PLANNING & DEVELOPMENT DEPARTMENT
STAFF REPORT
AUGUST 9, 2022

Application #:	**2022-12**
Project Name:	**Rose Creek Preliminary Plan**
Application:	Preliminary Plan
Representative:	Vortex Engineering, Inc.
Location:	Parcels #2697-094-79-002 and #2697-094-00-715 (Northwest corner of 19 and K Road)
Zone:	Community Residential (CR)
Request:	This is a request for approval of a Preliminary Plan application for the development of 130 single family lots over approximately 22.74 acres located in the Community Residential (CR) zone.

PROJECT DESCRIPTION:

This is a request for approval of a 130-lot subdivision over approximately 22.74 acres located northwest of the intersection of 19 and K Road. The subdivision consists of two parcels, parcels #2697-094-79-002 and #2697-094-00-715, which are both owned by Rose Creek, LLC. The parcels were annexed in 2020 and 2021.

The proposed subdivision is requesting approval of density bonuses. The purpose of density bonuses is to help implement portions of the Fruita Community Plan (Master Plan) by providing for residential density bonuses in designated zones tied to the provision of community benefits. Additionally, density bonuses provide opportunities for development incentives in response to applicants providing community benefits and encouraging applicants to deliver amenities without incurring unreasonable economic costs or driving up housing or consumer costs.

This particular request for density bonuses is to allow for a decrease in lot size in the Community Residential (CR) zone from a minimum of 7,000 square feet to a minimum of 3,500 square feet. The CR zone allows for residential densities of up to 6 dwelling units per acre with the allowance for up to 8 dwelling units per acre upon approval of density bonuses. The Land Use Code requires density bonuses to be approved by the City Council in which they would consider whether or not the application meets the intents and purposes of the density bonus section of the Code (17.09.040). The elements required to be included for consideration of approval of density bonuses include 20% Open Space, Bike and Trail Connections, Alley/Shared drive access, and/or a Mix of Housing. The request for density bonuses does not always translate to more

density, as with this subdivision, the request for density bonuses is to decrease the minimum lot sizes. The application is proposing Bike and Trail Connections and the Mix of Housing Types within the density bonus request. More detail is included within this Staff Report.

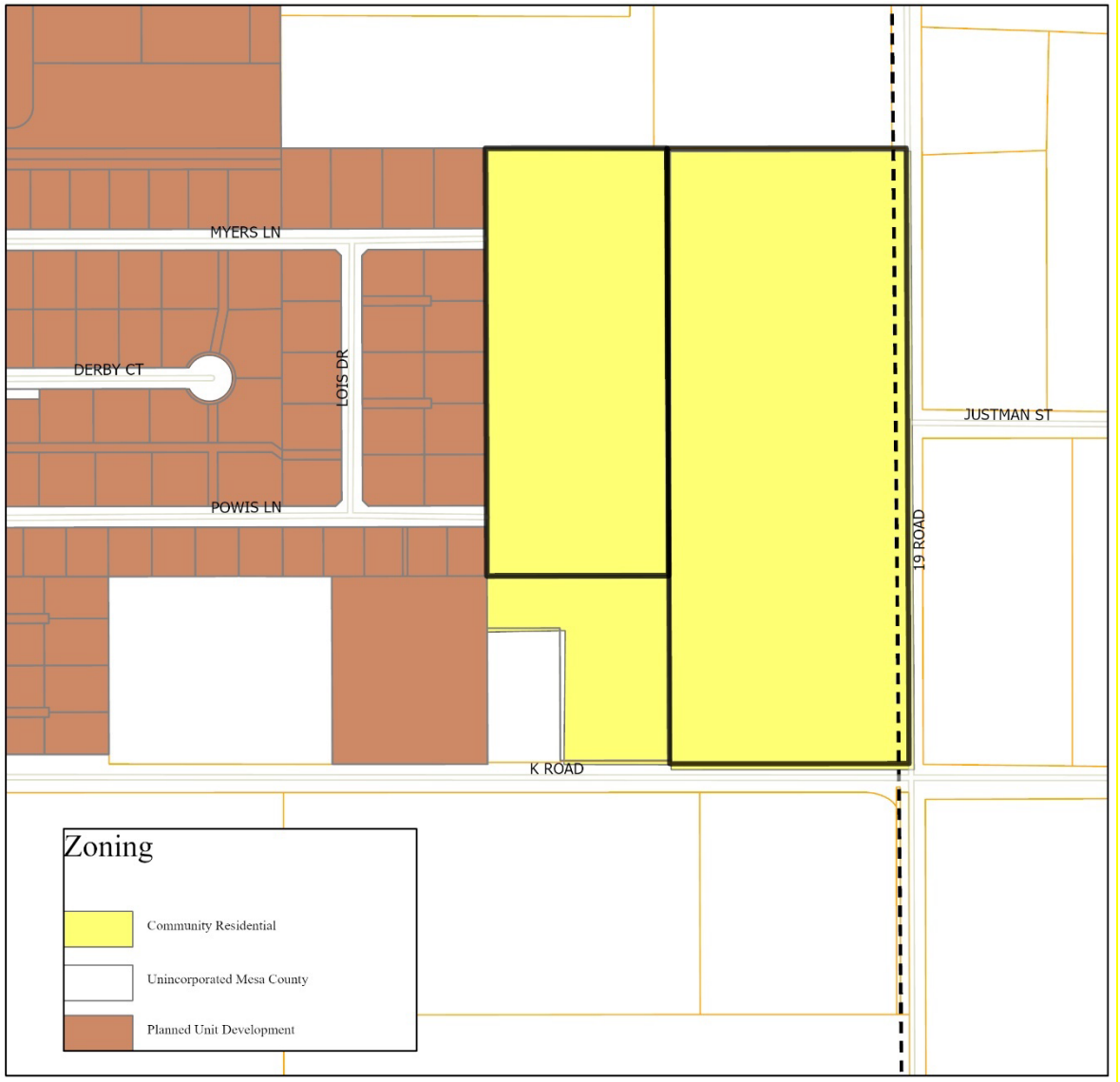
This subdivision is proposing to utilize street stubs at Myers Lane and Powis Lane with one additional connection to 19 Road and the northeast corner near the existing house. The interior roads within the subdivision are proposed to be constructed as standard residential which includes 44-feet of right-of-way, 28-feet of asphalt with curb, gutter, and sidewalk on both sides. Additionally, the subdivision proposes a 20-foot-wide alley interior to the subdivision which will provide a point of access to approximately 12-24 dwelling units.

Off-site improvements will also be required with this subdivision along Ottley Avenue (K Road) and 19 Road. The improvements along Ottley Avenue include the extension of sanitary sewer from Brandon Drive to the east, along with drainage and road improvements. The improvements proposed for 19 Road include street widening and a northbound left turn deceleration lane at 19 Road and Myers Lane.

SURROUNDING LAND USES AND ZONING:

Surrounding land uses are primarily single family detached residential with some small-scale farming scattered nearby. This is typical of subdivisions built at the city's edge.

ZONING MAP


MYERS LN
DERBY CT
LOIS DR
POWIS LN
JUSTMAN ST
19 ROAD
K ROAD
Zoning
Community Residential
Unincorporated Mesa County
Planned Unit Development

2022 AERIAL PHOTO

REVIEW OF APPLICABLE LAND USE CODE REQUIREMENTS:

PRELIMINARY PLAN (MAJOR SUBDIVISION)

Section 17.21.040 (A) states, Major Subdivisions are reviewed based on the following criteria:

1. Conformance to the City of Fruita's Master Plan, Land Use Code, Design Criteria and Construction Specifications Manual and other city policies and regulations;

Conformance to the City of Fruita's Master Plan (Comprehensive Plan):

Influenced by the community values expressed on page 2 of the Comprehensive Plan, the Plan Vision states, *"The City of Fruita values quality of place. It's an inclusive city, with a small-town*

feel and vibrant downtown, surrounded by public lands. People love to live, work, and play in Fruita because the City facilitates community, safe neighborhoods, family-friendly events, and walking and biking. The City governs in a way that's responsive to its citizens and prioritizes high-impact services and projects. Fruita fosters a fun and funky ambiance around the arts, agriculture, and recreation."

Community Values were built into the plan and some to keep in mind for residential development applications include the following:

- *Fruita is a place where you run into neighbors, friends, and acquaintances at local stores and restaurants, parks, and the community center. (Community Values, Page 2, Comprehensive Plan)*
- *Fruita is a community where people are invested and constantly work to make the community better. (Community Values, Page 2, Comprehensive Plan)*
- *Fruita is committed to a land use pattern and supporting policies that promote access to housing across the income spectrum of its residents. (Community Values, Page 2, Comprehensive Plan)*

Community Snapshot – *The Comprehensive Plan must suit the needs of the current Fruita community and remain relevant as the city changes and grows in the future. Thus, a thorough analysis of city and regional demographic and economic trends was conducted for this plan. This data-driven approach has informed many elements of this plan, from the future land use goals to economic development strategies and education policies.* (Community Snapshot, Page 10, Comprehensive Plan).

The Community Snapshot also identified the growing need for affordable housing units within Fruita. Fruita has some of the highest home prices in Mesa County and home prices are appreciating rapidly. This portion states, "*The average 2018 resale home price in Fruita was $271,684. The quality of life in Fruita, including its schools and small-town feel, are the major factors driving home prices. Home prices are also appreciating throughout Mesa County and the Rocky Mountain region due to other macroeconomic factors such as labor and material costs and an overall shortage of housing.*" Community Snapshot, Page 11, Comprehensive Plan).

Furthermore, the plan goes on to state, "*Regardless of price, the dominant housing product in Fruita is single-family homes, which comprise 97% of new construction from 2010 through 2018. Of the 557 total new homes permitted during this time period, 538 (97%) were for single-family detached homes. Building exclusively single-family homes means limited diversity of housing types and often, few housing options at lower price points*." (Community Snapshot, Page 12, Comprehensive Plan).

The Community Snapshot section with the Comprehensive Plan also identified affordability as a growing concern within Fruita. "*Affordability issues are greatest among renters in Fruita, with about half of all renters paying more than 30% of their income towards housing costs. This is defined as being cost burdened, wherein a household is paying too much towards housing. The rental supply in Fruita is extremely limited with essentially zero vacancy, allowing landlords to charge higher rents. The percentage of renters in Fruita has increased, even though most*

housing being built is in the form of single-family homes. Some people may be renting single-family homes by choice; for others it may be the only option and they would prefer a lower cost option such as an apartment or duplex. Housing affordability issues affect the ability of local businesses to attract and retain employees. This is a threat to economic sustainability if left unchecked." (Community Snapshot, Page 12, Comprehensive Plan).

The findings from the Community Snapshot point to key areas for the City to address through the Comprehensive Plan. The Plan seeks to address managing growth at the edges and encouraging development within the city, supporting affordable housing to retain the local workforce. The Community Snapshot also identified the growing need for affordable housing units within Fruita as well as creating opportunities for housing diversity. Supporting evidence included in the Comprehensive Plan states, "*Regardless of price, the dominant housing product in Fruita is single-family homes, which comprise 97% of new construction from 2010 through 2018. Of the 557 total new homes permitted during this time period, 538 (97%) were for single-family detached homes. Building exclusively single-family homes means limited diversity of housing types and often, few housing options at lower price points."* (Community Snapshot, Page 12, Comprehensive Plan).

The Community Snapshot section with the Comprehensive Plan also identified affordability as a growing concern within Fruita. "*Affordability issues are greatest among renters in Fruita, with about half of all renters paying more than 30% of their income towards housing costs. This is defined as being cost burdened, wherein a household is paying too much towards housing. The rental supply in Fruita is extremely limited with essentially zero vacancy, allowing landlords to charge higher rents. The percentage of renters in Fruita has increased, even though most housing being built is in the form of single-family homes. Some people may be renting single-family homes by choice; for others it may be the only option and they would prefer a lower cost option such as an apartment or duplex. Housing affordability issues affect the ability of local businesses to attract and retain employees. This is a threat to economic sustainability if left unchecked.*" (Community Snapshot, Page 12, Comprehensive Plan).

The Comprehensive Plan also states that, "*the lot size requirements for various types of development make it hard to build housing types other than single-family homes unless it is on a very large lot. This plan encourages a diversity of housing options. Changes to the Land Use Code to allow different housing types on various lot sizes will help remedy this issue.*" (Chapter 3 Land Use and Growth, Page 24, Comprehensive Plan).

The City of Fruita's Master Plan, Fruita In Motion: Plan Like a Local, encourages Efficient Development as one of its Plan Themes. The Plan Themes section is found in in Chapter 1 (page 5) of the plan and states that, "*The City of Fruita encourages infill over sprawl and development within the existing city limits and Urban Growth Boundary (UGB). Efficient development reduces the demand for infrastructure and city services, supports community connectivity, and encourages a thriving downtown core*." This subdivision is within the UGB and will meet the intents of creating a definitive city edge. An urban-rural edge defines Fruita as a freestanding community separate from Grand Junction. Undeveloped parcels within the edge are encouraged to develop at higher densities than beyond the edge where rural densities are desired.

Connectivity is another Plan Theme within Fruita's Master Plan. This Plan Theme reads, "*It is easy for vehicles, cyclists, and pedestrians to get around Fruita and to visit local destinations. The City of Fruita offers safe, intuitive, and well connected on- and off-street trail networks for pedestrians and cyclists.*" Overall, the proposed subdivision meets the intents and purposes of the connectivity Plan Theme which is ultimately meant to create an overall development pattern that is positive for vehicular and pedestrian movement.

Conformance to Land Use Code, Design Criteria and Construction Specifications Manual and other city policies and regulations:

The property is zoned Community Residential (CR). The purpose of the CR zone is to allow moderate density with a mix of housing types. The CR zone has a minimum lot size of 7,000 square feet for subdivisions with up to 6 dwelling units per acre and as explained before, density bonuses may be requested to reduce the minimum lot sizes to 3,500 square feet and/or increase the allowable density. This subdivision is proposing density bonuses to decrease the minimum lot sizes by proposing a mix of housing types and including bike and pedestrian connections. It should be noted that this application for density bonuses is not meant to increase the already proposed density of 5.72 dwelling units/acre (130 dwelling units/22.74 acres). Supporting the density bonus request would allow the lot sizes to be a minimum of 3,500 square feet instead of 7,000 square feet.

Density Bonuses:

Mix of Housing Types- This application is proposing a total of 130 dwelling units, 110 of which will be attached and 20 of which will be detached. Overall, the attached dwelling units account for 85% of the dwelling units. Section 17.09.050 (D)(4) states, "*A mix of housing types are proposed with a minimum of twenty (20%) percent of the dwelling units being single- family attached, duplexes and/or multi- family units. The unit types shall be dispersed within the development, and a site plan shall be recorded to ensure that the final buildout reflects representations in the density bonus review."*

Based on the proposed application, Staff is supportive of the density bonus request with regards to the proposed mix of housing types as expressed in Section 17.09.050 (D)(4).

Bike and Trail Connections – This application is proposing approximately 1,379 linear feet of internal trails within the subdivision. This is provided along the west and south edges with additional connections between the south block areas as identified in the Composite Site Plans submitted. Section 17.09.050 (D)(2) states, "*The project includes an internal trail network, a continuation of an existing trail network, or the continuation of a bike lane system internal to the project and along adjoining rights-of-way. The bike and trail amenities must be at least 500 feet of linear length to qualify for this bonus. On-site trails and/or sidewalks shall be extended to existing off-site trails, sidewalks or parks if the extension is less than two hundred (200) feet in length. An easement, or other form acceptable to the City Attorney, shall be required with the first phase or first filling of the subdivision to ensure the space is permanently designated as a trail."*

Based on the proposed application, Staff is supportive of the density bonus request with regards to the proposed bike and trail connections as expressed in Section 17.09.050 (D)(2).

With some changes, the proposed development can be in conformance with the city's Master Plan, Land Use Code, and all other city policies and regulations based on the more technical responses as expressed in the Consolidated Review Comments included with the Staff Report.

Review comments from the City Engineer, Planning & Development Department, Ute Water, Grand Valley Power (GVP), Grand Valley Drainage District (GVDD), Lower Valley Fire District (LVFD) and others address technical issues within the development and are attached with this Staff Report. If these issues are adequately resolved with the Final Plat application, then this criterion can be met.

2. Compatibility with the area around the subject property in accordance with Section 17.05.080 (C);

The City seeks to provide a fair and consistent manner in which to consider compatibility within the overall context of the Fruita Comprehensive Plan, existing adjacent land uses, applicable zoning district requirements, and other city codes and regulations. Section 17.05.080 (C) of the Code states that for all land uses, "compatibility" is provided when a proposed land use can coexist with other existing uses in the vicinity without one use having a disproportionate or severe impact on the other use(s). The city decision-making body may consider other uses existing and approved and may consider all potential impacts relative to what customarily occurs in the applicable zone and those which are foreseeable, given the range of land uses allowed in the zone.

The primary use surrounding the subject property is single-family detached residential with some secondary small-scale farming nearby. The Brandon Estates subdivision is directly located to the west with two (2) existing street stubs at Myers Lane and Powis Lane. The Brandon Estates subdivision has a density of approximately 3.5 dwelling units/acre. Directly west of Brandon Estates is the Holly Park Mobile Home Park and the Holly Park Townhomes. The development of this subdivision at a density of 5.7 dwelling units per acre with attached and detached dwelling units is compatible with existing subdivisions and surrounding land uses. This criterion has been met.

3. Adequate provision of all required services and facilities (roads, bicycle and pedestrian facilities, parks, police protection, fire protection, domestic water, wastewater services, irrigation water, storm drainage facilities, etc.);

It appears that most required services and facilities are available to the subject property and the proposed subdivision. The subdivision is required to extend sanitary sewer in Ottley Avenue from Brandon Drive to the east, as well as make street improvements along Ottley Avenue and 19 Road. The Irrigation Report submitted identifies approximately 11.6 total irrigated acres once the subdivision is completed and that the parcels subject to development contain a total of 29 irrigation shares. More technical details pertaining to the roads, drainage facilities, domestic

water systems are contained in the review comments. All review agencies have had an opportunity to comment on this application and continued coordination will take place as the application continues to move forward.

If all review comments and issues identified in this Staff Report are adequately resolved with the Final Plat application, this criterion can be met.

4. Preservation of natural features and adequate environmental protection; and

Through annexation of both parcels, there were concerns from the neighboring property owners to the north about the visual impacts this subdivision may create. Staff is strongly recommending that no trees be removed in order to keep with some of the historical views to be preserved.

Any stormwater management issues must be addressed and sedimentation, weed, and dust controls will be required as part of the construction process.

This criterion can be met.

5. Ability to resolve all comments and recommendations from reviewers without a significant redesign of the proposed development.

Although some redesign will be necessary in order to meet the minimum requirements of the Land Use Code and other city regulations, it does not appear that resolving concerns necessarily leads to a significant redesign of the development that would require another Preliminary Plan review.

As mentioned before, review comments from the City Engineer, Planning & Development Department, Ute Water, Grand Valley Power (GVP), Grand Valley Drainage District (GVDD), Lower Valley Fire District (LVFD) and others address technical issues within the development and are attached with this Staff Report. If these issues are adequately resolved with the Final Plat application, then this criterion can be met.

Based on this information, the approval criteria that must be considered for Preliminary Plan applications either have been met or can be met if all review comments and issues identified in this Staff Report are adequately resolved with the Final Plat application.

LEGAL NOTICE:

Legal Notice (minimum of 15 days prior to Planning Commission)	
July 21, 2022 (19 days prior)	Post Cards [17.07.040 (E)(1)(d)]
July 21, 2022 (19 days prior)	Sign Posting [17.07.040 (E)(1)(c)]
July 22, 2022 (18 days prior)	Legal Ad [17.07.040 (E)(1)(a)]

NOTICE OF PUBLIC HEARING

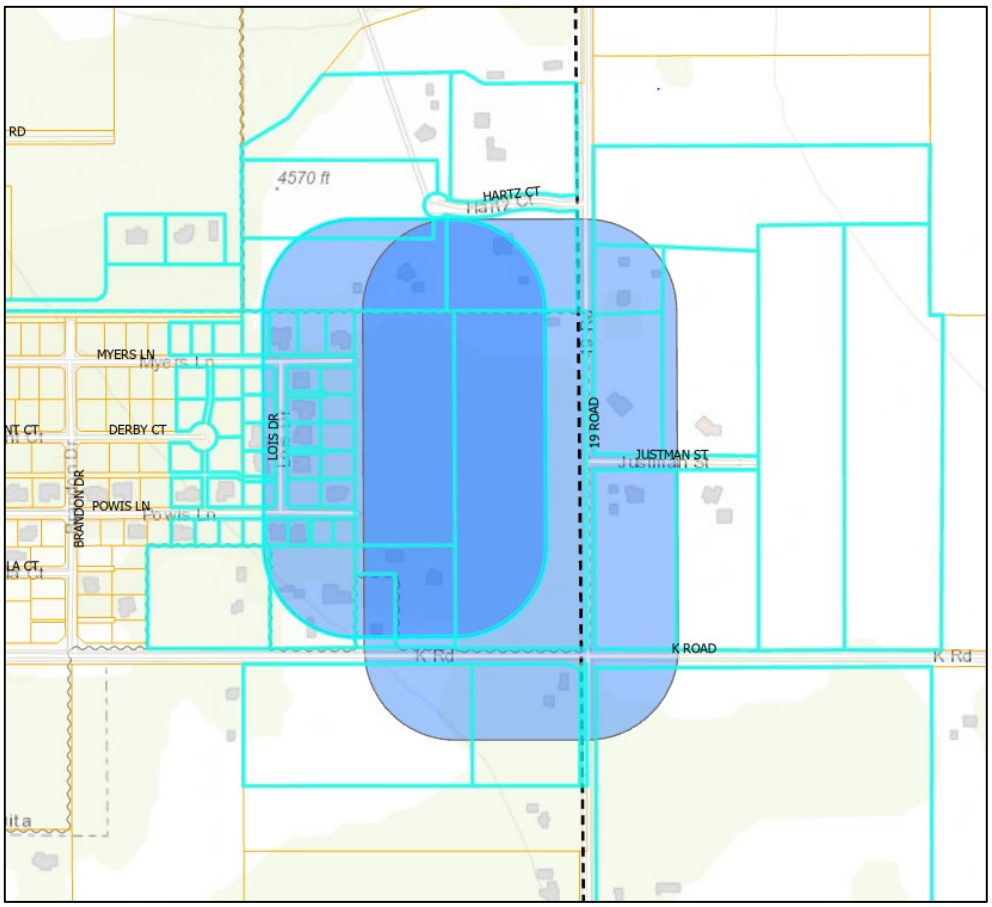
The Fruita Planning Commission will hold a public hearing **Tuesday, August 9, 2022** at **6:00 p.m**. This meeting may be held in person subject to public health orders or by City Council direction. Details on how to access this meeting will be found at www.fruita.org. If the meeting is held in person, the virtual link will remain open for public participation. The following item will be presented at the public hearings. The Planning Commission will formulate a Recommendation, which will be forwarded to the Fruita City Council. If the item listed below is acted on by the Planning Commission, the Fruita City Council will hold a public hearing on this same item on **Tuesday, September 6, 2022 at 7:00 p.m.** Please check www.fruita.org for more details. If you have an interest on the item please call 858-0786 or come to the Planning & Development Department office located at 325 E. Aspen Avenue to review the information in the file. Your appearance at both hearings is encouraged to ensure your concerns are accurately represented or you can write a letter outlining your concerns and submit it to the Planning & Development Department.

Application #:	2022-12
Project Name:	Rose Creek
Application:	Preliminary Plan
Representative:	Vortex Engineering
Location:	Parcels #2697-094-79-002 and 2697-094-00-715
Description:	This is a request for approval of a Preliminary Plan of a 130-lot subdivision on approximately 22.74 acres

Physically disadvantaged persons who wish to obtain information or need assistance in attending the Public Hearing, may call (970) 858-0786, the hearing impaired may call Relay Colorado at 1-800-659-2656, or visit our website: www.fruita.org


CITY OF
FRUITA
PUBLIC NOTICE
Planning & Development


CITY OF
FRUITA
PUBLIC NOTICE
Planning & Development
2022-12
ROSE CREEK
PRELIMINARY PLAN



REVIEW COMMENTS:

All review comments received are included with this Staff Report. All review comments must be adequately resolved with the Final Plat application.

PUBLIC COMMENTS:

Written public comments have been received at this time and are included with the review materials.

It should be noted that the Land Use Code requires a neighborhood meeting to be held by the applicant in accordance with Section 17.07.040 (D). The city received the neighborhood meeting invitation from the applicant which invited the neighboring property owners to a virtual meeting on August 1, 2022 at 5:00pm.

STAFF RECOMMENDATION:

Staff recommends approval of application 2022-12, Rose Creek Preliminary Plan, with the condition that all review comments and all issues identified in the Staff Report are adequately resolved with the Final Plat application.

PLANNING COMMISSION SUGGESTED MOTION:

Mr. Chair, I move we (**approve**/deny) application 2022-12, the Rose Creek Preliminary Plan to the City Council with the condition that all review comments and all issues identified in the Staff Report be adequately resolved with the Final Plat application.

FRUITA PLANNING COMMISSION: AUGUST 9, 2022
FRUITA CITY COUNCIL: SEPTEMBER 6, 2022

FRUITA COLORADO

Planning & Development Department
Review Comments – Round 2
7/26/2022

Application Type: Preliminary Plan
Application Name: Rose Creek Preliminary Plan
Application Number: 2022-12
Location: Northwest intersection of 19 and K Road
Acres: 21.72

General:

1. A neighborhood meeting is required prior to the Planning Commission meeting. This is required to be scheduled by the applicant/applicant's representative.
    a. This meeting must take place prior to public hearing dates being set to ensure the applicant has time to respond to any citizen concerns.
2. A portion of this subdivision is located on Lot 2 of the Skalla Minor Subdivision which was approved in 2020 (application 2020-17), as a condition of approval of the Skalla Minor Subdivision connection of sanitary sewer is required for Lot 1 of the Skalla Minor Subdivision.
    a. The Staff Report stated, *It is not clear in the application if Lot 1 (which contains the existing dwelling unit) will be connecting to City sewer. the city will require the connection to city sewer when either Lot 1 or Lot 2 redevelop*.
3. The Staff Report for the Skalla Annexation (application 2020-15) included the requirement of half-street and sewer main extension in Ottley Avenue, which states, *With the redevelopment of either Lot 1 or Lot 2, a sewer main extension and half street improvements will be required in Ottley Avenue.*
4. Lots 66, 109, 110 don't meet the 3,500 square foot minimum.
5. A landscaping buffer is strongly encouraged along the trails to decrease the perception of a fence canyon.
    a. Section 17.43.030 (B)(8) requires that there be at least 3-foot clearance on each side of the trail. The tracts proposed will need to be adjusted.
6. There should also be a trail connection on the south of the subdivision and could be placed over the utility easement next to the detention pond.
7. The Lot #'s don't appear to match up on all sheets submitted.
    a. Sheets C1.1, C1.2, and C1.3 don't match up with the rest of the plan set sheets.
8. The purpose of the CR zone is to allow for moderate density detached single-family residential neighborhoods with the inclusion of other housing types such as attached dwelling units (e.g. apartments and townhouses). Innovative neighborhood design is encouraged in this zone district to provide opportunities for housing diversity. This area is served by public utility infrastructure and is appropriate for density of 4-8 du per acre.

9. Section 17.03.040 (E)(1), *"Maximum or desired density may not be achievable on every lot or parcel, as the development must conform to applicable setbacks, coverage, parking, drainage, public improvements, landscaping and other code requirements."*
10. Landscaping Plan must include all tracts and trails.
11. Provide more detail on any trail section proposed. Horizontal and vertical clearance as well as landscaping.
12. Corner lots can have issues related to fencing and clear site of oncoming traffic. Please show site distances for corner lots.
13. Plans indicate the removal of the northern fence.
    a. Typically fencing is shared between property owners.
    b. Have you discussed this with the neighboring property owners that share this fence?
14. Irrigation to be maintained to 1892 K Road (the existing house southwest of the development)?
    a. Please confirm and address any changes to the system that may affect the property owner.
15. Is this subdivision going to be completed in Filings or Phases?
16. Duplexes require 3.5 off-street parking spaces. (Section 17.37.030 (A))
17. Ally dependent lots may have parking issues without street frontage.
18. No parking signs will be required along the alley.
19. A Parking Pod for the increased parking generated by the attached units in the accessing from the alley may be a great addition to the subdivision.
20. Please provide a headgate report to confirm appropriate irrigation shares are directed to the subject properties.
21. The hammer-heads at the south should just be built as a standard residential street instead.
22. The project narrative suggests that the subdivision is meeting the connectivity requirements, suggesting that sidewalks count towards meeting the intent.
    a. Connectivity Plan Theme contained in the Master Plan states, *"The City of Fruita offers a safe, intuitive, and well connected on- and off-street trail network for pedestrians and cyclists."*
        i. The amount of trails proposed appears to be about 1,379 linear feet.
23. The Land Use Code and Master Plan (including the PHROST Master Plan) support and strongly encourage development in Fruita to contain elements that have a positive contribution towards health and the outdoors.
    a. How is this subdivision moving this forward?
24. The Land Use Code states that, The intent of Chapter 43 is to implement the city's Comprehensive Plan by providing for a comprehensive, integrated network of public parks, trails, recreation facilities and open spaces to be developed and preserved as the community grows.
25. A general provision of the Land Use Code states that it is designed to separate incompatible uses and densities so as to avoid negative impacts of uses on each other.

a. Supporting evidence of this provision is that when increases of densities of subdivisions adjacent from one another buffering be provided. The Code supports trails and open space as a form of buffering.

