NOTICE OF MEETING
PLANNING COMMISSION
CITY OF ST. GEORGE
WASHINGTON COUNTY, UTAH

Public Notice

Notice is hereby given that the Planning Commission of the City of St. George, Washington County, Utah, will hold a **Planning Commission** meeting in the City Council Chambers, 175 East 200 North, St George, Utah, on **Tuesday, June 27, 2023,** commencing at **5:00 p.m**.

The agenda for the meeting is as follows:
Call to Order
Flag Salute

1. **Soleil Ridge Apartments, Development Agreement, Hillside Development Permit and Zoning Map Amendment** – Josh Lyon, representing Wasatch Commercial Builders is requesting approval of a Development Agreement, a Hillside Development Permit and a Zoning Map Amendment on the property located generally west of the 900 South and 250 West intersection for the purpose of constructing 224 units on 19.72 acres. The project is known as Soleil Ridge Apartments. This project was previously heard at the September 28, 2021, Planning Commission meeting. (Staff – Dan Boles)
    a. **PUBLIC HEARING:** Consider a request for a Development Agreement that will allow the developer to acquire city owned property and implement rockfall hazard mitigation in return for supplying attainable housing units. **Case No. 2023-DA-003**
    b. Consider a request for a Hillside Development Permit in order to allow construction in grades that exceed 20% and to approve plans for rockfall hazard mitigation. **Case No. 2021-HS-007**
    c. **PUBLIC HEARING:** Consider a request to change the zoning from C-2 (Commercial) to PD-R (Planned Development Residential) in order to construct a multifamily development. **Case No. 2023-ZC-006**

2. **Food Truck Park Zoning Regulation Amendment** – Yori Livingston is requesting to amend portions of the St. George City Code, to add Food Truck Park as a use and to allow this use as a permitted with standards use in the C-2, C-3 and/or C-4 zone. This item was continued from the May 9, 2023, Planning Commission meeting. **Case No. 2023-ZRA-002**. (Staff – Carol Winner)

3. **PEG 1B Subdivision Preliminary Plat** - Bob Hermandson, representing Bush and Gudgell is requesting approval of a preliminary plat to create a single lot for the northern portion of the PEG apartments development located along Desert Color Pkwy just south of Black Mountain Dr. The property is approximately 8.62 acres and is zoned PD-C (Planned Development Commercial) with a Horizontal Mixed-Use Overlay. **Case No. 2023-PP-021** (Staff – Dan Boles)

4. **Cove Valley Preliminary Plat** – Ken Miller, representing DSG Engineering is requesting approval of an eleven (11) lot residential preliminary plat located at approximately 2500 East and 5500 South on the extension of Malitsoh Way, north of White Dome Dr. The property is approximately 2.61acres and is zoned R-1-7 (Single Family Residential 7,000 sq ft minimum lot size). **Case No. 2023-PP-022 (**Staff – Carol Winner)

5. **Estates at Old Farm Preliminary Plat** – Ryan Lay, representing Bush and Gudgell is requesting approval of a twenty-one (21) lot residential preliminary plat located north of 2450 South St and east of 2580 East St. The property is approximately 14.50 acres and is zoned R-1-20 (Single Family Residential 20,000 sq ft minimum lot size). **Case No. 2023-PP-023** (Staff – Carol Winner)

6. **The Estates at Copper Ridge Preliminary Plat** – Tony Carter, representing Horrocks Engineering is requesting approval of a forty-two (42) lot residential preliminary plat generally located on Hillrise Drive south of Summit Ridge Drive. The property is approximately 70.83 acres and is zoned PD-R (Planned Development Residential). **Case No. 2023-PP-013** (Staff – Dan Boles)

7. **Minutes**

   Consider a request to approve the meeting minutes from the June 13, 2023, meeting.

8. **City Council Items**

   Jim Bolser the Community Development Director will report on items heard at the June 1, 2023, City Council meeting.

   1. 2023-ZC-003 Tonaquint Heights Phases 4-7
   2. 2023-HS-005 Banded Hills Lot 3
   3. 2023-PP-018 Moorland Park Phases 5 and 8
   4. 2023-PDA-004 Circolo Villas
   5. 2023-PP-011 Circolo Villas
   6. 2023-PDA-007 Desert Reflection
   7. 2023-PP-017 Desert Reflection at Desert Canyons

Brenda Hatch – Development Office Supervisor

Reasonable Accommodation: The City of St. George will make efforts to provide reasonable accommodations to disabled members of the public in accessing City programs. Please contact the City Human Resources Office at (435) 627-4674 at least 24 hours in advance if you have special needs.

St.George
Community Development

ITEM 1A & 1C

ZONE CHANGE &
DEVELOPMENT AGREEMENT

PLANNING COMMISSION AGENDA REPORT: 09/28/2021 (Continued)
PLANNING COMMISSION AGENDA REPORT: 06/13/2023 (Continued)
PLANNING COMMISSION AGENDA REPORT: 06/27/2023

Zone Change & Development Agreement
Soleil Ridge Apartments
Case No. 2021-ZC-064
2023-ZC-006 & 2023-DA-003

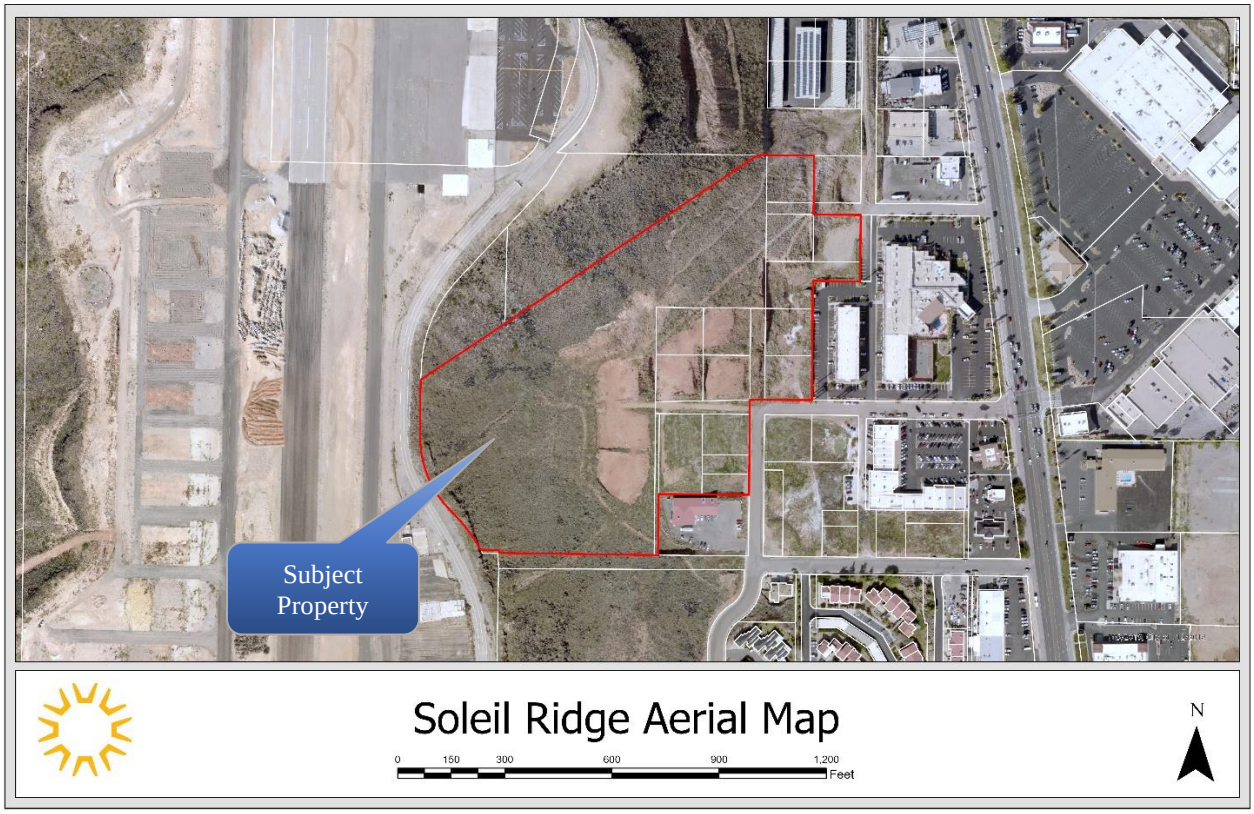
Request: Consider a Zone Change from C-2 (Highway Commercial) to PD-R (Planned Development Residential)

Applicant: Wasatch Commercial Builders

Representative: Josh Lyon

Area: 19.72 Acres

Location: The property is generally located west of the 900 South and 250 West intersection.



Current Zone: C-2 (Highway Commercial)

General Plan: HDR (High Density Residential)

Updated Plan:
On September 28, 2021, the Planning Commission held a public hearing for a zone change to a Planned Development (PD) on the site. Several concerns were brought up at that meeting and are addressed below. Staff has been working with the applicant on a development agreement which will address some concerns remaining on the project.

1. *Additional detail on the rock wall or other type of wall that will be on the west and the north.* The applicant submitted an updated rockfall mitigation and slope protection report. That report can be found as exhibit B of this staff report. Wall details can be found in that report.
2. *Additional detail on the parking structure on their elevations, inside and outside the property.* The applicant has revised the parking structure to add additional detail such as stone that would tie the structure to the buildings. See updated elevations in the presentation attached to this staff report.
3. *The rockfall issue of structures inside the rockfall area and how those will be mitigated*. One of the concerns and reasons for staff recommending denial of the application as it is currently designed is that there are still buildings within the identified rockfall hazard area. The applicant is proposing fencing to mitigate any potential rock fall hazard. Over the past year and a half since this was last reviewed, there has been extensive discussion between the applicant and city to the point where the staff is comfortable seeing this move forward. This is part of the development agreement that will be discussed in more detail later. See Exhibit B for details.
4. *Report on the discussion with the neighbors to the North concerning connectivity at 800 S Street.* The applicant is proposing an access point to 800 South.

Background:
The property was originally subdivided into blocks and lots in 1946 as the Worthen Subdivision. This subdivision was later amended and extended as the 1948 Addition to Worthen Subdivision and extended again in 1955. The lots were sold off and used primarily for corrals and sheds. Lots were graded and terraced to accommodate these uses which accounts for the level spaces on the property today. It isn't clear when those uses were removed from the property, but it has remained vacated for many years. Much of the property is sloped leading up to the old airport or future Tech Ridge property. This sloped area is proposed to remain undisturbed hillside property.

Proposed Site Details:
Currently, the site is free from any buildings or structures and is comprised of a number of lots and parcels that have been assembled together. As previously discussed, the site has several level pads that were previously used to keep animals which use has since been abandoned. The combined acreage of property is approximately 19.72 acres.

The proposed site plan depicts seven apartment buildings, parking structures and amenity/landscaping areas. In order calculate density on the property, a slope survey was

conducted to determine which areas are up to 20%, 21-30%, 31-40%, and 40% plus. The ordinance allows a percentage of the property to be calculated based on its slope for the purposes of calculating density. In this case a total of 224 total units would be allowed given the slope (over 6.5 acres is over 40% which may not be factored into the density calculation).

General Plan: Over the past few years, four applications have been made to change the general plan as property has been amassed. All four proposed changes have been approved with the final result being High Density Residential land use (up to 22 units per acre) on the property. If density is calculated on the entire 19.72 acres, the density is 11.3 units per acre. If it is calculated based on the project area to be disturbed, the density is 21.56 units per acre. In either case, the density meets the requirement for less than 22 units per acre.

Parking: Under section 10-19-4(A)(4) of the St. George zoning code, each unit is required to provide two parking stalls, one of which must be covered, plus one stall for every three units for guest parking. With 224 units, this would yield a total requirement of 523 stalls (2x224=448+75 guest stalls). 223 of the stalls must be covered. The site is providing a total of 526 stalls which meets the requirement for both resident and guest parking.

Part of the proposal for the parking is incorporating two parking structures. Those parking structures are concrete which is to be expected. However, staff is concerned with the appearance of plain concrete parking structures. Staff is suggesting that they make improvements through change of materials and/or coloring and stamping the concrete to provide visual interest. The applicant is also proposing smaller garages on the northern portion of the property. Any garages must be open to all residents and guests and may not be charged by the owner.

Elevations: Each building has been designed individually. That said, they are all proposed to be between 52.5 and 54.5 feet tall and four stories. The maximum height of buildings in the PD-R zone is forty feet tall. Section 10-7F-4(C) provides an allowance for the increased height. It states:

> C. *Height Regulations:* No residential dwelling shall be erected to a height less than ten feet (10') and no structure shall be greater than forty feet (40'). The city council, after recommendation from the planning commission, may approve increased building height upon making a finding, as part of a zone change approval, that the increase in height will fit harmoniously into the neighborhood, minimizing any negative impacts, after considering the following:
>
> 1. Proposed setbacks provide an appropriate buffer to neighboring properties;
> 2. Increased landscaping enhances the project and reduces any negative impacts;
> 3. Site layout and design enhance the project and reduce any negative impacts;
> 4. The massing and building scale is appropriate for the location;
> 5. The proposed height increase is appropriate for the area; and
> 6. The increase in height is consistent with any applicable master plan.

The materials to be used are varying colors of cement lap siding (Hardie Board), stone and stucco with metal facia highlights. The materials and colors have been chosen to complement each other. The hillside ordinance requires that the colors be earth tones which they have accommodated.

