



ALPINE CITY PLANNING COMMISSION MEETING

NOTICE is hereby given that the **PLANNING COMMISSION** of Alpine City, UT will hold a **Regular Meeting** at **Alpine City Hall**, 20 North Main, Alpine, Utah on **Tuesday, March 19, 2019 at 7:00 pm** as follows:

I. GENERAL BUSINESS

- | | |
|-----------------------------|---------------------|
| A. Welcome and Roll Call: | David Fotheringham |
| B. Prayer/Opening Comments: | Sylvia Christiansen |
| C. Pledge of Allegiance: | By Invitation |

II. PUBLIC COMMENT

Any person wishing to comment on any item not on the agenda may address the Planning Commission at this point by stepping to the microphone and giving his or her name and address for the record.

III. ACTION ITEMS

A. Major Subdivision Preliminary Plan Review – Montdella – Alan Cottle

Planning Commission will review Preliminary Plans for a 55+ Community in the Business/Commercial Zone and Senior Housing Overlay, and make a recommendation to City Council.

IV. COMMUNICATIONS

V. APPROVAL OF PLANNING COMMISSION MINUTES: March 5, 2019

ADJOURN

Chairman David Fotheringham
March 19, 2019

THE PUBLIC IS INVITED TO ATTEND ALL PLANNING COMMISSION MEETINGS. If you need a special accommodation to participate in the meeting, please call the City Recorder's Office at 801-756-6347 ext. 5.

CERTIFICATION OF POSTING. The undersigned duly appointed recorder does hereby certify that the above agenda notice was posted at Alpine City Hall, 20 North Main, Alpine, UT. It was also sent by e-mail to The Daily Herald located in Provo, UT a local newspaper circulated in Alpine, UT. This agenda is also available on the City's web site at www.alpinecity.org and on the Utah Public Meeting Notices website at www.utah.gov/pmn/index.html.

PUBLIC MEETING AND PUBLIC HEARING ETIQUETTE

Please remember all public meetings and public hearings are now recorded.

- All comments **must** be recognized by the Chairperson and addressed through the microphone.
- When speaking to the Planning Commission, please stand, speak slowly and clearly into the microphone, and state your name and address for the recorded record.
- Be respectful to others and refrain from disruptions during the meeting. Please refrain from conversation with others in the audience as the microphones are very sensitive and can pick up whispers in the back of the room.
- Keep comments constructive and not disruptive.
- Avoid verbal approval or dissatisfaction of the ongoing discussion (i.e., booing or applauding).
- Exhibits (photos, petitions, etc.) given to the City become the property of the City.
- Please silence all cellular phones, beepers, pagers or other noise making devices.
- Be considerate of others who wish to speak by limiting your comments to a reasonable length, and avoiding repetition of what has already been said. Individuals may be limited to two minutes and group representatives may be limited to five minutes.
- Refrain from congregating near the doors or in the lobby area outside the council room to talk as it can be very noisy and disruptive. If you must carry on conversation in this area, please be as quiet as possible. (The doors must remain open during a public meeting/hearing.)

Public Hearing vs. Public Meeting

If the meeting is a **public hearing**, the public may participate during that time and may present opinions and evidence for the issue for which the hearing is being held. In a public hearing there may be some restrictions on participation such as time limits.

Anyone can observe a **public meeting**, but there is no right to speak or be heard there - the public participates in presenting opinions and evidence at the pleasure of the body conducting the meeting.

ALPINE PLANNING COMMISSION AGENDA

SUBJECT: Major Subdivision Preliminary Plan Review – Montdella

FOR CONSIDERATION ON: 19 March 2019

PETITIONER: Alan Cottle

ACTION REQUESTED BY PETITIONER: Recommend Approval of the Preliminary Plat and Plans

BACKGROUND INFORMATION:

The developer is seeking approval of the preliminary plat and plans for the proposed Montdella Subdivision, a 55+ Community, which consists of 25 dwelling units on 3.94 acres. Dwelling units range in size from approximately 2,400 square feet to 3,500 square feet. The property is located in the Business/Commercial Zone and Senior Housing Overlay.



**ALPINE CITY
STAFF REPORT**
March 14, 2019

To: Alpine City Planning Commission

From: Staff

Prepared By: Austin Roy, City Planner
Planning & Zoning Department

Jed Muhlestein, City Engineer
Engineering & Public Works Department

Re: Montdella Subdivision, 55+ Residential Community - Preliminary

Applicant: Alan Cottle, Cottle Capital Group
Project Location: 242 S. Main Street
Zoning: Business/Commercial Zone; Senior Housing Overlay
Acreage: Approximately 3.94 Acres
Lot Size: Townhomes range in size from approx. 2,400-3,500 sq. ft.
Request: Recommend and approve preliminary plans

SUMMARY

The developer is seeking approval of the preliminary plat and plans for the proposed Montdella Subdivision, a 55+ Community, which consists of 25 dwelling units on 3.94 acres. Dwelling units range in size from approximately 2,400 square feet to 3,500 square feet. The property is located in the Business/Commercial Zone and Senior Housing Overlay.

BACKGROUND

On August 28, 2018 a concept plan was brought before City Council seeking approval of a Senior Housing Overlay. The City Council reviewed and approved the request for the Senior Housing Overlay.

The developer is now returning seeking approval for preliminary plans. Business/Commercial Zone, Senior Housing Overlay, and Gateway/Historic requirements should all be taken into consideration when reviewing the preliminary plat and plans for approval.

ANALYSIS

Lot Area and Width

A Senior Housing Project shall be at least 2 acres in size, but no more than 6 acres in size. A maximum of 8 dwelling units is allowed per acre, with an overall project cap of 32 units (Article 3.18.070). The proposed plans meet these criteria.

Setbacks

Plans show setbacks of 30 feet off of Main Street, 20 feet on side rear setbacks, and 25 feet from the high water mark of Dry Creek. Dwellings structures are spaced at least 10 feet apart. All proposed setbacks meet the requirements of the underlying zone.

Use

The development is proposed as a 55+ community, with combination of single and attached dwellings. The proposed use is permitted in the Business/Commercial Zone within a Senior Housing Overlay (Article 3.07 and 3.18).

Sensitive Lands (Wildland Urban Interface, etc.)

The property contains a flood plain area. Flood Damage Prevention Overlay requirements will need to be met. See the below Engineering Review for further details.

Trails

The Alpine City Trail Master Plan shows a proposed trail that runs through this property along the northern boundary, from the northeast corner to the southwest corner of the property. This proposed trail is an extension of the existing Dry Creek Corridor Trail. The developer has included this trail in the plans as a proposed 8-foot-wide walking/jogging trail, which will follow the existing creek and connect to Main Street. Trail is shown on all plans but not on the subdivision plat. However, the **trail must be shown on the plat** before it can be recorded. Trail requirement has been included with other minor redlines for the plat and plans.

Gateway/Historic

The Gateway Historic District Design Guidelines state that new developments should:

- a) Mimic details of older buildings
- b) Use similar materials
- c) Make mundane uses look good
- d) Include design features on blank walls

Colored perspectives and architectural renderings have been submitted for the project. Building materials appear to be primarily brick and other masonry. The design appears to have taken into consideration all criteria from the Gateway Historic District Design Guidelines. Staff has no concerns with the overall design.

General Plan

The plat and plans as proposed are compatible with the General Plan.

REVIEWS

PLANNING AND ZONING DEPARTMENT REVIEW

The analysis section in the body of this report serves as the Planning and Zoning Department review.

ENGINEERING AND PUBLIC WORKS DEPARTMENT REVIEW

Streets

All site plans must adhere to the Off-Street Parking Ordinance (Article 3.24). The applicant has submitted a parking plan which appears to be in compliance with the ordinance. Parking stalls are dimensioned correctly and not located in a setback area, an all-weather surface of asphalt is proposed, a lighting plan was submitted and approved, and it is graded to retain all storm water onsite. Storm drain calculations and plans were submitted and approved for the design of the parking lot.

The application shows a 24-foot wide private street through the development that will connect to an existing parking area to the south. This design provides more than one access to the development. The Fire Chief will review the plans and comment on street width.

The applicant provided a traffic study with the application. The study shows very low traffic volumes generated from the development; 140 trips per day and only 12 trips during the peak hours of the day. Though volumes were very low, the study recognizes the current traffic problem during peak hour traffic due to the charter school. The study offered ideas for restricting how traffic turns in and out of the development. The two optional ideas would not allow left hand turns coming in or out of the development. Staff does not feel that any restrictions should be imposed on the development in terms of traffic flow due to the following:

1. the overall daily low volume;
2. the low volume expected during peak hours;
3. restricting north-bound, left hand turns would force northbound vehicles more northward into the areas of congestion already created by the charter school;
4. there is more than one exit within the development, residents will have more than one northbound option if traffic is congested on main street;
5. A traffic study was recently done specifically for the charter school. One of the remedies for congestion was to re-stripe main street and add a center turn lane. **If the new center turn lane was painted from the round-a-bout to approximately 100 South, a safer area would exist for left hand turning in and out of the development. This would be Engineering's recommendation.**

The street master plan requires a landscaping plan along arterial and collector roads (of which Main Street is). The applicant has turned in a landscaping plan along with architectural renderings for review by the Planning Commission. There are some tree species that have large shallow root systems which can damage sidewalks, which is one reason why the City adopted a tree guideline recently. Engineering verified the trees proposed closest to the sidewalk met the City's tree guideline and were safe trees to plant near a sidewalk.

The applicant shows the location of proposed street lights which is accepted.

Utilities

Culinary water is proposed to “loop” through the development and connect to existing lines on both the Main Street side and west side. There is an existing 8-inch main in Main Street and a 10-inch main on the west side which the plans show connection to. New service laterals are shown for each unit. Horrocks Engineer’s reviewed the development; their review shows the development is in compliance with the water master plan and should have plentiful flows for fire flows. There are two existing water service laterals that are shown to be removed and capped at the main, which is the standard for disconnecting services that will no longer be in use.

Pressurized irrigation will connect to an existing lateral for the development. All common areas will be irrigated via this connection.

A new sewer line will be extended from an existing manhole on the west side of the development to serve the units. New sewer laterals are shown for each unit.

As mentioned in the streets section, a storm drain design was submitted and approved. The storm drain system collects water from the development and stores it in a detention pond on the south west corner of the property. The water is pre-treated through an oil/water/trash separator prior to entering the detention pond. The pond was sized correctly for the 100-yr event and releases water at pre-development flow rates back in to Dry Creek.

Other

A flood plain exists on the property. No homes, structures, or even the proposed trail are in the flood plain. The plan appears to be in compliance with the City’s flood plain ordinance (3.12.08).

Retaining walls are shown on the plan. Retaining walls require a separate permit and are regulated during the construction period (Article 3.32).

A Land Disturbance Permit would be required prior to construction which ensures a Storm Water Pollution Prevention Plan (SWPPP) is followed. All disturbed areas of the site are required to be revegetated after construction.

A condition of approval should be to fix some minor redlines on the plat and plans.

LONE PEAK FIRE DEPARTMENT REVIEW

See the attached review from the Lone Peak Fire Department.

HORROCKS ENGINEERING REVIEW

See the attached review from Horrocks Engineers.

NOTICING

Notice has been properly issued in the manner outlined in City and State Code

STAFF RECOMMENDATION

Review staff report and findings and make a recommendation to City Council to either approve or deny the proposed subdivision. Findings are outlined below.

Findings for a Positive Motion:

- A. Plans follow and meet Planning and Zoning requirements.
- B. Plans follow and meet Engineering requirements.

Findings for Negative Motion:

- A. None.

MODEL MOTIONS

SAMPLE MOTION TO APPROVE

I motion to recommend approval of the proposed Montdella Subdivision Preliminary Plans with the following conditions:

- The Developer address redlines on the plat and plans;
- The Developer address all concerns from the Fire Department.

SAMPLE MOTION TO DENY

I motion to recommend that the proposed Montdella Subdivision Preliminary Plans be denied based on the following:

- ***Insert Finding***

Re: Montdella Development

1 message

Reed Thompson <rthompson@lonepeakfire.com>

Wed, Mar 13, 2019 at 6:56 PM

To: Brandon Parr <bparr@focusutah.com>

Cc: Alan Cottle <acottle@cottlecapital.com>, aroy@alpinecity.org

Brandon,

I apologize as I was out of the office yesterday with training, and today I was out sick.

In reviewing the plans I had three comments to be addressed.

1. The road width will need to be 26' to accommodate an aerial fire apparatus. The plans show 24' including the rolled curb.
2. The round about island will need to be reduced to accommodate placement of fire apparatus in that area during a fire and address the turning radius negotiation of apparatus travel.
3. Due to the close proximity of the housing units and the risk of fire exposure spread, at least one additional fire hydrant will be required midway through the private street.
4. Based on limited access to the rear of the structures on the north side, we will likely restrict the use of barbecue grills on floor two rear patios.

Please let me know if you have any questions.

Thanks,

Reed M. Thompson
Fire Chief
Lone Peak Fire District
rthompson@lonepeakfire.com
801-330-4380

On Mar 13, 2019, at 5:10 PM, Brandon Parr <bparr@focusutah.com> wrote:

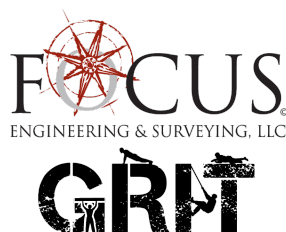
Hello Reed,

I am working on the Montdella Development in Alpine with Alan Cottle. He mentioned you had some concerns with the development. I am going to be addressing some minor comments from planning and engineering in the next few days and would love to get any of your comments addressed at the same time. Can you please let me know what your concerns/comments are as soon as possible so that we can get everything addressed at the same time. Feel free to give me a call if you have any questions.

Thanks,

Brandon

BRANDON PARR
PROJECT MANAGER

O: [801-352-0075](tel:801-352-0075)M: [801-910-2066](tel:801-910-2066)BPARR@FOCUSUTAH.COMFOCUSUTAH.COM

32 W. CENTER STREET
MIDVALE, UT 84047

To: Jed Muhlestein
Alpine City

From: John E. Schiess, P.E.

Date: Jan 26, 2019

Memorandum

Subject: Alpine Townhomes Hydraulic Modeling Results and Recommendations

The proposed development consists of 26 townhomes located on Main Street just south of Dry Creek.

The development proposes 26 culinary ERC's, 2.33 irrigated acres, and 26 sanitary sewer ERU's. The current master plan anticipated 20.4 culinary ERC's, 0.6 irrigated acres, and 20.4 sanitary sewer ERU's. Proposed connections are slightly higher than anticipated for this area.

The proposed culinary water improvements have been modeled in both the current and buildout models. The proposed improvements fit well within the City's culinary water master plan and modeling shows them to be adequate. The following comments and recommendations are noted for the proposed culinary water system.

The proposed pressurized irrigation improvements have been modeled in both the current and buildout models under both wet and dry year supply conditions. The proposed demands are more than the City's pressurized irrigation master plan but modeling shows them to be adequate. The following comments and recommendations are noted for the proposed pressurized irrigation system.

The proposed sanitary sewer improvements have been modeled in both the current and buildout models. The proposed improvements fit well within the City's sanitary sewer master plan and modeling shows them to be adequate. The following comments and recommendations are noted for the proposed sanitary sewer system.

Recommendations:

1. None.

Comments:

2. Fire flow available in the area surrounding the proposed improvements should be over 3000 gallons per minute at 20 psi for the proposed lines.



Gateway Historic District Design Guidelines

Adopted by Resolution 2015-11

Purpose and Intent

Gateway Historic District will become a village of mixed uses, promoting a pedestrian friendly atmosphere and providing excellence in landscaping and architecture, in a setting which honors and preserves the past while promoting the future.

1. In the interest of preserving the character of the Gateway-Historic District, it is necessary to regulate to a certain extent the new construction that is built there. New structures should only affect the district in a positive manner, and not in detrimental ways.
2. Respecting the heritage of Alpine associated with the historical structures in the district.
3. Utilize approaches that have been shown to encourage the sustainability of historic districts and neighborhoods.

The guidelines for the following elements are intended to encourage compatible new construction. In the event that these guidelines conflict with the Alpine City Zoning Ordinance, the Zoning Ordinance will be followed.

Guidelines

1. New developments should:
 - a. Mimic details of older buildings
 - b. Use similar materials
 - c. Make mundane uses look good
 - d. Include design features on blank walls
2. All new development projects should achieve a determination of design appropriateness from the Planning Commission.
3. New construction should respect and build upon the historical legacy of downtown Alpine and borrow historic features from the area. It should be

designed for its specific context. Elements that should influence the design of new development include building form, massing, scale, materials and colors.

Gateway Historic District Design Criteria

1. Relation to the Surrounding Area (Massing, Scale, Orientation)
2. Height
3. Exterior Walls and Surfaces
4. Windows and Doors
5. Exterior Trim and Decorative Detailing
6. Roofing
7. Materials (Texture, Color, Finishes)
8. Streetscaping

Relation to the Surrounding Area **(Massing, Scale, Orientation)**

New construction that utilizes appropriate massing and scale can affect historic districts in a positive manner. New structures should take their own place in time.

Design Standards

- New structures should relate to the fundamental characteristics of the district, but may use their own style and method of construction.
- Orientation of new construction should be to the street to establish a pedestrian-friendly quality.
- One major entrance should orient to each street to which the building abuts for easy access by pedestrians from the street and sidewalk.
- Corner entrances may be used for buildings orienting to two streets at an intersection.
- New construction should not be dramatically greater in scale than surrounding structures in the district.
- The perceived width of new construction should be visually compatible with adjacent structures. Wider buildings should be divided into modules to convey a sense of traditional construction.
- The building form of new construction should be similar to surrounding structures but should not necessarily be a direct imitation.



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Height

New construction should respect the overall height limits established in the city code for the underlying zone.

Design Standards

- The height of buildings should be compatible with adjacent historic structures.
- Creative historic design elements fitting for the area can be considered.



Exterior Walls and Surfaces

The type of materials used for new construction can greatly enhance the relationship to surrounding historical structures while maintaining individual identity.

Design Standards

- The use of stone, brick, wood, or stucco is encouraged for use as the primary exterior material.
- Plastics, vinyl and CMU (concrete masonry unit) are prohibited.
- Innovative use of other materials may be considered.



Windows and Doors

Windows and doors of new construction should relate to the general character of the area.

Design Standards

- Windows with a vertical emphasis shall be encouraged over a horizontal orientation.
- Scale, proportion, and character of windows and doors should be carefully considered and should relate to the intended general character of the area.
- The simple shape of windows is encouraged.
- If new construction is built to the sidewalk, the use of awnings or canopies should be considered for providing protection to the pedestrian.
- The ground floor of the primary façade should include transparency at the pedestrian level.



Exterior Trim and Decorative Detailing

New construction can be enhanced by the wise use of exterior trim and decorative detailing. Using these details to break up uninspiring solid surfaces can help avoid the box-like appearance often seen in new construction.

Design Standards

- Trim and detailing should be simple in material and design.
- Materials that are compatible to the primary exterior material should be used.
- Excessive ornamentation is not recommended.
- The following factors should be considered in determining whether or not a particular finishing material is acceptable:
 1. Durability and low maintenance characteristics.
 2. Consistency with the overall design goals.
 3. Location on the building.
 4. Potential shielding by landscaping or other feature.
 5. The visibility of the site from public streets and neighboring uses.
 6. A mansard roof is prohibited



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Roofing

The style and form of the roof on new construction can contribute to the success of blending in with surrounding historic structures.

Design Standards

- Traditional rooflines are preferred.
- Smaller structures should use a hip, gable, or shed roof.
- Flat roofs may be considered for use on structures where the context is appropriate.
- Flat roofs shall provide a cornice or other decorative treatment.
- The character or design of the front and rear façades of all buildings shall demonstrate a variety in depth, relief, rhythm and roof line height, with changes occurring in all of these areas at least every forty feet.
- Mechanical equipment shall not be visible from the street.



Materials – Texture, Color, Finishes

Good attention to design and color is expected in the Gateway Historic District to help all buildings become more complimentary to each other and assist the creation of a unique and cohesive environment. The materials used for the finish of the exterior surface of new construction should be compatible with the nature of the surrounding area.

Design Standards

- The use of color schemes should be compatible with the surrounding area. Simplicity is encouraged – excessive amounts of different colors should not be used.
- Avoid pure white as a façade color, and if masonry must be painted, it should be done in a natural hue.
- The natural colors of brick masonry, stone, or other existing building materials should dominate the color scheme of the building. Other colors should be respectful of adjacent buildings.
- A predominant color should be used with one or two other accent colors.
- The texture and finish of new construction should attempt to convey a modern building while still respecting the historic character of the area.
- The cornice, window frames, ornamental details, signs and storefronts should all blend in as an attractive harmonious unit.



Streetscaping

Streetscapes should be incorporated in sidewalk areas adjacent to Main Street.

Design Standards

- At least one streetscape feature should be installed and maintained every thirty (30) linear feet along sidewalks, nearest to the curb.
- Acceptable streetscape features include, but are not limited to, the following: trees, planters, benches, drinking fountains, decorative garbage canisters, outdoor clocks, bike racks, and water features.
- Businesses are encouraged to coordinate the installation of streetscape elements with surrounding properties.
- Installation of plazas and gathering spaces where people may linger is encouraged.
- Installation of planters with trees and shrubs to create areas to sit are encouraged.
- Providing benches in strategic areas to encourage mingling and gathering is encouraged.



3.11 Gateway/Historic Zone**3.11.010 Purpose And Intent****3.11.020 District Boundaries****3.11.030 Applicability****3.11.040 Site Plan Process****3.11.050 Plan Requirements****3.11.060 Repair Or Maintenance Exception****3.11.070 Permitted Uses****3.11.080 Conditional Uses****3.11.090 Water Rights Requirements****3.11.010 Purpose And Intent**

The purpose of this chapter is to maintain a high character of community development, to protect and preserve property, to promote the stability of property values and to protect real estate from impairment or destruction of value for the general community welfare by regulating the exterior architectural characteristics of structures and preservation and protection of buildings of architectural or historical significance throughout the hereinafter defined Gateway/Historic District.

