influence Area Speed (SR), mi/h	58.8
Flow in Lanes 1 and 2 (v12), pc/h	556	Outer Lanes Freeway Speed (SO), mi/h	65.0
Flow Entering Ramp-Infl. Area (vR12), pc/h	704	Ramp Junction Speed (S), mi/h	58.8
Number of Outer Lanes on Freeway (NO), ln	0	Average Density (D), pc/mi/ln	6.0
Level of Service (LOS)	A	Density in Ramp Influence Area (DR), pc/mi/ln	1.6

2: Red Rock Rd & Clements Ranch Pkwy

Intersection						
Int Delay, s/veh	6					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	147	10	3	32	17	49
Future Vol, veh/h	147	10	3	32	17	49
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	160	11	3	35	18	53
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	86	45	71	0	-	0
Stage 1	45	-	-	-	-	-
Stage 2	41	-	-	-	-	-
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	915	1025	1529	-	-	-
Stage 1	977	-	-	-	-	-
Stage 2	981	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	913	1025	1529	-	-	-
Mov Cap-2 Maneuver	913	-	-	-	-	-
Stage 1	975	-	-	-	-	-
Stage 2	981	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	9.8	0.6		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1529	-	919	-	-	
HCM Lane V/C Ratio	0.002	-	0.186	-	-	
HCM Control Delay (s)	7.4	0	9.8	-	-	
HCM Lane LOS	A	A	A	-	-	
HCM 95th %tile Q(veh)	0	-	0.7	-	-	

1. Baseline (Opening Year) Plus Project Conditions AM

3: Clearwater Pkwy/Clements Ranch Pkwy & Farm District Rd

Intersection												
Int Delay, s/veh	3.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	6	141	28	10	127	3	62	0	27	9	0	18
Future Vol, veh/h	6	141	28	10	127	3	62	0	27	9	0	18
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	350	-	300	200	-	-	0	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	71	71	71	71	92	71	92	71	92	92	92
Heavy Vehicles, %	2	6	6	6	6	2	6	2	6	2	2	2
Mvmt Flow	7	199	39	14	179	3	87	0	38	10	0	20

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	182	0	0	238	0	0	432	423	199	461	461	181
Stage 1	-	-	-	-	-	-	213	213	-	209	209	-
Stage 2	-	-	-	-	-	-	219	210	-	252	252	-
Critical Hdwy	4.12	-	-	4.16	-	-	7.16	6.52	6.26	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.16	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.16	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.254	-	-	3.554	4.018	3.354	3.518	4.018	3.318
Pot Cap-1 Maneuver	1393	-	-	1306	-	-	527	522	832	511	497	862
Stage 1	-	-	-	-	-	-	780	726	-	793	729	-
Stage 2	-	-	-	-	-	-	774	728	-	752	698	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1393	-	-	1306	-	-	509	514	832	482	489	862
Mov Cap-2 Maneuver	-	-	-	-	-	-	509	514	-	482	489	-
Stage 1	-	-	-	-	-	-	776	722	-	789	721	-
Stage 2	-	-	-	-	-	-	748	720	-	714	695	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.2	-	-	0.6	-	-	12.3	-	-	10.5	-	-
HCM LOS	-	-	-	-	-	-	B	-	-	B	-	-

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	509	832	1393	-	-	1306	-	-	683
HCM Lane V/C Ratio	0.172	0.046	0.005	-	-	0.011	-	-	0.043
HCM Control Delay (s)	13.5	9.5	7.6	-	-	7.8	-	-	10.5
HCM Lane LOS	B	A	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.6	0.1	0	-	-	0	-	-	0.1

1. Baseline (Opening Year) Plus Project Conditions AM

Note: Due to the unique nature of the High-Tee configuration, the analysis is conducted in 2 parts. The northbound left turn merge with the westbound through is analyzed using HCS software.

1: Red Rock Rd & US 50A

Intersection						
Int Delay, s/veh	2.4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↑	↑↑	↑	↑
Traffic Vol, veh/h	663	131	42	0	86	24
Future Vol, veh/h	663	131	42	0	86	24
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	380	500	-	100	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	6	2	2	6	2	2
Mvmt Flow	737	146	47	0	96	27
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	883	0	831	369
Stage 1	-	-	-	-	737	-
Stage 2	-	-	-	-	94	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	762	-	308	628
Stage 1	-	-	-	-	434	-
Stage 2	-	-	-	-	919	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	762	-	289	628
Mov Cap-2 Maneuver	-	-	-	-	369	-
Stage 1	-	-	-	-	434	-
Stage 2	-	-	-	-	862	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		10		16.6	
HCM LOS					C	
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	369	628	-	-	762	-
HCM Lane V/C Ratio	0.259	0.042	-	-	0.061	-
HCM Control Delay (s)	18.1	11	-	-	10	-
HCM Lane LOS	C	B	-	-	B	-
HCM 95th %tile Q(veh)	1	0.1	-	-	0.2	-

2. Baseline (Opening Year) Plus Project Conditions PM

HCS Freeway Merge Report

Project Information

Analyst		Date	4/4/2023
Agency		Analysis Year	2023
Jurisdiction		Time Analyzed	PM Base PP
Project Description	US 50A/ Red Rock PM Base PP	Units	U.S. Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	65.0	20.0
Segment Length (L) / Acceleration Length (LA), ft	1500	1500
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Highway/CD Roadway	Left-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Proportion of CAVs in Traffic Stream	0	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000
Capacity Adjustment Factor for CAVs, CAFCAV	1.000	-
Final Capacity Adjustment Factor (CAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi), veh/h	636	86
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	0.00	0.00
Heavy Vehicle Adjustment Factor (fHV)	1.000	1.000
Flow Rate (vi), pc/h	677	91
Capacity (cmd), pc/h	4400	1900
Adjusted Capacity (cmda), pc/h	4400	1900
Volume-to-Capacity Ratio (v/c)	0.17	0.05

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (VOA), pc/h/ln	-
Downstream Equilibrium Distance (LEQ), ft	-	On-Ramp Influence Area Speed (SR), mi/h	58.8
Flow in Lanes 1 and 2 (v12), pc/h	677	Outer Lanes Freeway Speed (SO), mi/h	65.0
Flow Entering Ramp-Infl. Area (vR12), pc/h	768	Ramp Junction Speed (S), mi/h	58.8
Number of Outer Lanes on Freeway (NO), ln	0	Average Density (D), pc/mi/ln	6.5
Level of Service (LOS)	A	Density in Ramp Influence Area (DR), pc/mi/ln	2.1

2: Red Rock Rd & Clements Ranch Pkwy

Intersection						
Int Delay, s/veh	3.6					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	97	6	9	13	16	157
Future Vol, veh/h	97	6	9	13	16	157
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	105	7	10	14	17	171
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	137	103	188	0	-	0
Stage 1	103	-	-	-	-	-
Stage 2	34	-	-	-	-	-
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	856	952	1386	-	-	-
Stage 1	921	-	-	-	-	-
Stage 2	988	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	850	952	1386	-	-	-
Mov Cap-2 Maneuver	850	-	-	-	-	-
Stage 1	915	-	-	-	-	-
Stage 2	988	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	9.8	3.1		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1386	-	855	-	-	
HCM Lane V/C Ratio	0.007	-	0.131	-	-	
HCM Control Delay (s)	7.6	0	9.8	-	-	
HCM Lane LOS	A	A	A	-	-	
HCM 95th %tile Q(veh)	0	-	0.5	-	-	

2. Baseline (Opening Year) Plus Project Conditions PM

3: Clearwater Pkwy/Clements Ranch Pkwy & Farm District Rd

Intersection												
Int Delay, s/veh	2.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	20	124	85	14	91	10	40	0	8	7	0	12
Future Vol, veh/h	20	124	85	14	91	10	40	0	8	7	0	12
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	350	-	300	200	-	-	0	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	94	94	94	94	92	94	92	94	92	92	92
Heavy Vehicles, %	2	1	0	0	1	2	0	2	0	2	2	2
Mvmt Flow	22	132	90	15	97	11	43	0	9	8	0	13

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	108	0	0	222	0	0	315	314	132	359	399	103
Stage 1	-	-	-	-	-	-	176	176	-	133	133	-
Stage 2	-	-	-	-	-	-	139	138	-	226	266	-
Critical Hdwy	4.12	-	-	4.1	-	-	7.1	6.52	6.2	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.2	-	-	3.5	4.018	3.3	3.518	4.018	3.318
Pot Cap-1 Maneuver	1483	-	-	1359	-	-	642	601	923	596	539	952
Stage 1	-	-	-	-	-	-	831	753	-	870	786	-
Stage 2	-	-	-	-	-	-	869	782	-	777	689	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1483	-	-	1359	-	-	621	585	923	579	525	952
Mov Cap-2 Maneuver	-	-	-	-	-	-	621	585	-	579	525	-
Stage 1	-	-	-	-	-	-	819	742	-	857	777	-
Stage 2	-	-	-	-	-	-	848	773	-	758	679	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.7			0.9			10.8			9.8		
HCM LOS							B			A		

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	621	923	1483	-	-	1359	-	-	769
HCM Lane V/C Ratio	0.069	0.009	0.015	-	-	0.011	-	-	0.027
HCM Control Delay (s)	11.2	8.9	7.5	-	-	7.7	-	-	9.8
HCM Lane LOS	B	A	A	-	-	A	-	-	A
HCM 95th %tile Q(veh)	0.2	0	0	-	-	0	-	-	0.1

2. Baseline (Opening Year) Plus Project Conditions PM

Appendix F

Future Year LOS Calculations



1: Red Rock Rd & US 50A

Intersection						
Int Delay, s/veh	0.8					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↑	↑↑	↑	↑
Traffic Vol, veh/h	774	20	2	0	39	3
Future Vol, veh/h	774	20	2	0	39	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	380	500	-	100	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	10	2	2	10	2	2
Mvmt Flow	823	21	2	0	41	3
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	844	0	827	412
Stage 1	-	-	-	-	823	-
Stage 2	-	-	-	-	4	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	788	-	310	589
Stage 1	-	-	-	-	392	-
Stage 2	-	-	-	-	1018	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	788	-	309	589
Mov Cap-2 Maneuver	-	-	-	-	350	-
Stage 1	-	-	-	-	392	-
Stage 2	-	-	-	-	1015	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		9.6		16.3	
HCM LOS					C	
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	350	589	-	-	788	-
HCM Lane V/C Ratio	0.119	0.005	-	-	0.003	-
HCM Control Delay (s)	16.7	11.1	-	-	9.6	-
HCM Lane LOS	C	B	-	-	A	-
HCM 95th %tile Q(veh)	0.4	0	-	-	0	-

5. Future Year Conditions AM

HCS Freeway Merge Report

Project Information

Analyst		Date	4/4/2023
Agency		Analysis Year	2023
Jurisdiction		Time Analyzed	AM Future
Project Description	US 50A/ Red Rock AM Future	Units	U.S. Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	65.0	20.0
Segment Length (L) / Acceleration Length (LA), ft	1500	1500
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Highway/CD Roadway	Left-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Proportion of CAVs in Traffic Stream	0	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000
Capacity Adjustment Factor for CAVs, CAFCAV	1.000	-
Final Capacity Adjustment Factor (CAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi), veh/h	854	39
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	0.00	0.00
Heavy Vehicle Adjustment Factor (fHV)	1.000	1.000
Flow Rate (vi), pc/h	909	41
Capacity (cmd), pc/h	4400	1900
Adjusted Capacity (cmda), pc/h	4400	1900
Volume-to-Capacity Ratio (v/c)	0.22	0.02

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (VOA), pc/h/ln	-
Downstream Equilibrium Distance (LEQ), ft	-	On-Ramp Influence Area Speed (SR), mi/h	58.8
Flow in Lanes 1 and 2 (v12), pc/h	909	Outer Lanes Freeway Speed (SO), mi/h	65.0
Flow Entering Ramp-Infl. Area (vR12), pc/h	950	Ramp Junction Speed (S), mi/h	58.8
Number of Outer Lanes on Freeway (NO), ln	0	Average Density (D), pc/mi/ln	8.1
Level of Service (LOS)	A	Density in Ramp Influence Area (DR), pc/mi/ln	3.5

3: Clearwater Pkwy & Farm District Rd

Intersection						
Int Delay, s/veh	3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↘	↑	↘	↗
Traffic Vol, veh/h	187	38	14	158	84	36
Future Vol, veh/h	187	38	14	158	84	36
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	300	200	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	71	71	71	71	71	71
Heavy Vehicles, %	6	6	6	6	6	6
Mvmt Flow	263	54	20	223	118	51
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	317	0	526	263
Stage 1	-	-	-	-	263	-
Stage 2	-	-	-	-	263	-
Critical Hdwy	-	-	4.16	-	6.46	6.26
Critical Hdwy Stg 1	-	-	-	-	5.46	-
Critical Hdwy Stg 2	-	-	-	-	5.46	-
Follow-up Hdwy	-	-	2.254	-	3.554	3.354
Pot Cap-1 Maneuver	-	-	1221	-	505	766
Stage 1	-	-	-	-	772	-
Stage 2	-	-	-	-	772	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1221	-	497	766
Mov Cap-2 Maneuver	-	-	-	-	576	-
Stage 1	-	-	-	-	772	-
Stage 2	-	-	-	-	760	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		0.7		12	
HCM LOS					B	
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	576	766	-	-	1221	-
HCM Lane V/C Ratio	0.205	0.066	-	-	0.016	-
HCM Control Delay (s)	12.9	10	-	-	8	-
HCM Lane LOS	B	B	-	-	A	-
HCM 95th %tile Q(veh)	0.8	0.2	-	-	0	-

5. Future Year Conditions AM

1: Red Rock Rd & US 50A

Intersection						
Int Delay, s/veh	0.4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↑	↑↑	↑	↑
Traffic Vol, veh/h	1082	17	3	0	17	0
Future Vol, veh/h	1082	17	3	0	17	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	380	500	-	100	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	6	2	2	6	2	2
Mvmt Flow	1202	19	3	0	19	0
Major/Minor	Major1	Major2		Minor1		
Conflicting Flow All	0	0	1221	0	1208	601
Stage 1	-	-	-	-	1202	-
Stage 2	-	-	-	-	6	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	567	-	176	443
Stage 1	-	-	-	-	247	-
Stage 2	-	-	-	-	1016	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	567	-	175	443
Mov Cap-2 Maneuver	-	-	-	-	220	-
Stage 1	-	-	-	-	247	-
Stage 2	-	-	-	-	1011	-
Approach	EB	WB		NB		
HCM Control Delay, s	0	11.4		22.9		
HCM LOS	C					
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	220	-	-	-	567	-
HCM Lane V/C Ratio	0.086	-	-	-	0.006	-
HCM Control Delay (s)	22.9	0	-	-	11.4	-
HCM Lane LOS	C	A	-	-	B	-
HCM 95th %tile Q(veh)	0.3	-	-	-	0	-

HCS Freeway Merge Report

Project Information

Analyst		Date	4/4/2023
Agency		Analysis Year	2023
Jurisdiction		Time Analyzed	PM Future
Project Description	US 50A/ Red Rock PM Future	Units	U.S. Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	65.0	20.0
Segment Length (L) / Acceleration Length (LA), ft	1500	1500
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Highway/CD Roadway	Left-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Proportion of CAVs in Traffic Stream	0	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000
Capacity Adjustment Factor for CAVs, CAFCAV	1.000	-
Final Capacity Adjustment Factor (CAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi), veh/h	1038	90
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	0.00	0.00
Heavy Vehicle Adjustment Factor (fHV)	1.000	1.000
Flow Rate (vi), pc/h	1104	96
Capacity (cmd), pc/h	4400	1900
Adjusted Capacity (cmda), pc/h	4400	1900
Volume-to-Capacity Ratio (v/c)	0.27	0.05

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (VOA), pc/h/ln	-
Downstream Equilibrium Distance (LEQ), ft	-	On-Ramp Influence Area Speed (SR), mi/h	58.7
Flow in Lanes 1 and 2 (v12), pc/h	1104	Outer Lanes Freeway Speed (SO), mi/h	65.0
Flow Entering Ramp-Infl. Area (vR12), pc/h	1200	Ramp Junction Speed (S), mi/h	58.7
Number of Outer Lanes on Freeway (NO), ln	0	Average Density (D), pc/mi/ln	10.2
Level of Service (LOS)	A	Density in Ramp Influence Area (DR), pc/mi/ln	5.5

3: Clearwater Pkwy & Farm District Rd

Intersection						
Int Delay, s/veh	1.7					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↖	↑	↖	↗
Traffic Vol, veh/h	155	115	18	115	54	11
Future Vol, veh/h	155	115	18	115	54	11
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	300	200	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	1	0	0	1	0	0
Mvmt Flow	165	122	19	122	57	12
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	287	0	325	165
Stage 1	-	-	-	-	165	-
Stage 2	-	-	-	-	160	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1287	-	673	885
Stage 1	-	-	-	-	869	-
Stage 2	-	-	-	-	874	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1287	-	663	885
Mov Cap-2 Maneuver	-	-	-	-	697	-
Stage 1	-	-	-	-	869	-
Stage 2	-	-	-	-	861	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		1.1		10.3	
HCM LOS					B	
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	697	885	-	-	1287	-
HCM Lane V/C Ratio	0.082	0.013	-	-	0.015	-
HCM Control Delay (s)	10.6	9.1	-	-	7.8	-
HCM Lane LOS	B	A	-	-	A	-
HCM 95th %tile Q(veh)	0.3	0	-	-	0	-

6. Future Year Conditions PM

Appendix G

Future Year Plus Project LOS Calculations



1: Red Rock Rd & US 50A

Intersection						
Int Delay, s/veh	4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↗	↖	↑↑	↖	↗
Traffic Vol, veh/h	774	57	14	0	149	40
Future Vol, veh/h	774	57	14	0	149	40
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	380	500	-	100	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	10	2	2	10	2	2
Mvmt Flow	823	61	15	0	159	43
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	884	0	853	412
Stage 1	-	-	-	-	823	-
Stage 2	-	-	-	-	30	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	761	-	298	589
Stage 1	-	-	-	-	392	-
Stage 2	-	-	-	-	989	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	761	-	292	589
Mov Cap-2 Maneuver	-	-	-	-	346	-
Stage 1	-	-	-	-	392	-
Stage 2	-	-	-	-	969	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		9.8		21.3	
HCM LOS	C					
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	346	589	-	-	761	-
HCM Lane V/C Ratio	0.458	0.072	-	-	0.02	-
HCM Control Delay (s)	23.9	11.6	-	-	9.8	-
HCM Lane LOS	C	B	-	-	A	-
HCM 95th %tile Q(veh)	2.3	0.2	-	-	0.1	-

3. Future Year Plus Project Conditions AM

HCS Freeway Merge Report

Project Information

Analyst		Date	4/4/2023
Agency		Analysis Year	2023
Jurisdiction		Time Analyzed	AM Future PP
Project Description	US 50A/ Red Rock AM Future PP	Units	U.S. Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	65.0	20.0
Segment Length (L) / Acceleration Length (LA), ft	1500	1500
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Highway/CD Roadway	Left-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Proportion of CAVs in Traffic Stream	0	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000
Capacity Adjustment Factor for CAVs, CAFCAV	1.000	-
Final Capacity Adjustment Factor (CAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi), veh/h	854	149
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	0.00	0.00
Heavy Vehicle Adjustment Factor (fHV)	1.000	1.000
Flow Rate (vi), pc/h	909	159
Capacity (cmd), pc/h	4400	1900
Adjusted Capacity (cmda), pc/h	4400	1900
Volume-to-Capacity Ratio (v/c)	0.24	0.08

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (VOA), pc/h/ln	-
Downstream Equilibrium Distance (LEQ), ft	-	On-Ramp Influence Area Speed (SR), mi/h	58.7
Flow in Lanes 1 and 2 (v12), pc/h	909	Outer Lanes Freeway Speed (So), mi/h	65.0
Flow Entering Ramp-Infl. Area (vR12), pc/h	1068	Ramp Junction Speed (S), mi/h	58.7
Number of Outer Lanes on Freeway (NO), ln	0	Average Density (D), pc/mi/ln	9.1
Level of Service (LOS)	A	Density in Ramp Influence Area (DR), pc/mi/ln	4.4

2: Red Rock Rd & Clements Ranch Pkwy

Intersection						
Int Delay, s/veh	5.8					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	147	10	3	42	22	49
Future Vol, veh/h	147	10	3	42	22	49
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	160	11	3	46	24	53
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	103	51	77	0	-	0
Stage 1	51	-	-	-	-	-
Stage 2	52	-	-	-	-	-
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	895	1017	1522	-	-	-
Stage 1	971	-	-	-	-	-
Stage 2	970	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	893	1017	1522	-	-	-
Mov Cap-2 Maneuver	893	-	-	-	-	-
Stage 1	969	-	-	-	-	-
Stage 2	970	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	9.9	0.5		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1522	-	900	-	-	
HCM Lane V/C Ratio	0.002	-	0.19	-	-	
HCM Control Delay (s)	7.4	0	9.9	-	-	
HCM Lane LOS	A	A	A	-	-	
HCM 95th %tile Q(veh)	0	-	0.7	-	-	

3. Future Year Plus Project Conditions AM

3: Clearwater Pkwy/Clements Ranch Pkwy & Farm District Rd

Intersection												
Int Delay, s/veh	4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	6	190	38	14	168	3	84	0	36	9	0	18
Future Vol, veh/h	6	190	38	14	168	3	84	0	36	9	0	18
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	350	-	300	200	-	-	0	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	71	71	71	71	92	71	92	71	92	92	92
Heavy Vehicles, %	2	6	6	6	6	2	6	2	6	2	2	2
Mvmt Flow	7	268	54	20	237	3	118	0	51	10	0	20

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	240	0	0	322	0	0	571	562	268	614	615	239
Stage 1	-	-	-	-	-	-	282	282	-	279	279	-
Stage 2	-	-	-	-	-	-	289	280	-	335	336	-
Critical Hdwy	4.12	-	-	4.16	-	-	7.16	6.52	6.26	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.16	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.16	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.254	-	-	3.554	4.018	3.354	3.518	4.018	3.318
Pot Cap-1 Maneuver	1327	-	-	1216	-	-	426	436	761	404	407	800
Stage 1	-	-	-	-	-	-	716	678	-	728	680	-
Stage 2	-	-	-	-	-	-	710	679	-	679	642	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1327	-	-	1216	-	-	409	427	761	371	398	800
Mov Cap-2 Maneuver	-	-	-	-	-	-	409	427	-	371	398	-
Stage 1	-	-	-	-	-	-	712	675	-	724	669	-
Stage 2	-	-	-	-	-	-	681	668	-	630	639	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.2			0.6			15.1			11.6		
HCM LOS							C			B		

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	409	761	1327	-	-	1216	-	-	577
HCM Lane V/C Ratio	0.289	0.067	0.005	-	-	0.016	-	-	0.051
HCM Control Delay (s)	17.3	10.1	7.7	-	-	8	-	-	11.6
HCM Lane LOS	C	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	1.2	0.2	0	-	-	0	-	-	0.2

1: Red Rock Rd & US 50A

Intersection						
Int Delay, s/veh	3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↑	↑↑	↑	↑
Traffic Vol, veh/h	1082	135	42	0	90	24
Future Vol, veh/h	1082	135	42	0	90	24
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	380	500	-	100	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	6	2	2	6	2	2
Mvmt Flow	1202	150	47	0	100	27
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1352	0	1296	601
Stage 1	-	-	-	-	1202	-
Stage 2	-	-	-	-	94	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	505	-	154	443
Stage 1	-	-	-	-	247	-
Stage 2	-	-	-	-	919	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	505	-	140	443
Mov Cap-2 Maneuver	-	-	-	-	212	-
Stage 1	-	-	-	-	247	-
Stage 2	-	-	-	-	834	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		12.9		31.5	
HCM LOS	D					
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	212	443	-	-	505	-
HCM Lane V/C Ratio	0.472	0.06	-	-	0.092	-
HCM Control Delay (s)	36.3	13.6	-	-	12.9	-
HCM Lane LOS	E	B	-	-	B	-
HCM 95th %tile Q(veh)	2.3	0.2	-	-	0.3	-

4. Future Year Plus Project Conditions PM

HCS Freeway Merge Report

Project Information

Analyst		Date	4/4/2023
Agency		Analysis Year	2023
Jurisdiction		Time Analyzed	PM Future PP
Project Description	US 50A/ Red Rock PM Future PP	Units	U.S. Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	65.0	20.0
Segment Length (L) / Acceleration Length (LA), ft	1500	1500
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Highway/CD Roadway	Left-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Proportion of CAVs in Traffic Stream	0	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000
Capacity Adjustment Factor for CAVs, CAFCAV	1.000	-
Final Capacity Adjustment Factor (CAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi), veh/h	1038	90
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	0.00	0.00
Heavy Vehicle Adjustment Factor (fHV)	1.000	1.000
Flow Rate (vi), pc/h	1104	96
Capacity (cmd), pc/h	4400	1900
Adjusted Capacity (cmda), pc/h	4400	1900
Volume-to-Capacity Ratio (v/c)	0.27	0.05

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (VOA), pc/h/ln	-
Downstream Equilibrium Distance (LEQ), ft	-	On-Ramp Influence Area Speed (SR), mi/h	58.7
Flow in Lanes 1 and 2 (v12), pc/h	1104	Outer Lanes Freeway Speed (SO), mi/h	65.0
Flow Entering Ramp-Infl. Area (vR12), pc/h	1200	Ramp Junction Speed (S), mi/h	58.7
Number of Outer Lanes on Freeway (NO), ln	0	Average Density (D), pc/mi/ln	10.2
Level of Service (LOS)	A	Density in Ramp Influence Area (DR), pc/mi/ln	5.5

2: Red Rock Rd & Clements Ranch Pkwy

Intersection						
Int Delay, s/veh	3.6					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	97	6	9	17	20	157
Future Vol, veh/h	97	6	9	17	20	157
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	105	7	10	18	22	171
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	146	108	193	0	-	0
Stage 1	108	-	-	-	-	-
Stage 2	38	-	-	-	-	-
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	846	946	1380	-	-	-
Stage 1	916	-	-	-	-	-
Stage 2	984	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	840	946	1380	-	-	-
Mov Cap-2 Maneuver	840	-	-	-	-	-
Stage 1	910	-	-	-	-	-
Stage 2	984	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	9.9	2.6		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1380	-	846	-	-	
HCM Lane V/C Ratio	0.007	-	0.132	-	-	
HCM Control Delay (s)	7.6	0	9.9	-	-	
HCM Lane LOS	A	A	A	-	-	
HCM 95th %tile Q(veh)	0	-	0.5	-	-	

4. Future Year Plus Project Conditions PM

3: Clearwater Pkwy/Clements Ranch Pkwy & Farm District Rd

Intersection												
Int Delay, s/veh	2.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	20	165	115	18	121	10	54	0	11	7	0	12
Future Vol, veh/h	20	165	115	18	121	10	54	0	11	7	0	12
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	350	-	300	200	-	-	0	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	94	94	94	94	92	94	92	94	92	92	92
Heavy Vehicles, %	2	1	0	0	1	2	0	2	0	2	2	2
Mvmt Flow	22	176	122	19	129	11	57	0	12	8	0	13

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	140	0	0	298	0	0	399	398	176	460	515	135
Stage 1	-	-	-	-	-	-	220	220	-	173	173	-
Stage 2	-	-	-	-	-	-	179	178	-	287	342	-
Critical Hdwy	4.12	-	-	4.1	-	-	7.1	6.52	6.2	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.2	-	-	3.5	4.018	3.3	3.518	4.018	3.318
Pot Cap-1 Maneuver	1443	-	-	1275	-	-	565	540	872	512	464	914
Stage 1	-	-	-	-	-	-	787	721	-	829	756	-
Stage 2	-	-	-	-	-	-	827	752	-	720	638	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1443	-	-	1275	-	-	544	524	872	494	450	914
Mov Cap-2 Maneuver	-	-	-	-	-	-	544	524	-	494	450	-
Stage 1	-	-	-	-	-	-	775	710	-	817	745	-
Stage 2	-	-	-	-	-	-	803	741	-	700	628	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.5	0.9	11.9	10.3
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	544	872	1443	-	-	1275	-	-	696
HCM Lane V/C Ratio	0.106	0.013	0.015	-	-	0.015	-	-	0.03
HCM Control Delay (s)	12.4	9.2	7.5	-	-	7.9	-	-	10.3
HCM Lane LOS	B	A	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.4	0	0	-	-	0	-	-	0.1

4. Future Year Plus Project Conditions PM

PRELIMINARY TECHNICAL DRAINAGE REPORT

FOR

CLEMENTS RANCH

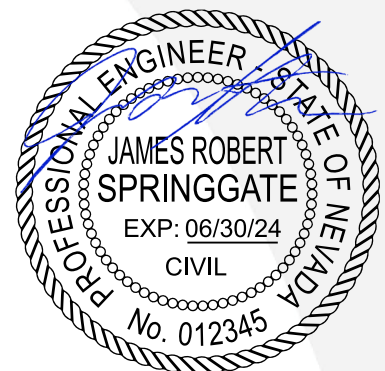
Prepared for:

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April 18, 2023

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04/17/2023



WOOD RODGERS
BUILDING RELATIONSHIPS ONE PROJECT AT A TIME

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APPENDIX A

VICINITY MAP
FEMA FIRM EXHIBIT
NOAA ATLAS 14 PRECIP INTENSITIES
FERNLEY PWDW "C" FACTORS
WEIGHTED "C" FACTORS
EXISTING HYDRO BASIN EXHIBIT
PROPOSED HYDRO BASIN EXHIBIT

APPENDIX B

WEST BASIN CALCULATIONS
EAST BASIN CALCULATIONS
COMBINED POND CALCULATIONS



1 INTRODUCTION

This report serves as the preliminary technical drainage report for the Clements Ranch project. The purpose of this report is to provide the analysis to support the development of the proposed project site in accordance with City of Fernley development standards.

1.1 PROJECT LOCATION

According to the Public Land Survey System, the site is situated within Sections 21 and 22, Township 20 North, Range 25 East, Mount Diablo Meridian (T20N, R25E, MDM), in Lyon County, Nevada. The parcel comprising the development is designated Assessor Parcel Numbers (APNs) 021-341-18. The project is bordered by undeveloped Bureau of Reclamation and private land to the north, existing single family residential developments to the east and west, and Farm District Road to the south. A vicinity map is included in Appendix A.

1.2 PROJECT DESCRIPTION

The ±86.0 ac Clements Ranch is designed as a single family detached residential and medium density residential development. The project will consist of construction of the residences as well as roads, utilities, retention ponds, and associated infrastructure to support the development.

Existing terrain at the Clements Ranch project site slopes to the north at slopes ranging from 1.5 to 40 percent in the proposed development area. The site is currently utilized as a farm in the flatter (southern) portions of the site. The northern portion of the site is largely native sagebrush and grasses. The site is currently accessed from the south by way of Farm District Road. The Clements Ranch project is located entirely within FEMA FIRM Panel No. 32019C0110E. A FEMA Flood Zone Exhibit is included in Appendix A.

There is a TCID irrigation ditch at the norther border of the project adjacent to Farm District Road. The Clements Ranch project will include an entrance to the project that crosses the irrigation ditch and culverts will be installed to pass the irrigation flow past the project entrance. The project will not drain to the TCID ditch.

1.3 REGULATORY PERSPECTIVE

The project site is located within the City of Fernley jurisdiction. The drainage utilities are to be public, owned and maintained by the City of Fernley.

2 PREVIOUS STUDIES

No previous studies are known at this time.

3 METHODS

The Rational Method Formula was used to compute peak runoff flow rates and volumes for the proposed site conditions for both the 5-year and 25-year storm events. The Rational Method Formula requires only the area of the basin, the rainfall intensity as discussed in Section 4.1 of



this report, and the Rational Runoff Coefficient as discussed in Section 4.2 of this report. 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 (unitless)
i = rainfall intensity in (inches/hr)
A = area of the basin (acres)

When volumes are required, they will be calculated using the following equation:

$$V = Q * T$$

Where:

V = volume of runoff (cf).
Q = peak runoff in cubic feet per second (cfs).
T = duration of storm (s)

4 HYDROLOGIC ANALYSIS

The hydrologic analysis consists of on-site peak runoff flow computations for the existing and proposed conditions. The 5-year and 100-year storm events were modeled per the City of Fernley Public Works Design Manual (PWDM) using the Rational Method.

4.1 DESIGN RAINFALL INTENSITIES

Precipitation intensity estimates were taken from the National Oceanic and Atmospheric Administration (NOAA) Atlas 14, Volume 1, Version 5, which provides rainfall information for latitude and longitude. It was determined that the site latitude and longitude are approximately 39.587 West and 119.173 North, and intensities were used appropriately for the 5-year and 25-year storm events. Intensity numbers are included in Appendix A of this report.

4.2 RATIONAL RUNOFF COEFFICIENTS

Rational Runoff Coefficients were determined using the table on page SD-1 of the PWDM. This table gives values for “c” corresponding to land use of the area being analyzed. A copy of the table is included in Appendix A. A weighted average of “c” factors was used for the proposed drainage basins, and a table summarizing the weighting is included in Appendix A.

5 HISTORIC DRAINAGE SYSTEM

Historically the site drains to the north at slopes ranging from 1.5% to 40%. The existing site has been analyzed as a single drainage basin because the entire site discharges to the same area in pre-development conditions. Runoff flows from the site to the north onto the Bureau of Reclamation property, and from there is passed under Highway 50 and eventually flows to the Fernley Wildlife Management Area. Please reference the Existing Hydrologic Basin Exhibit in Appendix B.



Using the Rational Method peak flows were calculated for the Clements Ranch project pre-development conditions. Intensities were taken from NOAA correlating to the 5-year, 6-hour and 25-year, 6-hour storm. Results of the hydrologic analysis are included in Appendix B.

A portion of the runoff from neighboring parcels to the south of the project drain to the proposed Clements Ranch (APNs 021-341-19, 021-341-13, and 022-101-13). Runoff from these parcels will be collected in swales at the property lines of the proposed project and conveyed to the proposed storm drain system of Clements Ranch. From there, the runoff will travel to the proposed retention ponds as discussed in section 6.4.

6 PROPOSED DRAINAGE SYSTEM

The proposed drainage system will consist of curb and gutter to collect and convey runoff produced on-site, Type IV drainage inlets to collect runoff from the gutters, storm drain laterals, pipes, manholes, and storm drain main to convey collected runoff through the project. Individual drainage elements are to be sized with final drainage reports accompanying each phase of the project. The Clements Ranch project will also utilize two retention ponds to mitigate runoff increases from developing the project.

6.1 PROPOSED DRAINAGE BASINS

The proposed development is represented as two drainage basins depending on which of the two retention ponds they drain to. 5-year and 25-year peak flows were calculated using the Rational Method. Intensities were taken from NOAA correlating to the 5-year, 6-hour and 25-year, 6-hour storm. Rational Method “c” factors were based on post-development land uses. Results of the hydrologic analysis are included in Appendix B.

6.2 PROPOSED STORM DRAIN SYSTEM

The proposed storm drain system will serve to collect and convey runoff generated onsite to one of the two retention ponds. The storm drain system will be public, owned and maintained by the City of Fernley, and will be sized with final design of the subdivision.

6.3 WATER QUALITY CONTROLS

Water quality controls specific to each phase are to be determined with design of that respective phase. The retention basins will settle any sediment or pollutants within runoff volume. Water quality controls likely to be utilized during construction include construction entrances, inlet protection, and silt fence or fiber rolls on downhill sides of the grading. Water quality controls will be finalized with phases of the subdivision project and will be specific to the phase developed.

6.4 DETENTION REQUIREMENTS

Per the City of Fernley PWD, the project is required to detain the difference in peak flow between the pre-development and post-development conditions. The Clements Ranch project will retain 100% of the 25-year, 6-hour storm. The retention will serve two purposes, first to aid in irrigation of the soccer fields of the park site whenever possible, and second to prevent erosion due to discharge of storm waters to downstream sites. A field assessment of site soils, as well as



geotechnical reports from nearby developments indicate that the soils will be able to infiltrate storm runoff in an appropriate time. The storm runoff will be retained in two retention ponds (west and east), and retention volumes were calculated for each basin. The calculations are included in Appendix B.

7 SPECIAL FLOOD HAZARDS

The entire site lies within FEMA flood hazard area “unshaded X”, which indicates that the project is outside the 0.2% probability per year flood zone. As the project area is outside the 0.2% annual probability of flooding, there are no special flood hazard considerations for the development area.

7.1 IMPACTS OF PROPOSED DEVELOPMENT ON FLOOD HAZARD AREA

Although the project is outside the flood hazard area, the site lies within a closed hydrologic basin with a Zone A area below the project area. As the runoff from the Clements Ranch project will flow to the hazard area, retention has been proposed for the project to mitigate volumetric runoff increases that might contribute to flood conditions to the north. As such, no impacts are expected to the flood hazard area.

7.2 FEMA AND LOCAL CODE COMPLIANCE

The Clements Ranch project will be compliant with all federal and local code requirements.

8 CONCLUSIONS

The proposed Clements Ranch project has been designed to collect and retain on-site generated storm flows from the site. Runoff from the Clements Ranch project will be retained in proposed retention ponds. Storm water quality measures will be installed during construction to reduce probability of sediment being carried off-site by storm runoff. No negative impacts are anticipated from the development of the Clements Ranch project.