Landscaping/Amenities: The site is required to maintain a minimum of 30% landscaping/open space. The site has been designed with 30% formal landscaping. Additionally, the site will leave the six plus acres on the west side that is hillside in a natural state (this is not worked into the landscaping calculation). Additionally, a multi-family development must provide usable recreation areas, in this case at least 44,600 sq ft. The applicant is indicating approximately 45,000 sq ft of usable amenity area. The site depicts a pickleball court, a clubhouse, pool, BBQ area, Spa, and other outdoor amenity areas. The details on all of the amenities and landscaping will be reviewed at the time of site plan.

Hillside Review: In August of 2020, the property was under different ownership which was pursuing a different layout. That layout went to the Hillside Review Board but went no further. In August of this year, under new ownership (current owner), the application went to the Hillside Review Board for their review. That application will be presented along with this zone change application and will have details regarding that application. Ultimately, the Hillside Review Board recommended approval of the application.

City Parcel: There is an approximately 395'x11' "sliver" parcel that is owned by the city on the southern portion of the site. The site plan shows a portion of a structure that overlaps that parcel. The City has worked with the applicant on this issue. It was a parcel that was handed over to the city from the County. Through the development agreement, the city will turn that over to the applicant in exchange for seven units that will meet the affordable housing standards.

Development Agreement (DA): Since the time of the public hearing in September of 2021, the applicant has worked with the legal department to work out details of a development agreement that would deal with a number of issues. The issues resolved through the DA are:

1. Rockfall Mitigation Measures – The Development agreement will allow for the applicant to implement the wall and rock fall fence as proposed. This is a new mitigation strategy to the city and as such, it is integrated into the DA.
2. Sliver Parcel – As previously mentioned, there is a parcel of land that extends into the subject project area which is owned by the city. The applicant has designed a portion of a structure to straddle the parcel. In order for that design to work, the applicant needs to own that property.
3. Attainable Housing – The city, through the DA agrees to deed the sliver property over and allow the rockfall mitigation in exchange for seven attainable housing units. These units will be in perpetuity and will be floating units meaning that they will not be in any one particular spot but may be transferred throughout the facility as they become available. As the city is in desperate need of attainable housing, staff felt this was a good exchange.

The development agreement is attached to this staff report as Exhibit D for consideration by the Planning Commission. A motion will need to be made on the proposed DA.

Recommendation:
Planning Commission will need to make two separate motions for this application, one motion for the development agreement and a separate motion for the zone change. Staff is recommending approval of both applications.

Alternatives:
1. Recommend approval as presented.
2. Recommend approval with conditions.
3. Recommend denial.
4. Table the proposed zone change amendment to a specific date.

Possible Development Agreement Motion: "I move that we forward a (positive/negative) recommendation to the City Council for a development agreement for Soleil Ridge Apartments, case no. 2023-ZC-006, based on the findings and subject to the conditions listed in the staff report (with the following additional conditions…)."

Possible Zone Change Motion: "I move that we forward a (positive/negative) recommendation to the City Council for the zone change for Soleil Ridge Apartments, case no. 2023-ZC-006, based on the findings and subject to the conditions listed in the staff report (with the following additional conditions…)."

Findings for Approval:
1. That a zoning map amendment application was filed by the applicant in accordance with section 10-1-8 of the St. George city code.
2. That a development agreement was negotiated between the city and the applicant.
3. That the development agreement resolves the outstanding issues of the city property and rockfall mitigation and in return provides for attainable housing.
4. That the height and architecture is appropriate for the area.
5. That there is adequate ingress and egress to the site.
6. The density meets the requirements of the general plan of 22 units per acre.

Conditions of Approval (if positive recommendation):
1. That the applicant adds additional materials, texturing, and color to the concrete parking structures on the site as shown on the exhibits attached to this staff report; and
2. That no additional financial charges are placed for private parking.
3. That an increase in height is approved.
4. That the site must meet all aspects of the city codes not addressed by the development agreement.
5. That the lots are combined in a manner that is acceptable to the city.

EXHIBIT A

APPLICANT NARRATIVE

Soleil Ridge

Soleil Ridge, a luxury community located in the epicenter of the city of St. George, Utah. Designed to provide a premium living experience for Southern Utah's growing population that encompasses apartments homes and best-in-class amenities. The modern architecture features designs that incorporate the idealistic landscape along with angles and structures that allow for the enjoyment of the scenic landscape.

Nestled at the base of Tech Ridge, Soleil Ridge features eco-friendly solar powered resources that offsets the impact on the community. The property is able to meet the growth demands of the area by creating housing for the up-and-coming Tech Ridge development with 223 multi-family units.

The Wasatch Group

WASATCH GROUP

595 South Riverwoods
Parkway, Suite 400
Logan, Utah 84321

T: (435) 755-2000

WASATCHGROUP.COM

EXHIBIT B

ROCKFALL MITIGATION
AND
SLOPE PROTECTION REPORT (AGEC)

AGEC
Applied GeoTech

October 6, 2021

Wasatch Commercial Builders, LLC
40 East Galivan Way 2nd Floor
Salt Lake City, Utah 84111

Attn: Josh Lyon
email: jlyon@wasatchcb.com

Subject: Rockfall Mitigation and Slope Protection Recommendations
Soleil Ridge
St, George, Utah
AGEC Project No. 2201872

Applied Geotechnical Engineering Consultants, Inc. (AGEC) was requested to provide recommendations for rockfall mitigation and slope protection for the above referenced project. AGEC has previously provided a Rock Fall Study for the property under Project No. 2192092. As a part of the project, a rockfall hazard has been identified and evaluated by AGEC. During the study, the rockfall hazard was defined and a rockfall "runout line" was determined. AGEC was requested to provide options for mitigation of the rock fall hazard. The rockfall hazard area includes the hillside perimeter of the property on the northwest, west and southwest. See photos No. 1 and 2 for typical slope conditions.

AGEC has further evaluated the rockfall into levels of hazard areas that have been designated as Zones for various levels of rock fall hazard (See Figure 1). The rock fall hazard was divided into Zone 1 (High), Zone 2 (moderate) and Zone 3 (low). These zones were based on our evaluation of the potential risk of rockfall, source of rock, steepness of the slope and the proximity of planned adjacent buildings.

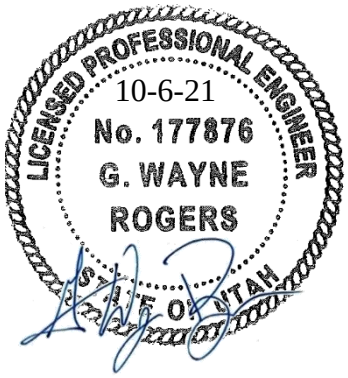
AGEC has previously provided a preliminary slope detail during the original hillside review. The original detail was provided prior to the current plan. This detail has been modified to assist with rockfall mitigation due to the current plan and building locations. Based on the additional evaluation and changes in the proposed construction, a revised detail has been provided on Figure 2 with the notes on Figure 3. The detail includes that the existing slope will be cut into bedrock at approximately ½ to 1 (horizontal to vertical) with benches per IBC Chapter 18, Appendix J. The base of the cut slope will have a rock slope with a

drainage catchment or ditch at the top of the wall. The top of the slope will include a rockfall berm that varies in size depending on the rockfall Zone designation shown on Figure 1. Several photos of an adjacent project, Monster Storage and another similar project, Red Rock Commons (Dicks Sporting Goods) showing the slopes is provided in photos 3-7. The Monster Storage project is nearby with similar layers of materials anticipated and the Red Rock Commons project shows a similar condition. In each case, it will be necessary to provide some long term weathering or raveling of smaller particles over time.

As an alternative to the rockfall berm in Zone 1, AGEC is evaluating the potential use of a Rockfall Fence product called Geobrugg. AGEC has utilized the product for this purpose previously on a local project in Ivins called Sentierre (south of Tucahn). Several photos of the product are attached. The rock fall fence would be a preferred mitigation and would be able to minimize the bench and slope cut at the top of the cut zone. The design for the rock fall fence would include foundations supported on micropiles also used for lateral support. The fence product is primarily a high strength steel mesh product with cables that absorbs the energy from a rock fall event. If this alternative is to be utilized, AGEC will assist in the design along with a structural engineer and engineers from Geobrugg.

If you have any questions, or if we can provide additional information, please contact us.

Sincerely,
APPLIED GEOTECHNICAL ENGINEERING CONSULTANTS, INC.