It is the further purpose of this Title to recognize and preserve the historical and architectural character of this community, which has been greatly influenced by the architecture of an earlier period in this community's history. It is also the intent of the district to allow for a mixture of commercial and residential uses. These purposes shall be served by the regulation of exterior design, use of materials, the finish grade line, landscaping and orientation of all commercial structures hereinafter altered, constructed, reconstructed, erected, enlarged or remodeled, removed or demolished for commercial purposes in the hereinafter defined Gateway/Historic District.

(Ord. No. 2002-06, 07/09/2002; Amended by Ord. No. 2010-19, 11/09/10)

3.11.020 District Boundaries

There is hereby established a Gateway-Historic District Overlay Zone which shall include the area shown as Business Commercial (BC) on the Alpine City Zoning Map.

(Ord. No. 2002-06, 07/09/2002; Amended by Ord. No. 2010-19, 11/09/10)

3.11.030 Applicability

An application for a site plan shall be filed with the City Planner whenever:

1. A commercial structure, as defined by this Zoning Ordinance, whether public or private, within the above describe district is proposed to be constructed or erected; or
2. An existing commercial structure is proposed to be altered, reconstructed, enlarged, or remodeled if such alteration, reconstruction, enlargement, or remodeling involves the exterior design, material, finish grade line, landscaping or orientation of the structure; or
3. An existing structure is proposed to be altered, reconstructed, enlarged or remodeled into a commercial structure, if such alteration, reconstruction, enlargement or remodeling involves the exterior design, material, finish grade line, landscaping or orientation of the structure.

(Ord. No. 2002-06, 07/09/2002; Amended by Ord. No. 2010-19, 11/09/10)

3.11.040 Site Plan Process

1. During the review process, the City Planner and City Engineer, the Planning Commission, and the City Council may request reasonable additional information from the applicant from time to time; and may ask other advisors to review the plan if, in the opinion of the City, it may contribute to a decision in the best interest of the City.

After submittal of the required application materials, no excavation or alteration of the property may be undertaken prior to written final approval by the City Council of the site plan. Excavation or alteration of the property prior to approval may be cause for disapproval. Additionally, work on existing structures prior to final approval is not permitted.

2. City Planner and City Engineer

- a. The applicant shall meet with the City Planner and City Engineer to review the proposed site plan before submitting an application.
- b. The applicant shall prepare a concept site plan, properly and accurately drawn to scale.
- c. The City Planner and City Engineer shall review the site plan to determine compliance with the Alpine City General Plan and applicable City ordinances.
- d. When the City Planner and City Engineer determines that the site plan is ready for Planning Commission review, the City Planner, in consultation with the Planning Commission Chairperson, shall establish a review date. The applicant may prepare a site plan that incorporates all changes recommended by City Planner and City Engineer.

3. Planning Commission

- a. The applicant shall submit the following to the City Planner at least fourteen (14) days before the scheduled Planning Commission meeting:
 - i. the site plan application;
 - ii. pay the associated fee(s) in accordance with the current fee schedule (payable to Alpine City);
 - iii. four (4) D size (22" x 34") copies of the site plan;
 - iv. ten (10) 11" x 17" copies of the site plan drawn to scale;
 - v. building elevations including building height;
 - vi. a landscape plan including a list of plant types; and
 - vii. an electronic copy of the site plan and building elevations in a compatible format as specified by City Staff.

In addition, the application shall be accompanied by a detailed narrative description of the proposed design or change of design, use of materials, finish grade line, landscaping. In addition, the Planning Commission may require submission of colored perspectives or architectural renderings in applications where the Planning Commission feels it is required.

- b. The site plan will not be presented to the Planning Commission until the application is complete, including submitting all required information and paying all fees. The application must be complete and accepted in writing by the City Planner.
- c. The Planning Commission shall give guidance to the applicant to assist in meeting the requirements and constraints for development within Alpine City.
- d. The Planning Commission shall determine whether the site plan promotes, preserves and enhances the distinctive historical village character of the community and would not be at variance with existing structures within that portion of the district in which the site plan is or is proposed to be located as to be detrimental to the interests of the District as set forth in DCA 3.11.010. In conducting its review, the Planning Commission shall make examination of and give consideration to the elements of the Gateway Historic District Design Guidelines.
- e. The Planning Commission may recommend exceptions to the Business Commercial Zone requirements regarding parking, building height, signage, setbacks and use if it finds that the plans proposed better implement the design guidelines to the City Council for approval.
- f. If the Planning Commission finds that the proposed site plan complies with all applicable requirements, it shall recommend approval to the City Council. If the Planning Commission finds that the proposed site plan does not meet the requirements, it shall recommend disapproval of the site plan.

4. City Council

- a. Following the recommendation of approval or disapproval of the site plan by the Planning Commission, the City Council shall consider the site plan at a public meeting. If the City Council determines that the site plan is in conformity with all applicable requirements and any reasonable conditions as recommended by City Staff, the Planning Commission, or on its own initiative, it shall approve the site plan.
- b. If the City Council determines that the site plan is not in conformity with all applicable requirements or any reasonable conditions imposed, it shall disapprove the site plan specifying the reasons for such disapproval.

(Ord. No. 2002-06, 07/09/2002; Amended by Ord. No. 2010-19, 11/09/10)

3.11.050 Plan Requirements

The site plan shall include the following items:

1. Address of the site plan
2. A vicinity map
3. The property boundaries of the proposed site plan and the names of all adjacent property owners
4. The location of all existing and proposed easements
5. Lot dimensions
6. Location and orientation of all structures on the lot
7. Setbacks of all structures on the lot
8. Location of garbage dumpster
9. Location of all existing and proposed utilities
10. Parking plan
11. Lighting plan
12. Other information which may allow the City Planner, City Engineer, Planning Commission, and City Council to evaluate the proposed site plan.

(Ord. No. 2002-06, 07/09/2002; Amended by Ord. No. 2010-19, 11/09/10)

3.11.060 Repair Or Maintenance Exception

Nothing in this Chapter shall be construed to prevent any ordinary repair or maintenance of an exterior architectural feature or any ordinary planting and landscaping now in the District.

(Ord. No. 2002-06, 07/09/2002; Amended by Ord. No. 2010-19, 11/09/10)

3.11.070 Permitted Uses

The permitted uses listed in the Business Commercial Zone shall be permitted in the Gateway/Historic Zone.

(Ord. No. 2002-06, 07/09/2002; Amended by Ord. No. 2010-19, 11/09/10)

3.11.080 Conditional Uses

The conditional uses listed in the Business Commercial Zone shall be conditional uses in the Gateway/Historic Zone.

(Ord. No. 2002-06, 07/09/2002; Amended by Ord. No. 2010-19, 11/09/10)

3.11.090 Water Rights Requirements

Developments occurring under the provisions of this Chapter must comply with the water rights requirements of Alpine City.

(Ord. No. 2002-06, 07/09/2002; Amended by Ord. No. 2010-19, 11/09/10)

MEMORANDUM

Date: February 14, 2019
To: Cottle Capital Group
From: Hales Engineering



Subject: Alpine City Alpine Townhomes TGS

UT19-1392

This memorandum discusses the trip generation study completed for the proposed Alpine Townhomes. A vicinity map of the proposed development is shown in Figure 1.

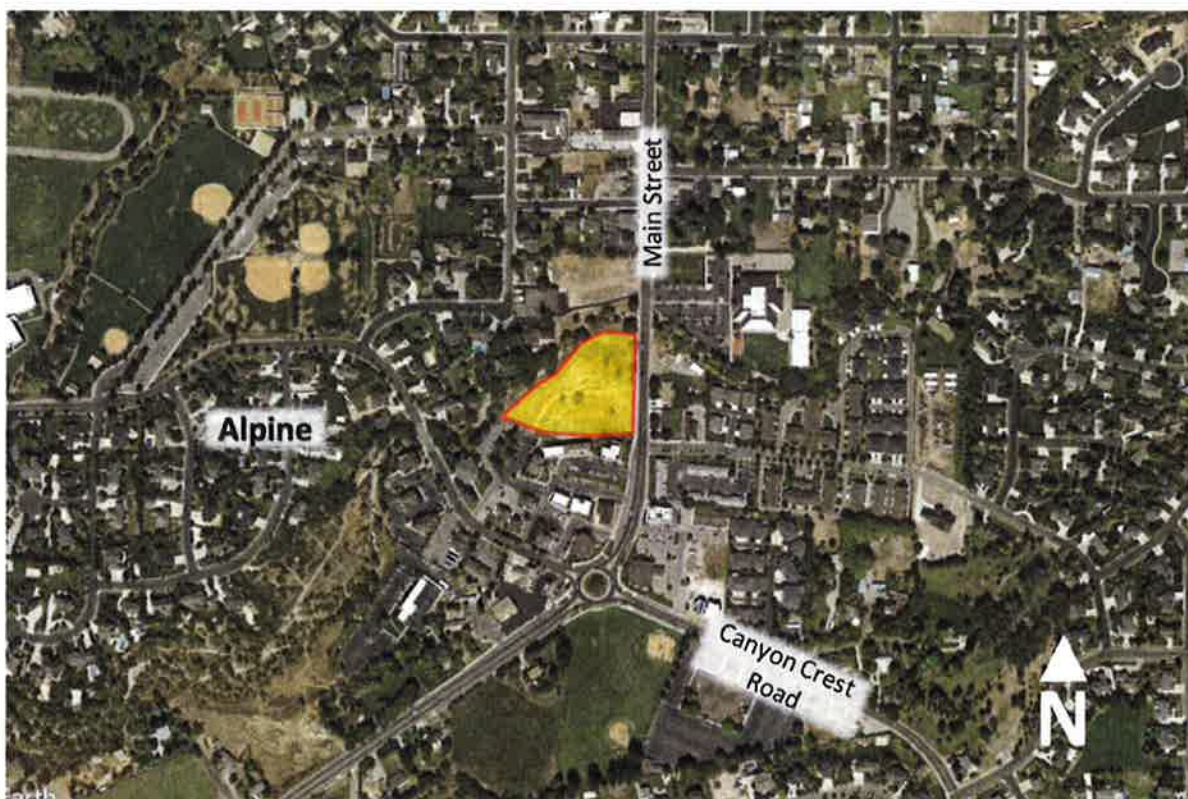


Figure 1: Vicinity map of the proposed development in Alpine, Utah

Background

The proposed Alpine Townhomes are located west of Main Street and just north of the Alpine Main Street Village. The project includes 26 townhomes that are anticipated to be a +55 community. It is anticipated that the project will have one access to Main Street and one that will cut through the Alpine Main Street Village to the south and access Canyon Creek Road. A site plan for the proposed development is included in Appendix A.

The proposed land use for the development has been identified as follows:

- Multifamily Housing (Mid-Rise) - Townhomes 26 units

Trip Generation

Trip generation for the development was calculated using trip generation rates published in the Institute of Transportation Engineers (ITE) *Trip Generation (10th Edition, 2017)*. Trip generation for the proposed project is included in Table 1.

As shown in Table 1, it is anticipated that the proposed townhomes will generate approximately 140 trips on an average weekday, including 10 trips during the morning peak hour, and 12 trips during the evening peak hour.

Table 3 Alpine - Alpine Townhomes TGS Trip Generation								
Weekday Daily	# of	Unit	Trip	%	%	Trips	Trips	Total Daily
Land Use ¹	Units	Type	Generation	Entering	Exiting	Entering	Exiting	Trips
Multifamily Housing (Mid-Rise) (221)	26	Dwelling Units	140	50%	50%	70	70	140
Project Total Daily Trips						70	70	140
Morning Peak Hour	# of	Unit	Trip	%	%	Trips	Trips	Total a.m.
Land Use ¹	Units	Type	Generation	Entering	Exiting	Entering	Exiting	Trips
Multifamily Housing (Mid-Rise) (221)	26	Dwelling Units	10	26%	74%	3	7	10
Project Total a.m. Peak Hour Trips						3	7	10
Evening Peak Hour	# of	Unit	Trip	%	%	Trips	Trips	Total p.m.
Land Use ¹	Units	Type	Generation	Entering	Exiting	Entering	Exiting	Trips
Multifamily Housing (Mid-Rise) (221)	26	Dwelling Units	12	61%	39%	7	5	12
Project Total p.m. Peak Hour Trips						7	5	12

1. Land Use Code from the Institute of Transportation Engineers (ITE) *Trip Generation*, 10th Edition, 2017.

SOURCE: Hales Engineering, February 2019

Trip Assignment

Project traffic is assigned to the roadway network based on the type of trip and the proximity of project access points to major streets, high population densities, and regional trip attractions. Existing travel patterns observed during data collection also provide helpful guidance to establishing the trip assignment. These assumptions were used to assign the morning peak hour trips for the development as shown in Figure 2.

Project Access

The proposed project is planned to have an access out to Main Street and one that heads south through the Alpine Main Street Village. Main Street is a busy roadway with over 10,000 vehicles traveling it a day. During the morning peak hour, the near-by Mountainville Academy bring a lot of traffic into the area. This traffic would make left-turns out of the project access very difficult and dangerous. There are over 1,000 vehicles passing the proposed access during the peak hour.

The northbound traffic during the morning peak hour is expected to have many vehicles heading north towards on the school on Main Street. Turning left into the site will hold up northbound traffic while a gap in the southbound direction becomes available. There are currently 650 vehicles heading north past this access with approximately 550 vehicles heading southbound past the access.

There are three potential options for the Main Street Access with Main Street:

Option 1 - Full-movement access.

Pros

- Allows all movements to use this access
- Reduces the amount of circuitous travel
- Limited number of seniors traveling during peak hours (low volume access)

Cons

- Can cause queueing in the northbound direction as a northbound left-turning vehicle will cause delay for vehicles headed northbound
- Left-turns out of the access may be difficult and dangerous
- Left-turns across travel lanes can be dangerous



Option 2 – 3/4-movement access.

- A ¾ access with right-in right-out (RIRO) and an eastbound to northbound left turn out would not be geometrically feasible as a raised median controlling access followed by an acceleration lane and a merge area would impact the school traffic negatively.
- A ¾ access with a RIRO and a northbound to westbound left-turn lane in would be feasible with a small raised island limiting egress movements to right-out only. In this scenario, the left-turn in would need to be initiated from the northbound through travel lane, therefore, vehicles behind the left-turning vehicle would need to wait and incur delay. Although this is not an ideal scenario, it is one that would be consistent with the recommendations for the Mountainville Academy traffic study, e.g., providing shoulder storage for parent drop off and pick up.

Option 3 – Right-in, Right-out only access.

Pros

- Allows only right-turns into and out of this access which is more safe than full movement or ¾ accesses
- Left-turns eliminated, reducing conflict points and further increasing safety.
- Northbound left-turn delay is eliminated

Cons

- All left-turn movements will need to be completed at Canyon Creek Road
- There will be a slight increase to traffic on Canyon Creek Road

Each of these alternatives are anticipated to function adequately due to the low volume of traffic expected to be generated by the site, except the ¾ access out of the project site. As the access becomes more restricted, e.g., full to ¾, to RIRO, the access will become safer.

Conclusions

The findings of this study are as follows:

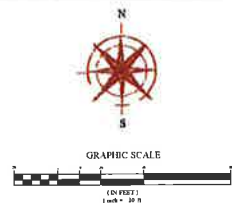
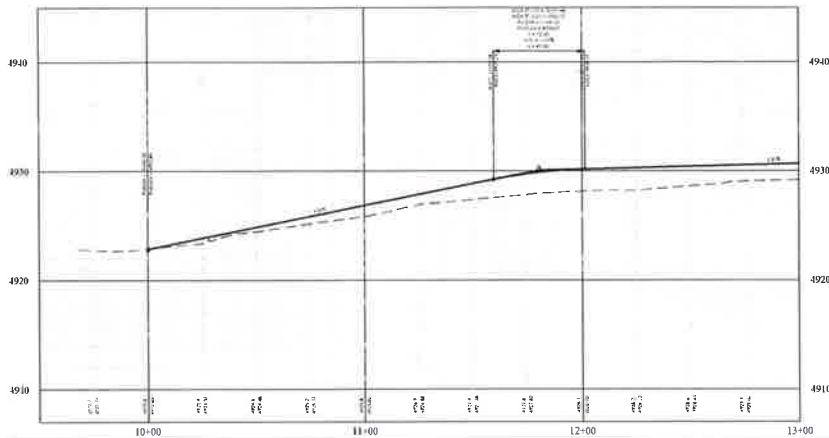
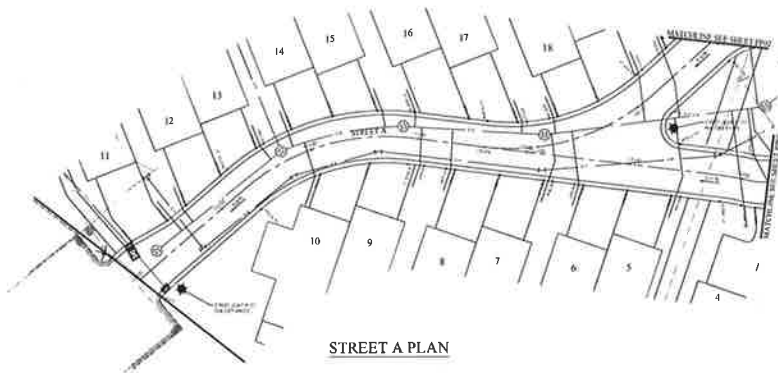
- The proposed development is planned to have a total of 26 townhomes that are anticipated to be a 55+ community.
- It is anticipated that the proposed project will generate approximately 140 trips on an average weekday, including 10 trips during the morning peak hour, and 12 trips during the evening peak hour.
- Four access alternatives have been provided for Main Street
 - Full-movement access
 - ¾ access (RIRO + left out, or RIRO + left in)
 - Right-in, right-out only access (RIRO)

- The City and Developer should meet and discuss the Main Street access and come to an agreement between safety and accessibility for the site.

APPENDIX A

Site Plan





LEGEND

1.00%	2.00%	3.00%	4.00%	5.00%	6.00%	7.00%	8.00%	9.00%	10.00%	11.00%	12.00%	13.00%	14.00%	15.00%	16.00%	17.00%	18.00%	19.00%	20.00%	21.00%	22.00%	23.00%	24.00%	25.00%	26.00%	27.00%	28.00%	29.00%	30.00%	31.00%	32.00%	33.00%	34.00%	35.00%	36.00%	37.00%	38.00%	39.00%	40.00%	41.00%	42.00%	43.00%	44.00%	45.00%	46.00%	47.00%	48.00%	49.00%	50.00%	51.00%	52.00%	53.00%	54.00%	55.00%	56.00%	57.00%	58.00%	59.00%	60.00%	61.00%	62.00%	63.00%	64.00%	65.00%	66.00%	67.00%	68.00%	69.00%	70.00%	71.00%	72.00%	73.00%	74.00%	75.00%	76.00%	77.00%	78.00%	79.00%	80.00%	81.00%	82.00%	83.00%	84.00%	85.00%	86.00%	87.00%	88.00%	89.00%	90.00%	91.00%	92.00%	93.00%	94.00%	95.00%	96.00%	97.00%	98.00%	99.00%	100.00%
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BENCHMARK

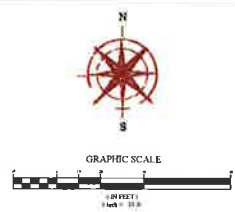
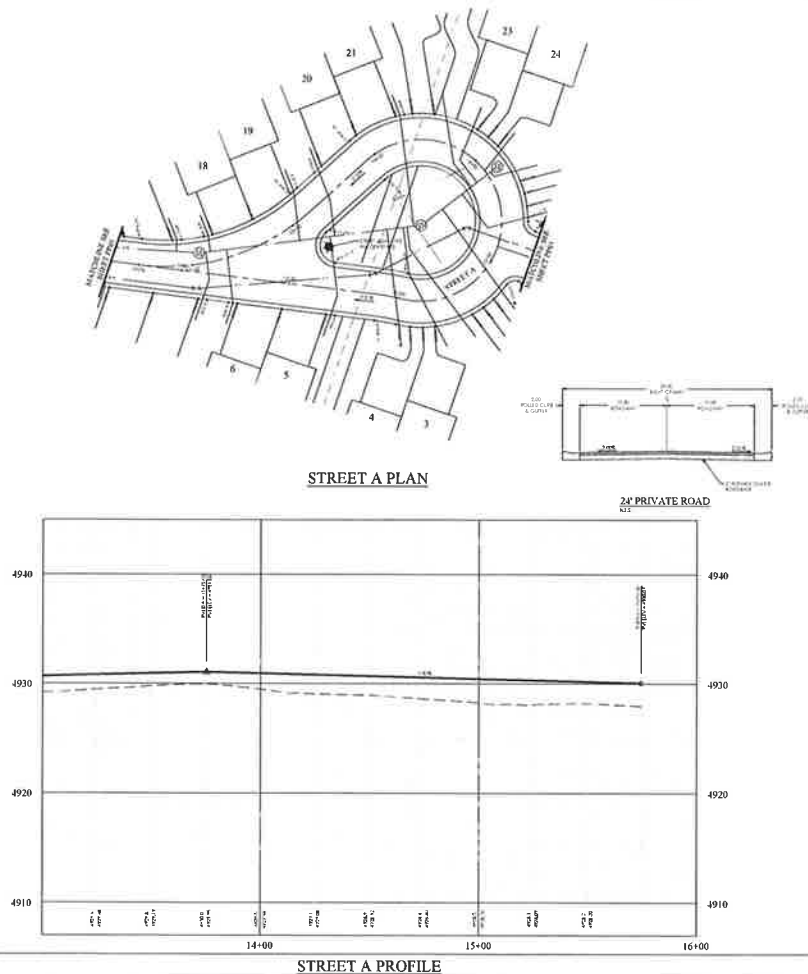
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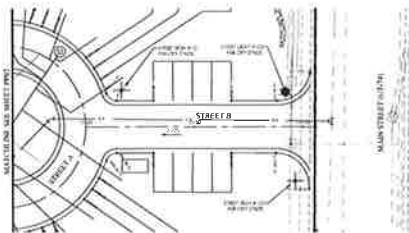