Density Bonus:

1. Based on the lot sizes proposed, it appears that the application will need to request approval of density bonuses. The density bonuses will allow for the lot sizes to be decreased to a minimum of 3,500 square feet.
    a. The application is proposing a total of 130 dwelling units.
        i. Attached units = 110 (85%)
        ii. Detached units = 20 (15%)
        iii. Section 17.09.050 (D)(4) states, *A mix of housing types are proposed with a minimum of twenty (20%) percent of the dwelling units being single-family attached, duplexes and/or multi- family units. The unit types shall be dispersed within the development, and a site plan shall be recorded to ensure that the final buildout reflects representations in the density bonus review.*
        iv. It appears that this application has met the mix of housing standards for approval of 1 additional density bonus.
    b. The application is proposing approximately 1,379 linear feet of internal trails within the subdivision which has met the bike and trail connections criteria for approval of 1 additional density bonus.
        i. Section 17.09.050 (D)(2) states, *The project includes an internal trail network, a continuation of an existing trail network, or the continuation of a bike lane system internal to the project and along adjoining rights-of-way. The bike and trail amenities must be at least 500 feet of linear length to qualify for this bonus. On-site trails and/or sidewalks shall be extended to existing off-site trails, sidewalks or parks if the extension is less than two hundred (200) feet in length. An easement, or other form acceptable to the City Attorney, shall be required with the first phase or first filling of the subdivision to ensure the space is permanently designated as a trail.*

Density Bonus Criteria			
		CR	**SFR**
Base Density		6.0 DU/acre	4.0 DU/acre
Maximum Density		8.0 DU/acre	5.0 DU/acre
20% Open Space		1 additional DU/acre	1 additional
→ Bike and Trail Connections		1 additional DU/acre	1 additional
Alley/shared drive access		1 additional DU/acre	Not applicable
→ Mix of housing types		1 additional DU/acre	Not applicable

Residential Design Standards – Section 17.13.070:

1. The intent and purposes of the residential design standards is to support the development of new compact, walkable neighborhoods with a variety of housing.
2. Section 17.13.070 (A) Site Design.
    a. It appears that the site circulation and street design standard of this section have been met.
3. Block lengths do appear to have been met with this proposed subdivision plan. Where street connections aren't made, a pedestrian trail/access way is provided.
4. It appears that the location of the pedestrian trail proposed along the western and southern property lines are to also be used as a buffer from one area to another.
5. Block lengths shall provide for at least one street connection for every three to six hundred (300 to 600) feet maximum in block length, except where topographic or access restrictions (e.g., arterial intersection spacing) preclude such connections. Where street connections are not feasible, pedestrian and bicycle pathway/trail connections shall be used to make walking and bicycling within and between developments convenient.

DENSITY AND DIMENSIONAL STANDARDS TABLE							
ZONE DISTRICT	MAX RES. DENSITY (GROSS) (A)	MIN LOT AREA (B)	MIN FRONT/ STREET YARD (C)	MIN SIDE YARD (D)	MIN REAR YARD (E)	MAX STRUCTURE HEIGHT (F)	MAX LOT COVERAGE (G)
Community Residential (CR)	6 DU/acre by right 8 DU/acre thru Density Bonus	For properties with up to 6 DU/acre: 7,000 sq ft For properties with 7 to 8 DU/acre: 3,500 sq ft	15 feet for properties with alley loaded garages 25 feet for all facades with a garage opening facing the street 20 feet for elevations other than garage opening	16 feet total 5 feet for primary structures 3 feet for accessory structures except 0' where common wall or zero-lot line dev. Allowed	15 feet for primary structures 3 feet for accessory structures	35 feet for primary structures 16 feet for accessory structures	60%

Section 17.21.040 (B) (1) (b) Final Plat applications must be submitted within 180 days of approval of the Preliminary Plan unless a time extension has been granted pursuant to Section 17.21.160. If more than 180 days have elapsed from the date of the approval of the Preliminary Plan application, and if no extension is granted, the Preliminary Plan approval shall expire.

*Responses to comments must be shown with redlines so the comments addressed can be identified by Staff. This applies to responses to comments where the plan set is to be revised. Revision dates must also be placed on any revised plans.

CITY OF FRUITA
CITY ENGINEER & PUBLIC WORKS REVIEW SHEET

PROJECT: Rose Creek Subdivision – Preliminary Plan

Petitioner: Rose Creek, LLC, John Davis
Vortex Engineering & Architecture, Inc.

Reviewer: Sam Atkins

Date: August 2, 2022

REVIEW TYPE: (Check One)
____ Minor Subdivision
__X__ Major Subdivision - Preliminary Plan
____ Lot Line Adjustment
____ Final Plat
____ Site Design Review
____ Conditional Use Permit
____ Other: Public Purpose Subdivision

REVIEW COMMENTS

1. General: This application is for a residential subdivision for 130 single family dwelling units on 22.74 acres located at parcel numbers 2697-094-79-002 & 2697-094-00-715.

2. These comments are general in nature. A detailed review will be performed upon completion of the final drawing set.

3. Sheet C0.2
   a. Where is the symbol for a street light?
   b. Provide a typical section for Ottley.

4. Site Plan:
   a. Hammer head street terminations will not be accepted. A cul-de-sac is more appropriate for the end of those streets, or connect across with a standard street section.
   b. Remove the 25 MPH speed limit signage.
   c. Mailbox locations are shown. How many units will be located at each location?
   d. Some locations on Sheet C1.0 have light pole callouts but they don't have a symbol. Are these locations where the lights are proposed or just an extra callout?
   e. Dimension the proposed right of way for 19 Road. It should be 50-ft on the west side of the section line.
   f. Existing fencing is shown as removal. Coordinate with adjacent property owners as to any fencing that needs to be replaced.
   g. The Pavement on 19 Road should extend to the north end of property without the taper.
   h. Callout the location of the future driveway for the existing house. The existing driveway is to be removed and relocated to Myers Ln.

5. Utility Composite Plan
   a. The sewer line in the alley should have 10' clear on both sides of the line for maintenance and future replacement.
   b. Show the existing house water service.

c. The storm drains at the west end of Powis should be located at the westernmost point to collect as much of this project's runoff as possible.
d. What is the 14-ft Multipurpose tract for along 19 Road? Is that in addition to 50-ft of right of way dedication west of the section line?
e. Note the size and material of the waterline to be wet-tapped.
f. Show the dry utilities on the plan.
g. Inlets on Patron Ln. south of Powis Ln. are shown at the PT of the curb return on Powis. The road P&P on sheet C4.4 shows the low point of the road farther south. Which is it?
h. GVDD GIS lists the line in K Road as a 36" RCP. The plans say 48" for that line. Which is it?
i. Pond outlet is labeled as Sewer MH.
j. What are the laterals on Ottley picking up? Show the exiting ditches or pipes they are connecting to?

6. Grading
   a. There are Type B lots labeled as type A for lots 11-16.
   b. Will there be a retaining wall at the northeast corner of the property west of this one on Ottley. There is a contour of 4563, but a spot elevation of 4561.0. That would indicate a 2-foot drop at the property line.
   c. Same thing happens along the west just north of Powis at Lot 17. There is over a foot of drop into the neighboring parcel.
   d. Lots 5 – 10 have 3 feet of continuous fall across them. Maximum driveway slopes are 10% by our standards.
   e. Label the existing contours at a frequency that can be readily seen.
   f. Lot 10 has a FF elevation of 4567.1-4568.1. The contour crossing the alley is 4564. So 3.1-4.1 feet of fall with a potential garage setback of 15. That is too steep.
   g. The direction the contours run on lot 34 would indicate there will be a low spot in the southwest corner.
   h. 19 Road information is not called out.

7. Street Plan and Profiles:
   a. Sheets C4.10 and C4.11 show up as the first 2 sheets in that series.
   b. There is no sheet for Ottley plan and profile. Provide a design and cross sections.
   c. Flowline elevation on left gutter (Patron Ln.) at STA 4+00 is not labeled. Right gutter flowline is labelled to be 0.40' lower than the centerline. The provides no reveal which does not meet our standard details. The 0.4 is consistent through the plans.
   d. Slope callouts for curb ramp at southeast corner of Myers and Patron show that the ramp will not meet ADA regulations for cross slope.
   e. Low points in Patron at 7+00 do not match the location of the inlet boxes.
   f. I don't see a pavement section for the improvements to Ottley.
   g. The Pine St. pavement section is not called out in the Geotech report. How was that developed?
   h. Show the grade on the existing roads of Myers and Powis to show what kind of break in grade there will be.
   i. On the west end of Myers, you could steepen the grade (0.73%) so that you can capture more runoff to the pond rather than send more to the existing Brandon Estates subdivision that does not have detention.

j. The 19 Road Plan sheet is very difficult to read.
   a. North arrow pointing to the east.
   b. Should be 50 ft dedication from section line.
   c. Cross sections should be provided.
   d. No slopes are provided
   e. No existing utilities are shown.
   f. The swale is not shown if that is what the flowline labels are calling out that are pointing to space on the sheet.
   g. Minimum storm drain size is 18" per SWMM.

8. Irrigation
   a. The irrigation vault should be in a tract.
   b. There is an irrigation overflow in the box. Where does that drain.
   c. You have elevations in the 4700's. They don't match the elevations on the grading plan.
   d. The irrigation supply will need to be buried with proper cover for the limits of the property which includes the existing house.
   e. There are no valves proposed on the system. How will you isolate an area if there is a break?

.

9. Sewer Plan and Profiles:
   a. There are callouts to Powis Drive and Powis Lane as well as Myers.
   b. Why are there +/- elevations on the rim. Should just calculate the elevation and place that as the label.
   c. The sewer in Ottley has rim locations that are lower than the existing grade elevation. Why is that?
   d. Storm drain stands out more than the sewer line when the plan is for the sewer.
   e. Sheet C5.9
      i. Hammer head connection east of SSMH-P1 shows a sewer east of last manhole with a "D" symbol on it. Call out the sewer service stationing.
      ii. There are some "5" tags that point to nothing.

10. Stormwater Plan and Profiles:
    a. There is some confusion as to which inlet is double and which is single. The graphics are opposite the callouts.
    b. Show other utilities in your profiles to ensure there are no conflicts.
    c. Show HGL in profiles.
    d. Minimum pipe size is 18" per SWMM.

11. Drainage Report:
    a. If the 4560 is the top of pond excluding the 1-ft freeboard, you are proposing slightly less than the required volume as calculated. Later it shows in the outlet detail a 10-year water surface of 4560.05. Show this in your volume calculation to verify volume. Additionally, if your volume is so close in design, you may not be able to construct this that accurately so you will have a hard time getting the as-builts to show you have the design volume.
    b. The outlet detail and profiles of the outlet pipe should be shown in the construction drawings as well as the drainage report.
    c. Dimension the offset to the property line for the storm drain south of the subdivision to Ottley Ave

12. Traffic Impact Study
    a. Was a warrant checked for 4-way stop control at 19 Road and Ottley?

Engineering recommends approval of this Preliminary Subdivision Plan upon adequately addressing these review comments.

2022-12 Rose Creek Preliminary Plan

Consolidated Review Comments

Grand Valley Drainage District

GVDD has reviewed the preliminary documents, and has the following comments:

1. The District's K Road Drain has been documented to have no capacity for additional MS4 water. As you now, the District is not issuing Discharge Licenses, and when this project was 1st proposed in 2021 the District stipulated that a Discharge license would be required. That requirement is suspended.

2. The plans show that the existing 12 RCP tied into our MH K.00/18.90 will be left in place and a new 15" RCP MS4 discharge pipe from the proposed detention pond will be tied into that MH. The Drainage Report indicates that that stormwater running down 19 Rd from offsite is intended to be routed onto the site and into an existing irrigation tail ditch that discharges through said 12" pipe. With an area greater than 1 acre, basin OS needs to have detention and water quality management. Will the maintenance of this storm drain system be part of the Rose Creek's responsibility or will this be a Fruita drain facility?

Grand Valley Irrigation

1. We require headgate agreements to be signed for ML469. Please contact our office.

2. How will the proposed irrigation vault be cleaned? This structure will regularly silt up, reducing the available volume (most of which is required) to operate the irrigation system on 29 shares of water.

Grand Valley Power

Thanks for the opportunity to review this project.
It is in the GVP Service Area.

Lower Valley Fire District

Review comments: 2022-12 Rose Creek Subdivision Preliminary Review

1. Required fire flow is 1,000 GPM at 20 PSI residual for dwellings under 3600 SF and 1,500 GPM for dwellings over 3600 SF. Required fire flow may be reduced to less than 1,000 GPM by installing fire sprinkler systems in dwellings.
2. Alley and street ROW shall be a minimum of twenty-six feet in width. Ref: Appendix D 103.1 and 105.2 of the 2018 IFC.
3. The hammerheads at the ends of Skalla Lane and Patron Lane are unacceptable. Either connect the two lanes or install Cul de sacs on each lane.

Mesa County Stormwater

Site is within the Stormwater Urbanized Area and is larger than 1 acre, this project will require a Mesa County Construction Stormwater (MS4) Permit which can be applied for at https://h9.maintstar.co/MesaCountyportal/#/

Please provide a copy of your Construction Stormwater Management Plan (CSWMP), including site maps, and your COR400000 State discharge permit. All Mesa County permit fees must be paid before we can review your CSWMP.

This project is considered new development and will require a Post-Construction Operation and Maintenance Agreement for the permanent water quality feature in Tract A (detention pond). The O&M Agreement must be signed and notarized. This form can be found at the link provided below.

https://stormwater.mesacounty.us/globalassets/stormwater/forms/documents/post-construction-om-agreementform.pdf

Mesa County Building Department

MCBD has no objections to this project. The following must be provided to our office in paper form The city approved Soil report, Drainage plan & TOF tabulation sheet Water and sewer service lines must not be more than 5' deep at the back of utility easement and no 90 degree fittings allowed in sewer lines.

Ute Water

- Please fully investigate the existing utilities in accordance with the SUE. If would be strongly preferred that the offsite waterline in 19 Rd have a Plan & Profile associated showing existing utilities and their depths.
- Show a proposed fire hydrant in 19 Rd at Justman.
- Plan full valve cluster at Myers Lane & 19 Rd
- Use 8x4 tee to reconnect to ex 4-inch waterline in 19 Rd. Abandon the ex 4-inch south of the existing water
- service for Lot 34
- Research (through locates) the existing water services along 19 Rd. Have appropriate notes to set 8x3/4 tap saddles, ¾-inch corp stops, ¾-inch copper and connect to new 8-inch main (19 Rd) after successful QA pressure test.
- Eliminate west gate valve at Patron Lane leaving one gate valve south.
- Show Owner's design of dry utilities for further evaluation of WSs.
- Coordinate WSs where Irrigation utilities and easements are proposed.
- Eliminate west gate valve at Skalla Lane leaving one gate valve south.

- Re-visit water line alignments where streets curve to come up with optimized layout of fittings and pipe deflection (per manufacturer and UWCD factor safety) to be ±3-ft from edge of gutter.
- If "Alley" is not dedicated public ROW, remove water facilities.
- Move west gate valve(s) to east side of tee on Rose Creek intersection at Myers and Powis.
- On Skalla and Powis show (1) gate valve N & S.
- Show (3) gate valves on Powis and Patron
- Terminate the waterline(s) on Patron and Skalla at the south ends after the last water service; no need to extend
- beyond or through the tract.
- The District will review with regard to SS and Storm and dry utilities at next revision.

MC Transportation

1. 19 Rd is a County Road and access spacing standards should be adhered to unless the City of Fruita annexes the roadway. See Mesa County Design Standards (MCDS) Exhibit 5.1 an indicate access spacing provided to the north of the proposed access location (spacing to the south already provided).
2. The Traffic Impact Study (TIS) notes a negative growth factor for K Rd and 19 Rd and uses a 1.0 growth assumption. A negative growth rate is not consistent with Mesa County traffic data. The ADT data listed in Table 3 is also inconsistent with Mesa County traffic counts. From 2016 to 2022 Mesa County has seen an annual growth rate of 2.8% for 19 Rd and 3.9% for K Rd. Data can be provided upon request. Traffic projections should be updated based on this data.
3. TIS Auxiliarily Turn Lane Evaluations section makes reference to Mesa County Transportation Engineering Standards (TEDS). TEDS is a City of Grand Junction standard that Mesa County applies for projects within the City of Grand Junction Urban Development Boundary. Reference should be made to the Mesa County Design Standards (MCDS) instead. If the City of Fruita is not annexing these roadways then the turn lane evaluation should be based on the MCDS.
    a. MCDS §6.03.E - the design speed should be 10 mph greater than the posted speed limit.
    b. MCDS turn lane warrants are based on the turning movement and the Design Hourly Volume (DHV) of the roadway. The submitted study indicates an analysis based on the conflicting through volumes. This is not consistent with MCDS requirements which are already adjusted to account for a two lane roadway. These turning movements should be reevaluated at the access location and at the K Rd / 19 Rd intersection.
4. TIS Intersection Sight Distance section makes reference to the Mesa County Road Access Policy. The Road Access Policy has been superceded by the MCDS. Please update.
5. TIS Recommendations section should be revised based on MCDS requirements and updated growth estimates.

FRUITA
COLORADO

LAND DEVELOPMENT APPLICATION

Project Name: Rose Creek Subdivision
Project Location: Property NW of 19 Rd. and K Rd. Intersection
Current Zoning District: CR Requested Zone: N/A
Tax Parcel Number(s): 2697-094-79-002; 2697-094-00-715 Number of Acres: 22.74
Project Type: Preliminary Plan - Major Subdivision

Property Owner: Rose Creek LLC
Property Owner:
Address: 1023 24 Rd.
City/State/Zip: Grand Junction, CO 81505
Phone: 970-640-4320 Fax:
E-mail: jdavis@bluestarindustries.com

Developer: Rose Creek LLC
Contact: John Davis
Address: 1023 24 Rd.
City/State/Zip: Grand Junction, CO 81505
Phone: 970-640-4320 Fax:
E-mail: jdavis@bluestarindustries.com

Please designate a representative as the coordinator for this application. The representative should attend all conferences/hearings, will receive all correspondence, and communicate all information to the property owners.

Owner Rep: Vortex Engineering & Architecture, Inc.
Contact: Robert W. Jones II
Address: 861 Rood Ave.
City/State/Zip: Grand Junction, CO 81501
Phone: 970-245-9051 Fax: 970-245-7639
E-mail: rjones@vortexeng.us

Engineer: Vortex Engineering & Architecture, Inc.
Contact: Robert W. Jones II
Address: 861 Rood Ave.
City/State/Zip: Grand Junction, CO 81501
Phone: 970-245-9051 Fax: 970-245-7639
E-mail: rjones@vortexeng.us

This Notarized application authorizes the owner's representative, if designated, to act on behalf of the property owners regarding this application.

The above information is correct and accurate to the best of my knowledge.

John Davis — 02/21/2022

Name of Legal Owner | Signature | Date

Name of Legal Owner | Signature | Date

Name of Legal Owner | Signature | Date

STATE OF COLORADO)
) ss.
COUNTY OF MESA)

The foregoing instrument was acknowledged before me this 21 day of February, 2022

My Commission expires: 07/27/2025

Adam Asgari
Notary Public

ADAM P. ASGARI
NOTARY PUBLIC
STATE OF COLORADO
NOTARY ID #20214029852
My Commission Expires July 27, 2025

Project Report
Rose Creek
Preliminary Plan

Date: July 25, 2022

Prepared by: Robert W. Jones II, P.E.
Vortex Engineering and Architecture, Inc.
861 Rood Avenue
Grand Junction, CO 81501
(970) 245-9051
VEI# F19-095

Submitted to: Fruita Planning & Development Department
325 E. Aspen Street
Fruita, CO 81521

Type of Design: Preliminary Plan

Property Owner: Fiddlers Grove, LLC
1023 24 Road
Grand Junction, CO 81505

Property Address: Parcels north & east of 1892 K Road
Fruita, CO 81521

Tax Parcel No: 2697-094-79-002
2697-094-00-715

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Project Intent

This application is made to request approval of the Preliminary-Final Plan for property located at 1892 K Rd. which was annexed into the City on January 5, 2021 and property located at 1123 19 Rd. which was annexed into the City on July 6, 2021. The proposed development will occur on both of the previously mentioned properties. The applicant's intent is to construct a subdivision in a manner that is consistent with the goals and policies of the recently adopted Fruita Comprehensive Plan and the CR zone district.

Project Description

The subject property consists of two parcels, one is approximately 7.85 acres and located north of 1892 K Road and east of Brandon Estates at the end of Myers Lane and Powis Lane, while the other 14.89-acre property is located on the NW corner of K Rd. & 19 Rd. The subject property is zoned CR (Community Residential).

The applicant is requesting Preliminary Plan approval for a 130-lot subdivision for detached single-family homes and townhome duplexes. Base Density of the subdivision is 5.7 du/ac. Internal streets will be constructed as urban residential streets with a 44' right-of-way and will extend to the eastern property line for future access to the vacant property on the east property line.

The subject property is shown on the aerial map below.

Density Bonus

Density Bonus Section 17.09.050:

1. The applicant has designed this project to ensure the Density Bonus Criteria can be utilized. The lot sizes proposed, are requesting approval of density bonuses. The density bonuses will allow for the lot sizes to be decreased to a minimum of 3,500 square feet. A breakdown of the dwelling unit housing type is as follows:
    a. The application proposes a total of 130 dwelling units.
        i. Attached units = 110 (85%)
        ii. Detached units = 20 (15%)
        iii. Section 17.09.050 (D)(4) states, *A mix of housing types are proposed with a minimum of twenty (20%) percent of the dwelling units being single- family attached, duplexes and/or multi- family units. The unit types shall be dispersed within the development, and a site plan shall be recorded to ensure that the final buildout reflects representations in the density bonus review.*
        iv. This application has met the mix of housing standards for approval of 1 additional density bonus.
    b. The project was proposed to also provide for additional amenities by numerous trail corridors. Approximately 1,379 linear feet of internal trails within the subdivision have been incorporated. These trail corridors meet the bike and trail connections criteria for approval of 1 additional density bonus.
        i. Section 17.09.050 (D)(2) states, *The project includes an internal trail network, a continuation of an existing trail network, or the continuation of a bike lane system internal to the project and along adjoining rights-of-way. The bike and trail amenities must be at least 500 feet of linear length to qualify for this bonus. On-site trails and/or sidewalks shall be extended to*

existing off-site trails, sidewalks or parks if the extension is less than two hundred (200) feet in length. An easement, or other form acceptable to the City Attorney, shall be required with the first phase or first filling of the subdivision to ensure the space is permanently designated as a trail.

In summary, the project has met both criteria to implement the smaller lot sizes requested and achieve the goals and policies of the Fruita Comprehensive Plan envisioned.

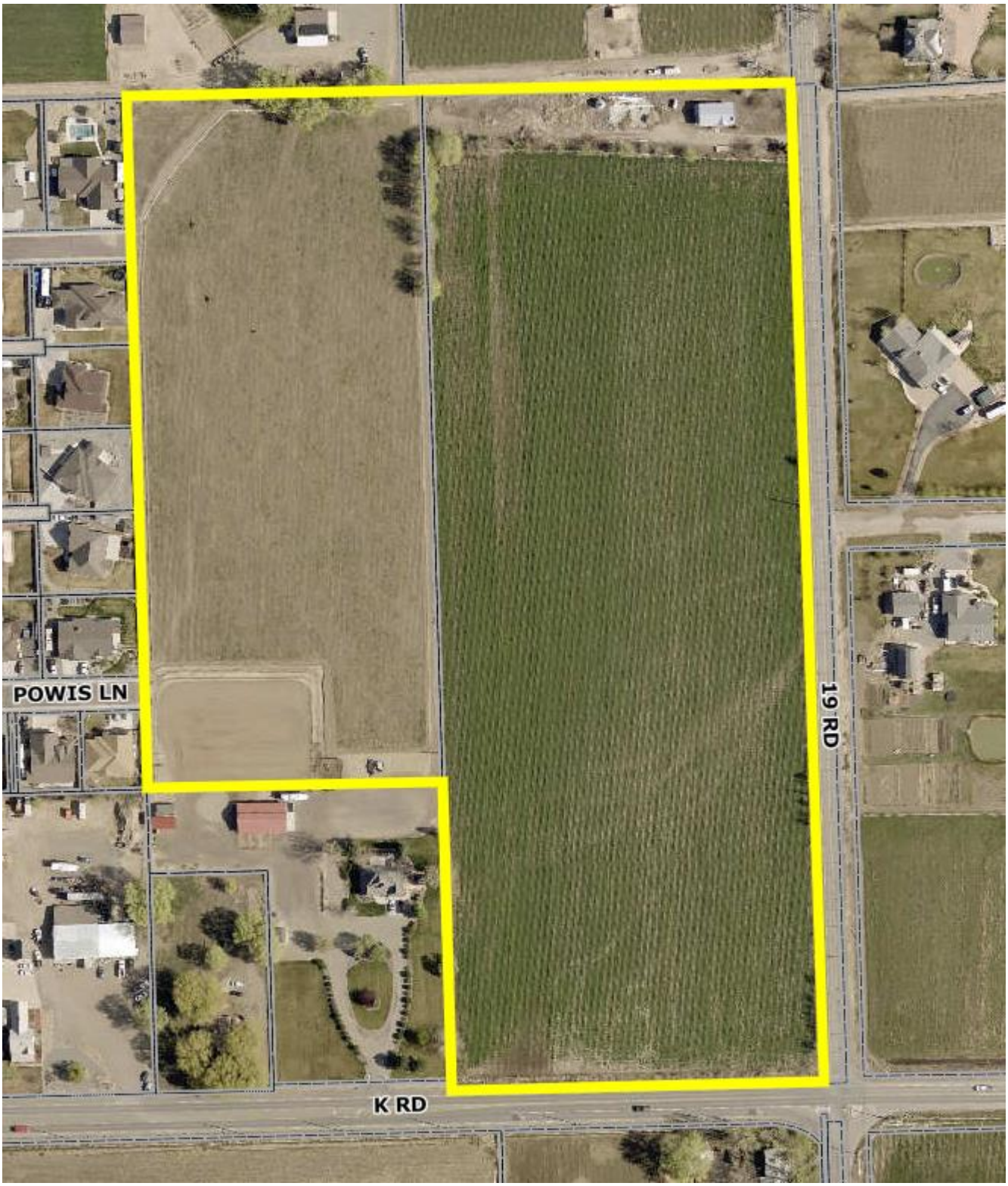


Figure 1 Subject Property

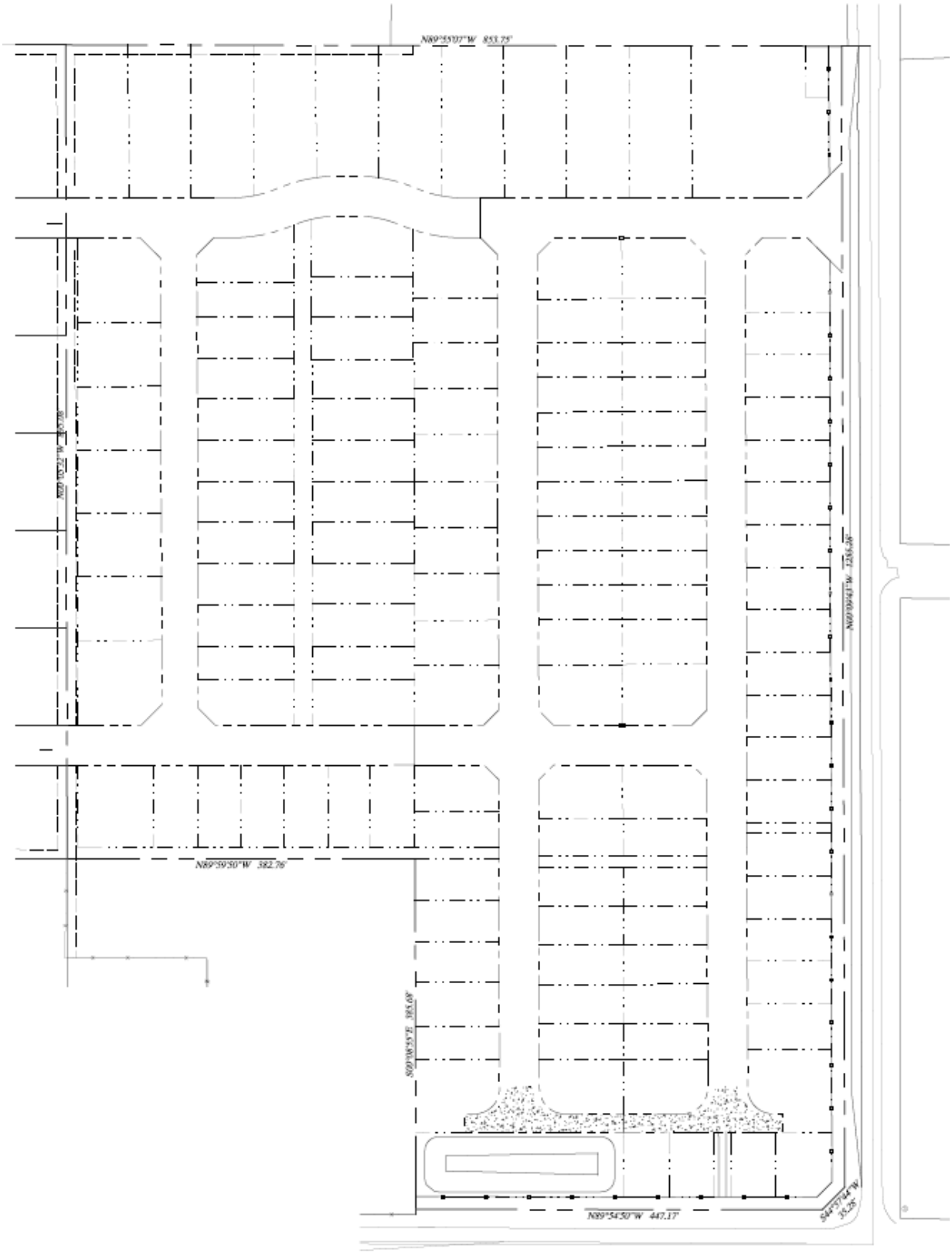


Figure 2 Proposed Lot Layout

Legal Description

The legal description of 2697-094-79-002 is:
LOT 2 SKALLA MINOR SUB LOCATED IN SEC 9 1N 2W UM PLAT RECORDED AT RECPT NO 2963206 MESA CO RECDS - 7.90 AC

The legal description of 2697-094-00-715 is:
E 15AC OF SE4SE4 SEC 9 1N 2W EXC 30FT ON S FOR RD & ALSO INC E 10FT LOT 1 PAULS MINOR SUB SD SEC 9 - 14.96 AC

Public Notice

Public notice shall be provided in accordance with Section 17.01.130, Public Notices, of the Fruita Land Use Code, including mailed notice, published notice and posting of the subject property.