G. Wayne Rogers, P.E.
P:\2020 Project Files\2201800\2201872 - GT Soleil Ridge (The Cove)\slope letter.docx

Photo No. 1, View of SW portion of hillslope

Photo No. 2, View of North Slope area

Photo No. 3, View of Monster Storage cut slope

Photo No. 4, View cut face on back side of Monster Storage- Sandstone Rock

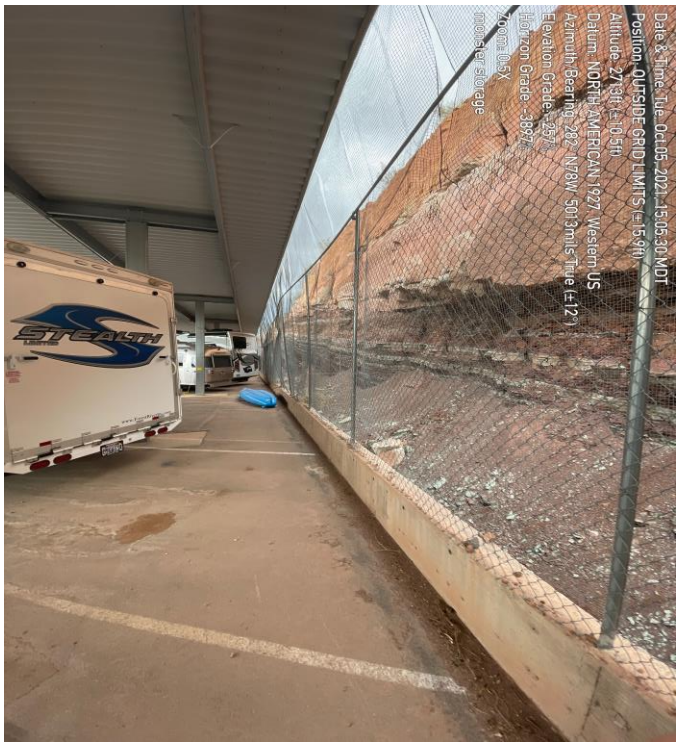


Photo no. 5 – View of cut face in mudstone- Monster Storage

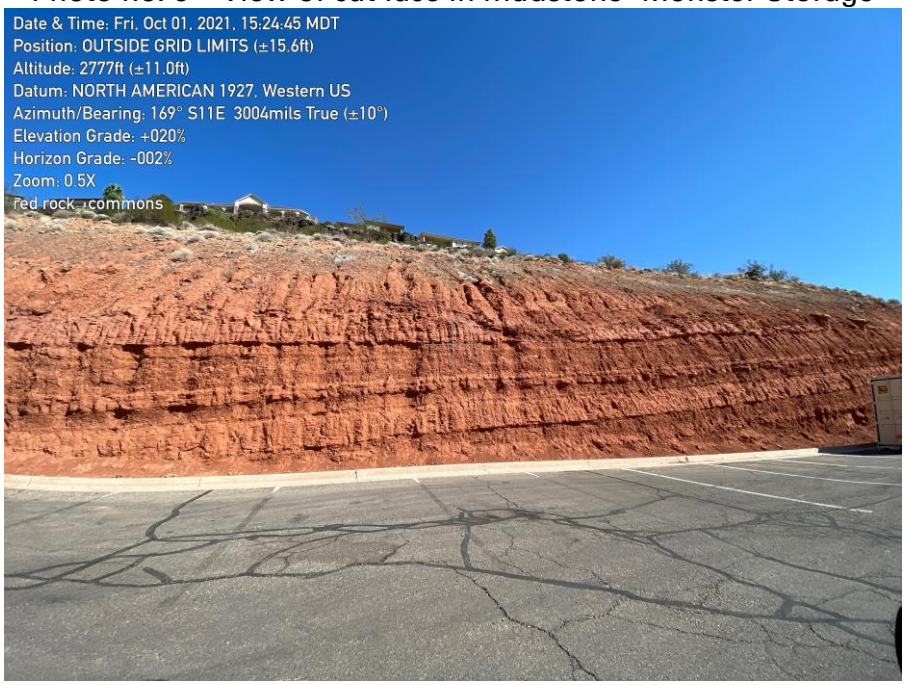


Photo No. 6 – View of cut face in shale bedrock – Red Rock Commons

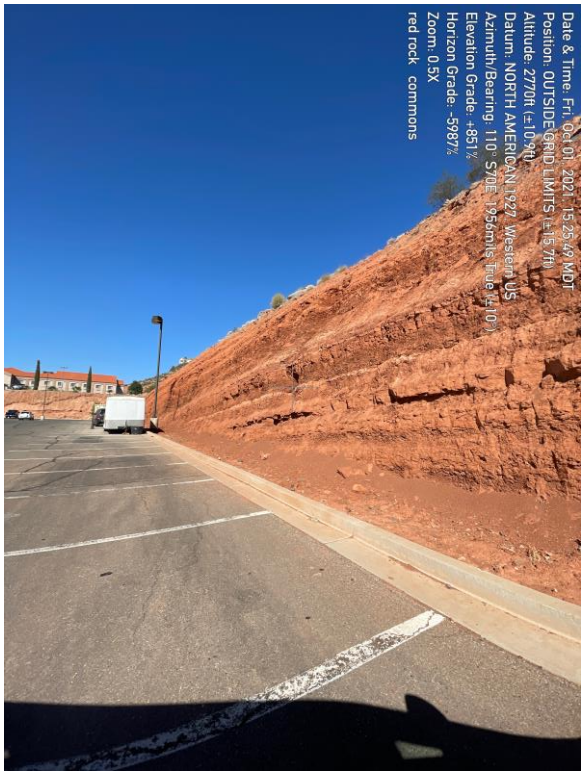


Photo No. 7, View of cut face – Dicks Sporting Goods


Photo No. 8 – View of rock fall fence – Sentierre

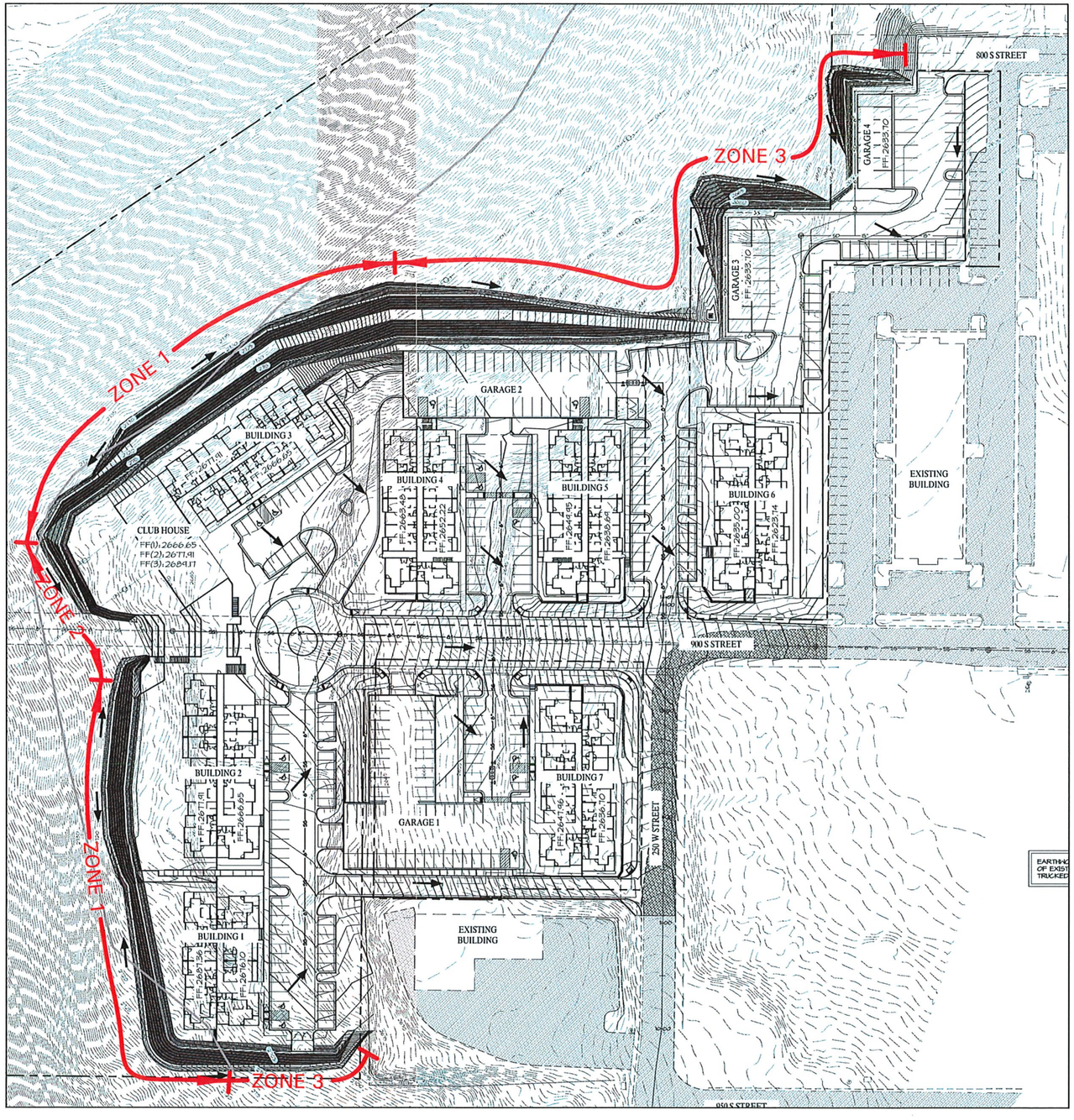
Photo No. 9 – Veiw of rock fall fence - Sentierre

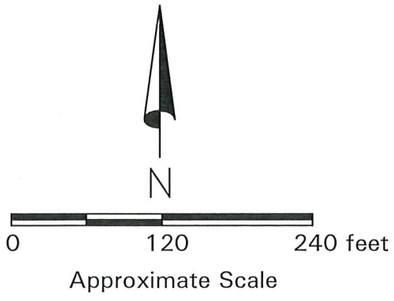
Photo No. 10 – View of rock fall fence - Sentierre

Photo No. 11 – View of rock fall fence - Sentierre

SOLEIL RIDGE
ST. GEORGE, UTAH

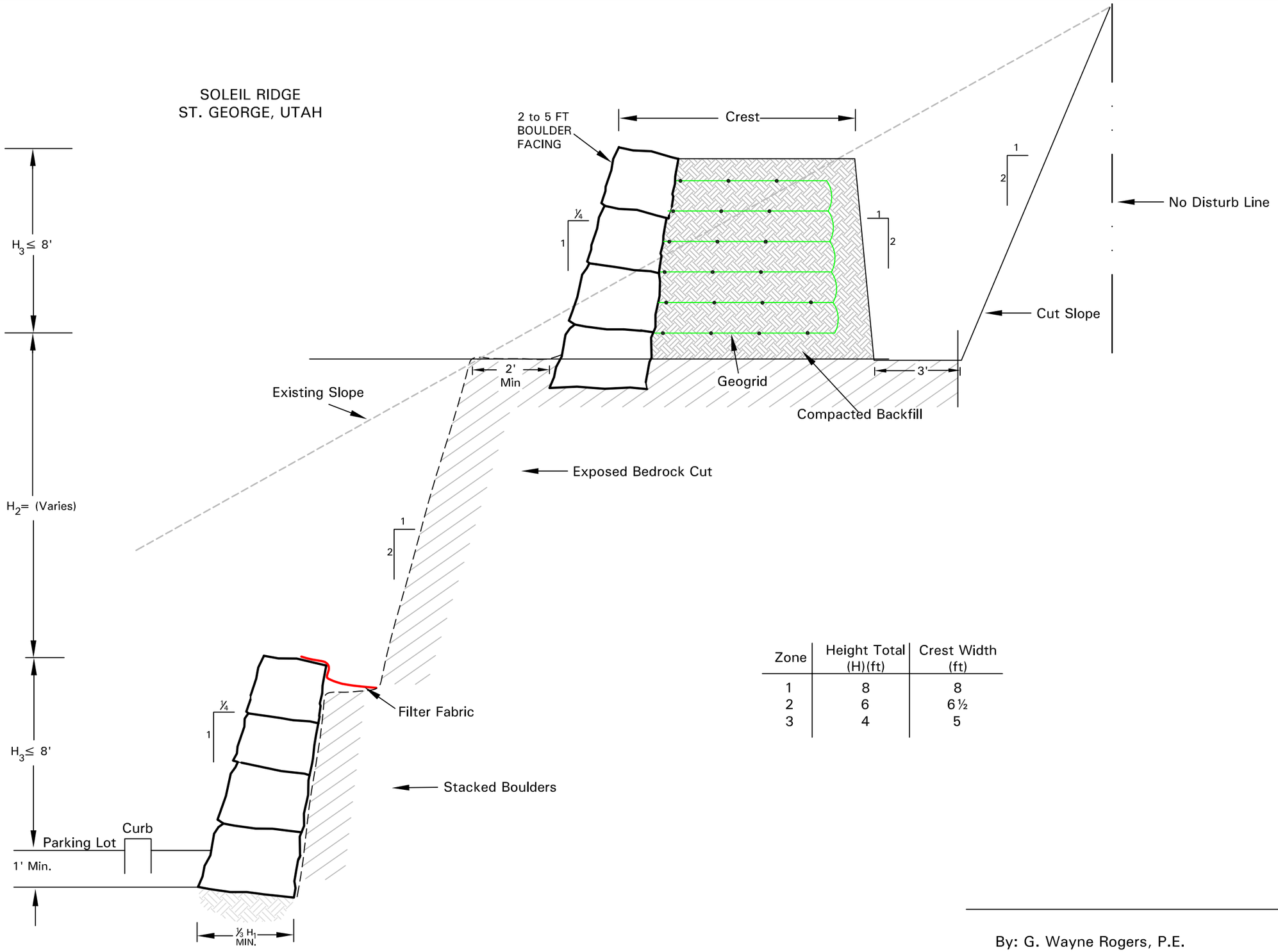
Zone	Height Total (H)(ft)	Crest Width (ft)
1	8	8
2	6	6½
3	4	5





2201872	AGEC	Site Plan	Figure 1

SOLEIL RIDGE
ST. GEORGE, UTAH



Zone	Height Total (H)(ft)	Crest Width (ft)
1	8	8
2	6	6½
3	4	5

By: G. Wayne Rogers, P.E.

2201872	AGEC	ROCKERY FACED SLOPE DESIGN	Figure 2

SOLEIL RIDGE
ST. GEORGE, UTAH

Geosynthetic Reinforcement Schedule ¼:1 (H:V) Slope

Top Tier Boulder Faced Fill Slope Height (ft)	Geosynthetic Reinforcement Required	* Geogrid	Geosynthetic Vertical Spacing (ft)	Grid Lengths (L)
			S_1	L_1
$H_T \leq 8$	Yes (upper)	Mirafi 5XT	1	Full Berm

* Approved Equivalents - Tensar UX1500HS = Miragrid 5XT = Fortrac 80/30-20 = Macaafari WG5

Boulder Slope Construction Notes:

1. Stacked boulders should consist of durable material resistant to weathering and approved by AGEC. Boulders should typically range from 2 to 4 feet in size with boulder sizes decreasing as they are stacked. Typical materials suitable for this application include basalt, limestone and some sandstones. The on-site sandstone should be suitable.
2. The slope/boulder foundation subgrade should be cleared of vegetation, rock or other obstacles and the surface level and smooth such that depressions and humps do not exceed 6 inches.
3. The boulders placed at the base of each tier should be embedded at least 1 foot below the lowest adjacent grade.
4. The subgrade should be properly prepared by compacting to at least 95% of ASTM D-1557.
5. The boulders should be stacked no steeper than ¼:1 (H:V). Less steep slopes may be required at the engineers discretion.

Geosythetic Notes:

1. Geosynthetic reinforcement should be placed continuously in the primary strength direction. It may not be spliced in the primary strength direction.
2. The placement of the geosynthetic reinforcement should be observed by a representative of AGEC to verify the specified geosynthetic is being used and properly placed. It should be stretched by hand until taut and free of wrinkles. Individual lengths of the geosynthetic reinforcement should be overlapped at least 1 foot.
3. The filter fabric should consist of Mirafi 140N non-woven filter fabric or equivalent.

Grading Notes:

1. The onsite sand may be used as backfill.
2. Backfill placed behind boulders and in reinforced areas should be tested frequently to verify compaction is at least 95% of the maximum dry density as determined by ASTM D-1557. We recommend a testing frequency of each lift of fill placed staggered approximately every 50 lineal feet. If the fill is not properly compacted, the stability of the slope will be reduced.
3. Backfill should be placed/spread over layers of specified geosynthetic in such a way which minimizes wrinkles and/or movement of the geosynthetic. Backfill within 3 feet of the boulders should be compacted with hand compaction equipment. Rubber-tired equipment may be utilized to compact the fill without causing damage to the geosynthetic. Track-mounted equipment should not be operated directly on the geosynthetic. At least 12 inches of fill should be placed above the geosynthetic prior to operating track-mounted equipment.

By: G. Wayne Rogers P.E.