9 **REFERENCES**

City of Fernley Department of Public Works Design Standards & Review Guidelines. May, 2008.

NOAA Atlas 14, Volume 11, Version 2, Precipitation-Frequency Atlas of the United States. National Oceanic and Atmospheric Administration, 2018

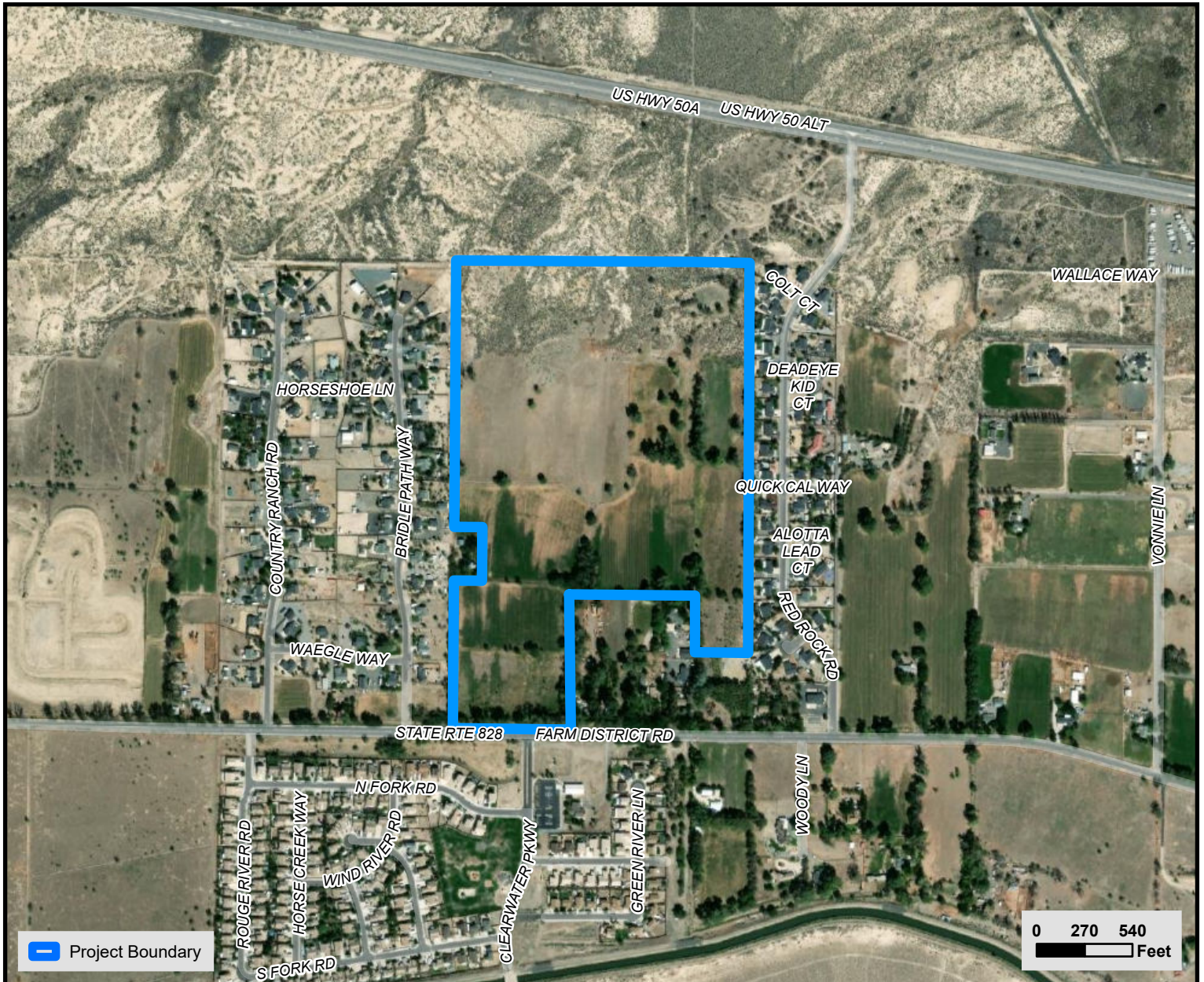


APPENDIX A

GENERAL FIGURES



WOOD RODGERS
BUILDING RELATIONSHIPS ONE PROJECT AT A TIME



1

Vicinity Map

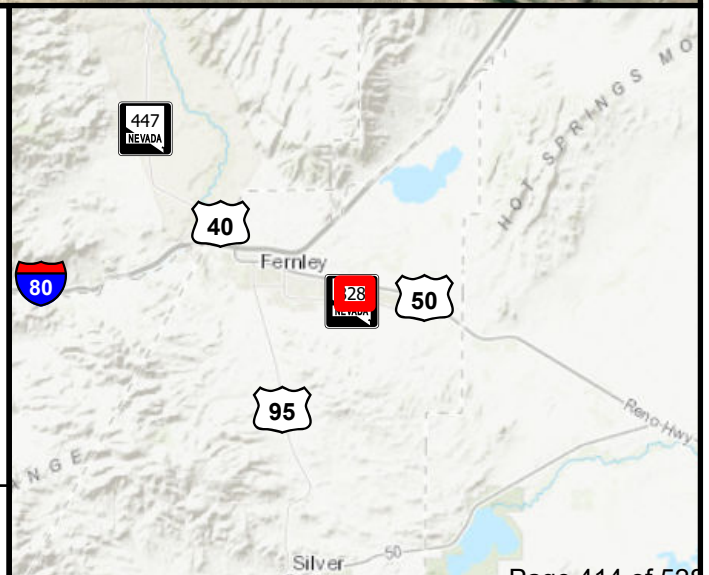
Clements Ranch P.U.D.

Fernley, NV

April, 2023

Prepared By: JRS

Checked By: ANV



National Flood Hazard Layer FIRMette



119°10'40"W 39°35'33"N

Legend

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

Without Base Flood Elevation (BFE)
Zone A, V, A99

With BFE or Depth *Zone AE, AO, AH, VE, AR*

Regulatory Floodway

SPECIAL FLOOD HAZARD AREAS

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 OF FLOOD HAZARD

NO SCREEN

Area of Minimal Flood Hazard *Zone X*

Effective LOMRs

Area of Undetermined Flood Hazard *Zone D*

OTHER AREAS

Channel, Culvert, or Storm Sewer

Levee, Dike, or Floodwall

GENERAL STRUCTURES

20.2

17.5

Cross Sections with 1% Annual Chance Water Surface Elevation

Coastal Transect

Base Flood Elevation Line (BFE)

Limit of Study

Jurisdiction Boundary

Coastal Transect Baseline

Profile Baseline

Hydrographic Feature

OTHER FEATURES

Digital Data Available

No Digital Data Available

Unmapped

MAP PANELS

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 **3/9/2023 at 12:10 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.

Page 415 of 528

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



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	1.19 (0.972-1.42)	1.49 (1.22-1.79)	1.99 (1.64-2.44)	2.47 (2.02-3.00)	3.23 (2.57-3.97)	3.94 (3.05-4.86)	4.75 (3.56-5.93)	5.72 (4.14-7.30)	7.28 (4.98-9.59)	8.70 (5.68-11.7)
10-min	0.906 (0.738-1.08)	1.13 (0.930-1.36)	1.52 (1.25-1.85)	1.88 (1.54-2.29)	2.46 (1.96-3.02)	2.99 (2.32-3.70)	3.61 (2.72-4.51)	4.36 (3.16-5.55)	5.54 (3.80-7.30)	6.62 (4.31-8.89)
15-min	0.748 (0.612-0.892)	0.936 (0.768-1.13)	1.26 (1.04-1.53)	1.55 (1.27-1.89)	2.03 (1.62-2.50)	2.47 (1.92-3.06)	2.99 (2.25-3.73)	3.60 (2.61-4.59)	4.58 (3.14-6.04)	5.47 (3.57-7.34)
30-min	0.502 (0.412-0.602)	0.630 (0.518-0.760)	0.848 (0.700-1.03)	1.05 (0.856-1.27)	1.37 (1.09-1.68)	1.67 (1.29-2.06)	2.01 (1.51-2.51)	2.43 (1.76-3.09)	3.08 (2.11-4.06)	3.68 (2.40-4.95)
60-min	0.311 (0.255-0.372)	0.390 (0.320-0.470)	0.524 (0.433-0.637)	0.647 (0.530-0.787)	0.847 (0.675-1.04)	1.03 (0.799-1.28)	1.25 (0.936-1.56)	1.50 (1.09-1.91)	1.91 (1.31-2.52)	2.28 (1.49-3.06)
2-hr	0.193 (0.164-0.235)	0.242 (0.206-0.293)	0.314 (0.264-0.382)	0.376 (0.313-0.458)	0.470 (0.380-0.575)	0.553 (0.438-0.682)	0.653 (0.504-0.815)	0.775 (0.580-0.978)	0.974 (0.697-1.26)	1.16 (0.798-1.54)
3-hr	0.147 (0.125-0.175)	0.183 (0.157-0.220)	0.234 (0.198-0.280)	0.275 (0.231-0.331)	0.334 (0.276-0.401)	0.386 (0.313-0.468)	0.450 (0.358-0.551)	0.528 (0.410-0.656)	0.657 (0.496-0.851)	0.774 (0.568-1.03)
6-hr	0.090 (0.077-0.106)	0.113 (0.097-0.135)	0.144 (0.123-0.172)	0.168 (0.142-0.200)	0.201 (0.168-0.240)	0.226 (0.186-0.271)	0.252 (0.205-0.305)	0.290 (0.230-0.355)	0.349 (0.270-0.434)	0.402 (0.304-0.523)
12-hr	0.052 (0.045-0.060)	0.066 (0.057-0.076)	0.085 (0.073-0.099)	0.099 (0.085-0.115)	0.119 (0.101-0.139)	0.134 (0.113-0.158)	0.149 (0.124-0.178)	0.165 (0.135-0.200)	0.187 (0.148-0.230)	0.210 (0.162-0.262)
24-hr	0.031 (0.027-0.035)	0.039 (0.035-0.044)	0.050 (0.045-0.056)	0.059 (0.052-0.066)	0.071 (0.063-0.080)	0.081 (0.071-0.091)	0.091 (0.079-0.103)	0.102 (0.088-0.115)	0.116 (0.099-0.132)	0.128 (0.107-0.147)
2-day	0.017 (0.015-0.019)	0.021 (0.019-0.024)	0.027 (0.024-0.031)	0.032 (0.028-0.036)	0.039 (0.034-0.044)	0.044 (0.039-0.050)	0.050 (0.043-0.056)	0.055 (0.047-0.063)	0.063 (0.053-0.072)	0.069 (0.058-0.080)
3-day	0.012 (0.011-0.013)	0.015 (0.014-0.017)	0.020 (0.018-0.022)	0.023 (0.020-0.026)	0.028 (0.025-0.031)	0.032 (0.028-0.035)	0.035 (0.031-0.040)	0.039 (0.034-0.045)	0.045 (0.038-0.051)	0.049 (0.041-0.057)
4-day	0.010 (0.009-0.011)	0.012 (0.011-0.014)	0.016 (0.014-0.017)	0.018 (0.016-0.020)	0.022 (0.020-0.025)	0.025 (0.022-0.028)	0.028 (0.025-0.032)	0.032 (0.027-0.035)	0.036 (0.031-0.041)	0.040 (0.033-0.045)
7-day	0.006 (0.006-0.007)	0.008 (0.007-0.009)	0.010 (0.009-0.012)	0.012 (0.011-0.014)	0.015 (0.013-0.016)	0.017 (0.015-0.019)	0.019 (0.016-0.021)	0.021 (0.018-0.023)	0.024 (0.020-0.027)	0.026 (0.022-0.030)
10-day	0.005 (0.004-0.006)	0.006 (0.006-0.007)	0.008 (0.007-0.009)	0.010 (0.008-0.011)	0.011 (0.010-0.013)	0.013 (0.011-0.015)	0.014 (0.013-0.016)	0.016 (0.014-0.018)	0.018 (0.015-0.021)	0.020 (0.017-0.023)
20-day	0.003 (0.003-0.003)	0.004 (0.003-0.004)	0.005 (0.004-0.005)	0.005 (0.005-0.006)	0.007 (0.006-0.007)	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 (0.009-0.012)
30-day	0.002 (0.002-0.002)	0.003 (0.002-0.003)	0.003 (0.003-0.004)	0.004 (0.004-0.005)	0.005 (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)
45-day	0.002 (0.001-0.002)	0.002 (0.002-0.002)	0.003 (0.002-0.003)	0.003 (0.003-0.003)	0.004 (0.003-0.004)	0.004 (0.004-0.004)	0.004 (0.004-0.005)	0.005 (0.004-0.005)	0.005 (0.005-0.006)	0.006 (0.005-0.006)
60-day	0.001 (0.001-0.002)	0.002 (0.002-0.002)	0.002 (0.002-0.003)	0.003 (0.002-0.003)	0.003 (0.003-0.003)	0.003 (0.003-0.004)	0.004 (0.003-0.004)	0.004 (0.003-0.004)	0.004 (0.004-0.005)	0.004 (0.004-0.005)

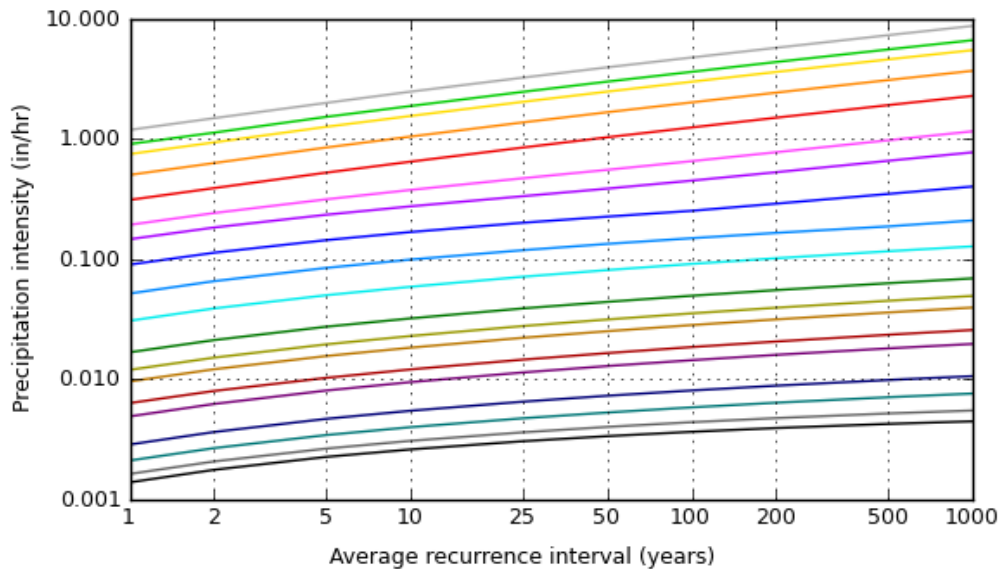
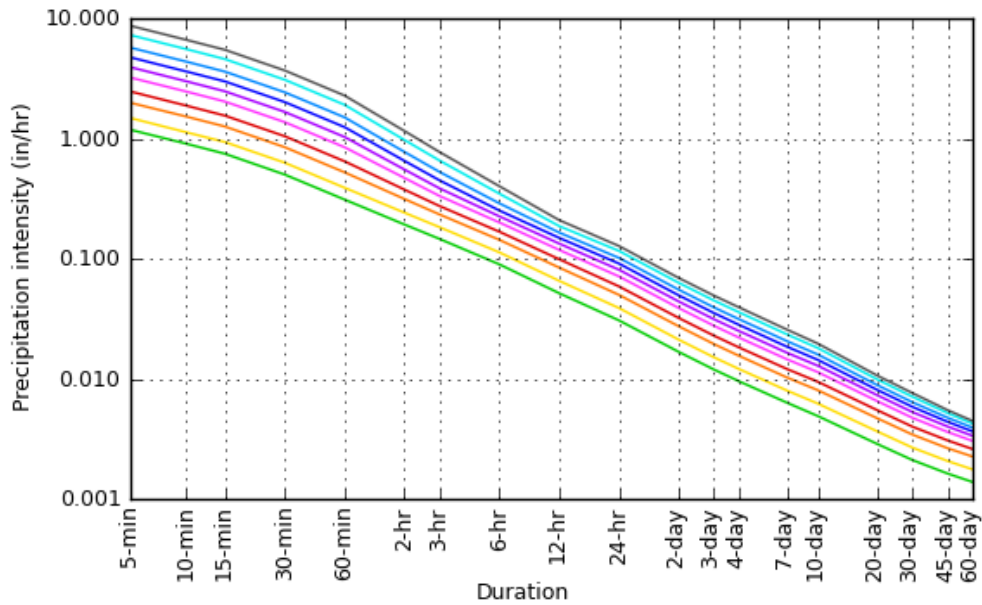
¹ Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).
Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average 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

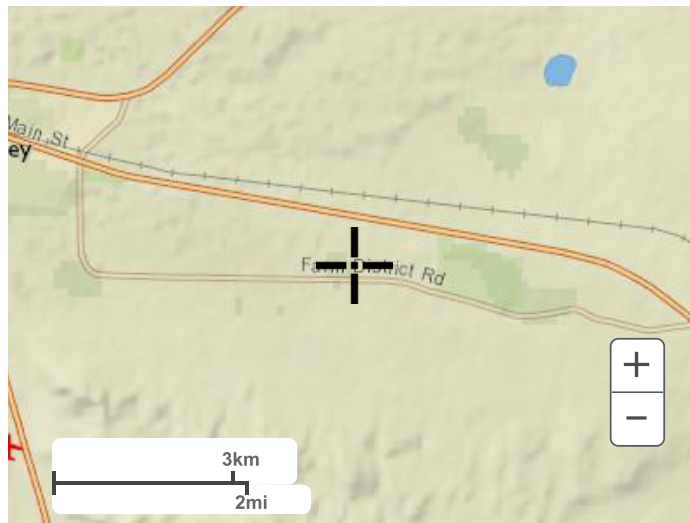
PDS-based intensity-duration-frequency (IDF) curves

Latitude: 39.5874°, Longitude: -119.1728°

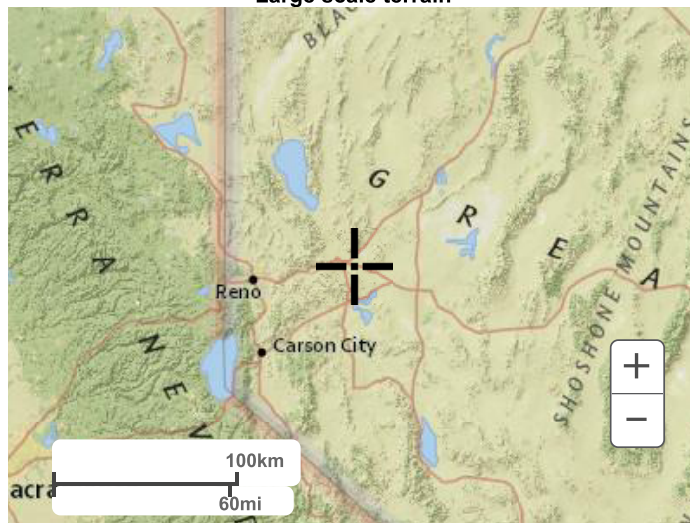


Maps & aerials

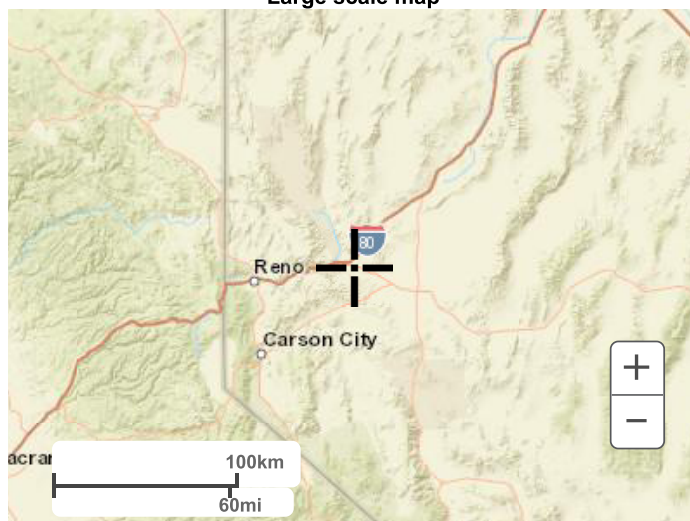
Small scale terrain



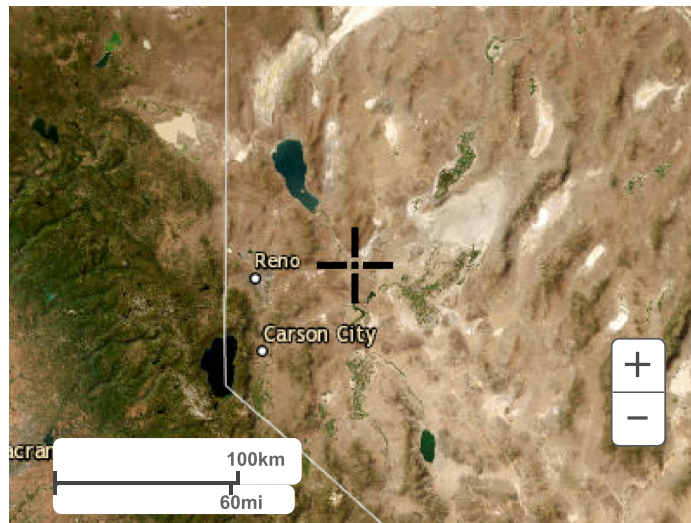
Large scale terrain



Large scale map



Large scale aerial



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1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

[Disclaimer](#)

RUNOFF COEFFICIENTS "C"

Land Use Type	Runoff Coefficient "C"
Rural	0.25-0.35
Single Family Residential	0.45-0.60
Multi-Residential	0.60-0.70
Neighborhood Commercial	0.85
Community Commercial	0.85
Tourist Commercial	0.85
Office	0.85
Manufacturing	0.85-0.90
Distribution and Warehousing	0.85-0.90
Public Facility	0.50-0.85
Pavement and Concrete Surfaces	0.90-0.95
Park	0.25
Open Space (0-5% grade - vegetated)	0.20-0.30
Open Space (0-5% grade - no vegetation)	0.30-0.40
Open Space (5-15% grade - vegetated or unvegetated)	0.40-0.50
Open Space (Over 15% grade - sparsely vegetated, rock or clay soils)	0.40-0.60

- c) The rainfall intensity curve included in this Guideline on page SD-14 shall be used for determining the average intensity. The time of concentration, with a minimum build up time of 10 minutes is expressed as:

$$tc_i = 10 \text{ or } \frac{L}{V \times 60}, \text{ whichever is greater}$$

where:

tc_i = time of concentration at initial inlet, minutes

L = length from uppermost point of watershed inlet, feet

V = channel or overland velocity, feet per second

Given the time of concentration at a design point, the time of concentration at the next design point is determined by adding travel time, expressed as:

$$t = \frac{L}{V \times 60}$$

where:

t = travel time, minutes

L = length of channel or conduit between design points, feet

V = channel or conduit velocity, feet per second

Curve Number Calculations
Proposed Onsite Basins

Watershed	Total Area (ac)	Pre-Development				Post-Development								Weighted "c" Factor
		Open Space (0-5%, veg.)	Open Space (0-5%, veg.) (ac.)	Open Space (5-15%)	Open Space (5-15%) (ac.)	Single Family Res, 1/8ac	Single Family Res, 1/8ac (ac.)	Single Family Res, 1/3ac	Single Family Res, 1/3ac	Multifamily	Multifamily (ac.)	Park	Park (ac.)	
E-1	83.90	0.25	66.20	0.45	17.70	0.60	0.00	0.55	0.00	0.65	0.00	0.25	0.00	0.29
P-1	44.46	0.25	0.00	0.45	0.00	0.60	31.74	0.55	12.72	0.65	0.00	0.25	0.00	0.59
P-2	39.44	0.25	0.00	0.45	0.00	0.60	12.74	0.55	8.30	0.65	14.42	0.25	3.98	0.57

EXISTING HYDROLOGIC BASINS

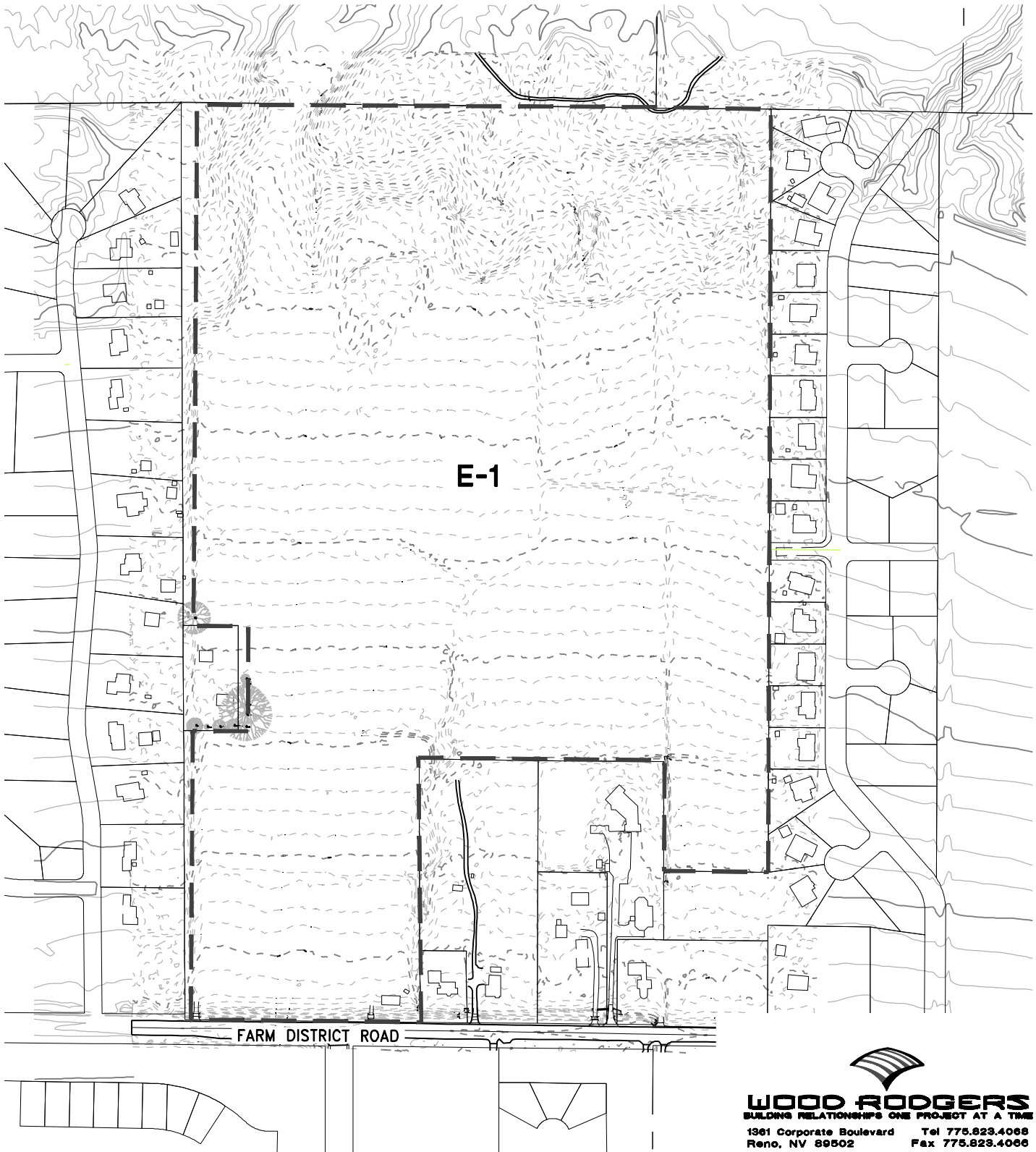
CLEMENTS RANCH TM

CLEMENTS RANCHING, LLC

RENO

NEVADA

APRIL, 2023



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

PROPOSED HYDROLOGIC BASINS

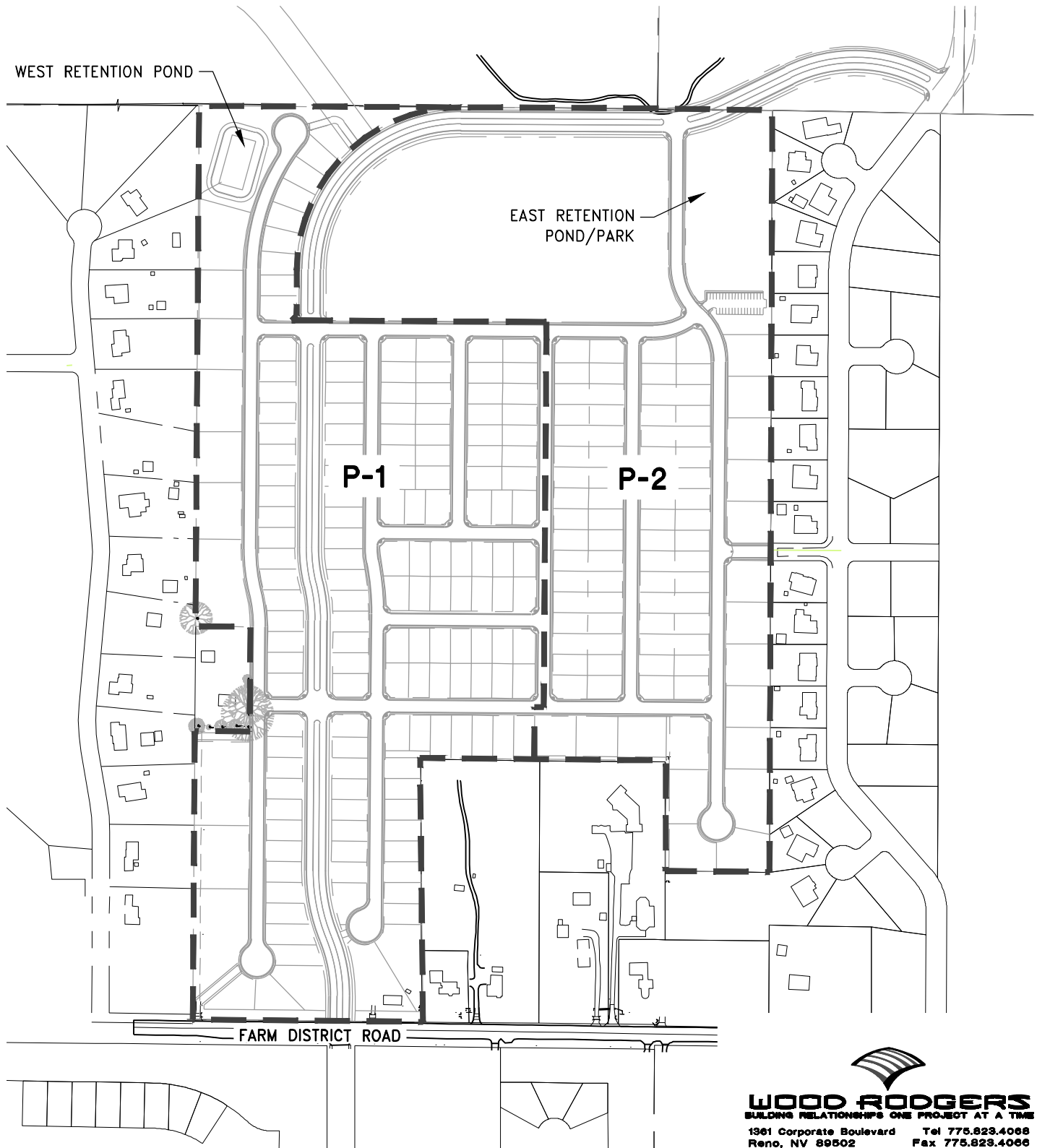
CLEMENTS RANCH TM

CLEMENTS RANCHING, LLC

RENO

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APRIL, 2023



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Reno, NV 89502 Fax 775.823.4066

APPENDIX B

Hydrologic Calculations

Date: 4/5/2023
Project No.: 3460
Subject: West Retention Basin Volume Calculation
Project Title: Clements Ranch

Made by: JRS
Checked by: JRS
Reviewed by: ANV

1.0 Estimate of Retention Basin Volume per City of Fernley Design Standards

$$\text{Peak Flow} = c * I * A$$

Project Area	44.46	ac
Rainfall Intensity (5yr, 6hr)	0.144	in/hr
Existing Weighted 'c' Factor, E-1	0.29	
Existing 5-yr, 6-hr Peak Flow	1.86	cfs
5-yr, 6-hr Runoff Volume	40,104	cf

Project Area	44.46	
Rainfall Intensity (25yr, 6hr)	0.201	
Existing Weighted 'c' Factor, E-1	0.29	
Existing 25-yr, 6-hr Peak Flow	2.59	
25-yr, 6-hr Runoff Volume	55,978	

Project Area	44.46	ac
Rainfall Intensity (5yr, 6hr)	0.144	in/hr
Weighted 'c' Factor, P-1	0.59	
Proposed 5-yr, 6-hr Peak Flow	3.78	cfs
5-yr, 6-hr Runoff Volume	81,590	cf

Project Area	44.46	ac
Rainfall Intensity (25yr, 6hr)	0.201	in/hr
Weighted 'c' Factor, P-1	0.59	
Proposed 25-yr, 6-hr Peak Flow	5.27	cfs
25-yr, 6-hr Runoff Volume	113,886	cf
Required Retention Volume	113,886	cf

2.61 ac.ft

Date: 4/5/2023
Project No.: 3460
Subject: East Retention Basin Volume Calculation
Project Title: Clements Ranch

Made by: JRS
Checked by: JRS
Reviewed by: ANV

1.0 Estimate of Retention Basin Volume per City of Fernley Design Standards

$$\text{Peak Flow} = c * I * A$$

Project Area	39.44	ac
Rainfall Intensity (5yr, 6hr)	0.144	in/hr
Existing Weighted 'c' Factor, E-1	0.29	
Existing 5-yr, 6-hr Peak Flow	1.65	cfs
5-yr, 6-hr Runoff Volume	35,576	cf

Project Area	39.44	
Rainfall Intensity (25yr, 6hr)	0.201	
Existing Weighted 'c' Factor, E-1	0.29	
Existing 25-yr, 6-hr Peak Flow	2.30	
25-yr, 6-hr Runoff Volume	49,657	

Project Area	39.44	ac
Rainfall Intensity (5yr, 6hr)	0.144	in/hr
Weighted 'c' Factor, P-1	0.57	
Proposed 5-yr, 6-hr Peak Flow	3.24	cfs
5-yr, 6-hr Runoff Volume	69,924	cf

Project Area	39.44	ac
Rainfall Intensity (25yr, 6hr)	0.201	in/hr
Weighted 'c' Factor, P-1	0.57	
Proposed 25-yr, 6-hr Peak Flow	4.52	cfs
25-yr, 6-hr Runoff Volume	97,603	cf
Required Retention Volume	97,603	cf

2.24 ac.ft

CALCULATIONS

Date: 3/23/2023
Project No.: 3460
Subject: Combined Retention Basin Volumes
Project Title: Clements Ranch

Made by: JRS
Checked by: JRS
Reviewed by: ANV

1.0 Estimate of Retention Basin Volume per City of Fernley Design Standards

$$\text{Peak Flow} = c * I * A$$

Project Area	44.46	ac
Rainfall Intensity (25yr, 6hr)	0.201	in/hr
Weighted 'c' Factor, P-1	0.59	
Proposed Conditions Peak Flow	5.27	cfs
25-yr, 6-hr Runoff Volume	113,886	cf

<- Park

Project Area	39.44	ac
Rainfall Intensity (25yr, 6hr)	0.201	in/hr
Weighted 'c' Factor, P-2	0.57	
Proposed Conditions Peak Flow	4.52	cfs
25-yr, 6-hr Runoff Volume	97,603	cf

<- North

Required Retention Volume	211,489	cf
----------------------------------	---------	----

4.86 ac.ft

PRELIMINARY SANITARY SEWER REPORT

FOR

CLEMENTS RANCH

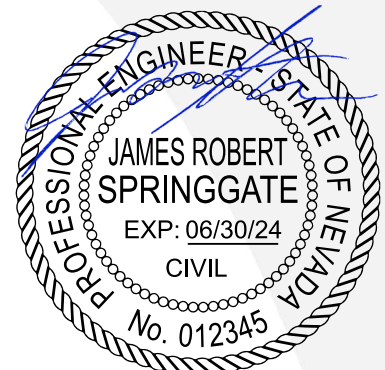
Prepared for:

Clements Ranching, LLC
3040 Farm District Road
Fernley, NV 89408

April 18, 2023

Prepared by:

Wood Rodgers Inc.
1361 Corporate Boulevard
Reno, Nevada 89502
(775) 823-4068
James Springgate PE



04/18/2023



WOOD RODGERS
BUILDING RELATIONSHIPS ONE PROJECT AT A TIME

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1 INTRODUCTION

This report serves as the preliminary sanitary sewer report for the Clements Ranch tentative map. The purpose of this report is to provide the analysis to support the development of the proposed project site in accordance with City of Fernley development standards.