Fruita Comprehensive Plan

The recently adopted Fruita Comprehensive Plan contains several goals, policies and key themes to achieve the vision of the Plan. The Comprehensive Plan is the City's guiding document towards land use and other community development decisions. The goals, policies, and actions of the plan are intended to support and preserve the community values. Based on these values, the following key themes emerged:

Efficient Development-
The City of Fruita encourages infill over sprawl and development within the existing city limits and Urban Growth Boundary (UGB). Efficient development reduces the demand for infrastructure and city services, supports community connectivity, and encourages a thriving downtown core.

Response: The property was recently annexed into the City and is within the Urban Growth Boundary. Annexation and eventual development of this property is consistent with this goal as it will allow development that is more efficient than sprawling development farther away from existing City infrastructure. The resulting development will be more compact, urban development as anticipated by the City's new Comprehensive Plan.

A key finding of Chapter Two, Community Snapshot, of the Comprehensive Plan stated that housing growth in Mesa County is accelerating, but Fruita's housing stock is growing relatively slowly. Grand Junction issued an average of 280 new construction building permits annually from 2010 to 2018. In 2018, there were nearly 500 new housing starts there. In Unincorporated Mesa County, there were nearly 200 new housing starts annually during this time period and nearly 300 in 2018. In contrast, Fruita has issued an average of 62 new construction building permits per year, with 95 in 2018.

Development of this property will support efficient, compact development in the City and provide needed housing for City residents.

Community First, Tourism Second-
The City of Fruita prioritizes its residents and provides them a high quality of life. Tourists are attracted to Fruita for this and the opportunity to "play like a local."

Response: Annexation of the subject property was the first step in positioning the property for future residential development within the City limits. The City's Comprehensive Plan has identified a need to increase Fruita's housing stock. The residential development of the subject property will support the community by providing needed housing for City residents to live and work in Fruita which supports this goal of the Comprehensive Plan.

A Thriving Downtown-
The City of Fruita supports a thriving downtown with strong local businesses, an inviting streetscape, and events and places that encourage the community to gather. Flexible design standards support creative uses of downtown spaces, and higher-than-existing surrounding residential densities creates a variety of housing units and types for residents to frequent businesses.

Response: The applicant's intent is to develop a residential subdivision that meets the density anticipated by the Comprehensive Plan's new land use classification of Residential 4-8 dwelling units per acre which supports this goal of the Comprehensive Plan.

The Comprehensive Plan's Future Land Use Map shows the subject property as Residential 4-8 dwelling units per acre. Based on the City's intent to encourage infill and discourage sprawl, the applicant requested annexation with the intent to provide future development at a density that is consistent with the future land use classification. New development will likely occur at higher-than-existing residential densities. Providing needed housing will allow City residents to live and work in Fruita as well as supporting existing businesses in the downtown area.

Connectivity-
It is easy for vehicles, cyclists, and pedestrians to get around Fruita and to visit local destinations. The City of Fruita offers a safe, intuitive, and well connected on- and off-street trail network for pedestrians and cyclists.

Response: The proposed development will include sidewalks and pedestrian trails (where applicable) to extend the City's existing transportation network. Extending pedestrian and bicycle facilities (even if only on public streets) will enhance the City's multi-modal network and help the city achieve this goal.

Strategic Economic Development-
Fruita's approach to economic development focuses on expanding existing businesses while also making Fruita an attractive place to live and do business. Rather than compete with Grand Junction, Fruita is strategic in recruiting businesses that are well-suited for the Fruita community.

Response: Development of the subject property will provide more opportunity for housing that supports local businesses and their employees to be able to live within the City limits. Creating additional housing units will

enable Fruita to provide a community where residents can live and work and lessen the impact of being a “bedroom community” for neighboring communities where Fruita residents travel to work.

Development with the CR zone district, which is designed to implement the new land use classification of Residential 4-8 dwelling units per acre, will help achieve the goals and vision of the recently adopted Comprehensive Plan.

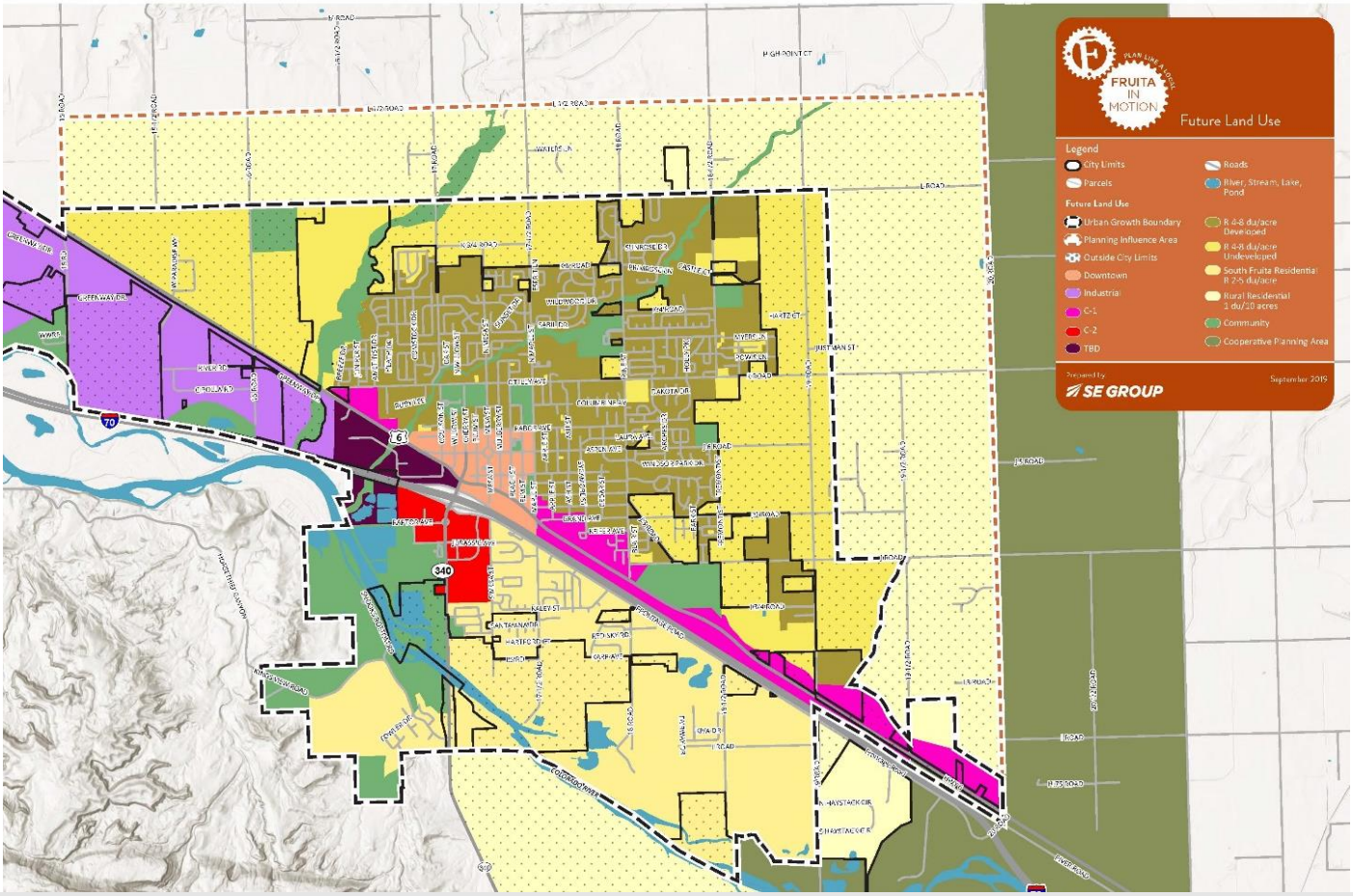


Figure 3 Future Land Use Map

Zoning and Surrounding Areas

The property was zoned to CR, Community Residential, on January 5, 2021 upon annexation into the City of Fruita. The purpose of the CR zone is to allow for moderate density detached single-family residential neighborhoods with the inclusion of other housing types such as attached dwelling units (e.g. apartments and townhouses).

The City of Fruita is currently updating the CR zone district to implement the new Comprehensive Plan Future Land Use Map designation of Residential 4-8 dwelling units per acre. The current zoning is consistent with and supports the Comprehensive Plan's Future Land Use Map classification of Residential 4-8 dwelling units per acre and will help the City achieve its goal for infill and higher urban density within the City.

Surrounding area zoning and land uses include:

- North – Mesa County AFT with single family residential and agricultural land uses
- South – City of Fruita CR with single family land use
- West – City of Fruita Planned Development (PD) with single family residential land uses
- East – Mesa County AFT with single family residential land use

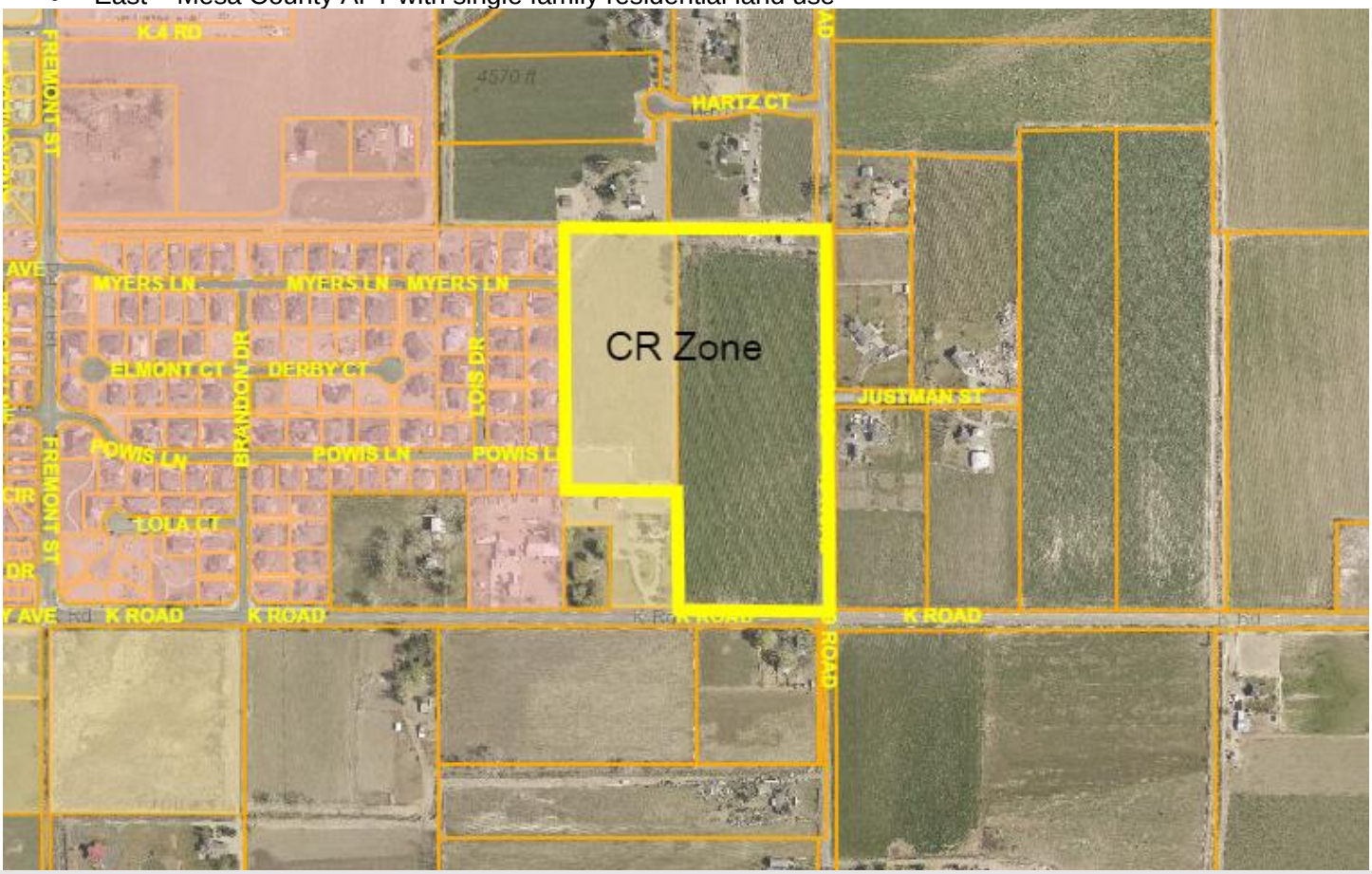


Figure 4 Existing and Surrounding Zoning

Utility Providers

All required and necessary utilities shall be provided concurrent with development of the subject property. Utility providers for the development have the capacity and willingness to serve the development.

Public facilities such as medical, schools, parks, public library, retail sales and services and public safety are available to serve development within 1.5 miles of the site.

All required and necessary utilities shall be provided concurrent with development of the subject property. Utility providers for the development have the capacity and willingness to serve the development.

Utility providers for the site are as follows:

- Sewer: City of Fruita
- Water: Ute Water Conservation District
- Drainage: Grand Valley Drainage District
- Electric: Xcel Energy
- Irrigation: Grand Valley Irrigation Company

All utilities shall be constructed to meet the service providers specifications. See the Utility plan sheet for specific details.

Parks, Open Space, and Trails

The applicant requests to utilize the payment in lieu of dedication and improvements in accordance with Section 17.47.090 of the Fruita Land Use Code. The proposed development contains 130 lots and will contain a combination of single-family attached and detached units. This dwelling unit count represents 5.70 units/acre, thereby falling below maximum dwelling units that are allowed as use-by-right in the Community Residential zone (6 du/ac). However, with the request for the smaller lot sizes for those attached units, the use of the density bonus points are being requested.

Access, Circulation and Streets

Access to the proposed development will be provided from the extension of two existing streets that currently serve Brandon Estates Subdivision, Myers Ln, and Powis Ln. Myers Ln will be extended all the way to 19 Rd. which will provide another access point into the development.

Drainage

The subject property has a gentle slope toward the southwest corner of the site. Drainage will be detained onsite in a detention facility for the Water Quality volume and released to the City's stormwater system in 17 ½ Road. The larger storm event runoff will be conveyed directly to the City's storm sewer system. The detention facility will be landscaped and maintained by the Home Owners Association.

Residential Design Standards – 17.13.070

The proposed development will comply with the City of Fruita Residential Design Standards as defined in Section 17.13.070 of the Fruita Land Use Code.

17.13.070.A. Site Design

The proposed development will include sidewalks that will provide pedestrian connectivity both within the subdivision and to neighboring Brandon Estates Subdivision. Myers Ln and Powis Ln will be extending into the subdivision providing an extension to the existing street network. Powis Ln will not extend to 19 Rd. which will prevent cut-through traffic on residential streets. Additionally, Myers Ln has been designed with some curvature to it near 19 Rd. which will serve as a traffic calming measure reducing the speed of traffic entering and exiting the subdivision.

Wetlands and Floodplain

There are no known wetlands or floodplains associated with the subject property. The property is located on FEMA Panel 0437F.

Figure 5 Wetlands and Floodplain

Approval Criteria

At a public hearing in accordance with Section 17.05.070, the Planning Commission shall evaluate the Preliminary Plan application according to the Sketch Plan criteria in Section 17.15.060(C) and also the following criteria:

1. Adequate resolution of all review comments; and
Response: All review comments shall be resolved through the review process of the applicants' request for approval of the Preliminary Plan for the proposed Rose Creek subdivision.
This criterion can be met.

2. Compliance with conditions of approval on the Sketch Plan, if any
Response: As permitted by the Fruita Land Use Code, the applicants have requested approval for the Preliminary Plan rather than prepare a Sketch Plan.
This criterion is not applicable.

Section 17.05.070 approval criteria:

1. Conformance to the City of Fruita's Master Plan, Land Use Code, Design Criteria and Construction Specifications Manual and other city policies and regulations.
Response: The design, plans and supporting reports and analyses have been prepared in accordance with Fruita's Comprehensive Plan, Land Use Code, Design Criteria and Construction Specifications Manual. All review comments will be addressed and resolved through the review and approval process to ensure that the construction plans and plat for the proposed subdivision will be in accordance with Fruita's design and development regulations.
This criterion can be met.

2. Compatibility with the area around the subject property in accordance with Section 17.07.080.
Response: Section 17.07.080 states "the purpose of this Section is to provide a fair and consistent manner in which to consider compatibility within the overall context of the Fruita Master Plan, existing adjacent land uses, applicable zoning district requirements, and other city codes and regulations. Nothing in this Section shall prevent the City of Fruita from denying a land use application based on relevant Code requirements or taking enforcement action against a property owner where a nuisance or other Code violation occurs.

For all land uses, "compatibility" is provided when a proposed land use can coexist with other existing uses in the vicinity without one use having a disproportionate or severe impact on the other use(s). The city decision-making body may consider other uses existing and approved and may consider all potential impacts relative to what customarily occurs in the applicable zone and those which are foreseeable, given the range of land uses allowed in the zone. The review authority may require conditions of approval to promote compatibility between uses."

The proposed Rose Creek subdivision has been designed in accordance with all Fruita development regulations and specifications. The Comprehensive Plan's Future Lane Use Map anticipates residential

development above the density proposed by Rose Creek subdivision; therefore the proposed development will be compatible with surrounding development because the Comprehensive Plan shows that 4-8 dwelling units per acre is compatible residential density.
This criterion has been met.

3. Adequate provision of all required services and facilities (roads, bicycle and pedestrian facilities, parks, police protection, fire protection, domestic water, wastewater services, irrigation water, storm drainage facilities, etc.).
Response: All necessary and required utilities and municipal services shall be provided with the proposed Rose Creek subdivision. Municipal services such as sewer, police service and stormwater facilities shall be provided by Fruita. Domestic water is available through Ute Water Conservation District and fire protection shall be provided by the Lower Valley Fire District.
This criterion can be met.

4. Preservation of natural features and adequate environmental protection; and
Response: There are no natural features shall as a stream or wash on the property. The property has been used for agricultural purposes in recent years; therefore, most of the site has been in cultivation.
This criterion is not applicable.

5. Ability to resolve all comments and recommendations from reviewers without a significant redesign of the proposed development.
Response: The proposed Rose Creek subdivision has been designed in accordance with the anticipated type of housing and density of the Comprehensive Plan, the bulk standards of the CR zone district and the design specifications of Fruita's development regulations. Plans will be revised as needed in response to review comments from review agencies and city staff.
This criterion can be met.

Conclusion

After demonstrating how the proposed Preliminary Plan meets the goals and policies of the Fruita Master Plan and standards of Title 17 of the Fruita Land Use Code, we respectfully request approval.

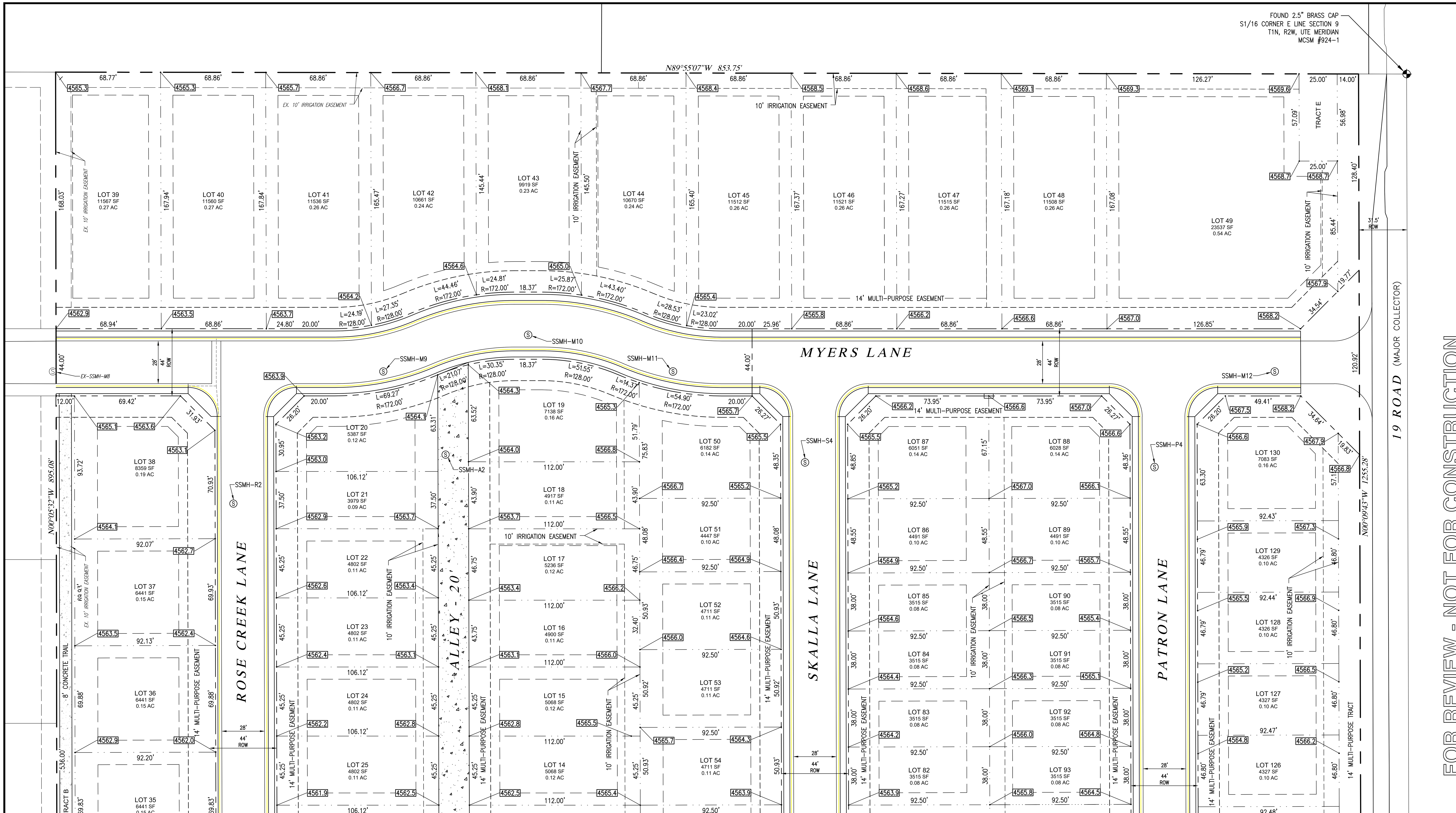
Limitations/Restrictions

This report is a site-specific report and is applicable only for the client for whom our work was performed. The review and use of this report by City of Fruita, affiliates, and review agencies is fully permitted and requires no other form of authorization. Use of this report under other circumstances is not an appropriate application of this document. This report is a product of Vortex Engineering, Inc. and is to be taken in its entirety. Excerpts from this report when taken out of context may not convey the true intent of the report. It is the owner's and owner's agent's responsibility to read this report and become familiar with recommendations and findings contained herein. Should any discrepancies be found, they must be reported to the preparing engineer within 5 days.

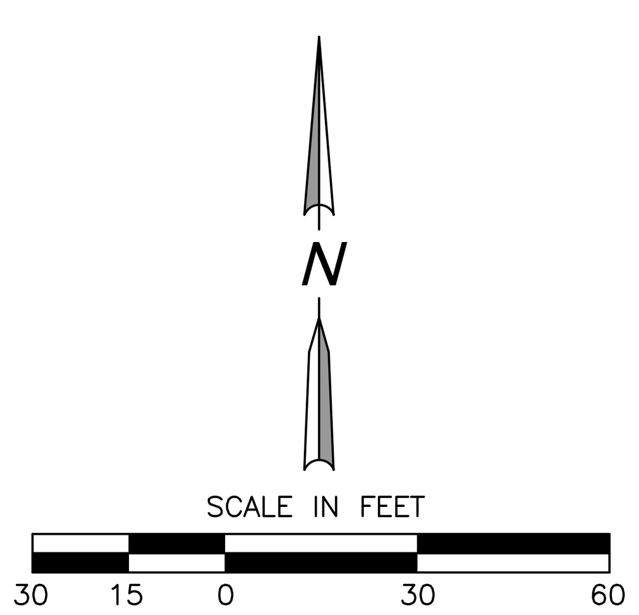
The recommendations and findings outlined in this report are based on: 1) The site visit and discussion with the owner, 2) the site conditions disclosed at the specific time of the site investigation of reference, 3) various

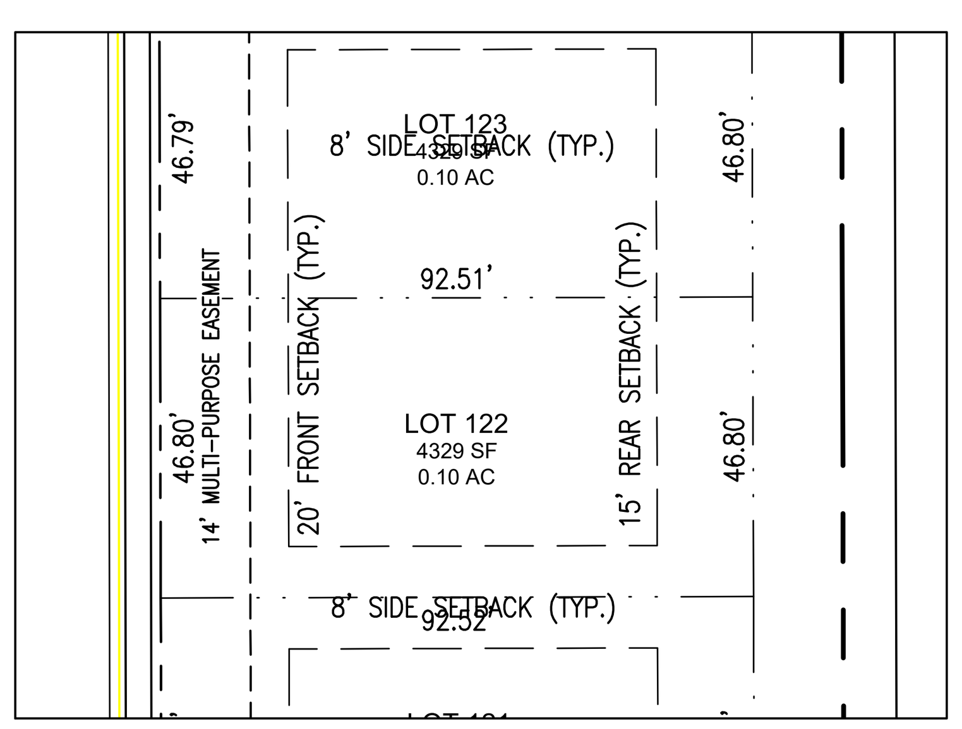
conversations with planners and utility companies, and 4) a general review of the zoning and transportation manuals. Vortex Engineering, Inc. assumes no liability for the accuracy or completeness of information furnished by the client or municipality/agency personnel. Site conditions are subject to external environmental effects and may change over time. Use of this report under different site conditions is inappropriate. If it becomes apparent that current site conditions vary from those reported, the design engineering should be contacted to develop any required report modifications. Vortex Engineering, Inc. is not responsible and accepts no liability for any variation of assumed information.