ALPINE TOWNHOMES
ALPINE, UT
STREET A

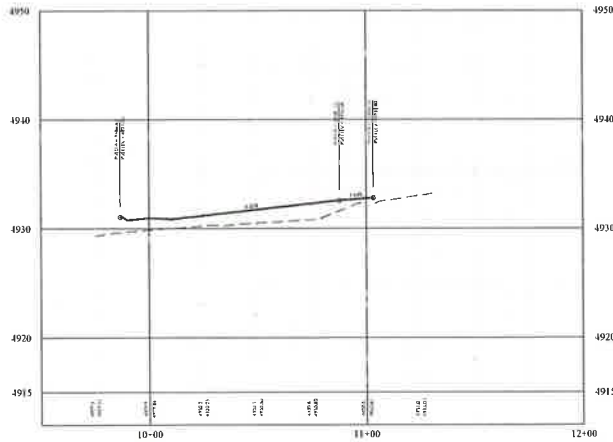
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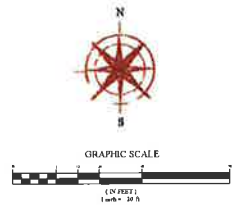




STREET B PLAN



STREET B PROFILE



LEGEND

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8" (40'00")	8" (40'00")
10" (50'00")	10" (50'00")
12" (60'00")	12" (60'00")
14" (70'00")	14" (70'00")
16" (80'00")	16" (80'00")
18" (90'00")	18" (90'00")
20" (100'00")	20" (100'00")
22" (110'00")	22" (110'00")
24" (120'00")	24" (120'00")
26" (130'00")	26" (130'00")
28" (140'00")	28" (140'00")
30" (150'00")	30" (150'00")
32" (160'00")	32" (160'00")
34" (170'00")	34" (170'00")
36" (180'00")	36" (180'00")
38" (190'00")	38" (190'00")
40" (200'00")	40" (200'00")
42" (210'00")	42" (210'00")
44" (220'00")	44" (220'00")
46" (230'00")	46" (230'00")
48" (240'00")	48" (240'00")
50" (250'00")	50" (250'00")
52" (260'00")	52" (260'00")
54" (270'00")	54" (270'00")
56" (280'00")	56" (280'00")
58" (290'00")	58" (290'00")
60" (300'00")	60" (300'00")
62" (310'00")	62" (310'00")
64" (320'00")	64" (320'00")
66" (330'00")	66" (330'00")
68" (340'00")	68" (340'00")
70" (350'00")	70" (350'00")
72" (360'00")	72" (360'00")
74" (370'00")	74" (370'00")
76" (380'00")	76" (380'00")
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86" (430'00")	86" (430'00")
88" (440'00")	88" (440'00")
90" (450'00")	90" (450'00")
92" (460'00")	92" (460'00")
94" (470'00")	94" (470'00")
96" (480'00")	96" (480'00")
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102" (510'00")	102" (510'00")
104" (520'00")	104" (520'00")
106" (530'00")	106" (530'00")
108" (540'00")	108" (540'00")
110" (550'00")	110" (550'00")
112" (560'00")	112" (560'00")
114" (570'00")	114" (570'00")
116" (580'00")	116" (580'00")
118" (590'00")	118" (590'00")
120" (600'00")	120" (600'00")
122" (610'00")	122" (610'00")
124" (620'00")	124" (620'00")
126" (630'00")	126" (630'00")
128" (640'00")	128" (640'00")
130" (650'00")	130" (650'00")
132" (660'00")	132" (660'00")
134" (670'00")	134" (670'00")
136" (680'00")	136" (680'00")
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158" (790'00")	158" (790'00")
160" (800'00")	160" (800'00")
162" (810'00")	162" (810'00")
164" (820'00")	164" (820'00")
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168" (840'00")	168" (840'00")
170" (850'00")	170" (850'00")
172" (860'00")	172" (860'00")
174" (870'00")	174" (870'00")
176" (880'00")	176" (880'00")
178" (890'00")	178" (890'00")
180" (900'00")	180" (900'00")
182" (910'00")	182" (910'00")
184" (920'00")	184" (920'00")
186" (930'00")	186" (930'00")
188" (940'00")	188" (940'00")
190" (950'00")	190" (950'00")
192" (960'00")	192" (960'00")
194" (970'00")	194" (970'00")
196" (980'00")	196" (980'00")
198" (990'00")	198" (990'00")
200" (1000'00")	200" (1000'00")



BENCHMARK

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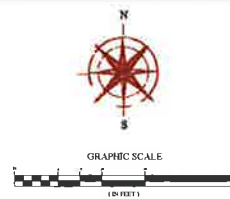
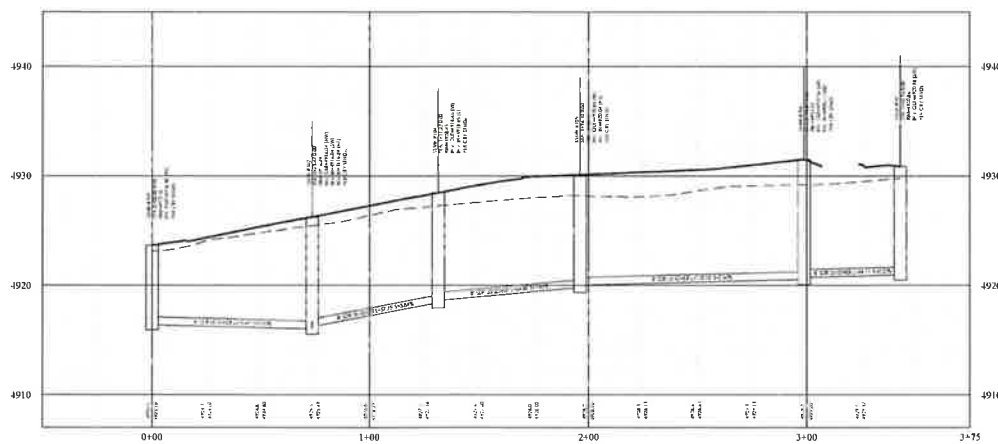
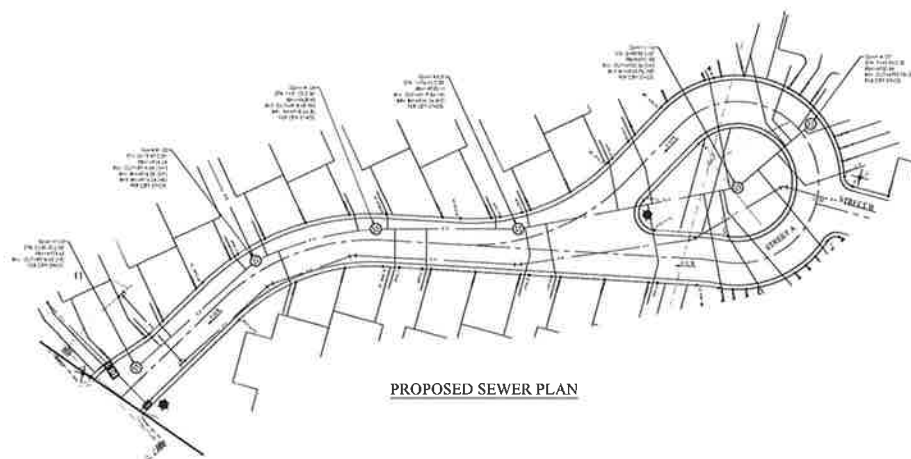
FOCUS
ENGINEERING AND SURVEYING, LLC
ADDRESS: 11111 SOUTH 11111 WEST, SUITE 11111, ALPINE, UT 84005
PHONE: (435) 555-1111

ALPINE TOWNHOMES
ALPINE, UT
STREET B

NO.	DATE	DESCRIPTION
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2	11/11/11	REVISED
3	11/11/11	REVISED
4	11/11/11	REVISED
5	11/11/11	REVISED
6	11/11/11	REVISED
7	11/11/11	REVISED
8	11/11/11	REVISED
9	11/11/11	REVISED
10	11/11/11	REVISED

STREET B

PP03

[illegible]

BENCHMARK
TONGUEUX TX, RANGE 4 E
SALT LAKE BASIN AND ADJUTAN
ELEV 4,045 FT
DATUM NAD83



FOCUS
ENGINEERING AND SURVEYING, LLC
12 WEST GERRARD STREET
ANN ARBOR, MI 48106
www.focusllc.com

ALPINE TOWNHOMES
ALPINE, UT
PROPOSED SEWER

WATERGATE REACTION		CIVIL DISOBEDIENCE	
Q	ANSWER	Q	ANSWER
1	water	1	water
2	water	2	water
3	water	3	water
4	water	4	water
5	water	5	water
6	water	6	water
7	water	7	water
8	water	8	water
9	water	9	water
10	water	10	water

PROPOSED SEWER	
DATE: 07/10/2018	BY: J. L. B.
NO. 00000000000000000000	00000000000000000000
PP04	



1497 West 40 South
Lindon, Utah - 84042
Phone (801) 225-5711

840 West 1700 South #10
Salt Lake City, Utah - 84104
Phone (801) 787-9138

1596 W. 2650 S. #108
Ogden, Utah - 84401
Phone (801) 399-9516

**Geotechnical Study
Alpine Townhomes
300 South Main Street
Alpine, Utah**

Project No. 189260

December 14, 2018

Prepared For:

Cottle Capital Group, LLC
Attention: Ms. Sherry Fenn
801 North 500 West
Bountiful, UT 84010

Prepared By:

EARTHTEC ENGINEERING
Lindon Office



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ATTACHED FIGURES

No. 1	VICINITY MAP
No. 2	AERIAL PHOTOGRAPH SHOWING LOCATION OF TEST PITS
Nos. 3 – 7	TEST PIT LOGS
No. 8	LEGEND
Nos. 9 – 11	CONSOLIDATION-SWELL TEST

APPENDIX A

Timpview Analytical Labs



1.0 EXECUTIVE SUMMARY

This entire report presents the results of Earthtec Engineering's completed geotechnical study for the Alpine Townhomes in Alpine, Utah. This executive summary provides a general synopsis of our recommendations and findings. Details of our findings, conclusions, and recommendations are provided within the body of this report.

- The subject property is approximately 3.94 acres and is proposed to be developed with the construction of new townhomes. The proposed structures will consist of conventionally framed, one- to two-story, buildings with basements. We anticipate foundation loads for the proposed structures will not exceed 4,000 pounds per linear foot for bearing wall, 30,000 pounds for column loads, and 100 pounds per square foot for floor slabs. (see Section 3)
- Our field exploration included the excavation of five (5) test pits to depths of 10 to 12 feet below the existing ground surface. Groundwater was not encountered within the excavations at the depths explored. (see Section 5)
- The native silt soils have a moderate potential for collapse (settlement) and a moderate potential for compressibility under increased moisture contents and anticipated load conditions. (see Section 6)
- The subsurface soils encountered generally consisted of fill overlying near-surface medium stiff silt, and medium dense to dense sand and gravel. All fill encountered appears to be undocumented. Fill and topsoil should be removed beneath the entire building footprints, exterior flatwork, and pavements prior to construction. (see Section 7)
- Conventional strip and spread footings may be used to support the structure, with foundations placed entirely on firm, undisturbed, uniform gravel soils that extend a minimum of 24 inches below footings, or entirely on a minimum of 18 inches of properly placed, compacted, and tested structural fill extending to undisturbed native soils. (see Section 10)
- Minimum roadway section consists of 3 inches of asphalt overlying 10 inches of road-base. Areas that are soft or deflect under construction traffic should be removed and replaced with granular material or structural fill. (see Section 13)

Based on the results of our field exploration, laboratory testing, and engineering analyses, it is our opinion that the subject site may be suitable for the proposed development, provided the recommendations presented in this report are followed and implemented during design and construction.

Failure to consult with Earthtec Engineering (Earthtec) regarding any changes made during design and/or construction of the project from those discussed herein relieves Earthtec from any liability arising from changed conditions at the site. We also strongly recommend that Earthtec observes the building excavations to verify the adequacy of our recommendations presented herein, and that Earthtec performs materials testing and special inspections for this project to



provide continuity during construction.

2.0 INTRODUCTION

The project is located at approximately 300 South Main Street in Alpine, Utah. The general location of the site is shown on Figure No. 1, *Vicinity Map* and Figure No. 2, *Aerial Photograph Showing Location of Test Pits*, at the end of this report. The purposes of this study are to:

- Evaluate the subsurface soil conditions at the site,
- Assess the engineering characteristics of the subsurface soils, and
- Provide geotechnical recommendations for general site grading and the design and construction of foundations, concrete floor slabs, miscellaneous concrete flatwork, and asphalt paved parking and drive areas.

The scope of work completed for this study included field reconnaissance, subsurface exploration, field and laboratory soil testing, geotechnical engineering analysis, and the preparation of this report.

3.0 PROPOSED CONSTRUCTION

We understand that the proposed project, as described to us by Ms. Sherry Fenn with Cottle Capital Group, consists of developing the approximately 3.94-acre existing parcel with the construction of new townhomes. The proposed structures will consist of conventionally framed, one- to two-story, buildings with basements. We have based our recommendations in this report that anticipated foundation loads for the proposed structures will not exceed 4,000 pounds per linear foot for bearing wall, 30,000 pounds for column loads, and 100 pounds per square foot for floor slabs. If structural loads will be greater Earthtec should be notified so that we may review our recommendations and make modifications, if necessary.

In addition to the construction described above, we anticipate that

- Utilities will be installed to service the proposed buildings,
- Exterior concrete flatwork will be placed in the form of curb, gutter, and sidewalks, and
- Asphalt paved parking and drive areas will be constructed.

4.0 GENERAL SITE DESCRIPTION

4.1 Site Description

At the time of our subsurface exploration the site was a developed lot vegetated with grass, weeds and trees. A two- to three- tier rock wall exists along the northern side of the property



and is approximately 8 to 12 feet in exposed height. Below the rock wall to the north is a stream bed. Earthtec Engineering was not involved in the design, construction, or evaluation of the constructed rock walls. We recommend that the rock walls and slope be evaluated if any structure is placed within 20 feet of the rock walls. The ground surface appears to be relatively flat, we anticipate less than 3 feet of cut and fill may be required for site grading. The lot was bounded on the north and west by Dry Creek, on the east by South Main Street, on the south by commercial properties.

4.2 Geologic Setting

The subject property is located in the central portion of Utah Valley near the eastern shore of Utah Lake. Utah Valley is a deep, sediment-filled basin that is part of the Basin and Range Physiographic Province. The valley was formed by extensional tectonic processes during the Tertiary and Quaternary geologic time periods. The valley is bordered by the Wasatch Mountain Range on the east and the Lake Mountains on the west. Much of northwestern Utah, including Utah Valley, was previously covered by the Pleistocene age Lake Bonneville. Utah Lake, which currently covers much of the western portion of the valley, is a remnant of this ancient fresh water lake. The surficial geology of much of the eastern margin of the valley has been mapped by Constenius, 2011¹. The surficial geology at the location of the subject site and adjacent properties is mapped as "Fine-grained lacustrine deposits" (Map Unit Qlf) dated to upper Pleistocene. These soil or deposits are generally described in the referenced mapping as "silt and clay with some fine grained sand."

5.0 SUBSURFACE EXPLORATION

5.1 Soil Exploration

Under the direction of a qualified member of our geotechnical staff, subsurface explorations were conducted at the site on November 30, 2018 by the excavation of five (5) test pits to depths of 10 to 12 feet below the existing ground surface using a track-mounted mini excavator. The approximate locations of the test pits are shown on Figure No. 2, *Aerial Photograph Showing Location of Test Pits*. Graphical representations and detailed descriptions of the soils encountered are shown on Figure Nos. 3 through 7, *Test Pit Log* at the end of this report. The stratification lines shown on the logs represent the approximate boundary between soil units; the actual transition may be gradual. Due to potential natural variations inherent in soil deposits, care should be taken in interpolating between and extrapolating beyond exploration points. A key to the symbols and terms on the logs is presented on Figure No. 8, *Legend*.

Disturbed bag samples and relatively undisturbed block samples were collected at various

¹ Constenius, K.N., Clark, D.L., King, J.K., Ehler, J.B., 2011, Interim Geologic Map of the Provo Quadrangle, *Utah, Wasatch and Salt Lake Counties, Utah*; U.S. Geological Survey, Open-File 586DM, Scale 1: 62,500.



depths in each test pit. The soil samples collected were classified by visual examination in the field following the guidelines of the Unified Soil Classification System (USCS). The samples were transported to our Lindon, Utah laboratory where they will be retained for 30 days following the date of this report and then discarded, unless a written request for additional holding time is received prior to the 30-day limit.

6.0 LABORATORY TESTING

Representative soil samples collected during our field exploration were tested in the laboratory to assess pertinent engineering properties and to aid in refining field classifications, if needed. Tests performed included natural moisture content, dry density tests, liquid and plastic limits determinations, mechanical (partial) gradation analyses, and one-dimensional consolidation tests. The table below summarizes the laboratory test results, which are also included on the attached *Test Pit Logs* at the respective sample depths, and on Figure Nos. 9 through 11, *Consolidation-Swell Test*.

Table 1: Laboratory Test Results

Test Pit No.	Depth (ft.)	Natural Moisture (%)	Natural Dry Density (pcf)	Atterberg Limits		Grain Size Distribution (%)			Soil Type
				Liquid Limit	Plasticity Index	Gravel (+ #4)	Sand	Silt/Clay (- #200)	
TP-1	9	16	108	21	NP*	0	26	74	ML
TP-1	11½	16	93	23	3	1	24	75	ML
TP-3	10	11	89	22	NP*	1	19	80	ML
TP-4	5	2	---	---	---	60	37	3	GP

NP* = Non-Plastic

As part of the consolidation test procedure, water was added to the samples to assess moisture sensitivity when the samples were loaded to an equivalent pressure of approximately 1,000 psf. The native silt soils have a moderate potential for collapse (settlement) and a moderate potential for compressibility under increased moisture contents and anticipated load conditions.

A water-soluble sulfate test was performed on a representative sample obtained during our field exploration which indicated a value of less than 12 parts per million. Based on this result, the risk of sulfate attack to concrete appears to be "negligible" according to American Concrete Institute standards. Therefore, any type of Portland cement may be used for concrete in contact with on-site soils. The results can be found in Appendix A.

7.0 SUBSURFACE CONDITIONS

7.1 Soil Types

On the surface of the site, we encountered fill and topsoil which is estimated to extend 12 feet or deeper at the test pit locations. Below the fill we encountered layers of silt, sand and gravel



extending to depths of 10 to 12 feet below the existing ground surface. Graphical representations and detailed descriptions of the soils encountered are shown on Figure Nos. 3 through 7, *Test Pit Log* at the end of this report. Based on our experience and observations during field exploration, the silt soils visually were medium stiff in consistency and the sand and gravel soils visually had a relative density varying from medium dense to dense.

7.2 Groundwater Conditions

Groundwater was not encountered within the excavations at the depths explored. Note that groundwater levels will fluctuate in response to the season, precipitation, snow melt, irrigation, and other on and off-site influences. Quantifying these fluctuations would require long term monitoring, which is beyond the scope of this study. The contractor should be prepared to dewater excavations as needed.

8.0 SITE GRADING

8.1 General Site Grading

All surface vegetation and unsuitable soils (such as topsoil, organic soils, undocumented fill, soft, loose, or disturbed native soils, and any other inapt materials) should be removed from below foundations, floor slabs, exterior concrete flatwork, and pavement areas. We encountered fill and topsoil on the surface of the site. The fill encountered on the site is considered undocumented (untested). The fill and topsoil (including soil with roots larger than about ¼ inch in diameter) should be completely removed, even if found to extend deeper, along with any other unsuitable soils that may be encountered. Over-excavations below footings and slabs also may be needed, as discussed in Section 10.0.

Fill placed over large areas, even if only a few feet in depth, can cause consolidation in the underlying native soils resulting in settlement of the fill. Because the site is relatively flat, we anticipate that less than 3 feet of grading fill will be placed. If more than 3 feet of grading fill will be placed above the existing surface (to raise site grades), Earthtec should be notified so that we may provide additional recommendations, if required. Such recommendations will likely include placing the fill several weeks (or possibly more) prior to construction to allow settlement to occur.

8.2 Temporary Excavations

Temporary excavations that are less than 4 feet in depth and above groundwater should have side slopes no steeper than ½H:1V (Horizontal:Vertical). Temporary excavations where water is encountered in the upper 4 feet or that extend deeper than 4 feet below site grades should be sloped or braced in accordance with OSHA² requirements for Type C soils.

² OSHA Health And Safety Standards, Final Rule, CFR 29, part 1926.



8.3 Fill Material Composition

The existing fill and native fine-grained soils are not suitable for use as placed and compacted structural fill. Excavated soils, including silt, may be stockpiled for use as fill in landscape areas.

Structural fill is defined as fill material that will ultimately be subjected to any kind of structural loading, such as those imposed by footings, floor slabs, pavements, etc. We recommend that a professional engineer or geologist verify that the structural fill to be used on this project meets the requirements, stated below. We recommend that structural fill consist of imported sandy/gravelly soils meeting the following requirements in the table below:

Table 2: Structural Fill Recommendations

Sieve Size/Other	Percent Passing (by weight)
4 inches	100
3/4 inches	70 – 100
No. 4	40 – 80
No. 40	15 – 50
No. 200	0 – 20
Liquid Limit	35 maximum
Plasticity Index	15 maximum

In some situations, particles larger than 4 inches and/or more than 30 percent coarse gravel may be acceptable but would likely make compaction more difficult and/or significantly reduce the possibility of successful compaction testing. Consequently, stricter quality control measures than normally used may be required, such as using thinner lifts and increased or full-time observation of fill placement.

We recommend that utility trenches below any structural load be backfilled using structural fill. Note that most local governments and utility companies require Type A-1-a or A-1-b (AASHTO classification) soils (which overall is stricter than our recommendations for structural fill) be used as backfill above utilities in certain areas. In other areas or situations, utility trenches may be backfilled with the native soil, but the contractor should be aware that native silt soils (as observed in the explorations) may be time consuming to compact due to potential difficulties in controlling the moisture content needed to obtain optimum compaction. All backfill soil should have a maximum particle size of 4 inches, a maximum Liquid Limit of 35 and a maximum Plasticity Index of 15.

If required (i.e. fill in submerged areas), we recommend that free draining granular material (clean sand and/or gravel) meet the following requirements in the table below:



Table 3: Free-Draining Fill Recommendations

Sieve Size/Other	Percent Passing (by weight)
3 inches	100
No. 10	0 – 25
No. 40	0 – 15
No. 200	0 – 5
Plasticity Index	Non-plastic

Three inch minus washed rock (sometimes called river rock or drain rock) and pea gravel materials usually meet these requirements and may be used as free draining fill. If free draining fill will be placed adjacent to soil containing a significant amount of sand or silt/clay, precautions should be taken to prevent the migration of fine soil into the free draining fill. Such precautions should include either placing a filter fabric between the free draining fill and the adjacent soil material, or using a well-graded, clean filtering material approved by the geotechnical engineer.