1.1 PROJECT LOCATION

According to the Public Land Survey System, the site is situated within Sections 21 and 22, Township 20 North, Range 25 East, Mount Diablo Meridian (T20N, R25E, MDM), in Lyon County, Nevada. The parcel comprising the development is designated Assessor Parcel Numbers (APNs) 021-341-18. The project is bordered by undeveloped Bureau of Reclamation and private land to the north, existing single family residential developments to the east and west, and Farm District Road to the south. A vicinity map is included in Appendix A.

1.2 BACKGROUND

The ±86.0 ac Clements Ranch project is designed as a single family residential and multifamily residential development. The project will consist of construction of the residences as well as roads, utilities, retention ponds, and associated infrastructure to support the development. Per the development agreement with the City of Fernley, the Clements Ranch project is limited to 400 total units. The Clements Ranch tentative map will include 241 single family detached lots and a maximum of 159 medium density residential units. The Clements Ranch project will sewer to the southeast to an existing 18" sewer interceptor in Red Rock Road. This interceptor discharges to the Highway 50 Lift Station east of the project, which pumps the sewage to the East Plant Lift Station, which discharges to the East Wastewater Treatment Plant.

1.3 REGULATORY PERSPECTIVE

The project site is within the City of Fernley, Lyon County, Nevada. The proposed sewer facilities are public and are to be owned and maintained by the City of Fernley.

2 PREVIOUS STUDIES

A draft sewer discovery was performed by Shaw Engineering on April 14, 2023 titled Clements Ranch Sewer Discovery CoF WO# W&S2023.02.06. The proposed sewer main of the Clements Ranch project will flow to the northeast and connect to the existing City of Fernley sewer system at a manhole in Red Rock Road. This discovery analyzed the pipes from the manhole in Red Rock Road to the Hwy 50 lift station. The preliminary discovery indicates that the downstream City of Fernley sewer has available capacity for the Clements Ranch project, with a maximum analyzed d/D ratio of 0.30 after full project build-out.

3 METHODS

3.1 DESIGN PEAK FLOWS

The sanitary sewer system was analyzed in accordance with Chapter 8 of the City of Fernley Department of Public Works Design Standards (PWDS). Design peak sewage flows for residential sources are based upon the number of units being constructed and the sewer contribution of each unit. The total design peak flow is calculated using the following equation:



$$Q = \# \text{ of Units} * \text{Average Residential Flow Rate} * \text{Peaking Factor}$$

Where:

Q = Estimated peak sewer flows (gal/day).

Average Residential Flow Rate = 345 gal/day for 8" main, 250 gal/day for 10" or larger

Peaking Factor = 3.0 (unitless)

3.2 PIPE HYDRAULICS

Pipe hydraulics and flow characteristics have been analyzed using Manning's Equation with a roughness coefficient "n" value of 0.012.

Manning's Equation: $Q = \left(\frac{1.49}{n}\right) A R^{\frac{2}{3}} \sqrt{S}$

Where:

Q = flow rate in cubic feet per second (cfs)

n = Manning's roughness coefficient (unitless)

A = flow crosssection area in square feet

R = hydraulic radius in feet = (A/P)

P = wetted perimeter in feet

S = slope in decimal (ft./ft.)

Alternatively, pipe hydraulics and flow characteristics may be determined using a computer modeling software such as SewerCAD®, SewerGEMS®, FlowMaster® or other software approved by the City Engineer.

4 SEWER ANALYSIS

The Clements Ranch project is limited to a maximum of 400 lots per the development agreement with the City of Fernley. The current layout has 241 single family lots and a maximum of 159 possible medium density residential units. All lots will drain to the north to the sewer main under the proposed Clements Ranch Parkway. From there the sewer flows east to the existing 18" sanitary sewer interceptor under Red Rock Road. The City of Fernley sewer below the connection was analyzed with the draft sewer discovery by Shaw Engineering, which indicates that the downstream sewer has available capacity for the proposed Clements Ranch project.

The 400 units of the Clements Ranch project generate a design peak flow of 414,000 gal/day (400 units * 3.0 peaking factor * 345 gallons per day per unit). All sewer is proposed to be 8" SDR35 PVC with a minimum slope of 0.3%. The ½ full velocity of sewer within pipes will be a minimum of 2.0ft/s, and all sewer mains will be less than the 0.75D allowed in the PWDS. A design report for an 8" PVC sewer main at 0.3% slope with a peak flow of 414,000 gal/day is included in the Appendix.

5 CONCLUSIONS

The proposed sanitary sewer system discussed in this report has been designed to sufficiently serve the proposed Clements Ranch project. The proposed 8" sewer main has the capacity for



peak sewer flows of the project and will conform to City of Fernley design standards. All proposed sanitary sewer facilities shall be public and will be owned and maintained by the City of Fernley.

6 REFERENCES

City of Fernley Department of Public Works Design Standards & Review Guidelines, May, 2008.

Clements Ranch Sewer Discovery CoF WO# W&S2023.02.06, Shaw Engineering, April 14, 2023

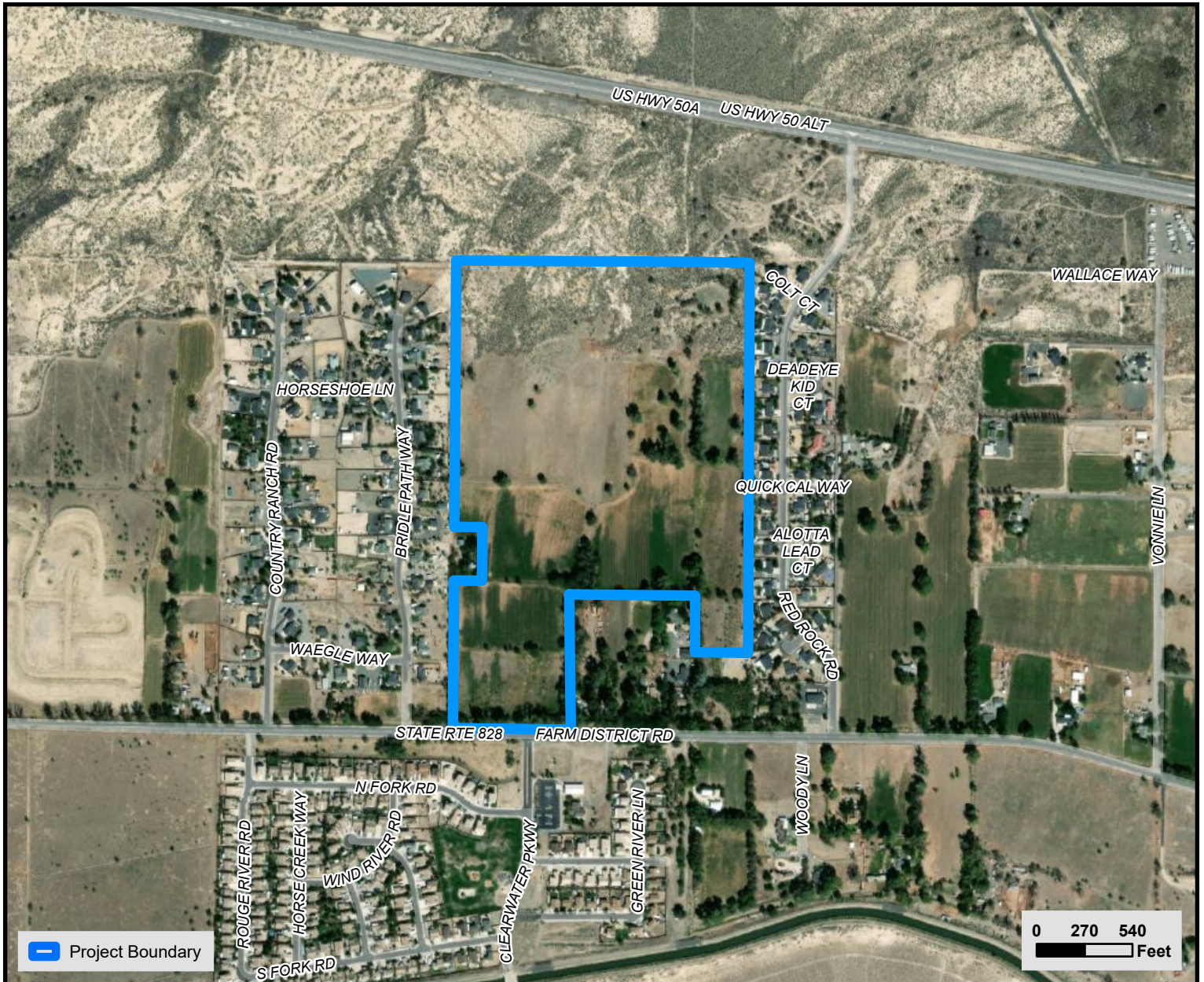


Appendix A

General Figures



WOOD RODGERS
BUILDING RELATIONSHIPS ONE PROJECT AT A TIME



1

Vicinity Map

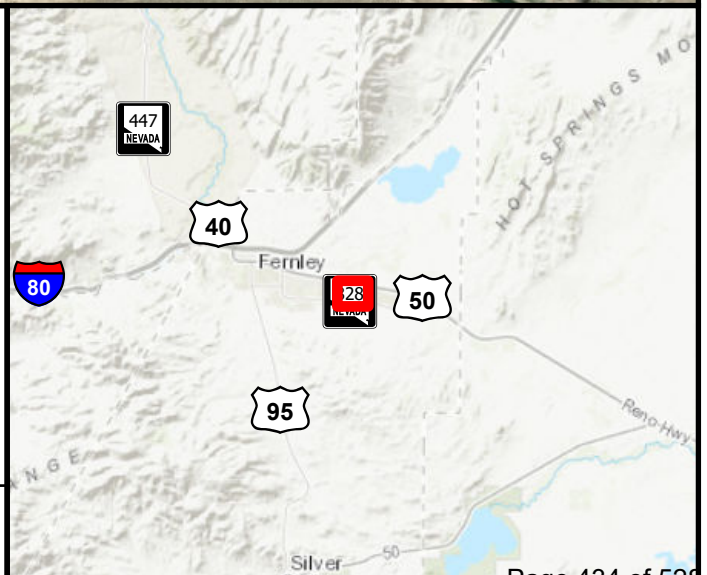
Clements Ranch P.U.D.

Fernley, NV

April, 2023

Prepared By: JRS

Checked By: ANV



PROPOSED SEWER LAYOUT

CLEMENTS RANCH TM

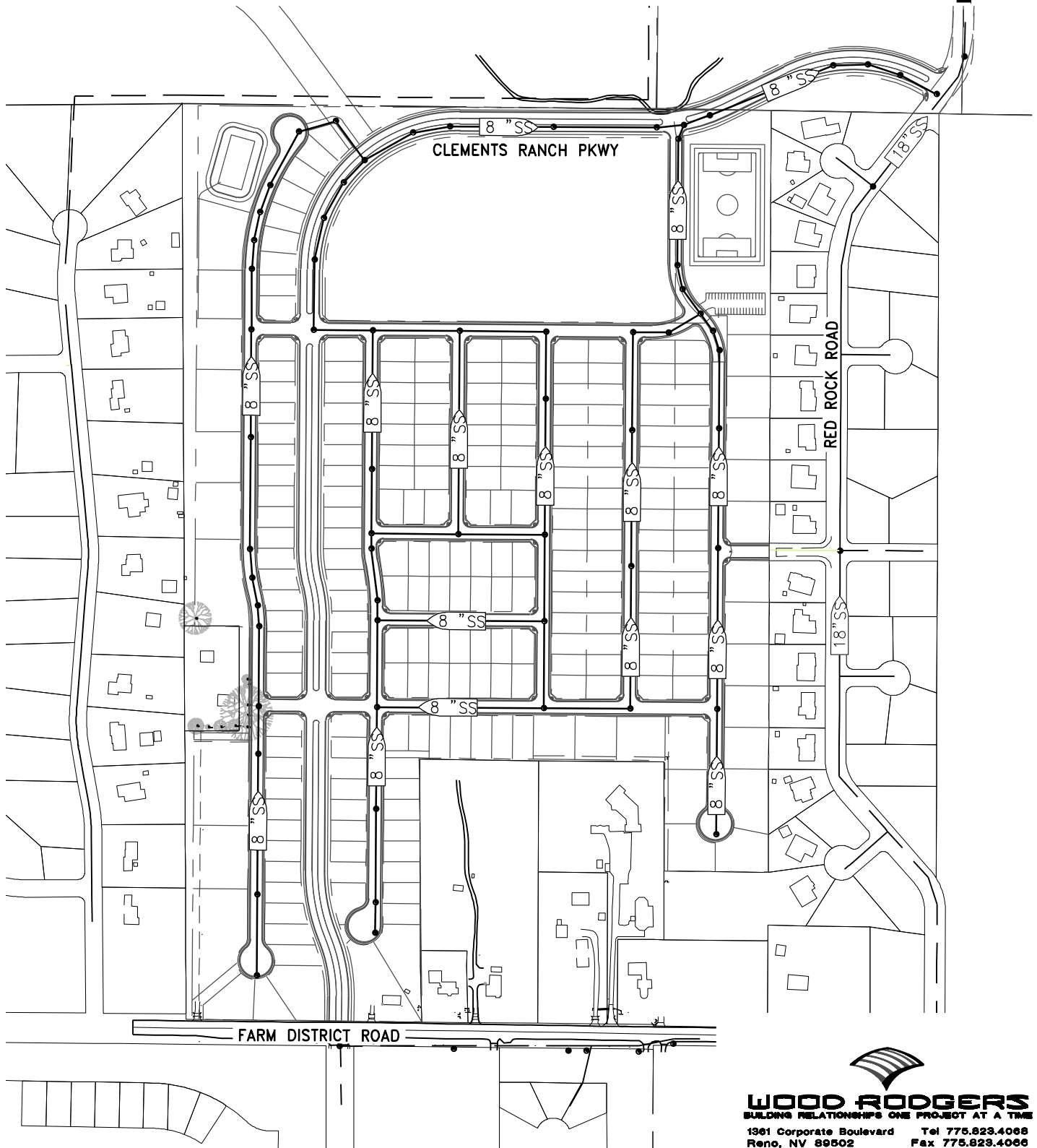
CLEMENTS RANCHING, LLC

RENO

NEVADA

APRIL, 2023

TO HWY 50



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

Appendix B

Pipe Hydraulic Calculations

Worksheet for 8" PIPE AT 0.3%

Project Description	
Friction Method	Manning
	Formula
Solve For	Normal Depth
Input Data	
Roughness Coefficient	0.012
Channel Slope	0.0030 ft/ft
Diameter	8.0 in
Discharge	414,000.00 gal/day
Results	
Normal Depth	5.9 in
Flow Area	0.3 ft ²
Wetted Perimeter	1.4 ft
Hydraulic Radius	2.4 in
Top Width	0.59 ft
Critical Depth	4.5 in
Percent Full	73.7 %
Critical Slope	0.0064 ft/ft
Velocity	2.32 ft/s
Velocity Head	0.08 ft
Specific Energy	0.58 ft
Froude Number	0.598
Maximum Discharge	498,486.51 gal/day
Discharge Full	463,404.10 gal/day
Slope Full	0.0024 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	0.0 %
Downstream Velocity	0.00 ft/s
Upstream Velocity	0.00 ft/s
Normal Depth	5.9 in
Critical Depth	4.5 in
Channel Slope	0.0030 ft/ft
Critical Slope	0.0064 ft/ft

Appendix C

Draft Sewer Discovery



TO: Derek Starkey, P.E.

DATE: April 14, 2023

FROM: Cody Black, P.E.

RE: Clements Ranch Sewer Discovery CoF WO# W&S2023.02.06

Summary:

The applicant has proposed the development of 237 detached single family residences and 163 attached single family residences on 83.90± acres across one parcel in East Fernley. The City of Fernley is capable of providing sewer service from the site and sewers to the northeast to the East wastewater treatment plan via the Highway 50 Lift Station. The project lies within the City of Fernley service territory; therefore, annexation is not required. 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 and required to serve the development.

The project is comprised of one parcel totaling 83.90± acres. The project is located within the City of Fernley's retail service territory North of Farm District Road and West of Red Rock Road.

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.

Table 1: Proposed Parcel Information

APN	Proposed Parcel-Use	Acreage±
021-341-18	Parcel 1 – Vacant – Mixed Zoning	83.90
Total Acres =		83.90

Project Sewage Peak Hour Flows:

According to the 2009 Sewer Master Plan, anticipated sewer flows from the Clements Ranch development are estimated to be 250 gpd/ERC with a peak hour factor (PHF) of 3 for a total average day flow of 100,000 gpd (69.5 gpm) and peak hour flow of 300,000 gpd (208.3 gpm). The number of ERC's is estimated to be 400 ERCs. Table 2 lists the estimated project flows based on master planning criteria.

Table 2: Clements Ranch Project Flows

Phase	Site Total ERC's*	ADF (GPM/GPD)	PHF (GPM/GPD)
Clements Ranch – Single Family Attached	237	41.14/59,250	123.43/177,750
Clements Ranch – Single Family Detached	163	28.29/40,750	84.90/122,250
Total	400	69.43/100,000	208.3/300,000

*ERC Calculation is for modeling purposes per 2009 Master Plan and is not utilized for payment of connection fees.

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Reno, Nevada
89503

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775.
329.5559

Facsimile:
775.
329.5406

Email:
mail@
shawengineering
.com

Conclusions

The City of Fernley sewer system appears to have sufficient capacity to serve the development as proposed. Clements Ranch will connect to an existing manhole located with Red Rock Blvd for service. An easement and access road(s) per the design standards will be required for the portion of sewer main crossing the property to the Northeast.

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.

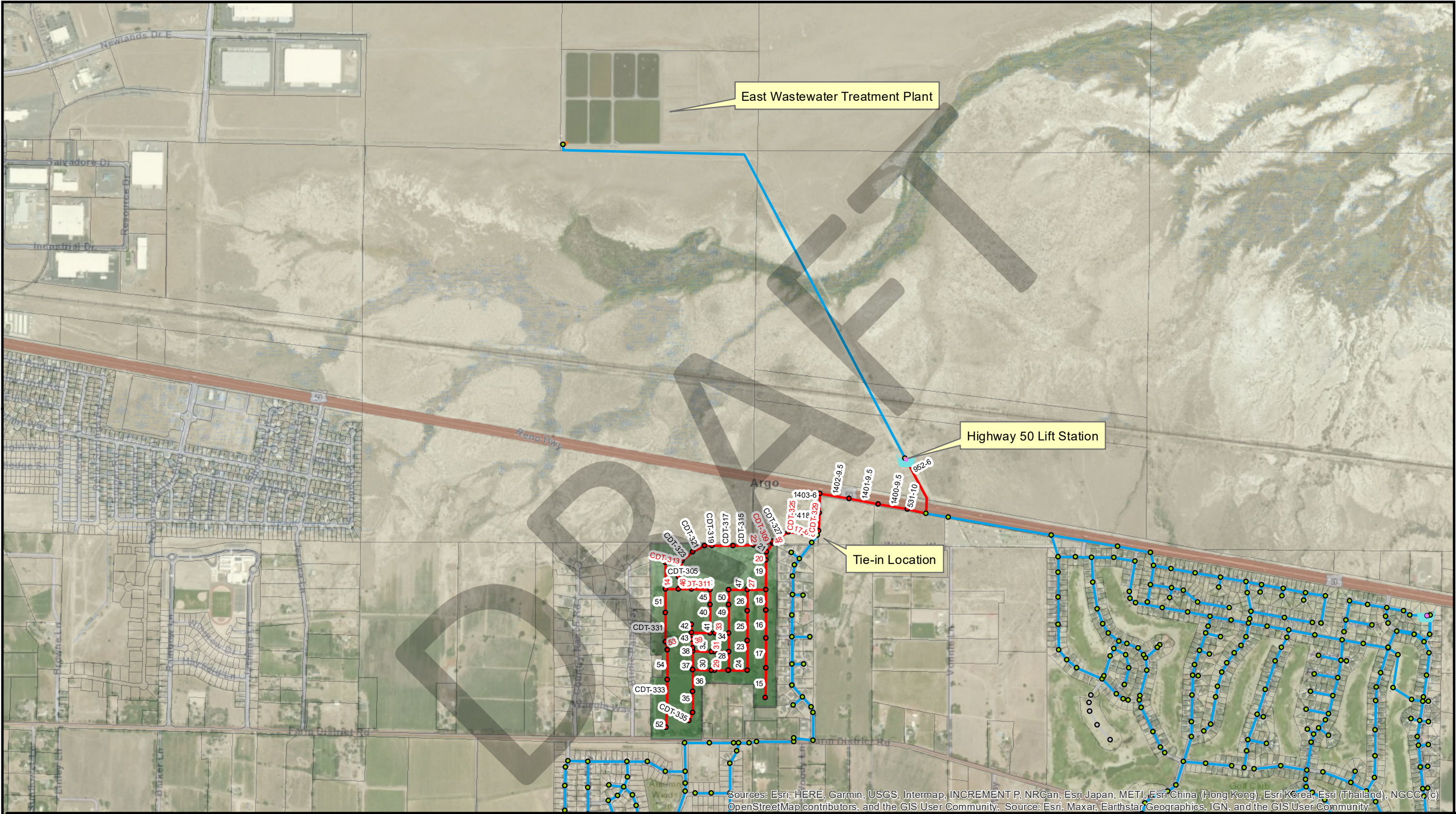
Assumptions and Final Design Guidance:

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 design 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

Discovery Pipe Report



Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community. Source: Esri, Maxar, Earthstar Geographics, IGN, and the GIS User Community.

City of Fernley Sewer System Map

Maps are for graphical purposes only. They do not represent legal survey. Shaw Engineering cannot assume liability for any damages caused by any errors or omissions in the data and makes no warranty, expressed or implied, nor does the fact of distribution constitute such a warranty.



Clements Ranch - PHF Report - Before Development					
ID	Diameter (in)	Percent Slope (%)	Maximum Flow (gpm)	Maximum Velocity (ft/s)	d/D
531-10	18	0.169	136.343	1.384	0.19
1400-9.5	18	0.28	136.345	1.816	0.15
1401-9.5	18	0.28	136.36	1.816	0.15
1402-9.5	18	0.28	136.394	1.816	0.15
1403-6	18	0.384	136.534	1.981	0.15
1418-6	18	2.061	136.618	3.411	0.10
1417-6.5	18	3.133	136.659	3.94	0.09
952-6	12	1.543	333.165	4.184	0.28

DRAFT

Clements Ranch - PHF Report - After Development					
ID	Diameter (in)	Percent Slope (%)	Maximum Flow (gpm)	Maximum Velocity (ft/s)	d/D
CDT-329	8	3.8	208.0	6.1	0.30
531-10	18	0.2	302.8	2.0	0.25
1400-9.5	18	0.3	303.0	2.2	0.24
1401-9.5	18	0.3	303.1	2.3	0.23
1402-9.5	18	0.3	303.5	2.3	0.23
1403-6	18	0.4	303.9	2.5	0.22
1418-6	18	2.1	304.1	4.2	0.15
1417-6.5	18	3.1	304.1	5.0	0.13
952-6	12	1.5	443.4	4.5	0.32



April 18, 2023
Project No. 3460004

Matt Clements
2464 Rose Hill Road
Marietta, NY 13110

Re: Geotechnical Due Diligence Letter Report
Clements Ranch
APN 021-341-18
Fernley, Lyon County, Nevada

Ref: International Residential Code 2018
Northern Nevada Amendments – City of Fernley

Clements Ranch
Tentative Subdivision Map
April 2023
Wood Rodgers

Dear Matt:

Wood Rodgers is pleased to present our geotechnical due diligence letter for the referenced parcel located in Fernley, Nevada. The purpose of our due diligence review is to provide a summary of geotechnical considerations that could potentially influence the development of the property. This summary has been based on review of readily available published documents. A design level geotechnical report will be necessary to meet the requirements of the IRC and to provide design level site grading and foundation design recommendations.

DELIVERABLES

As stated in our project proposal, the following are presented or discussed:

- Description of the project site
- Review of readily available published documents including NRCS Soil Survey maps, geologic maps, NDWR well data, and previous geotechnical reports completed near the project vicinity.
- General summary of the site soils and geology.
- Consistent with the requirements of the IRC, discussion regarding seismic hazard potential.
- Preliminary grading considerations.
- Anticipated types of suitable foundations.

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Attn: Matt Clements

April 18, 2023

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- Preliminary drainage considerations that may affect foundation and concrete slab-on-grade performance.
- Recommendations for additional explorations necessary to develop a design level geotechnical report.

PROJECT DESCRIPTION

The project consists of constructing 241 single family residential homes with associated utilities and access roads. The residences are anticipated to be up to two stories in height, wood-framed, with conventional spread foundations or structural slab-on-grade foundations. Foundation loads are anticipated to be light. A storm retention basin extending to 14-feet in depth, with side slopes of 2:1 (H:V), is planned near the northwest corner of the site. Underground utilities will be provided by a variety of public and private services. Roadways will be designed to be consistent with City of Fernley/Lyon County standards.

Wood Rodgers has prepared Grading Plans for the project in April 2023. Based on these grading plans, cuts and fills for the residences are anticipated to be on the order of 6-feet and 4-feet, respectively.

SITE CONDITIONS

The project site, located in Fernley, Lyon County, Nevada, encompasses an area of approximately 90 acres and has a central latitude and longitude of 39.5890°N and 119.1726°E, respectively. As shown in Attachment A, site access is off Red Rock Road to the northeast of the site. The property is bordered by single-family residences to the west and east and Farm District Road to the south. The project area is comprised of two parcels, APNs 021-201-12 and 021-341-18.

From the northern portion of project area, the site slopes upward to the south at approximately 2-percent. The southern portion of the site is abandoned pasture, and undeveloped land is in the north. Vegetation in the undeveloped area consists of native grasses and brush.

PRELIMINARY GEOLOGIC AND SOIL AND GROUNDWATER CONDITIONS

Based on the United States Geologic Survey (USGS), Preliminary Geologic Map of the Fernley West Quadrangle, Lyon, Storey, and Washoe Counties, Nevada, the site is mapped in Quaternary aged alluvial, lacustrine, and disturbed agricultural land deposits. Natural Resource Conservation Services' (NRCS) Soil Survey Maps indicate that most of the site soils consist of fine-grained soils characterized as low plasticity silts and high plasticity sandy clays. Previous explorations completed approximately 0.25-miles west of the project site indicate medium to high plasticity sandy clays in the upper 5-feet of the soil profile underlain by silty/clayey sands. Due to the agricultural history of the site, limited fills may have been placed to facilitate irrigation.

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April 18, 2023

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Nevada Division of Water Resources (DWR) well logs indicate the static water level is located at approximately 25 to 35-feet below the existing ground surface on the project area.

PRELIMINARY SEISMIC HAZARDS*Surface Rupture*

The USGS Quaternary Faults Map and the NBMG Fault Map were accessed to review the proximity of any active faults as previously characterized. The closest mapped fault, which is considered Holocene active (< 15,000 years), is part of the Pyramid Lake fault zone and is located approximately 4.75-miles west of the property. The mapped structure is sufficiently distant that offsets or additional analysis and exploration related to on-site rupture hazards is not required during the design level geotechnical study.

PRELIMINARY SEISMIC DESIGN CRITERIA

Per the 2018 Northern Nevada Amendments to the IRC, adopted by the City of Fernley, residential structures should be designed for Seismic Design Category D1. Site Class D has been assigned for the project site. The ASCE 7 Hazards report is presented in Attachment B for preliminary design considerations.

PRELIMINARY SITE PREPARATION AND GRADING CONSIDERATIONS

All vegetation and organic debris will need to be cleared and grubbed from structural areas and disposed offsite or placed in non-structural fill areas.

Based on proximate investigations and readily available published data, the near surface soils are anticipated to range from clay and fine-grained soils underlain by granular soils (at depths on the order of 6-feet). Overexcavation of clay soils and replacement with structural fill or specialized foundation alternatives will be required to mitigate potentially expansive clays. Preliminary separation requirements below standard spread foundations include 2-feet of separation below footings and 1-foot below slab-on-grade foundations and structural pavement sections. A presumptive allowable static bearing pressure of 2,000 psf may be assumed when considering standard spread foundation support for the residences. When considering post-tensioned slabs, a preliminary slab thickness 10 to 11-inches with an additional 2 to 4-inch turn-down would likely be required. Final design values would need to be developed during performance of a design level geotechnical report.

Per the referenced civil drawings (Wood Rodgers, 2023), the proposed storm retention basin will have side slopes of 2:1 (H:V) extending to depths on the order of 14-feet. Typically, 2:1 (H:V) slopes require armoring. Slopes steeper than 3:1 (H:V) are typically addressed with a combination of revegetation and localized armoring or the incorporation of landscape retaining walls.

CORROSION POTENTIAL FOR CONCRETE AND STEEL

NRCS maps presenting corrosion potential to concrete, and steel were reviewed. Severe corrosion potential for steel and low to severe corrosion potential for concrete were reported. The geotechnical investigation will specifically test for the presence of sulfates and chlorides. Sulfate exposure can typically be readily mitigated through the incorporation of higher strength concrete, air-entrainment, and/or the incorporation of flyash or the use of Type IP cement. Chlorides can be more critical for post tensioned slab-on-grade soils and mitigation is typically addressed through the structural engineer.

STRUCTURAL PAVEMENT CONSIDERATIONS

Structural fill will be required between roadbed grade and the surface fine grained and clay soils. Per City of Fernley standard specifications, a minimum 3-inches of Type 3 AC capping 6-inches of Type 2, Class B aggregate base for private and local residential streets will be adequate where granular soil is encountered or where separation requirements are met.

DEVELOPMENT OF A DESIGN LEVEL GEOTECHNICAL REPORT

Based upon our findings of this investigation, the development of a geotechnical design report, consistent with the requirements of the 2018 International Residential Code (IRC) and City of Fernley development standards is recommended. The anticipated services are outlined below:

- Advance eight to twelve test pits excavated with a rubber-tired backhoe are proposed up to a maximum depth of 10-feet within the subdivision area.
- Perform two to three percolation tests within the proposed storm retention basin area.
- Perform laboratory testing on soils encountered and sampled during exploration. It is anticipated laboratory testing to consist of: soil moisture content (ASTM D2216), gradation (ASTM D6913), and plasticity (ASTM D4318). Corrosion testing will also be performed to provide a basis to assess the site soils' potential effects on concrete and steel elements.
- Perform a geophysical survey to measure the shear wave velocity profile to a depth of 100 feet to identify Site Class.
- Prepare a general summary of the site soils and geology in consideration of the new and existing information.
- Develop a summary of surface and ground water conditions encountered and discuss potential influence on site grading.
- Provide seismic design values based on the most current IRC amendments adopted by the City of Fernley.
- Develop and present site preparation and grading recommendations for standard spread foundations including allowable bearing pressures, appropriate footing depths and widths, and anticipated settlement.

CLEMENTS RANCH

Attn: Matt Clements

April 18, 2023

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- Develop and present site preparation and grading recommendations for post-tensioned slabs-on-grade including allowable bearing pressures, required turn-down depths, and additional design and maintenance practices stipulated by the Post-Tensioning Institute (PTI).
- Discuss drainage considerations that may affect foundation and concrete slab-on-grade performance.
- Present concrete and concrete slab-on-grade support options.
- Develop and present site preparation and grading recommendations for dedicated roadways and required structural pavement sections.

SUMMARY

We appreciate the opportunity to provide this due diligence geotechnical investigation. Please note that this document has been prepared based on published data. Varying conditions, and conditions not yet identified, may come to light or may be encountered during development of a design-level geotechnical report. Please contact our office if you have any related questions.

Sincerely,

WOOD RODGERS, INCORPORATED

Lilian Lorincz, PE
Engineer
RE Number: 030237
Expires 12/31/2023



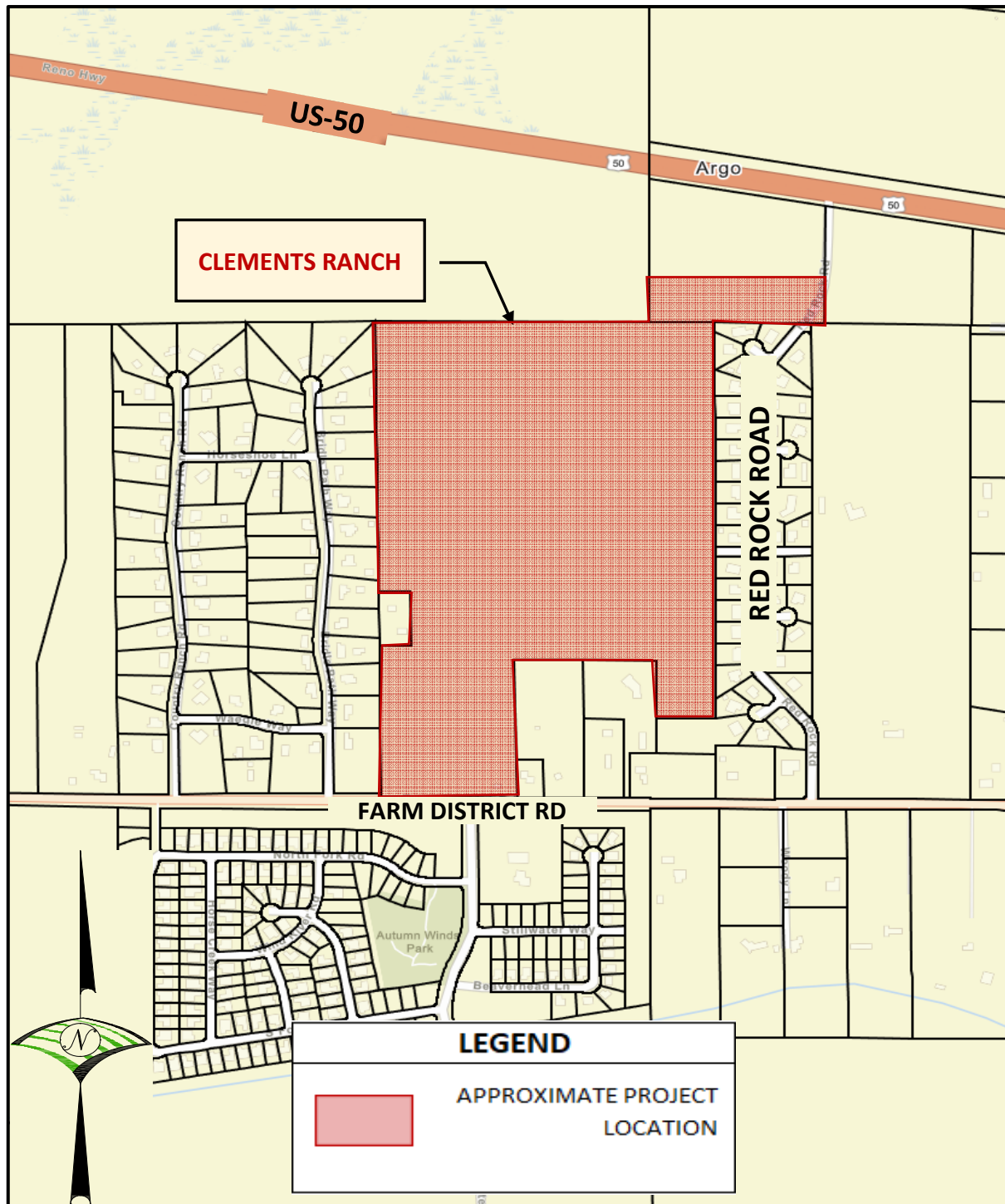
Mischelle J. Smith, PE
Senior Engineer

Attachments

Attachment A – Vicinity Map
Attachment B – ASCE 7 Hazards Report
Attachment C – NRCS Corrosion Reports



ATTACHMENT A VICINITY MAP



CLEMENTS RANCH
PROJECT NO. 3460004

VICINITY MAP

ATTACHMENT A

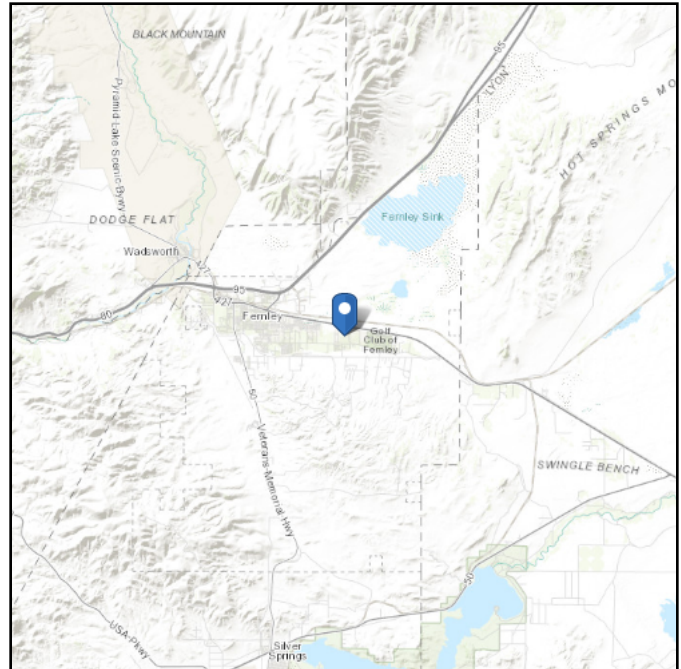
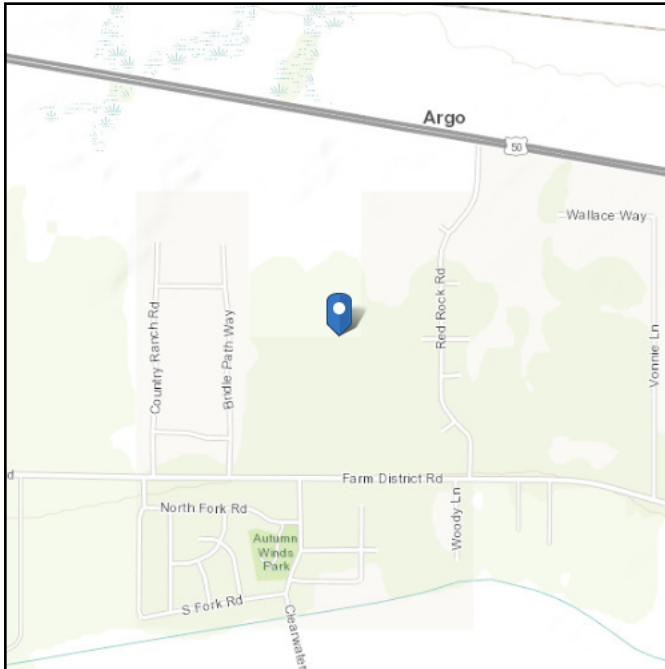
ATTACHMENT B
ASCE 7 HAZARDS REPORT