Vortex Engineering, Inc. represents this report has been prepared within the limits prescribed by the owner and in accordance with the current accepted practice of the civil engineering profession in the area. No warranty or representation either expressed or implied is included or intended in this report or in any of our contracts.



MATCH LINE - SEE SHEET C1.2





LOT SETBACK DETAIL

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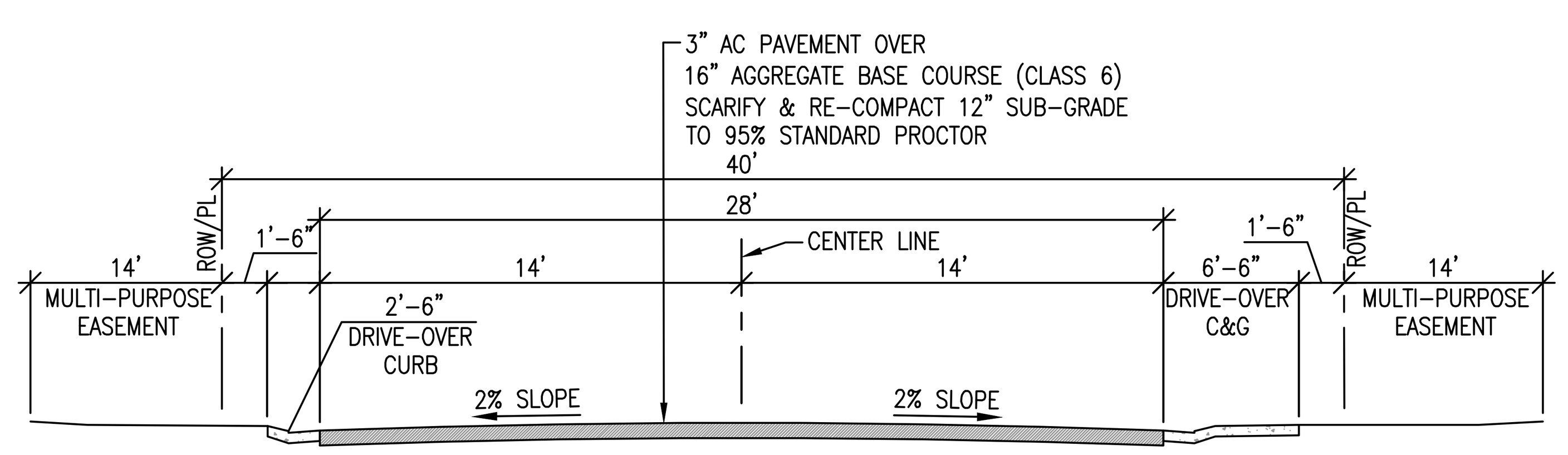

URBAN RESIDENTIAL STREET
0 to 1000 A.D.T.
N.T.S.

PROJECT BENCHMARK

BASIS OF BEARING: USING THE MESA COUNTY REAL TIME VIRTUAL REFERENCE NETWORK, A BEARING AND DISTANCE OF N89°55'07"W AND 1315.07 FEET BETWEEN A THE S1/16 CORNER ON THE EAST LINE OF SECTION 9 MARKED WITH A 2.5" BRASS CAP (MCSM #924-1) AND THE SE1/16 CORNER OF SECTION 9 MARKED WITH A 3" ALUMINUM CAP 6' WITNESS CORNER (MCSM #925-1).

UTILITY PROVIDERS INFORMATION

UTILITY	PROVIDER	PHONE NUMBER
SANITARY SEWER	CITY OF FRUITA	970-250-1554
DRAINAGE	GRAND VALLEY DRAINAGE DISTRICT	970-242-4343
DOMESTIC WATER	UTE WATER CONSERVANCY DISTRICT	970-242-7491
IRRIGATION	GRAND VALLEY IRRIGATION	970-242-2762
ELECTRICITY	XCEL ENERGY	800-895-4999
NATURAL GAS	XCEL ENERGY	800-895-4999
TELEPHONE	CENTURYLINK	800-603-6000
CABLE TELEVISION	SPECTRUM	833-780-1880

ACCEPTED FOR CONSTRUCTION FOR ONE YEAR FROM THIS DATE

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CITY ENGINEERING DIVISION REPRESENTATIVE | DATE

VORTEX ENGINEERING, INC.
• CONSTRUCTION MANAGERS & SITE PLANNERS
• PROJECT MANAGERS
• CIVIL & CONSULTING ENGINEERS
861 Rood Avenue
Grand Junction, CO 81501
Phone: (970) 245-9051
Fax (970) 245-7639

STEPHEN E. SWINDELL
PROFESSIONAL ENGINEER
COLORADO LICENSE No. 57688

REV. DATE	COMMENT	BY

FOR REVIEW - NOT FOR CONSTRUCTION

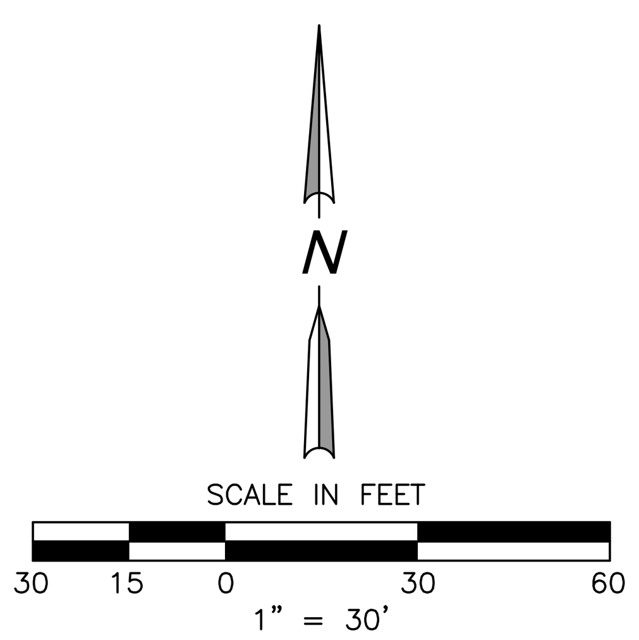
Composite Site Plan - North
Rose Creek Subdivision
Final
1892 Ottley (K Road)
Fruita, CO 81521

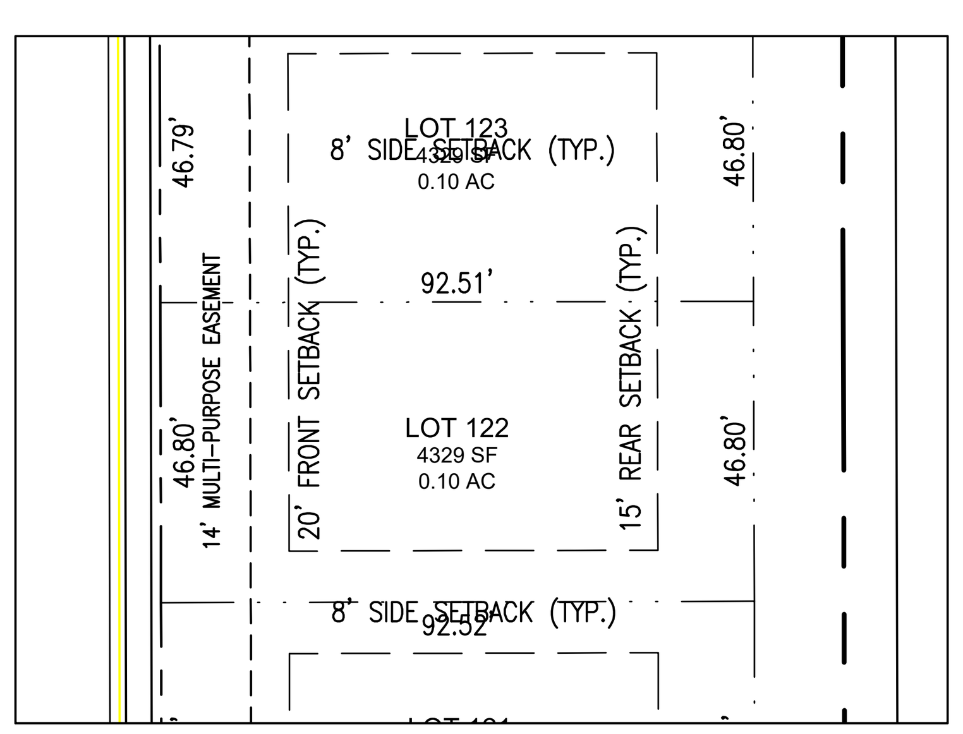
PROJECT NO: F20-070
DATE: 03/14/22
site2 f20-070.dwg

~SHEET~
C1.1

MATCH LINE - SEE SHEET C1.1

MATCH LINE - SEE SHEET C1.3





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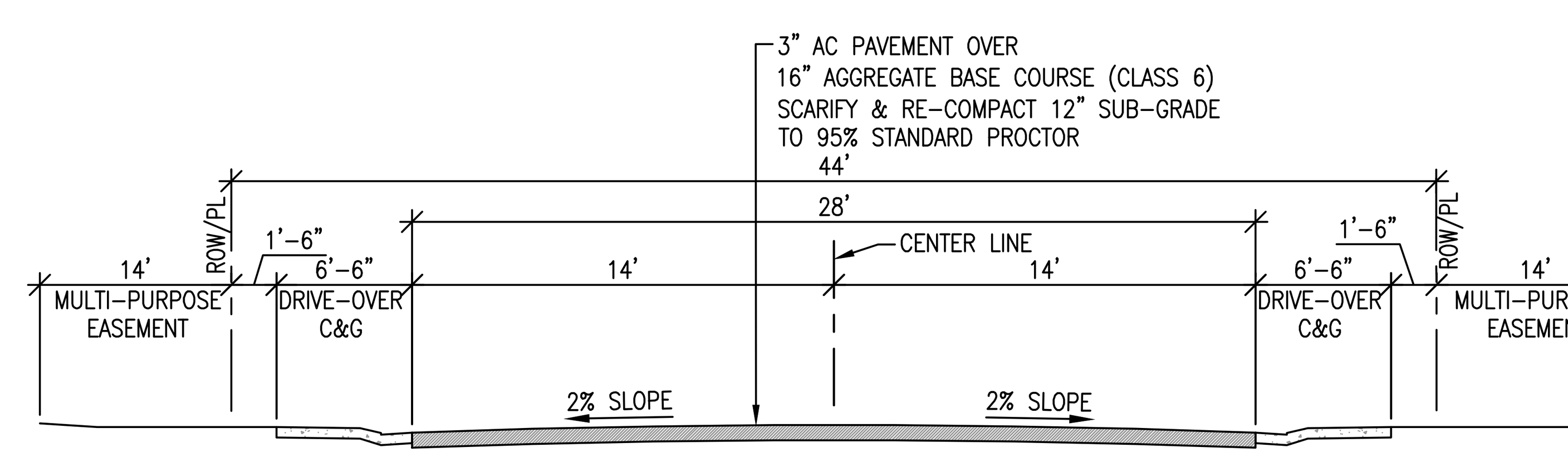

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Phone: (970) 245-9051
Fax (970) 245-7639

STEPHEN E. SWINDELL
PROFESSIONAL ENGINEER
COLORADO LICENSE No. 57688

REV. DATE	COMMENT	BY

Composite Site Plan - Center

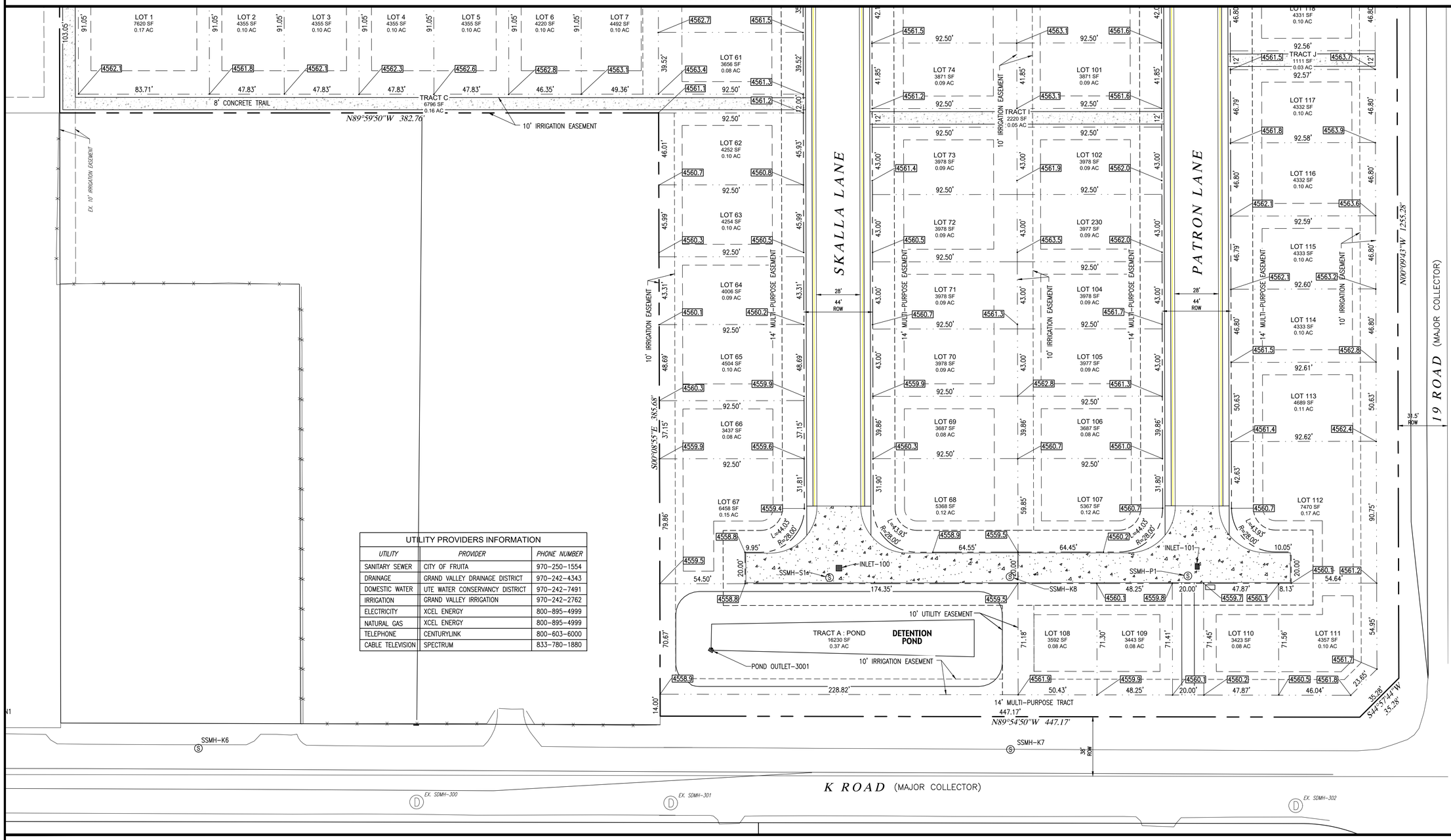
Rose Creek Subdivision Final

1892 Ottley (K Road)
Fruita, CO 81521

PROJECT NO: F20-070
DATE: 03/14/22
site2 f20-070.dwg

~SHEET~
C1.2

MATCH LINE - SEE SHEET C1.2



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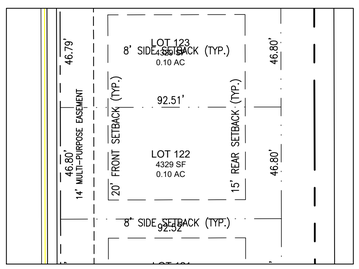

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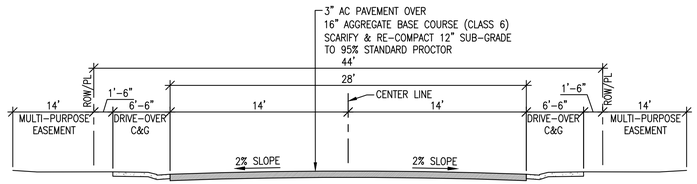

URBAN RESIDENTIAL STREET

0 to 1000 A.D.T.

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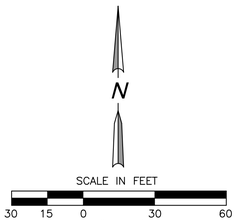

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STEPHEN E. SWINDELL
PROFESSIONAL ENGINEER
COLORADO LICENSE No. 57688

REV. DATE	COMMENT	BY

Composite Site Plan - South

Rose Creek Subdivision Final

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Fruita, CO 81521

PROJECT NO: F20-070
DATE: 03/14/22
site2 f20-070.dwg

~SHEET~
C1.3

Rose Creek Subdivision

LEVEL 2 TRAFFIC IMPACT STUDY

Project Location: 1123 19 Road, Fruita, CO

Access Location: 19 Road

Prepared By: APEX Consulting Engineers, LLC
1000 N 9th Street, Suite 44
Grand Junction, CO 81501

Report Date: March 28, 2022

APEX
CONSULTING ENGINEERS
CIVIL ENGINEERS • MANAGEMENT • DEVELOPMENT

Rose Creek Subdivision, Fruita CO
Level 2 Traffic Impact Study

Contents

Appendix

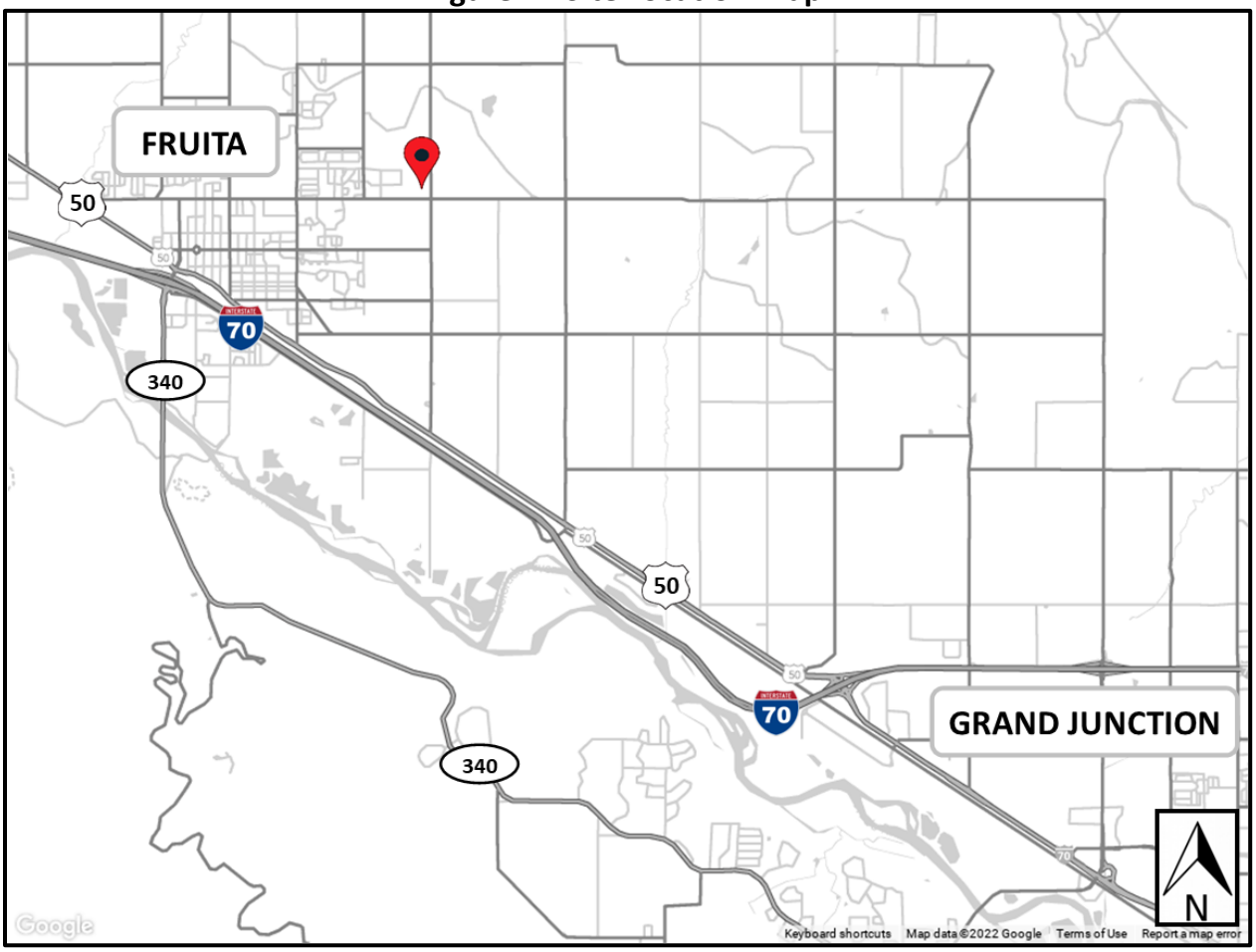
1. Introduction

APEX Consulting Engineers, LLC (APEX) prepared this Traffic Impact Study (Study) for the proposed Rose Creek Subdivision (Project), located in Fruita, Colorado. The following sections describe the Project, traffic volumes, auxiliary turn lane assessments, access spacing, and sight distance.

2. Project Location and Description

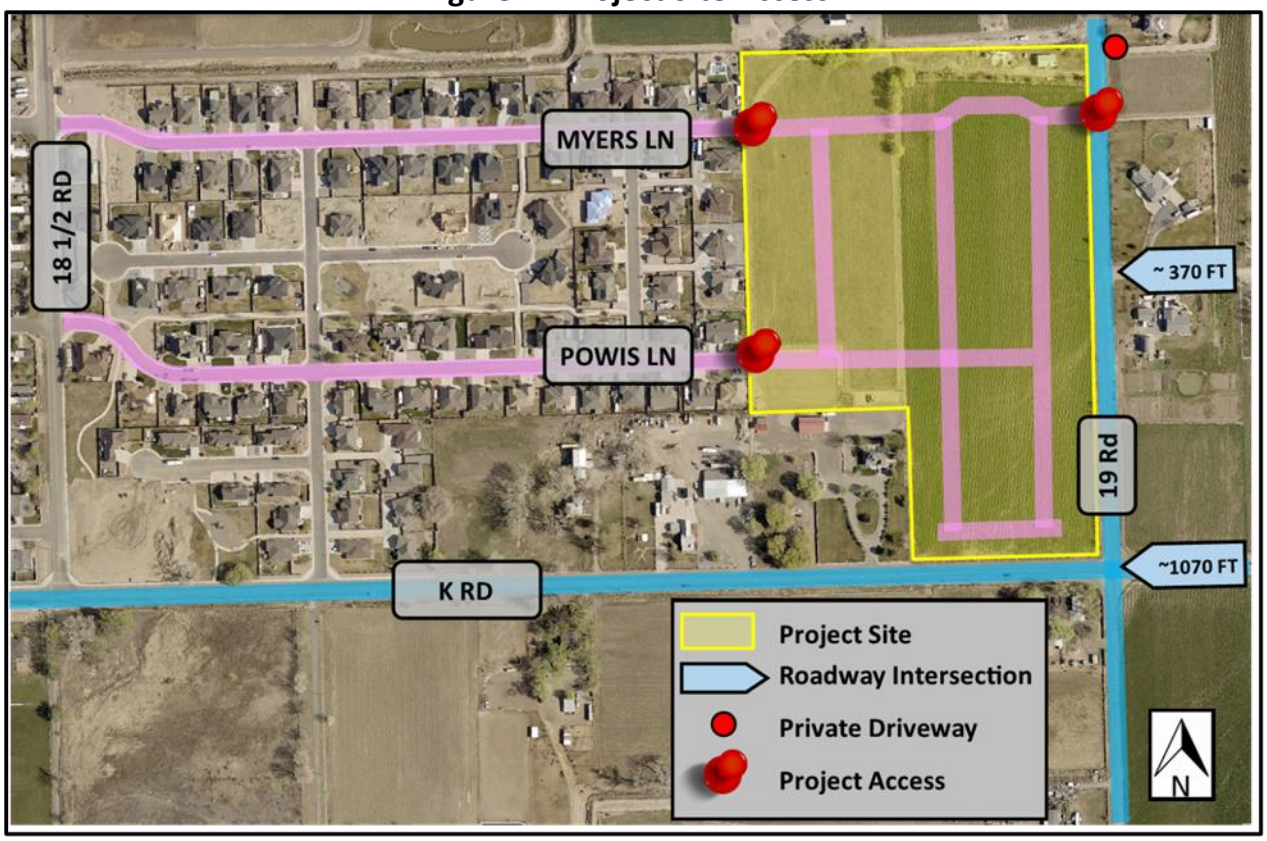
As shown in Figure 1, the proposed Project will be located on the northwest corner of 19 Road & K Road in the City of Fruita. The Project currently proposes 75 single family homes with the possibility of creating up to 136 dwelling units. The Project is expected to be completed in 2024. A concept plan is included in Appendix A. Access to the local road network will be from a continuation of Myers Lane onto 19 Road.

Figure 1 - Site Location Map



Project Access locations and existing, adjacent driveways are shown if Figure 2.

Figure 2 –Project Site Access



3. Study Area and Roadway Conditions

3.1 Study Area

The study area includes the following intersection:

Intersection 1. K Road & Myers Lane
Intersection 2. K Road & 19 Road

3.2 Existing Roadway Conditions

Functional Classification, speed limit, and peak hour traffic is provided within the study area for each major roadway.

Classifications and Speed Limits

Street Classifications and speed limits are as follows per the 2012 Fruita Area Street Classifications and Traffic Control Plan, and field inspection.

- K Road, Major Collector, 35 mph both directions
- 19 Road, Enhanced Travel Corridor, 45 mph both directions.
- Myers Lane, Residential, 25 mph both directions
- Powis Lane, Residential, 25 mph both directions

4. Trip Generation & Distribution

4.1 Trip Generation

The ITE Trip Generation Manual 10th Edition provides trip generation rates for the Land Use Code 210, Single Family Detached Housing. Trip generation traffic calculations from the ITETripGen Web-based App are found in Appendix B. Peak Hour of Generator is used in the Study as this time period provides the highest calculated peak hour traffic result. Table 1 provides the Project peak hour traffic results using protocol for selecting rates or equation as outlined in the ITE Trip Generation Handbook.

Table 1 –Layout Option 1 Peak Hour Trip Generation

	Period	AM	PM
LUC 210 (136 DU)	Ins	28	91
	Outs	79	51
	TOTAL	**107**	**142**

Additional traffic will be added to the Project traffic due to the extension of Myers Lane. Using the gravity model, a total of 14 single family homes are estimated to start using the newly proposed access upon completion of the Project. Land Use Code 210, Single Family Detached Housing, will be used for the additional traffic volumes. Table 1 provides the additional peak hour traffic.

Table 2 –Additional Peak Hour Trip Generation

	Period	AM	PM
LUC 210 (14 DU)	Ins	4	11
	Outs	11	6
	TOTAL	**15**	**17**

4.2 Trip Reduction Factors

An internal capture trip reduction factor was not used, due to the single-use nature of the Project. Additionally, pass-by capture factors were also not used.