8.4 Fill Placement and Compaction

Fill should be placed on level, horizontal surfaces. Where fill will be placed on slopes steeper than 5H:1V, the existing ground should be benched prior to placing fill. We recommend bench heights of 1 to 4 feet, with the lowest bench being a minimum 3 feet below adjacent grade and at least 10 feet wide.

The thickness of each lift should be appropriate for the compaction equipment that is used. We recommend a maximum lift thickness prior to compaction of 4 inches for hand operated equipment, 6 inches for most "trench compactors" and 8 inches for larger rollers, unless it can be demonstrated by in-place density tests that the required compaction can be obtained throughout a thicker lift. The full thickness of each lift of structural fill placed should be compacted to at least the following percentages of the maximum dry density, as determined by ASTM D-1557:

- In landscape and other areas not below structurally loaded areas: 90%
- Less than 5 feet of fill below structurally loaded areas: 95%
- Greater than 5 feet of fill below structurally loaded areas: 98%

Generally, placing and compacting fill at moisture contents within ± 2 percent of the optimum moisture content, as determined by ASTM D-1557, will facilitate compaction. Typically, the further the moisture content deviates from optimum the more difficult it will be to achieve the required compaction.

Fill should be tested frequently during placement and we recommend early testing to demonstrate that placement and compaction methods are achieving the required compaction. The contractor is responsible to ensure that fill materials and compaction efforts are consistent so that tested areas are representative of the entire fill.



8.5 Stabilization Recommendations

Near surface soils may rut and pump during grading and construction. The likelihood of rutting and/or pumping, and the depth of disturbance, is proportional to the moisture content in the soil, the load applied to the ground surface, and the frequency of the load. Consequently, rutting and pumping can be minimized by avoiding concentrated traffic, minimizing the load applied to the ground surface by using lighter equipment, partially loaded equipment, tracked equipment, by working in dry times of the year, and/or by providing a working surface for equipment.

During grading the soil in any obvious soft spots should be removed and replaced with granular material. If rutting or pumping occurs traffic should be stopped in the area of concern. The soil in rutted areas should be removed and replaced with granular material. In areas where pumping occurs the soil should either be allowed to sit until pore pressures dissipate (several hours to several days) and the soil firms up or be removed and replaced with granular material. Typically, we recommend removal to a minimum depth of 24 inches.

For granular material, we recommend using angular well-graded gravel, such as pit run, or crushed rock with a maximum particle size of four inches. We suggest that the initial lift be approximately 12 inches thick and be compacted with a static roller-type compactor. A finer granular material such as sand, gravelly sand, sandy gravel or road base may also be used. Materials which are more angular and coarse may require thinner lifts in order to achieve compaction. We recommend that the fines content (percent passing the No. 200 sieve) be less than 15%, the liquid limit be less than 35, and the plasticity index be less than 15.

Using a geosynthetic fabric, such as Mirafi 600X or equivalent, may also reduce the amount of material required and avoid mixing of the granular material and the subgrade. If a fabric is used, following removal of disturbed soils and water, the fabric should be placed over the bottom and up the sides of the excavation a minimum of 24 inches. The fabric should be placed in accordance with the manufacturer's recommendations, including proper overlaps. The granular material should then be placed over the fabric in compacted lifts. Again, we suggest that the initial lift be approximately 12 inches thick and be compacted with a static roller-type compactor.

9.0 SEISMIC AND GEOLOGIC CONSIDERATIONS

9.1 Seismic Design

The State of Utah has adopted the 2015 International Building Code (IBC) for seismic design and the structure should be designed in accordance with Chapter 16 of the IBC. The Site Class definitions in the IBC are based upon the soil properties in the upper 100 feet of the soil profile, according to Chapter 20 in ASCE 7. These properties are determined from sampler blow counts, undrained shear strength values, and/or shear velocity measurements. The code states, "When the soil properties are not known in sufficient detail to determine the site class, Site Class D shall be used unless the building official or geotechnical data determines that Site



Class E or F soil is likely to be present at the site.” Considering our experience in the vicinity of the site and based on the results of our field exploration, we recommend using Site Class D.

The site is located at approximately 40.450 degrees latitude and -111.779 degrees longitude. Using Site Class D, the design spectral response acceleration parameters are given below.

Table 4: Design Accelerations

S_s	F_a	S_{MS}	S_{DS}
1.237 g	1.005	1.243 g	0.829 g
S_1	F_v	S_{M1}	S_{D1}
0.454 g	1.546	0.702 g	0.468 g

S_s = Mapped spectral acceleration for short periods

S_1 = Mapped spectral acceleration for 1-second period

$S_{DS} = \frac{2}{3} S_{MS} = \frac{2}{3} (F_a \cdot S_s) = 5\%$ damped design spectral response acceleration for short periods

$S_{D1} = \frac{2}{3} S_{M1} = \frac{2}{3} (F_v \cdot S_1) = 5\%$ damped design spectral response acceleration for 1-second period

9.2 Faulting

The subject property is located within the Intermountain Seismic Belt where the potential for active faulting and related earthquakes is present. Based upon published geologic maps³, no active faults traverse through or immediately adjacent to the site and the site is not located within local fault study zones. The nearest mapped fault trace is the Wasatch Fault located about one mile south of the site.

9.3 Liquefaction Potential

According to current liquefaction maps⁴ for Utah County, the site is located within an area designated as “Very Low” in liquefaction potential. Liquefaction can occur when saturated subsurface soils below groundwater lose their inter-granular strength due to an increase in soil pore water pressures during a dynamic event such as an earthquake.

Loose, saturated sands are most susceptible to liquefaction, but some loose, saturated gravels and relatively sensitive silt to low-plasticity silty clay soils can also liquefy during a seismic event. Subsurface soils were composed of silt, sand and gravel soils. The soils encountered at this project do not appear liquefiable, but the liquefaction susceptibility of underlying soils (deeper than our explorations) is not known and would require deeper explorations to quantify.

10.0 FOUNDATIONS

10.1 General

The foundation recommendations presented in this report are based on the soil conditions encountered during our field exploration, the results of laboratory testing of samples of the

³ U.S. Geological Survey, Quaternary Fault and Fold Database of the United States, November 3, 2010

⁴ Utah Geological Survey, Liquefaction-Potential Map for a Part of Utah County, Utah, Public Information Series 28, August 1994.



native soils, the site grading recommendations presented in this report, and the foundation loading conditions presented in Section 3.0, *Proposed Construction*, of this report. If loading conditions and assumptions related to foundations are significantly different, Earthtec should be notified so that we can re-evaluate our design parameters and estimates (higher loads may cause more settlement), and to provide additional recommendations if necessary.

Conventional strip and spread footings may be used to support the proposed structures after appropriate removals as outlined in Section 8.1. Foundations should not be installed on topsoil, undocumented fill, debris, combination soils, organic soils, frozen soil, or in ponded water. If foundation soils become disturbed during construction, they should be removed or compacted.

10.2 Strip/Spread Footings

We recommend that conventional strip and spread foundations be constructed entirely on firm, undisturbed, uniform gravel soils that extend a minimum of 24 inches below footings, or entirely on a minimum of 18 inches of properly placed, compacted, and tested structural fill extending to undisturbed native soils. For foundation design we recommend the following:

- Footings founded on native gravel or a minimum of 24 inches of structural fill may be designed using a maximum allowable bearing capacity of 2,000 pounds per square foot. The values for vertical foundation pressure can be increased by one-third for wind and seismic conditions per Section 1806.1 when used with the Alternative Basic Load Combinations found in Section 1605.3.2 of the 2015 International Building Code.
- Continuous and spot footings should be uniformly loaded and should have a minimum width of 20 and 30 inches, respectively.
- Exterior footings should be placed below frost depth which is determined by local building codes. In general, 30 inches of cover is adequate for most sites; however local code should be verified by the end design professional. Interior footings, not subject to frost (heated structures), should extend at least 18 inches below the lowest adjacent grade.
- Foundation walls and footings should be properly reinforced to resist all vertical and lateral loads and differential settlement.
- The bottom of footing excavations should be compacted with at least 4 passes of an approved non-vibratory roller prior to erection of forms or placement of structural fill to densify soils that may have been loosened during excavation and to identify soft spots. If soft areas are encountered, they should be stabilized as recommended in Section 8.5.
- Footing excavations should be observed by the geotechnical engineer prior to beginning footing construction to evaluate whether suitable bearing soils have been exposed and whether excavation bottoms are free of loose or disturbed soils.
- Structural fill used below foundations should extend laterally a minimum of 6 inches for every 12 vertical inches of structural fill placed. For example, if 18 inches of structural fill is required to bring the excavation to footing grade, the structural fill should extend laterally a



minimum of 9 inches beyond the edge of the footings on both sides.

10.3 Estimated Settlements

If the proposed foundations are properly designed and constructed using the parameters provided above, we estimate that total settlements should not exceed one inch and differential settlements should be one-half of the total settlement over a 25-foot length of continuous foundation, for non-earthquake conditions. Additional settlement could occur during a seismic event due to ground shaking, if more than 3 feet of grading fill is placed above the existing ground surface, if loading conditions are greater than anticipated in Section 3, and/or if foundation soils are allowed to become wetted.

10.4 Lateral Earth Pressures

Below grade walls act as soil retaining structures and should be designed to resist pressures induced by the backfill soils. The lateral pressures imposed on a retaining structure are dependent on the rigidity of the structure and its ability to resist rotation. Most retaining walls that can rotate or move slightly will develop an active lateral earth pressure condition. Structures that are not allowed to rotate or move laterally, such as subgrade basement walls, will develop an at-rest lateral earth pressure condition. Lateral pressures applied to structures may be computed by multiplying the vertical depth of backfill material by the appropriate equivalent fluid density. Any surcharge loads in excess of the soil weight applied to the backfill should be multiplied by the appropriate lateral pressure coefficient and added to the soil pressure. For static conditions the resultant forces are applied at about one-third the wall height (measured from bottom of wall). For seismic conditions, the resultant forces are applied at about two-third times the height of the wall both measured from the bottom of the wall. The lateral pressures presented in the table below are based on drained, horizontally placed native soils as backfill material using a 28° friction angle and a dry unit weight of 120 pcf.

Table 5: Lateral Earth Pressures (Static and Dynamic)

Condition	Case	Lateral Pressure Coefficient	Equivalent Fluid Pressure (pcf)
Active	Static	0.36	43
	Seismic	0.56	68
At-Rest	Static	0.53	64
	Seismic	0.75	91
Passive	Static	2.77	332
	Seismic	3.27	393

*Seismic values combine the static and dynamic values

These pressure values do not include any surcharge and are based on a relatively level ground surface at the top of the wall and drained conditions behind the wall. It is important that water is not allowed to build up (hydrostatic pressures) behind retaining structures. Retaining walls should incorporate drainage behind the walls as appropriate, and surface water should be directed away from the top and bottom of the walls.



Lateral loads are typically resisted by friction between the underlying soil and footing bottoms. Resistance to sliding may incorporate the friction acting along the base of foundations, which may be computed using a coefficient of friction of soils against concrete of 0.55 for native gravels or structural fill meeting the recommendations presented herein. For allowable stress design, the lateral resistance may be computed using Section 1807 of the 2015 International Building Code and all sections referenced therein. Retaining wall lateral resistance design should further reference Section 1807.2.3 for reference of Safety Factors. Retaining systems are assumed to be founded upon and backfilled with granular structural fill. If backfilling with clay or silt, it is required to contact Earthtec prior to construction for further review and recommendations. The values for lateral foundation pressure can be increased by one-third for wind and seismic conditions per Section 1806.1 when used with the Alternative Basic Load Combinations found in Section 1605.3.2 of the 2015 International Building Code.

The pressure and coefficient values presented above are ultimate; therefore, an appropriate factor of safety may need to be applied to these values for design purposes. The appropriate factor of safety will depend on the design condition and should be determined by the project structural engineer.

11.0 FLOOR SLABS AND FLATWORK

Concrete floor slabs and exterior flatwork may be supported on native gravel soils or 12 inches of properly placed and compacted structural fill after appropriate removals and grading as outlined in Section 8.1 are completed. We recommend placing a minimum 4 inches of free-draining fill material (see Section 8.3) beneath floor slabs to facilitate construction, act as a capillary break, and aid in distributing floor loads. For exterior flatwork, we recommend placing a minimum 4 inches of road-base material. Prior to placing the free-draining fill or road-base materials, the native sub-grade should be proof-rolled to identify soft spots, which should be stabilized as discussed above in Section 8.5.

For slab design, we recommend using a modulus of sub-grade reaction of 120 pounds per cubic inch. The thickness of slabs supported directly on the ground shall not be less than 3½ inches. A 6-mil polyethylene vapor retarder with joints lapped not less than 6 inches shall be placed between the ground surface and the concrete, as per Section 1907.1 of the 2015 International Building Code.

To help control normal shrinkage and stress cracking, we recommend that floor slabs have adequate reinforcement for the anticipated floor loads with the reinforcement continuous through interior floor joints, frequent crack control joints, and non-rigid attachment of the slabs to foundation and bearing walls. Special precautions should be taken during placement and curing of all concrete slabs and flatwork. Excessive slump (high water-cement ratios) of the concrete and/or improper finishing and curing procedures used during hot or cold weather conditions may lead to excessive shrinkage, cracking, spalling, or curling of slabs. We recommend all concrete placement and curing operations be performed in accordance with American Concrete Institute



(ACI) codes and practices.

12.0 DRAINAGE

12.1 Surface Drainage

As part of good construction practice, precautions should be taken during and after construction to reduce the potential for water to collect near foundation walls. Accordingly, we recommend the following:

- The contractor should take precautions to prevent significant wetting of the soil at the base of the excavation. Such precautions may include: grading to prevent runoff from entering the excavation, excavating during normally dry times of the year, covering the base of the excavation if significant rain or snow is forecast, backfill at the earliest possible date, frame floors and/or the roof at the earliest possible date, other precautions that might become evident during construction.
- Adequate compaction of foundation wall backfill should be provided i.e. a minimum of 90% of ASTM D-1557. Water consolidation methods should not be used.
- The ground surface should be graded to drain away from the building in all directions. We recommend a minimum fall of 8 inches in the first 10 feet.
- Roof runoff should be collected in rain gutters with down spouts designed to discharge well outside of the backfill limits, or at least 10 feet from foundations, whichever is greater.
- Sprinkler nozzles should be aimed away, and all sprinkler components kept at least 5 feet, from foundation walls. A drip irrigation system must be utilized in landscaping areas within 10 feet of foundation walls to minimize water intrusion at foundation backfill. Also, sprinklers should not be placed at the top or on the face of slopes. Sprinkler systems should be designed with proper drainage and well maintained. Over-watering should be avoided.
- Any additional precautions which may become evident during construction.

12.2 Subsurface Drainage

Walls or portions thereof that retain earth and enclose interior spaces and floors below grade shall conform to Section 1805 of the 2015 International Building Code for damp proofing and water proofing.

13.0 PAVEMENT RECOMMENDATIONS

We understand that asphalt paved parking and drive areas will be constructed as part of the project. The native soils encountered beneath the fill and topsoil during our field exploration



were predominantly composed of clay. We estimate that a California Bearing Ratio (CBR) value of 3 is appropriate for these soils. If the fill material and topsoil is left beneath concrete flatwork and pavement areas, increased maintenance costs over time should be anticipated.

We anticipate that the traffic volume will be about 500 vehicles a day or less for the parking and drive areas, consisting of mostly cars and pickup trucks, with a daily delivery truck and a weekly garbage truck. Based on these traffic parameters, the estimated CBR given above, and the procedures and typical design inputs outlined in the UDOT Pavement Design Manual (1998), we recommend the minimum asphalt pavement section presented below.

Table 6: Pavement Section Recommendations

Asphalt Thickness (in)	Compacted Roadbase Thickness (in)	Compacted Subbase Thickness (in)
3	10*	0
3	6	6*

* Stabilization may be required

If the pavement will be required to support construction traffic, more than an occasional semi-tractor or fire truck, or more traffic than listed above, our office should be notified so that we can re-evaluate the pavement section recommendations. The following also apply:

- The subgrade should be prepared by proof rolling to a firm, non-yielding surface, with any identified soft areas stabilized as discussed above in Section 8.5.
- Site grading fills below the pavements should meet structural fill composition and placement recommendations per Sections 8.3 and 8.4 herein.
- Asphaltic concrete, aggregate base and sub-base material composition should meet local, APWA or UDOT requirements.
- Aggregate base and sub-base is compacted to local, APWA, or UDOT requirements, or to at least 95 percent of maximum dry density (ASTM D 1557).
- Asphaltic concrete is compacted to local or UDOT requirements, or to at least 96 percent of the laboratory Marshall density (ASTM D 6927).

Due to high static loads imposed by at dumpster locations, we recommend that a rigid pavement section for this area of a minimum of six (6) inches of Portland Cement Concrete (PCC) over a minimum of six (6) inches of aggregate base material. The aggregate base material should meet local, APWA or UDOT requirements and should be compacted to local, APWA, or UDOT requirements, or to at least 95 percent of maximum dry density (ASTM D1557).



14.0 GENERAL CONDITIONS

The exploratory data presented in this report was collected to provide geotechnical design recommendations for this project. The explorations may not be indicative of subsurface conditions outside the study area or between points explored and thus have a limited value in depicting subsurface conditions for contractor bidding. Variations from the conditions portrayed in the explorations may occur and which may be sufficient to require modifications in the design. If during construction, conditions are different than presented in this report, Earthtec should be advised immediately so that the appropriate modifications can be made.

Earthtec Engineering was not involved in the design, construction, or evaluation of the constructed rock walls. We recommend that the rock walls and slope be evaluated if any structure is placed within 20 feet of the rock walls.

The findings and recommendations presented in this geotechnical report were prepared in accordance with generally accepted geotechnical engineering principles and practice in this area of Utah at this time. No warranty or representation is intended in our proposals, contracts, letters, or reports.

This geotechnical report is based on relatively limited subsurface explorations and laboratory testing. Subsurface conditions may differ in some locations of the site from those described herein, which may require additional analyses and possibly modified recommendations. Thus, we strongly recommend consulting with Earthtec regarding any changes made during design and construction of the project from those discussed herein. Failure to consult with Earthtec regarding any such changes relieves Earthtec from any liability arising from changed conditions at the site.

To maintain continuity, Earthtec should also perform materials testing and special inspections for this project. The recommendations presented herein are based on the assumption that an adequate program of tests and observations will be followed during construction to verify compliance with our recommendations. We also assume that we will review the project plans and specifications to verify that our conclusions and recommendations are incorporated and remain appropriate (based on the actual design). Earthtec should be retained to review the final design plans and specifications so comments can be made regarding interpretation and implementation of our geotechnical recommendations in the design and specifications. Earthtec also should be retained to provide observation and testing services during grading, excavation, foundation construction, and other earth-related construction phases of the project.



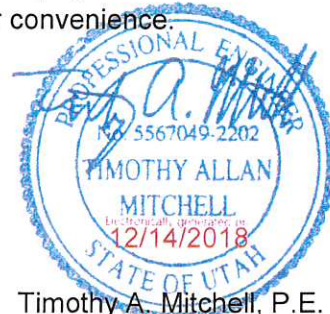
We appreciate the opportunity of providing our services on this project. If we can answer questions or be of further service, please contact Earthtec at your convenience.

Respectfully;

EARTHTEC ENGINEERING



Jeremy A. Balleck, E.I.T.
Staff Engineer



Timothy A. Mitchell, P.E.
Geotechnical Engineer

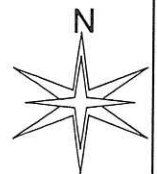


VICINITY MAP

ALPINE TOWNHOMES

300 SOUTH MAIN STREET

ALPINE, UTAH



Not to Scale

PROJECT NO.: 189260



FIGURE NO.: 1

AERIAL PHOTOGRAPH SHOWING LOCATION OF TEST PITS

ALPINE TOWNHOMES 300 SOUTH MAIN STREET ALPINE, UTAH



✕ Approximate Test Pit Locations



Not to Scale

PROJECT NO.: 189260



FIGURE NO.: 2

TEST PIT LOG

NO.: TP-1

PROJECT: Alpine Townhomes
CLIENT: Cottle Capital Group, LLC
LOCATION: See Figure 2
OPERATOR: JSI
EQUIPMENT: Mini Excavator
DEPTH TO WATER; INITIAL ∇ :

PROJECT NO.: 189260
DATE: 11/30/18
ELEVATION: Not Measured
LOGGED BY: J. Balleck

AT COMPLETION ∇ :

Depth (Ft.)	Graphic Log	USCS	Description	Samples	TEST RESULTS							
					Water Cont. (%)	Dry Dens. (pcf)	LL	PI	Gravel (%)	Sand (%)	Fines (%)	Other Tests
0			TOPSOIL, lean clay, moist, brown									
1			Lean CLAY, medium stiff (estimated), moist, brown, blocky, roots									
2		CL										
3												
4		GM	Silty GRAVEL with sand, medium dense (estimated), moist, brown, occasional cobbles									
5				X								
6			Poorly Graded GRAVEL with silt and sand, medium dense to dense (estimated), moist, gray, occasional cobbles									
7		GP-GM										
8				X								
9												
10			SILT with sand, medium stiff (estimated), moist, brown, slightly porous		16	108	21	NP	0	26	74	C
11		ML										
12					16	93	23	3	1	24	75	C
13			Maximum depth explored approximately 12 feet									
14												
15												

Notes: No groundwater encountered.