ASCE 7 Hazards Report

Address:
No Address at This Location

Standard: ASCE/SEI 7-16
Risk Category: II
Soil Class: D - Default (see Section 11.4.3)

Latitude: 39.589
Longitude: -119.1726
Elevation: 4134.0634525 ft (NAVD 88)



Site Soil Class: D - Default (see Section 11.4.3)

Results:

S_S :	1.077	S_{D1} :	N/A
S_1 :	0.386	T_L :	6
F_a :	1.2	PGA :	0.484
F_v :	N/A	PGA _M :	0.581
S_{MS} :	1.292	F_{PGA} :	1.2
S_{M1} :	N/A	I_e :	1
S_{DS} :	0.861	C_v :	1.315

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

Data Accessed: Thu Apr 13 2023

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

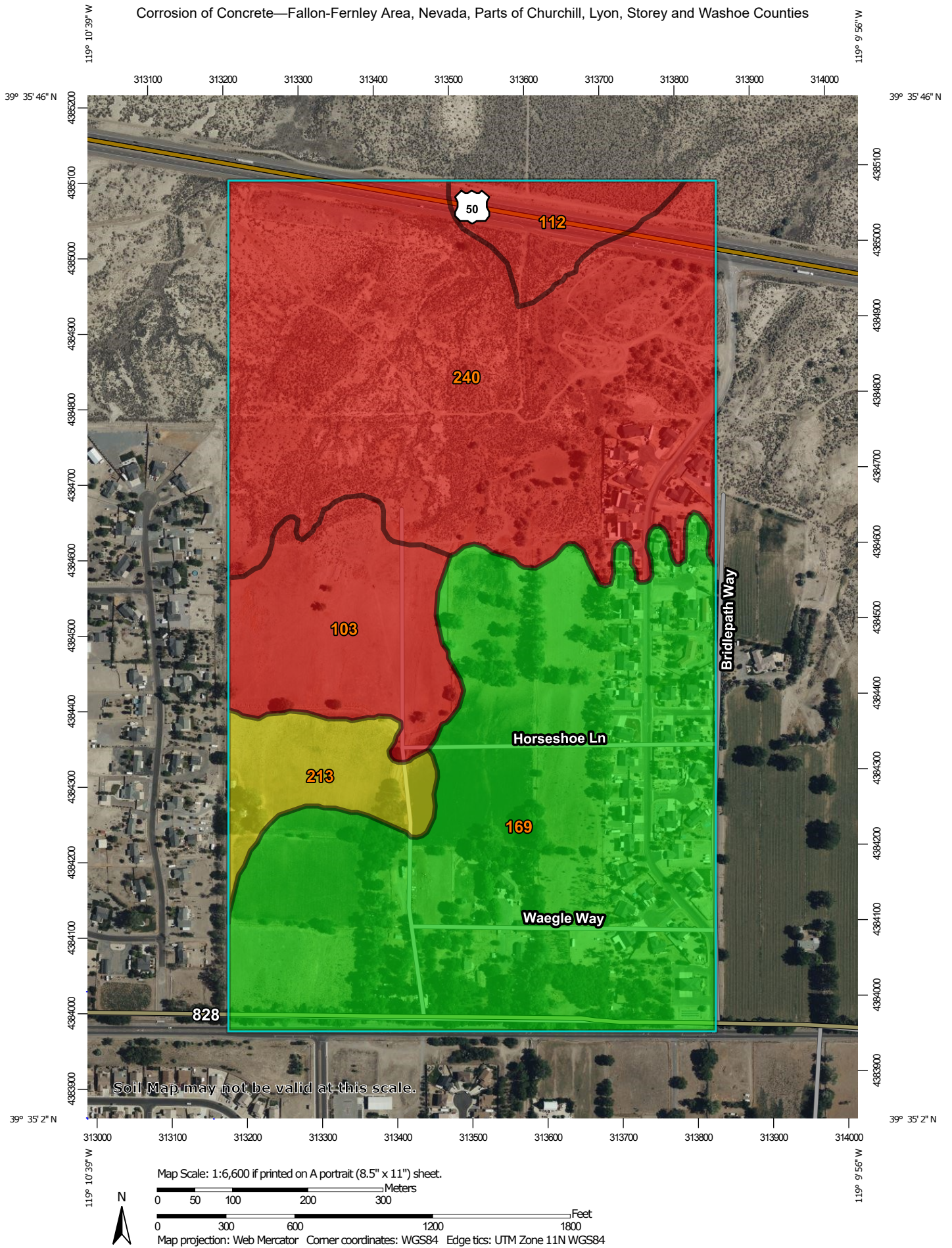
The ASCE 7 Hazard Tool is provided for your convenience, for informational purposes only, and is provided “as is” and without warranties of any kind. The location data included herein has been obtained from information developed, produced, and maintained by third party providers; or has been extrapolated from maps incorporated in the ASCE 7 standard. While ASCE has made every effort to use data obtained from reliable sources or methodologies, ASCE does not make any representations or warranties as to the accuracy, completeness, reliability, currency, or quality of any data provided herein. Any third-party links provided by this Tool should not be construed as an endorsement, affiliation, relationship, or sponsorship of such third-party content by or from ASCE.

ASCE does not intend, nor should anyone interpret, the results provided by this Tool to replace the sound judgment of a competent professional, having knowledge and experience in the appropriate field(s) of practice, nor to substitute for the standard of care required of such professionals in interpreting and applying the contents of this Tool or the ASCE 7 standard.

In using this Tool, you expressly assume all risks associated with your use. Under no circumstances shall ASCE or its officers, directors, employees, members, affiliates, or agents be liable to you or any other person for any direct, indirect, special, incidental, or consequential damages arising from or related to your use of, or reliance on, the Tool or any information obtained therein. To the fullest extent permitted by law, you agree to release and hold harmless ASCE from any and all liability of any nature arising out of or resulting from any use of data provided by the ASCE 7 Hazard Tool.

ATTACHMENT C
NRCS CORROSION REPORTS

Corrosion of Concrete—Fallon-Fernley Area, Nevada, Parts of Churchill, Lyon, Storey and Washoe Counties



MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Background

 Aerial Photography

Soils

Soil Rating Polygons

-  High
-  Moderate
-  Low
-  Not rated or not available

Soil Rating Lines

-  High
-  Moderate
-  Low
-  Not rated or not available

Soil Rating Points

-  High
-  Moderate
-  Low
-  Not rated or not available

Water Features

 Streams and Canals

Transportation

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

MAP INFORMATION

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

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

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

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

Source of Map: Natural Resources Conservation Service

Web Soil Survey URL:

Coordinate System: Web Mercator (EPSG:3857)

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

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

Soil Survey Area: Fallon-Fernley Area, Nevada, Parts of Churchill, Lyon, Storey and Washoe Counties

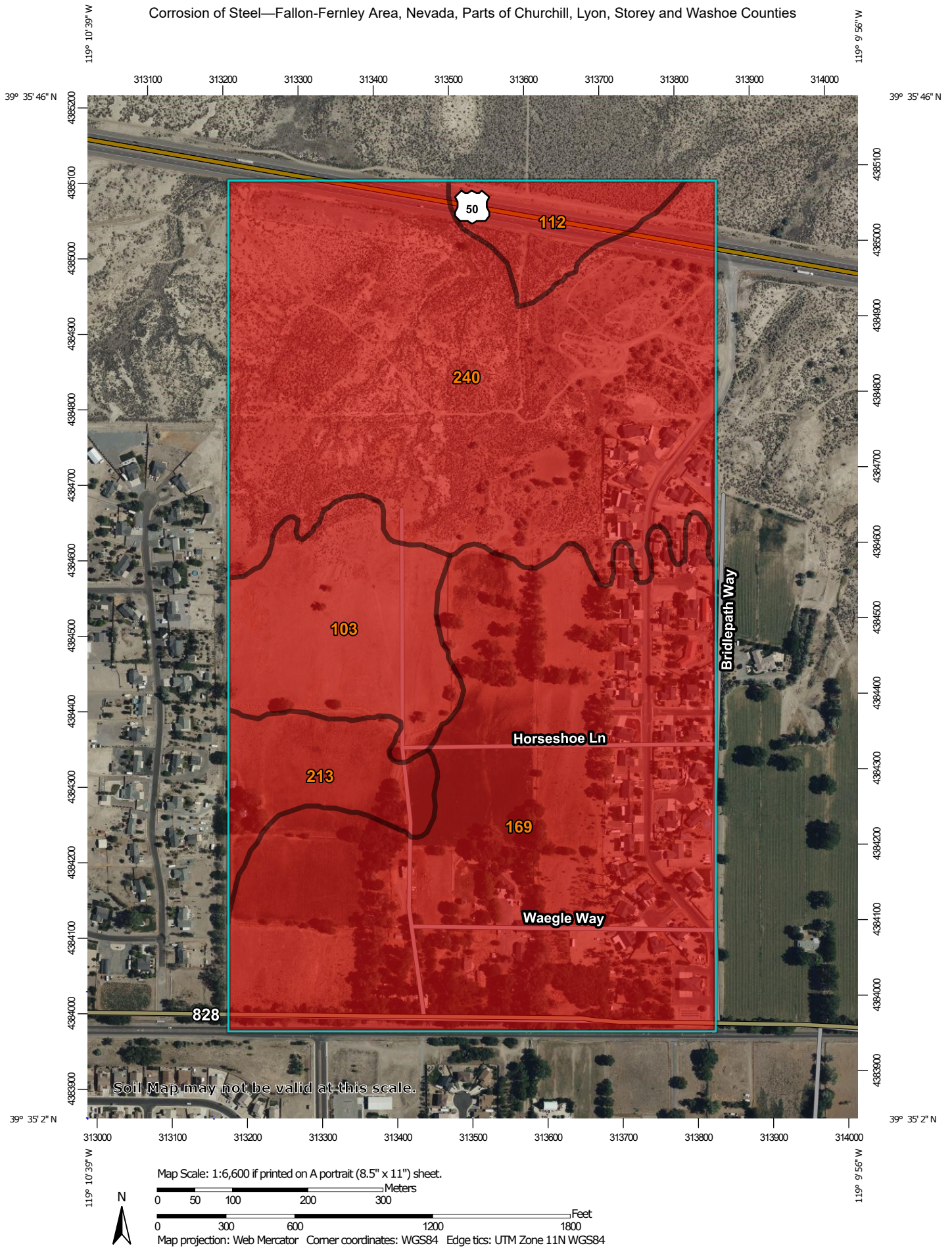
Survey Area Data: Version 18, Sep 8, 2022

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

Date(s) aerial images were photographed: Jun 10, 2022—Jun 14, 2022

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

Corrosion of Steel—Fallon-Fernley Area, Nevada, Parts of Churchill, Lyon, Storey and Washoe Counties



Natural Resources
Conservation Service

Web Soil Survey
National Cooperative Soil Survey

4/12/2023
Page 1 of 3
Page 458 of 528

MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Background

 Aerial Photography

Soils

Soil Rating Polygons

 High
 Moderate
 Low
 Not rated or not available

Soil Rating Lines

 High
 Moderate
 Low
 Not rated or not available

Soil Rating Points

 High
 Moderate
 Low
 Not rated or not available

Water Features

 Streams and Canals

Transportation

 Rails
 Interstate Highways
 US Routes
 Major Roads
 Local Roads

MAP INFORMATION

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

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

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

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

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

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

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

Soil Survey Area: Fallon-Fernley Area, Nevada, Parts of Churchill, Lyon, Storey and Washoe Counties
 Survey Area Data: Version 18, Sep 8, 2022

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

Date(s) aerial images were photographed: Jun 10, 2022—Jun 14, 2022

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

Corrosion of Steel

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
103	Appian fine sandy loam, 0 to 2 percent slopes	High	18.3	10.1%
112	Bango sandy loam, 2 to 4 percent slopes	High	6.9	3.8%
169	Juva sandy loam, 0 to 2 percent slopes	High	76.3	42.1%
213	Swingler sandy loam, 0 to 2 percent slopes	High	9.2	5.1%
240	Parran-Sondoa association	High	70.5	38.9%
Totals for Area of Interest			181.3	100.0%

Description

"Risk of corrosion" pertains to potential soil-induced electrochemical or chemical action that corrodes or weakens uncoated steel. The rate of corrosion of uncoated steel is related to such factors as soil moisture, particle-size distribution, acidity, and electrical conductivity of the soil. Special site examination and design may be needed if the combination of factors results in a severe hazard of corrosion. The steel in installations that intersect soil boundaries or soil layers is more susceptible to corrosion than the steel in installations that are entirely within one kind of soil or within one soil layer.

The risk of corrosion is expressed as "low," "moderate," or "high."

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Corrosion of Concrete

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
103	Appian fine sandy loam, 0 to 2 percent slopes	High	18.3	10.1%
112	Bango sandy loam, 2 to 4 percent slopes	High	6.9	3.8%
169	Juva sandy loam, 0 to 2 percent slopes	Low	76.3	42.1%
213	Swingler sandy loam, 0 to 2 percent slopes	Moderate	9.2	5.1%
240	Parran-Sondoa association	High	70.5	38.9%
Totals for Area of Interest			181.3	100.0%

Description

"Risk of corrosion" pertains to potential soil-induced electrochemical or chemical action that corrodes or weakens concrete. The rate of corrosion of concrete is based mainly on the sulfate and sodium content, texture, moisture content, and acidity of the soil. Special site examination and design may be needed if the combination of factors results in a severe hazard of corrosion. The concrete in installations that intersect soil boundaries or soil layers is more susceptible to corrosion than the concrete in installations that are entirely within one kind of soil or within one soil layer.

The risk of corrosion is expressed as "low," "moderate," or "high."

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher



TO: Derek Starkey, P.E.

DATE: April 17, 2023

FROM: Cody Black, P.E.

RE: Clements Ranch Water Discovery CoF WO# W&S2023.02.06

SUMMARY:

The applicant has proposed the development of 237 detached single family residences and 163 attached single family residences on 83.90± acres across one parcel in East Fernley. The City of Fernley is capable of providing water service from the existing gravity pressure zone 1. The project lies within the City of Fernley service territory; therefore, annexation is not required.

PURPOSE:

The purpose of this discovery is to identify potential offsite water facility improvements.

The project is comprised of one parcel totaling 83.90± acres. The project is located within the City of Fernley's retail service territory North of Farm District Road and West of Red Rock Road.

DISCUSSION:

The project parcel is listed in Table 1 and is shown in Figure 1. Water capacity is available on a first come first served basis. The existing system is deemed to have sufficient ability to serve the proposed development. The project will be required to comply with the looping requirements of NAC 445A.6712

Table 1: Proposed Parcel Information

APN	Parcel Land-Use	Acreage±
021-341-18	Parcel 1 – Vacant – Mixed Zoning	83.90
Total Acres =		83.90

Project Water Demands

Project demands for the Clements Ranch development come from the 2008 Water Master Plan. Project demands and demand scenarios are listed in Table 2.

Table 2: Clements Ranch Project Demand Scenarios

Phase	Qty.	Unit	ADD Modeling Allocation Rate	Site Total ERC's	ADD (GPM)	MDD (GPM) (2.1xADD)	PHD (GPM) (2.0xMDD)
Single Family (Detached)	237	SFR	1000 gpd/ERC	237	164.6	345.7	691.4
Single Family (Attached)	163	SFR	1000 gpd/ERC	163	113.2	237.7	475.4
TOTAL	400			400	277.8	583.4	1,166.8

20 Vine Street
Reno, Nevada
89503

Telephone:
775.
329.5559

Facsimile:
775.
329.5406

Email:
mail@
shawengineering
.com

Existing System/Resource Capacity

Firm production capacity with six wells in operation is stated as 6,010 gpm (8.65 MGD) per the "City of Fernley Water Master Plan". In addition, the Water Treatment Plant has an operational capacity of 12 to 20 MGD and the system has a total treated water storage capacity of 7.0 MG. 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 application for NDEP approval is organized. Table 3 lists existing demands and system capacity.

Table 3: Existing System and Resource Capacity

	Existing	Required	Meets Requirement?
ADD	3.09 MGD 2,145 gpm	-	-
MDD	6.50 MGD 4,513 gpm	-	-
Firm Production Capacity	8.65 MGD 6,010 gpm	6.50 MGD 4,513 gpm	Yes
Total Production Capacity	12.32 MGD 8,560 gpm	6.50 MGD 4,513 gpm	Yes
Storage Capacity	7.0 MG	6.19 MG	Yes
Treatment Capacity	20 MGD 13,889 gpm	6.50 MGD 4,513 gpm	Yes

Post-Development System/Resource Capacity

Following the completion of the Duets at Clements Ranch development it would bring the ADD from 3.09 MGD to 3.49 MGD and the MDD from 6.50 MGD to 6.87 MGD. Based on current modeling, there is deemed to be sufficient system capacity with regards to groundwater and treatment plant capacity for the new development. Table 4 lists the future system demand.

Table 4: Post Development System and Resource Capacity

	Distribution Operations	Required	Meets Requirement?
ADD	3.49 MGD 2,423 gpm	-	-
MDD	7.34 MGD 5,096 gpm	-	-
Firm Production Capacity	8.65 MGD 6,010 gpm	7.34 MGD 5,096 gpm	Yes
Total Production Capacity	12.32 MGD 8,560 gpm	7.34 MGD 5,096 gpm	Yes
Storage Capacity	7.0 MG	6.87 MG	Yes
Treatment Capacity	20 MGD 13,889 gpm	7.34 MGD 5,096 gpm	Yes

Regional Water System Improvements

Regional offsite water system improvements are not required for the construction of this project; however, system looping throughout the development will be required and the current dead ends shown will need to be looped or the development reconfigured to eliminate the need for dead ends.

Fire Flows

For this discovery, fire flow demand has been assumed to be 1,500 GPM maximum for 2 hours based on the International Fire Code for One and Two-Family Dwellings with fire areas >3,600 SF. Actual fire flow requirements will be determined by the NLCFPD Fire Marshal.

Dead Ends and Looping

The water service plan accounts for Nevada Administrative Code section 445A.6712, requiring systems to be designed, to the extent possible, to eliminate dead ends.

ASSUMPTIONS:

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. Project pressure criteria are:
 - a. Minimum MDD pressure of 40 pounds per square inch (psi) at building pad elevation with tank level at top of fire storage
 - b. Minimum peak hour pressure of 30 psi at building pad elevation with tank level at top of emergency storage
 - c. MDD plus fire flow minimum pressure of 20 psi at the center of street elevation with tank level at bottom of fire storage.
 - d. Maximum pressures of approximately 85 psi.
3. Facility requirements for the Project will be based on fire flows provided by the North Lyon County Fire District. Changes in facility maximum day demand or fire flow may change this requirement.
4. **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.**
5. Easements, permits, and all pertinent Agency approvals will be obtained for the design and construction of the water infrastructure necessary to serve the proposed Project.
6. The City of Fernley plans to reevaluate the maximum day demand equations for all customer usage types within the next 12 months, as part of a Water Master Plan Update.
7. The project will require separate irrigation meter(s), dedicated fire service line(s), and adequate backflow devices for all commercial services.
8. All backflow devices shall be placed at the edge of the public right of way or water easement.
9. Dead ends between phases shall have fire hydrants for flushing.
10. New public water mains shall be looped for redundancy.

Review of conceptual site plans or tentative maps by the City of Fernley and/or agents of the City of Fernley shall not constitute an application for service, nor implies a commitment by the City of Fernley for planning, design, or construction of the water

facilities necessary for service. The extent of required off-site and on-site water infrastructure improvements will be determined by the City of Fernley upon receiving a specific development proposal or complete application for service and upon review and approval of a water facilities plan by the Nevada Division of Environmental Protection (NDEP). NAC 445A Water System regulations are subject to interpretation, the City of Fernley and/or agents of the City of Fernley cannot guarantee that a subsequent water facility plan will be approved by the NDEP or that a timely review and approval of the Project will be made. The Applicant should carefully consider the financial risk associated with committing resources to their Project prior to receiving all required approvals. After submittal of a complete Application for Service, the required facilities, the cost of these facilities, which could be significant, and associated fees will be estimated and will be included as part of the Water Service Agreement necessary for the Project. All fees must be paid to the City of Fernley prior to water being delivered to the Project.

Please do not hesitate to contact me with any questions, comments, or if additional information is needed regarding this discovery.

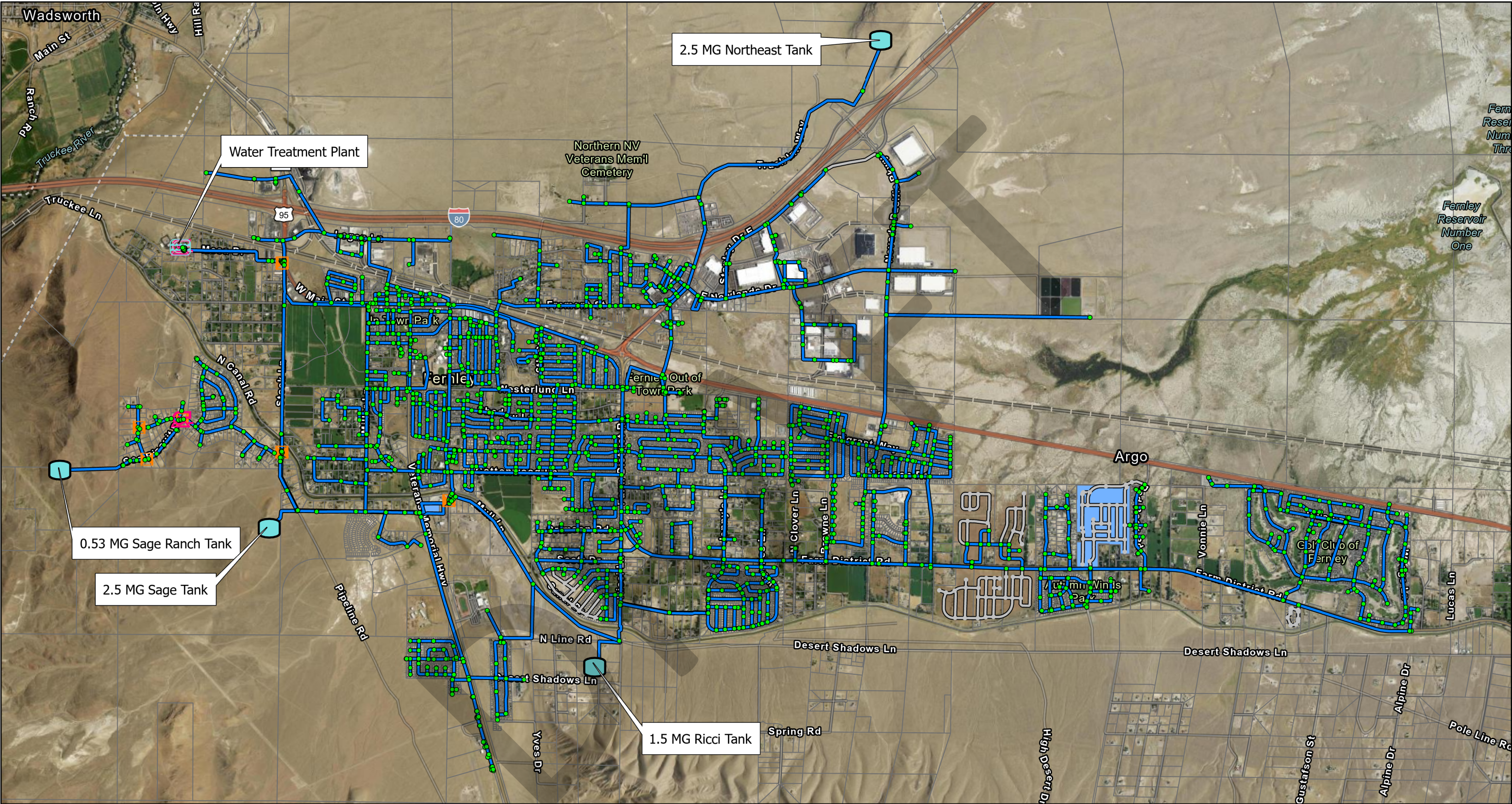


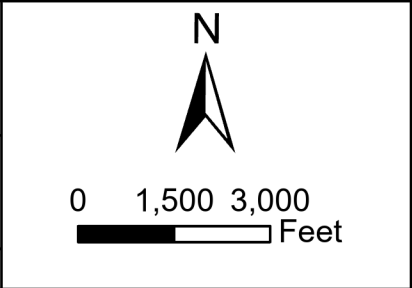
Figure 1: City of Fernley System Map and Project Location

Legend	Valve	Pump	Reservoir	Tank	Junction	Description	Parcel Master
Pipe Active Inactive	Active	Active Inactive	Active	Active	Active Inactive	Project Location	

Source: Esri, USDA FSA, California State Parks, Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, Bureau of Land Management, EPA, NPS, US Census Bureau, USDA, California State Parks, Esri, HERE, Garmin, FAO, NOAA, USGS, Bureau of Land Management, EPA, NPS, Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community, Esri, USGS

SHAW ENGINEERING
Trusted Engineering Expertise

Publication Time:
3/27/2023 8:30 AM



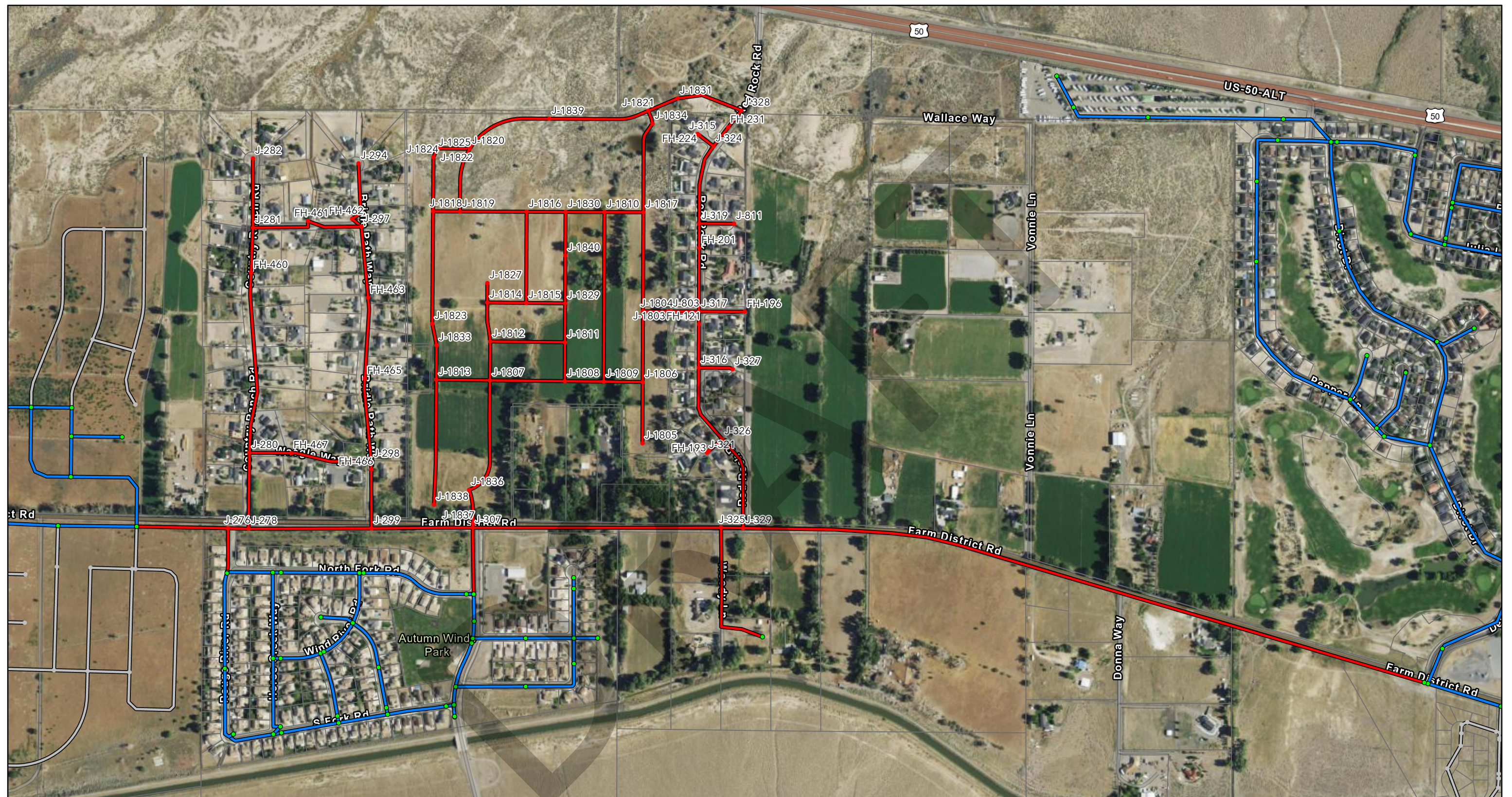
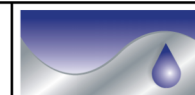
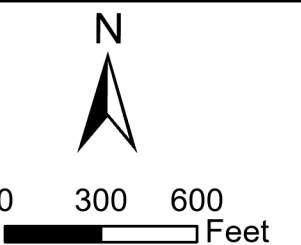


Figure 2: Junction ID's



SHAW ENGINEERING
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Publication Time:
4/17/2023 7:10 AM



Clements Ranch - MDD+FF Hydrant Report - Before Development						
ID	Hydrant Available Flow (gpm)	Hydrant Pressure at Available Flow (psi)	Critical Node ID for Design Run	Critical Pressure for Design Run (psi)	Fire-Flow Demand (gpm)	Residual Pressure (psi)
FH-121	2,466	20.1	FH-121	20	1,000	72.5
FH-193	3,076	20.3	FH-193	20	1,000	71.3
FH-196	2,227	20.1	FH-196	20	1,000	70.2
FH-201	2,213	20.1	FH-201	20	1,000	72.1
FH-224	1,968	20.0	FH-224	20	1,000	73.0
FH-231	1,993	20.0	FH-231	20	1,000	75.4
FH-460	3,795	20.5	FH-460	20	1,000	81.8
FH-461	3,727	20.5	FH-461	20	1,000	84.0
FH-462	3,589	20.4	FH-462	20	1,000	83.8
FH-463	3,789	20.5	FH-463	20	1,000	80.4
FH-465	4,086	20.7	FH-465	20	1,000	77.8
FH-466	5,248	20.0	FH-466	20	1,000	74.6
FH-467	4,809	20.0	FH-467	20	1,000	75.0

Clements Ranch - MDD+FF Hydrant Report - After Development							
ID	Hydrant Design Flow (gpm)	Hydrant Pressure at Design Flow (psi)	Critical Node ID for Design Run	Critical Pressure for Design Run (psi)	Fire-Flow Demand (gpm)	Residual Pressure (psi)	Change in Residual Pressure
FH-121	3,580	22.2	J-1838	20	1,000	74.3	1.8
FH-193	3,527	20.0	FH-193	20	1,000	69.4	-1.9
FH-196	3,050	20.0	FH-196	20	1,000	72.5	2.3
FH-201	3,334	20.0	FH-201	20	1,000	75.9	3.8
FH-224	3,129	20.0	FH-224	20	1,000	80.6	7.6
FH-231	3,396	20.0	FH-231	20	1,000	84.1	8.7
FH-460	3,631	20.8	FH-460	20	1,000	79.1	-2.7
FH-461	3,573	20.9	FH-461	20	1,000	81.3	-2.7
FH-462	3,445	20.8	FH-462	20	1,000	81.1	-2.7
FH-463	3,620	20.9	FH-463	20	1,000	77.6	-2.7
FH-465	3,884	20.0	FH-465	20	1,000	75.1	-2.7
FH-466	4,909	20.0	FH-466	20	1,000	71.9	-2.8
FH-467	4,524	20.0	FH-467	20	1,000	72.2	-2.7
J-1840	3,324.50	22.6	J-1838	20	1,500	65.9	-
Indicates New Hydrant							

APN# 021-341-18

Recording Requested by:

Name: City of Fernley

Address: 595 Silver Lace Blvd

City/State/Zip: Fernley, NV 89408

Mail Tax Statements to:

Name: _____

Address: _____

City/State/Zip: _____

DOC #: 666752

02/10/2023 01:28 PM Page: 1 of 14

OFFICIAL RECORD

Requested By:
CITY OF FERNLEY

Lyon County, NV
Anita Talbot, Recorder

Fee: \$0.00 RPTT: \$0.00
Recorded By: blathrop



DA22003 Clements Ranching, LLC

Title of Document

(Required Field)

FILL IN ALL THAT APPLY:

The Undersigned Hereby Affirms That This Document Submitted For Recording Contains Personal Information As Required By Law*:

Specify Law* _____

Signature _____

Specify Law* _____

Print Name _____

Title _____

*If there is no applicable State or Federal Law, Personal Information must be removed prior to recording.

If this document is a re-record or correction, fill out below:

Correcting Document#: _____ Amending: _____

Reason for re-record: _____

(For Re-records, all pages from original document must be included, \$25 Non-conforming Fee may apply)

If legal description is in metes & bounds, indicate where it was obtained:

_____ (Document Title), Book _____ Page _____or

Document # _____ recorded _____(date) in the

Lyon County Recorder's Office.

-OR-

If prepared by a surveyor, provide name and address:

"Personal information" means a natural person's first name or first initial and last name in combination with any one or more of the following data elements:

1. Social security number.
2. Driver's license number or identification card number.
3. Account number, credit card number or debit card number, in combination with any required security code, access code or password .

When recorded, mail to:
City Clerk
City of Fernley
595 Silver Lace Boulevard
Fernley, NV 89408

DEVELOPMENT AGREEMENT

ARTICLE 1. PARTIES, DEFINITIONS AND PROPERTY DESCRIPTIONS.

This Development Agreement (“**Agreement**”) is by and between:

“Developer” **Clements Ranching, LLC,**
a Nevada limited liability company
3000 Farm District Road
Fernley, NV 89408
Email: mattpclements@gmail.com

“City” **City of Fernley,**
a Nevada municipal corporation
595 Silver Lace Boulevard
Fernley, NV 89408
Email: laltick@cityoffernley.org

Key definitions in this Agreement are:

“Affiliate” means an entity, partnership or corporation which Developer controls, or in which Developer has a controlling interest or which controls Developer. For purposes of this definition, “control” when used with respect to any entity, means the power to direct the management and policies of such entity, directly or indirectly, whether through the ownership of voting securities, partnership interests, by contract or otherwise; and the terms “controlling” and “controlled” have meanings correlative to the foregoing.

“Approvals” means the zoning, land use, and mapping approvals and authorizations relating to the Project Property, together with applicable conditions, as granted by the City through the normal approval process. This includes MPA22003, ZMA22008, and any future entitlements requested and/or required for the Project.

“Building Permit” shall mean an official document or certificate issued by the Building Official (as defined in the Code from time-to-time) authorizing the construction of a residence or commercial building within the Project Property. This includes standard plan permits, model permits and production permits.

“Code” means the City of Fernley Municipal Code, as may be amended from time to time, including all rules, regulations, standards, criteria, manuals and other references adopted therein.

“Project” means the Master Plan Map Amendment (MPA22003) and Zoning Map Amendment (ZMA22008) submitted to the City of Fernley, Nevada (the **“City”**) on July 19, 2022, and any future residential project located on the Project Property.

“Project Property” means that real property consisting of approximately 83.9 acres located in the City of Fernley, County of Lyon, State of Nevada, more particularly described as **Exhibit A** attached hereto, having Lyon County Assessor’s Parcel Number (**“APN”**) 021-341-18.

“Record”, “Recording”, “Recordation”, or “Recorded”: To file, the filing, or filed of record with the Office of the County Recorder of Lyon County, Nevada. The date of Recording shall refer to that time at which a document or map is Recorded.

ARTICLE 2. RECITALS.