5. Trip Distribution & Assignment

5.1 Determination of Trip Distribution

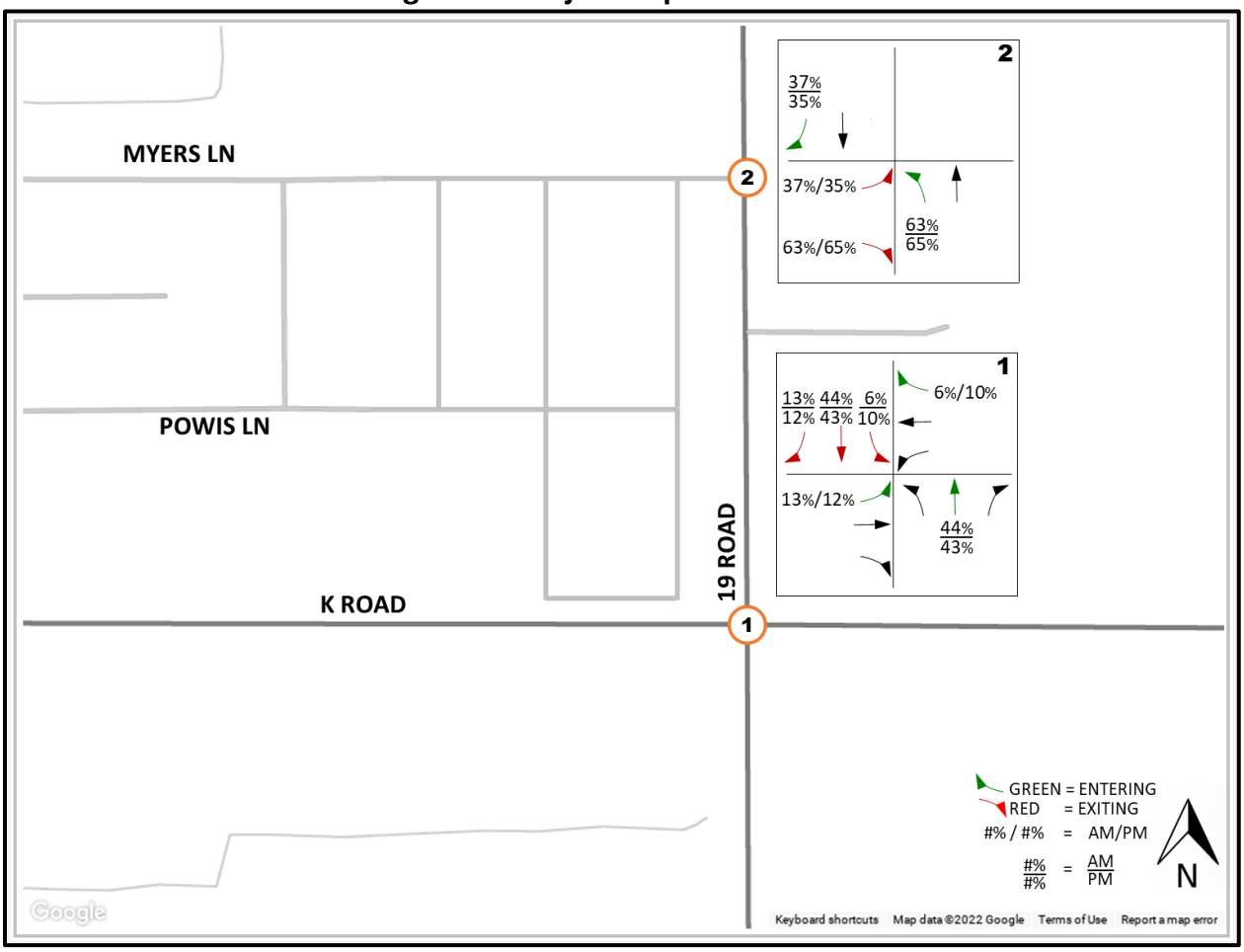
The existing traffic counts, the Grand Valley Circulation Plan, gravity model, and land use were used to estimate trip distributions. Existing traffic count data was then used to determine specific movement distributions at each key intersection. Where counts are used, AM and PM distributions are tracked separately due to the variations obtained between the two time periods.

Traffic counts dated June 6, 2021 located at K 4/10 Road & 18 Road were used to determine the overall site distribution at the Project Access. This intersection was used since it acts as a similar residential collector north of K Road.

Traffic counts dated February 24, 2022 located at K Road & 19 Road were used to determine the distribution of Project traffic at the given intersection.

All Project traffic is assumed to use the proposed access of Myers Lane & 19 Road. The detailed trip distribution is shown in Figure 3.

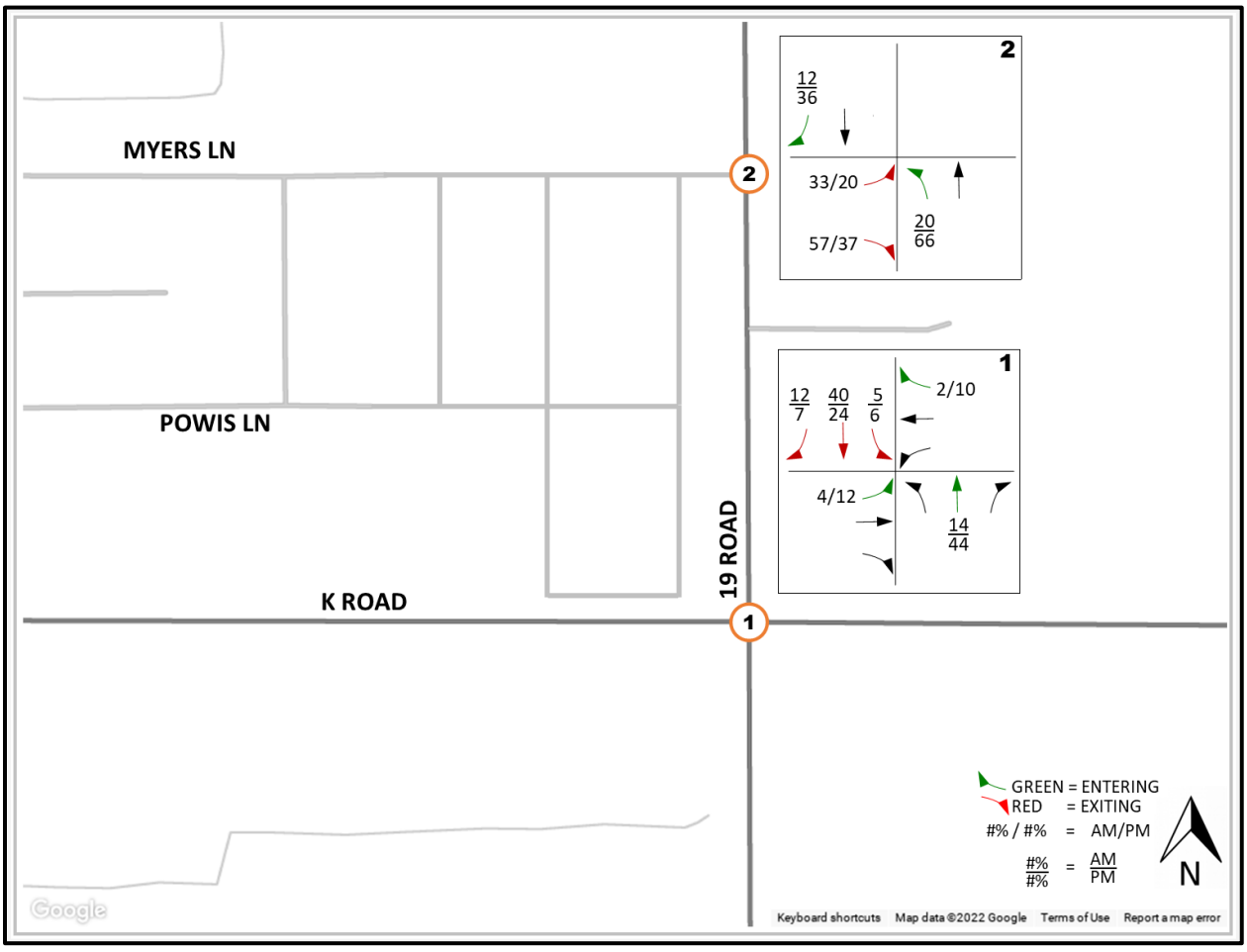
Figure 3 –Project Trip Distribution



5.2 Assignment of Project Traffic

Project traffic determined from the trip generation calculation is assigned to the existing traffic network using the distributions from Figure 4. The resulting Project trip assignment is shown in Figure 5.

Figure 4 –Project Trip Assignment



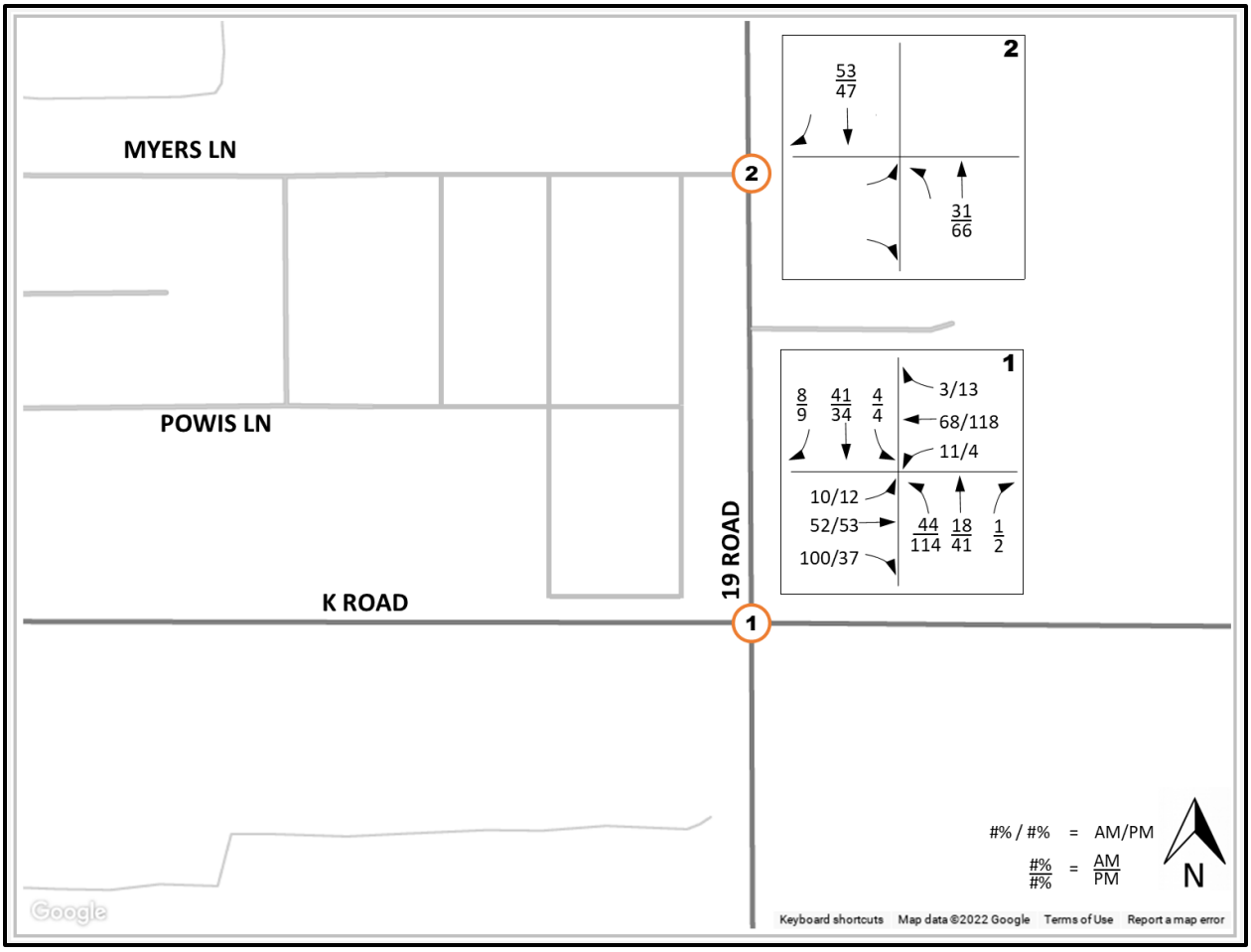
6. Existing & Future Traffic Volumes

Peak hour intersection turning movement counts were conducted at K Road & 19 Road on 2/24/2022.

Peak seasonal adjustment factors will not be used.

The existing peak hour traffic is represented in Figure 6. Count summaries are included in Appendix C.

Figure 5 –Existing Peak Hour Traffic
(From counts February 24, 2022)



7. Study Years Traffic Volumes

Future background traffic is determined in this section.

The project is expected to be completed in 2024. The study years will be 2024 and 2044. The Grand Valley Metropolitan Planning Organization (GVMPO) provided traffic volumes from the Regional

Travel Demand Model (RTDM), base 2019 model + future 2045, and is the basis for the following road segment growth factors:

Table 3 – Road Segment Growth

Road	Segment	ADT		Period Growth Factor	Avg. Annual Growth Rate	3 - year growth factor (2022-2025)	23 - year growth factor (2022-2045)
		2019	2045				
K Rd	East	839	1,464	1.745	2.16	1.066	1.635
K Rd*	West*	2,539	1,871	0.737	-1.17	0.9653*	0.7629*
19 Rd	North	1,515	3,007	1.985	2.67	1.082	1.833
19 Rd*	South*	3,641	2,391	0.657	-1.60	0.9528*	0.6901*

*Note that the growth factors are negative and will be assumed as a value of 1.0 for the purpose of staying conservative in the Traffic Impact Study.

These growth factors were used to determine future peak hour background traffic volumes.

8. Study Period Volumes

Total traffic volumes consist of future background traffic volumes plus Project trips. The following figures present background and total peak hour traffic for the study periods.

Figure 6 – Background Peak Hour Future Traffic (Year 2024)

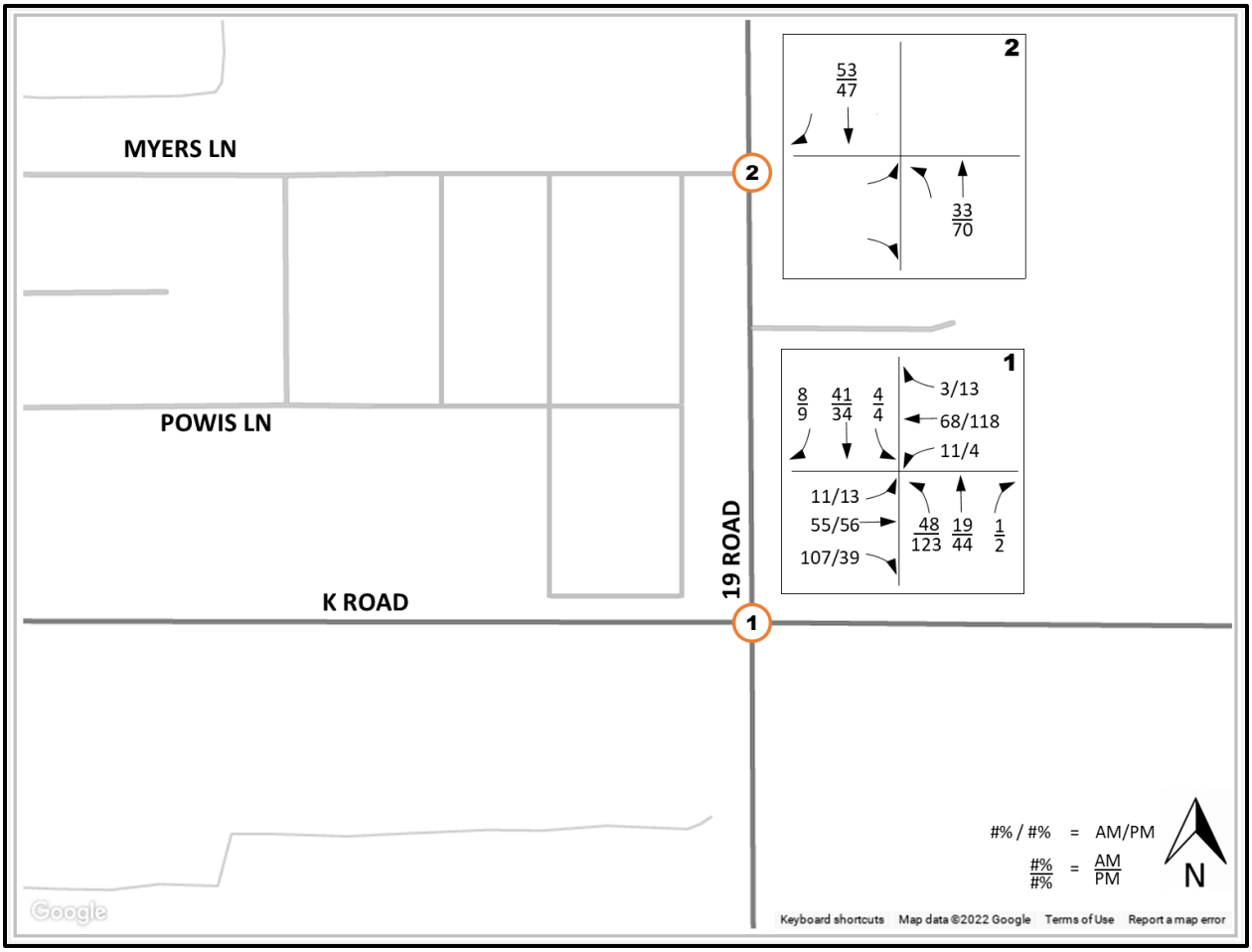


Figure 7 –Total Peak Hour Future Traffic (Year 2024)

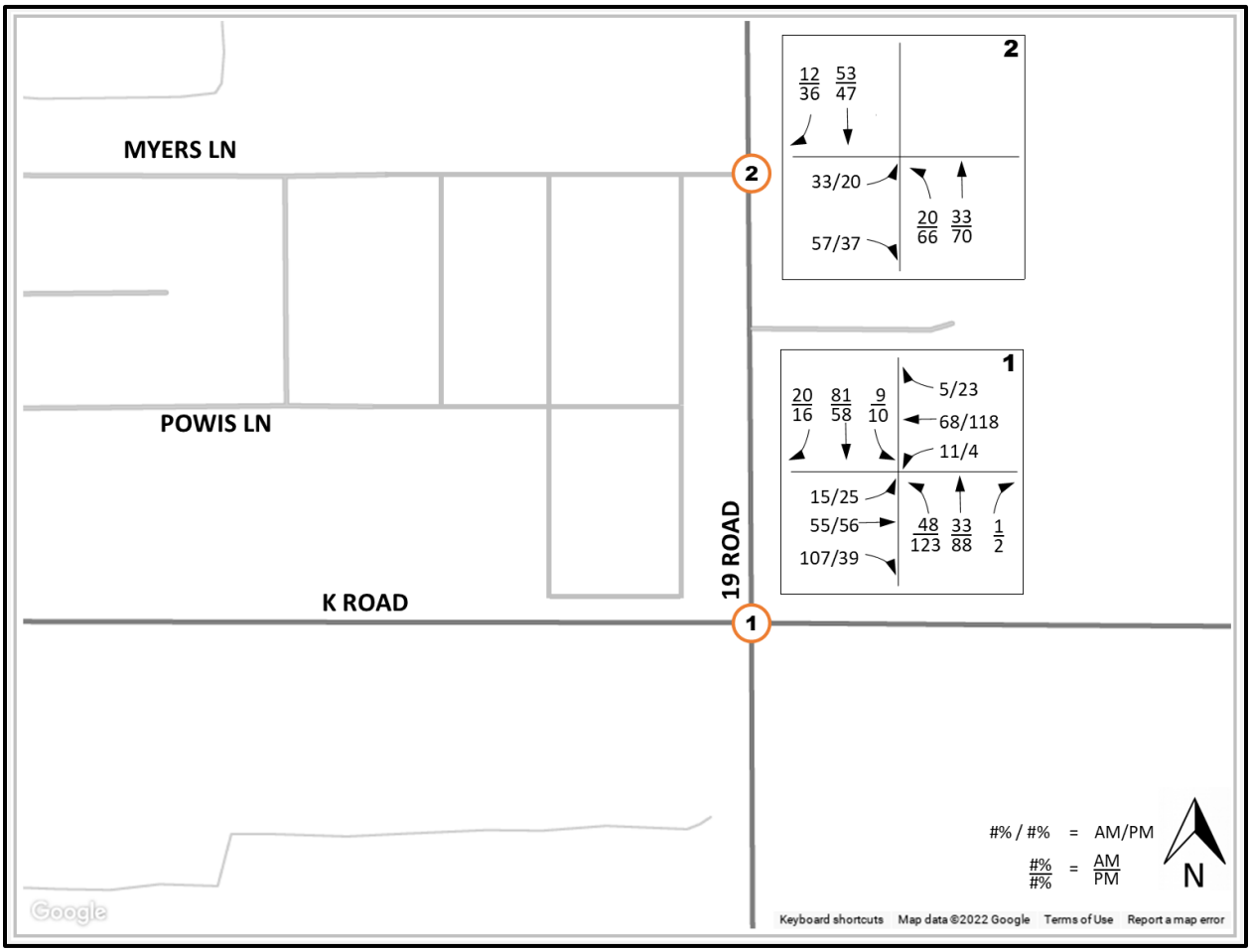


Figure 8 – Background Peak Hour Future Traffic (Year 2044)

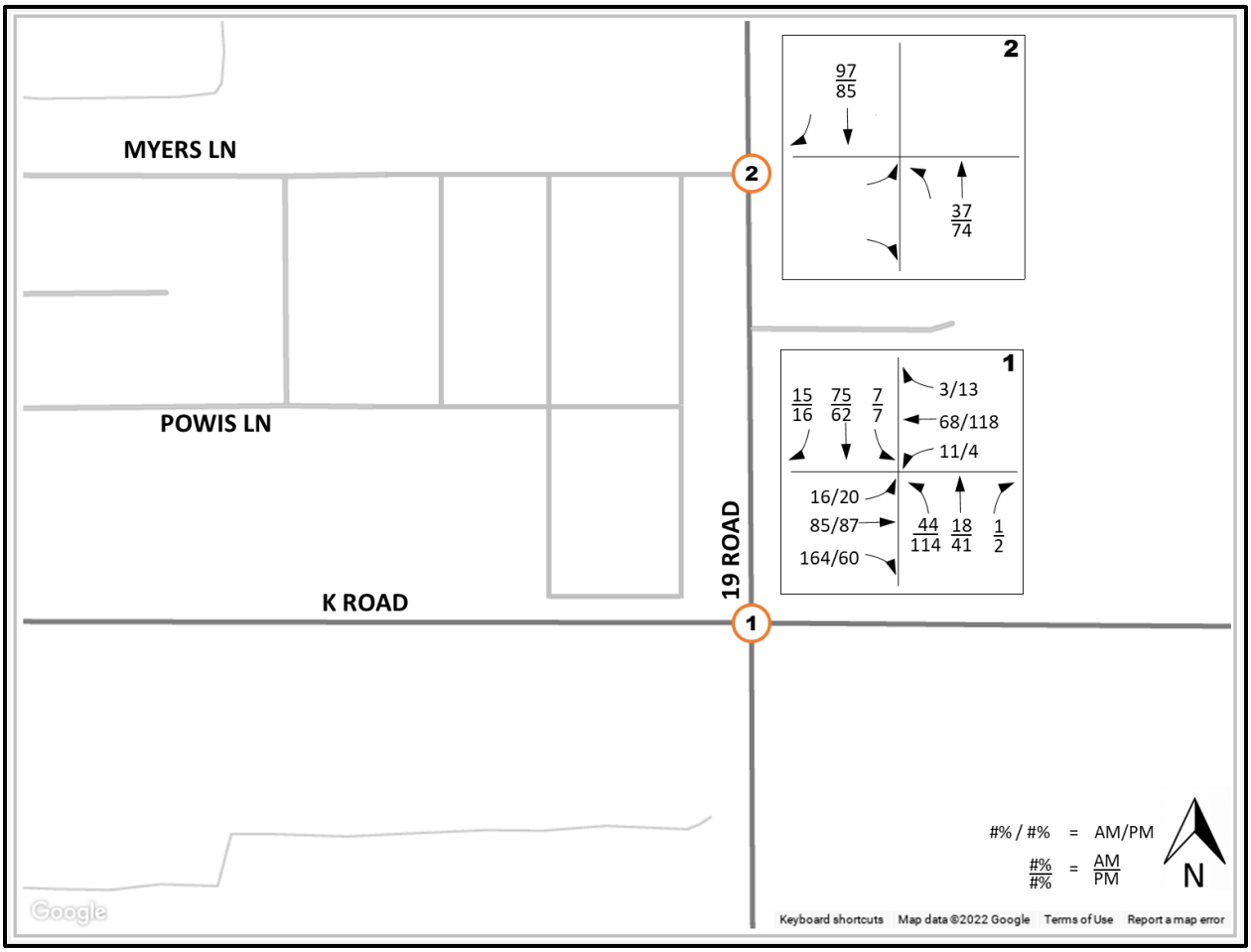
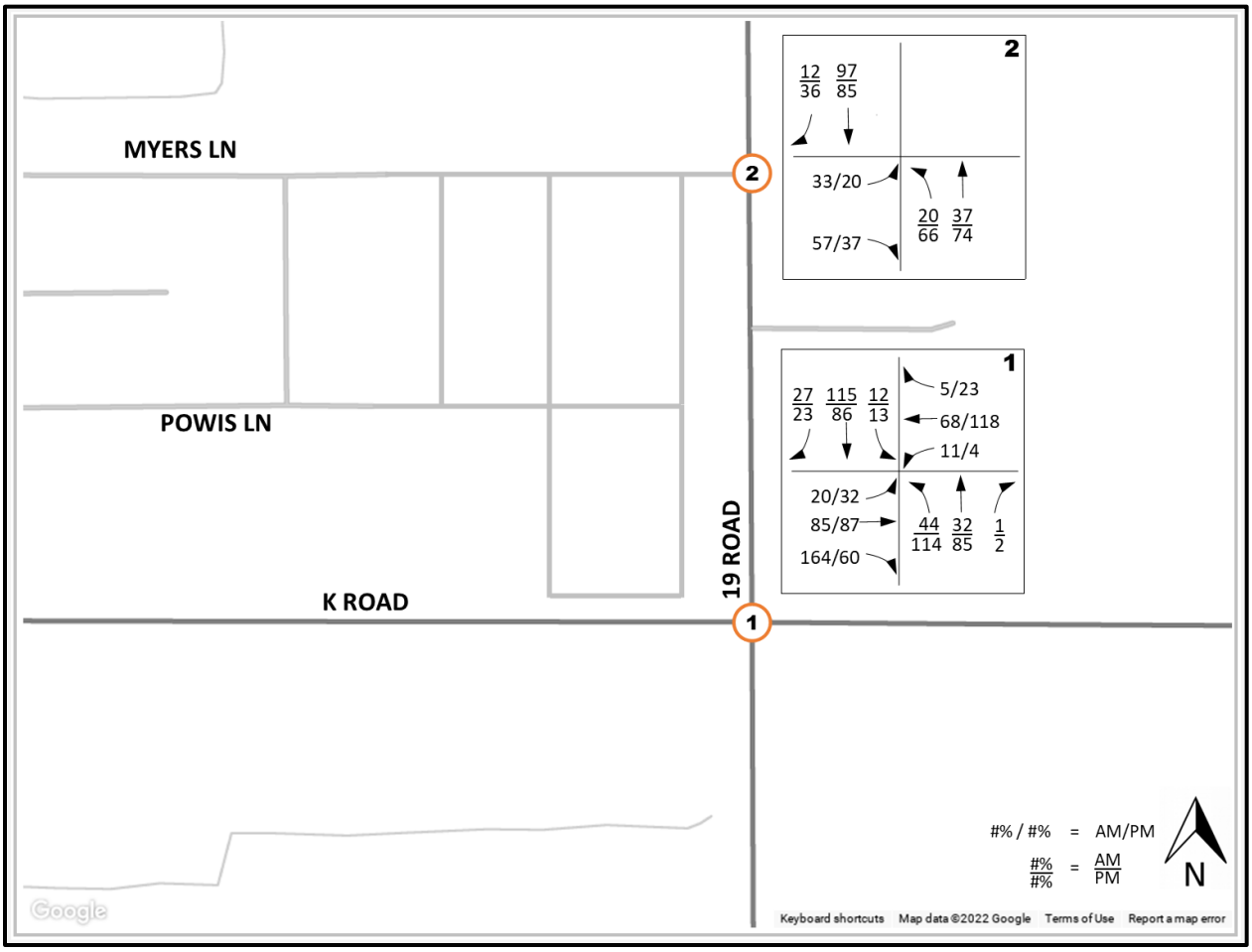


Figure 9 – Total Peak Hour Future Traffic (Year 2044)



9. Auxiliary Turn Lane Evaluations

The need for auxiliary lanes are based on the turn lane warrants listed in the Mesa County Transportation Engineering Design Standards (TEDS) based on total traffic volumes at the 20th year following Project completion (year 2044). The following table shows the data and criteria necessary to identify the need for exclusive right-turn and left-turn deceleration lanes at the intersections in the Study area based on speed limits of each roadway.