Tests Key

CBR = California Bearing Ratio
 C = Consolidation
 R = Resistivity
 DS = Direct Shear
 SS = Soluble Sulfates
 B = Burnoff

PROJECT NO.: 189260



FIGURE NO.: 3


TEST PIT LOG

NO.: TP-2

PROJECT: Alpine Townhomes
CLIENT: Cottle Capital Group, LLC
LOCATION: See Figure 2
OPERATOR: JSI
EQUIPMENT: Mini Excavator
DEPTH TO WATER; INITIAL ∇ :

PROJECT NO.: 189260
DATE: 11/30/18
ELEVATION: Not Measured
LOGGED BY: J. Balleck

AT COMPLETION ∇ :

Depth (Ft.) 0	Graphic Log	USCS	Description	Samples	TEST RESULTS							
					Water Cont. (%)	Dry Dens. (pcf)	LL	PI	Gravel (%)	Sand (%)	Fines (%)	Other Tests
1			FILL, silty gravel, moist, brown, debris, trash									
2												
3												
4												
5												
6												
7												
8												
9												
10												
11			Maximum depth explored approximately 10 feet									
12												
13												
14												
15												

Notes: No groundwater encountered.

Tests Key

CBR = California Bearing Ratio
 C = Consolidation
 R = Resistivity
 DS = Direct Shear
 SS = Soluble Sulfates
 B = Burnoff

PROJECT NO.: 189260












FIGURE NO.: 4

TEST PIT LOG

NO.: TP-3

PROJECT: Alpine Townhomes
CLIENT: Cottle Capital Group, LLC
LOCATION: See Figure 2
OPERATOR: JSI
EQUIPMENT: Mini Excavator
DEPTH TO WATER; INITIAL ∇ :

PROJECT NO.: 189260
DATE: 11/30/18
ELEVATION: Not Measured
LOGGED BY: J. Balleck
AT COMPLETION ∇ :

Depth (Ft.) 0	Graphic Log	USCS	Description	Samples	TEST RESULTS							
					Water Cont. (%)	Dry Dens. (pcf)	LL	PI	Gravel (%)	Sand (%)	Fines (%)	Other Tests
1			FILL, silty gravel, moist, brown, debris, trash									
2												
3												
4												
5												
6												
7												
8		SM	Silty SAND, medium dense (estimated), moist, light brown, slightly porous									
9												
10												
11		ML	SILT with sand, medium stiff (estimated), moist, brown, oxide stains, slightly porous		11	89	22	NP	1	19	80	C
12												
13												
14			Maximum depth explored approximately 12 feet									
15												

Notes: No groundwater encountered.

Tests Key

CBR = California Bearing Ratio
 C = Consolidation
 R = Resistivity
 DS = Direct Shear
 SS = Soluble Sulfates
 B = Burnoff

PROJECT NO.: 189260



FIGURE NO.: 5


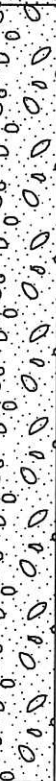
TEST PIT LOG

NO.: TP-4

PROJECT: Alpine Townhomes
CLIENT: Cottle Capital Group, LLC
LOCATION: See Figure 2
OPERATOR: JSI
EQUIPMENT: Mini Excavator
DEPTH TO WATER; INITIAL ∇ :

PROJECT NO.: 189260
DATE: 11/30/18
ELEVATION: Not Measured
LOGGED BY: J. Balleck

AT COMPLETION ∇ :

Depth (Ft.) 0	Graphic Log	USCS	Description	Samples	TEST RESULTS							
					Water Cont. (%)	Dry Dens. (pcf)	LL	PI	Gravel (%)	Sand (%)	Fines (%)	Other Tests
			TOPSOIL, silty sand, moist, brown									
1		GP	Poorly Graded GRAVEL with sand, medium dense to dense (estimated), moist, gray, some cobbles									
2												
3												
4												
5												
6						X	2			60	37	3
7												
8												
9												
10												
11						X						
12			Maximum depth explored approximately 11 feet									
13												
14												
15												

Notes: No groundwater encountered.

Tests Key

CBR = California Bearing Ratio
 C = Consolidation
 R = Resistivity
 DS = Direct Shear
 SS = Soluble Sulfates
 B = Burnoff

PROJECT NO.: 189260





FIGURE NO.: 6

TEST PIT LOG

NO.: TP-5

PROJECT: Alpine Townhomes
CLIENT: Cottle Capital Group, LLC
LOCATION: See Figure 2
OPERATOR: JSI
EQUIPMENT: Mini Excavator
DEPTH TO WATER; INITIAL ∇ :

PROJECT NO.: 189260
DATE: 11/30/18
ELEVATION: Not Measured
LOGGED BY: J. Balleck
AT COMPLETION ∇ :

Depth (Ft.) 0	Graphic Log	USCS	Description	Samples	TEST RESULTS							
					Water Cont. (%)	Dry Dens. (pcf)	LL	PI	Gravel (%)	Sand (%)	Fines (%)	Other Tests
1			FILL, silty gravel, moist, brown, debris, trash									
2												
3												
4												
5												
6												
7												
8		GM	Silty GRAVEL with sand, medium dense (estimated), moist, brown, occasional cobbles									
9												
10												
11			Maximum depth explored approximately 10 feet									
12												
13												
14												
15												

Notes: No groundwater encountered.

Tests Key

CBR = California Bearing Ratio
 C = Consolidation
 R = Resistivity
 DS = Direct Shear
 SS = Soluble Sulfates
 B = Burnoff

PROJECT NO.: 189260


















FIGURE NO.: 7

LEGEND

PROJECT: Alpine Townhomes
CLIENT: Cottle Capital Group, LLC

DATE: 11/30/18
LOGGED BY: J. Balleck

UNIFIED SOIL CLASSIFICATION SYSTEM

MAJOR SOIL DIVISIONS			USCS SYMBOL TYPICAL SOIL DESCRIPTIONS		
COARSE GRAINED SOILS (More than 50% retaining on No. 200 Sieve)	GRAVELS (More than 50% of coarse fraction retained on No. 4 Sieve)	CLEAN GRAVELS (Less than 5% fines)		GW	Well Graded Gravel, May Contain Sand, Very Little Fines
				GP	Poorly Graded Gravel, May Contain Sand, Very Little Fines
		GRAVELS WITH FINES (More than 12% fines)		GM	Silty Gravel, May Contain Sand
				GC	Clayey Gravel, May Contain Sand
	SANDS (50% or more of coarse fraction passes No. 4 Sieve)	CLEAN SANDS (Less than 5% fines)		SW	Well Graded Sand, May Contain Gravel, Very Little Fines
				SP	Poorly Graded Sand, May Contain Gravel, Very Little Fines
		SANDS WITH FINES (More than 12% fines)		SM	Silty Sand, May Contain Gravel
				SC	Clayey Sand, May Contain Gravel
FINE GRAINED SOILS (More than 50% passing No. 200 Sieve)	SILTS AND CLAYS (Liquid Limit less than 50)			CL	Lean Clay, Inorganic, May Contain Gravel and/or Sand
				ML	Silt, Inorganic, May Contain Gravel and/or Sand
				OL	Organic Silt or Clay, May Contain Gravel and/or Sand
	SILTS AND CLAYS (Liquid Limit Greater than 50)			CH	Fat Clay, Inorganic, May Contain Gravel and/or Sand
				MH	Elastic Silt, Inorganic, May Contain Gravel and/or Sand
				OH	Organic Clay or Silt, May Contain Gravel and/or Sand
HIGHLY ORGANIC SOILS				PT	Peat, Primarily Organic Matter

SAMPLER DESCRIPTIONS

- SPLIT SPOON SAMPLER
(1 3/8 inch inside diameter)
- MODIFIED CALIFORNIA SAMPLER
(2 inch outside diameter)
- SHELBY TUBE
(3 inch outside diameter)
- BLOCK SAMPLE
- BAG/BULK SAMPLE

WATER SYMBOLS

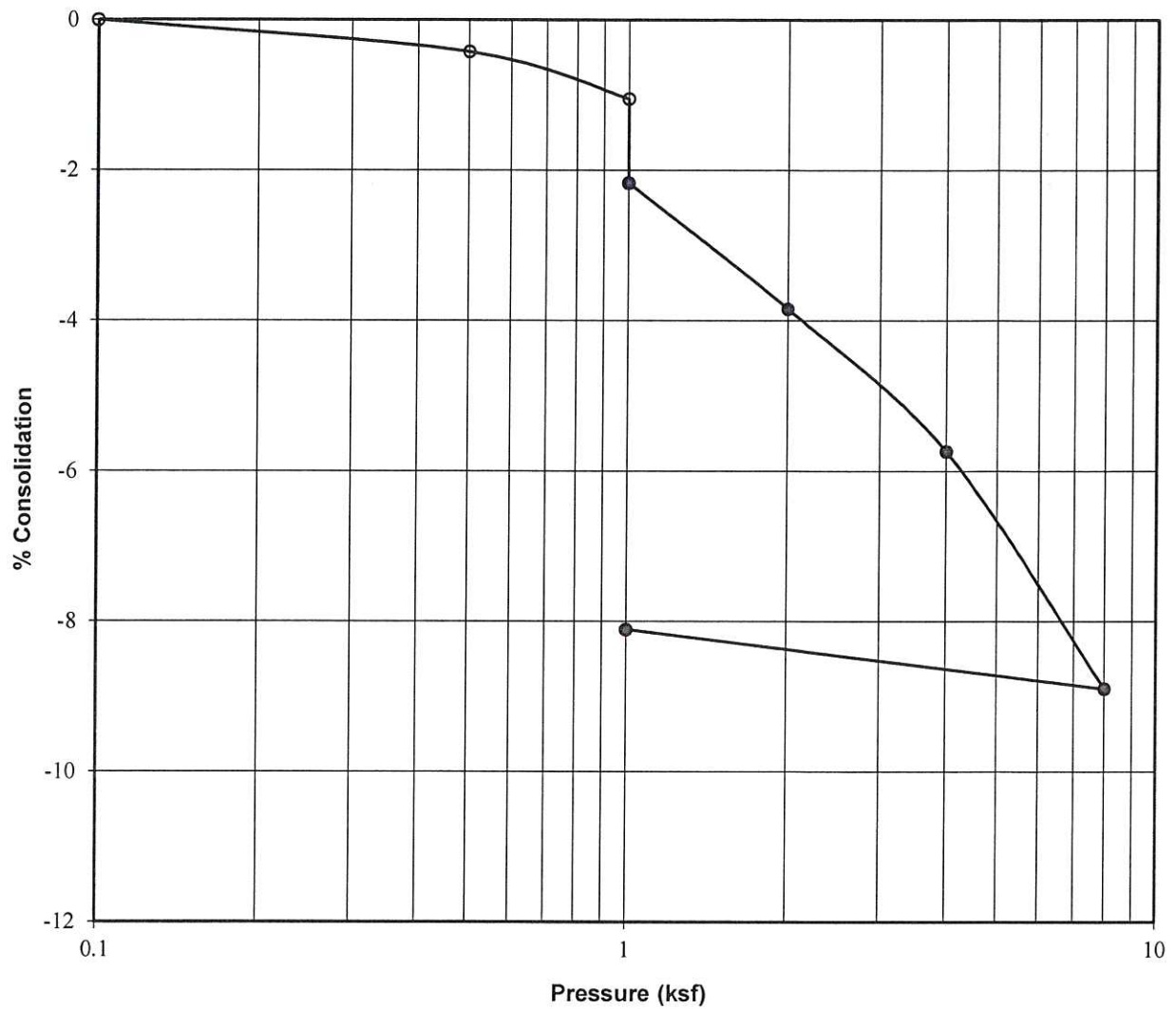
- Water level encountered during field exploration
- Water level encountered at completion of field exploration

- NOTES:**
- The logs are subject to the limitations, conclusions, and recommendations in this report.
 - Results of tests conducted on samples recovered are reported on the logs and any applicable graphs.
 - Strata lines on the logs represent approximate boundaries only. Actual transitions may be gradual.
 - In general, USCS symbols shown on the logs are based on visual methods only; actual designations (based on laboratory tests) may vary.

PROJECT NO.: 189260



FIGURE NO.: 8



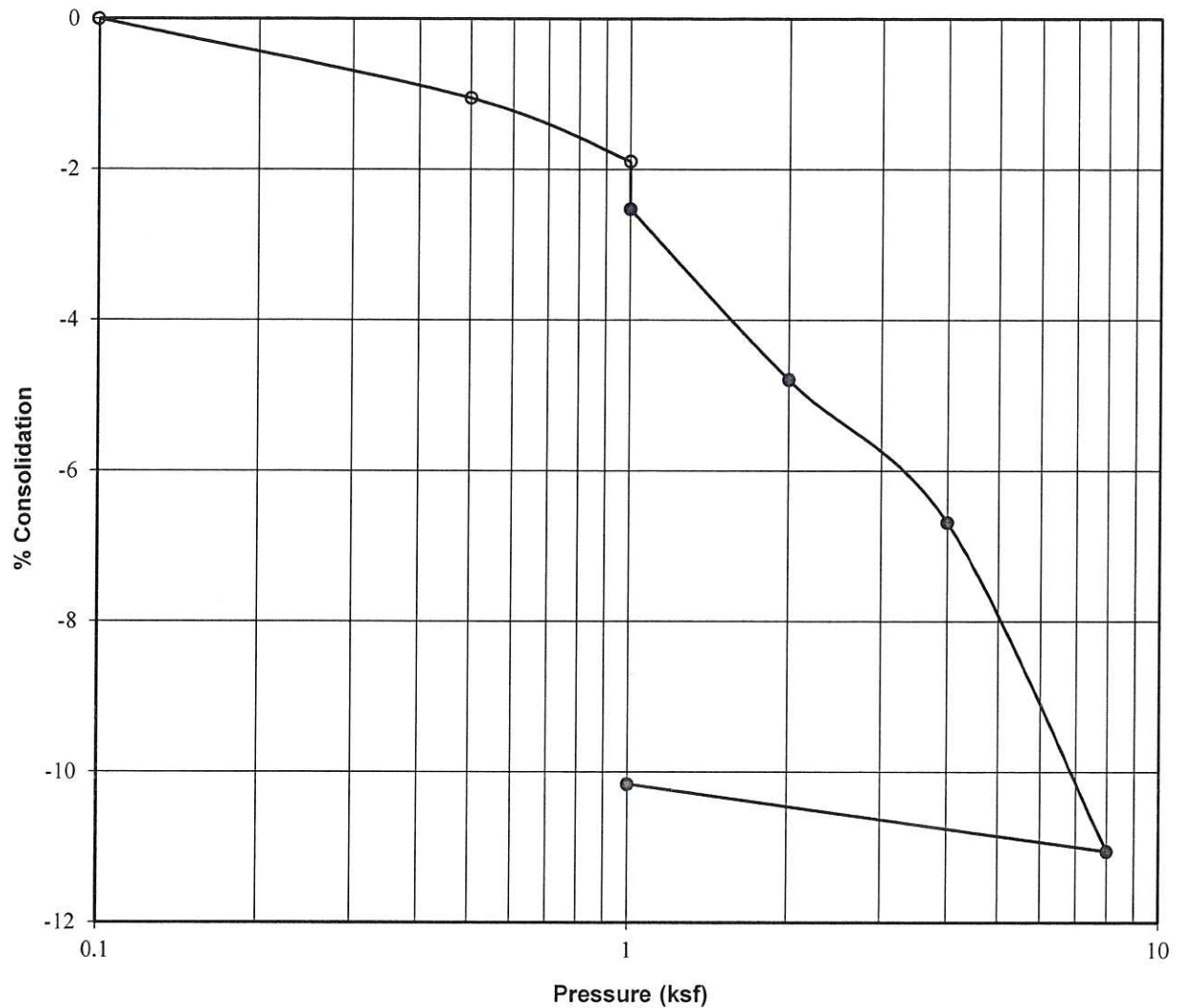
Project:	Alpine Townhomes
Location:	TP-1
Sample Depth, ft:	9
Description:	Block
Soil Type:	SILT with sand (ML)
Natural Moisture, %:	16
Dry Density, pcf:	108
Liquid Limit:	21
Plasticity Index:	NP
Water Added at:	1 ksf
Percent Collapse:	1.1

PROJECT NO.: 189260



FIGURE NO.: 9

CONSOLIDATION - SWELL TEST

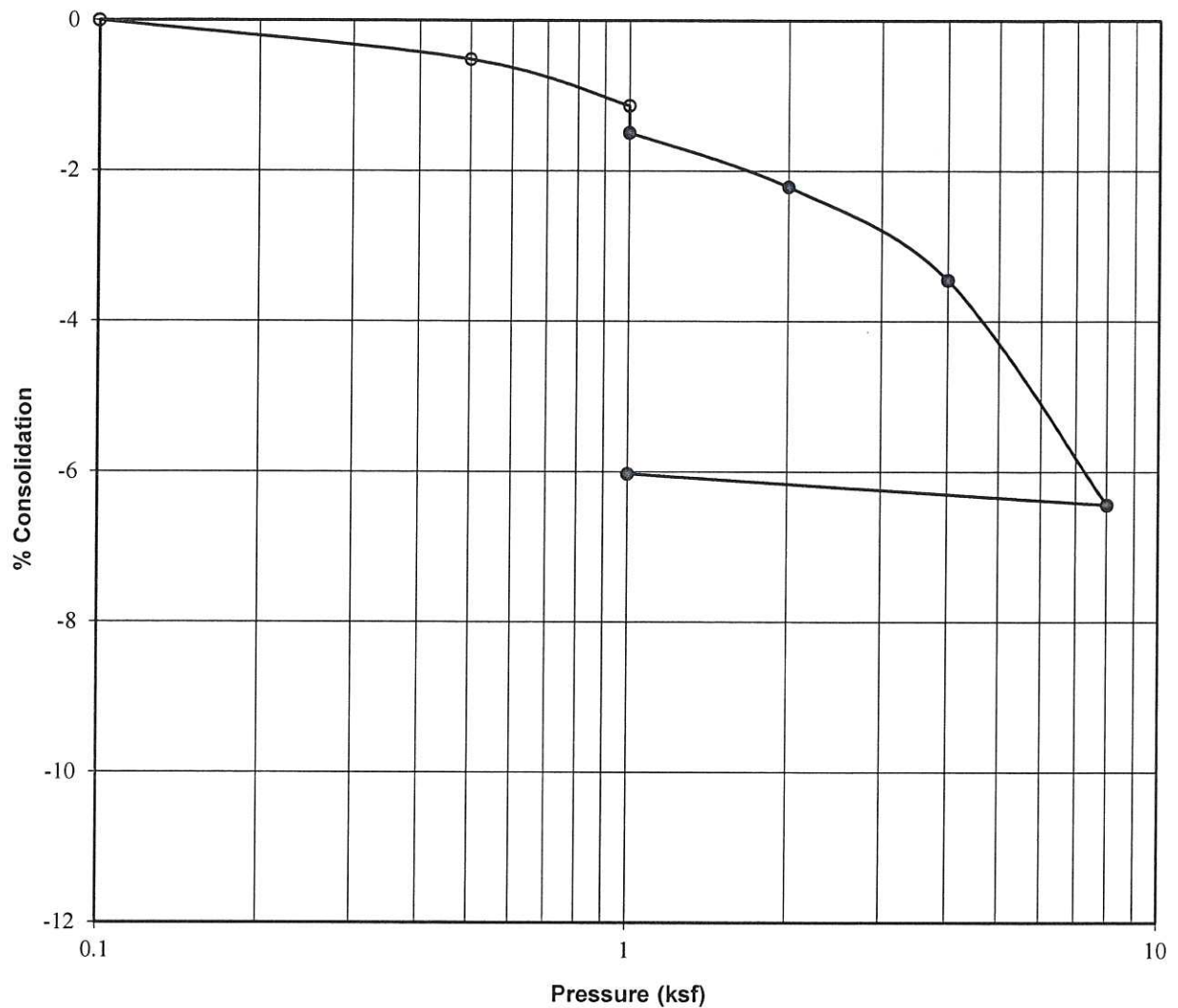


Project:	Alpine Townhomes
Location:	TP-1
Sample Depth, ft:	11½
Description:	Block
Soil Type:	SILT with sand (ML)
Natural Moisture, %:	16
Dry Density, pcf:	93
Liquid Limit:	23
Plasticity Index:	3
Water Added at:	1 ksf
Percent Collapse:	0.6

PROJECT NO.: 189260



FIGURE NO.: 10



Project:	Alpine Townhomes
Location:	TP-3
Sample Depth, ft:	10
Description:	Block
Soil Type:	SILT with sand (ML)
Natural Moisture, %:	11
Dry Density, pcf:	89
Liquid Limit:	22
Plasticity Index:	NP
Water Added at:	1 ksf
Percent Collapse:	0.4

PROJECT NO.: 189260



FIGURE NO.: 11

APPENDIX A



Timpview Analytical Laboratories

A Chemtech-Ford, Inc. Affiliate
1384 West 130 South Orem, UT 84058 (801) 229-2282



Certificate of Analysis

Earthtec Testing & Engineering
Caleb Allred
1497 W 40 S
Lindon, UT 84042
DW System # :

Work Order #: 18L0336
PO# / Project Name: 189260
Receipt: 12/6/18 12:55
Batch Temp °C: 9.1
Date Reported: 12/14/2018

Sample Name: 189260 TP-1 @ 4.5

Collected: 11/30/18 11:00

Matrix: Solid

Collected By: Client

Analysis

<u>Parameter</u>	<u>Lab ID #</u>	<u>Method</u>	<u>Date / Time</u>	<u>Result</u>	<u>Units</u>	<u>MRL</u>	<u>Flags</u>
Sulfate, Soluble (IC)	18L0336-01	EPA 300.0	12/14/18	12	mg/kg dry	10	
Total Solids	18L0336-01	SM 2540G	12/10/18	98.4	%	0.1	

Comment:

Reviewed by:


Joyce Applegate, Project Manager

ALPINE TOWNHOMES

2/21/2019

Prepared for: Cottle Homes

Prepared by: Focus Engineering



32 West Center Street
Midvale, UT 84047
Phone: 801-352-0075
Web: www.focusutah.com

Table of Contents

I.	General Location and Description.....	1
II.	Drainage Basin.....	1
III.	Proposed Drainage Plan	1
IV.	Stormwater Quality.....	2
V.	Analysis.....	2
VI.	Conclusion	3

APPENDICES

Grading and drainage plan
Pond Calculations

I. GENERAL LOCATION AND DESCRIPTION

The proposed project is located at 250 South Main Street in Alpine Utah and is 3.94 acres, with approximately 100% being disturbed with construction. The current use is a vacant field and the proposed use will be multi-family residential (townhomes). The property slopes from east to west at 1-5%

Dry Creek runs along the western boundary of the property.