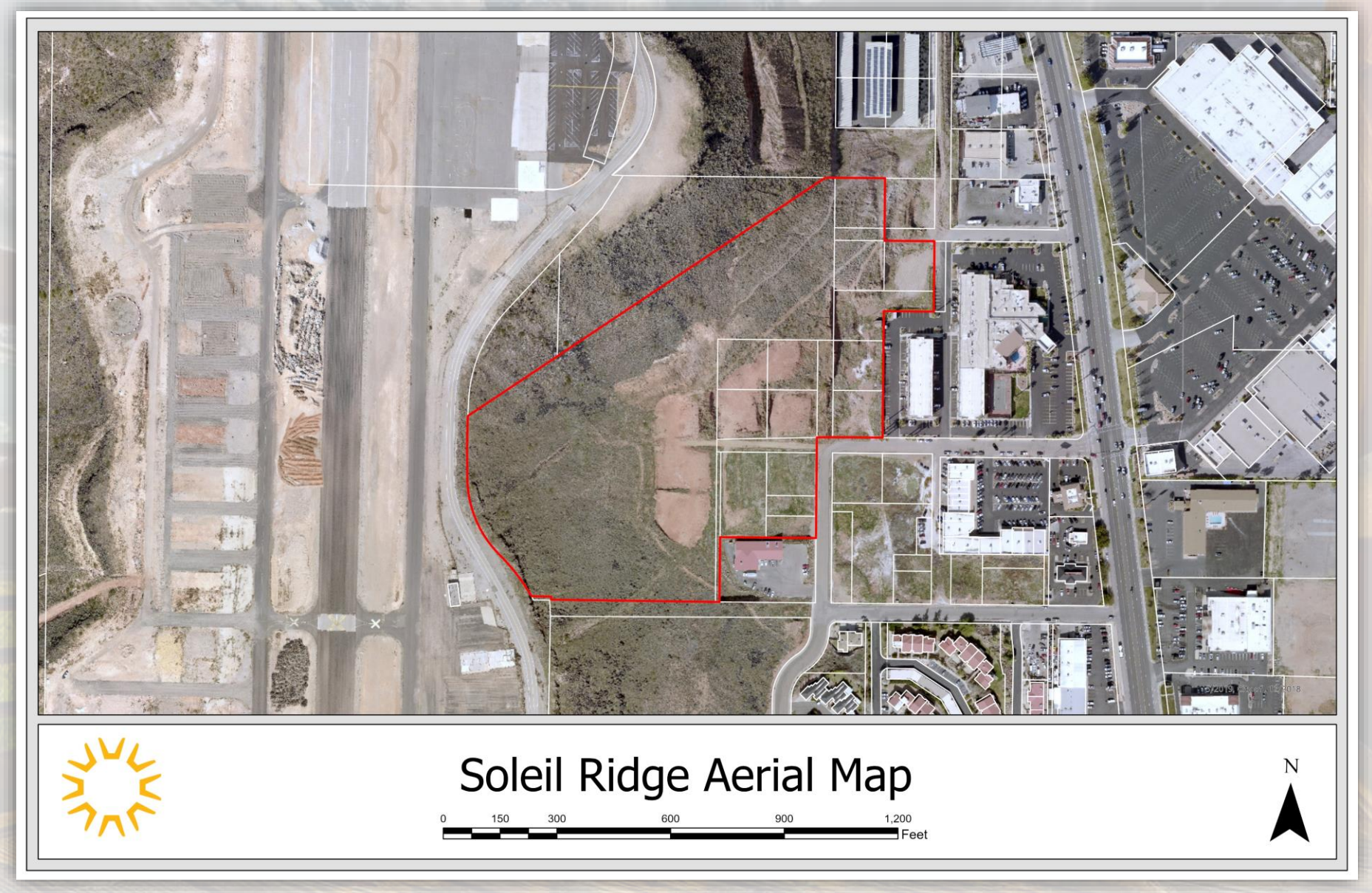
EXHIBIT C

POWERPOINT PRESENTATION

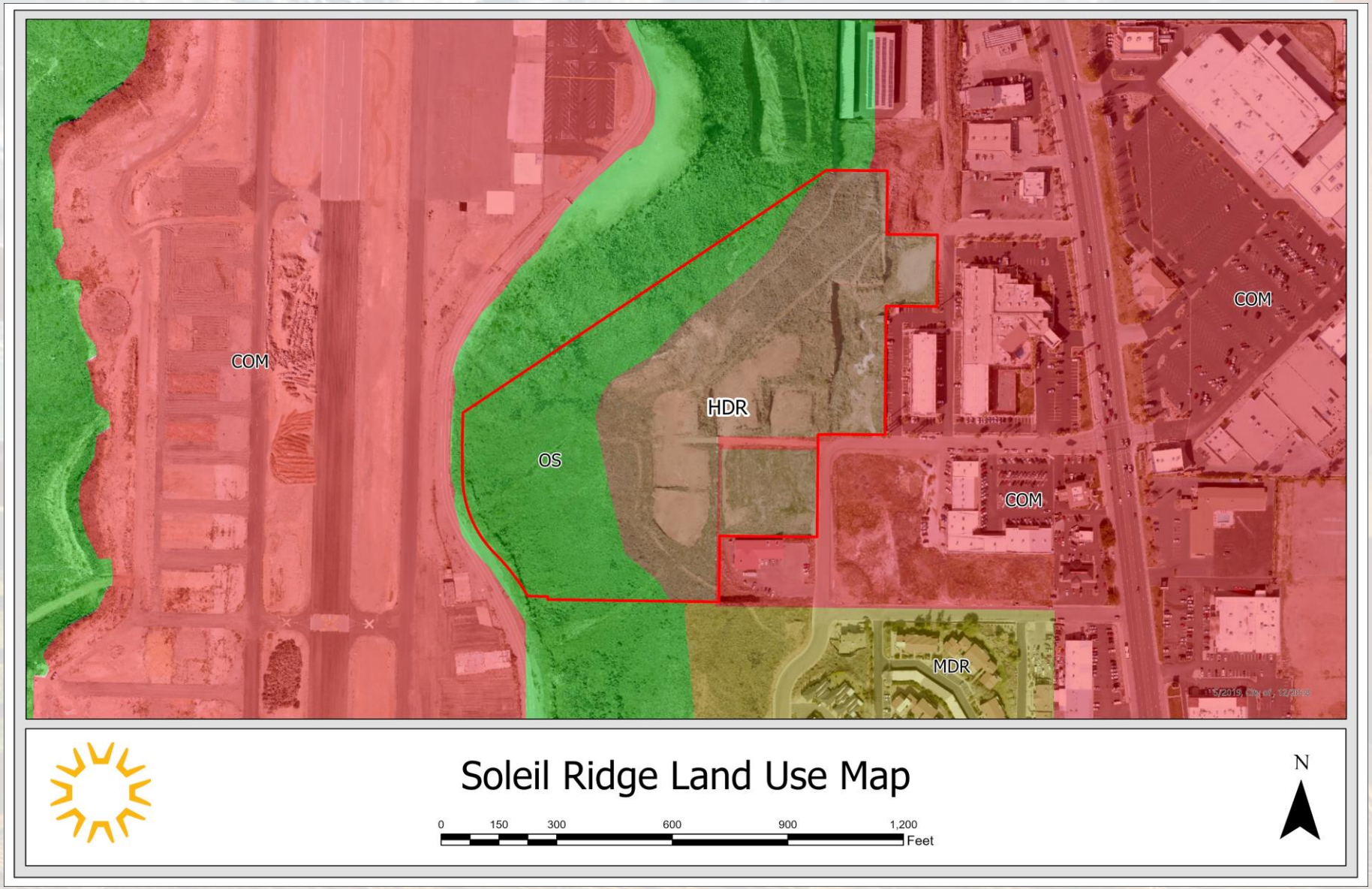
Soleil Ridge Apartments Zone Change

2021-ZC-064

Aerial Map



Land Use Map


COM
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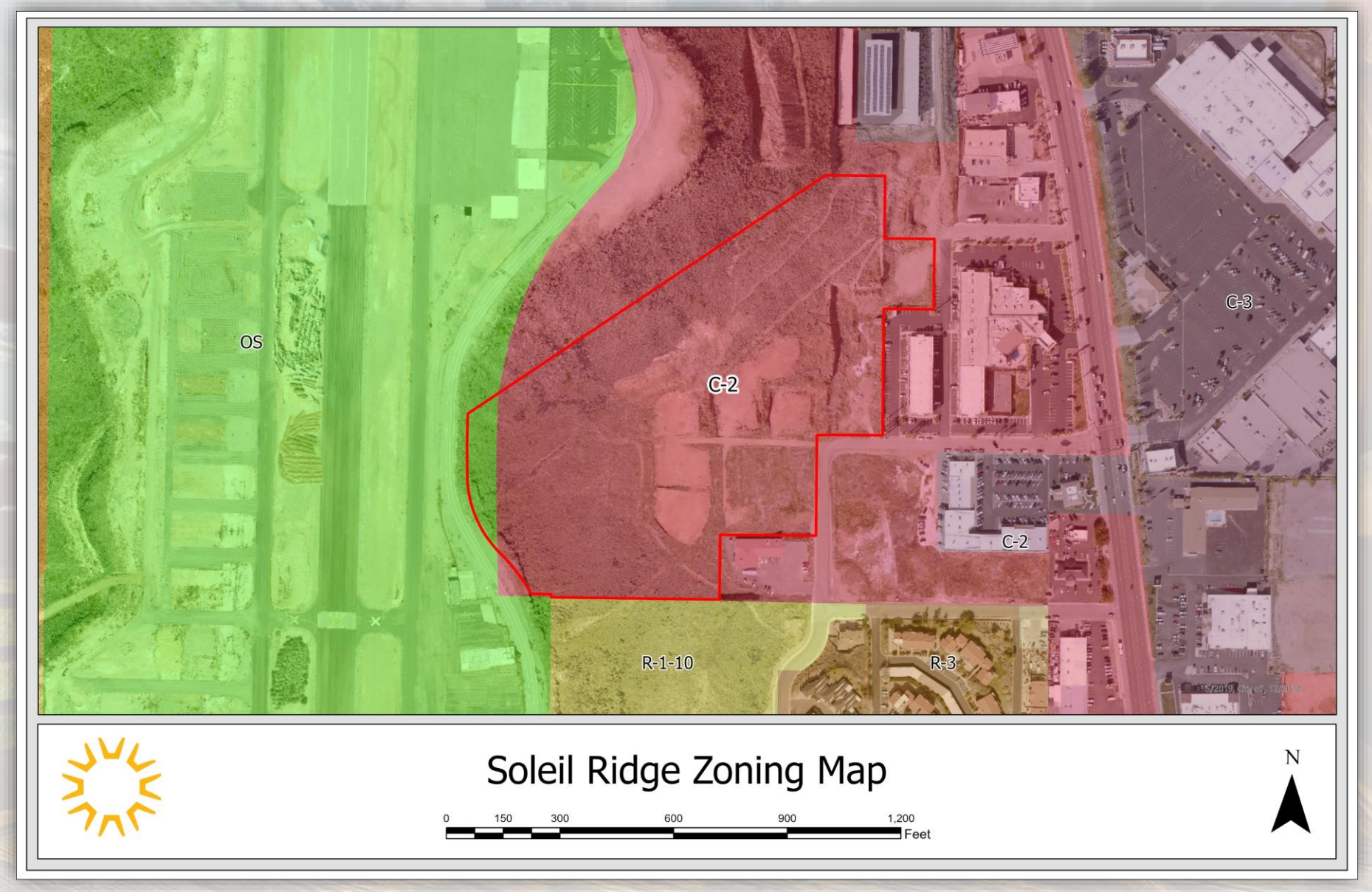
Soleil Ridge Land Use Map
0
150
300
600
900
1,200
Feet
N

Zoning Map


OS
C-2
C-3
C-2
R-1-10
R-3
Soleil Ridge Zoning Map
0
150
300
600
900
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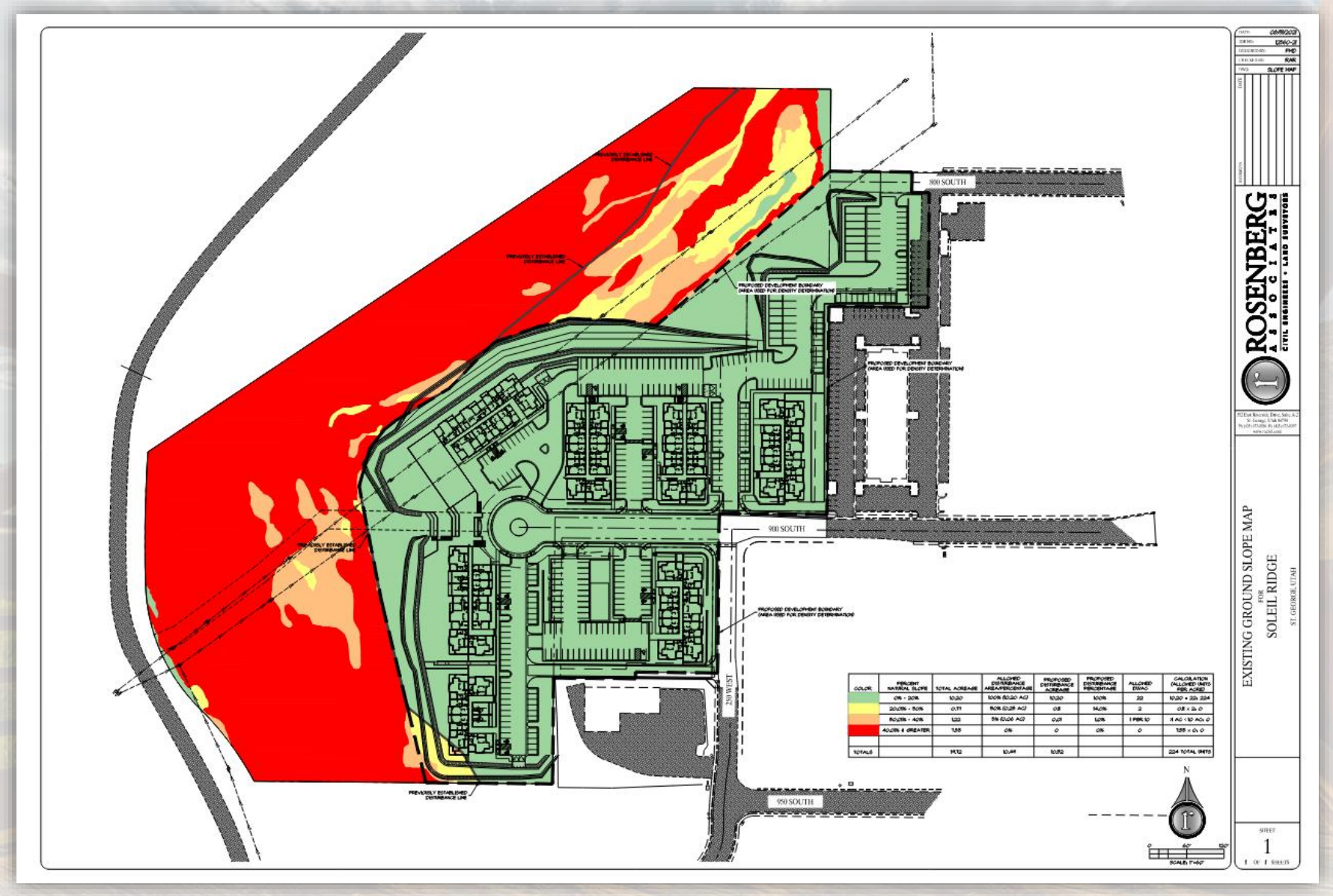
Feet
N