Table 4 – Comparison of Turning Volumes to Turn Lane Requirements

Intersection		Year	Deceleration Movement	Speed Limit	Highest Period	Turning (vph)	Through Volumes (vph)		Threshold Turning Volumes	Required Threshold Conflicting	Auxilary Lane Req'd
							Direction	Conflicting			
1	K Rd & 19 Rd	2024 Total	EB Right	35	No project traffic added to this movement						N/A
			EB Left		PM	25	EB	56		N/A[1]	NO[1]
			WB Right	35	PM	23	WB	118	200[2]	400[2]	NO[2]
			WB Left		No project traffic added to this movement						N/A
			NB Right	45	No project traffic added to this movement						N/A
			NB Left		No project traffic added to this movement						N/A
			SB Right	45	AM	20	SB	90	120[3]	300[3]	NO[3]
			SB Left		PM	10	SB	101	14	100	NO
		2044 Total	EB Right	35	No project traffic added to this movement						N/A
			EB Left		PM	32	EB	87		N/A[4]	NO[4]
			WB Right	35	PM	23	WB	122	200[2]	400[2]	NO[2]
			WB Left		No project traffic added to this movement						N/A
			NB Right	45	No project traffic added to this movement						N/A
			NB Left		No project traffic added to this movement						N/A
			SB Right	45	AM	27	SB	127	120[3]	300[3]	NO[3]
			SB Left		PM	13	SB	109	14	109	NO
2	Myers Ln & 19 Rd	2024 Total	EB Left	25	Turn lanes not required for speeds under 30 mph						NO
			EB Right		Turn lanes not required for speeds under 30 mph						NO
			NB Left	45	PM	66	NB	70		N/A[4]	NO[4]
			SB Right	45	PM	66	WB	153	200[2]	400[2]	NO[2]
		2044 Total	EB Left	45	Turn lanes not required for speeds under 30 mph						NO
			WB Right	45	Turn lanes not required for speeds under 30 mph						NO
			NB Left	45	AM	65	SB	83	33	N/A[4]	NO[4]
			SB Right		PM	66	WB	153	200[2]	400[2]	NO[2]

Table 4 Notes:

1. Left turn lanes generally not required with through volumes less than 100 vph and left turns less than 30 vph. Though the left turns are approaching the threshold volume of 30 for DDHV of 100, a straight line interpolation would project the warrant volume to be 37 left turns per hour at 56 DDHV through volume.
2. Right turn lanes generally not required with through volumes less than 400 vph and right turns less than 200 vph.
3. Right turn lanes generally not required with through volumes less than 300 vph and right turns less than 120 vph.
4. Left turn lanes are generally not required with through volumes less than 100 vph and left turns left than 14 vph at speeds above 40 MPH. However, left turns are significantly higher than 14 turns per hour so additional evaluation was required. A straight line interpolation of the turn lane warrants would show that a left turn lane would be warranted at 11 left turns with a through volume of 76 vehicles. Additionally, the travel distance from the intersection exceeds the 1045' spacing for Unsignalized Access Spacing Based on Adjacent and Independent Connections, in the Access Management Manual. However, the 66 left turns far exceeds the straight line interpolation warrant volume and rear-end collisions would be reduced if a left turn lane is provided.

10. Level of Service

Due to the high turning movement volumes, the Study includes level of service analysis to evaluate the quality of each intersection without the addition of auxiliary lanes. The traffic analysis was conducted using the methodologies outlined in the Transportation Research Board's Highway Capacity Manual, 2020 Edition. Synchro® 10 Planning & Analysis Software was used to determine traffic operation.

The results of the intersection operational analysis were used to assess the LOS experienced by drivers as the duration of delay a driver experiences at a given intersection. LOS A represents the most desirable conditions with free-flow movement of traffic and minimal delay to motorists. LOS F generally indicates severely congested conditions with excessive delays to motorists. Intermediate grades of B, C, D, and E reflect incremental increases in congestion.

The duration of delay is measured differently for signalized intersections as compared to unsignalized intersections. The LOS delay range for an unsignalized intersection is typically shorter than at a signalized intersection primarily because at a stop sign, the traveling public has an expectation to experience less delay than at a signal. In addition, studies have shown that at unsignalized intersections drivers tend to become impatient with long delays and may use inadequate and unsafe gaps in the traffic stream to make left turns or enter the major street. The following table provides the delay thresholds for signalized and unsignalized intersections.

Table 5 – Intersection Delay & LOS Thresholds

Level of Service (LOS)	**Signalized Intersections** (seconds/vehicle)	**Unsignalized Intersection** (seconds/vehicle)
A	0.0 – 10.0	0.0 – 10.0
B	10.1 – 20.0	10.1 – 15.0
C	20.1 – 35.0	15.1 – 25.0
D	35.1 – 55.0	25.1 – 35.0
E	55.1 – 80.0	35.1 – 50.0
F	Greater than 80.0	Greater than 50.0

Source: Transportation Research Board, Highway Capacity Manual, 2020 Edition

Traffic Operations Analysis Results

Peak hour LOS was computed within the Study area using Synchro's Highway Capacity Manual 2016 Methodology Module. Results are reported in Table 6 and calculations are included in Appendix D.

Table 6 – Intersection Operations Summary

	Intersection E-W	Intersection N-S	Period	Traffic Control	New Lane Geometry	2024 Background	2024 Total	2044 Background	2044 Total
1	**K Rd**	**19 Rd**	**AM**	Unsignalized	Intersection LOS	A (4.0)	A (5.4)	A (4.3)	A (5.8)
	Eastbound			Free	1 left-thru, 1 right	A	A	A	A
	Westbound			Free	1 left-thru-right	A	A	A	A
	Northbound			Stop	1 left-thru, 1 right	B	B	B	B
	Southbound			Stop	1 left-thru-right	B	B	B	A
	Control Delay LOS & Delay (sec/veh)					B (11.1)	B (11.8)	B (12.7)	B (13.9)
	K Rd	**19 Rd**	**PM**	Unsignalized	Intersection LOS	A (6.1)	A (7.8)	A (6.3)	A (8.2)
	Eastbound			Free	1 left-thru, 1 right	A	A	A	A
	Westbound			Free	1 left-thru-right	A	A	A	A
	Northbound			Stop	1 left-thru, 1 right	B	C	B	C
	Southbound			Stop	1 left-thru-right	B	B	B	B
	Control Delay LOS & Delay (sec/veh)					B (12.7)	C (15.0)	B (14.1)	C (17.0)
2	**Myers Ln**	**19 Rd**	**AM**	Unsignalized	Intersection LOS	A (0.0)	A (4.8)	A (0.0)	A (4.0)
	Eastbound			Stop	1 left-right	-	A	-	A
	Northbound			Free	1 left-thru	-	A	-	A
	Southbound			Free	1 thru-right	-	-	-	-
	Control Delay LOS & Delay (sec/veh)					A (0.0)	A (9.3)	A (0.0)	A (9.6)
	Myers Ln	**19 Rd**	**PM**	Unsignalized	Intersection LOS	A (0.0)	A (3.9)	A (0.0)	A (3.5)
	Eastbound			Stop	1 left-right	-	A	-	A
	Northbound			Free	1 left-thru	-	A	-	A
	Southbound			Free	1 thru-right	-	-	-	-
	Control Delay LOS & Delay (sec/veh)					A (0.0)	A (9.6)	A (0.0)	A (9.9)

As seen in Table 6 both intersections remain at a LOS C or better for all conditions. Note that although the LOS drops from a B to a C at Intersection 1 with the addition of the Project traffic, the additional delay is minimal, less than three seconds. This shows that the Project does not significantly impact the LOS of both intersections.

Table 6 demonstrates the intersections function within acceptable levels without the addition of auxiliary lanes.

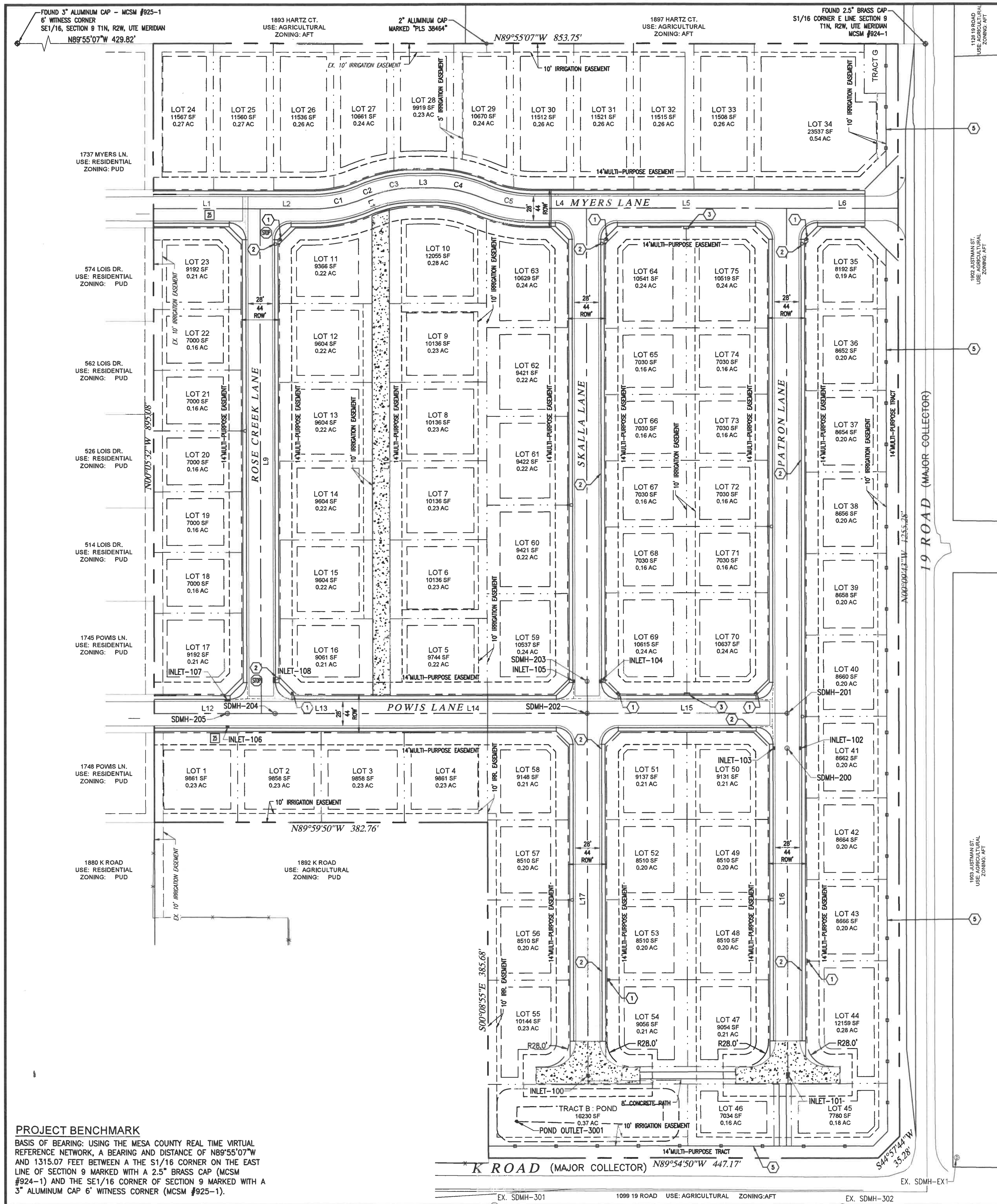
11. Intersection Sight Distance

The Project access will be located on a proposed extension of Myers Lane. Sight distance triangles will need to be dedicated through the right of way or tracts located on the site. Required sight distance for vehicles entering the roadway was obtained from Table 4.2 in the Mesa County Road Access Policy.

19 Road is a 2-lane roadway with a posted speed limit of 45 mph. The grades are less than 3%. The required sight distance is 500 feet and will be exceeded while looking north and south at the Project access.

12. Recommendations

Though the TEDS manual does not provide a metric to determine whether a left turn deceleration lane is warranted when through volumes are less than 100 DHV, a northbound left turn deceleration lane is recommended at 19 Road and Myers Lane.



GENERAL NOTES:

1. ALL CONSTRUCTION TO CONFORM TO THE CURRENT CITY OF FRUITA DEPARTMENT OF PUBLIC WORKS AND PLANNING STANDARDS AND SPECIFICATIONS.
2. CONTRACTOR MUST CONTACT CITY OF FRUITA TRAFFIC OPERATIONS SUPERVISOR PRIOR TO CONSTRUCTION OR PLACEMENT OF TRAFFIC CONTROL DEVICES/FEATURES (STRIPING, SIGNALS, MEDIANS, ETC.) FOR CONSTRUCTION IN THE RIGHT-OF-WAY ONLY.
3. REFER TO THE GEOTECHNICAL INVESTIGATION BY HUDDLESTON-BERRY ENGINEERING & TESTING, LLC, PROJECT # #00545-0066 DATED 01/06/21, FOR RECOMMENDATIONS REGARDING PAVEMENT, SLABS, FOUNDATIONS AND GROUNDWATER MITIGATION REQUIREMENTS.
4. MINIMUM PRINCIPAL BUILDING SETBACKS:
   FRONT = 20'
   SIDE = 8' (DETACHED) 0' (ATTACHED)
   REAR = 15'
5. ALL SANITARY SEWER MANHOLES ARE 48" I.D.
6. LIGHTING TO BE DESIGNED BY UTILITY PROVIDER. (XCEL)
7. ALL PAVEMENT SECTIONS ARE BASED UPON A PROVIDED GEOTECHNICAL INVESTIGATION PREPARED BY HUDDLESTON-BERRY ENGINEERING & TESTING, LLC. REFER TO PROJECT #00545-0066, DATED 01/06/21. ALL RECOMMENDATIONS AND SPECIFICATIONS PROVIDED IN THE GEOTECHNICAL INVESTIGATION SHALL BE ADHERED TO. DEVIATIONS FROM THE REPORT RECOMMENDATIONS AND SPECIFICATIONS ARE TO BE BROUGHT TO THE ATTENTION OF THE DESIGN ENGINEER PRIOR TO IMPLEMENTING.

CONSTRUCTION NOTES:

1. PROPOSED FIRE HYDRANT
2. PROPOSED LIGHT POLE BY XCEL ENERGY
3. PROPOSED MAILBOX LOCATION
4. REMOVE EXISTING IRRIGATION DITCH AND ASSOCIATED APERTURES
5. ±1690 LF OF DEVELOPER INSTALLED FENCE SEE FENCE DETAILS THIS SHEET

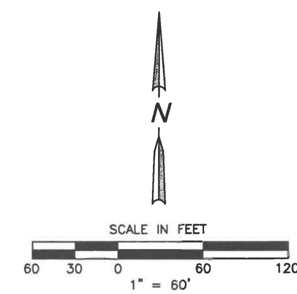
SIGN SCHEDULE

STOP SIGN (30"x30") & D3-1 STREET SIGN COMBINED

25 MPH SPEED LIMIT SIGN R2-1

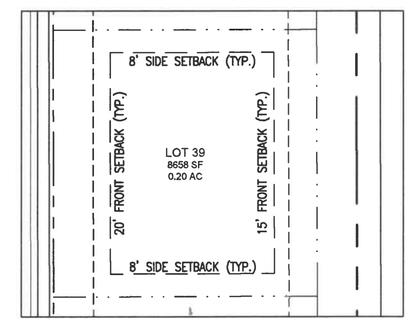
"RED DIAMOND" TYPE 4 OBJECT MARKER OM4-2

ALL SIGN POST MOUNTING AND PLACEMENT SHALL BE PER MUTCD OR MESA COUNTY SPECIFICATIONS. CONTRACTOR TO CONTACT MESA COUNTY TRAFFIC PRIOR TO INSTALLATION OF SIGNS.



PROPOSED LAND USE TABLE

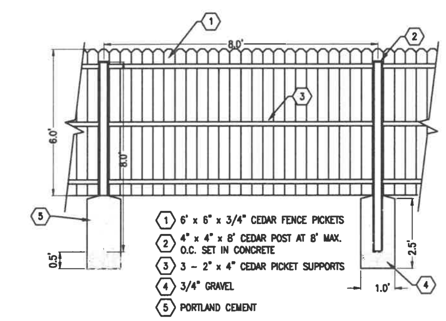
USE	AREA	AC	% OF TOTAL	OWNER
SINGLE FAMILY LOTS (75 TOTAL)	706,664 S.F.	16.223	74.69%	PRIVATE
TRACT A: ALLEY	11,068 S.F.	0.254	1.17%	PUBLIC
TRACT B: DETENTION POND	16,230 S.F.	0.373	1.72%	HOA
TRACT C: STORM	2,180 S.F.	0.050	0.23%	CITY
TRACT D: SEWER	1,429 S.F.	0.033	0.15%	CITY
TRACT E: MULTIPURPOSE	1,896 S.F.	0.044	0.20%	HOA
TRACT F: MULTIPURPOSE	20,774 S.F.	0.477	2.20%	HOA
TRACT F: MULTIPURPOSE	1426 S.F.	0.033	0.15%	HOA
RIGHT-OF-WAY	184,430 S.F.	4.234	19.49%	PUBLIC
TOTAL SITE AREA	946,097 S.F. - 21.72 AC			



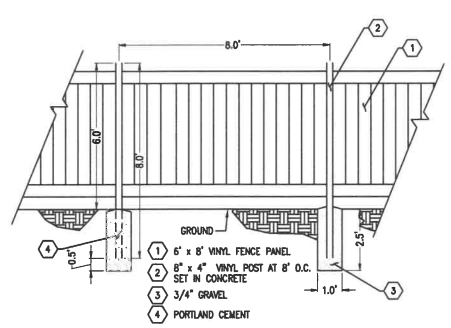
LOT SETBACK DETAIL

Street Centerline Data

Line #/Curve #	Length	Direction/Delta	Radius
C1	60.407	023°04'26"	150.000
C2	12.667	004°50'18"	150.000
C3	47.741	018°14'08"	150.000
C4	60.407	023°04'26"	150.000
C5	60.407	023°04'26"	150.000
L1	121.952	S89° 59' 50.55"E	
L2	60.608	S89° 59' 50.55"E	
L3	18.367	S89° 59' 50.42"E	
L4	60.492	S89° 59' 50.35"E	
L5	229.001	S89° 59' 50.35"E	
L6	128.410	S89° 59' 50.35"E	
L7	580.001	N00° 08' 55.14"W	
L8	580.001	N00° 08' 55.14"W	
L9	580.001	S00° 08' 55.14"E	
L10	575.573	S00° 08' 55.14"E	
L11	22.000	N18° 13' 58.55"W	
L12	122.485	S89° 59' 50.40"E	
L13	138.118	S89° 59' 50.40"E	
L14	236.501	S89° 59' 50.40"E	
L15	229.001	S89° 59' 50.40"E	
L16	425.791	N00° 08' 55.14"W	
L17	425.974	N00° 08' 55.14"W	



6' CEDAR PICKET/RAIL FENCE
(SHOWN FROM BACK SIDE)
N.T.S.



6' VINYL PANEL FENCE
(SHOWN FROM BACK SIDE)
N.T.S.

PROJECT BENCHMARK

BASIS OF BEARING: USING THE MESA COUNTY REAL TIME VIRTUAL REFERENCE NETWORK, A BEARING AND DISTANCE OF N89°55'07"W AND 1315.07 FEET BETWEEN A THE S1/16 CORNER ON THE EAST LINE OF SECTION 9 MARKED WITH A 2.5" BRASS CAP (MCSM #924-1) AND THE SE1/16 CORNER OF SECTION 9 MARKED WITH A 3" ALUMINUM CAP 6' WITNESS CORNER (MCSM #925-1).

ACCEPTED FOR CONSTRUCTION FOR ONE YEAR FROM THIS DATE

ACCEPTANCE OF THESE PLANS DOES NOT RELIEVE THE DEVELOPER, CONTRACTOR, OR THE ENGINEER FROM CONFORMANCE WITH THE CITY OF FRUITA DESIGN CRITERIA AND CONSTRUCTION SPECIFICATIONS MANUAL.

CITY OF FRUITA ENGINEERING DIVISION REPRESENTATIVE | DATE

VORTEX ENGINEERING, INC.
* CONSTRUCTION MANAGERS & SITE PLANNERS
* PROJECT MANAGERS
* CIVIL & CONSULTING ENGINEERS
861 Rood Avenue
Grand Junction, CO 81501
Phone: (970) 245-9051
Fax (970) 245-7639