A preliminary soils letter has been provided by Earthtec Engineering dated December 5, 2018 and the soil consists of clay, sand, and gravel below the fill material that has been placed on the site.

II. DRAINAGE BASIN

Existing storm water flows predominantly from east to west across the property and is collected naturally in Dry Creek, located on the western boundary of the property.

The property resides within two flood zones, Zone A and Zone C, per FEMA Community panel number 490228 0005 A, with an effective date of April 4, 1983. Zone A is defined as: Areas of 100-year flood; base flood elevations and flood hazard factors not determined. The property within Dry Creek and immediately adjacent to the creek are contained in Zone A. Zone C is defined as: Areas of minimal flooding. The majority of this property is contained within Zone C.

III. PROPOSED DRAINAGE PLAN

A drainage plan has been developed per Alpine City standards. The onsite system will consist of buried pipes, curb inlets, manholes, potential underground storage (if needed), and a detention pond. Roof drainage will be directed toward the front of the units and into the streets. Non-point sources of discharge include the rear landscaped areas of the units along Dry Creek. This runoff will be cleaned by the landscaping before naturally discharging into Dry Creek. Pipes have been sized to hold the 10-year storm event, and the detention pond has been sized to hold the 100-year storm event. The point source of discharge is the detention pond. After

leaving the detention pond the storm drain will outfall into Dry Creek at the required detained rate.

The rational method, using NOAA Atlas 14 data was used to design the drainage system for the development. A storage volume of 7,978 cubic feet is required for the development. A detention pond will be constructed at the northwest edge of the development, and sized to hold the required volume for the site.

An orifice of 4 inches will be employed at the storm drain discharge point of the project to control the discharge rate to the city standard 0.2 cfs/acre. The discharge rate for this project will be 0.788 cfs. Calculations for the pond and orifice can be found in the appendix of this report.

IV. STORMWATER QUALITY

A storm water pollution prevention plan will be developed for the construction of the project and submitted for review.

A snout and sump will be installed prior to entering the pond to clean the storm water before it is released into Dry Creek. The detention pond will be grass lined to contribute to the cleaning of the water before it enters the outlet structure.

V. ANALYSIS

Hydrology

The design storm required is the 100-year event for detention. The rainfall intensity information was obtained from the NOAA Atlas 14 website for the state of Utah. The post development storm water runoff discharge cannot exceed that of 0.2 cfs/acre. This is accomplished through the use of an orifice plate on the exit pipe of the detention system.

*The rational method ($Q=CIA$) was used to determine storm drain runoff flows. A weighted "C" value of 0.44, a variable rainfall intensity (from NOAA Atlas 14 data), and the project area of 3.94 acres, along with the discharge rate of 0.788 cfs, were used to size the detention pond. The runoff calculations resulted in a maximum detention volume of 7,978 cubic feet. See the appendix for detention pond sizing calculations.

The detention pond will be a grass lined pond sized to hold the required volume for the development. Once complete, the pond will be owned and maintained by the development's home owner's association (HOA).

Hydraulics:

The design storm required is the 10-year event for pipe capacity. The pipes were sized using Manning's equation for uniform flow $Q = VA = \left(\frac{1.49}{n}\right) AR^{\frac{2}{3}} S^{\frac{1}{2}}$ with a Manning's n value of 0.013.

Storm drain inlets have been placed at all low points in the road, and as needed to minimize the amount of storm water runoff that bypasses catch basins. Inlets have also been spaced no more than 400 feet apart for ease of maintenance.

The 100-year storm overflow path directs flows to the streets, and not onto adjacent properties.

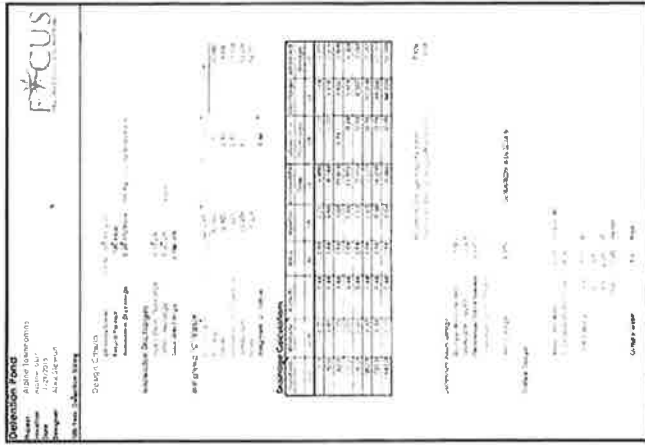
VI. CONCLUSION

It is concluded that the project is in compliance with city standards and design guidelines.

Sincerely,

Thomas Romney, P.E.
Production Manager
FOCUS Engineering & Surveying

www.enr.construction.com/resources/special/
 2007 ENR CONSTRUCTION SPECIAL ADVERTISING
 2007 ENR CONSTRUCTION SPECIAL ADVERTISING
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ENR
 ENGINEERING AND CONSTRUCTION



This is a blank, lined page from a notebook. The page features horizontal ruling lines and a vertical margin line on the left side. The paper appears slightly aged with some faint smudges. The page is oriented vertically, with the binding edge on the left.

Detention Pond

Project: **Alpine Townhomes**
 Location: **Alpine, Utah**
 Date: **11/29/2018**
 Designer: **Alex Stewart**

**100-Year Detention Sizing****Design Criteria**

Intensity Table: Per NOAA Atlas 14
 Return Period: **100 year**
 Allowable Discharge: **0.20 cfs/acre** Per Alpine City Standards

Allowable Discharges

Storm Drain Discharge: 0.79 cfs
 Other Discharge: 0.00 cfs Source:
 Total Discharge: **0.788 cfs**

Weighted "C" Value

Surface Type	Area (sf)	"C" Value	C*A
Building	43,632	0.85	37,087
Drives	10,400	0.85	8,840
Roadway and Sidewalk	16,021	0.85	13,618
Landscape	101,506	0.15	15,226
Totals	171,558		74,771
Weighted "C" Value		0.44	

Drainage Calculations

Duration	Intensity	Runoff C	Area	Rainfall	Accumulated	Allowable	Discharge	Required
min	in/hr		Ac	cfs	Flow	Discharge	cf	Storage
15.0	4.20	0.44	3.94	7.21	6,488	0.79	709	5,779
30.0	2.83	0.44	3.94	4.86	8,744	0.79	1,418	7,326
60.0	1.75	0.44	3.94	3.00	10,814	0.79	2,838	7,976
120.0	0.97	0.44	3.94	1.66	11,976	0.79	5,671	6,304
180.0	0.66	0.44	3.94	1.13	12,254	0.79	8,507	3,747
360.0	0.37	0.44	3.94	0.63	13,533	0.79	17,014	-3,481
720.0	0.22	0.44	3.94	0.38	16,239	0.79	34,028	-17,789
1440.0	0.11	0.44	3.94	0.19	16,462	0.79	68,056	-51,594

Maximum Storage Requirement: **7,978**
 Maximum Storage Requirement (ac-ft): **0.18**

Detention Basin Design

Storage Requirement: 7,978 cf
 Allowable Depth: 5.0 ft
 Detention Pond Volume: 8,590 cf
 Roadway Sump Storage: 0 cf

Total Storage 8,590 DETENTION ADEQUATE

Orifice Design

Restriction Rate 0.20 CFS/ACRE
 Allowable Outfall Rate Q (cfs) 0.79

Orifice Sizing: h = 3.5 ft
 C = 0.6
 A = 0.087 sf
 dia. = 4.00 inches

Orifice Size= 4.0 Inch

Common Area Maintenance and Management Plan

MONTDELLA TOWNHOMES



COTTLE CAPITAL GROUP

Alan Cottle, Manager
COTTLE CAPITAL GROUP, LLC
801 North 500 West, #103
Bountiful, UT 84010
Ph. 801-617-2100 Fx. 801-683-8570
acottle@cottlecapital.com

PURPOSE AND RESPONSIBILITY

As required by the Clean Water Act and resultant local regulations, including the Alpine City ordinances, those who develop land are required to build and maintain systems to minimize litter and contaminants in stormwater runoff that pollute waters of the State.

This Common Area Maintenance and Management Plan ("Plan") describes the systems, operations and the minimum standard operating procedures (SOPs) necessary to manage pollutants originating from or generated on this property. Any activities or site operations at this property that contaminate water entering the City's stormwater system and generate loose litter must be prohibited, unless SOPs are written to manage those activities or operations, and amended into this Plan.

SECTION 1: SITE DESCRIPTION, USE AND IMPACT

The site infrastructure and operations described in this Section are limited at controlling and containing pollutants and if managed improperly can contaminate the environment. The Plan includes standard operations procedures (SOP)s that are intended to compensate for the limitations of the site infrastructure.

The property manager must use good judgment and conduct operations appropriately, doing as much as possible indoors and responsibly managing operations that must be performed outdoors.

Impervious Areas, Parking, Sidewalk and Patio

The impervious infrastructure will consist of concrete drives, asphalt paved road surfaces, walkways to the home, small rear patios, curb and gutter. The road surfaces and curb and gutter are designed to funnel and collect contaminants and debris in locations as per the approved engineered construction drawings. The home owners association (the "HOA") will incorporate into its maintenance duties an SOP that such drains will be regularly inspected and cleaned by contracted maintenance or landscape maintenance company.

Storm Drain System

The storm water system will be constructed as per approved engineered construction drawings. Its presence and maintenance will positively impact water quality. HOA will use Alpine City's BMP guidelines for Storm Drain System Best Management Practices after the construction phase, such as: during snowy weather, inlet protection should be marked with a candle marker or some other effective device to warn storm plows to avoid the inlet. Storm inlet should be inspected after any snow plowing to be sure it is installed correctly.

Landscaping

The developer will have designed and installed landscaping that is sensitive to water consumption. Automatic sprinkling systems will be installed to minimize secondary water consumption. All excess water crossing landscaping will be contained within the storm drain system. HOA will adhere to BPM for landscape maintenance, which will include weekly maintenance and cleanup; all debris removed from the site by the landscape contractor. This will limit any debris flowing toward a storm drain system.

Waste Management

The HOA will contract with a qualified, licensed, insured and bonded waste management contractor for weekly off-haul of waste. Each household in the development will have an individual trash receptacle for weekly off-haul. Such containment and weekly off-haul of trash will improve water quality as it will remain free of debris and pollution.

Utility System

The utility system should have little or no impact on the storm drain system. All utilities will be installed underground and maintained by the municipalities or providers to which they are dedicated. The landscape maintenance contractor will look to keep the trees maintained in size and scope so as not to interfere with utility lines.

Snow and Ice Removal Management

Snow and ice removal will be contracted with a qualified snow/ice removal management company. Snow and ice will be removed to limit debris flowing toward the storm drains.

Equipment / Outside Storage

No outside storage structures or equipment are contemplated in the development project.

Outdoor Functions; Yard Sale Events, Fund Raisers...

All such outdoor functions, such as yard sale events, fund raise5rs, etc. much comply with Alpine City ordinances. The HOA will not allow these events to generate trash or, if they do, they must be contained in receptacles that are part of the scheduled waste management program. This will help maintain good water quality and keep the storm drain systems free of debris.

Add infrastructure or operations that are unique to this site

There are no infrastructure operations unique to this site.

SECTION 2: TRAINING

The HOA will ensure that all employees and maintenance contractors know and understand the SOPs specifically written to manage and maintain the property. Maintenance contractors must use the stronger of their Company and the Plan's SOPs. File all training records in Appendix A.

SECTION 3: RECORDKEEPING

The HOA will maintain records of operation and maintenance activities in accordance with SOPs.

APPENDIX A – PLAN RECORDKEEPING DOCUMENTS

[illegible]

MAINTENANCE/INSPECTION SCHEDULE

Frequency	Site Infrastructure.
S	Snow/ice removal
W	Landscape maintenance, debris removal, storm drain inspection
W	Waste management, debris removal

Inspection Frequency Key: A=annual, Q=Quarterly, M=monthly, W=weekly,
S=following appreciable storm event, U=Unique infrastructure specific (specify)

RECORD INSPECTIONS IN THE MAINTENANCE LOG

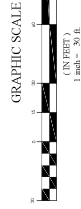
Inspection Means: Either; Traditional walk through, Awareness/Observation, and during regular maintenance operations while noting efficiencies/inefficiencies/concerns found, etc.

MAINTENANCE LOG

Date	Maintenance Performed/Spill Events. Perform Maintenance per SOPs	Observation Notes, including but not limited to; Inspection results, Observations, System Performance (effectiveness/inefficiencies), SOP Usefulness, Concerns, Necessary Changes...	Initials

Annual Summary of Plan effectiveness, inefficiencies, problems, necessary changes etc.

PREPARED FOR:
ALAN COTTLE
LOCATED IN:
ALPINE, UTAH



ENGINEER & SURVEYOR
FOCUS ENGINEERING & SURVEYING, LLC
 32 WEST CENTER STREET
 MIDVALE, UTAH 84047
 (801) 352-0075
 PROJECT MANAGER: BRANDON PARR
 SURVEY MANAGER: SPENCER LLEWELLYN
 OWNER: DEVELOPER
 ALAN COTTLE
 COTTLE CAPITAL GROUP, LLC
 801 NORTH 500 WEST, SUITE 103
 BOUNTIFUL, UTAH 84010
 801-617-2100
ACOTTLE@COTTLEHOMES.COM

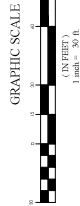
1. CONTRACTOR TO FIELD VERIFY HORIZONTAL AND VERTICAL LOCATIONS OF ALL EXISTING UTILITIES PRIOR TO COMMENCEMENT OF CONSTRUCTION AND BEFORE ANY UNDERMINING OF THE HIGHWAY.
2. CONTRACTOR TO FIELD VERIFY HORIZONTAL AND VERTICAL LOCATIONS OF ALL EXISTING UTILITIES PRIOR TO COMMENCEMENT OF CONSTRUCTION.
3. ALL CONSTRUCTION SHALL ADHERE TO APPLICABLE CITY STANDARDS AND SPECIFICATIONS.
4. ALL UTILITIES AND ROAD IMPROVEMENTS SHOWN ON THE PLANS SHALL BE PROTECTED BY CONSTRUCTION STAKES PLACED UNDER THE SUPERVISION OF THE CITY ENGINEER.
5. THE CITY ENGINEER SHALL BE NOTIFIED PRIOR TO ANY REMOVAL OF THE SURVEY OF UTILITY AND ROAD IMPROVEMENTS INSTALLED BY ANY OTHER AGENCY. ANY REMOVAL OF UTILITY AND ROAD IMPROVEMENTS WITHOUT THE CITY ENGINEER'S PERMISSION WILL NOT BE ACCEPTED OR PAID FOR.


















1. THE EXISTENCE AND LOCATION OF ANY UNDERGROUND UTILITY PIPES, CONDUITS OR STRUCTURES SHOWN ON THESE PLANS WERE OBTAINED BY A SEARCH OF THE AVAILABLE RECORDS. TO THE BEST OF OUR KNOWLEDGE, THERE ARE NO EXISTING UTILITIES EXCEPT AS SHOWN ON THESE PLANS. THE SHOWN UTILITIES ARE BASED ON RECORDS, DRAWINGS, FIELD NOTES, FIELD SURVEYS, FIELD RECONNAISSANCE, AND SHOWN ON THESE DRAWINGS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE EXISTENCE, LOCATION, DEPTH, AND RESPONSIBILITY FOR THE UTILITY PIPES, CONDUITS OR STRUCTURES SHOWN OR NOT SHOWN ON THESE DRAWINGS. IF UTILITY LINES ARE ENCOUNTERED DURING CONSTRUCTION THAT ARE NOT IDENTIFIED BY THESE PLANS, THE CONTRACTOR SHALL NOTIFY ENGINEER IMMEDIATELY.

COMMON AREA A

Scale:	1"=30'	Drawing:	AWS
Date:	3/8/2019	Job #:	18-421
Sheet:			

[illegible]

	SUN
	EXH. CONTROLLER MINOR
	STREET LIGHT
	SO ML INLET AND COMBO
	SILVER MANTLE
	VALVE, TIER AND HANDLE
	WATER BLOW-OFF
	FRIDGE/TANK
	STREET MONUMENT (TO BE SET)
	EXST. STREET MONUMENT
	EXST. SO ML INLET & ML
	EXST. SO ML
	EXST. VALVE, TIER & BEND
	EXST. FRIDGE/TANK
	PROTECT ELEVATION

Detention Pond
Project: Alpine Townhomes
Location: Alpine, Utah
Date: 2/18/2019
Designer: Alex Stewart

Design Criteria	Per NEMA Class 14 100' Year Return Period	Per Alpine Civil Standards
Intensity Table:		
Allowable Discharge:	0.25 cfs/acre	
Allowable Discharges		
Storm Drain Discharge:	0.75 cfs	
Other Discharge:	0.07 cfs	

Total Charges:	0.788 dh		60-97 Standard		0.788 g.
Weighted °C Value			Reference 1		

Source Year	Building	z-score	C. Value	C. %
1996	Proven	43.632	0.85	37.007
1997	Proven	10.490	0.80	8.048
1998	Roadway and School	16.021	0.80	13.618
1999	Landcode	107.266	0.15	15.256
2000	total	171.356	0.44	74.771
Weighted C-Value				0.44

Feed	Feed	Intake	Kcal/d	Area	Rate ¹	Concentration	Alcohol	Discharge	Residuals
mg	g	g	g	g	g	g	g	g	g
15.0	1.0	4.0	0.4	7.2	1.48	0.79	2.79	5.70	2.21
20.0	1.3	4.3	0.4	5.6	4.86	1.74	2.29	1.68	2.52
25.0	1.6	4.6	0.4	4.0	3.42	1.25	1.79	1.18	2.82
30.0	1.9	4.9	0.4	3.6	1.46	1.96	0.99	0.91	3.09
35.0	2.2	5.2	0.4	3.4	1.12	2.54	0.79	0.62	3.49
40.0	2.5	5.5	0.4	3.6	1.63	1.53	0.79	0.79	3.74
45.0	2.8	5.8	0.4	3.6	1.63	1.53	0.79	0.79	3.74
50.0	3.1	6.1	0.4	3.6	1.19	1.42	0.79	0.62	4.04
55.0	3.4	6.4	0.4	3.6	1.19	1.42	0.79	0.62	4.34
60.0	3.7	6.7	0.4	3.6	1.19	1.42	0.79	0.62	4.64
65.0	4.0	7.0	0.4	3.6	1.19	1.42	0.79	0.62	4.94
70.0	4.3	7.3	0.4	3.6	1.19	1.42	0.79	0.62	5.24
75.0	4.6	7.6	0.4	3.6	1.19	1.42	0.79	0.62	5.54
80.0	4.9	7.9	0.4	3.6	1.19	1.42	0.79	0.62	5.84
85.0	5.2	8.2	0.4	3.6	1.19	1.42	0.79	0.62	6.14
90.0	5.5	8.5	0.4	3.6	1.19	1.42	0.79	0.62	6.44
95.0	5.8	8.8	0.4	3.6	1.19	1.42	0.79	0.62	6.74
100.0	6.1	9.1	0.4	3.6	1.19	1.42	0.79	0.62	7.04

Maximum Storage Requirement:	7,975
Maximum Storage Requirement factor:	0.18

— — —

DEFINITION ADEQUATE

[illegible]

COMMON AREA

1

GENERAL NOTES

1. RETAINING WALLS
2. ANY DISTURBED AREAS TO BE RECLAIMED TO MEET LANDSCAPING MATERIAL SPECIFICATIONS.















LANDSCAPE NOTES:

1. LAWN AREAS WILL BE SOODED WITH KENTUCKY BLUEGRASS BLEND OVER 4 INCHES GOOD GRADE TOPSOIL.
2. ALL PLANTING BEDS WILL HAVE 3" DARK BROWN LONG STRAND SHREDDED BARK MULCH.
3. INSTALL PLASTIC EDGING FOR MOW STRIPS BETWEEN LAWN AREAS AND PLANTING BEDS.