Slope Map


300 SOUTH
900 SOUTH
950 SOUTH
250 WEST
PROPOSED DEVELOPMENT BOUNDARY
(AREA USED FOR DENSITY DETERMINATION)
PREVIOUSLY ESTABLISHED
DISTURBANCE LINE
ROSENBERG
ASSOCIATES
CIVIL ENGINEERS • LAND SURVEYORS
EXISTING GROUND SLOPE MAP
FOR
SOLEIL RIDGE
ST. GEORGE, UTAH
SHEET
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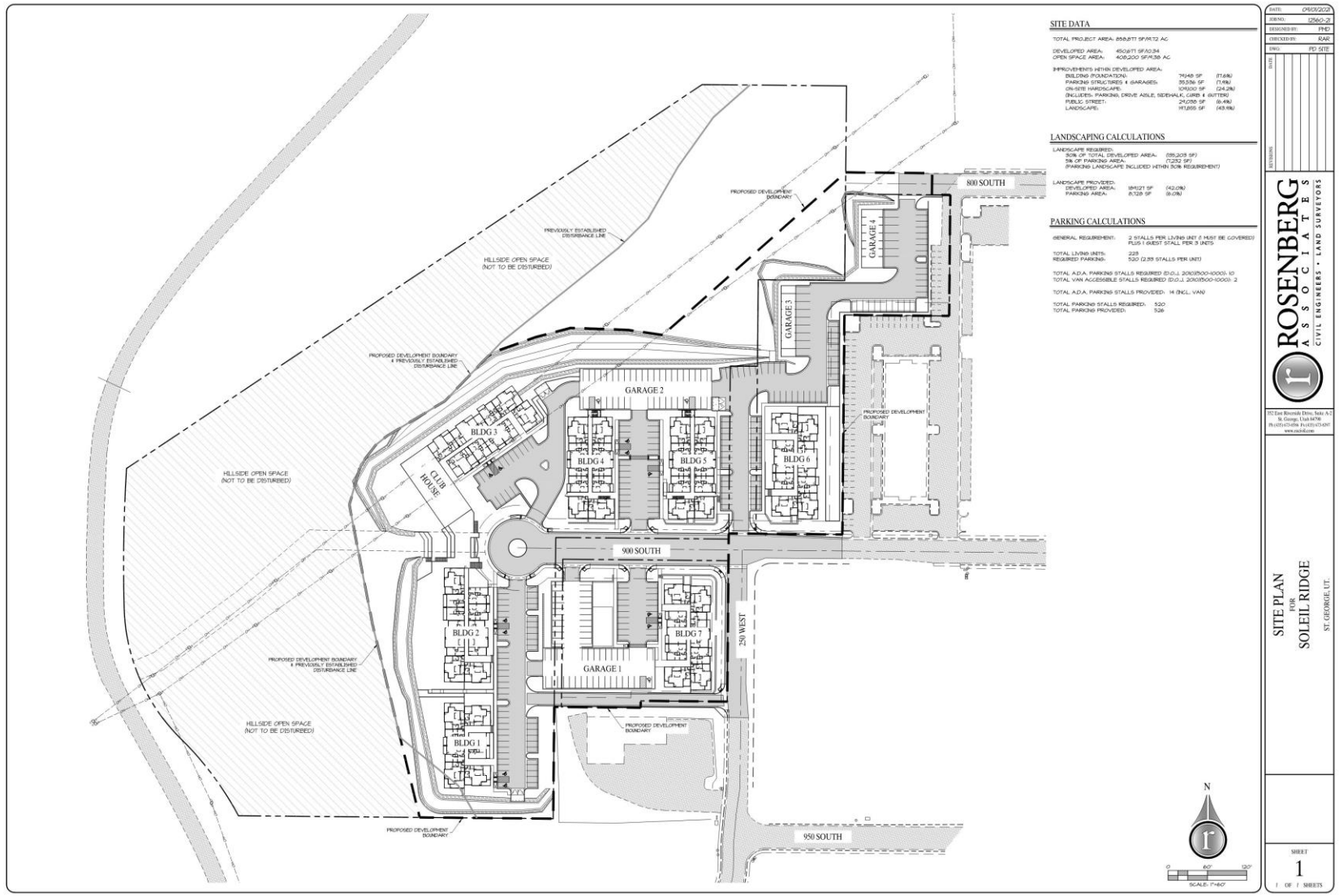
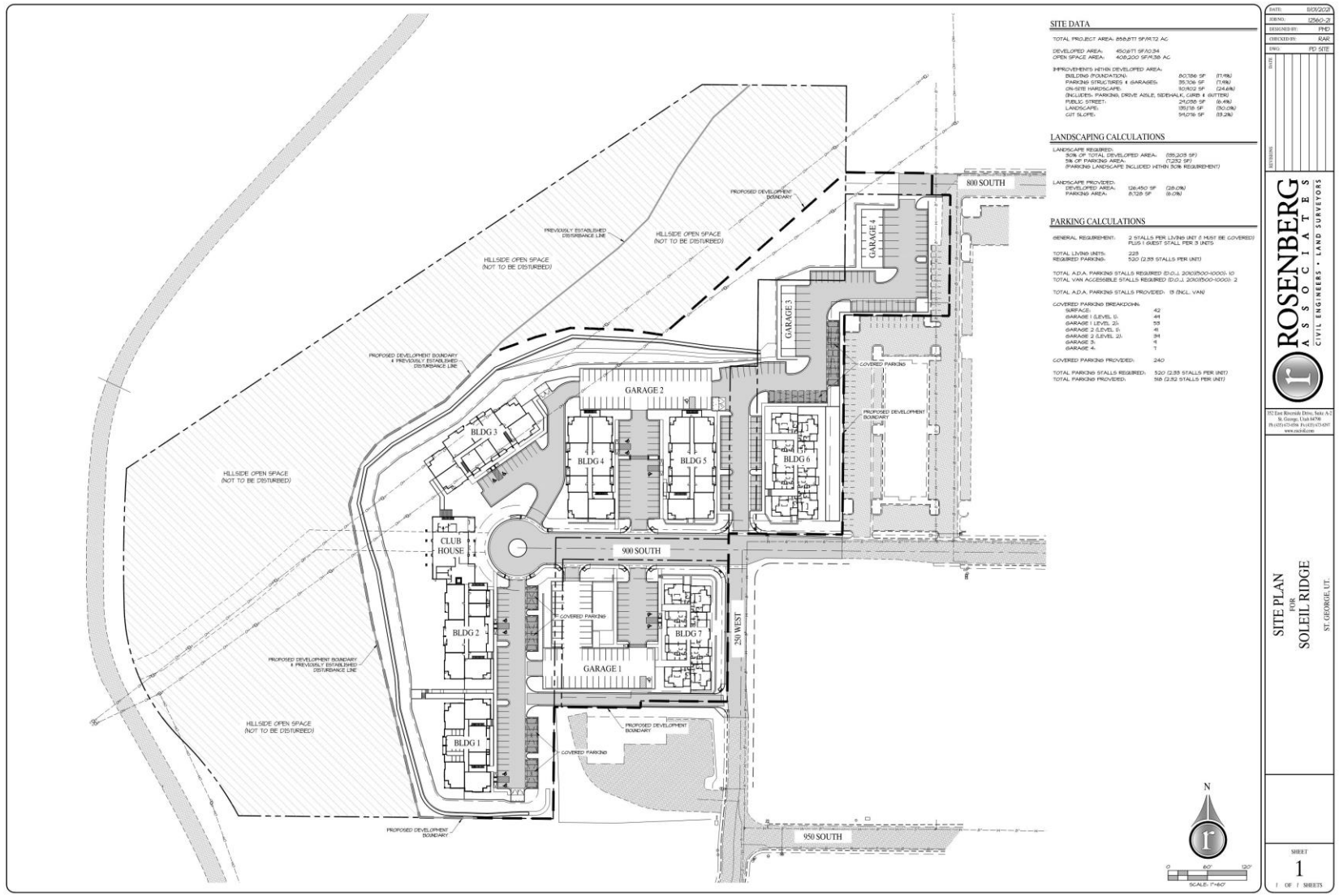
Previously Reviewed Site Plan



Proposed Site Plan



Site Plan/Landscaping

NOT FOR CONSTRUCTION

6/4 LOFTSIXFOUR

DESIGNING OUTDOOR LIVING EXPERIENCES

A: 9500 S 500 W STE 215 SANDY UT 84070

P: 801 878 4717

W: LOFTSIXFOUR.COM

5197921 Brandon A. Reed STATE OF UTAH

SOLEIL RIDGE HILLSIDE

250 W 900 S /
ST GEORGE / UTAH

DATE //	2021-11-02
PROJECT NO. //	2112
DRAWN BY //	NKJ
CHECKED BY //	BAR

REVISIONS //

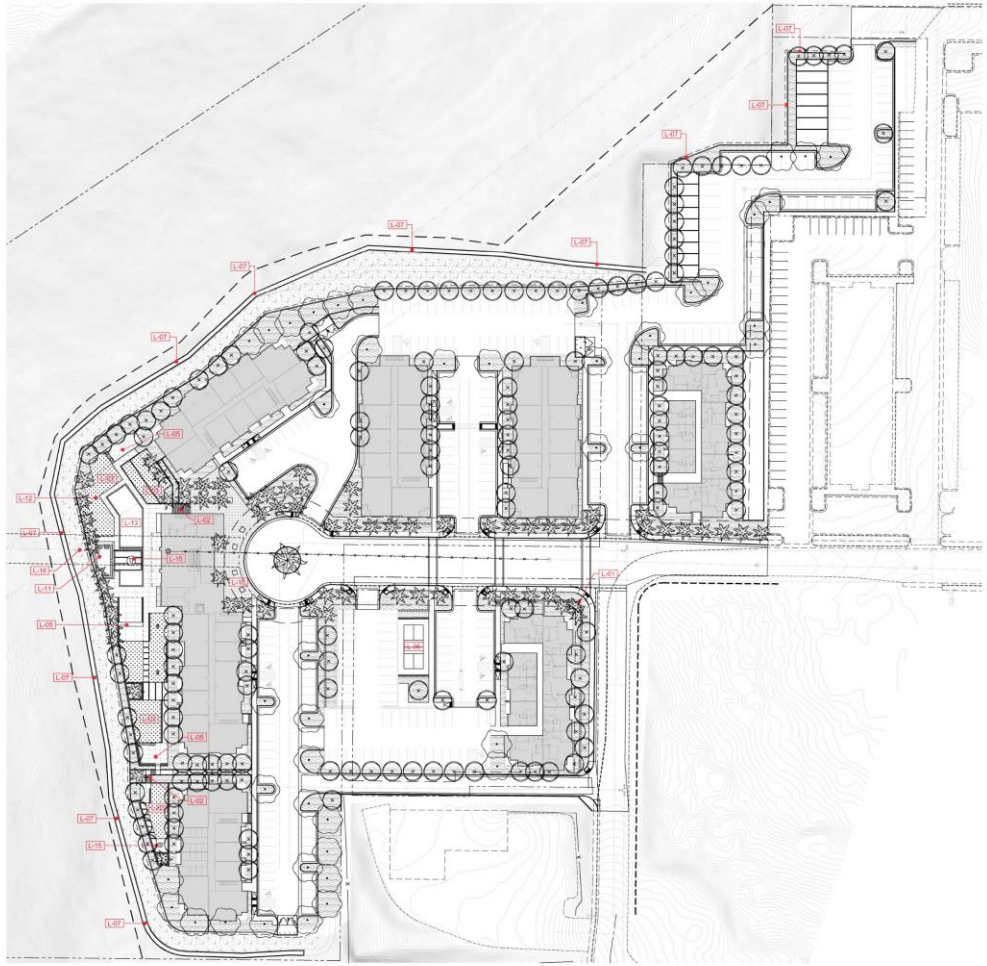
TITLE //

COLOR SITE DEVELOPMENT PLAN

SHEET //

CP101

Amenities



PLANT SCHEDULE

TREES	BOTANICAL / COMMON NAME	SIZE	CONT.	QTY
	FOCAL PALM TREE	30'	BOX	1
	LARGE DECIDUOUS / SHADE TREE	2" CAL.		44
	MEDIUM PALM TREE	20'	BOX	73
	MEDIUM/SMALL DECIDUOUS	2" CAL.		158