- A. Developer is the current owner of the Project Property and anticipates proposing residential development on the Project Property.
- B. On July 19, 2022, Developer submitted applications to the City for a Master Plan Map Amendment and Zoning Map Amendment for the Project Property.
- C. Developer has proposed certain buffering standards along the west and east property boundary of the subject parcel consistent with the City’s Development Code (**“Code”**) standards for adjacency (Code §32.09.030(D)), and a limitation on the total number of units which may be provided.
- D. The City is authorized, pursuant to NRS 278.360, NRS 278.0201 through 278.0207, inclusive, and Code §32.03.100(a), to enter into binding development agreements with any person having a legal or equitable interest in land concerning the development of that land provided that such agreement is consistent with the City of Fernley Comprehensive Master Plan August 2018 (**“Master Plan”**).
- E. The Master Plan includes the following goals:
 - 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. Master Plan §HP.1.1.
 - Encourage housing that supports sustainable development patterns by promoting the efficient use of land [...and] easy access to services and public facilities[...]. Master Plan §HP.1.2.
 - Strive for viable mixed income neighborhoods throughout Fernley that collectively reflect the diversity of housing types and tenure (rental and ownership). Master Plan §HP.1.3.

- Provide a spectrum of high-quality housing to meet the City's need. §HP1.6.
- Encourage new development in areas where adequate public services and facilities can be provided efficiently. Master Plan §LU.1.1
- Promote infill development. Master Plan §LU.1.5.

F. By entering into this Agreement, the City will ensure the orderly development of the Project in accordance with the Conditions, and consistent with the City's goals set forth in the Master Plan as identified in Recital E above. As such, approval of this Agreement is consistent with the Master Plan, as required by NRS 278.0203 and Code §32.03.100(A)(6)(a).

G. Acknowledging the foregoing, the parties desire to enter into this Agreement to provide for the matters set forth herein.

NOW, THEREFORE, in exchange for mutual considerations, the sufficiency of which is hereby acknowledged, the parties agree as follows:

ARTICLE 3. DEVELOPMENT MATTERS.

Section 3.1 Development Standards.

The permitted uses of the Project Property, the density or intensity of its use, the maximum height and size of the proposed buildings, and any dedication of any portion of the Project Property to the City for public use shall be as provided in this Agreement, the Code, and any future Approvals issued by the City for the Project or the Project Property, as the same may hereafter be revised, modified or amended from time to time in accordance with applicable law.

Section 3.2 Limitation.

Except as otherwise provided in this Agreement, the provisions of NRS 278.0201 shall apply to this Agreement to the extent that any rules, regulations, ordinances, laws, and official policies promulgated or enacted after the Effective Date conflict with the terms and conditions of this Agreement or the Approvals. Notwithstanding the foregoing, any development on the Project Property shall be subject to: (i) any rules, regulations, ordinances, laws, and official policies promulgated or enacted after the Effective Date that are not in conflict with Approvals or the terms of this Agreement; (ii) the Building Codes in effect at the time of issuance of the permit for the particular development activity; and (iii) other construction standards applicable to all developers other than Developer if such changes or additional standards are required in order to prevent a condition dangerous to the health or safety of City residents. Nothing in this Agreement shall preclude application of new or changed ordinances, regulations, plans or policies specifically mandated and required by changes in state or federal laws or regulations.

Section 3.3 Standards for Residential Adjacency; Limitation on Number of Dwelling Units.

The City and Developer agree that if the City approves the Master Plan Map Amendment (MPA22003) and Zoning Map Amendment (ZMA22008) submitted by the Developer on July 19, 2022, the Project Property and all future permits and Approvals considered by the City in connection therewith, shall require the following development standards and impose the following development constraints upon the Project Property:

(i) Along the western boundary of the Project Property, residential lots shall provide a minimum 0.40-acre lot area with lot width matching, a 30-foot rear setback, and all residential structures shall be limited to a single story;

(ii) Along the eastern boundary of the Project Property and along the boundary line shared between the Project Property and APN 021-341-13, residential lots shall provide a minimum of 14,000 square feet lot area with lot width matching, a 30-foot rear setback, and all residential structures shall be limited to a single story; and

(iii) The maximum density allowed on the Project Property shall not exceed 400 residential units.

The development standards set forth above shall survive the termination of this Agreement and are deemed a permanent part of the zoning established by ZMA22008. Any development standards not addressed above shall be governed by the Code and any conditions of the Approvals.

Section 3.4 Further Requirements

The Developer acknowledges that further Approvals will be necessary to develop the Project including, but not limited to, tentative and final subdivision maps. All future Approvals required or requested by the Developer in connection with the Project shall be reviewed and considered for approval in accordance with the terms of this Agreement and applicable law.

ARTICLE 4. GENERAL TERMS.

Section 4.1 Effective Date; approved by ordinance.

This Agreement is not effective until it has been approved by ordinance by the City Council for the City of Fernley (“**City Council**”) and Recorded (the date of Recording being referred to herein as the “**Effective Date**”).

Section 4.2 Term; Cancellation.

This Agreement shall continue in full force and effect for 10 years from the Effective Date, unless cancelled or extended in accordance with the terms of NRS 278.0205. A cancellation of this Agreement is not effective or binding until approved by ordinance of the City Council and Recorded in accordance with NRS 278.0205.

Section 4.3 Modifications and Amendments.

Modifications and amendments to this Agreement are not effective or binding until approved by ordinance of the City Council and Recorded in accordance with NRS 278.0205.

Section 4.4 Breach.

A violation of this Agreement by a party shall be a breach of this Agreement by that party if, within 60 days after receipt of notice of such violation delivered in accordance with Section 4.7 below by the non-violating party, the party in violation fails to cure such violation. If the material breach is not corrected within 60-day cure period, the defaulting Party is in default, and the Party alleging material breach may elect any one or more of the following courses:

A. Amendment or Termination by City. After proper notice and the expiration of the above-referenced period for Developer to correct the alleged material breach, the City may give notice of intent to amend or terminate this Agreement as authorized by NRS Chapter 278. Following any such notice of intent to amend or terminate, the matter shall be scheduled and noticed as required by law for consideration and review solely by the City Council. Following consideration of the evidence presented before the City Council and a finding that a material breach has occurred by Developer and remains uncured, City may amend or terminate this Agreement. Developer shall have twenty-five (25) days after receipt of written notice of termination to institute legal action pursuant to this Section.

B. Termination by Developer. In the event City materially defaults under this Agreement, Developer shall have the right to terminate this Agreement after providing notice and an opportunity to cure as set forth in this Section. Developer shall have the option, in its discretion, to maintain this Agreement in effect and seek to enforce all of City's obligations by pursuing an action for specific performance or other appropriate judicial remedy.

Section 4.5 Entire Agreement.

With respect to the matters addressed herein (including the recitals), this Agreement integrates all of the terms and conditions mentioned herein or incidental hereto, and supersedes all negotiations or previous agreements between the parties.

Section 4.6 Assignments; Transfer of rights.

A. To an Affiliate of Developer. The rights of Developer under this Agreement may be freely transferred or assigned to an Affiliate of Developer provided that such entity shall assume in writing all obligations of Developer hereunder, and provide substitute security in form and amount acceptable to the City for any security previously provided by Developer in compliance with the Code, if any.

B. To a Third Party. If Developer sells or transfers more than fifty percent (50%) of the Project Property to a party other than an Affiliate, Developer shall be relieved of its obligations under this Agreement, provided that such transferee assumes all duties and obligations of Developer then unsatisfied and provides substitute security, in form and amount acceptable to City, for any of Developer's previous obligations for which Developer provided performance security, if any.

C. Transfer Not to Relieve Developer of its Obligation. Except as expressly provided herein, no assignment or transfer of any portion of the Project Property shall relieve Developer of its obligations hereunder as to the portion of the Project Property so assigned or transferred, and such assignment or transfer shall be subject to all of the terms and conditions of this Agreement, provided, however, that no such transferee shall be deemed to be the Developer hereunder unless such transferee expressly assumes such obligations and duties of Developer. This subsection shall have no effect upon the validity of obligations recorded as covenants, conditions, restrictions or liens against parcels of real property.

D. In Connection with Financing Transactions. Developer has full discretion and authority to transfer, assign or encumber the Project Property or portions thereof, in connection with financing transactions, without limitation to the size or nature of any such transaction, the amount of land involved or the use of the proceeds therefrom, and may enter into such transactions at any time and from time to time without permission of or notice to City. All such financing transactions shall be subject to the terms and conditions of this Agreement.

Section 4.7 Notices; when deemed sufficiently given.

A. Formal notices, demands and communications between the City and Developer must be in writing and must be sent to the addresses or facsimile numbers stated in Article 1 above and to each successor or assign of Developer to the address given by such party in writing and if no written notice is given, then to the address stated in subsequent agreements, and/or to any address or number subsequently communicated to the sending party in writing.

B. If notice is sent by registered or certified mail to the correct address, postage prepaid, it will be deemed sufficiently given the earlier of when actually received by the addressee or three business days after it is received by the U.S. Post Office as indicated on the receipt.

C. If notice is sent by courier, or overnight delivery service (Federal Express, UPS Overnight, U.S. Postal Priority Mail), and is properly addressed, it will be deemed sufficiently given when delivered as indicated in the records of the courier or service.

D. If notice is sent by facsimile, properly addressed to the addressee specified in Article 1 above and is actually sent to the correct facsimile number, it will be deemed sufficiently given when receipt is confirmed by either the receiving or sending facsimile machine, provided that that confirmation is in writing and sufficiently identifies the document, and indicates the time and date that the document was received by the receiving facsimile machine.

Section 4.8 Further documents.

Each party agrees to honor any reasonable requests by the other party to complete, execute, and deliver any document necessary to accomplish the purposes hereof.

Section 4.9 Legal Actions.

The City and Developer agree that they would not have entered into this Agreement if either were to be liable for damages under or with respect to this Agreement that would be greater than without this Agreement. Accordingly, the City and Developer may pursue any course of

action or equity available for breach, except that neither party shall be liable to the other or to any other person for any monetary damages for a breach of this Agreement. If any party hereto institutes any action or proceeding (including arbitration, if authorized or mutually agreed upon) against the other or others arising out of or relating to this Agreement, the prevailing party shall be awarded attorney's fees and costs by the other party.

Section 4.10 Time of Essence.

Time is of the essence in the performance of this Agreement.

Section 4.11 Governing law.

The laws of the State of Nevada, without regard to conflicts of law principles, shall govern the interpretation and enforcement of this Agreement.

Section 4.12 Severability of invalid or unenforceable provisions.

If any provision contained in this Agreement is held to be unenforceable by a court of law or equity, this Agreement shall be construed as if such provision did not exist and the non-enforceability of such provision shall not be held to render any other provision or provisions of this Agreement unenforceable.

Section 4.13 Binding effect; successors and assigns; assignment/delegation.

This Agreement shall be binding upon and inure to the benefit of the heirs, executors, administrators, and permitted successors and assigns of the parties hereto. To the extent that any assignment of any right under this Agreement changes the duty of either party, increases the burden or risk involved, impairs the chances of obtaining the performance of this Agreement, attempts to operate as novation, or includes a waiver or abrogation of any defense to payment by the City, such offending portion of the assignment shall be void, and shall be a breach of this Agreement.

Section 4.14 No third-party beneficiaries intended.

Unless otherwise specifically identified in this Agreement, there are no third-party beneficiaries intended by this Agreement and no third parties have any standing to enforce any of the provisions of this Agreement.

Section 4.15 Representation and warranties by persons who sign this Agreement.

Each person who signs this Agreement represents and warrants to each other person who signs this Agreement that he or she is an authorized agent of and has actual authority to execute this Agreement on behalf of the party for whom he or she is signing, and that all required approvals and actions have been taken to authorize the execution of this Agreement with the intent and effect of binding the party to this Agreement.

Section 4.16 Counterparts.

This Agreement may be executed in any number of counterparts, each of which when so executed and delivered shall be deemed an original; and such counterparts shall constitute one and the same Agreement. Any signature page of the Agreement may be detached from any counterpart without impairing the legal effect of any signatures, and may be attached to another counterpart identical in form. This Agreement may be executed by signatures provided by facsimile or email, and such signatures shall be as binding and effective as original signatures.

Section 4.17 Construction.

This Agreement is the product of joint collaboration and negotiations among the parties and their counsel. The terms and conditions of this Agreement shall be construed as a whole according to their fair meaning, and not strictly for or against any party. Further, any ambiguities are to be resolved according to their fair meaning, and not construed against the drafting party.

[Signature Pages Follows]

EXECUTED on the dates indicated:

City:

CITY OF FERNLEY,

a Nevada municipal corporation

Dated February 1, 2023

By: Neal E McIntyre
Mayor Neal E. McIntyre

Its: Mayor
Attest: Kim Swanson

Kim Swanson

City Clerk

Developer:

CLEMENTS RANCHING, LLC
a Nevada limited liability company

Dated January 30, 2022²³

By: Holly G. Wolf
Name Holly G. Wolf
Its: Manager

State of Nevada
County of Washoe

This instrument was acknowledged before me on January 30, 2023 by
Holly Wolf as Manager of CLEMENTS RANCHING,
LLC, a Nevada limited liability company.

(Signature of notarial officer)

(Seal, if any)

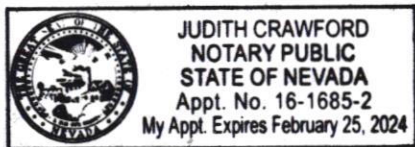


EXHIBIT A
LEGAL DESCRIPTION

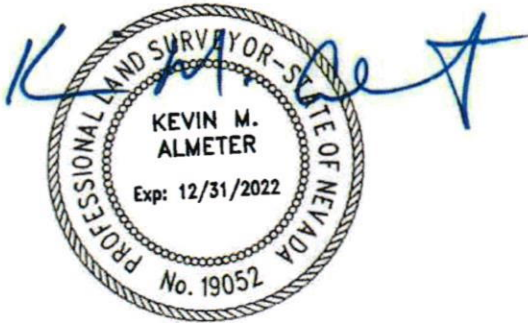
EXHIBIT A
LEGAL DESCRIPTION FOR PROJECT PROPERTY

All that certain real property situate within a portion of the Northeast One-Quarter (NE 1/4) of Section Twenty-One (21) and a portion of the Northwest One-Quarter (NW 1/4) of Section Twenty-Two (22), Township Twenty (20) North, Range Twenty-Five (25) East, Mount Diablo Meridian, City of Fernley, County of Lyon, State of Nevada, and being more particularly described as follows:

BEING Parcel 2-A of the Parcel Map for "Clements Ranching, LLC", recorded on December 8, 2017, as File No. 573596, filed in the Official Records of Lyon County, Nevada.

APN: 021-341-18

Prepared by:
Wood Rodgers, Inc.
1361 Corporate Blvd.
Reno, NV 89502



8-11-22

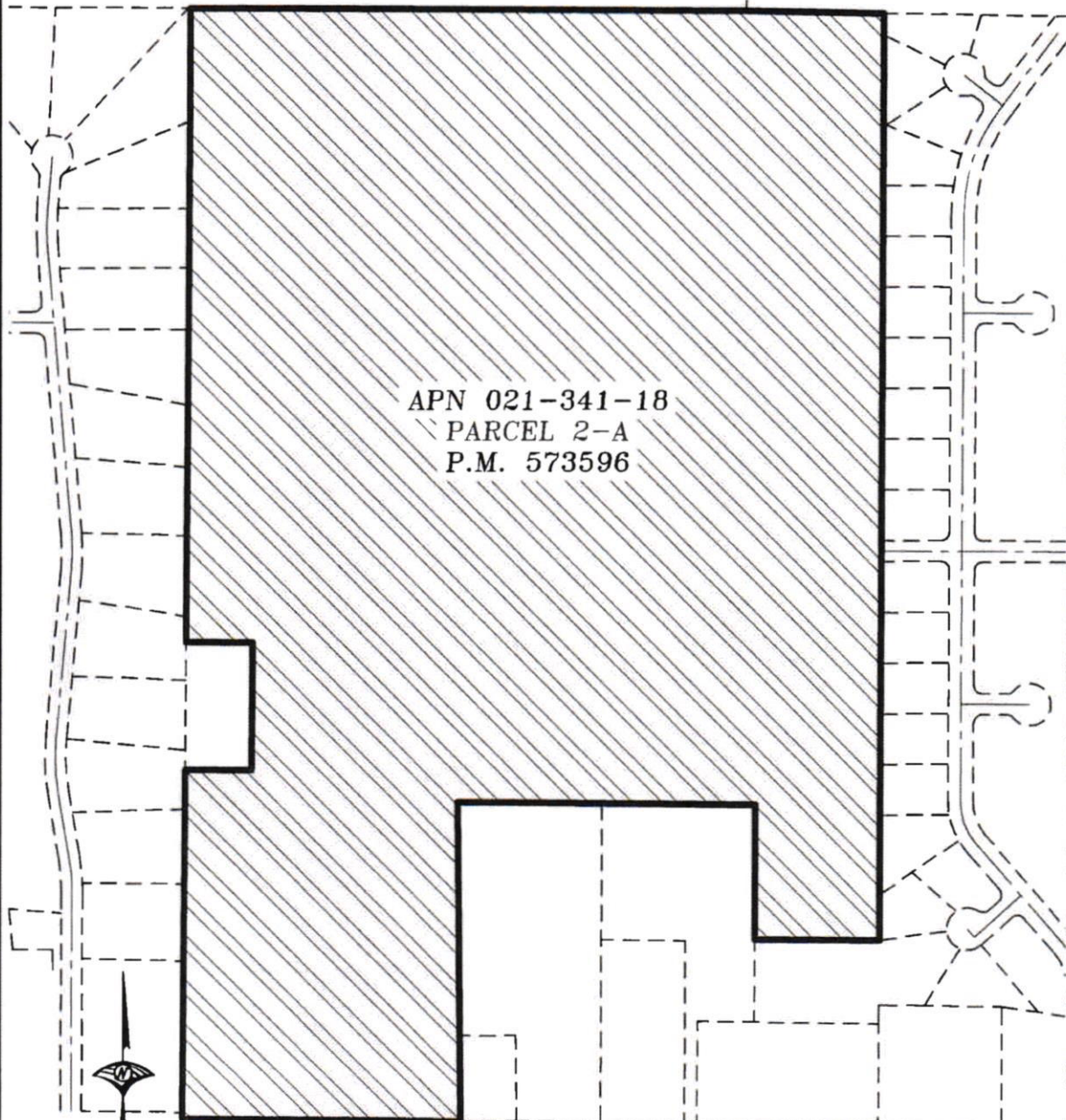
Kevin M. Almeter, P.L.S.
Nevada Certificate No. 19052

EXHIBIT A-1

PLAT TO ACCOMPANY

PROJECT PROPERTY

PORTIONS OF THE NE 1/4 OF SECTION 21 &
THE NW 1/4 OF SECTION 22
TOWNSHIP 20 NORTH, RANGE 25 EAST, M.D.M.
FERNLEY LYON COUNTY NEVADA



APN 021-341-18
PARCEL 2-A
P.M. 573596

1" = 400'

FARM DISTRICT ROAD

JOB NO. 3460004
SHEET 1 OF 1



WOOD RODGERS
BUILDING RELATIONSHIPS ONE PROJECT AT A TIME

1361 Corporate Blvd
Reno, NV 89502

Tel 775.823.4068
Fax 775.823.4068

J:\Jobs\3460_Clements Ranch\Clements Ranch_OA\Geomatics\legals_exhibits\DEV AGREEMENT Exhibit A-1.dwg 8/11/2022 4:21 PM McKenzie Jones

Map Pocket



CITY OF FERNLEY

Planning Commission AGENDA REPORT

Meeting Date: June 14, 2023

REPORT TO: Fernley Planning Commission

REPORT FROM: Lisa Warner

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) Discussion and possible action regarding a conditional use permit (CUP23003) application submitted by Morton & Pitalo on behalf of Fernley QOF, LLC to allow for the development of a 91-room hotel on the ±12.66-acre parcel zoned General Commercial (C2) and generally located southeast of Stanley Drive, north of Newlands Drive East, and west of the Newlands Drive East / Lyon Drive intersection (APN: 021-232-53); this is phase one of the project known as the "Fernley Promenade" and proposed for a 3.5-acre site within the parcel.

AGENDA ITEM BRIEF:

A hotel with greater than 20 rooms is a conditional use within the General Commercial zone. The applicant is requesting a conditional use permit that will allow a 91-room hotel.

RECOMMENDED MOTION:

Approval

"I move to approve the conditional use permit associated with CUP23002, 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 1-33 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:

Denial

"Based on information received in written materials and the public hearings on this matter, I move to deny the conditional use permit request associated with CUP23002, as I am unable to make the following required conditional use permit findings(s): I am unable to make finding(s) _____ as it relates to _____. Therefore, I cannot approve the conditional use permit.

Note: Though no further language has been provided, all motions made in accordance with City of Fernley Planning Commission parliamentary procedure are appropriate.

BACKGROUND:

Two prior land division applications have been processed in relation to this project. TSM22008 was a tentative subdivision map application to subdivide the entire parcel into 7 new parcels. It was submitted and withdrawn in 2022 as the applicant was unable to provide accurate traffic data for the proposed buildout. Because they do not yet know which commercial tenants they intend to build for, staff asked them to resubmit a parcel map to split off just the hotel portion. TPM22006 was the subsequent tentative parcel map application and was approved on February 8, 2023. The approved TPM allows for the project site to be split into two lots, one for the proposed hotel development and the other for future commercial use.

This conditional use permit request applies solely to one of the future new parcels. The parcel is expected to be ±3.5-acres in size and located at the southwestern corner of the existing parcel. This site is a prime location for a hotel and future commercial development. In addition being a location within our existing commercial center, it will support the existing and planned development associated with the Victory Logistics project. Mark IV and City of Fernley are working to connect Nevada Pacific Parkway and Nevada Pacific Boulevard, which would make this hotel well-situated to provide an extended stay option near the future industrial park. Building A of Victory Logistics is already leased by Redwood Materials, Building B is to be occupied by Mark IV, and Buildings C and D are in the construction phase and soon to follow.

FINDINGS:

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

General Commercial (C2) is an equivalent zoning category and lodging is suggested as a primary use in the commercial land use area. Further, this project will support the following identified characteristics and locational criteria of our commercial land use area:

Large parcels are encouraged to provide access via frontage roads rather than multiple driveways.

The only proposed entrance is located on Lowe's existing frontage road / driveway.

No direct access to local streets will be allowed.

No local streets abut this project site.

Infill and redevelopment is encouraged on vacant or underutilized sites.

This is a vacant site amid a concentrated commercial land use area and qualifies as infill development. The site is located between Walmart and Lowe's.

Should be located where existing public facilities have the capacity to serve.

There is existing sewer infrastructure at the southwest corner of this site and existing water infrastructure at the southeast corner of this site.

Municipal services are required.

The project has submitted a preliminary utility plan to connect to municipal services.

This project further supports the following goals and action strategies from the Land Use (LU), Transportation (T), and Public Services and Facilities (PSF) sections of our comprehensive master plan:

- LU.1.1 - Encourage and plan for new development in areas where adequate public services and facilities can be provided efficiently.
- LU.1.1.1 - Require new development to provide its proportionate share of improvements to avoid a degradation of services for existing residents. This requirement will be applied regardless of project size in order to avoid incremental erosion of services and facilities.
- LU.1.1.2 - Encourage development of vacant or underutilized land within the community core where adequate infrastructure and facilities currently exist.
- LU.1.1.3 - Require new development to provide certified, stamped studies demonstrating the impact proposed development will have on existing infrastructure and to provide improvements and/or funding in lieu of improvements in proportion to the impacts of the proposed projects on the city's roadway, sewer, and water systems.
- LU.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.
- LU.1.5 - Promote infill development.
- T.1.1 - Require that roadway facilities be maintained and constructed as needed to ensure high quality and safe travel on major streets and at major intersections.
- T.1.1.1 - The minimum Level of Service on all city-maintained roadways shall be LOS D. The City will work with a representative from NDOT to ensure timely improvements are planned when NDOT roadways are forecast to fall below LOS D.
- T.1.1.6 - Require all new development to be consistent with the access right-of-way dedication and improvement standards as specified in the Public Works Design Manual and pursuant to the functional classification as defined in this chapter.
- T.1.3 - Implement street design and access standards to provide for safe and efficient movement of goods and people.
- T.1.3.4 - Require proposed new development that intends to connect with an NDOT roadway to incorporate the NDOT Access Management System and Standards into the project design. These standards regulate access onto the roadway network in order to protect the health, safety, and welfare of the public, maintain the rights-of-way, and to preserve the functional classification level of the roadway network while meeting the needs of the monitoring public. The access management standards address the location, spacing and frequency of access points on the roadway network.
- PSF.2.1 - Insure an efficient, adequate and self-supporting wastewater collection treatment and disposal system that will meet the needs of the public and comply with federal, state, and local clean water requirements.
- PSF.2.1.3 - Sewer costs directly attributable to new development shall be paid for by the new development. The cost of providing service shall include the cost of extending service lines or other necessary facilities to the individual project site.
- PSF.3.11 - Require large-scale developments to be within adequate fire service areas.
- PSF.3.11.5 - Require water distribution systems to meet the Lyon County Fire District standards for all future development.

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

Parcels located north (Interstate 80), east (currently Lowe's), and southwest (Currently Walmart) are all zoned General Commercial (C2), as is the subject parcel. The parcel to the south (currently Daehan Solutions and CNH Parts & Service) is zoned Mixed-Use.

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

No natural resources have been identified on this project site, aside from the land itself. The City of Fernley has an abundance of undeveloped land and best land use practices dictate infill development. This parcel is located along a main arterial road and in proximity to our existing infrastructure. Conservation efforts are best applied to parcels outlying the core of existing City of Fernley development.

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

Although the hotel project will not directly contribute to the availability and need for affordable housing in the community, staff does not perceive that it will detract from this goal.

CUP5. The conditional use permit has been conditioned to address identified impacts.

Staff suggests the following conditions of approval to address identified impacts specific to this project:

6. SIGNS: IN ACCORDANCE WITH FERNLEY MUNICIPAL CODE SECTION 32.10.100, THE FREESTANDING PYLON SIGN AT LOCATION A ON THE SITE PLAN SHALL NOT EXCEED 72' IN HEIGHT FROM GRADE.

This condition arose due to the design of a freestanding sign submitted with the conditional use permit. The sign as submitted was too tall for our development standards, so staff called this item out specifically.

14. DRAINAGE REPORT: 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 ISSUE OF A BUILDING PERMIT FOR ANY PORTION OF THE PROJECT.

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

AT THE TIME OF CIVIL IMPROVEMENT PLAN SUBMITTAL, A TABLE SHALL BE INCLUDED IN THE PROPOSED DRAINAGE SYSTEM/ONSITE DRAINAGE INTENT SECTION SUMMARIZING THE DESIGN FLOWS, TOTAL REQUIRED STORAGE VOLUME, AND PROVIDED STORAGE VOLUME FOR EACH SUB-BASIN.

INCLUDE THE RELEASE MAP OF THE 100-YEAR 6-HOUR STORM WHEN THE ONSITE DRAINAGE SYSTEM IS CLOGGED.

NOTATE ON THE PRELIMINARY SHED MAP THE CAPACITY/DIMENSIONS OF THE DRY WELLS WITH THE PEAK INFLOWS.

INCLUDE AN ANALYSIS OF THE 100-YEAR 24-HOUR STORM EVENT TO CONFIRM NO NEGATIVE IMPACTS TO OFFSITE/DOWNSTREAM PROPERTIES OR ONSITE RETENTION INCREASED TO SATISFY THE DESIGN STANDARDS.

This condition arose because the developer is suggesting non-standard storm drain and/or water retention infrastructure. Our consultant engineer requires more information before an alternative can be approved. While the City of Fernley prefers all storm drain and water retention infrastructure be dedicated to the City, the developer is unable to comply with our standard infrastructure due to a cross-parking agreement with Lowe's that requires more parking than City of Fernley does for a project of this type.

14. SITE UTILITIES: FINAL UTILITIES FOR THE HOTEL SITE AND FUTURE COMMERCIAL SITE SHALL NOT REQUIRE ANY ONSITE PUBLICLY OWNED OR MAINTAINED WATER, SEWER, OR STORM DRAIN INFRASTRUCTURE AND ALL SERVICE CONNECTIONS AND BACKFLOW DEVICES SHALL BE LOCATED ALONG STANLEY DRIVE. ACCESS EASEMENTS TO THE BENEFIT OF THE CITY MAY BE REQUIRED FOR ANY FUTURE SEWER CONNECTIONS TO PRIVATE SEWER MAINS ON THE SITE TO ALLOW MONITORING AND SAMPLING OF COMMERCIAL WASTEWATER FLOWS FROM FUTURE COMMERCIAL BUILDINGS WITHIN THE SITE. DURING CIVIL IMPROVEMENT PERMITTING FOR THE HOTEL, ANY WATER OR SEWER SERVICES FOR FUTURE COMMERCIAL PROPERTIES WHICH NEED TO HAVE LATERALS OR OTHER INTERCONNECTIONS WITH THE PROPOSED HOTEL SHALL BE SHOWN AS FUTURE AND ACCOUNTED FOR IN THE DESIGN OF THE HOTEL SITE. ANY PLANNED JOINT USE OF PRIVATE FIRE LINES, PRIVATE SEWER LINES AND INFRASTRUCTURE, OR PRIVATE STORM DRAIN SYSTEMS SHALL BE INCLUDED IN A RECIPROCAL EASEMENT OR OTHER OWNERSHIP GROUP AGREEMENT BETWEEN THE PARCELS. EASEMENTS SHALL BE IDENTIFIED ON THE HOTEL SITE SO FUTURE DEVELOPMENT ON THE REMAINDER PARCEL ARE NOT LAND-LOCKED FROM BEING SERVED WITH UTILITY CONNECTIONS FROM STANLEY DRIVE.

Because we will not own the infrastructure, the developer will be required to record easements for City of Fernley to monitor waste water discharge. Because the hotel is in the process of being divided from the other commercial portion, the developer must also record easements to allow the other parcel access to utilities from Stanley drive.

26. TRAFFIC ANALYSIS: THE DEVELOPER SHALL PROVIDE A FINAL 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 ISSUE OF A BUILDING PERMIT.

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

STRIPING IMPROVEMENTS AND ANY REQUIRED SIGNAGE SHALL BE INCLUDED FOR THE EXISTING LOWE'S DRIVEWAY TO BE SHARED WITH THE HOTEL DEVELOPMENT PROJECT.

Providing a traffic analysis is a standard condition; however, this developer will also be required to do some minor improvements to the Lowe's frontage road / driveway in order to share it.

31. SITE PLAN: SPLIT RAIL FENCING, BOULDERS, OR OTHER VEHICLE BARRIERS SHALL BE PROVIDED ALONG THE TEMPORARY EDGE OF PAVEMENT TO PREVENT VEHICLES FROM TRAVELING INTO THE UNIMPROVED AREAS OF THE PARCEL, TO THE APPROVAL OF THE ADMINISTRATOR, PRIOR TO ISSUE OF A CERTIFICATE OF OCCUPANCY FOR THE HOTEL.

Staff is concerned about the possibility of people attempting to access Stanley Drive directly from the unimproved portions of the lot. Once the full lot is developed, City of Fernley will allow for the removal of these barriers if the developer wishes.

All other conditions of approval are standard for this type of project. These conditions are written to serve the

following purposes:

- Preventing the developer from holding on to this entitlement if the use is not established in a timely manner.
- Ensuring the developer complies with all City of Fernley design standards.
- Establishing a point of contact during the construction phase so we may quickly address any issues that arise.
- Limiting construction hours to minimize noise impacts on neighboring parcels.
- Addressing dust, noise, and other nuisances that arise during construction preemptively.
- Requiring outside verification that the site is geologically stable.
- Ensuring the City of Fernley has a bond in place to cover restoring the site if the project does not make it past the grading stage.
- Collecting construction taxes to support schools, city infrastructure, and other public services.
- Ensuring streetnames and addresses are both very clearly defined for emergency services and inoffensive in nature.
- Requiring the developer to construct all sewer, water, and storm drain infrastructure on their property and update any city infrastructure required to serve this community.
- Requiring outside verification that any traffic impacts have been appropriately mitigated.
- Reminding the developer of the numerous outside agencies that oversee various aspects of the project to ensure compliance with all state and federal regulations, as well as those of the City of Fernley.

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

Staff certifies that public notice has been given per the requirements of the City of Fernley Development Code and Nevada Revised Statutes. A public hearing will be held at the June 14, 2023 Planning Commission meeting.

RELEVANT LAWS, STATUTES, AND REGULATIONS:

Note: All of the links supplied for relevant laws, statutes, and regulations are correct as of the day of publication. City of Fernley Planning Department will not be monitoring these links for continued applicability and operation beyond the June 12, 2023 Planning Commission.

[Nevada Revised Statutes \(NRS\), Chapter 278](#), Planning and Zoning
[Fernley Municipal Code \(FMC\), Title 32](#), Development Code
[City of Fernley Comprehensive Master Plan, August 2018](#)

Specific references:

[FMC Section 32.03.050\(b\)](#) - Administration / Entitlements / Conditional use permit
[FMC Section 32.06.100](#) - Zoning districts / Commercial (C1, C2, and TC)
[FMC Section 32.06.150](#) - Zoning districts / Unlisted uses and use table

FINANCIAL IMPLICATIONS:

N/A

ATTACHMENTS:

1. CUP23002 Conditions of Approval
2. Vicinity Map

3. Conceptual Site Plan
4. Preliminary Landscaping Plan
5. Site Overview
6. Floor Plans
7. Building Elevations

Conditions of Approval for CUP23002

CONDITIONAL USE PERMIT

SCOPE AND DURATION OF APPROVAL

1. APPROVAL:

THE APPLICATION IS APPROVED AS SUBMITTED AND CONDITIONED. ANY SUBSTANTIVE CHANGE SHALL BE REVIEWED BY THE PLANNING COMMISSION AS AN AMENDMENT TO THIS CONDITIONAL USE PERMIT.

2. PROJECT DESCRIPTION:

THE PROJECT APPROVAL PERTAINS TO THE DEVELOPMENT AND CONSTRUCTION OF A 91-ROOM HOTEL ON A ±3.5-ACRE PORTION OF CURRENT APN: 021-232-53, WHICH IS ±12.66-ACRES TOTAL, ZONED GENERAL COMMERCIAL (C2), AND GENERALLY LOCATED SOUTHEAST OF STANLEY DRIVE, NORTH OF NEWLANDS DRIVE EAST, AND WEST OF THE NEWLANDS DRIVE EAST / LYON DRIVE INTERSECTION.

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.

4. GOVERNING DOCUMENTS:

ALL FERNLEY MUNICIPAL CODE OR DEVELOPMENT CODE REFERENCES HEREIN PERTAIN TO THE VERSION OF FERNLEY MUNICIPAL CODE ESTABLISHED BY ORDINANCE NUMBER 2020-005, UNLESS OTHERWISE NOTED. THE DEVELOPER MAY SUBSTITUTE REQUIREMENTS ESTABLISHED IN FUTURE FERNLEY MUNICIPAL CODE UPDATES, IF APPROVED BY THE ADMINISTRATOR.

DESIGN STANDARDS

5. GENERAL DESIGN STANDARDS:

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

CURRENT RELEVANT DESIGN STANDARDS INCLUDE, BUT ARE NOT LIMITED TO: DIMENSIONAL STANDARDS, SITE PLANNING, PARKING AND CIRCULATION, COMMUNITY AMENITIES, LANDSCAPING AND SCREENING, BUILDING ARCHITECTURE, ADJACENCY STANDARDS, GRADING, BUFFER REQUIREMENTS, LIGHTING, STREETS, MECHANICAL AND TRASH SCREENING, AND UTILITY CONSIDERATIONS.

6. SIGNS:

IN ACCORDANCE WITH FERNLEY MUNICIPAL CODE SECTION 32.10.100, THE FREESTANDING PYLON SIGN AT LOCATION A ON THE SITE PLAN SHALL NOT EXCEED 72' IN HEIGHT FROM GRADE.

7. PARKING AND LOADING:

Conditions of Approval for CUP23002

CONDITIONAL USE PERMIT

THE DEVELOPER SHALL COMPLY WITH THE PARKING AND LOADING REQUIREMENTS AS SET FORTH IN SECTION 32.09.120 OF THE FERNLEY MUNICIPAL CODE, TO THE APPROVAL OF THE ADMINISTRATOR.

8. DRIVEWAY SPACING:

THE DRIVEWAY SPACING AND DESIGN SHALL BE IN COMPLIANCE WITH THE CITY OF FERNLEY ACCESS MANAGEMENT POLICY. THE TRAFFIC STUDY SUBMITTED WITH THE PROJECT ALSO RECOMMENDS RELOCATING THE PROPOSED DRIVEWAY ACCESS TO THE EAST.

CONSTRUCTION PHASE

9. PROJECT CONTACT:

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

10. 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 PER 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, SUBJECT 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.

11. CONSTRUCTION MAINTENANCE:

THE DEVELOPER SHALL LOCATE A SUFFICIENT NUMBER OF TRASH CONTAINERS ON-SITE TO BE USED DURING CONSTRUCTION OF THE PROJECT TO MAINTAIN THE PROJECT SITE IN A CLEAN AND ORDERLY STATE. THE APPROPRIATE NUMBER AND LOCATION OF TRASH CONTAINERS IS SUBJECT TO THE APPROVAL OF THE ADMINISTRATOR.