STEPHEN E. SWINDELL
PROFESSIONAL ENGINEER
COLORADO LICENSE No. 57688

FOR REVIEW - NOT FOR CONSTRUCTION

Composite Site Plan - Overall

Rose Creek Subdivision

Final

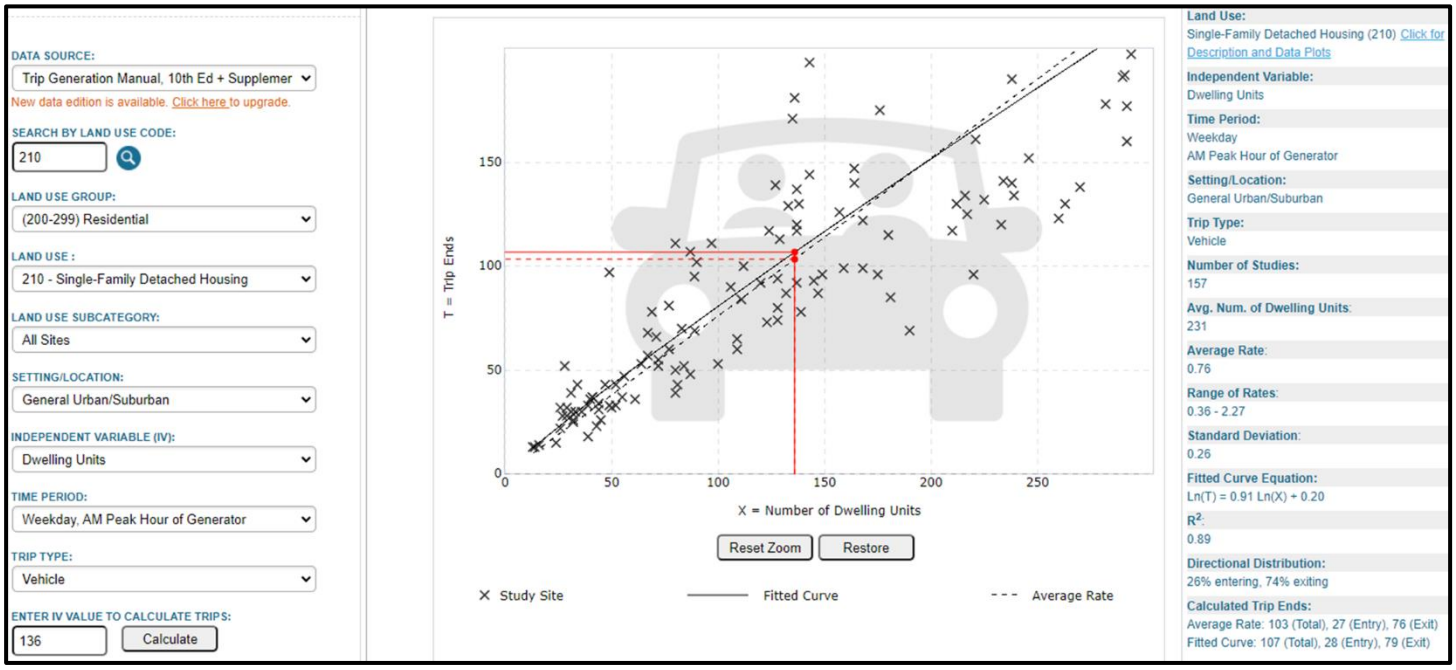
1892 Ottley (K Road)
Fruita, CO 81521

PROJECT NO: F20-070
DATE: 03/14/22
site f20-070.dwg

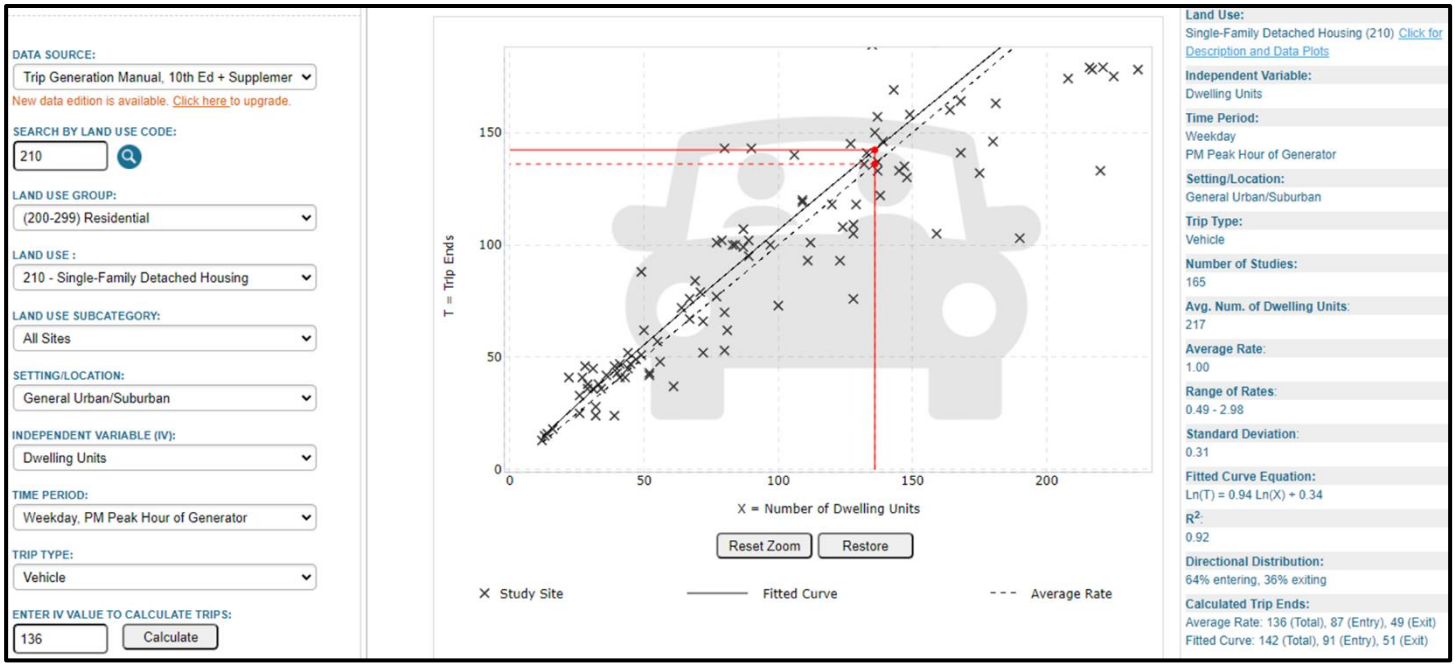
~SHEET~
C1.0

Appendix B – Project Trip Generation

LUC 210 (136 DU)– AM Peak Hour

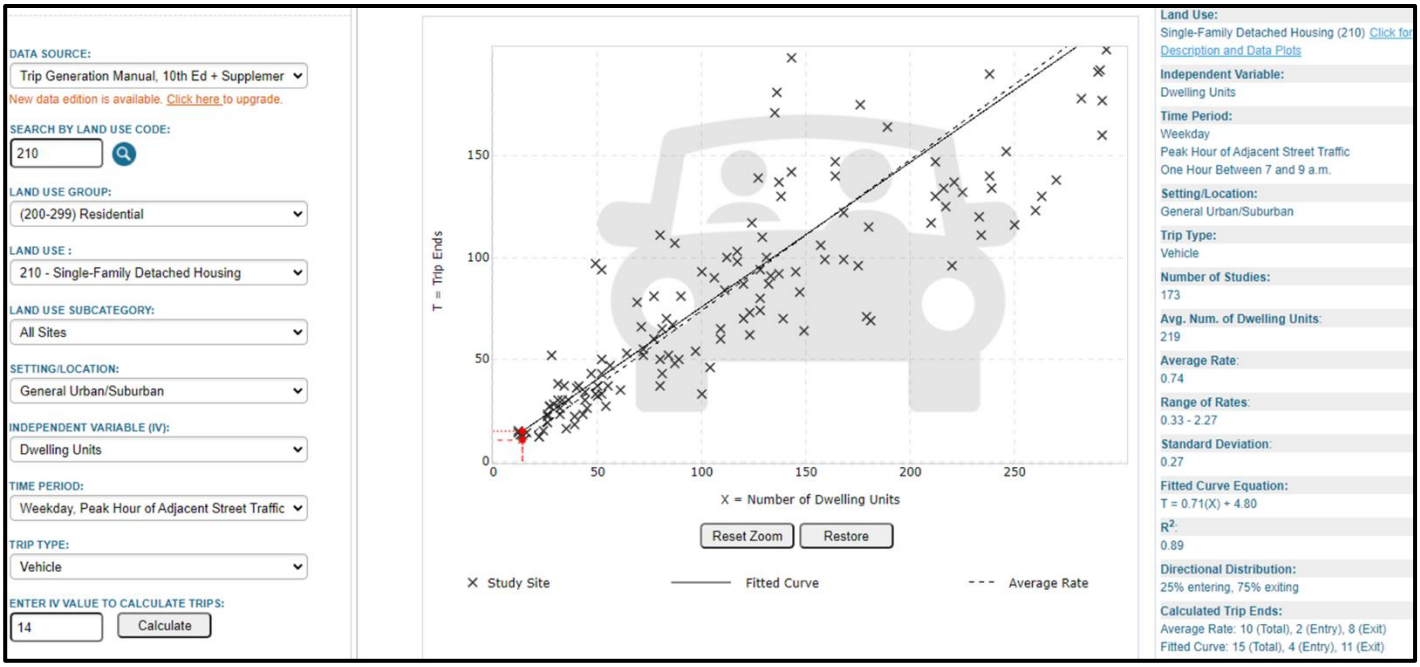


LUC 210 (136 DU) – PM Peak Hour

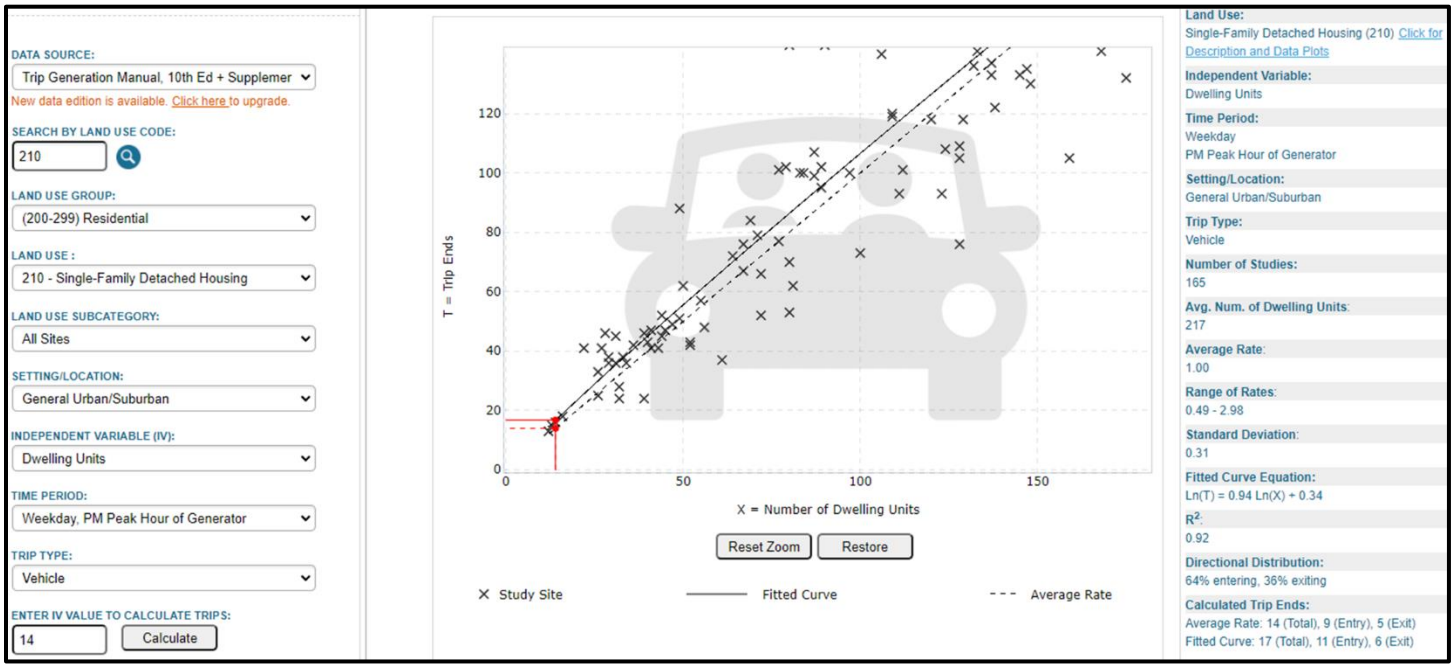


Appendix B – Project Trip Generation

LUC 210 (Additional 14 DU)– AM Peak



LUC 210 (Additional 14 DU) – PM Peak



APEX CONSULTING ENGINEERS
CIVIL ENGINEERS • MANAGEMENT • DEVELOPMENT

Appendix C – Intersection Turning Movement Count Traffic Summaries

Intersection Turning Movement Count Summary

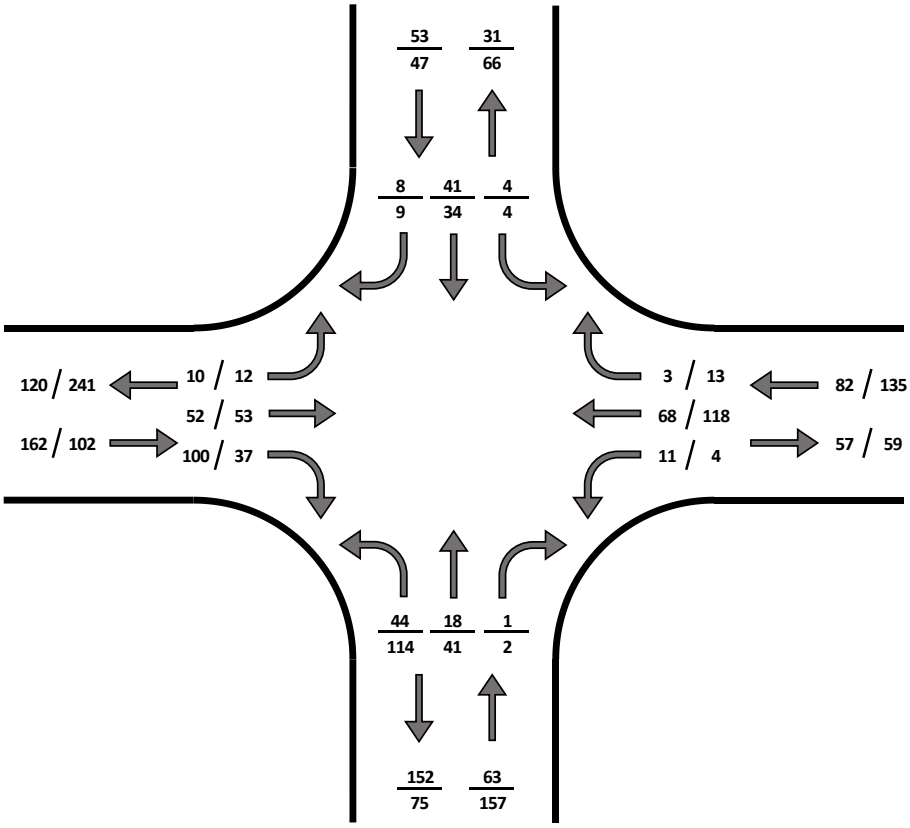
APEX CONSULTING ENGINEERS
CIVIL ENGINEERS • MANAGEMENT • DEVELOPMENT

Project:	**Rose Creek Vortex**
Location:	**Fruita, CO**
EB/WB Road:	**K Rd**
NB/SB Road:	**19 Rd**

Counted By: KJR
Count Date: 2/24/2022

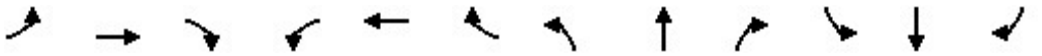
Intersection 1 - K Rd & 19 Rd

		K Rd - (EB)			K Rd - (WB)			19 Rd - (NB)			19 Rd - (SB)			
		Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right	Sums
AM	7:00	0	13	23	1	3	0	3	0	0	1	11	1	56
	7:15	1	14	28	1	6	0	7	0	0	1	8	2	68
	7:30	0	21	29	1	8	0	6	4	1	2	14	2	88
	7:45	0	20	20	0	4	0	6	2	1	0	10	0	63
	8:00	**3**	**15**	**16**	**0**	**19**	**1**	**7**	**2**	**0**	**1**	**10**	**2**	**76**
	8:15	**1**	**6**	**19**	**3**	**15**	**0**	**8**	**2**	**0**	**1**	**10**	**1**	**66**
	8:30	**3**	**18**	**43**	**7**	**21**	**0**	**11**	**4**	**0**	**1**	**16**	**5**	**129**
	8:45	**3**	**13**	**22**	**1**	**13**	**2**	**18**	**10**	**1**	**1**	**5**	**0**	**89**
	Peak	**10**	**52**	**100**	**11**	**68**	**3**	**44**	**18**	**1**	**4**	**41**	**8**	**360**
	Sums	**162**			**82**			**63**			**53**			
PM	16:00	1	20	28	1	17	0	18	9	0	0	4	1	99
	16:15	0	18	20	2	18	5	25	15	4	2	6	2	117
	16:30	1	19	15	4	11	1	21	7	2	0	6	5	92
	16:45	3	12	7	1	23	2	29	8	2	2	8	3	100
	17:00	**4**	**14**	**8**	**1**	**34**	**7**	**15**	**10**	**0**	**0**	**4**	**3**	**100**
	17:15	**2**	**14**	**10**	**2**	**33**	**3**	**40**	**7**	**1**	**2**	**7**	**3**	**124**
	17:30	**4**	**12**	**11**	**0**	**23**	**2**	**30**	**10**	**1**	**1**	**19**	**1**	**114**
	17:45	**2**	**13**	**8**	**1**	**28**	**1**	**29**	**14**	**0**	**1**	**4**	**2**	**103**
	Peak	**12**	**53**	**37**	**4**	**118**	**13**	**114**	**41**	**2**	**4**	**34**	**9**	**441**
	Sums	**102**			**135**			**157**			**47**			



1: 19 Rd & K Rd — Year 2024 Background Condition

HCM Unsignalized Intersection Capacity Analysis — Timing Plan: AM Peak



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	11	55	107	11	68	3	48	19	1	4	41	8
Future Volume (Veh/h)	11	55	107	11	68	3	48	19	1	4	41	8
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	12	60	116	12	74	3	52	21	1	4	45	9
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	77			176			215	185	60	195	300	76
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	77			176			215	185	60	195	300	76
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			99			92	97	100	99	93	99
cM capacity (veh/h)	1522			1400			684	698	1005	737	603	986

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	NB 2	SB 1
Volume Total	72	116	89	73	1	58
Volume Left	12	0	12	52	0	4
Volume Right	0	116	3	0	1	9
cSH	1522	1700	1400	688	1005	650
Volume to Capacity	0.01	0.07	0.01	0.11	0.00	0.09
Queue Length 95th (ft)	1	0	1	9	0	7
Control Delay (s)	1.3	0.0	1.1	10.9	8.6	11.1
Lane LOS	A		A	B	A	B
Approach Delay (s)	0.5		1.1	10.8		11.1
Approach LOS				B		B

Intersection Summary				
Average Delay	4.0			
Intersection Capacity Utilization	28.0%	ICU Level of Service		A
Analysis Period (min)	15			

2: 19 Rd & Myers Ln — Year 2024 Background Condition

HCM Unsignalized Intersection Capacity Analysis — Timing Plan: AM Peak

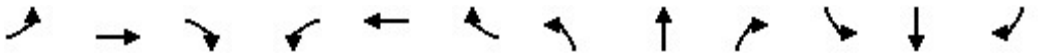
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	0	33	53	0
Future Volume (Veh/h)	0	0	0	33	53	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	36	58	0
Pedestrians						
Lane Width (ft)						
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	94	58	58			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	94	58	58			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	906	1008	1546			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	0	36	58
Volume Left	0	0	0
Volume Right	0	0	0
cSH	1700	1546	1700
Volume to Capacity	0.00	0.00	0.03
Queue Length 95th (ft)	0	0	0
Control Delay (s)	0.0	0.0	0.0
Lane LOS	A		
Approach Delay (s)	0.0	0.0	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	6.7%	ICU Level of Service	A
Analysis Period (min)	15		

1: 19 Rd & K Rd — Year 2024 Background Condition

HCM Unsignalized Intersection Capacity Analysis — Timing Plan: PM Peak



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	13	56	39	4	118	13	123	44	2	4	34	9
Future Volume (Veh/h)	13	56	39	4	118	13	123	44	2	4	34	9
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	14	61	42	4	128	14	134	48	2	4	37	10
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	142			103			260	239	61	258	274	135
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	142			103			260	239	61	258	274	135
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			100			79	93	100	99	94	99
cM capacity (veh/h)	1441			1489			648	654	1004	649	625	914

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	NB 2	SB 1
Volume Total	75	42	146	182	2	51
Volume Left	14	0	4	134	0	4
Volume Right	0	42	14	0	2	10
cSH	1441	1700	1489	649	1004	669
Volume to Capacity	0.01	0.02	0.00	0.28	0.00	0.08
Queue Length 95th (ft)	1	0	0	29	0	6
Control Delay (s)	1.5	0.0	0.2	12.7	8.6	10.8
Lane LOS	A		A	B	A	B
Approach Delay (s)	0.9		0.2	12.6		10.8
Approach LOS				B		B

Intersection Summary				
Average Delay	6.1			
Intersection Capacity Utilization	32.7%	ICU Level of Service		A
Analysis Period (min)	15			

2: 19 Rd & Myers Ln — Year 2024 Background Condition

HCM Unsignalized Intersection Capacity Analysis — Timing Plan: PM Peak

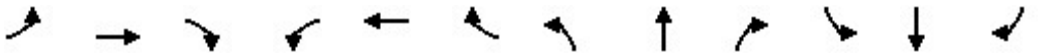
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	0	70	47	0
Future Volume (Veh/h)	0	0	0	70	47	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	76	51	0
Pedestrians						
Lane Width (ft)						
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	127	51	51			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	127	51	51			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	868	1017	1555			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	0	76	51
Volume Left	0	0	0
Volume Right	0	0	0
cSH	1700	1555	1700
Volume to Capacity	0.00	0.00	0.03
Queue Length 95th (ft)	0	0	0
Control Delay (s)	0.0	0.0	0.0
Lane LOS	A		
Approach Delay (s)	0.0	0.0	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	7.0%	ICU Level of Service	A
Analysis Period (min)	15		

1: 19 Rd & K Rd — Year 2024 Total Condition

HCM Unsignalized Intersection Capacity Analysis — Timing Plan: AM Peak



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	15	55	107	11	68	5	48	33	1	9	81	20
Future Volume (Veh/h)	15	55	107	11	68	5	48	33	1	9	81	20
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	16	60	116	12	74	5	52	36	1	10	88	22
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	79			176			258	195	60	212	308	76
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	79			176			258	195	60	212	308	76
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			99			91	95	100	99	85	98
cM capacity (veh/h)	1519			1400			593	687	1005	705	594	985

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	NB 2	SB 1
Volume Total	76	116	91	88	1	120
Volume Left	16	0	12	52	0	10
Volume Right	0	116	5	0	1	22
cSH	1519	1700	1400	628	1005	650
Volume to Capacity	0.01	0.07	0.01	0.14	0.00	0.18
Queue Length 95th (ft)	1	0	1	12	0	17
Control Delay (s)	1.6	0.0	1.1	11.7	8.6	11.8
Lane LOS	A		A	B	A	B
Approach Delay (s)	0.6		1.1	11.6		11.8
Approach LOS				B		B

Intersection Summary				
Average Delay	5.4			
Intersection Capacity Utilization	30.5%	ICU Level of Service		A
Analysis Period (min)	15			

2: 19 Rd & Myers Ln — Year 2024 Total Condition

HCM Unsignalized Intersection Capacity Analysis — Timing Plan: AM Peak

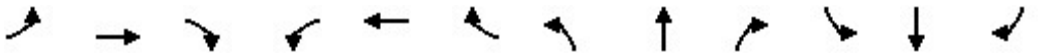
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	33	57	20	33	53	12
Future Volume (Veh/h)	33	57	20	33	53	12
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	36	62	22	36	58	13
Pedestrians						
Lane Width (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	144	64	71			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	144	64	71			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	96	94	99			
cM capacity (veh/h)	836	1000	1529			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	98	58	71
Volume Left	36	22	0
Volume Right	62	0	13
cSH	933	1529	1700
Volume to Capacity	0.11	0.01	0.04
Queue Length 95th (ft)	9	1	0
Control Delay (s)	9.3	2.9	0.0
Lane LOS	A	A	
Approach Delay (s)	9.3	2.9	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	4.8		
Intersection Capacity Utilization	21.5%	ICU Level of Service	A
Analysis Period (min)	15		

1: 19 Rd & K Rd — Year 2024 Total Condition

HCM Unsignalized Intersection Capacity Analysis — Timing Plan: PM Peak



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	25	56	39	4	118	23	123	88	2	10	58	16
Future Volume (Veh/h)	25	56	39	4	118	23	123	88	2	10	58	16
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	27	61	42	4	128	25	134	96	2	11	63	17
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	153			103			312	276	61	314	306	140
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	153			103			312	276	61	314	306	140
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			100			76	84	100	98	89	98
cM capacity (veh/h)	1428			1489			568	618	1004	553	595	907

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	NB 2	SB 1
Volume Total	88	42	157	230	2	91
Volume Left	27	0	4	134	0	11
Volume Right	0	42	25	0	2	17
cSH	1428	1700	1489	588	1004	630
Volume to Capacity	0.02	0.02	0.00	0.39	0.00	0.14
Queue Length 95th (ft)	1	0	0	46	0	13
Control Delay (s)	2.4	0.0	0.2	15.0	8.6	11.7
Lane LOS	A		A	C	A	B
Approach Delay (s)	1.6		0.2	14.9		11.7
Approach LOS				B		B

Intersection Summary				
Average Delay	7.8			
Intersection Capacity Utilization	40.3%	ICU Level of Service		A
Analysis Period (min)	15			

2: 19 Rd & Myers Ln — Year 2024 Total Condition

HCM Unsignalized Intersection Capacity Analysis — Timing Plan: PM Peak

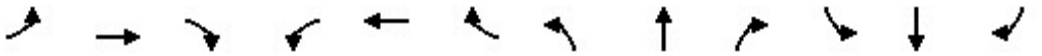
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	20	37	66	70	47	36
Future Volume (Veh/h)	20	37	66	70	47	36
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	22	40	72	76	51	39
Pedestrians						
Lane Width (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	290	70	90			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	290	70	90			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	97	96	95			
cM capacity (veh/h)	667	992	1505			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	62	148	90
Volume Left	22	72	0
Volume Right	40	0	39
cSH	846	1505	1700
Volume to Capacity	0.07	0.05	0.05
Queue Length 95th (ft)	6	4	0
Control Delay (s)	9.6	3.8	0.0
Lane LOS	A	A	
Approach Delay (s)	9.6	3.8	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	3.9		
Intersection Capacity Utilization	24.1%	ICU Level of Service	A
Analysis Period (min)	15		

1: 19 Rd & K Rd — Year 2044 Background Condition

HCM Unsignalized Intersection Capacity Analysis — Timing Plan: AM Peak



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	16	85	164	11	68	3	44	18	1	7	75	15
Future Volume (Veh/h)	16	85	164	11	68	3	44	18	1	7	75	15
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	17	92	178	12	74	3	48	20	1	8	82	16
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	77			270			282	227	92	236	404	76
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	77			270			282	227	92	236	404	76
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			99			92	97	100	99	84	98
cM capacity (veh/h)	1522			1293			571	659	965	690	525	986

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	NB 2	SB 1
Volume Total	109	178	89	68	1	106
Volume Left	17	0	12	48	0	8
Volume Right	0	178	3	0	1	16
cSH	1522	1700	1293	594	965	576
Volume to Capacity	0.01	0.10	0.01	0.11	0.00	0.18
Queue Length 95th (ft)	1	0	1	10	0	17
Control Delay (s)	1.2	0.0	1.1	11.8	8.7	12.7
Lane LOS	A		A	B	A	B
Approach Delay (s)	0.5		1.1	11.8		12.7
Approach LOS				B		B

Intersection Summary				
Average Delay	4.3			
Intersection Capacity Utilization	29.8%	ICU Level of Service		A
Analysis Period (min)	15			

2: 19 Rd & Myers Ln — Year 2044 Background Condition

HCM Unsignalized Intersection Capacity Analysis — Timing Plan: AM Peak

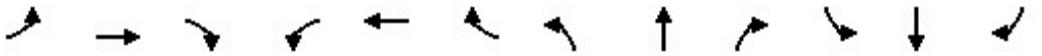
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	0	37	97	0
Future Volume (Veh/h)	0	0	0	37	97	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	40	105	0
Pedestrians						
Lane Width (ft)						
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	145	105	105			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	145	105	105			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	847	949	1486			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	0	40	105
Volume Left	0	0	0
Volume Right	0	0	0
cSH	1700	1486	1700
Volume to Capacity	0.07	0.00	0.06
Queue Length 95th (ft)	0	0	0
Control Delay (s)	0.0	0.0	0.0
Lane LOS	A		
Approach Delay (s)	0.0	0.0	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	8.4%	ICU Level of Service	A
Analysis Period (min)	15		

1: 19 Rd & K Rd — Year 2044 Background Condition

HCM Unsignalized Intersection Capacity Analysis — Timing Plan: PM Peak



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	87	60	4	118	13	114	41	2	7	62	16
Future Volume (Veh/h)	20	87	60	4	118	13	114	41	2	7	62	16
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	22	95	65	4	128	14	124	45	2	8	67	17
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	142			160			332	289	95	306	347	135
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	142			160			332	289	95	306	347	135
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			100			77	93	100	99	88	98
cM capacity (veh/h)	1441			1419			547	610	962	600	566	914

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	NB 2	SB 1
Volume Total	117	65	146	169	2	92
Volume Left	22	0	4	124	0	8
Volume Right	0	65	14	0	2	17
cSH	1441	1700	1419	562	962	612
Volume to Capacity	0.02	0.04	0.00	0.30	0.00	0.15
Queue Length 95th (ft)	1	0	0	31	0	13
Control Delay (s)	1.5	0.0	0.2	14.1	8.8	11.9
Lane LOS	A		A	B	A	B
Approach Delay (s)	1.0		0.2	14.1		11.9
Approach LOS				B		B

Intersection Summary				
Average Delay	6.3			
Intersection Capacity Utilization	36.2%	ICU Level of Service		A
Analysis Period (min)	15			

2: 19 Rd & Myers Ln — Year 2044 Background Condition

HCM Unsignalized Intersection Capacity Analysis — Timing Plan: PM Peak

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	0	74	85	0
Future Volume (Veh/h)	0	0	0	74	85	0
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	0	80	92	0
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	172	92	92			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	172	92	92			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	818	965	1503			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	0	80	92
Volume Left	0	0	0
Volume Right	0	0	0
cSH	1700	1503	1700
Volume to Capacity	0.00	0.00	0.05
Queue Length 95th (ft)	0	0	0
Control Delay (s)	0.0	0.0	0.0
Lane LOS	A		
Approach Delay (s)	0.0	0.0	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	7.8%	ICU Level of Service	A
Analysis Period (min)	15		

1: 19 Rd & K Rd — Year 2044 Total Condition

HCM Unsignalized Intersection Capacity Analysis — Timing Plan: AM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	85	164	11	68	5	44	32	1	12	115	27
Future Volume (Veh/h)	20	85	164	11	68	5	44	32	1	12	115	27
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	22	92	178	12	74	5	48	35	1	13	125	29
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	79			270			328	239	92	255	414	76
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	79			270			328	239	92	255	414	76
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			99			90	95	100	98	76	97
cM capacity (veh/h)	1519			1293			485	646	965	657	516	985

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	NB 2	SB 1
Volume Total	114	178	91	83	1	167
Volume Left	22	0	12	48	0	13
Volume Right	0	178	5	0	1	29
cSH	1519	1700	1293	542	965	573
Volume to Capacity	0.01	0.10	0.01	0.15	0.00	0.29
Queue Length 95th (ft)	1	0	1	13	0	30
Control Delay (s)	1.5	0.0	1.1	12.8	8.7	13.9
Lane LOS	A		A	B	A	B
Approach Delay (s)	0.6		1.1	12.8		13.9
Approach LOS				B		B

Intersection Summary				
Average Delay	5.8			
Intersection Capacity Utilization	33.6%	ICU Level of Service		A
Analysis Period (min)	15			

2: 19 Rd & Myers Ln — Year 2044 Total Condition

HCM Unsignalized Intersection Capacity Analysis — Timing Plan: AM Peak

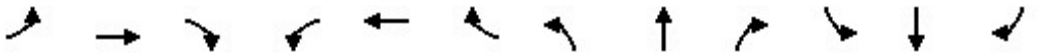
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	33	57	20	37	97	12
Future Volume (Veh/h)	33	57	20	37	97	12
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	36	62	22	40	105	13
Pedestrians						
Lane 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	196	112	118			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	196	112	118			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	95	93	99			
cM capacity (veh/h)	781	942	1470			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	98	62	118
Volume Left	36	22	0
Volume Right	62	0	13
cSH	876	1470	1700
Volume to Capacity	0.11	0.01	0.07
Queue Length 95th (ft)	9	1	0
Control Delay (s)	9.6	2.7	0.0
Lane LOS	A	A	
Approach Delay (s)	9.6	2.7	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	4.0		
Intersection Capacity Utilization	21.7%	ICU Level of Service	A
Analysis Period (min)	15		

1: 19 Rd & K Rd — Year 2044 Total Condition

HCM Unsignalized Intersection Capacity Analysis — Timing Plan: PM Peak



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	32	87	60	4	118	23	114	85	2	13	86	23
Future Volume (Veh/h)	32	87	60	4	118	23	114	85	2	13	86	23
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	35	95	65	4	128	25	124	92	2	14	93	25
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	153			160			385	326	95	362	378	140
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	153			160			385	326	95	362	378	140
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			100			74	84	100	97	83	97
cM capacity (veh/h)	1428			1419			474	576	962	510	538	907

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	NB 2	SB 1
Volume Total	130	65	157	216	2	132
Volume Left	35	0	4	124	0	14
Volume Right	0	65	25	0	2	25
cSH	1428	1700	1419	513	962	580
Volume to Capacity	0.02	0.04	0.00	0.42	0.00	0.23
Queue Length 95th (ft)	2	0	0	52	0	22
Control Delay (s)	2.2	0.0	0.2	17.0	8.8	13.0
Lane LOS	A		A	C	A	B
Approach Delay (s)	1.5		0.2	17.0		13.0
Approach LOS				C		B

Intersection Summary				
Average Delay	8.2			
Intersection Capacity Utilization	41.6%	ICU Level of Service		A
Analysis Period (min)	15			

2: 19 Rd & Myers Ln
HCM Unsignalized Intersection Capacity Analysis

Year 2044 Total Condition
Timing Plan: PM Peak

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	20	37	66	74	85	36
Future Volume (Veh/h)	20	37	66	74	85	36
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)	22	40	72	80	92	39
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	336	112	131			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	336	112	131			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	96	96	95			
cM capacity (veh/h)	627	942	1454			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	62	152	131
Volume Left	22	72	0
Volume Right	40	0	39
cSH	799	1454	1700
Volume to Capacity	0.08	0.05	0.08
Queue Length 95th (ft)	6	4	0
Control Delay (s)	9.9	3.8	0.0
Lane LOS	A	A	
Approach Delay (s)	9.9	3.8	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	3.5		
Intersection Capacity Utilization	27.6%	ICU Level of Service	A
Analysis Period (min)	15		

Irrigation Report
For
Rose Creek

Date: March 15, 2022

Prepared by: Vortex Engineering, Inc.
2394 Patterson Road, Suite 201
Grand Junction, CO 81505
970-245-9051
VEI# F20-707

Submitted to: City of Fruita
250 N. 5th Street
Grand Junction, CO 81501

Type of Design: Major Subdivision

Owners: Rose Creek, LLC
1023 24 Rd
Grand Junction, CO 81505

Property Address: 1123 19 Rd
Fruita, CO 81521

Tax Schedule No.: 2697-094-79-002
2697-094-00-715

Table of Contents

I. Introduction

A. Background

This Irrigation Report has been prepared by Vortex Engineering, Inc., and is required as part of the Rose Creek submittal.

B. Project Location

Rose Creek consists of two parcels of land with an area of 22.8 acres. The project is located in the political boundary of The City of Fruita, Colorado, and bordered by 19 Rd to the east, K Road to the south, and Brandon Estates to the west. The applicant is requesting approval of a new subdivision comprised of 82 lots and tracts. A vicinity map is provided in Appendix A for reference.

C. Property Description

Existing conditions

The existing site slopes from the northeast to the south and southwest and is currently undeveloped and vegetated with native grass. Existing agricultural irrigation infrastructure is present at the site.

Proposed Conditions

With the development of the project site, it is planned for irrigation with the source of irrigation water being the Grand Valley Irrigation Company (GVIC). In the proposed conditions, it is estimated that the area to be irrigated is approximately 11.6 acres in size.

D. Irrigation Shares

Currently there are 29 irrigation shares associated with this property, which shall be sufficient for the site

II. Irrigation System Description

The closest source for irrigation water to service the subject site is situated in the northeast corner of the property. A pipe will convey water from the headgate device to an underground settlement and storage vault. A separate pump system will then deliver pressurized irrigation water to the subdivision. See sheet C6.0 thru C6.1 for layout and distribution information.

The proposed irrigation system consists of 4” distribution pipe which carries water from the above-described point of connection throughout the development. The underground vault is sized to store volume required to irrigate 4 (four) zones in 1 (one) irrigation cycle. See calculations and construction plans in the Appendix.

III. Conclusions

The proposed irrigation plan complies with the City of Fruita requirements. This plan shall not adversely affect adjacent properties.