GROUND COVERS	BOTANICAL / COMMON NAME	CONT	HZONE	SPACING	QTY
	4"-6" RIP RAP / LANDSCAPE ROCK	N/A			29,217 SF
	LANDSCAPE AREA 50% OF ALL LANDSCAPE AREA SHALL BE COVERED BY WATER EFFICIENT PLANT MATERIAL PER CITY REQUIREMENTS.	N/A			69,907 SF
	SYNTHETIC TURF	N/A			8,159 SF

REFERENCE NOTES SCHEDULE

SYMBOL	SITE LAYOUT DESCRIPTION	QTY	DETAIL
L-01	MONUMENT SIGN LOCATION - PER PLAN		
L-02	CONCRETE STAIRS		
L-03	SYNTHETIC TURF		
L-05	BBQ/PATIO AREA		
L-06	OUTDOOR PATIO/PICKLEBALL		
L-07	HILLSIDE RETAINING WALL(S) (BY OTHERS)		
L-10	ENTRY PLAZA		
L-11	SPA		
L-12	POOL PATIO		
L-13	POOL		
L-15	FIRE PIT		
L-16	SEWER LINE		

SUMMARY DATA

TOTAL PROJECT: 858,877 SF 19.72 ACRES 100%

REQUIRED LANDSCAPE AREA:

DEVELOPED AREA: 135,203 SF (30%)
PARKING AREA: 7,232 SF (5%)
(PARKING AREA INCLUDED IN 30%)

PROPOSED LANDSCAPE AREA:
DEVELOPED AREA: 126,450 SF (28%)
PARKING AREA: 8,728 SF (6%)

TOTAL LANDSCAPE AREA: 135,178 SF (30.1%)

0 50' 100' 100' feet
1" = 50'

NOT FOR CONSTRUCTION

6/4 LOFTSIXFOUR

DESIGNING OUTDOOR LIVING EXPERIENCES
A: 9500 S 500 W STE 215 SANDY UT 84070
P: 801 878 4717
W: LOFTSIXFOUR.COM

#5197921 Brandon A. Reed STATE OF UTAH

SOLEIL RIDGE HILLSIDE
250 W 900 S /
ST GEORGE / UTAH

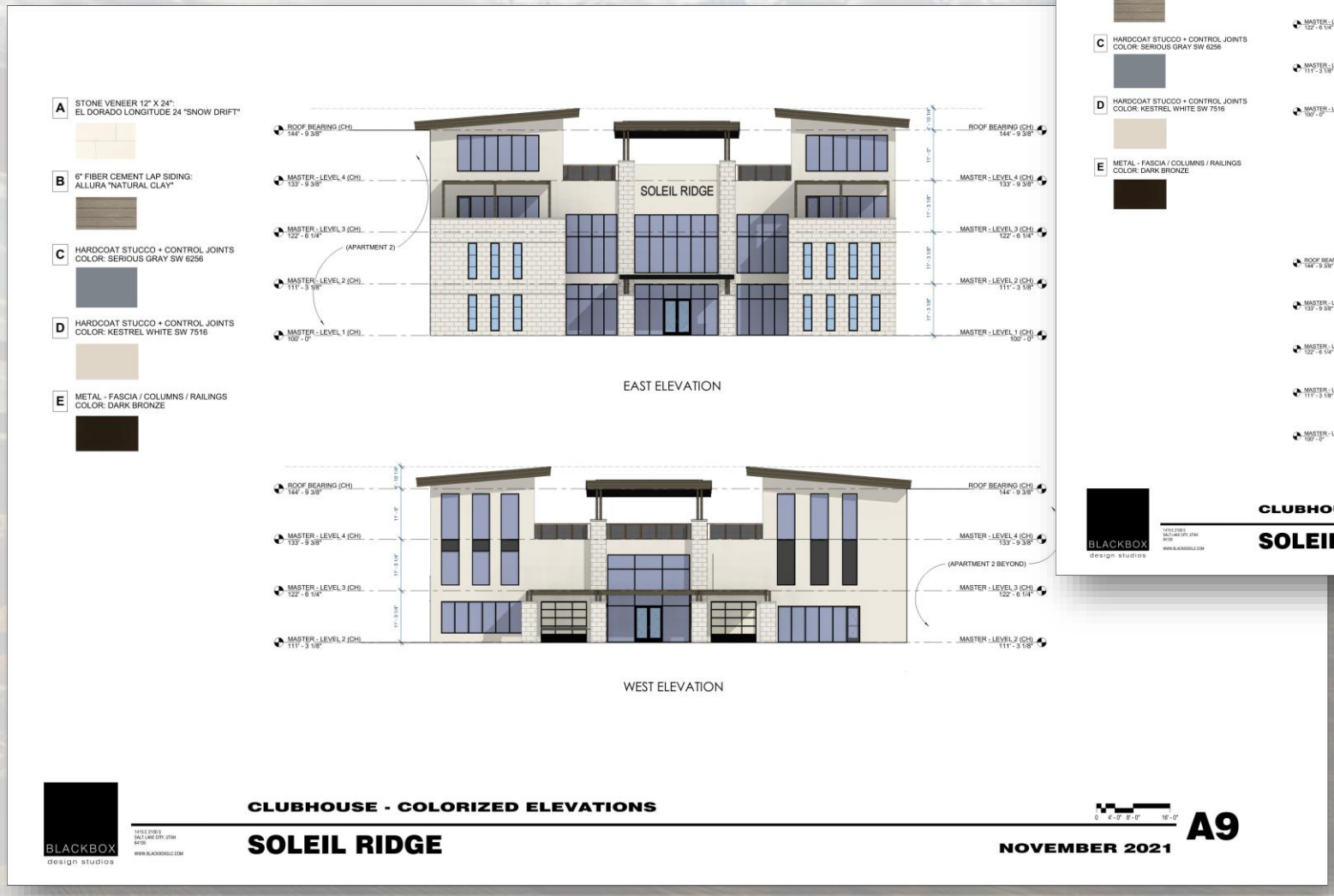
DATE // 2021-11-02
PROJECT NO. // 2112
DRAWN BY // NKJ
CHECKED BY // BAR

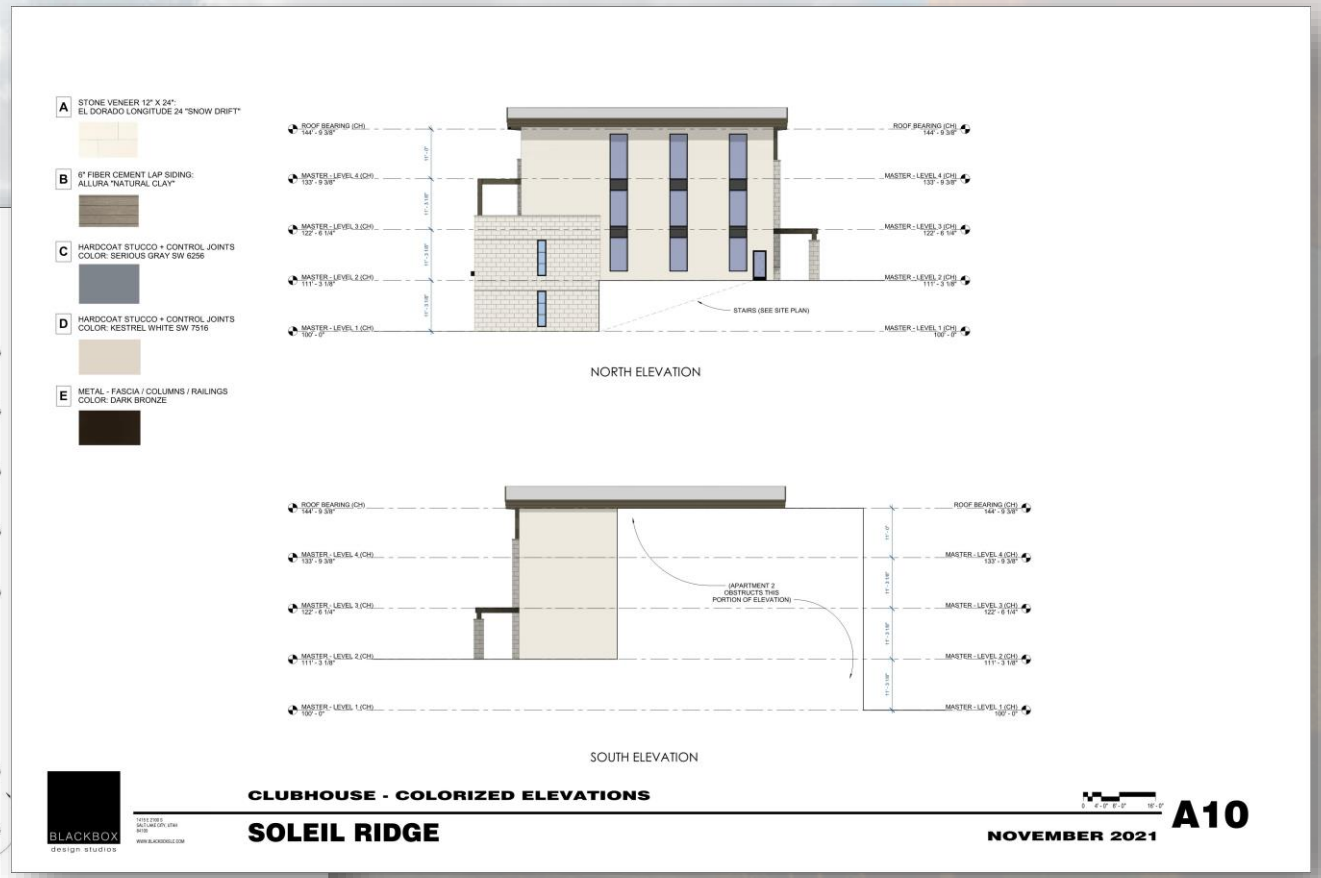
REVISIONS //

TITLE // OVERALL LANDSCAPE PLAN

SHEET // LP101

Clubhouse Elevations





Elevations

A STONE VENEER 12" X 24":
EL DORADO LONGITUDE 24 "SNOW DRIFT"

B 6" FIBER CEMENT LAP SIDING:
ALLURA "NATURAL CLAY"

C HARDCOAT STUCCO + CONTROL JOINTS
COLOR: SERIOUS GRAY SW 6256

D HARDCOAT STUCCO + CONTROL JOINTS
COLOR: KESTREL WHITE SW 7516

E METAL - FASCIA / COLUMNS / RAILINGS
COLOR: DARK BRONZE

EAST ELEVATION

WEST ELEVATION

NORTH ELEVATION

SOUTH ELEVATION

BLACKBOX design studios

1415 E 2100 S
SALT LAKE CITY, UTAH
84105
WWW.BLACKBOXSLC.COM

APARTMENT BUILDING 1 - COLORED ELEVATIONS

SOLEIL RIDGE

0 4'-0" 8'-0" 16'-0"

A11

AUGUST 2021

Elevations

A STONE VENEER 12" X 24":
EL DORADO LONGITUDE 24 "SNOW DRIFT"

B 6" FIBER CEMENT LAP SIDING:
ALLURA "NATURAL CLAY"

C HARDCOAT STUCCO + CONTROL JOINTS
COLOR: SERIOUS GRAY SW 6256

D HARDCOAT STUCCO + CONTROL JOINTS
COLOR: KESTREL WHITE SW 7516

E METAL - FASCIA / COLUMNS / RAILINGS
COLOR: DARK BRONZE

EAST ELEVATION

WEST ELEVATION

BLACKBOX design studios

APARTMENT BUILDING 2 - COLORIZED ELEVATIONS

SOLEIL RIDGE

0 4'-0" 8'-0" 16'-0"

A13

NOVEMBER 2021

Elevations

A STONE VENEER 12" X 24":
EL DORADO LONGITUDE 24 "SNOW DRIFT"

B 6" FIBER CEMENT LAP SIDING:
ALLURA "NATURAL CLAY"

C HARDCOAT STUCCO + CONTROL JOINTS
COLOR: SERIOUS GRAY SW 6256

D HARDCOAT STUCCO + CONTROL JOINTS
COLOR: KESTREL WHITE SW 7516

E METAL - FASCIA / COLUMNS / RAILINGS
COLOR: DARK BRONZE

EAST ELEVATION

WEST ELEVATION

BLACKBOX design studios

1415 E 2100 S
SALT LAKE CITY, UTAH
84105
WWW.BLACKBOXSLC.COM

APARTMENT BUILDING 3 - COLORIZED ELEVATIONS

SOLEIL RIDGE

0 4'-0" 8'-0" 16'-0"