GRADING AND CIVIL IMPROVEMENT PERMIT REQUIREMENTS

12. GEOTECHNICAL REPORT:

THE DEVELOPER SHALL PROVIDE A FINAL GEOTECHNICAL REPORT WHICH WILL INCLUDE PERCOLATION TESTING 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.

ADDITIONAL INFORMATION FOR THE PERCOLATION TESTING WILL BE REQUIRED AS PART OF THE FINAL GEOTECHNICAL REPORT.

13. GRADING PERMIT:

THE DEVELOPER SHALL SUBMIT A GRADING PERMIT FOR ANY PHASE OF THE PROJECT TO THE APPROVAL OF THE CITY ENGINEER. PRIOR TO ISSUE OF A GRADING PERMIT FOR THE PROJECT, THE DEVELOPER SHALL POST A SURETY BOND FOR REGRADING AND RECLAMATION OF THE SITE. THE

Conditions of Approval for CUP23002

CONDITIONAL USE PERMIT

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 FOR GRADING AREAS 1 ACRE OR GREATER AS WELL AS A SURFACE AREA DISTURBANCE PERMIT FOR GRADING AREAS EXCEEDING 5 ACRES.

14. DRAINAGE REPORT:

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 ISSUE OF A BUILDING PERMIT FOR ANY PORTION OF THE PROJECT.

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

AT THE TIME OF CIVIL IMPROVEMENT PLAN SUBMITTAL, A TABLE SHALL BE INCLUDED IN THE PROPOSED DRAINAGE SYSTEM/ONSITE DRAINAGE INTENT SECTION SUMMARIZING THE DESIGN FLOWS, TOTAL REQUIRED STORAGE VOLUME, AND PROVIDED STORAGE VOLUME FOR EACH SUB-BASIN.

INCLUDE THE RELEASE MAP OF THE 100-YEAR 6-HOUR STORM WHEN THE ONSITE DRAINAGE SYSTEM IS CLOGGED.

NOTATE ON THE PRELIMINARY SHED MAP THE CAPACITY/DIMENSIONS OF THE DRY WELLS WITH THE PEAK INFLOWS.

INCLUDE AN ANALYSIS OF THE 100-YEAR 24-HOUR STORM EVENT TO CONFIRM NO NEGATIVE IMPACTS TO OFFSITE/DOWNSTREAM PROPERTIES OR ONSITE RETENTION INCREASED TO SATISFY THE DESIGN STANDARDS.

15. ON SITE PRIVATE UTILITIES:

FINAL UTILITIES FOR THE HOTEL SITE AND FUTURE COMMERCIAL SITE SHALL NOT REQUIRE ANY ONSITE PUBLICLY OWNED OR MAINTAINED WATER, SEWER, OR STORM DRAIN INFRASTRUCTURE AND ALL SERVICE CONNECTIONS AND BACKFLOW DEVICES SHALL BE LOCATED ALONG STANLEY DRIVE. ACCESS EASEMENTS TO THE BENEFIT OF THE CITY MAY BE REQUIRED FOR ANY FUTURE SEWER CONNECTIONS TO PRIVATE SEWER MAINS ON THE SITE TO ALLOW MONITORING AND SAMPLING OF COMMERCIAL WASTEWATER FLOWS FROM FUTURE COMMERCIAL BUILDINGS WITHIN THE SITE.

DURING PERMITTING FOR THE HOTEL, ANY WATER OR SEWER SERVICES FOR FUTURE COMMERCIAL PROPERTIES WHICH NEED TO HAVE LATERALS OR OTHER INTERCONNECTIONS WITH THE PROPOSED HOTEL SHALL BE SHOWN AS FUTURE AND ACCOUNTED FOR IN THE DESIGN OF THE HOTEL SITE.

ANY PLANNED JOINT USE OF PRIVATE FIRE LINES, PRIVATE SEWER LINES AND INFRASTRUCTURE, OR PRIVATE STORM DRAIN SYSTEMS SHALL BE INCLUDED IN A RECIPROCAL EASEMENT OR OTHER OWNERSHIP GROUP AGREEMENT BETWEEN THE PARCELS. EASEMENTS SHALL BE IDENTIFIED ON THE

Conditions of Approval for CUP23002

CONDITIONAL USE PERMIT

HOTEL SITE SO FUTURE DEVELOPMENT ON THE REMAINDER PARCEL ARE NOT LAND-LOCKED FROM BEING SERVED WITH UTILITY CONNECTIONS FROM STANLEY DRIVE.

BUILDING PERMIT REQUIREMENTS

16. ADDRESSING AND STREET NAMES

THE DEVELOPER SHALL SUBMIT A STREET NAME RESERVATION APPLICATION AND REQUEST FOR ADDRESSING TO THE CITY OF FERNLEY FOR REVIEW AND APPROVAL. ALL LOT ADDRESSING SHALL BE COMPLETED BY THE CITY. STREET NAMES SHALL BE APPROVED AND ADDRESSING SHALL BE COMPLETE PRIOR TO ISSUE OF A BUILDING PERMIT.

17. SCREENING:

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 THAT CONSISTS OF THE SAME DURABLE BUILDING MATERIALS, TO THE APPROVAL OF THE 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 ISSUE OF A BUILDING PERMIT FOR EACH INDIVIDUAL BUILDING.

18. LIGHTING:

THE DEVELOPER IS REQUIRED TO COMPLY WITH THE LIGHTING STANDARDS AND REQUIREMENTS IN THE CITY OF FERNLEY DEVELOPMENT 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. THE DEVELOPER SHALL NOT HAVE LIGHTING POLES IN THE PARKING LOT IN EXCESS OF 20' TO GRADE. THE DEVELOPER SHALL SUBMIT A LIGHTING PLAN FOR REVIEW AND APPROVAL BY THE ADMINISTRATOR PRIOR TO ISSUE OF A BUILDING PERMIT.

19. LANDSCAPING/IRRIGATION:

THE DEVELOPER SHALL SUBMIT A LANDSCAPING AND IRRIGATION PLAN FOR THE PROJECT IN SUBSTANTIAL CONFORMANCE WITH THE CITY OF FERNLEY DEVELOPMENT CODE 32.09.090 FOR REVIEW AND APPROVAL BY THE ADMINISTRATOR PRIOR TO ISSUE OF A BUILDING PERMIT FOR THE PROJECT.

20. 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 ELEVATIONS SHALL REQUIRE REVIEW AND APPROVAL BY THE ADMINISTRATOR PRIOR TO ISSUE OF A BUILDING PERMIT.

21. WATER AND SEWER SYSTEM MODELING:

THE DEVELOPER SHALL COMPLETE WATER AND SEWER MODELING AND CONSTRUCT ANY IMPROVEMENTS IDENTIFIED AS NECESSARY TO SERVE THE PROJECT IN ACCORDANCE WITH STATE AND LOCAL REGULATIONS PRIOR TO ISSUE OF A BUILDING PERMIT.

Conditions of Approval for CUP23002

CONDITIONAL USE PERMIT

22. 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 ISSUE OF A BUILDING PERMIT FOR ANY PHASE OF THE PROJECT.

23. WATER SYSTEM LOOPING:

THE DEVELOPER SHALL PROVIDE THE CITY WITH A UTILITY PLAN FOR THE WATER SYSTEM THAT DEMONSTRATES ADEQUATE SYSTEM LOOPING PRIOR TO ISSUE OF A BUILDING 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 THE ADMINISTRATOR.

24. STORM WATER TREATMENT:

THE DEVELOPER SHALL EMPLOY STRUCTURE CONTROLS FOR THE TREATMENT OF STORM WATER RUNOFF, IN ACCORDANCE WITH BEST MANAGEMENT PRACTICES, AND SUBJECT TO APPROVAL OF THE CITY ENGINEER AND PUBLIC WORKS DIRECTOR. DRAINAGE CONVEYANCE FACILITIES AND OTHER IMPROVEMENTS MUST BE CONSTRUCTED AND FUNCTIONAL PRIOR TO ISSUE OF A BUILDING PERMIT.

25. 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 ISSUE OF A BUILDING PERMIT.

26. TRAFFIC ANALYSIS:

THE DEVELOPER SHALL PROVIDE A FINAL 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 ISSUE OF A BUILDING PERMIT.

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

STRIPING IMPROVEMENTS AND ANY REQUIRED SIGNAGE SHALL BE INCLUDED FOR THE EXISTING LOWE'S DRIVEWAY TO BE SHARED WITH THE HOTEL DEVELOPMENT PROJECT.

27. UNITED STATES POSTAL SERVICE:

THE DEVELOPER SHALL COMPLY WITH ALL REQUIREMENTS OF THE UNITED STATES POSTAL SERVICE FOR MAIL DELIVERY, MAILBOX DESIGN, AND MAILBOX LOCATION, SUBJECT TO APPROVAL OF THE FERNLEY POSTMASTER, CITY ENGINEER, PUBLIC WORKS DIRECTOR, AND ADMINISTRATOR, PRIOR TO ISSUE OF A BUILDING PERMIT FOR THE PROJECT.

CERTIFICATE OF OCCUPANCY REQUIREMENTS

Conditions of Approval for CUP23002

CONDITIONAL USE PERMIT

28. TRASH ENCLOSURES:

THE DEVELOPER SHALL LOCATE AND INSTALL TRASH ENCLOSURES OF THE APPROPRIATE SIZE IN AN APPROPRIATE LOCATION, TO THE APPROVAL OF WASTE MANAGEMENT AND THE ADMINISTRATOR. THE TRASH ENCLOSURES SHALL MATCH THE PROJECT'S ARCHITECTURE AND BUILDING MATERIALS, TO THE APPROVAL OF THE ADMINISTRATOR, PRIOR TO ISSUE OF A 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 ISSUE OF A CERTIFICATE OF OCCUPANCY FOR EACH INDIVIDUAL BUILDING.

30. LANDSCAPING/IRRIGATION:

THE LANDSCAPING AND IRRIGATION SHALL BE INSTALLED PER THE APPROVED PLANS PRIOR TO ISSUE OF A CERTIFICATE OF OCCUPANCY FOR ANY BUILDING.

31. SITE PLAN:

SPLIT RAIL FENCING, BOULDERS, OR OTHER VEHICLE BARRIERS SHALL BE PROVIDED ALONG THE TEMPORARY EDGE OF PAVEMENT TO PREVENT VEHICLES FROM TRAVELING INTO THE UNIMPROVED AREAS OF THE PARCEL, TO THE APPROVAL OF THE ADMINISTRATOR, PRIOR TO ISSUE OF A CERTIFICATE OF OCCUPANCY FOR THE HOTEL.

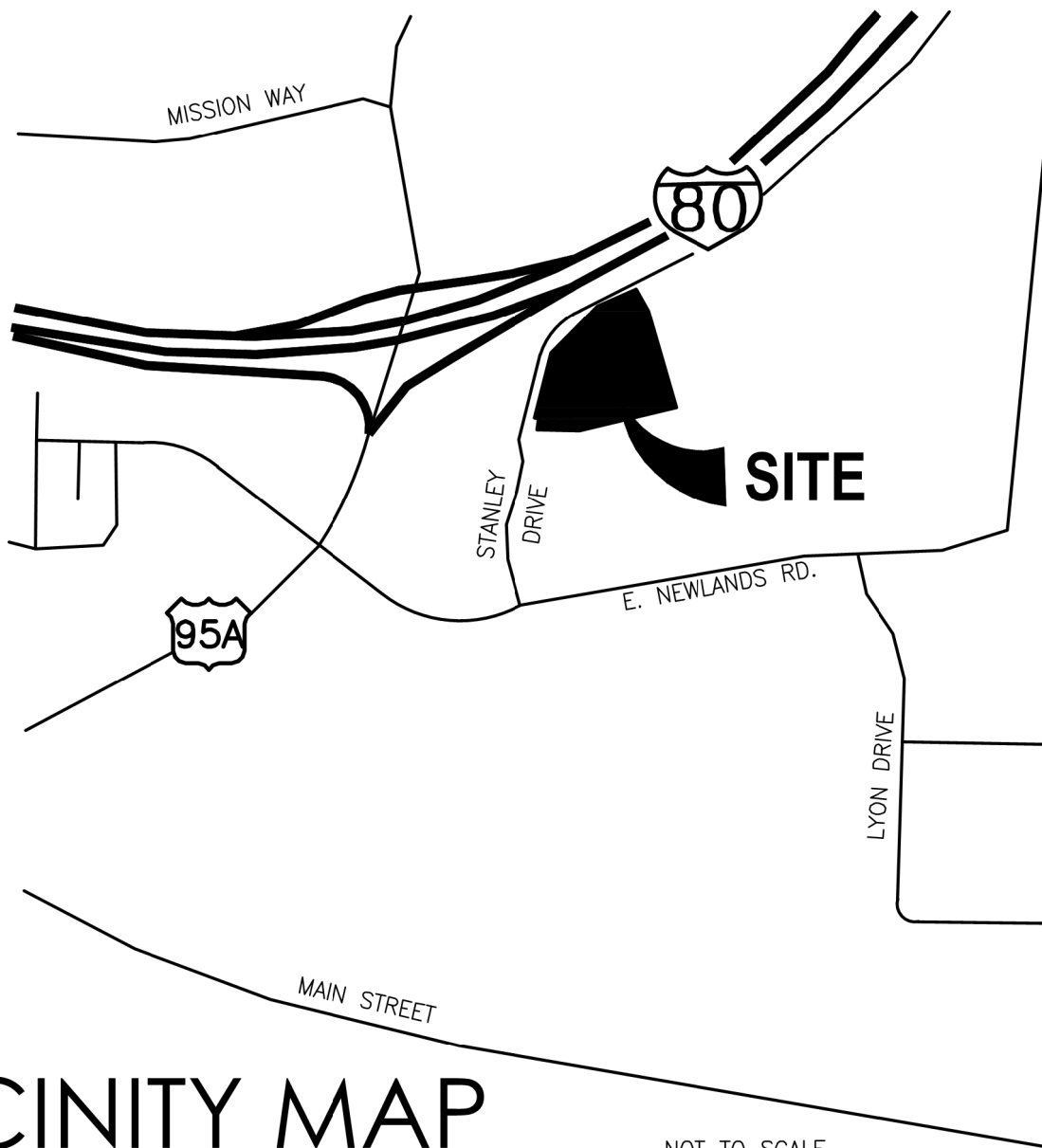
REGULATORY AGENCIES

32. 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 ISSUE OF A BUILDING PERMIT.

33. FEDERAL, STATE, AND LOCAL AGENCIES:

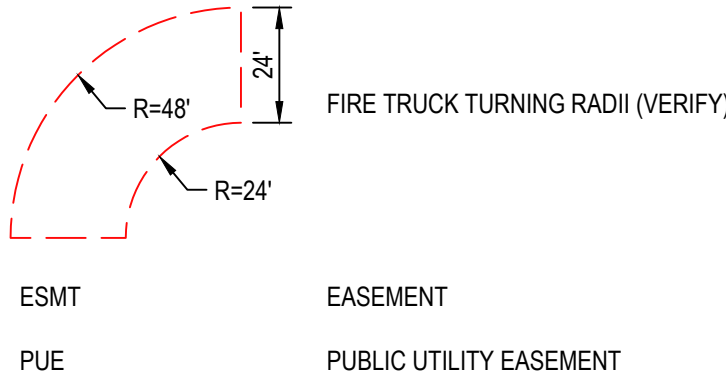
THE DEVELOPER SHALL COMPLY WITH ALL REQUIREMENTS OF ANY FEDERAL, STATE, OR LOCAL AGENCY, DEPARTMENT, OR LICENSED PROFESSIONAL WITH JURISDICTION OVER THE PROJECT INCLUDING, BUT NOT LIMITED TO: NEVADA DEPARTMENT OF TRANSPORTATION (NDOT), NEVADA DIVISION OF ENVIRONMENTAL PROTECTION (NDEP), NEVADA DIVISION OF WATER RESOURCES (NDWR), NEVADA BUREAU OF WATER POLLUTION CONTROL, NEVADA BUREAU OF SAFE DRINKING WATER, NEVADA STATE ENVIRONMENTAL COMMISSION, THE CITY OF FERNLEY BUILDING OFFICIAL, THE CITY OF FERNLEY ENGINEER, THE CITY OF FERNLEY PLANNING DEPARTMENT, AND THE CITY OF FERNLEY PUBLIC WORKS DEPARTMENT.



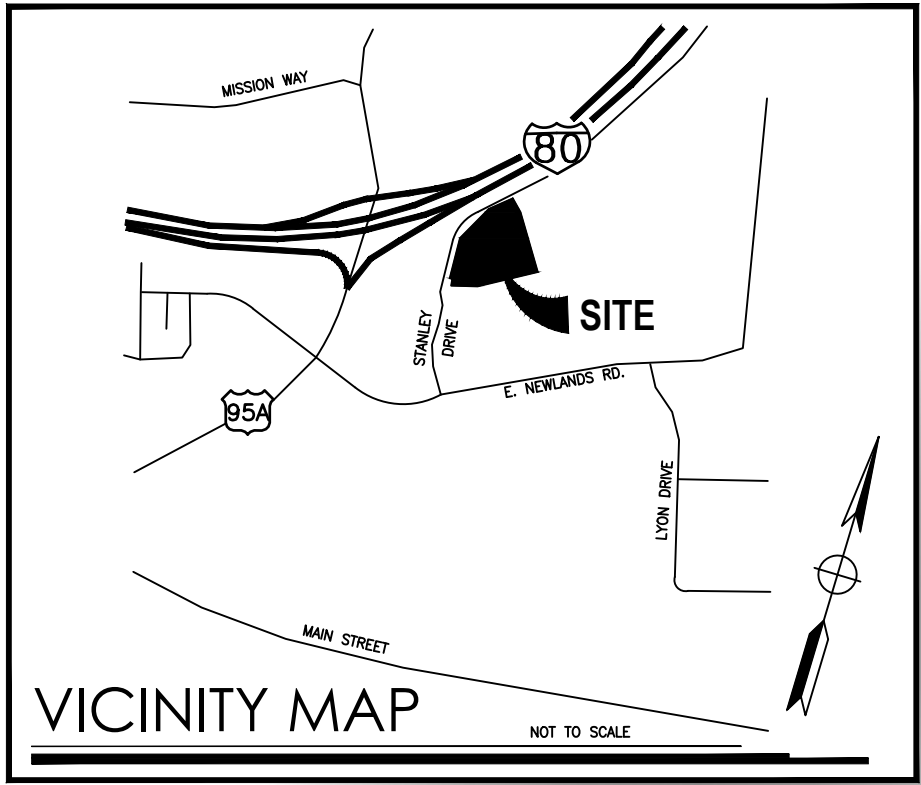
VICINITY MAP

NOT TO SCALE

CITY OF FERNLEY, NEVADA PARKING REQUIREMENTS									
PARCEL	AREA	ROOMS	CODE	REQUIRED	PROVIDED	EV	ACCESSIBLE	BIKE (SHORT TERM)	BIKE (LONG TERM)
1	3.399 AC	91	1 PER ROOM	91 STALLS	202 STALLS	N / A	4	N / A	N / A



LEGEND & ABBREVIATIONS



LOWE'S HIW INC.
PARCEL 2
PM 393486
APN: 021-232-54

PROJECT INFORMATION

ASSESSOR PARCEL NUMBERS	021-232-53
USE:	VACANT
EXISTING SPECIFIC PLAN ZONING:	COMMERCIAL
PROPOSED SPECIFIC PLAN ZONING:	COMMERCIAL
EXISTING #	ACRES
EXISTING NUMBER OF PARCELS	1 12.66 ± AC
PROPOSED #	ACRES
PROPOSED NUMBER OF LOTS	8 12.66 ± AC COMMERCIAL

APPLICANT

LUIS CORNEJO
600 COOLIDGE DRIVE, SUITE #140
FOLSOM, CA 95630
PHONE: (916) 927-2400
EMAIL: L.CORNEJO@MPENGR.COM

PLANNER / ENGINEER

MORTON & PITALO, INC.
600 COOLIDGE DRIVE, SUITE #140
FOLSOM, CA 95630
CONTACT: LUIS CORNEJO / SCOTT PEDERSEN
PHONE: (916) 927-2400
EMAIL: L.CORNEJO@MPENGR.COM
EMAIL: S.PEDERSEN@MPENGR.COM

UTILITY PROVIDERS

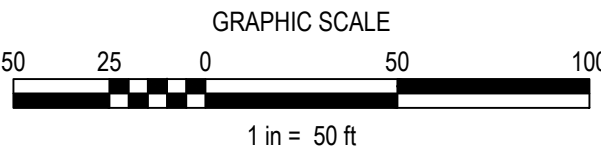
WATER	CITY OF FERNLEY
SEWER	CITY OF FERNLEY
ELECTRIC	NV ENERGY
GAS:	SOUTHWEST GAS CORP.
TELEPHONE:	AT & T

SERVICE PROVIDERS

SCHOOL DISTRICT:	LYON COUNTY SCHOOL DISTRICT
FIRE PROTECTION:	NORTH LYON COUNTY FIRE
POLICE PROTECTION:	LYON COUNTY SHERIFF
PARKS & RECREATION:	LYON COUNTY
STORM DRAINAGE:	CITY OF FERNLEY
SOLID WASTE:	WASTE MANAGEMENT OF NEVADA

NOTES

- MINOR MODIFICATION MAY BE MADE TO LOT LINES AT FINAL MAP.
- FOR PRELIMINARY PLANNING PURPOSES ONLY. BOUNDARY, TOPO, EASEMENTS AND SITE CONDITIONS TO BE VERIFIED PRIOR TO FINAL MAP AND ENGINEERING.

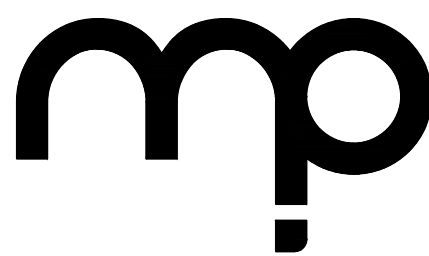


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SCALE:	BENCH MARK
HORIZ. 1" = 50'	
VERT. 1" = N/A	

COMPUTED	
DESIGNED TA	
DRAWN TA	
PROJ. ENGR. LC	



MORTON & PITALO, INC.
CIVIL ENGINEERING • LAND PLANNING • LAND SURVEYING
Folsom • Fresno
600 Coolidge Drive, Suite #140
Folsom, CA 95630
phone: (916) 984-7621
web: www.mpengr.com

EXHIBIT
FERNLEY COMMERCIAL
CONDITIONAL USE PERMIT
CONCEPTUAL SITE PLAN
FERNLEY, NEVADA

DATE	APRIL 11, 2023
SHEET	1
OF	1

Preliminary Landscape Plan - Home2 Suite, Fernley, NV



LEGEND

PRELIMINARY TREE LIST (2" Caliper Minimum)

Deciduous Shade Trees

Acer x freemanii 'Autumn Blaze'	Autumn Blaze Maple
Acer saccharum	Sugar Maple

Ornamental Trees

Prunus Cerasifera Purple Leaf Plum

Evergreen Trees

Juniperus Virginiana	Eastern Redcedar
Picea Pungens	Colorado Blue Spruce
Pinus Nigra	Austrian Pine

Landscape Area
(Landscape Area to have one of the following ground surface treatments):

- Turf
- Four-inch rounded river rock
- Decomposed granite with a pre-emergent herbicide using weed barrier underneath
- Other similar ground surface as approved by the administrator

Size of Planter (square feet)

Drip Irrigation Systems proposed for all Plants:

LANDSCAPING CALCS AND NOTES

All work must conform to Section 32.09.090. Landscaping and Screening of the City of Fernley Municipal Code

Lot Size: 3.399 Acres

Required Landscaping Area for General Commercial District (C2) = 15% Site = 0.510 Acres = 22,216 Square Feet

Provided Landscape Area = 25,792 Square Feet

Required Number of Trees: 90 Trees Total (90 provided)

- 1 tree per 500 square feet of Required Landscaping Area = 22,216 Square Feet / 500 square feet = 44 Trees
- 1 shade tree per 10 parking spaces if over 125 spaces. 176 spaces = 18 Trees
- 1 tree per 30 linear feet of street frontage = 28 Trees

- Required Number of Shrubs: 1,481 Shrubs Total (Not shown on this Preliminary Landscaping Plan, but will be provided)
- 1 shrub per 15 square feet in all zoning districts = 1,481 shrubs.
- 60% of container-grown shrubs and plants (excluding trees), and excluding those plants grown in flats, shall be a minimum five-gallon size and the remainder shall be minimum one-gallon size at time of planting.

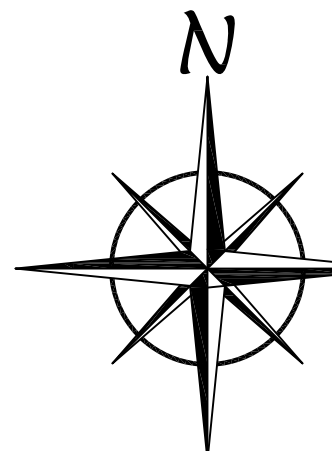
The trees used shall represent a mixture of deciduous and coniferous varieties

Landscaping strips shall be at least ten feet wide regardless of the percentage of the site area involved.

Landscape elements shall provide a vertical dimension. Trees and tall shrubs shall be used in addition to grass and groundcover

Each planter island containing a tree shall have at least 288 square feet for double loaded parking and 144 square feet for single loaded parking, with an eight-foot minimum interior width protected by a six-inch curb.

Non-permeable materials may not be used for more than 20 percent of the total landscaped area and excludes the areas of temporary coverage allowed for all plant and ground cover maturity.



0' 15' 30'

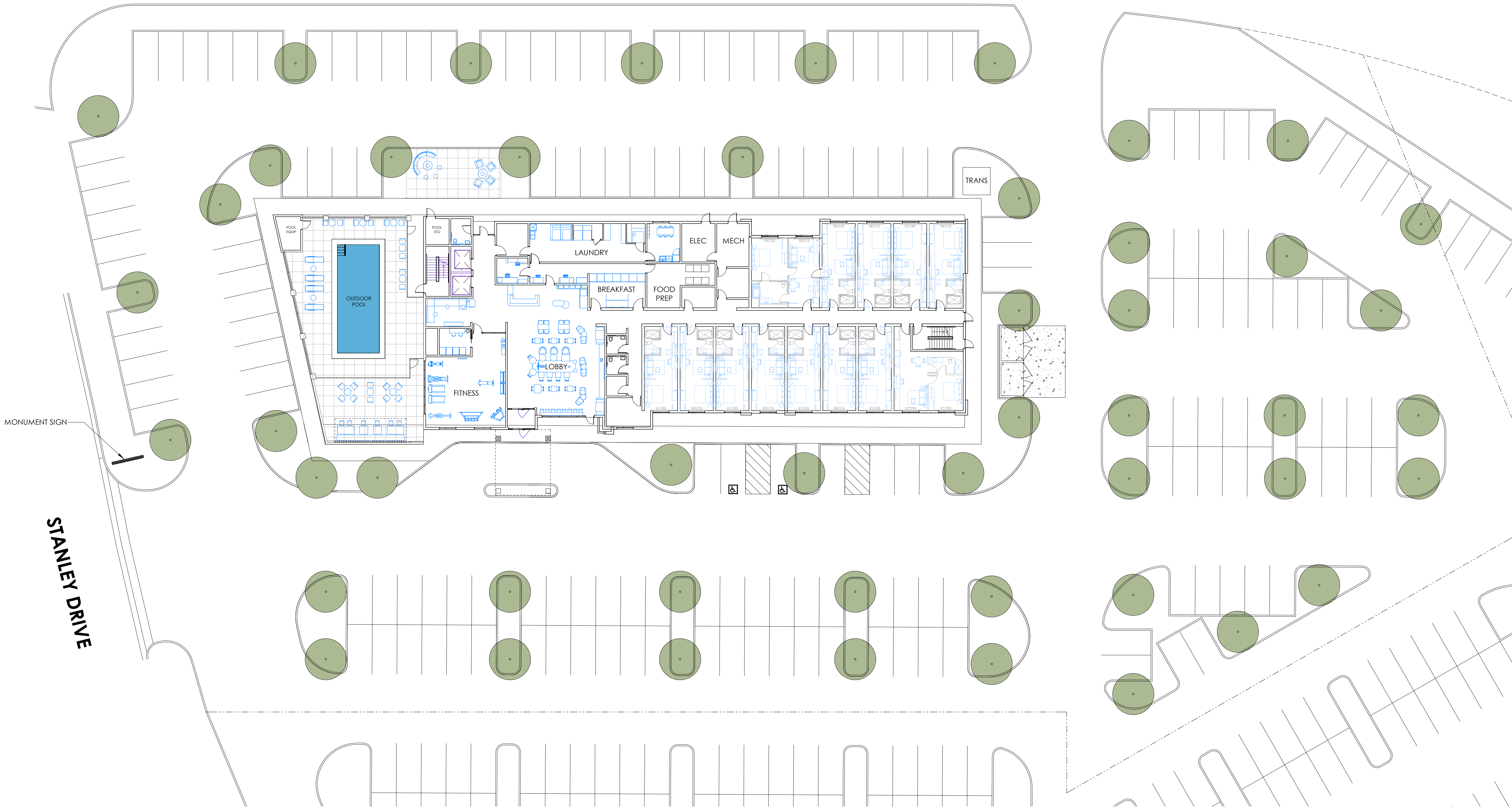


SCALE 1" = 30'



Know what's below
Call before you dig

[illegible]



PROJECT NAME: HOME 2 SUITES FERNLEY
PROJECT LOCATION: STANLEY DR. FERNLEY, NV
ASSESSORS PARCEL #: 021-232-53
LOT SIZE: 3.5 ACRES
ZONING: COMMERCIAL
OCCUPANCY / USE: R-1, HOTEL
PARKING DIMENSIONS: 90 DEGREE STANDARD
Space Width: 9 FT
Space Depth: 18 FT
Two-Way Maneuvering Width: 24 FT

BUILDING SUMMARY:

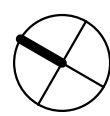
LEVEL	GROSS AREA	TOTAL GUESTROOMS
LEVEL 1	14,145 SF	13
LEVEL 2	14,145 SF	26
LEVEL 3	14,145 SF	26
LEVEL 4	14,145 SF	26
TOTAL	56,580 SF	91

HOTEL DATA

SITE PLAN

1" = 20'-0"

1



ROLAND KETELSEN

HOME2SUITE

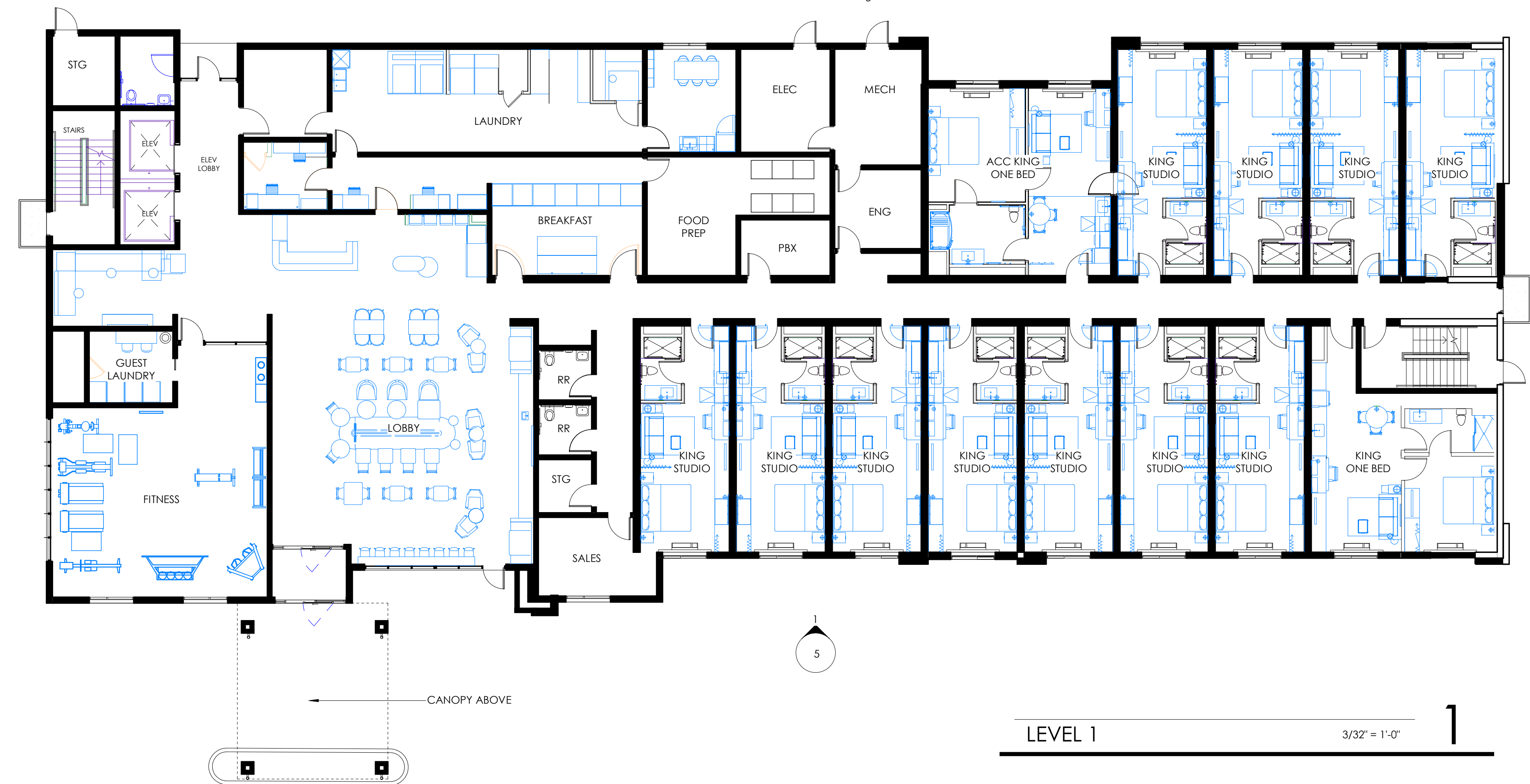
FERNLEY, NV

2277 Fair Oaks Boulevard, Studio 220
Sacramento, California 95825
916.993-4800

03/21/2023

22070

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03/21/2023

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ROLAND KETELSEN

HOME2SUITE

FERNLEY, NV

2

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916.993-4800

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ROOF

3/32" = 1'-0"

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3

5 2

LEVEL 3 & 4

3/32" = 1'-0"