TREE LEGEND

 *Cercis canadensis*
Eastern Redbud 27 cal. (12 total)



 *Malus 'Spring Snow'*
 *Malus 'Royal Raindrops'*
 *Malus 'Spring Snow'*
 *Malus 'Spring Snow'*
 *Malus 'Spring Snow'*
 *Malus 'Spring Snow'*
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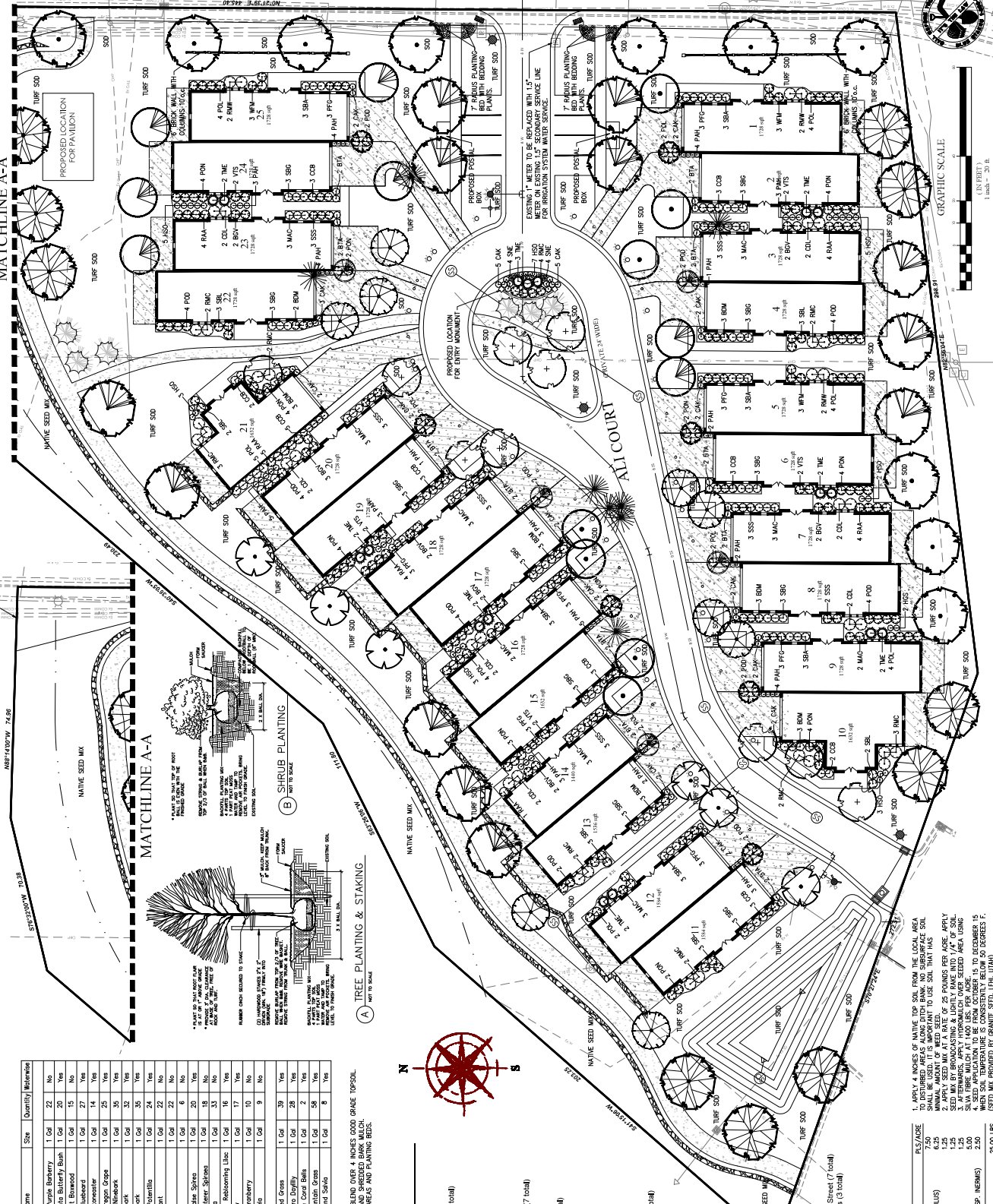
Zelkova serrata 'Green Vase'

Green Vase Zelkova 2nd cal. behind units (3 total)

 NATIVE CABIN GRASS BLEND

PLUGS	FEEDS	TO BE USED.
MOUNTAIN BROME (<i>BROMUS MARGINATUS</i>)	7.50	SHALL BE USED.
SLENDER WHEATGRASS (<i>ELYMUS TRACHYCAULUS</i> SPP. <i>TRACHYCAULUS</i>)	6.25	MINIMAL AMOUNT
MANOBERG BLUEGRASS (<i>POA SECUNDA</i> SPP. <i>SANDBERGII</i>)	1.25	APPLY SEED M
BLUEGRASS (<i>POA SECUNDA</i> SPP. <i>AMPLA</i>)	1.25	SEED MIX BY BRO

	LBS.
SILVA FIBRE MULCH	4.45
SEED APPLICATION	5.00
WHEN SOIL TEMPER.	2.50
(SEED MIX PROMC)	25.00 LBS.
<hr/>	
TOTAL	

[illegible]

PLANT SCHEDULE		Common Name
Symbol	Scientific Name	
	<i>Vaccinium</i>	Blueberries
B1A	<i>Sorbus bumbagata</i> 'atzo "concepcion"	Dark Red-shed
B1B	<i>Buddleia davidii</i> "Bartz Magnolia"	Bart Magnolia
B1C	<i>Buxa</i> "Green Velvet"	Green Velvet
C0B	<i>Campanula</i> "campanella 'White Mist'"	White Mist
C0C	<i>Comarostaphylis</i> "darmstadt 'Lewi Mast'"	Lewi Mast
MAC	<i>Malvastrum apiculatum</i> "Little Jewel"	Little Jewel
P0A	<i>Physocarpus opulifolius</i> "Little Jewel"	Little Jewel
P0B	<i>Physocarpus opulifolius</i> "Nugget"	Nugget
P0C	<i>Physocarpus opulifolius</i> "Nugget"	Nugget
P0D	<i>Physocarpus opulifolius</i> "Nugget"	Nugget
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MONTEDELLA
ALPINE, UTAH
ALI COURT

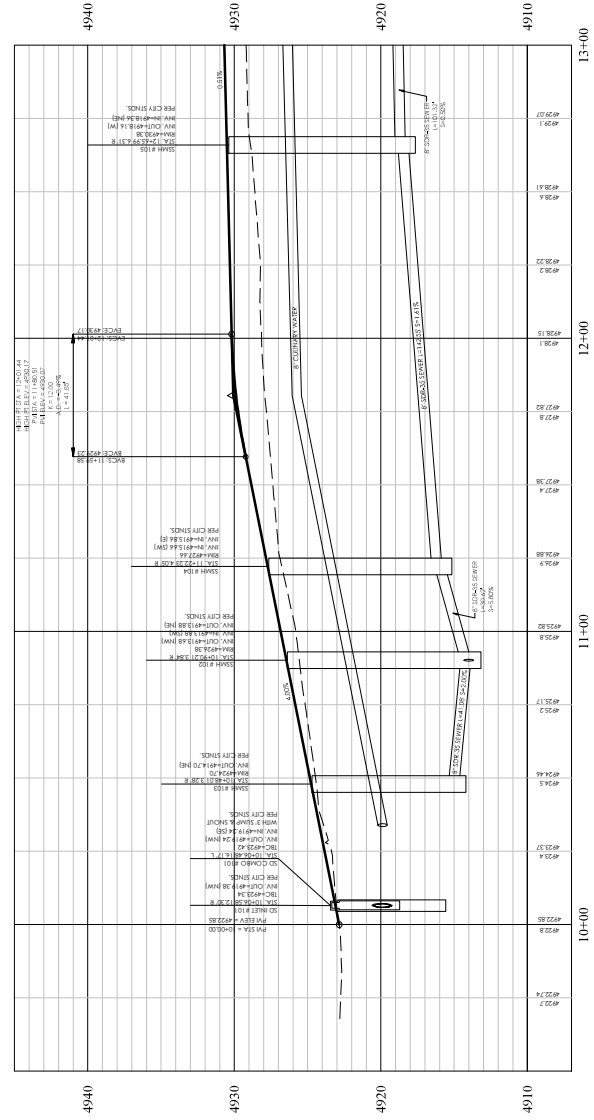
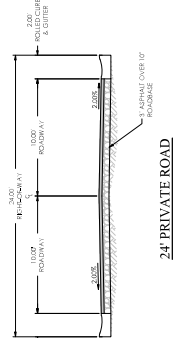
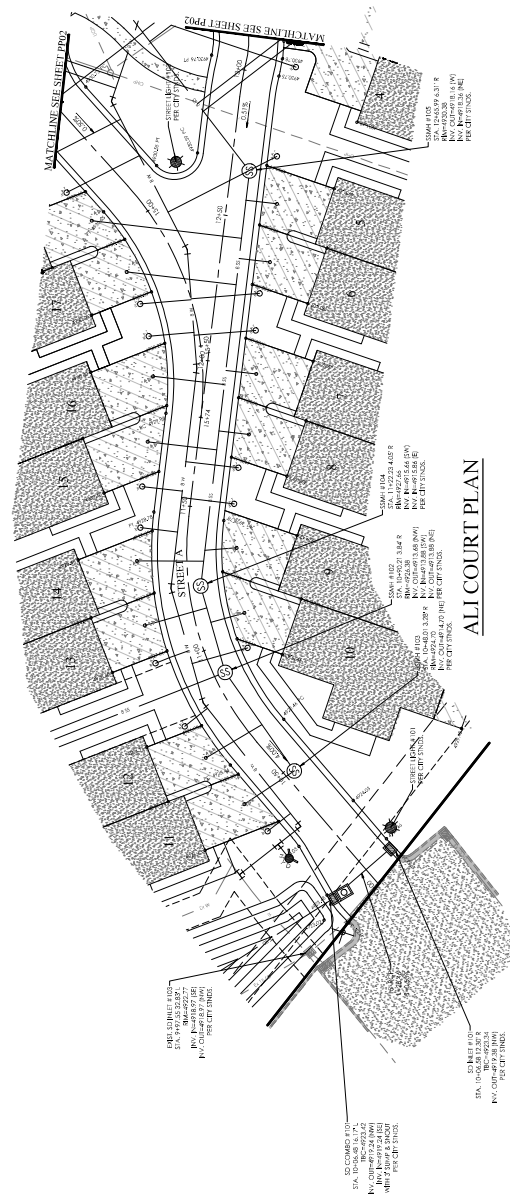
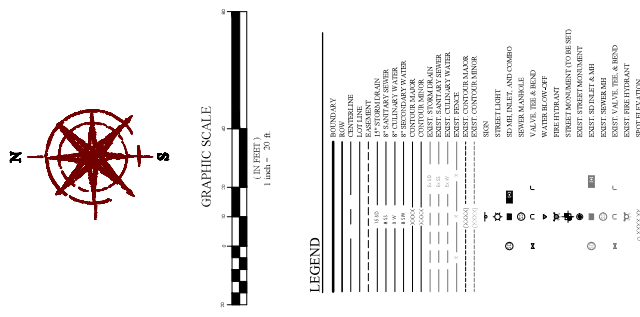
REVISION BLOCK		DESCRIPTION	#	DATE
			1	
			2	
			3	
			4	
			5	
			6	

ALI COURT

Sheet: PP01



BENCHMARK
NE1/4 OF SECTION 25 AND SE1/4 OF SECTION
TOWNSHIP 4 S. RANGE 1 E
SAUT LAKE BASE AND MERIDIAN
ELEV. 4,946.87
DATUM: NAD83