NOVEMBER 2021

A15

NORTH ELEVATION

SOUTH ELEVATION

Elevations


A STONE VENEER 12" X 24": EL DORADO LONGITUDE 24 "SNOW DRIFT"
B 6" FIBER CEMENT LAP SIDING: ALLURA "NATURAL CLAY"
C HARDCOAT STUCCO + CONTROL JOINTS COLOR: SERIOUS GRAY SW 6256
D HARDCOAT STUCCO + CONTROL JOINTS COLOR: KESTREL WHITE SW 7516
E METAL - FASCIA / COLUMNS / RAILINGS COLOR: DARK BRONZE
EAST ELEVATION
WEST ELEVATION
BLACKBOX design studios
APARTMENT BUILDING 4 - COLORED ELEVATIONS
SOLEIL RIDGE
AUGUST 2021
A17


A STONE VENEER 12" X 24": EL DORADO LONGITUDE 24 "SNOW DRIFT"
B 6" FIBER CEMENT LAP SIDING: ALLURA "NATURAL CLAY"
C HARDCOAT STUCCO + CONTROL JOINTS COLOR: SERIOUS GRAY SW 6256
D HARDCOAT STUCCO + CONTROL JOINTS COLOR: KESTREL WHITE SW 7516
E METAL - FASCIA / COLUMNS / RAILINGS COLOR: DARK BRONZE
RIDGE
EAST ELEVATION
WEST ELEVATION
BLACKBOX design studios
APARTMENT BUILDING 5 - COLORED ELEVATIONS
SOLEIL RIDGE
AUGUST 2021
A19

Elevations

A STONE VENEER 12" X 24":
EL DORADO LONGITUDE 24 "SNOW DRIFT"

B 6" FIBER CEMENT LAP SIDING:
ALLURA "NATURAL CLAY"

C HARDCOAT STUCCO + CONTROL JOINTS
COLOR: SERIOUS GRAY SW 6256

D HARDCOAT STUCCO + CONTROL JOINTS
COLOR: KESTREL WHITE SW 7516

E METAL - FASCIA / COLUMNS / RAILINGS
COLOR: DARK BRONZE

EAST ELEVATION

WEST ELEVATION

NORTH ELEVATION

SOUTH ELEVATION

BLACKBOX design studios

APARTMENT BUILDING 6 & 7 - COLORED ELEVATIONS

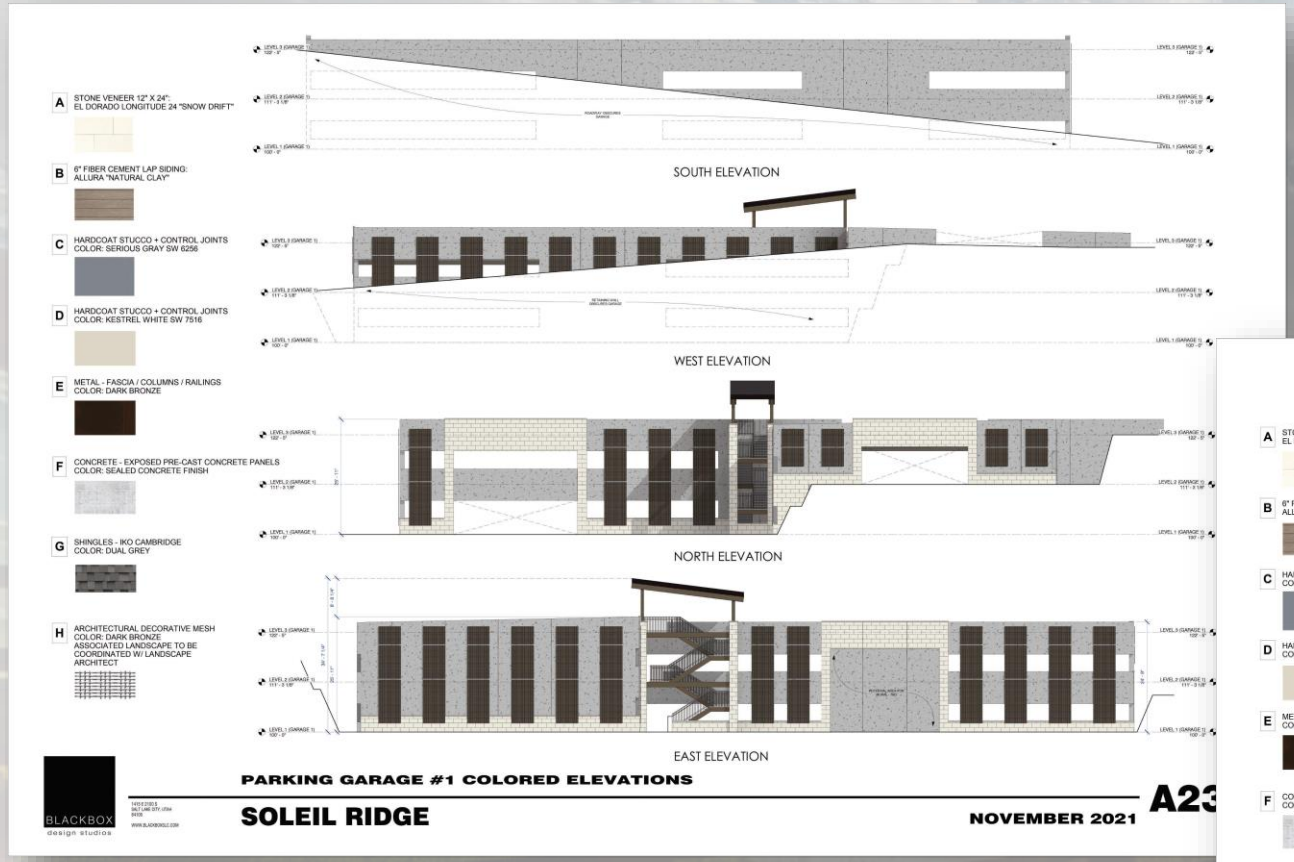
SOLEIL RIDGE

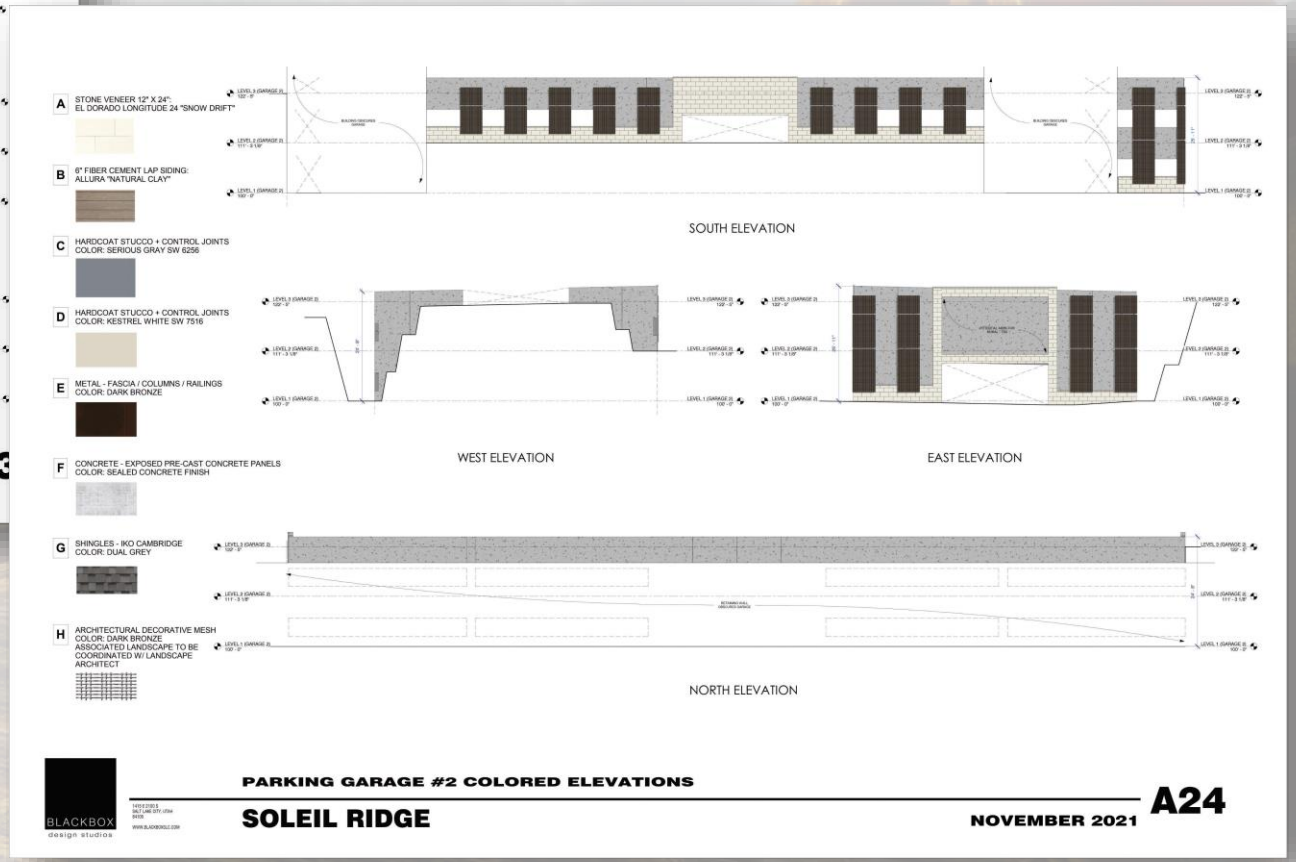
0 4'-0" 8'-0" 16'-0"