1

03/21/2023

22070

ROLAND KETELSEN

HOME2SUITE

FERNLEY, NV

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916.993-4800

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3



PERSPECTIVE

1

ROLAND KETELSEN

HOME2SUITE

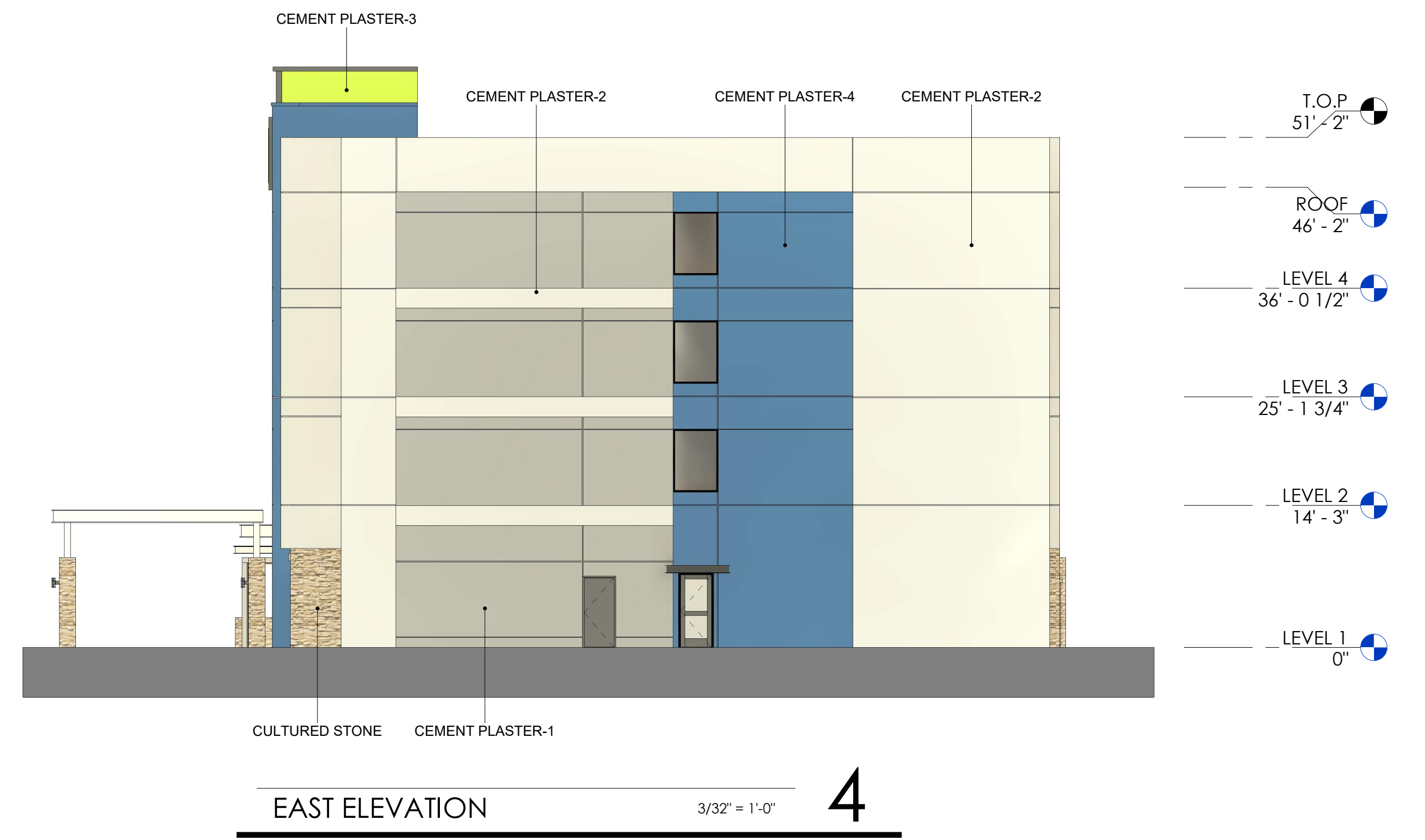
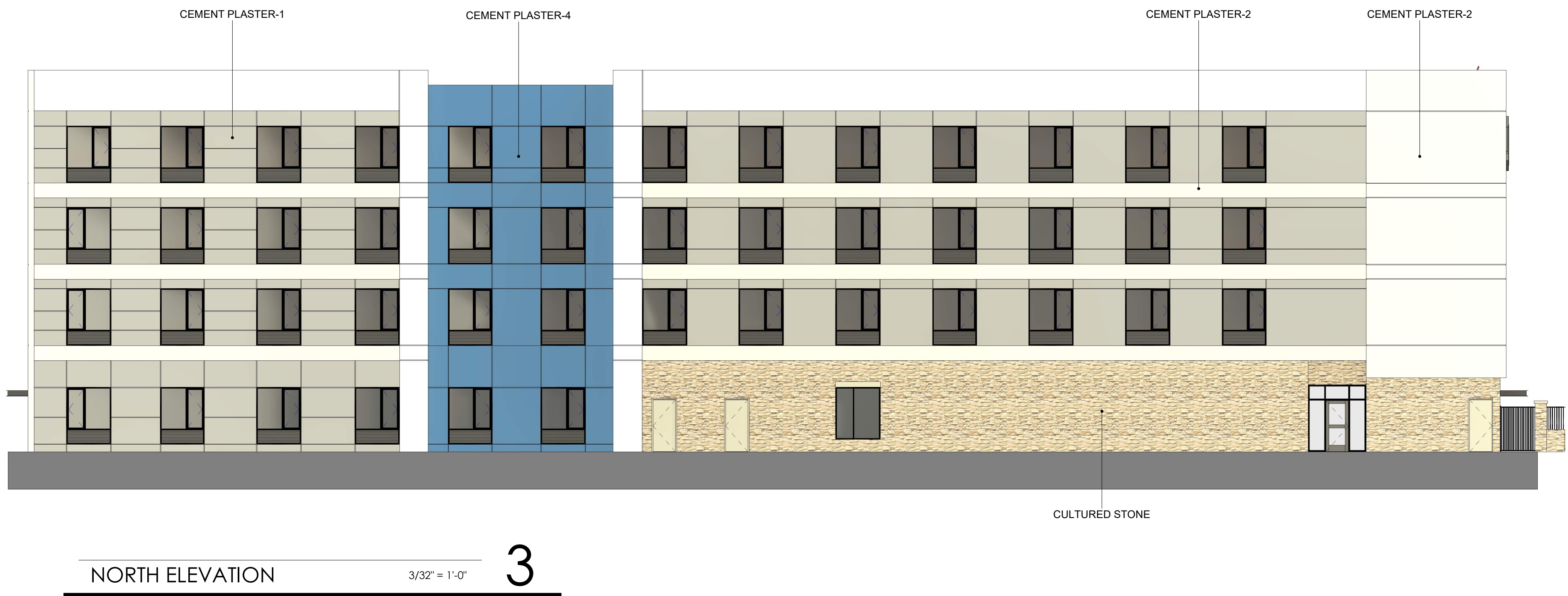
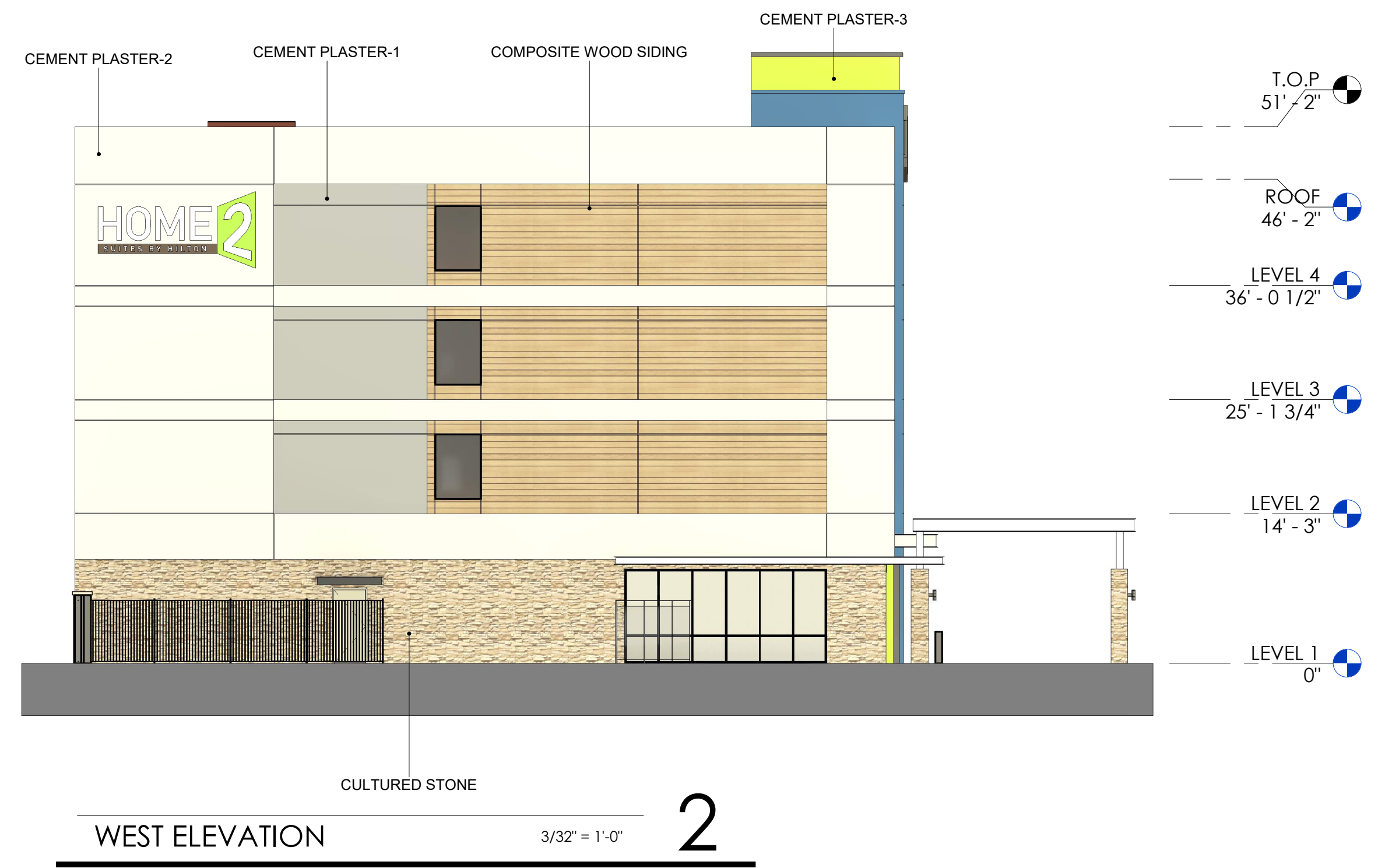
FERNLEY, NV

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03/21/2023

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4



ROLAND KETELSEN

HOME2SUITE
FERNLEY, NV

2277 Fair Oaks Boulevard, Studio 220
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916.993.4800

03/21/2023

22070

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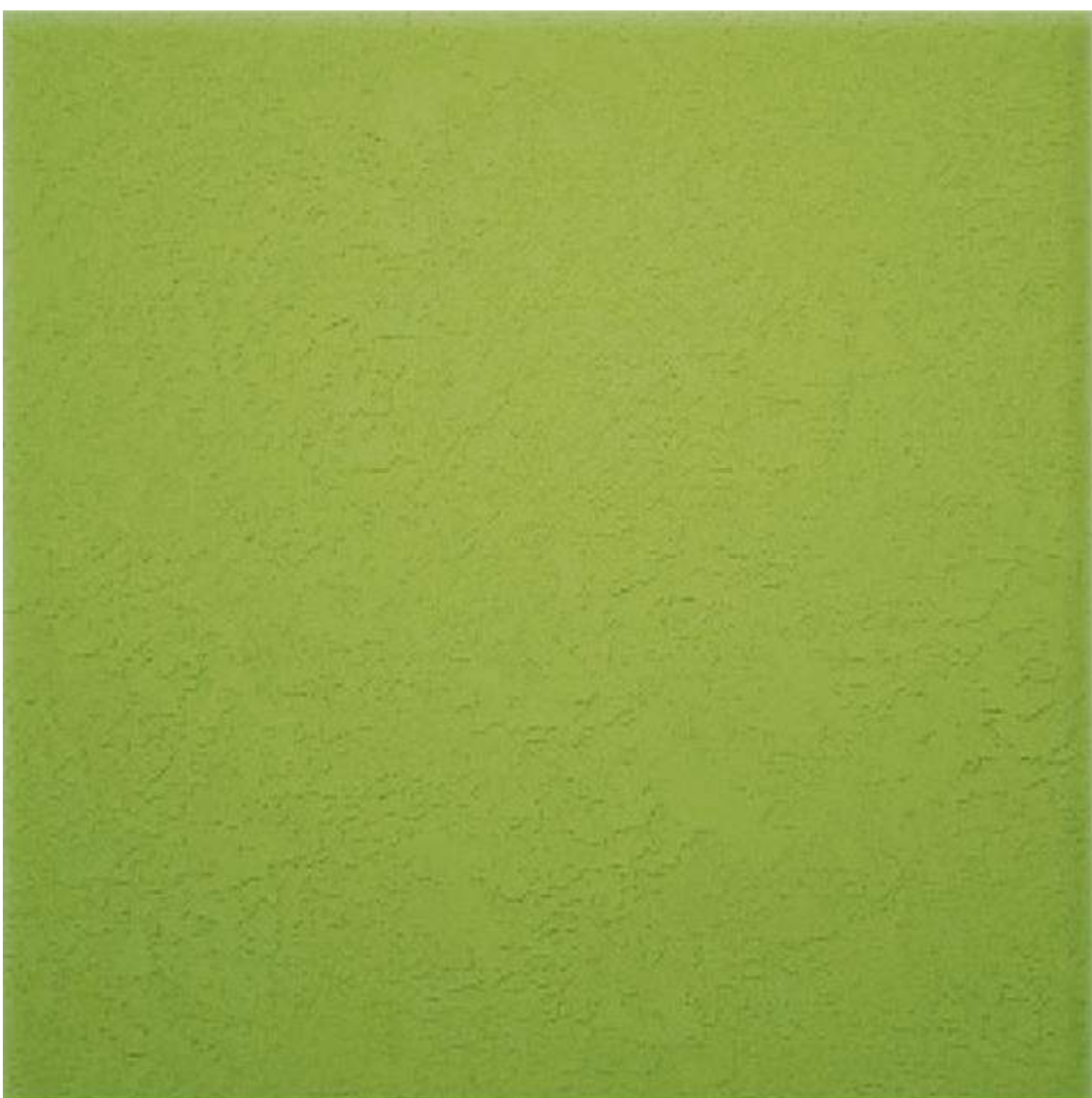
MATERIAL BOARD



CEMENT PLASTER - 1
GREY



CEMENT PLASTER - 2
LIGHT BEIGE



CEMENT PLASTER - 3
GREEN



CEMENT PLASTER - 4
BLUE



COMPOSITE WOOD SIDING



CULTURED STONE -
BEIGE



CITY OF FERNLEY

Planning Commission AGENDA REPORT

Meeting Date: June 14, 2023

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) Discussion and possible action regarding a conditional use permit (CUP23004) application submitted by Westex Engineers on behalf of Stor-All, LLC for ±32,909 square feet of mini-warehouse storage space on a portion of a parcel zoned General Commercial (C2), ±11.32-acres in size, and generally located west of 95A, south of Shadow Lane, east of White Eagle Lane, and north of Sunshine Lane (APN:021-132-64).

AGENDA ITEM BRIEF:

Construction of a self-storage facility falls under the mini-warehouse use, which is a conditional use in the general commercial zone. The applicant is requesting the conditional use permit to allow for a 132,909 square foot self-storage facility.

RECOMMENDED MOTION:

Approval with conditions as written

"I move to approve the conditional use permit associated with CUP23004, 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 33 as set forth by staff in the staff report."

Approval with alternate suggested conditions

"I move to approve the conditional use permit associated with CUP23004, 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 6 and 10 through 33 as set forth by staff in the staff report. Regarding conditions 7, 8, and 9 I move to adopt the conditions as requested by the developer."

Note: Planning Commission may alter the language for approval with alternate suggested conditions to include only 1 or 2 of the suggested conditions if preferred.

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:Denial

"Based on information received in written materials and the public hearings on this matter, I move to deny the conditional use permit request associated with CUP23001, because I am unable to make the following required conditional use permit finding(s): I am unable to make finding(s) _____ as it relates to _____. Therefore, I cannot approve the conditional use permit."

Note: Though no further language has been suggested, any motion that complies with City of Fernley Planning Commission parliamentary procedure is appropriate.

BACKGROUND:

The owner/applicant is developing the project in three phases. Phase 1 will consist of a self-storage facility, Phase 2 is proposed as 30 multi-family dwelling units, and Phase 3 is proposed as 19,300 square feet of commercial retail space. This conditional use permit only pertains to the storage facility, as a specific use has not been specified for the commercial space and the City has not received enough information regarding the form of the 30 multi-family dwelling units to approve it as a conditional use. The developer will need to reapply with a conditional use permit or administrative review to develop phases 2 and 3 when they are ready to do so.

FINDINGS:

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

The comprehensive master plan land use for this site is Suburban Mixed Use (SMU). General Commercial (C2) is not an equivalent zoning category of SMU; however, the site already had this zoning before the master plan was in place. The primary uses the master plan suggests for SMU are a mix of commercial and residential. Here, the term commercial refers to those commercial uses permitted within the C1 zone for neighborhood commercial which are typically less intensive uses than those permitted in C2. The applicant has applied for the mini-warehouse as a conditional use in the rear of the lot, which is permitted in C2 but not in C1, and intends to offer uses more appropriate for the SMU land use at the front of the parcel.

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

This parcel is surrounded by the following existing and permitted uses:

- East - Multifamily quadruplex style housing in the Multi-Family Residential (30 dwelling units per acre maximum) zone
- West - Existing single-family residences and parcels platted for future single-family residences in The Meadows Subdivision, which is zoned Single-Family (6,000 square feet lot size minimum)
- Southwest - 2.31-acre lot that contains a single-family home and is zoned Rural Residential (1-acre minimum lot size)
- Southeast - 2.71-acre lot that contains a single-family residence and is zoned General Commercial
- North - Vacant land that is zoned General Commercial

Staff believes that the self-storage facility can be an appropriate use for this area if designed with consideration for the neighboring residential homes.

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

No natural resources have been identified on this project site, aside from the land itself. The City of Fernley has an abundance of undeveloped land and best land use practices dictate infill development. This parcel is located along a main arterial road and in proximity to our existing infrastructure. Conservation efforts are best applied to parcels outlying the core of existing City of Fernley development.

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

The mini-warehouse use does not directly contribute to this need. It may support the construction of affordable housing by offering people alternative places to store belongings and allowing them to inhabit smaller dwellings than they may otherwise need. The developer has also proposed a 30 unit multi-family dwelling as future development on this property, which will likely directly contribute to the availability and need for affordable housing for all persons in our community. This will be dependent upon the type of multi-family housing constructed.

CUP5. The conditional use permit has been conditioned to address identified impacts.

Staff drafted 33 conditions of approval for your consideration. Two major identified impacts specific to this project are buffering between the self-storage and existing single-family homes along White Eagle Lane, and aesthetic concerns regarding landscaping. Conditions of approval 7 - 9 pertain to these items; staff wrote a series of conditions that directly comply with historical interpretation of our development standards. Staff further prepared an alternate set of conditions that include concessions that deviate from our development code. The applicant has determined the buffering and aesthetic concerns will still be addressed and their reasoning may be found in the attached project overview.

CUP6. Public notice has been given and a public hearing held, per the requirements of the development code and the Nevada Revised Statutes.

Staff certifies that public notice has been given in accordance with Nevada Revised Statutes and the development code portion of Fernley Municipal Code. A public hearing will be held as part of the Planning Commission meeting on June 14, 2023.

RELEVANT LAWS, STATUTES, AND REGULATIONS:

Note: All of the links supplied for relevant laws, statutes, and regulations are correct as of the day of publication. City of Fernley Planning Department will not be monitoring these links for continued applicability and operation beyond the June 12, 2023 Planning Commission.

[Nevada Revised Statues \(NRS\), Chapter 278, Planning and Zoning](#)
[Fernley Municipal Code \(FMC\), Title 32, Development Code](#)
[City of Fernley Comprehensive Master Plan, August 2018](#)

Specific References:

[FMC Section 32.03.050](#) (b) - Administration / Entitlements / Conditional Use Permit
[FMC Section 32.06.100](#) - Zoning Districts / Commercial (C1, C2, TC)
[FMC Section 32.06.150](#) - Zoning Districts / Unlisted uses and use table
[FMC Section 32.07.280](#) - Zone Standards / Mini-warehouse
[FMC Section 32.09.030](#) - Development Standards / Adjacency Standards

FINANCIAL IMPLICATIONS:

N/A

ATTACHMENTS:

1. CUP23004 Conditions of Approval
2. CUP23004 Conditions of Approval - Alternate Conditions
3. Vicinity Map
4. Project Description
5. Site Plan and Elevations
6. Conceptual Site Plan

Conditions of Approval for CUP23004

CONDITIONAL USE PERMIT

SCOPE AND DURATION OF APPROVAL

1. APPROVAL:

THIS APPLICATION IS APPROVED AS SUBMITTED AND CONDITIONED. ANY SUBSTANTIVE CHANGE(S) SHALL BE REVIEWED BY THE PLANNING COMMISSION AS AN AMENDMENT TO THIS CONDITIONAL USE PERMIT.

2. PROJECT DESCRIPTION:

THIS PROJECT APPROVAL PERTAINS TO THE DEVELOPMENT AND CONSTRUCTION OF A 132,909 SQUARE FOOT SELF-STORAGE FACILITY, REFERRED TO HEREIN AS A "MINI-WAREHOUSE", ON AN 11.32-ACRE PARCEL (APN: 021-132-64) WHICH IS ZONED GENERAL COMMERCIAL (C2).

PHASE 1 OF THE PROJECT INCLUDES THE MINI-WAREHOUSE, PHASE 2 OF THE PROJECT IS PROPOSED TO INCLUDE APPROXIMATELY 30 MULTI-FAMILY UNITS, AND PHASE 3 IS PROPOSED TO INCLUDE 19,300 SQUARE FEET OF COMMERCIAL RETAIL SPACE. ANY PHASES BEYOND PHASE 1 SHALL BE REQUIRED TO SUBMIT AN ADDITIONAL CONDITIONAL USE PERMIT APPLICATION OR ADMINISTRATIVE REVIEW APPLICATION AS APPLICABLE.

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.

4. GOVERNING DOCUMENTS:

ALL FERNLEY MUNICIPAL CODE OR DEVELOPMENT CODE REFERENCES HEREIN PERTAIN TO THE VERSION OF FERNLEY MUNICIPAL CODE ESTABLISHED BY ORDINANCE NUMBER 2020-005, UNLESS OTHERWISE NOTED. THE DEVELOPER MAY SUBSTITUTE REQUIREMENTS ESTABLISHED IN FUTURE FERNLEY MUNICIPAL CODE UPDATES, IF APPROVED BY THE ADMINISTRATOR.

DESIGN STANDARDS

5. DESIGN STANDARDS:

UNLESS OTHERWISE STATED IN THE CONDITIONS OF APPROVAL, THE DEVELOPER SHALL COMPLY WITH ANY DESIGN STANDARDS AND REGULATIONS SET FORTH IN THE CITY OF FERNLEY DEVELOPMENT CODE, ESPECIALLY THOSE SPECIFIC TO THE USE DEFINED AS "MINI-WAREHOUSE" UNLESS IN CONFLICT WITH THE LOCAL, STATE, OR FEDERAL REGULATIONS, IN WHICH CASE THE MORE STRINGENT REGULATION WILL TAKE PRECEDENCE.

CURRENT RELEVANT DESIGN STANDARDS INCLUDE BUT ARE NOT LIMITED TO: DIMENSIONAL STANDARDS, SITE PLANNING, PARKING AND CIRCULATION, COMMUNITY AMENITIES, LANDSCAPING AND SCREENING, BUILDING ARCHITECTURE, ADJACENCY STANDARDS, GRADING, BUFFER REQUIREMENTS, LIGHTING, STREETS, MECHANICAL AND TRASH SCREENING, AND UTILITY CONSIDERATIONS.

6. PERIMETER WALL:

IN ACCORDANCE WITH FERNLEY MUNICIPAL CODE SECTION 32.07.280 AND SECTION 32.06.100, THE PERIMETER OF THE FACILITY SHALL BE SCREENED BY A SOLID (OPAQUE) MASONRY WALL. THE WALL SHALL INCORPORATE AT LEAST ONE OF THE FOLLOWING EVERY 50 LINEAR FEET: AT LEAST A TWO-FOOT CHANGE IN PLANE FOR AT LEAST TEN FEET;

Conditions of Approval for CUP23004

CONDITIONAL USE PERMIT

A MINIMUM 18-INCH RAISED PLANTER FOR AT LEAST TEN FEET; OR USE OF A PILASTER AT 75-FOOT INTERVALS, ON PROPERTY CORNERS, OR AT CHANGES IN WALL PLANES.

THE DEVELOPER MAY CHOOSE TO INCLUDE EXTERIOR BUILDING WALLS AS PART OF THE CONSTRUCTION OF THE MASONRY WALL; HOWEVER, IN ALL CASES, THE NON-FACADE PORTIONS OF THE WALL AND BUILDINGS COMBINED MUST BE THE SAME HEIGHT AROUND THE PERIMETER.

7. RESIDENTIAL DISTRICT ADJACENT SETBACKS:

IN ACCORDANCE WITH FERNLEY MUNICIPAL CODE SECTION 32.06.100, ALL SIDE OR REAR PORTIONS OF THE FACILITY ABUTTING A RESIDENTIAL DISTRICT MUST HAVE A SETBACK EQUAL TO THAT OF THE BUILDING HEIGHT. THIS SETBACK APPLIES TO THE WEST AND SOUTHWEST PORTIONS OF THE FACILITY, THE NORTH, EAST, SOUTH, AND SOUTHEAST PORTIONS OF THE FACILITY ABUT NON-RESIDENTIAL DISTRICTS.

8. PERCENTAGE LANDSCAPING REQUIRED:

IN ACCORDANCE WITH FERNLEY MUNICIPAL CODE SECTION 32.09.090, THE MINIMUM PORTION OF THE SITE AREA TO BE LANDSCAPED IS 15%. IF PHASED, EACH INDIVIDUAL PHASE MUST CONTAIN 15% LANDSCAPING PROPORTIONATE TO THE AREA UNDER CONSTRUCTION AND ANY AREAS PREVIOUSLY CONSTRUCTED.

9. PHASE 1 LANDSCAPE REQUIREMENTS:

IN ACCORDANCE WITH FERNLEY MUNICIPAL CODE SECTION 32.09.090, AS PART OF PHASE 1, THE DEVELOPER SHALL INSTALL ALL LANDSCAPING REQUIRED BY SPECIFIC STANDARDS AND BUFFER REQUIREMENTS SECTIONS. IN THE CASE THAT A SPECIFIC STANDARD OR BUFFER REQUIREMENT RELATES TO THE SQUARE FOOTAGE OF REQUIRED LANDSCAPING, THE DEVELOPER MAY SUBSTITUTE THE SQUARE FOOTAGE OF LANDSCAPING REQUIRED BY THE CURRENT PHASE.

10. PARKING:

IN ACCORDANCE WITH FERNLEY MUNICIPAL CODE SECTION 32.09.120, THE ADMINISTRATOR MAY APPROVE THE USE OF ALTERNATIVE PARKING REQUIREMENTS BASED ON AN ANALYTICAL STUDY FROM THE INSTITUTE OF TRANSPORTATION ENGINEERS (ITE). ITE RECOMMENDS 1 PARKING SPACE FOR EVERY 10,000 SQUARE FEET OF STORAGE SPACE AND THE CITY OF FERNLEY ADMINISTRATOR APPROVES USING THIS REQUIREMENT INSTEAD OF THE 1 PARKING SPACE PER 2,000 SQUARE FEET LISTED IN FERNLEY MUNICIPAL CODE FOR THE MINI-WAREHOUSE USE. CITY OF FERNLEY MUNICIPAL CODE FURTHER REQUIRES 1 PARKING SPACE PER LIVE/WORK DWELLING, AND 1 PARKING SPACE PER 800 SQUARE FEET OF OFFICE SPACE.

GIVEN THESE REQUIREMENTS, THE TOTAL PARKING NEED IS AS FOLLOWS: 1 PARKING SPACE FOR THE CARETAKER UNIT, APPROXIMATELY 1.5 PARKING SPACES FOR THE 1,225 SQUARE FOOT OFFICE, AND APPROXIMATELY 13.25 PARKING SPACES FOR THE REMAINING 132,909 SQUARE FEET OF STORAGE SPACE. THE TOTAL NUMBER OF PARKING SPACES REQUIRED IS 16.

BECAUSE MOST STORAGE UNITS WILL LIKELY BE ACCESSED BY PARKING IN FRONT OF THEIR UNIT, CITY OF FERNLEY PLANNING COMMISSION APPROVES A REDUCED PARKING STANDARD OF 1 OFF-STREET PARKING SPOT DEDICATED TO THE CARETAKER UNIT, 3 REGULAR PARKING SPOTS, AND 1 ADA VAN-ACCESSIBLE PARKING SPACE, FOR A TOTAL OF 5 PARKING SPACES. BECAUSE THE DEVELOPER INTENDS TO ALLOW TEMPORARY PARKING WITHIN THE DESIGNATED DRIVE AISLES, ALL FIRE LINES AND FIRE TURNAROUNDS MUST BE CLEARLY DELINEATED AS "NO PARKING" ZONES. IN NO CASE SHALL PARKING SPACES FOR RENT TO STORE RVs, AUTOMOBILES, BOATS, TRAILERS, OR OTHER VEHICLES BE COUNTED

Conditions of Approval for CUP23004

CONDITIONAL USE PERMIT

TOWARD ANY PARKING MINIMUMS.

11. CURB, GUTTER AND SIDEWALK:

IN ACCORDANCE WITH TABLE 32.09.140-1, THE DEVELOPER SHALL INSTALL CURB, GUTTER, AND SIDEWALK ALONG US95A WITH PHASE 1 OF THE PROJECT.

CONSTRUCTION PHASE

12. PROJECT CONTACT:

THE DEVELOPER SHALL DESIGNATE TO THE ADMINISTRATOR A PROJECT CONTACT PERSON RESPONSIBLE FOR AND AUTHORIZED TO CORRECT PROBLEMS REGARDING THE PROJECT ON A 24-HOUR / 7 DAY-PER-WEEK BASIS. THE DEVELOPER SHALL DESIGNATE THE PROJECT CONTACT PERSON TO THE ADMINISTRATOR PRIOR TO ISSUE OF A GRADING PERMIT.

13. 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-PER-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, SUBJECT 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.

14. CONSTRUCTION MAINTENANCE:

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

GRADING PERMIT REQUIREMENTS

15. GEOTECHNICAL REPORT:

THE DEVELOPER SHALL PROVIDE A FINAL 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.

16. GRADING PERMIT:

THE DEVELOPER SHALL SUBMIT A GRADING PERMIT FOR ANY PHASE OF THE PROJECT TO THE APPROVAL OF THE CITY ENGINEER. PRIOR TO ISSUE OF A GRADING PERMIT FOR THE PROJECT, THE DEVELOPER SHALL POST A SURETY BOND 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 FOR GRADING AREAS 1 ACRE OR GREATER AS WELL AS A SURFACE AREA DISTURBANCE PERMIT FOR GRADING AREAS EXCEEDING 5 ACRES.

17. STORM WATER DRAINAGE:

THE DEVELOPER SHALL PROVIDE A FINAL DRAINAGE REPORT FOR THE PROJECT IN CONFORMANCE WITH THE FERNLEY MUNICIPAL CODE AND THE PUBLIC WORKS DESIGN

Conditions of Approval for CUP23004

CONDITIONAL USE PERMIT

MANUAL FOR REVIEW AND APPROVAL BY THE CITY ENGINEER PRIOR TO ISSUE OF A GRADING OR BUILDING PERMIT FOR ANY PORTION OF THE PROJECT.

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

BUILDING PERMIT REQUIREMENTS

18. ADDRESSING AND STREET NAMES:

THE DEVELOPER SHALL SUBMIT A STREET NAME RESERVATION APPLICATION AND REQUEST FOR ADDRESSING TO THE CITY OF FERNLEY FOR REVIEW AND APPROVAL. ALL LOT ADDRESSING SHALL BE COMPLETED BY THE CITY. STREET NAMES SHALL BE APPROVED AND ADDRESSING SHALL BE COMPLETE PRIOR TO ISSUE OF A BUILDING PERMIT.

19. SCREENING:

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 THAT CONSISTS OF THE SAME DURABLE BUILDING MATERIALS USED TO THE APPROVAL OF THE ADMINISTRATOR.

ANY LOADING AND SERVICE AREAS, TO INCLUDE 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 ISSUE OF A BUILDING PERMIT FOR EACH INDIVIDUAL BUILDING.

20. LIGHTING:

THE DEVELOPER SHALL SUBMIT A LIGHTING PLAN FOR REVIEW AND APPROVAL BY THE ADMINISTRATOR PRIOR TO ISSUE OF A BUILDING PERMIT. THE DEVELOPER IS REQUIRED TO COMPLY WITH THE LIGHTING STANDARDS AND REQUIREMENTS IN 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.

THE DEVELOPER SHALL NOT HAVE LIGHTING POLES IN EXCESS OF 20' TO GRADE OF PARKING LOT AND LIGHT STANDARDS IN OR WITHIN 100 FEET OF RESIDENTIAL ZONES WILL NOT EXCEED 12 FEET IN HEIGHT.

21. LANDSCAPING/IRRIGATION:

THE DEVELOPER SHALL SUBMIT A LANDSCAPING AND IRRIGATION PLAN FOR THE PROJECT IN SUBSTANTIAL CONFORMANCE WITH THESE CONDITIONS OF APPROVAL AND CITY OF FERNLEY MUNICIPAL CODE 32.09.090, FOR REVIEW AND APPROVAL BY THE ADMINISTRATOR PRIOR TO ISSUE OF A BUILDING PERMIT FOR THE PROJECT

22. 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. UNLESS REQUIRED BY THESE CONDITIONS OF APPROVAL, SUBSTANTIAL CHANGES TO THE ELEVATIONS SHALL REQUIRE REVIEW AND APPROVAL BY THE ADMINISTRATOR PRIOR TO ISSUE OF A BUILDING PERMIT FOR THE BUILDINGS.

23. WATER AND SEWER SYSTEM MODELING:

THE DEVELOPER SHALL COMPLETE WATER AND SEWER MODELING AND CONSTRUCT ANY

Conditions of Approval for CUP23004

CONDITIONAL USE PERMIT

IMPROVEMENTS IDENTIFIED AS NECESSARY TO SERVE THE PROJECT IN ACCORDANCE WITH STATE AND LOCAL REGULATIONS PRIOR TO ISSUE OF A BUILDING PERMIT.

24. 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 REQUIRED PRIOR TO ISSUE OF A BUILDING PERMIT FOR ANY PHASE OF THE PROJECT.

25. WATER SYSTEM LOOPING:

THE DEVELOPER SHALL PROVIDE THE CITY WITH A UTILITY PLAN FOR THE WATER SYSTEM THAT DEMONSTRATES ADEQUATE SYSTEM LOOPING PRIOR TO ISSUE OF A BUILDING 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 THE ADMINISTRATOR.

26. STORM WATER TREATMENT:

THE DEVELOPER SHALL EMPLOY STRUCTURE CONTROLS FOR THE TREATMENT OF STORM WATER RUNOFF IN ACCORDANCE WITH BEST MANAGEMENT PRACTICES AND SUBJECT TO APPROVAL OF THE CITY ENGINEER AND PUBLIC WORKS DIRECTOR. DRAINAGE CONVEYANCE FACILITIES AND OTHER IMPROVEMENTS MUST BE CONSTRUCTED AND FUNCTIONAL PRIOR TO ISSUE OF A BUILDING PERMIT.

27. 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 ISSUE OF A BUILDING PERMIT.

28. TRAFFIC ANALYSIS:

THE DEVELOPER SHALL PROVIDE A FINAL 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 ISSUE OF A BUILDING PERMIT.

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

29. UNITED STATES POSTAL SERVICE:

THE DEVELOPER SHALL COMPLY WITH ALL REQUIREMENTS OF THE UNITED STATES POSTAL SERVICE FOR MAIL DELIVERY, MAILBOX DESIGN, AND MAILBOX LOCATION, SUBJECT TO APPROVAL OF THE FERNLEY POSTMASTER, CITY ENGINEER, PUBLIC WORKS DIRECTOR, AND ADMINISTRATOR, PRIOR TO ISSUE OF A BUILDING PERMIT FOR THE PROJECT.

CERTIFICATE OF OCCUPANCY REQUIREMENTS

30. 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, AND BE CONSTRUCTED

Conditions of Approval for CUP23004

CONDITIONAL USE PERMIT

PRIOR TO ISSUE OF A CERTIFICATE OF OCCUPANCY FOR THE INDIVIDUAL BUILDINGS.

31. 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 ISSUE OF A CERTIFICATE OF OCCUPANCY FOR EACH INDIVIDUAL BUILDING.

32. LANDSCAPING/IRRIGATION:

THE LANDSCAPING AND IRRIGATION SHALL BE INSTALLED PER THE APPROVED PLANS, PRIOR TO ISSUE OF A CERTIFICATE OF OCCUPANCY FOR ANY BUILDING.

REGULATORY AGENCIES

33. 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 ISSUE OF A BUILDING PERMIT.

34. FEDERAL, STATE, AND LOCAL AGENCIES:

THE DEVELOPER SHALL COMPLY WITH ALL REQUIREMENTS OF ANY FEDERAL, STATE, OR LOCAL AGENCY, DEPARTMENT, OR LICENSED PROFESSIONAL WITH JURISDICTION OVER THE PROJECT INCLUDING, BUT NOT LIMITED TO: NEVADA DEPARTMENT OF TRANSPORTATION (NDOT), NEVADA DIVISION OF ENVIRONMENTAL PROTECTION (NDP), NEVADA DIVISION OF WATER RESOURCES (NDWR), NEVADA BUREAU OF WATER POLLUTION CONTROL, NEVADA BUREAU OF SAFE DRINKING WATER, NEVADA STATE ENVIRONMENTAL COMMISSION, THE CITY OF FERNLEY BUILDING OFFICIAL, THE CITY OF FERNLEY ENGINEER, THE CITY OF FERNLEY PLANNING DEPARTMENT, AND THE CITY OF FERNLEY PUBLIC WORKS DEPARTMENT, NEVADA DIVISION OF ENVIRONMENTAL PROTECTION.

35. NEVADA DEPARTMENT OF TRANSPORTATION:

THE DEVELOPER SHALL COMPLY WITH ALL REQUIREMENTS OF THE NEVADA DEPARTMENT OF TRANSPORTATION FOR ALL IMPROVEMENTS WITHIN THE NDOT RIGHT OF WAY. THE DEVELOPER SHALL INSTALL ALL REQUIRED IMPROVEMENTS FROM THE TRAFFIC IMPACT STUDY AND SUBSEQUENT ACCEPTANCE LETTER FROM NDOT DATED APRIL 14, 2023 WHICH INCLUDED:

INSTALLATION OF A LEFT TURN LANE FOR NORTHBOUND US50A AT THE PROJECT DRIVEWAY, INSTALLATION OF A 215-FOOT RIGHT TURN DECELERATION LANE FOR SOUTHBOUND US50A AT THE PROJECT DRIVEWAY, AND DRIVEWAY LIGHTING PER NDOT STANDARDS.