ALI COURT PROFILE



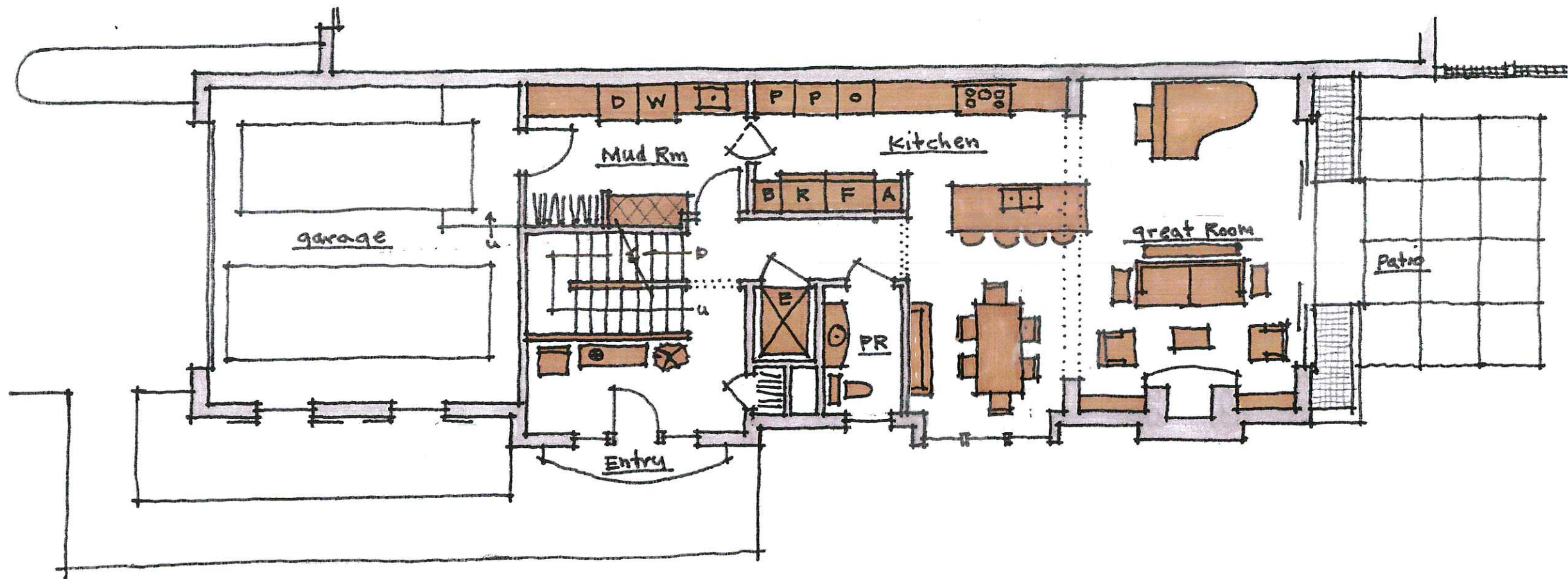


MAIN STREET





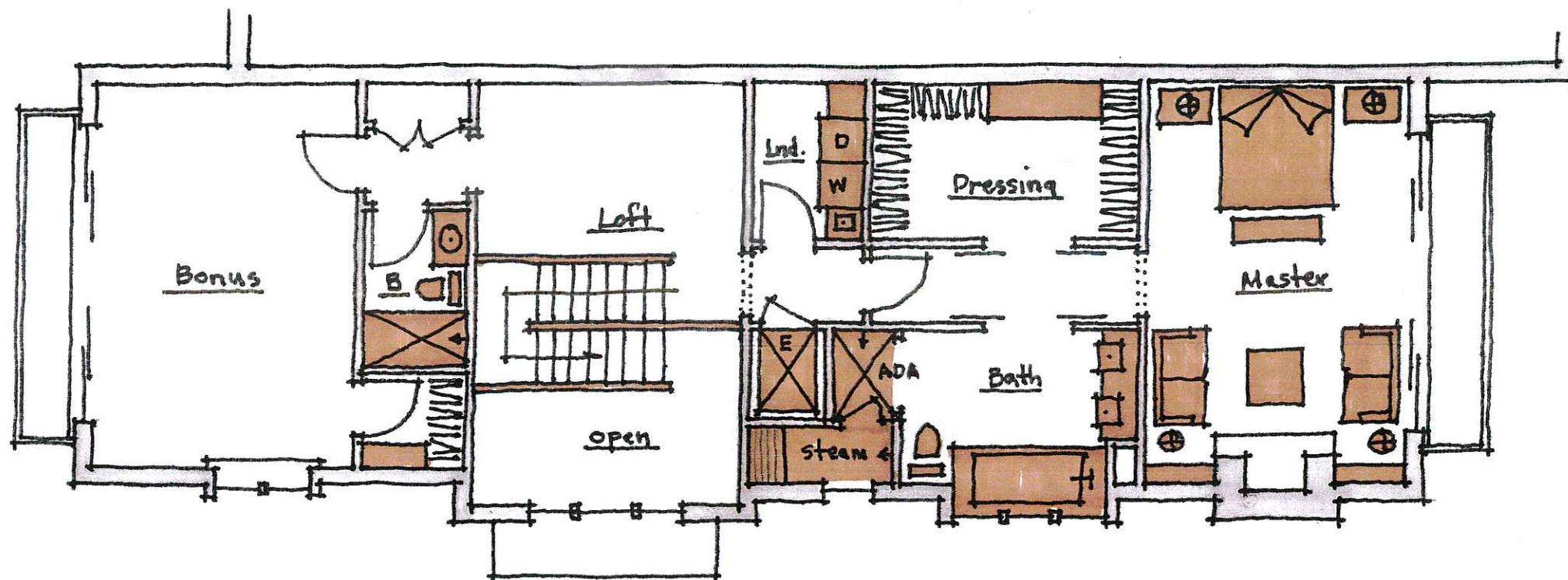




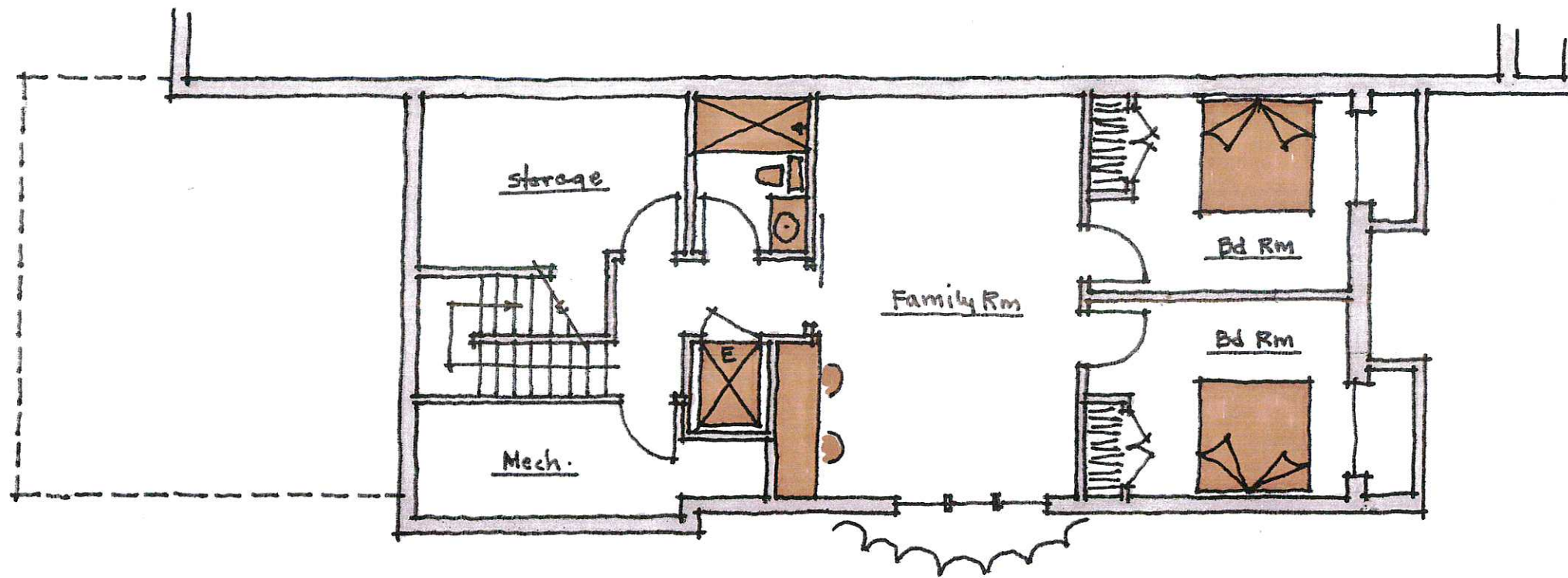
Main Floor Plan

MF = 1200 SF
 UF = 1652 SF
 LF = 1200 SF
 T = 4052 SF

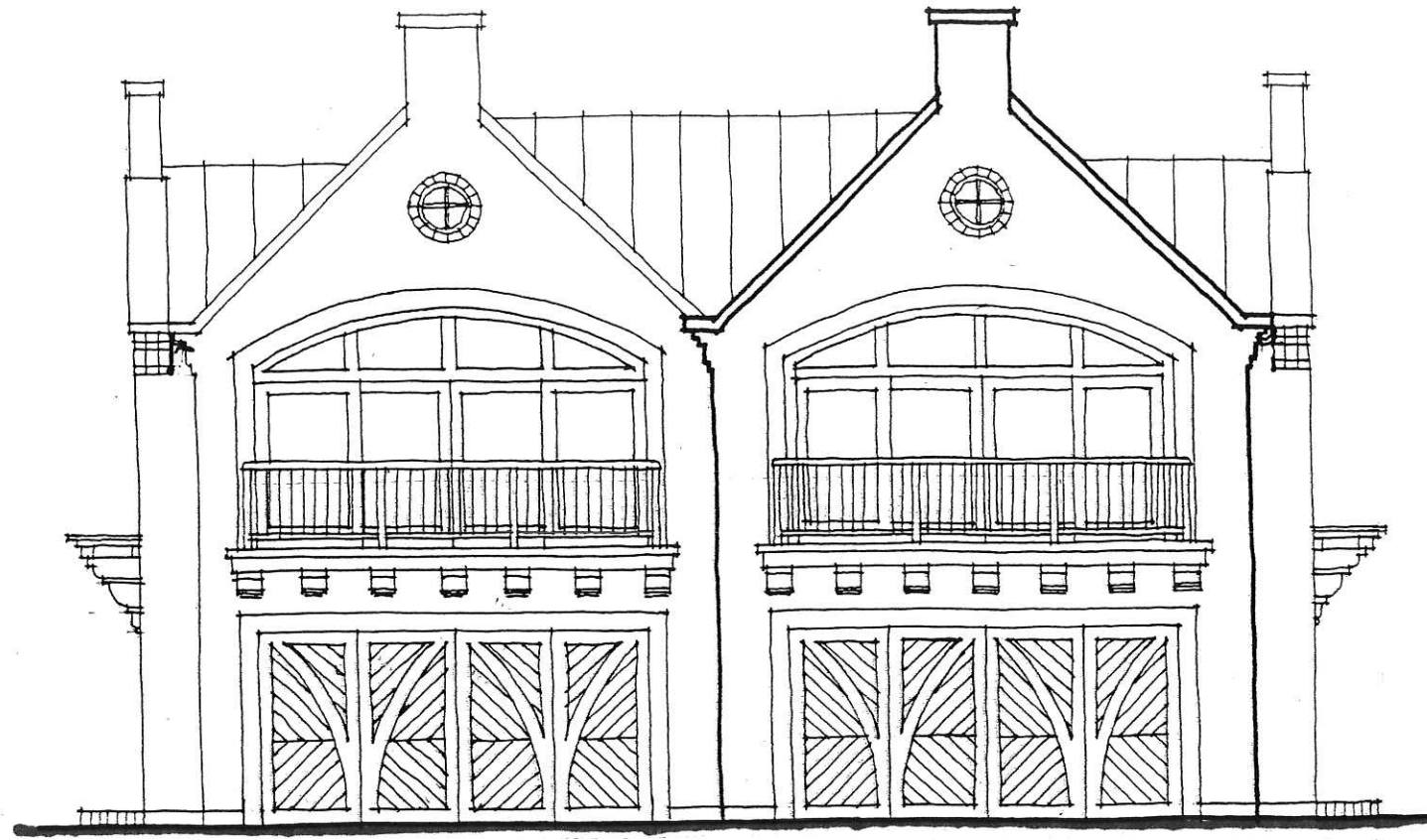
garage 451 SF

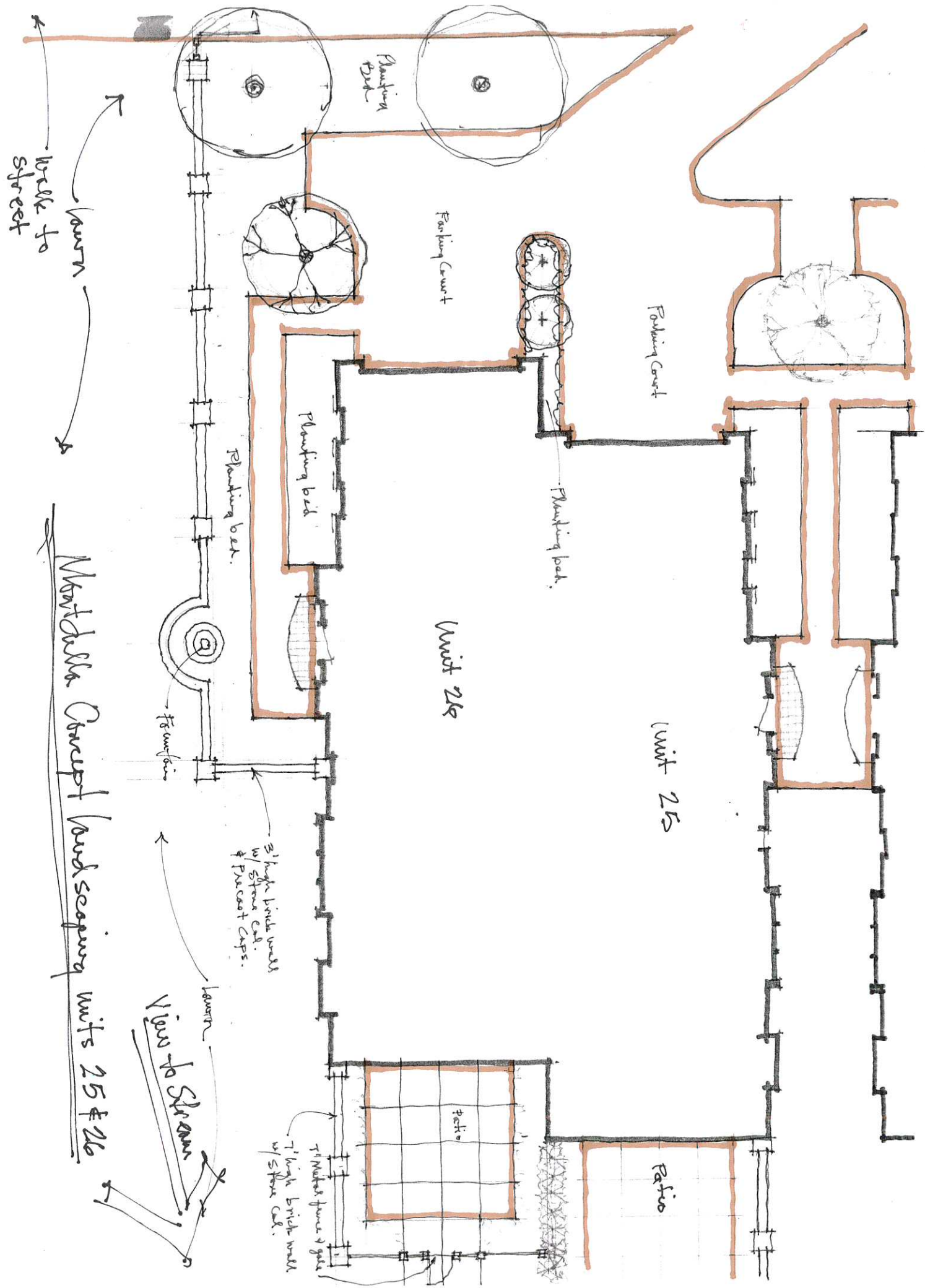


Upper Floor Plan
UF 1,652 SF



Lower Floor Plan
LF 1200 SF





Walk to street

down

Whitdella Concept Landscaping units 25 & 26

View to Stream

down

3' high brick wall w/ sphere cap. & Precast Caps.

7' high brick wall w/ sphere cap. & 1' high brick fence & gate

Unit 26

Unit 25

Paving Court

Patio

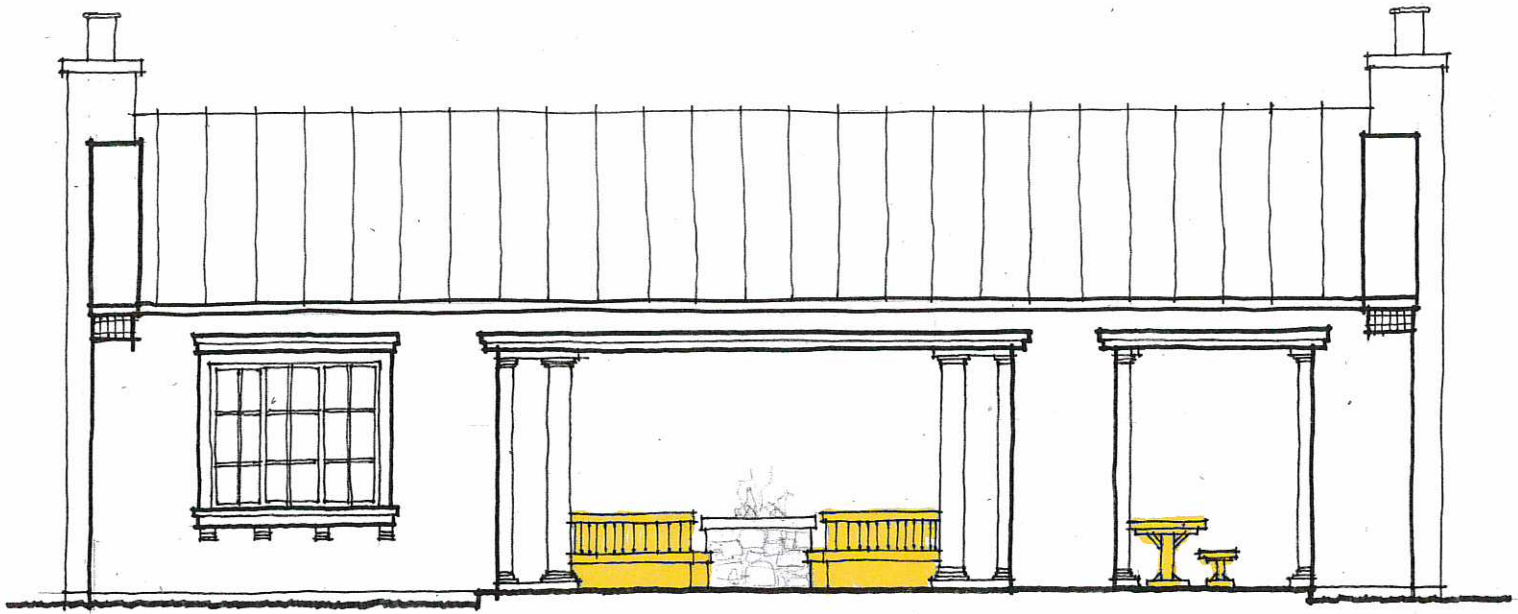
Paving Court

Planting bed

Planting bed.

Planting

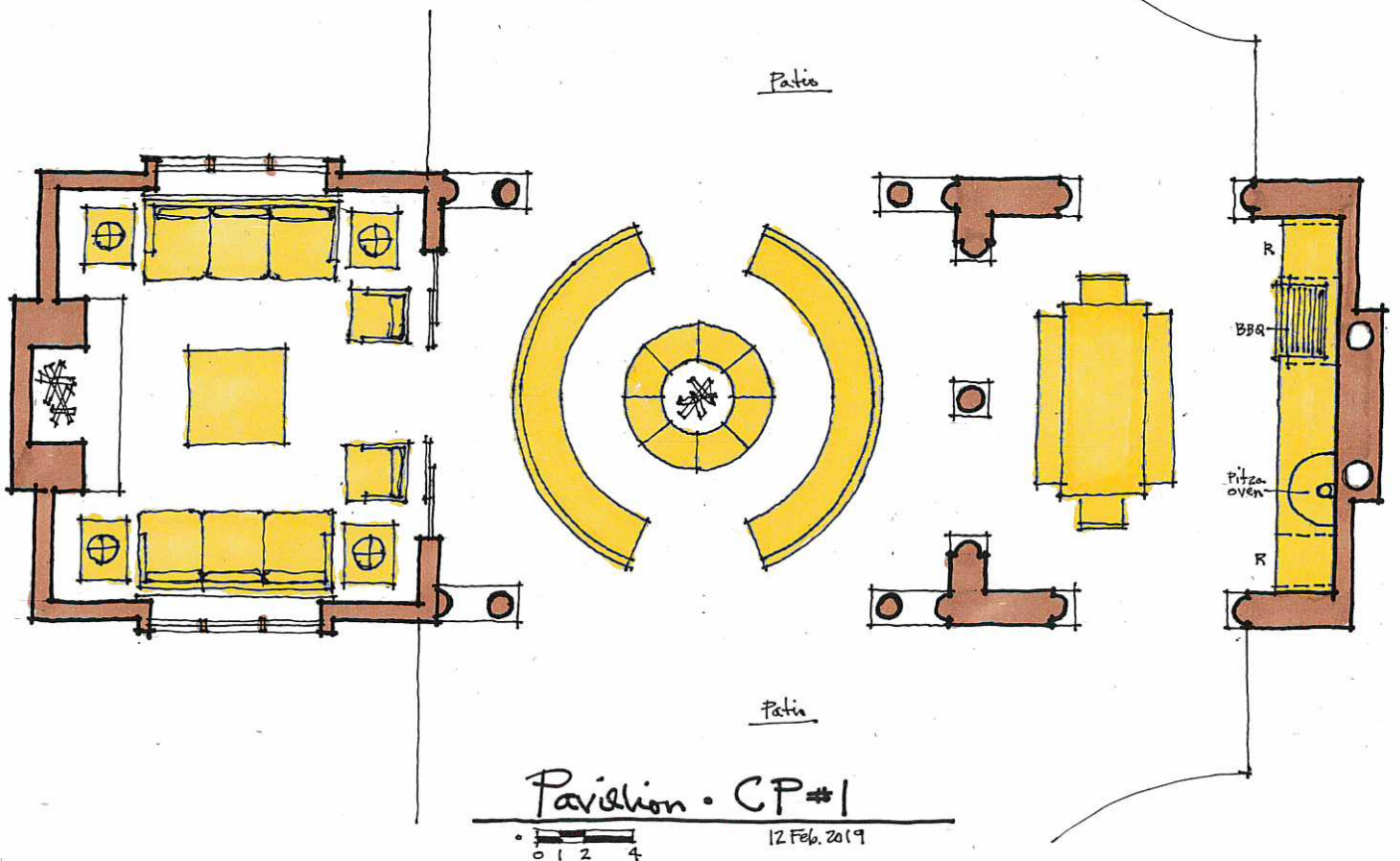
Patio



Pavilion • CFE #1



12 Feb. 2019



Pavilion • CP #1



12 Feb. 2019

ALPINE PLANNING COMMISSION AGENDA

SUBJECT: Planning Commission Minutes March 5, 2019

FOR CONSIDERATION ON: 19 March 2019

PETITIONER: Staff

ACTION REQUESTED BY PETITIONER: Approve Minutes

BACKGROUND INFORMATION:

Minutes from the March 5, 2019 Planning Commission Meeting.

STAFF RECOMMENDATION:

Review and approve the Planning Commission Minutes.

ALPINE CITY PLANNING COMMISSION MEETING
Alpine City Hall, 20 North Main, Alpine, UT
March 5, 2019

I. GENERAL BUSINESS

A. Welcome and Roll Call: The meeting was called to order at 7:00 pm by Chairman David Fotheringham. The following were present and constituted a quorum:

Chairman: Dave Fotheringham

Commission Members: Bryce Higbee, Alan MacDonald, John MacKay, Jane Griener, John Gubler, Sylvia Christiansen

Staff: Austin Roy, Marla Fox, Jed Muhlestein

Others:

B. Prayer/Opening Comments: Bryce Higbee

C. Pledge of Allegiance: Loraine Kirton

II. PUBLIC COMMENT

There were no public comments.

III. ACTION ITEMS

A. Exotic Animal Request – Peacocks – Loraine Kirton

Austin Roy explained that Alpine City ordinance approved various types of animals such as horses, pigs, goats, and chickens. He said any other animal was required to come before Planning Commission and City Council for recommendation by the Planning Commission and approval by the City Council.

The petitioner, Loraine Kirton, lived at 1118 East Village Way and was interested in acquiring two peacocks which would be considered exotic animals. Specifically, they were “Blue Peacocks” and would be coming from a property in Cedar Hills. The birds had lived in Utah for some time and were used to the climate and weather. The birds were friendly, and the petitioner was seeking two so that they could keep each other company. The proposal was for the birds to be free roam on the petitioner’s property with no animal enclosure being required. The birds primarily fed on bugs and table scraps, and the owner planned to keep them well fed to keep them happy.

Austin Roy stated that the petitioner would only acquire the birds if the neighbors all agreed and approved of the request. It was important to the petitioner that the neighbors be okay with the animals, since they may wander onto neighboring properties from time to time. If the neighbors did not agree then the petitioner would not acquire the peacocks.

Article 3.21.090.4 stated:

Other animals. *Exotic animals or animals not mentioned above may be permitted after review and recommendation by the Planning Commission and approval by the City Council.*

Austin Roy presented an aerial map of the Kirtons' property, noting that they lived on approximately one-half acre. He said peacocks were not customarily kept in a cage, as they tended to graze like ducks. The Kirtons were proposing to have a fence around their property; however, the birds do fly and may wander around the vicinity. The key to keeping them in one area was to keep them well fed, which as stated previously, they would be well-cared for by their owners. The applicant would like to move forward unless there was opposition from their neighbors.

Jane Griener said her neighbor in the back of her home had peacocks and she had thus observed their behavior. She said peacocks roamed around a bit but stayed close to their food source. Occasionally they flew off and ended up on someone's roof. She said they were fun and quirky but could be loud, especially during the spring. While the City had allowed peacocks for other people in the City, each decision was determined according to how much space was available to the animals.

Alan Macdonald asked if any input from the neighbors had been received either verbally or in writing. Austin Roy said Mrs. Kirton had not checked with any of her neighbors yet and because she wanted to propose the idea to the Planning Commission first. Jane Griener asked if there were currently any requirements pertaining to minimum lot size; she recalled the Planning Commission turning down a fox because the property was too small. Austin Roy explained that in the case of the fox, the property was only a quarter acre and the applicant didn't have enough room for an animal enclosure that would meet the ordinance. He stated that animal enclosures needed to be seventy-five feet away from a neighboring house. Since peacocks were free roaming animals, they did not need an enclosure, and therefore these same requirements did not apply.

Alan Macdonald asked if the peacocks would wander in the road. John MacKay said the peacocks would try to find a place to roost in the night, which would likely be in a tree or someplace similar. Peacocks were very curious and usually greeted cars in the vicinity by jumping up on the hoods and looking at their reflections in the glass. They also made noise and he didn't think this type of an animal was appropriate for a half-acre property.

Sylvia Christiansen had a question about fowls in the ordinance. She said she thought the City allowed chickens but not roosters because they were noisy. Austin Roy said roosters were strongly discouraged, but the City currently did not have an ordinance that prohibited them. Jed Muhlestein said the idea was brought forward to ban roosters, but it was turned down.

Loraine Kirton explained that her kids had a treehouse where they planned to put a balcony; since peacocks liked to be up high, the balcony would help protect them from predators like raccoons. She stated that the peacocks would be coming from a farm in Cedar Hills and were tame. If the neighbors didn't like them or there were any issues, the current owner said he would take them back. She confirmed that they liked to eat bugs, snails, and food scraps, which she would supply. Mrs. Kirton said these birds were used to the cold and had been raised in this environment. However, when it got especially cold, they would stay in the treehouse at night where there would also be a warming light. Mrs. Kirton said the peacocks would stay in the treehouse at night and wander around during the daytime. Most people thought they were beautiful animals, but if her neighbors were not okay with them living next door, then she wouldn't get them because she valued her relationships with her neighbors.

Jane Griener said one thing to consider was that peacocks made large messes that could spread to other properties. She said she didn't think a half-acre was large enough for these animals. There was subsequent discussion regarding the best decision to make on this item.

MOTION: Jane Griener moved to recommend approval of the Exotic Animal request for two peacocks for Loraine Kirton with the following condition:

1. Notification of neighbors within 175 feet and getting their approval.

Sylvia Christiansen seconded. There were 7 Ayes and 0 Nays (recorded below). The motion passed.

Ayes:

Bryce Higbee
 Alan MacDonald
 John MacKay
 David Fotheringham
 Jane Griener
 John Gubler
 Sylvia Christiansen

Nays:

None

B. Business Commercial – Car Dealership – Lonny Layton

The petitioner was interested in putting a small car dealership on a lot within the Business/Commercial Zone located at approximately 235 South Main Street. A proposed concept site plan had been prepared which showed building layout, parking, access, lighting, landscaping and other intended uses for the lot.

The development code did not expressly outline “car dealership” or “car lot” as a permitted use within the Business/Commercial Zone. However, there was language within Article 3.7 which may be interpreted to allow for such a use. The petitioner was asking that the Planning Commission review the proposed site plan and Business Commercial section of the Development Code and make a recommendation to the City Council.

Austin Roy read the following language from the Development Code in the Business Commercial Zone:

General retail stores and shops providing goods and services for sale at retail in the customary manor provided that all storage and sales activity shall be contained within the building.

He explained that this meant all sales should occur inside a building. However, there was a “Special Provisions, Uses” section in the Development Code, which stated the following:

All commercial activities and storage shall be conducted entirely within a fully enclosed building except those uses deemed by the City to be customarily and appropriately conducted in the open.

Austin Roy said examples were gasoline dispensing, nurseries, parked automobiles, and Christmas trees.

Austin Roy said the applicant felt like the ordinance supported what they wanted to do with the car dealership. He presented a landscaping plan for the lot, which showed an ADA handicapped ramp on Main Street, and a sidewalk that went to the back of the property, the building where the offices would be located, three display stalls, landscaping that included trees and bushes, and an area in the center with xeriscape. Austin Roy said they had plenty of parking space with about six stalls on each side. The Planning Commission needed to determine if this was a permitted use inside the Business Commercial Zone and what recommendation to make to the City Council.

The Planning Commissioners had a discussion on whether or they thought the proposed business met the ordinance. Austin Roy explained that the City's ordinance had permitted and conditional uses. In the permitted uses, specific uses were permitted in the Business Commercial Zone. This type of business was not included in the list of permitted uses, nor was it a conditional use. However, it was retail sales, for which there was language in the ordinance. The City had conflicting ordinances in that one stated that sales had to occur indoors whereas another that stated it could be done outdoors. Austin Roy read from Section 12 of the Permitted Uses:

Other uses which are determined by the Planning Commission to be similar to and compatible with the forgoing uses, and the intent of the zone.

Alan MacDonald asked Austin Roy if he believed this proposal should be approved. Both he and Jed Muhlestein stated that the proposal could not be denied based on how the code was written. Bryce Higbee said in reviewing the minutes from the last meeting, the Attorney, David Church, said he thought it was okay as well. Austin Roy added that David Church had said if the Planning Commission wanted to interpret this as a permitted use, there would be no argument on the matter. Jane Griener said that some people would interpret it one way whereas others would interpret it another way; basically, the Attorney indicated he would not fight it either way. Austin Roy said if the Planning Commission recommended approval and the City Council gave final approval of the proposal, the Planning Commission would have the power to determine the details of the site plan. There was further discussion regarding how the business would fall under the Gateway Historic Guidelines, and as such, be regulated by those guidelines. Jane Griener listed some of the guidelines and how the look and feel would fit in on Main Street.

Lonny Layton said the purpose of the special provisions section of the code was for direction to be given to peculiar projects that were not otherwise thoroughly satisfied or detailed within the list of permitted uses. The retail sales language was very vague. There was no way to add every business plan in the code, which was why a special provisions section was added.

Lonny Layton presented a second site plan which showed what the business could look like in the future if it were to be expanded. Regarding xeriscape, he explained that he would like to bring the building back into shape. He would like to have a dealership license so he could sell cars legally. Mr. Layton noted that he was a pilot by day, and selling cars was a hobby that he did on the side; therefore, all sales would be by appointment only. He believed this would be a good resource for Alpine. If this business were to get bigger, he would like to focus on Alpine residents. He said he had no intention on advertising or hiring employees. Mr. Layton stated that other commercial buildings had parking out front, so he did not feel his proposal would significantly change the look and feel of Main Street.

MOTION: Sylvia Christiansen moved to recommend approval of the proposed Lonny Layton business use as a car dealership.

John Gubler seconded the motion. There were 7 Ayes and 0 Nays (recorded below). The motion passed.

Ayes:

Bryce Higbee
 Alan MacDonald
 John MacKay
 David Fotheringham
 Jane Griener
 John Gubler
 Sylvia Christiansen

Nays:

None

C. Rules of Procedure - Discussion

In 2011, the City adopted rules of procedure for conducting of all meetings of the Alpine City Council. The rules of procedure adopted by the City Council defined and outlined notice and agenda requirements, roles of the Mayor and City Council, and a code of conduct. Included in the rules of procedure were ten rules of order, detailed as follows:

1. Meetings were governed by the agenda.
2. Matters requiring a decision shall be done by motion.
3. One question and one speaker at a time.
4. General Consent may be used for all motions except those used for the purpose of the meeting minutes.
5. Only three forms of motions are allowed: Initial Motions, Motions to Amend, and Substitute Motions.
6. Up to three motions can be on the floor at the same time.
7. Debate can continue as long as members wish to continue to discuss.
8. Quorum is needed to pass an item.
9. A motion to reconsider requires a majority vote to pass.
10. Mayor and Council members shall adhere to code of conduct.

The City Council rules of procedure were being presented to the Planning Commission for review and discussion, with the intention being that the Planning Commission consider adopting something similar for Planning Commission meetings.

David Fotheringham stated that he would meet with Austin Roy and work on the verbiage of the Rules of Procedures. He would then present these rules to the Planning Commission.

IV. Communications

There were no communication items.

V. APPROVAL OF PLANNING COMMISSION MINUTES: February 19, 2019

MOTION: John Gubler moved to approve the minutes for February 19, 2019, as written.

Sylvia Christiansen seconded the motion. There were 7 Ayes and 0 Nays (recorded below). The motion passed.

Ayes:

Bryce Higbee
Alan MacDonald
John MacKay
David Fotheringham
Jane Griener
John Gubler
Sylvia Christiansen

Nays:

None

The meeting was adjourned at 8:15 pm.