IV. Limitations /Restrictions

This report is a site-specific design for herein described irrigation system and is applicable only for the client for whom our work was performed. Use of this report under other circumstances is not an appropriate application of this document. This report is a product of Vortex Engineering & Architecture Incorporated and is to be taken in its entirety. Excerpts from this report may be taken out of context and may not convey the true intent of the report. It is the owner's and owner's agent's responsibility to read this report and become familiar with recommendations and design guidelines contained herein.

Vortex Engineering and Architectural, Inc. assumes no liability for the accuracy or completeness of information furnished by the client. Site conditions are subject to external environmental effects and may change over time. Use of this plan under different site conditions is inappropriate. If it becomes apparent that current site conditions vary from those anticipated, the design engineer should be contacted to develop any required design modifications. Vortex Engineering & Architecture, Inc. is not responsible and accepts no liability for any variation in assumed design parameters.

Vortex Engineering & Architecture, Inc. represents this report has been prepared within the limits prescribed by the owner and in accordance with the current accepted practice of the civil engineering profession in the area.

No warranty or representation either expressed or implied is included or intended in this report or in any of our contracts.

V. References

City of Fruita Regulations

Appendix A – Location Map

VICINITY MAP
N.T.S.

Appendix B – Irrigation Calculations

Rose Creek **Vortex Engineering, Inc**
Irrigation System Demand and Sizing **3/15/2022**

Grey shading indicates an output cell:			
Irrigated Area			
Total Irrigated Area (A)	11.6	acres	
Weekly Irrigation Demand			
Total # of Lots/Taps (n)	75		
inches of water per week (z)	3.00		
Demand	2.905	acre-feet	
Demand	126542	cubic feet	
Demand (D_V)	946596	gallons	(Eq. 1)
Irrigation Periods			
# of periods (zones) per day (a)	4		
A given lot recieves water once for every (b)	2	days	
# of waterings per lot per week (c)	3		
Average Irrigation Demand per Period (D_{PA})	39441	gallons	(Eq. 2)
Average Number of Lots/Taps per Period (n_{PA})	9.38		(Eq. 3)
Design Number of Lots/Taps per Period - Rounded up (n_{PD})	10.00		
Design Irrigation Demand per Period (D_{PD})	42071	gallons	(Eq. 4)
Flow in / Flow out			
# of shares supplied	29		
gallons per minute per share	4	gpm	
Flow in (Q_{in})	116	gpm	
Supplied Flow per Lot/Tap (Q_L)	15	gpm	
Design Flow out (Q_{out})	150.0	gpm	(Eq. 5)
Required Irrigation Period Duration (t_P)	4.67	hours	(Eq. 6)
Net loss during an irrigation period (V_R)	9536	gallons	(Eq. 7)
Required Recharge time (t_R)	1.37	hours	(Eq. 8)
Sum of Irrigation Periods and Recharge Times (t_T) (Invalid if >24)	24.18	hours	(Eq. 9)
Vault Sizing			
Minimum Required Storage Volume (Net Loss) (V_R)	9536	gallons	
Length (l)	20		
Width (w)	12		
Depth from Full Elevation to Intake*(d_i)	6		
Provided Storage Volume (Design Volume V_D)	10772	gallons	
Percent of Minimum Storage Provided	113%		

*Do not include total vault depth in design calculations if a sump is used for sediment collection

Rose Creek **Vortex Engineering, Inc**
Irrigation Pump Sizing **3/15/2022**

Grey shading indicates an output cell:			
System Flow			
Unit Flow provided per Lot/Tap (Q_L)	15	gpm	
Max number of taps per irrigation period (n_{PD})	10		
Design system flow (Q_{out})	150	gpm	
Elevation Head			
Highest point in the line	4568		
Pump Intake Elevtion	4562		
Elevation Head (H_e)	6	ft	
Velocity Head			
Pipe Diameter (D)	4	in	
Velocity (v)	3.830	ft/s	(Eq. 10)
Velocity Head (H_v)	0.228	ft	(Eq. 11)
Pressure Head			
Opperating Pressure	50	psi	
Pressure Head (H_p)	116	ft	(Eq. 12)
Head Loss to Friction			
(Hazen Williams)			
Roughness Coefficient (C)	140		
Hydraulic Diameter (d_h)	4	in	(Eq. 13)
Head Loss per 100 ft (h_{100ft})	1.409	ft/100ft	(Eq. 14)
Length of System (L)	6722	ft	
Total Head Loss to Friction (H_{fr})	94.70		(Eq. 15)
Minor Losses			
Assumed K (sum of minor loss coefficients) (K)	100		
Minor Losses (H_m)	22.77	ft	(Eq. 16)
Required Pump Specifications			
Required Pump Head (H_{pump})	239.2	ft	(Eq. 17)
Calculated Pump Horsepower (hp_D)	9.06	hp	(Eq. 18)
Assumed efficiency	80%		
Horsepower Required	11.33	hp	

Rose Creek
Equation Sheet

Vortex Engineering, Inc
3/15/2022

Equation 1: $D_V = \left(\frac{z}{12}\right)(A \times 43560) \times 7.4805$

Equation 2: $D_{PA} = \frac{D_V}{a \times b \times c}$

Equation 3: $n_{PA} = \frac{n}{a \times b}$

Equation 4: $D_{PD} = \left(\frac{D_{PA}}{n_{PA}}\right) \times n_{PD}$

Equation 5: $Q_{out} = n_{PD} \times Q_L$

Equation 6: $t_P = \left(\frac{D_{PD}}{Q_{out}}\right) \div 60$

Equation 7: $V_R = 60 \times t_P(Q_{out} - Q_{in})$

Equation 8: $t_R = \left(\frac{V_R}{Q_{in}}\right) \div 60$

Equation 9: $t_T = a(t_P + t_R)$

Equation 10: $v = \frac{Q_{out} \div (60 \times 7.4805)}{\pi\left(\frac{D}{2 \times 12}\right)^2}$

Equation 11: $H_v = \frac{v^2}{2 \times 32.2}$

Equation 12: $H_P = operating\ pressure\ (psi) \times 2.31$

Equation 13: $d_h = \frac{4 \times Cross - section\ area}{Wetted\ Perimeter} = \frac{4\pi\left(\frac{D}{2}\right)^2}{2\pi\frac{D}{2}}$

Equation 14: $h_{100ft} = \frac{0.2083\left(\frac{100}{C}\right)^{1.852} \times {Q_{out}}^{1.852}}{{d_h}^{4.8655}}$

Equation 14 (Hazen Williams)

Equation 15: $H_{fr} = \frac{L}{100} \times h_{100ft}$

Equation 16: $H_m = K(H_v)$

Equation 17: $H_{pump} = H_e + H_v + H_p + H_{fr} + H_m$

Equation 18: $hp_D = \frac{Q_{out} + H_{pump}}{3960}$

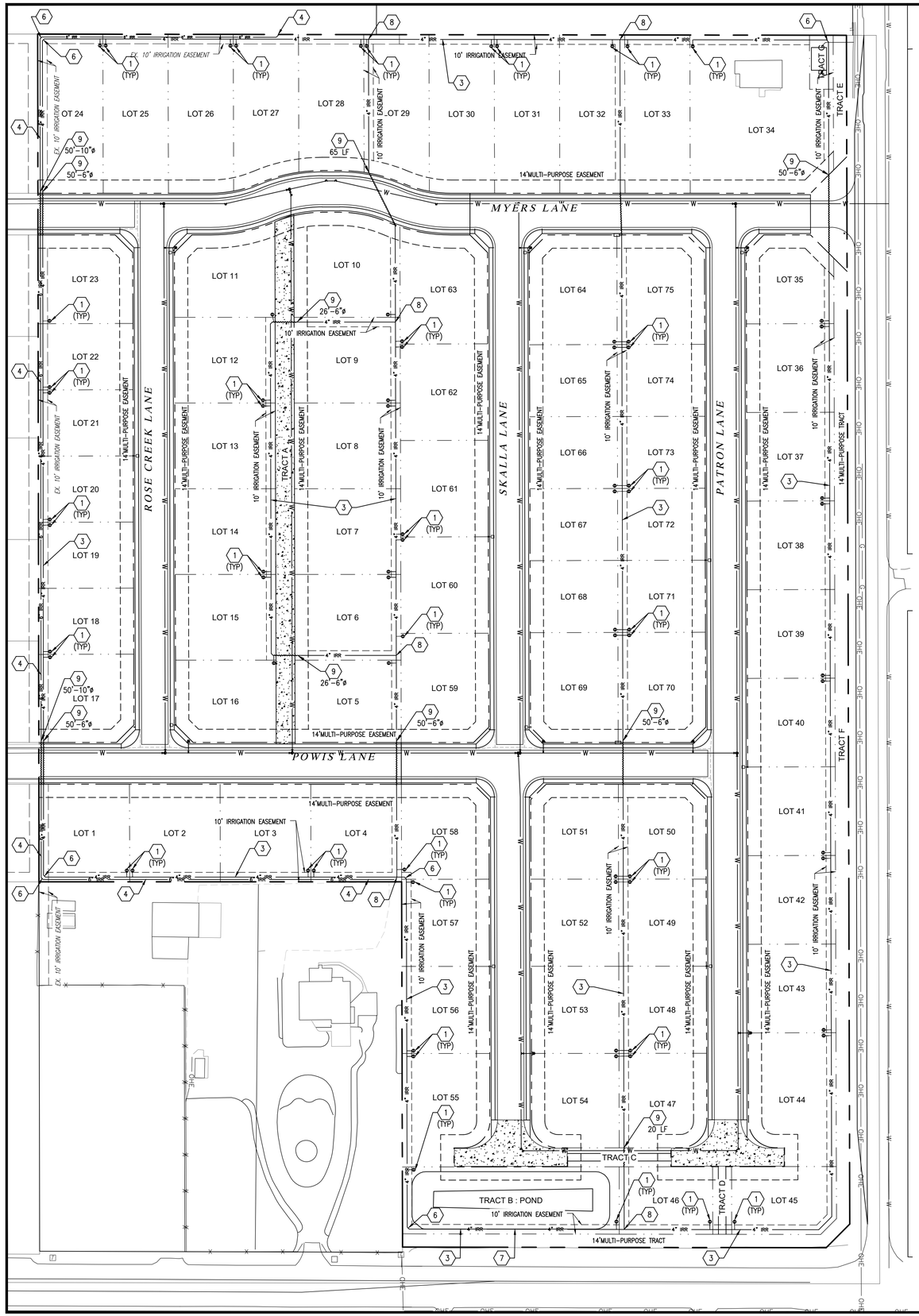
Irrigation Period Input Guide

# of periods per day (a)
-Simple am/pm: a = 2
-am/mid/pm: a = 3
-Four periods per day: a = 4

A given lot recieves water...(b)
-Typical odd/even: b = 2
-watering a lot every day of the week: b = 1
-watering a lot only twice a week (rare): b=3

# of waterings per lot per week (c)
-Typical odd/even: c = 3
-watering a lot every day of the week: c = 7
-watering a lot only twice a week (rare): c = 2

Appendix C – Irrigation Plans and Details



CONSTRUCTION NOTES:

1. INSTALL IRRIGATION RISER
   RE: DETAIL THIS SHEET
2. IRRIGATION VAULT & PUMP HOUSE. SEE SHEET C7.1
3. 4" PRESSURIZED IRRIGATION DISTRIBUTION LINE
4. 6" GRAVITY IRRIGATION BYPASS LINE
5. INSTALL CLEAN OUT
   RE: DETAIL THIS SHEET
6. INSTALL TWO (2) 45° ELBOWS WITH THRUST BLOCKS AT 90° BEND LOCATIONS
   RE: THRUST BLOCK CHART THIS SHEET
7. INSTALL SYSTEM DRAIN
   LOCATION AND DESIGN TO BE DETERMINED
8. INSTALL 4x4x4" TEE WITH THRUST BLOCK
   RE: THRUST BLOCK CHART THIS SHEET
9. INSTALL SLEEVE (SIZE & LENGTH NOTED)

GENERAL NOTES:

1. NO DIMENSIONS SHALL BE SCALED FROM THESE PLANS.
2. PLACE ALL IRRIGATION LINES IN PVC SLEEVES AT ALL ROAD CROSSINGS 3' BEYOND SIDEWALK

N

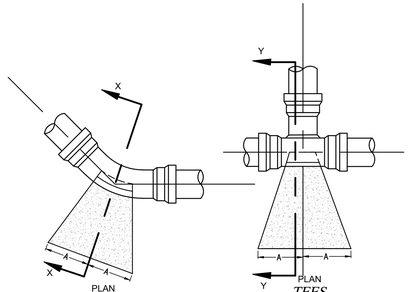
SCALE IN FEET

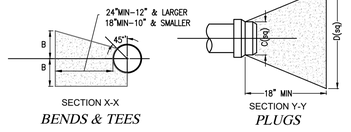
60 30 0 60 120

1" = 60'

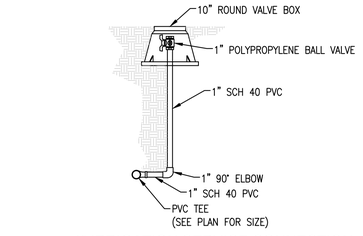
IRRIGATION SYSTEM NOTES:

1. IRRIGATION PIPING SHALL CONSIST OF THE FOLLOWING:
   - IRRIGATION SYSTEM SHALL BE MINIMAL CLASS 160 PVC.
   - MINIMUM OF 2 FEET OF COVER.
   - IRRIGATION LINES BENEATH ROADWAYS AND DRIVEWAYS SHALL BE PLACED IN A SLEEVE EXTENDING A MINIMUM OF 3 FEET BEYOND PAVING.
   - A 90 DEGREE CHANGE IN DIRECTION SHALL BE CONSTRUCTED WITH 2 – 45 DEGREE BENDS.
   - BURIED VALVES SHALL BE STANDARD EPOXY COATED CAST–IRON GLOBE VALVES WITH VALVE BOX
   - IRRIGATION SYSTEM SHALL BE PRESSURE TESTED AT 80 PSI, LEAKAGE (L) IN GALLONS PER HOUR SHALL NOT EXCEED THE FOLLOWING:
     L = (S X D X (P^0.5)) / 133,200
     S = LENGTH IN FEET, D = DIAMETER IN INCHES, P TEST PRESSURE IN PSI
   - ALL IRRIGATION LINES SHALL HAVE TRACER WIRE EXTENDED TO GRADE AT ALL CLEANOUTS, VALVES, & RISERS,
   - INSTALL THRUST BLOCKS ON TEES, BENDS, FITTINGS, AND DEAD–ENDS ON ALL DISTRIBUTION PIPING. (PRESSURIZED AND GRAVITY FEED LINES)
   - INSTALL AIR VAC AT IRRIGATION LINE HIGH POINTS
2. ALL IRRIGATION PIPE TO HAVE CAUTION TAPE AND TRACER WIRE, CAUTION TAPE TO BE 12" ±4" ABOVE BURIED PIPE.
3. INSTALL THRUST BLOCKS AT AREAS WHERE WATER CHANGES DIRECTION ON ALL FEED LINES.
4. EACH LOT SERVICE CONNECTION TO HAVE INSTALLED A 15 G.P.M. FLOW CONTROL VALVE.
5. PAINT EXPOSED PVC WITH BLUE LATEX PAINT.

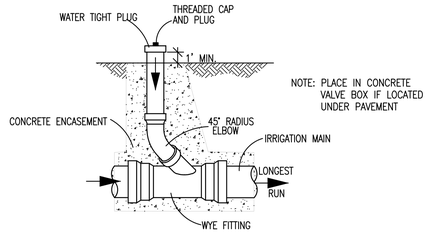




THRUST BLOCK SIZING									
SIZE	90° A	90° B	45° A	45° B	22.5° A	22.5° B	TEE'S A	TEE'S B	PLUGS C	PLUGS D
4"	5"	7"	4"	5"	2"	5"	5"	5"	7"	10"
6"	8"	10"	6"	8"	3"	8"	8"	8"	10"	15"
8"	12"	12"	8"	10"	5"	9"	9"	12"	12"	20"
10"	16"	14"	10"	12"	6"	10"	11"	14"	14"	25"
12"	19"	16"	12"	14"	8"	11"	14"	16"	16"	30"
14"	23"	18"	114"	16"	10"	12"	16"	18"	18"	34"
16"	26"	20"	16"	18"	11"	13"	18"	20"	20"	38"



1" IRRIGATION SERVICE CONNECTION
N.T.S.



IRRIGATION CLEAN OUT
N.T.S.

ACCEPTED FOR CONSTRUCTION FOR ONE YEAR FROM THIS DATE

ACCEPTANCE OF THESE PLANS DOES NOT RELIEVE THE DEVELOPER, CONTRACTOR, OR THE ENGINEER FROM CONFORMANCE WITH THE CITY OF FRUITA DESIGN CRITERIA AND CONSTRUCTION SPECIFICATIONS MANUAL.

CITY OF FRUITA ENGINEERING DIVISION REPRESENTATIVE DATE

FOR REVIEW - NOT FOR CONSTRUCTION

VORTEX ENGINEERING, INC.
• CONSTRUCTION MANAGERS & SITE PLANNERS
• PROJECT MANAGERS
• CIVIL & CONSULTING ENGINEERS
861 Rood Avenue
Grand Junction, CO 81501
Phone: (970) 245-9051
Fax (970) 245-7639

STEPHEN E. SWINDELL
PROFESSIONAL ENGINEER
COLORADO LICENSE No. 57688

REV/ DATE	COMMENT	BY

Irrigation Plan
Rose Creek Subdivision Final
1892 Ottley (K Road)
Fruita, CO 81521

PROJECT NO: F20-070
DATE: 03/14/22
irrigation f20-070.dwg

~SHEET~
C7.0

VORTEX
ENGINEERING, INC.

VIA: US Mail
Zoom Neighborhood Meeting

July 19, 2022

Adjacent Property Owner
Fruita, CO

RE: Rose Creek Subdivision
1123 19 RD & Parcels #2697-094-79-002
Fruita, CO 81521

VEAI #: F20-070

Dear Property Owner:

The above referenced property will soon be the subject of a Preliminary Plan application with the City of Fruita Community Development Department. A Neighborhood Meeting will be held to introduce the proposed plan and to answer any questions that you might have about the project.

This is a request for approval of a Preliminary Plan of a 130-lot subdivision on approximately 22.74 acres.

A Neighborhood meeting will be held via ZOOM Meeting process. The ZOOM meeting is designed to present information for you to learn more about the proposed project in a safe meeting environment. The meeting is scheduled for ***Monday, August 1, 2022 at 5:00 P.M.***

To attend and participate in the virtual ZOOM meeting, follow the link below and enter the meeting ID and password. You will be joined into the meeting and will have an opportunity to ask questions after the presentation.

ZOOM meeting link:

https://us06web.zoom.us/j/82905368731?pwd=NFRyYVBXcENpc0JtU2N0MW9lVHYxdz09

Meeting ID: 829 0536 8731
Passcode: 435972

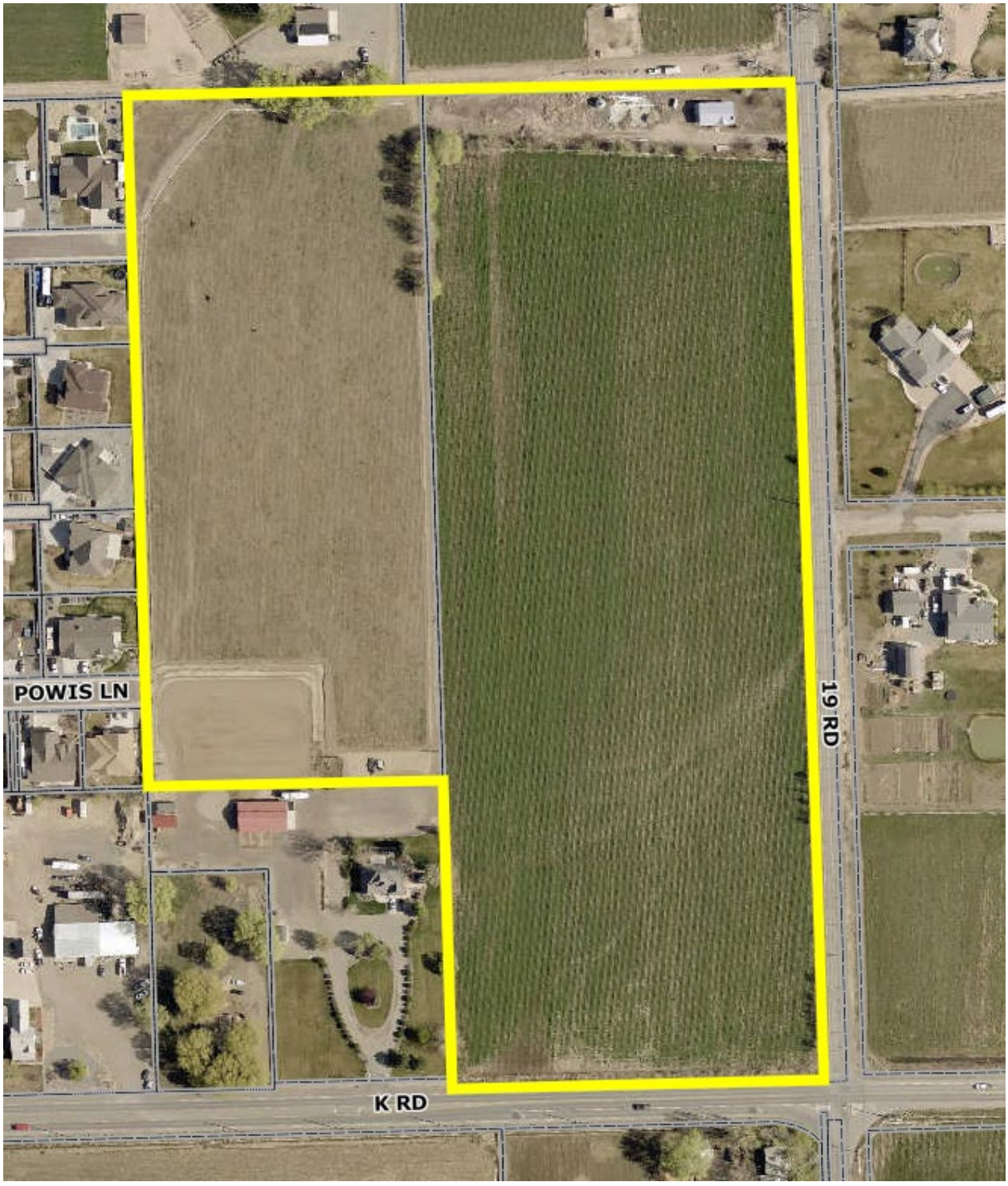
Please don't hesitate to contact me at 970-245-9051 should you have any questions about this project or need assistance to join the Zoom Meeting.

Sincerely,

Vortex Engineering, Inc.

Robert W. Jones, II, P.E.

Cc: File
Henry Hemphill, City Planning



August 2, 2022

City of Fruita, Community Development Dept.

Henry Hemphill, City Planner

325 E. Aspen Ave.
Fruita, CO 81521

RE: Neighborhood Meeting – Rose Creek Subdivision

1123 19 RD & Parcels #2697-094-79-002, Fruita, CO 81521

Date: Monday August 1st, 2022
Time: 5:00 p.m. – 6:00 p.m.
Location: Via Zoom Meeting

Dear Mr. Hemphill:

On Monday August 1st, 2022, a Neighborhood Meeting was held from 5:00 – 6:00 pm via Zoom Meeting for the proposed Rose Creek Subdivision. An overview of the proposed plan for the Major subdivision was presented by Stephen Swindell of Vortex Engineering, Inc.

The meeting was attended by Stephen Swindell & Adam Asgari from Vortex Engineering, and adjacent property owners.

The following is a synopsis of the only concern raised during the meeting:

1. Adjacent property owners, were concerned about the final lots configuration that is going to be applied to this subdivision.
2. A Brandon Residential property owner was concerned that the amount of Traffic that this subdivision will bring into 19 & adjacent roads due to several factors, safety and privacy being the most critical ones.
3. Some of the adjacent property owners were concerned about the Irrigation water and their Head gate shares when this subdivision is developed.
4. Adjacent property owners were concern about the drop in their property value When this subdivision is built.
5. A Brandon Residential property owner asked if there will be any park dedication same as Brandon Estates Subdivision.

Mr. Swindell addressed the questions. There were no further questions and at 6:00 p.m. Mr. Swindell decided to end the meeting due to no further questions from the meeting attendees. The meeting was then closed.

Should you have any questions regarding the neighborhood meeting, please do not hesitate to contact me at 970-245-9051, or by email at aasgari@vortexeng.us.

Sincerely,

Robert W. Jones II, P.E.
Vortex Engineering & Architecture, Inc.

cc: File

Kelli McLean

From: Dan Caris
Sent: Friday, July 22, 2022 8:39 AM
To: Kelli McLean; Henry Hemphill
Subject: Fwd: Rose Creek Subdivision

Dan Caris
City of Fruita | Planning & Development Director
325 E. Aspen Avenue
Fruita, CO 81521
970.858.0786 office
dcaris@fruita.org

Begin forwarded message:

> **From:** jsbratteli@gmail.com
> **Date:** July 21, 2022 at 7:15:33 PM MDT
> **To:** Dan Caris <dcaris@fruita.org>
> **Cc:** Amy Bratteli <amybratteli@gmail.com>, needham.steve@ymail.com, 3gfunco@charter.net
> **Subject: Rose Creek Subdivision**
>
> Hello,
>
> I will not be available for the zoom meeting 8/1/22. I reviewed the Rose Creek Subdivision plans. I have the following comments:
>
> 1. I would like to see some green space in the development, similar to Brandon Estates or Vista Valley. This would grant some continuity between neighboring subdivisions and limit traffic from the new subdivision into Brandon Estates' green space parks/playgrounds.
> 2. I would prefer to not see lots/homes in between 2 columns of houses (a property in the back yard of 2 homes simultaneously, accessed only by an alley). Having homes between/behind other homes is awkward. I would propose that lots 6,7,8, & 9 become green space. That would be sacrificing developer revenue, but I think the project would be less centrally claustrophobic and in the long-haul-big-picture, a more aesthetic and desirable development.
> 3. I would like the developer to be more exact on the number of homes being built. Duplexes do not match the community continuity of Brandon Estates. I think that all lots in the new development should be single family dwellings without wiggle room for the developer to alter the number of dwellings without oversight.
>
> Thanks for your consideration,
>
> John & Amy Bratteli
> 550 Lois Dr
> Brandon Estates
> Fruita
> 970-858-5107

Sent from Mail for Windows

From: eve17
To: Communications
Subject: Our Objection to Proposed Rose Creek Subdivision
Date: Sunday, August 7, 2022 3:23:42 PM

To: Fruita Planning Commission

As property owners and residents of Fruita who live on Myers Lane, we ask that the Planning Commission does not pass the proposed Rose Creek Preliminary Plan of 130 houses which would funnel traffic to the new subdivision through Brandon Estates. The increased number of vehicles would cause unnecessary danger to the current residents (especially the children), not to mention the degradation of our quiet neighborhood here in Brandon Estates.
We ask that the developers change the plan and put an entrance off K Road (Ottley) which would go directly through the South West corner of the actual Rose Creek Subdivision property and not through Brandon Estates. Or if that is not workable, limit the access to the main entrance off 19 Rd.
The Level 2 Traffic Impact Study mentions 'Intersection 1. K Rd and Myers Lane'. Since K Rd. does not intersect with Myers Lane, we feel it casts suspicion on the validity of the supposed traffic study. We also question the long term effects of the amount of traffic that will be generated by approval of yet another large new subdivision when considering all of the other new subdivisions the Planning Committee has already approved in Fruita.
We love living here, but with such rapid development, we feel the heart of the community is greatly diminished.
Respectfully,
Thomas and Eva Maxwell
1653 Myers Ln., Fruita, CO
970-639-8006

From: KAREN E FORD
To: Henry Hemphill
Subject: Rose Creek Plans
Date: Monday, August 8, 2022 12:54:30 PM

We are residents of Brandon Estates and would like to provide feedback to the Planning Department about the Rose Creek subdivision plans. First, we believe that the proposed density is too high and that it should be decreased to about 92 homes on the ~ 23 acres, which would allow about .25 acre per property. That would make the proposed density more similar to existing developments in the area, such as Brandon Estates, Country Creek, and Wildwood Acres, thus helping to protect and maintain property values in the area.
Second, we are concerned about the proposed use of Myers Lane and Powis Lane to access the Rose Creek subdivision. We are concerned about neighborhood safety, increased traffic in the neighborhood, and noise pollution. We would like to ask that additional points of access off 19 Rd be seriously considered rather than Myers Ln and Powis Ln.

Thank you for your serious consideration of our concerns. We look forward to hearing from you.
Karen Ford & Teresa Mays
1573 Elmont Ct
Fruita, CO 81521
kfordco@msn.com