Conditions of Approval for CUP23004

Suggested Language for Alternate Conditions

DESIGN STANDARDS

7. RESIDENTIAL DISTRICT ADJACENT SETBACKS:

IN ACCORDANCE WITH FERNLEY MUNICIPAL CODE SECTION 32.06.100, ALL SIDE OR REAR PORTIONS OF THE FACILITY ABUTTING A RESIDENTIAL DISTRICT MUST HAVE A SETBACK EQUAL TO THAT OF THE BUILDING HEIGHT. FURTHER, IN ACCORDANCE WITH FERNLEY MUNICIPAL CODE SECTION 32.09.090, EVERGREEN TREES SHALL BE PLANTED IN INTERVALS OF 30 FEET AT A MINIMUM BETWEEN RESIDENTIAL AND NON-RESIDENTIAL USES TO PROVIDE SCREENING.

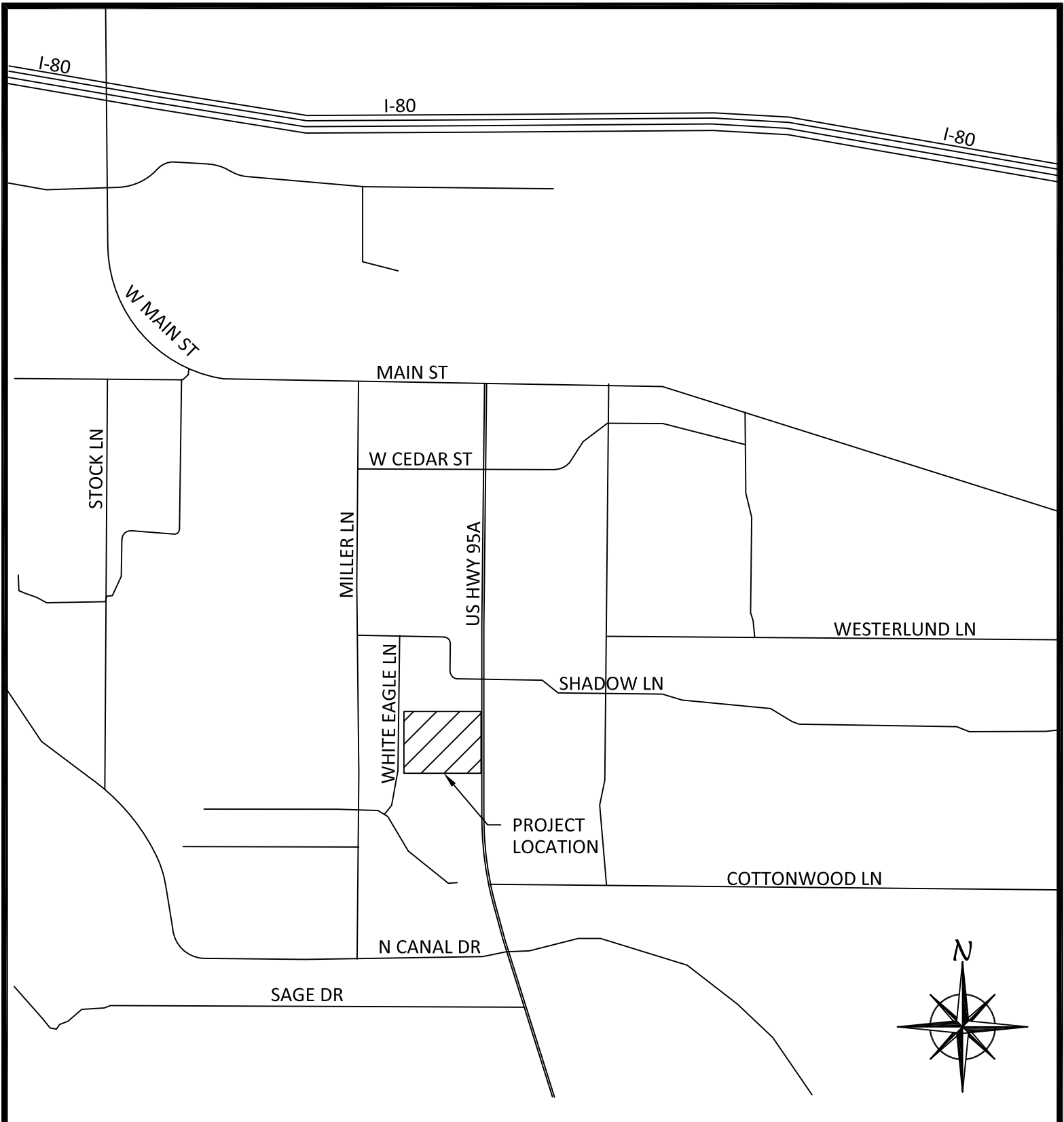
FERNLEY PLANNING COMMISSION FINDS THAT A MASONRY WALL AS DESCRIBED BY CONDITION OF APPROVAL 6 HEREIN, SUFFICIENTLY MEETS THE NEED TO SCREEN BETWEEN RESIDENTIAL AND NON-RESIDENTIAL USES AND HEREBY WAIVES BOTH THE SETBACK AND PLANTING REQUIREMENTS LISTED.

8. PERCENTAGE LANDSCAPING REQUIRED:

IN ACCORDANCE WITH FERNLEY MUNICIPAL CODE SECTION 32.09.090, THE MINIMUM PORTION OF THE SITE AREA TO BE LANDSCAPED IS 15%. BECAUSE PHASE 1 OF THE PROJECT DOES NOT INCLUDE 15% LANDSCAPING, ANY FURTHER PHASES MUST INCLUDE LANDSCAPE EQUIVALENT TO 15% OF THE ENTIRE 11.29-ACRE PARCEL. SHOULD THE SITE BE PARCELED IN THE FUTURE, ANY PARCELS CREATED WILL BE REQUIRED TO BEAR A DEED RESTRICTION TO DIVIDE THE BALANCE OF THE REMAINING REQUIRED LANDSCAPE BETWEEN THEM.

9. SPECIFIC LANDSCAPE REQUIREMENTS:

IN ACCORDANCE WITH FERNLEY MUNICIPAL CODE SECTION 32.09.090, THE DEVELOPER MUST PROVIDE LANDSCAPING AS LISTED IN THE SPECIFIC STANDARDS SECTION. CITY OF FERNLEY PLANNING COMMISSION APPROVES THE DEVELOPER TO COMPLETE ONLY THOSE SPECIFIC STANDARDS THAT APPLY TO THE MINI-WAREHOUSE SITE AT THIS TIME. FURTHER SPECIFIC STANDARDS SHALL BE EQUALLY DIVIDED BETWEEN PHASES 2 AND 3.



220 S. Rock Blvd, Ste 12; Reno, NV 89502

VICINITY MAP FOR STOR-ALL MIXED USE PROJECT

VICINITY MAP - STOR-ALL

Project Description for STOR-ALL Fernley Mixed Use Project and Requested Conditions of Approval

The proposed project is to be located on Lyon County APN 021-132-64 (0 Hwy 95A) in Fernley, NV. The parcel is 11.29 acres in size and is vacant. The parcel is currently zoned commercial (C2). This project will consist of a storage component in the rear (west side of the property) as Phase I, with two additional components (multifamily residential and commercial components) to be built in second and third Phases. The multifamily residential and commercial components will be along US 95A and will be used to screen the storage component in the rear of the property. The proposed land use is consistent with the Master Plan Land Use Map designation of Suburban Mixed Use (SMU).

The owner/applicant is planning on completing a parcel map to separate Phase I (storage component) from the other elements of this mixed-use project (commercial and multifamily components) once site improvement and building permits have been approved. Although only Phase I is to be completed in the immediate future, this project's land use, drainage requirements, and landscaping requirements should be looked at as a whole, for all proposed phases. Both C2 and MU zoning require 15% Landscaping area. Accordingly, 1.69 acres of the entire project of a whole shall be required to be Landscaping Area. The primary Landscaping areas are proposed along the eastern side of the parcel, as this will be the area visible to the public.

Aside from the proposed land use, as part of the Conditions of Approval, the applicant is requesting that 0ft setbacks are approved around the parcel for the storage component on both the northern and western property boundaries, as well as any internal property boundaries in the future. Any storage component adjoining residential zoning will build a solid masonry wall for screening and security.

The applicant is proposing 132,909 square feet of self-storage space, as well as future multi-family and commercial components. The future multifamily component is estimated to be 30 multifamily units. The future commercial space is estimated to be 19,300 square feet of retail space. Drainage will be built on site for full buildout of all components at this time. A single driveway in the center of the east side of the parcel is proposed for access off US 95A. A secondary emergency access is proposed as well.

There currently are no public water or sewer mains to service this project. The applicant is going to have to incur significant costs in order to extend both sewer line and water lines to serve this project. Per initial discussions with the City of Fernley Engineering Department, approximately 1,200 feet of 8" sewer main will need to be installed within US 95A, which will extend from the southern property line, approximately 1,200 feet north and to the east to connect at an existing point of connection at the corner of Shadow Lane and Sunny Lane. Additionally, an approximate 2,500 feet of 8" water main will

need to be looped between a bend in Shadow Lane to the northwest and the intersection of US 95A and Cottonwood Lane to the south.



Figure 1 – Recommended Path of Extension of 8" Sewer Main



Figure 2 – Recommended Path of Extension of 8" Water Main

Based on ITE Parking Generation Data, 0.10 parking spaces are required per 1,000 square feet of storage space, or one parking space for every 10,000 square feet. This results in a parking demand of 13.53 spaces (rounded to 14 spaces). However, due to the nature of the storage facility, drive in traffic will be allowed to park in front of their units for loading and unloading. It is assumed that the majority of parking by visitors will be completed in this fashion. Based on the Applicant's extensive knowledge in this department and experience running self-storage facilities within northern Nevada, the three parking spaces outside of the facility plus the single ADA space should be more than sufficient for visitors to the office portion only.

A traffic study has been completed by Headway Transportation showing minimal impact to the surrounding roadway network. The traffic study has been reviewed by NDOT and accepted in a letter dated April 14, 2023.

Requested Conditions of Approval are as follows:

- Applicant is allowed to construct up to 132,909 square feet of self-storage space for the Storage Component of the Project (Phase I).
- Future Multifamily Component is allowed for 30 multifamily units pending reanalysis of sewer and water demands when applying for civil improvements / building permit for multifamily component.
- Future Commercial Component is allowed for 19,300 square feet of retail commercial space pending reanalysis sewer and water demands when applying for civil improvements / building permit for multifamily component.
- Property is allowed to be parceled into three parcels at a later date. All appropriate public and private access, emergency access, utility easements, and private drainage easements must be included as part of the Parcel Map.
- If or when parceling occurs, a deed restriction must be recorded on the new parcels making sure that the total landscaping between all three parcels meets the 15% minimum area (1.69 acres) required by City of Fernley code. The deed restrictions will clearly state how many acres of land (and percentages thereof) that will be required for landscaping from each parcel, contributing to total 1.69 acres of landscaping area across all three parcels.
- Zero foot (0ft) setbacks are approved around the parcel for the storage component on both the northern and western property boundaries, as well as any internal property boundaries in the future. Any storage component adjoining residential zoning will require a solid masonry wall for screening and security.



SITE DATA			
APN	021-132-64		
LOT AREA	493,099 SQ. FT. 11.32 ACRES		
TOTAL GROSS BLDG. AREA	135,359 SQ. FT.		
ZONE	C-2; TBD		
SPECIFIC PLAN	N/A		
BUILDING DATA			
CONSTRUCTION TYPE	TYPE IIB - NON COMBUSTIBLE		
SPRINKLER SYSTEM	YES; NFPA 13		
SELF STORAGE OCCUPANCY TYPE	S-1		
STORAGE OFFICE OCCUPANCY TYPE	B		
BASIS OF DESIGN			
SETBACKS	REQUIRED	PROVIDED	
FRONT	TBD	3'	
SIDE	TBD	1'	
REAR	TBD	1'-6"	
MAX HEIGHT	60 FT.	TBD	
LOT COVERAGE MAX	TBD	±27.7% (135,359 SF)	
MAX FAR	TBD	.26	
REQUIRED PARKING (9'X18' STANDARD) STORAGE: 1 PER 2000 SF	68 SPACES	70 SPACES	
BUILDING AREA TABULATIONS (Square Feet)			
BUILDING	SELF / RV STORAGE	OFFICE/RESIDENCE	TOTAL
BUILDING 'A'	11,560	2,450	14,010
BUILDING 'B'	16,561		16,561
BUILDING 'C'	11,900		11,900
BUILDING 'D'	11,900		11,900
BUILDING 'E'	9,600		9,600
BUILDING 'F'	10,000		10,000
BUILDING 'G'	9,600		9,600
BUILDING 'H'	10,000		10,000
BUILDING 'I'	9,600		9,600
BUILDING 'J'	10,000		10,000
BUILDING 'K'	5,700		5,700
BUILDING 'L'	5,400		5,400
BUILDING 'M'	11,088		11,088
TOTAL GROSS AREA	132,909	2,450	135,359
ESTIMATED NET RENTABLE @90%			±121,000 SF

BUILDING CONSTRUCTION TYPE: IIB
BUILDINGS ARE EQUIPPED WITH AUTOMATIC FIRE SPRINKLER SYSTEM IN ACCORDANCE WITH NFPA 13.

STOR-ALL
STOR-ALL MIXED USE
FERNLEY, NV

SCHEME 'E'
PRELIMINARY SITE PLAN

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DATE: 02/28/2023



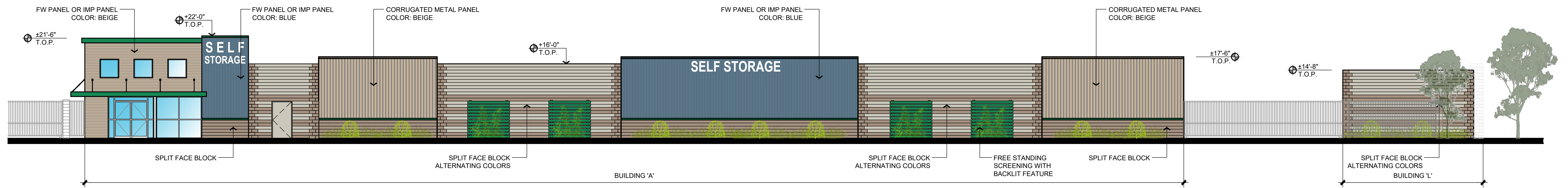
STOR-ALL
STOR-ALL MIXED USE
FERNLEY, NV

UNIT MIX PLAN

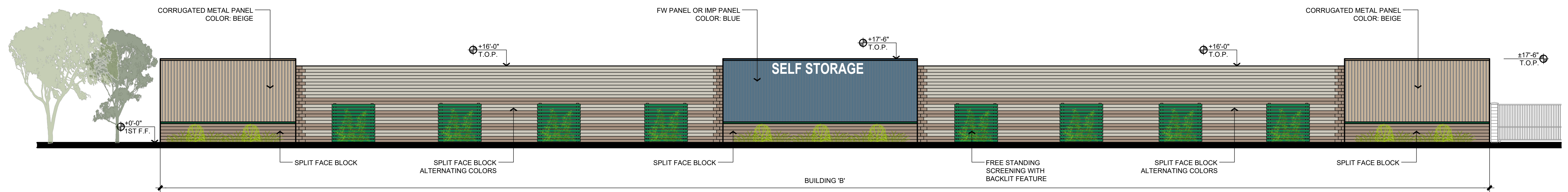
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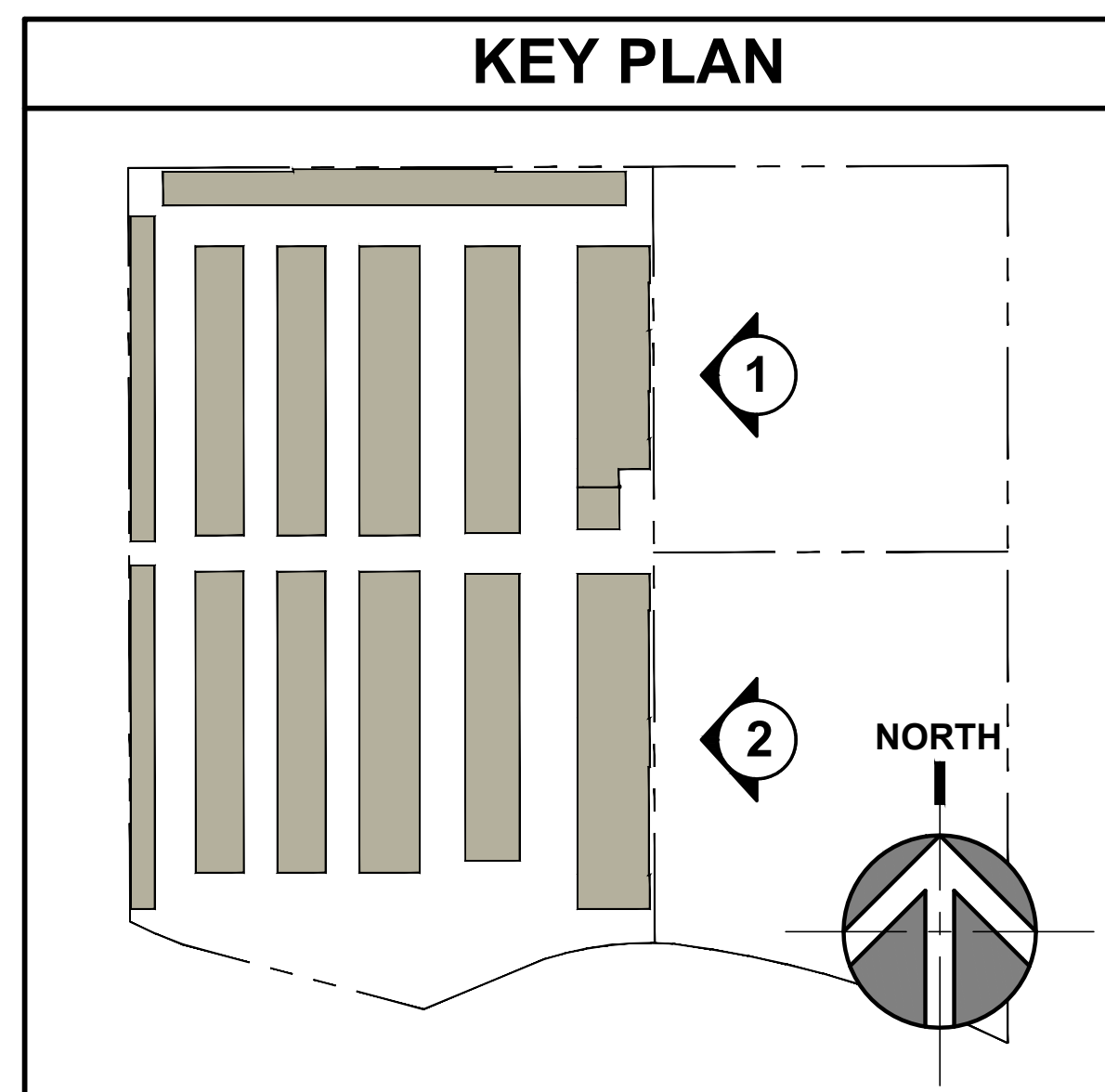




EAST ELEVATION 1
3/32"=1'-0"



EAST ELEVATION (CONT.) 2
3/32"=1'-0"



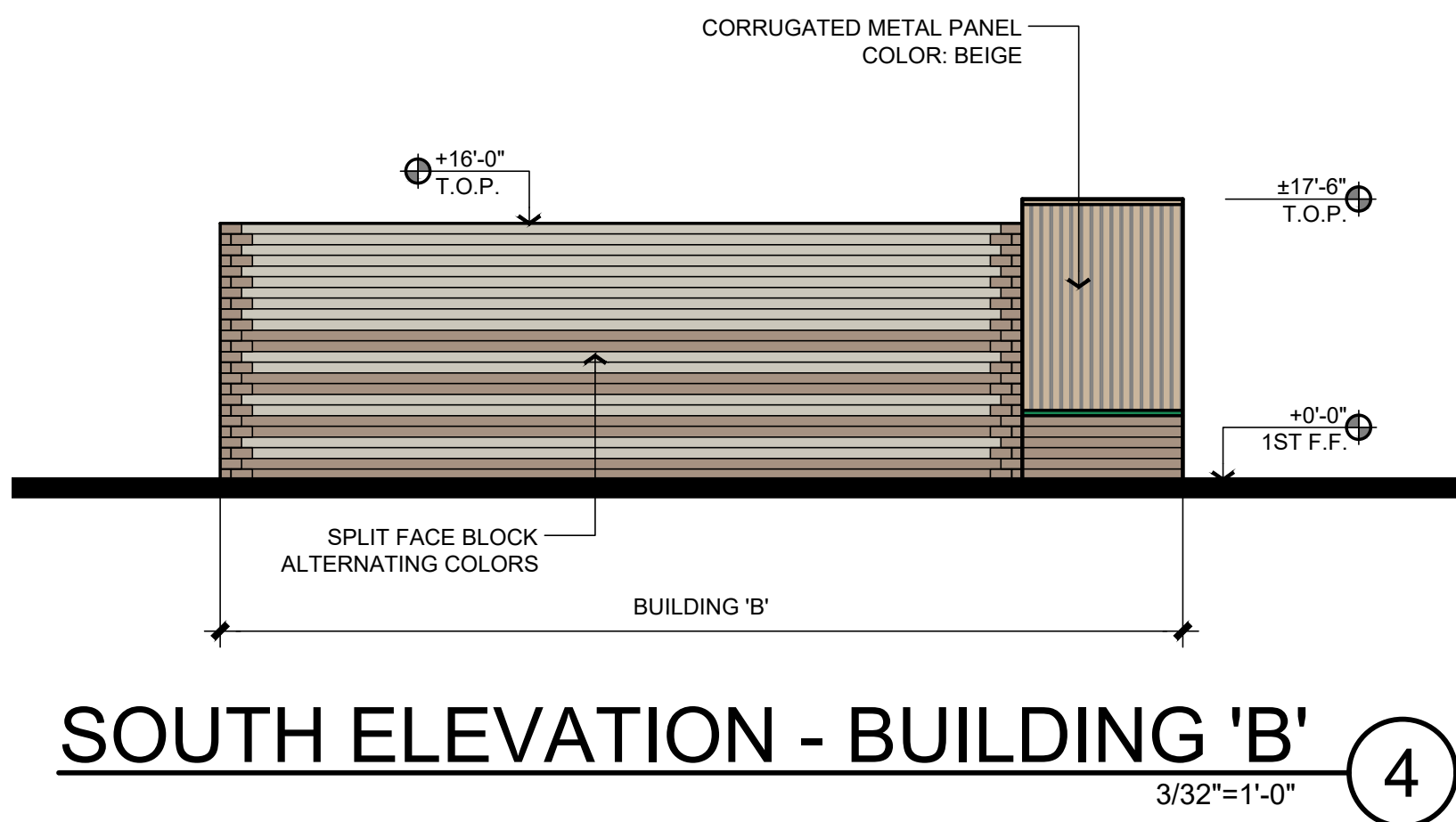
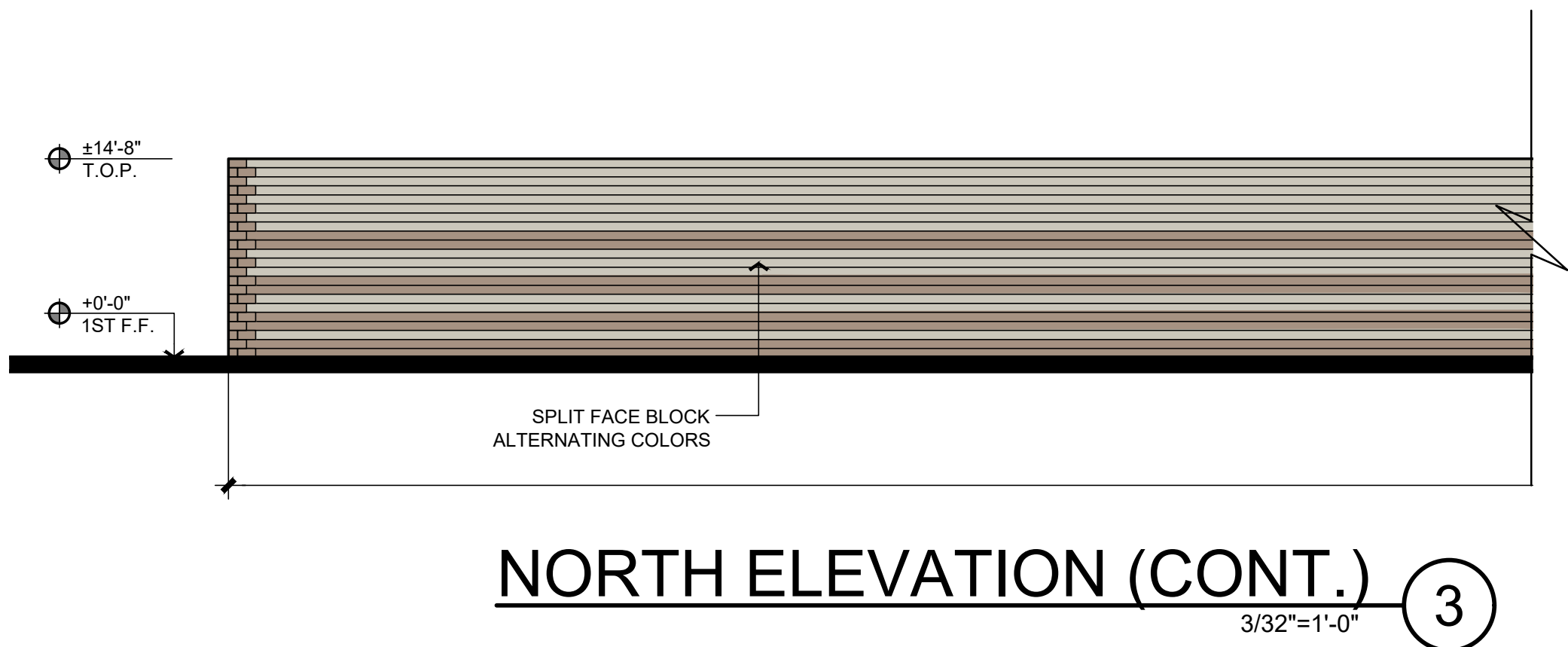
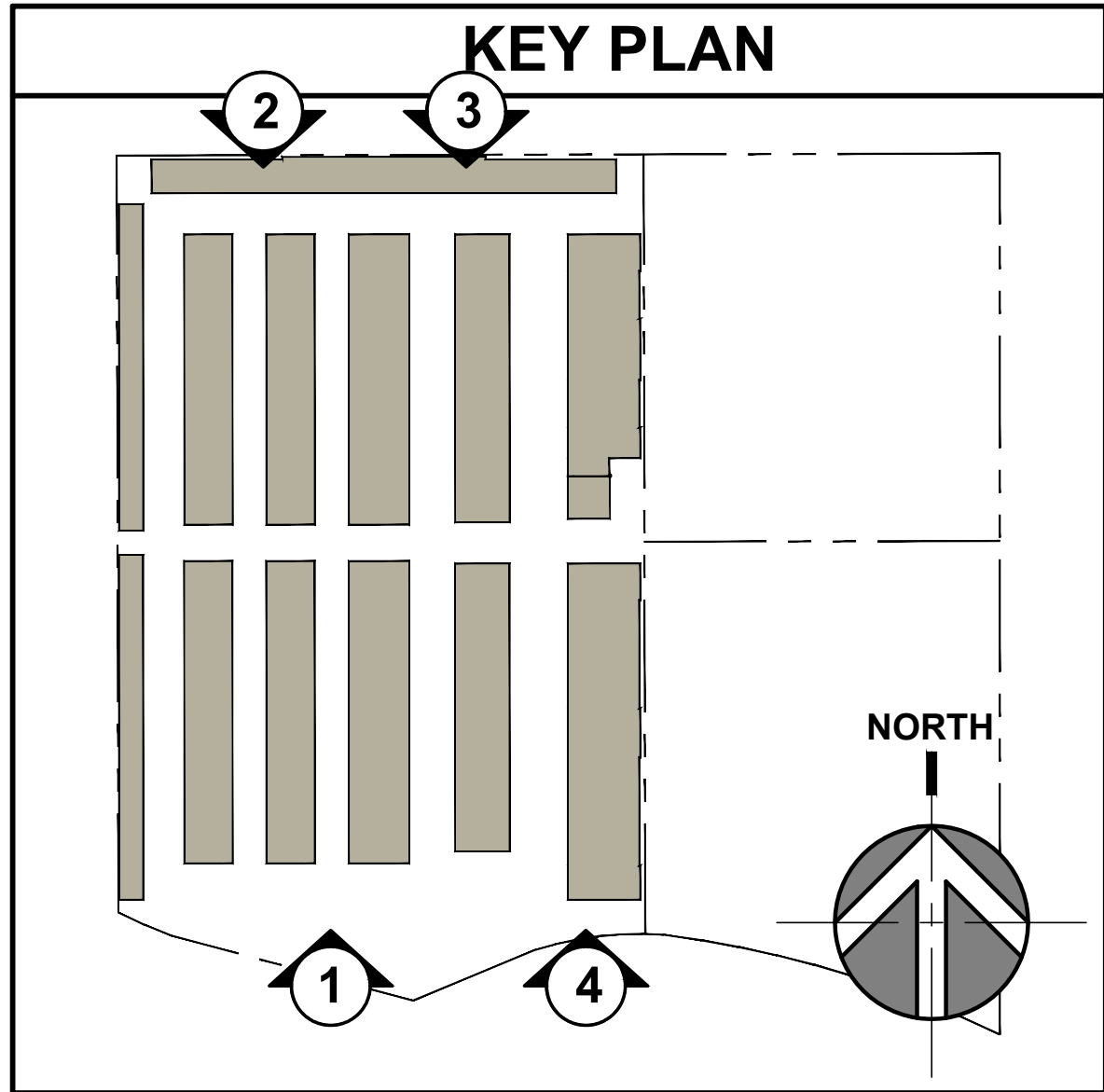
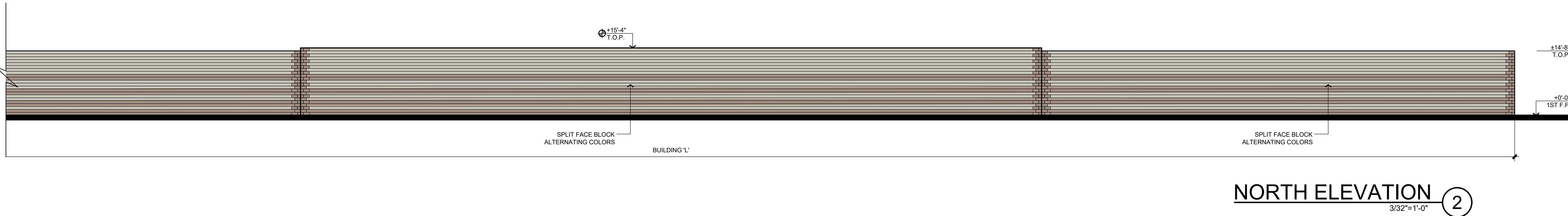
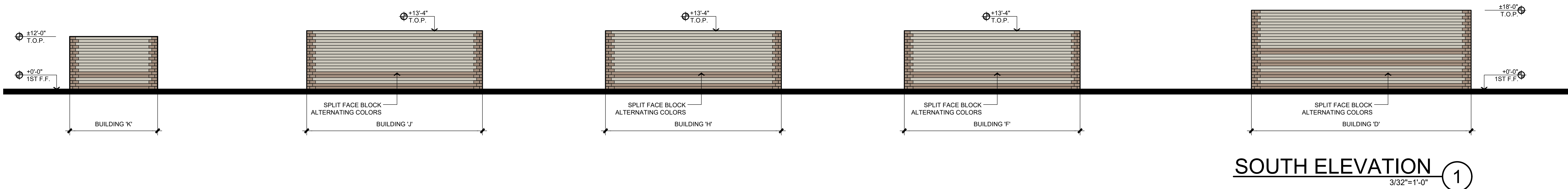
STOR-ALL
STOR-ALL MIXED USE
FERNLEY, NV

EAST ELEVATION

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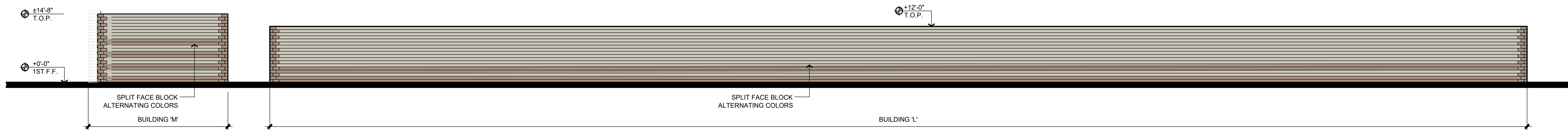
STOR-ALL
STOR-ALL MIXED USE
FERNLEY, NV

NORTH & SOUTH ELEVATION

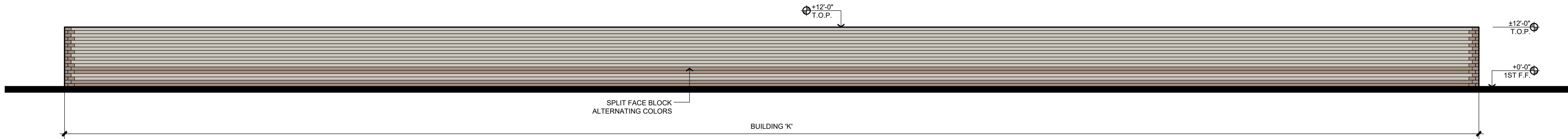
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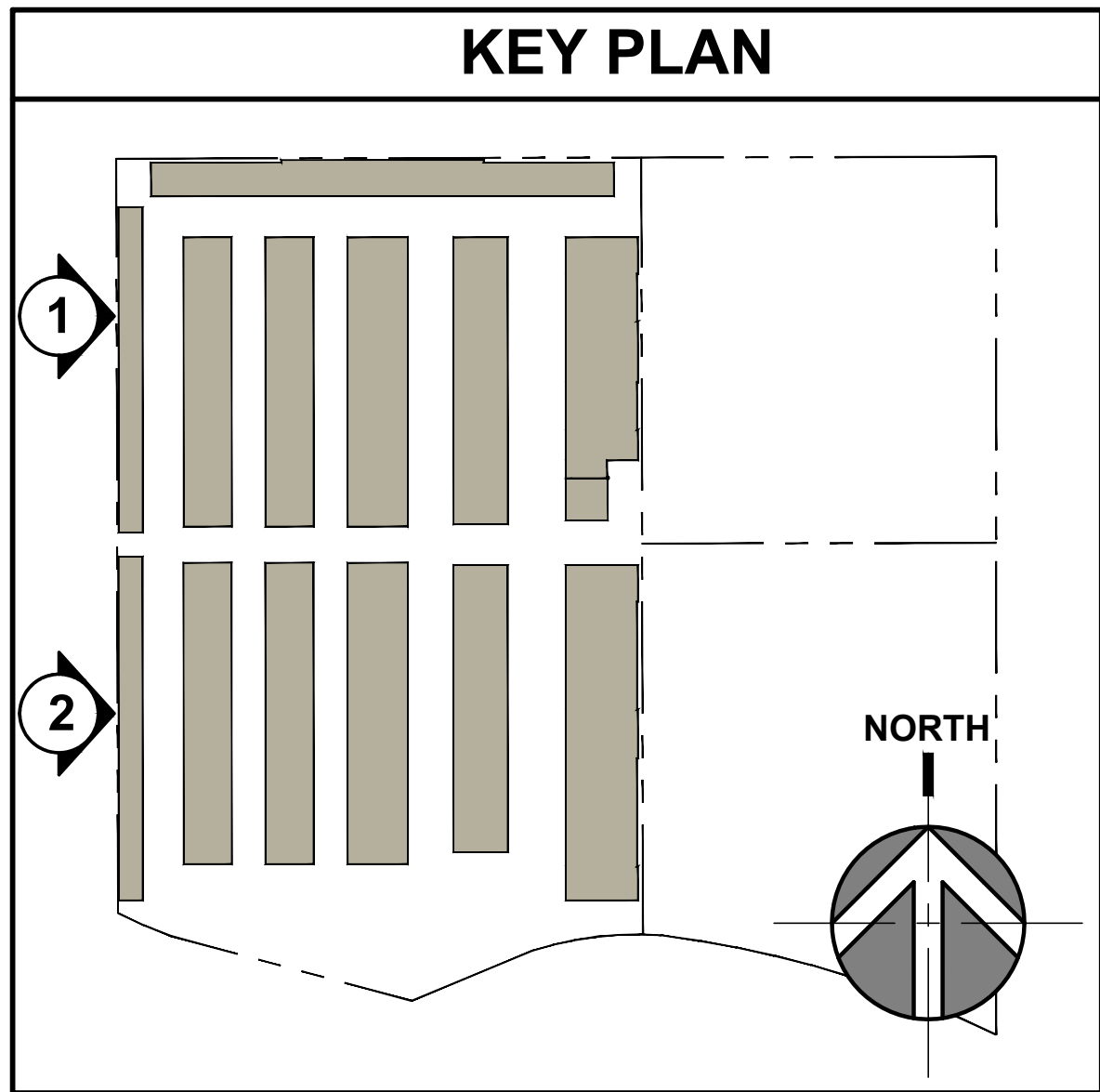




WEST ELEVATION 1
3/32"=1'-0"



WEST ELEVATION 2
3/32"=1'-0"



STOR-ALL
STOR-ALL MIXED USE
FERNLEY, NV

WEST ELEVATION

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