A21

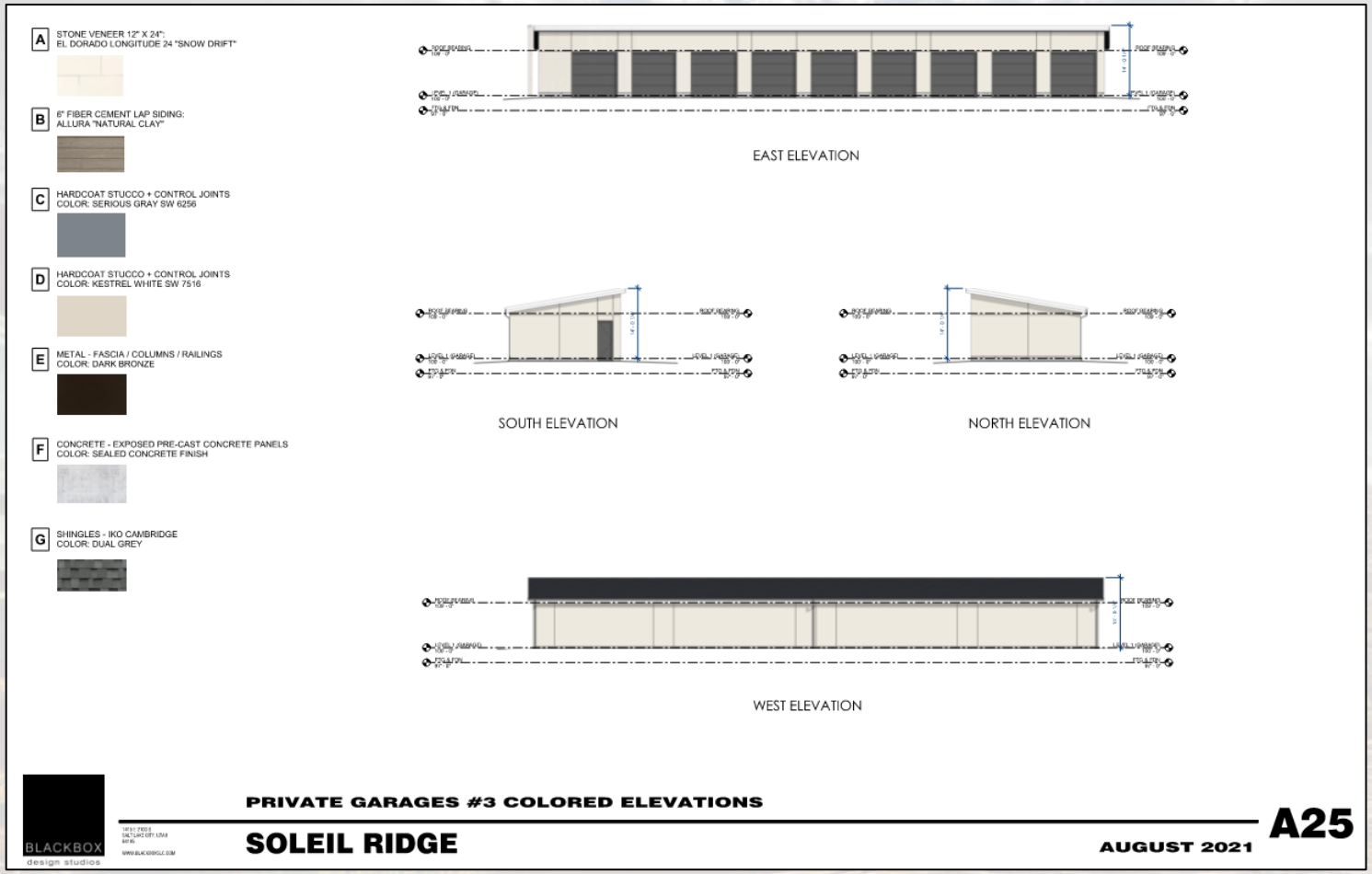
AUGUST 2021

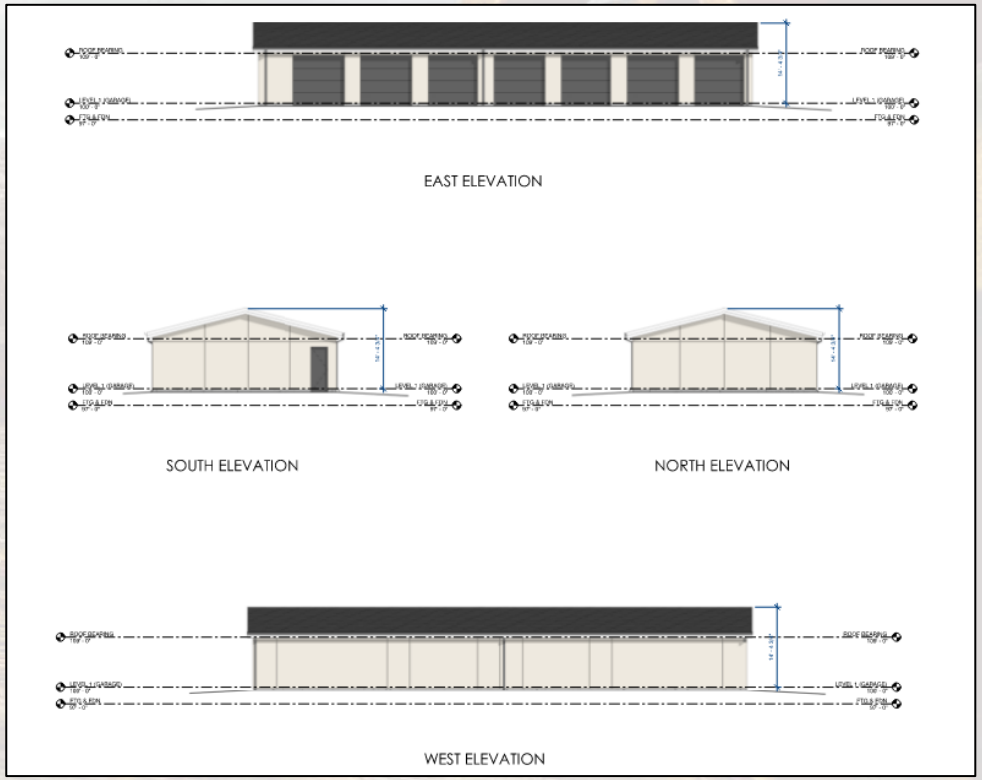
Parking Structure Elevations





Garage Elevations





Renderings

BLACKBOX design studios

RENDER 01 - CLUBHOUSE ENTRY DURING MORNING

SOLEIL RIDGE

NOVEMBER 2021

A1

BLACKBOX design studios

RENDER 03 - AERIAL LOOKING WEST

SOLEIL RIDGE

NOVEMBER 2021

A3

Renderings

BLACKBOX design studios

RENDER 04 - LOOKING TOWARDS POOL DECK

SOLEIL RIDGE

NOVEMBER 2021

A4

BLACKBOX design studios

RENDER 02 - LOOKING WEST LEADING UP TO CLUBHOUSE

SOLEIL RIDGE

NOVEMBER 2021

A2

Renderings

BLACKBOX design studios

RENDER 05 - YOGA DECK OVERLOOKING MAIN DRIVE

SOLEIL RIDGE

NOVEMBER 2021

A5

BLACKBOX design studios

RENDER 07 - FROM A BALCONY IN BUILDING 2

SOLEIL RIDGE

NOVEMBER 2021

A7

Renderings

BLACKBOX
design studios

RENDER 06 - GAME LAWN IN THE EVENING

SOLEIL RIDGE

NOVEMBER 2021

A6

BLACKBOX
design studios

RENDER 08 - FROM A BALCONY IN BUILDING 5

SOLEIL RIDGE

NOVEMBER 2021

A8

Rockfall Mitigation

Photo No. 1, View of SW portion of hillslope

Photo No. 2, View of North Slope area

Photo No. 3, View of Monster Storage cut slope

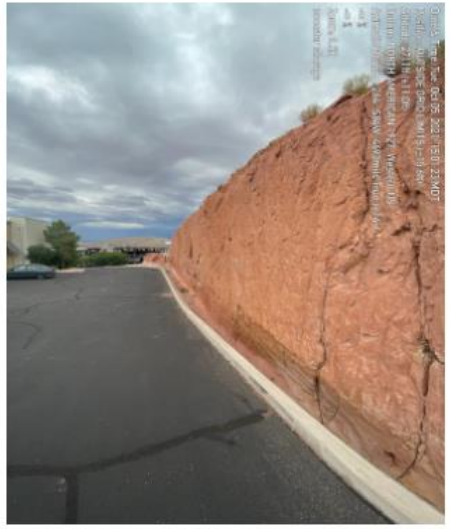


Photo No. 4, View cut face on back side of Monster Storage- Sandstone Rock

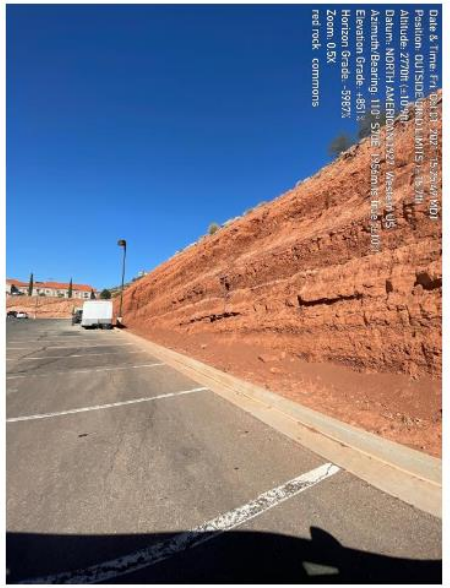


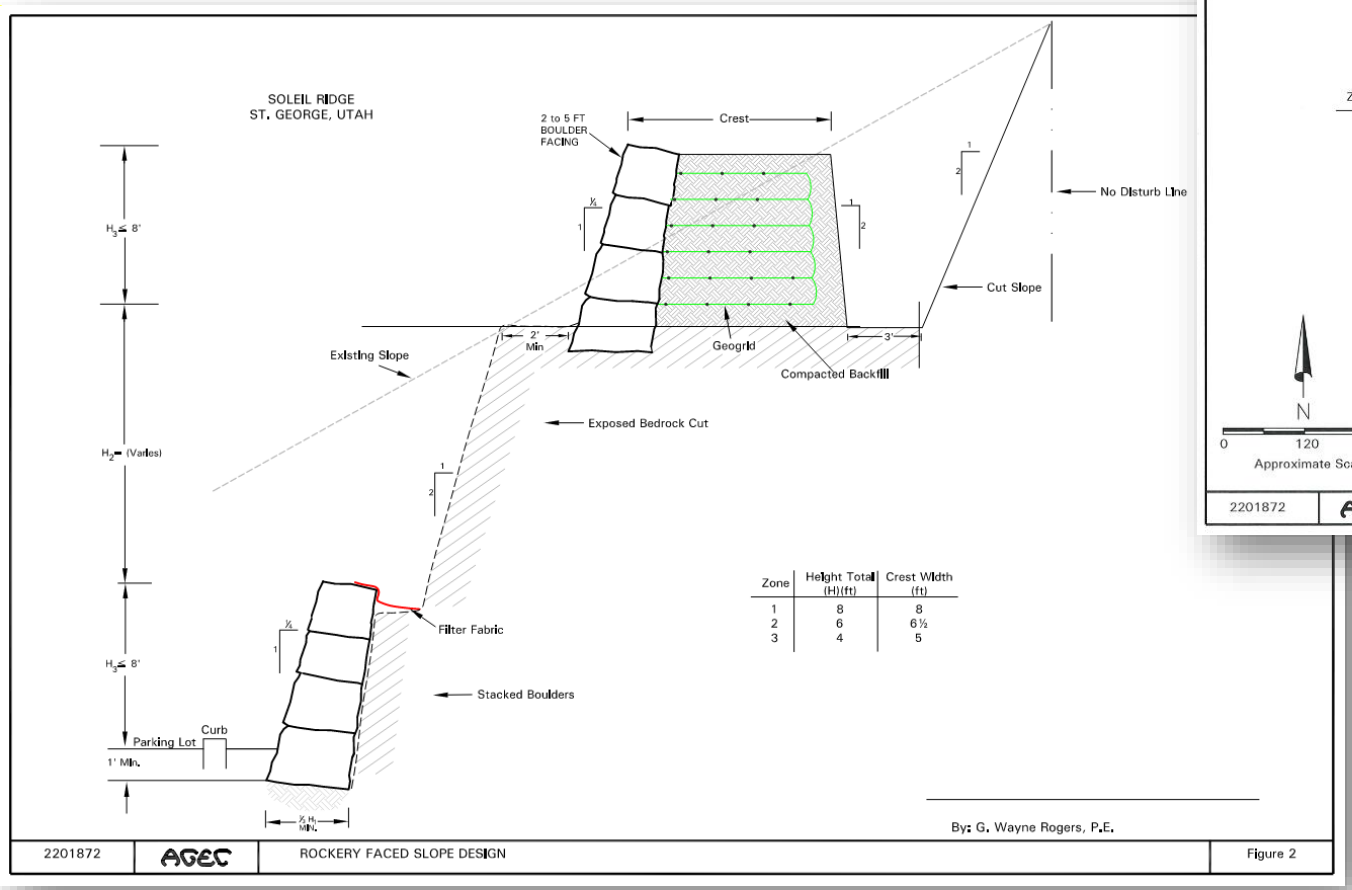
Photo No. 7, View of cut face – Dicks Sporting Goods

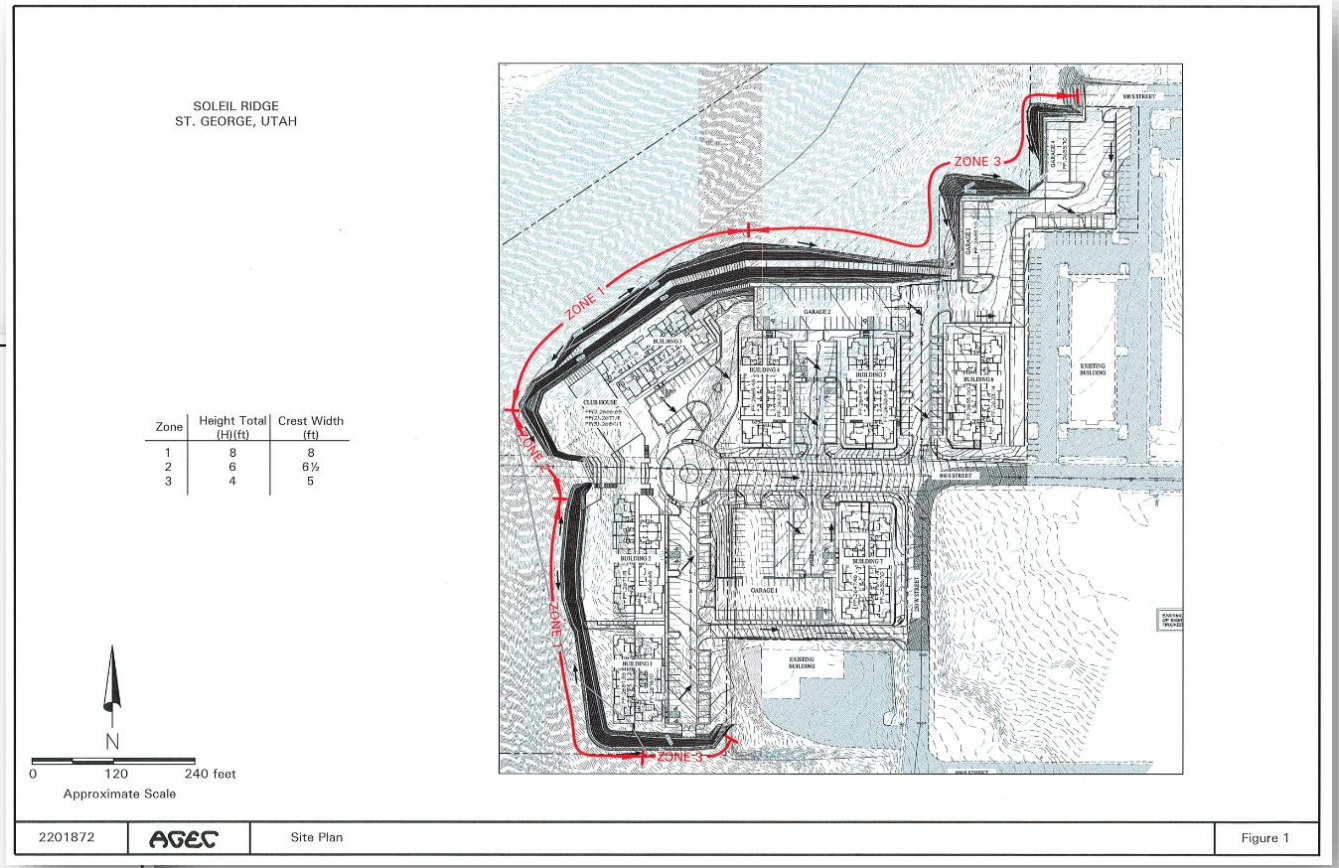
Photo No. 8 – View of rock fall fence – Sentierre

Photo No. 9 – Veiw of rock fall fence - Sentierre

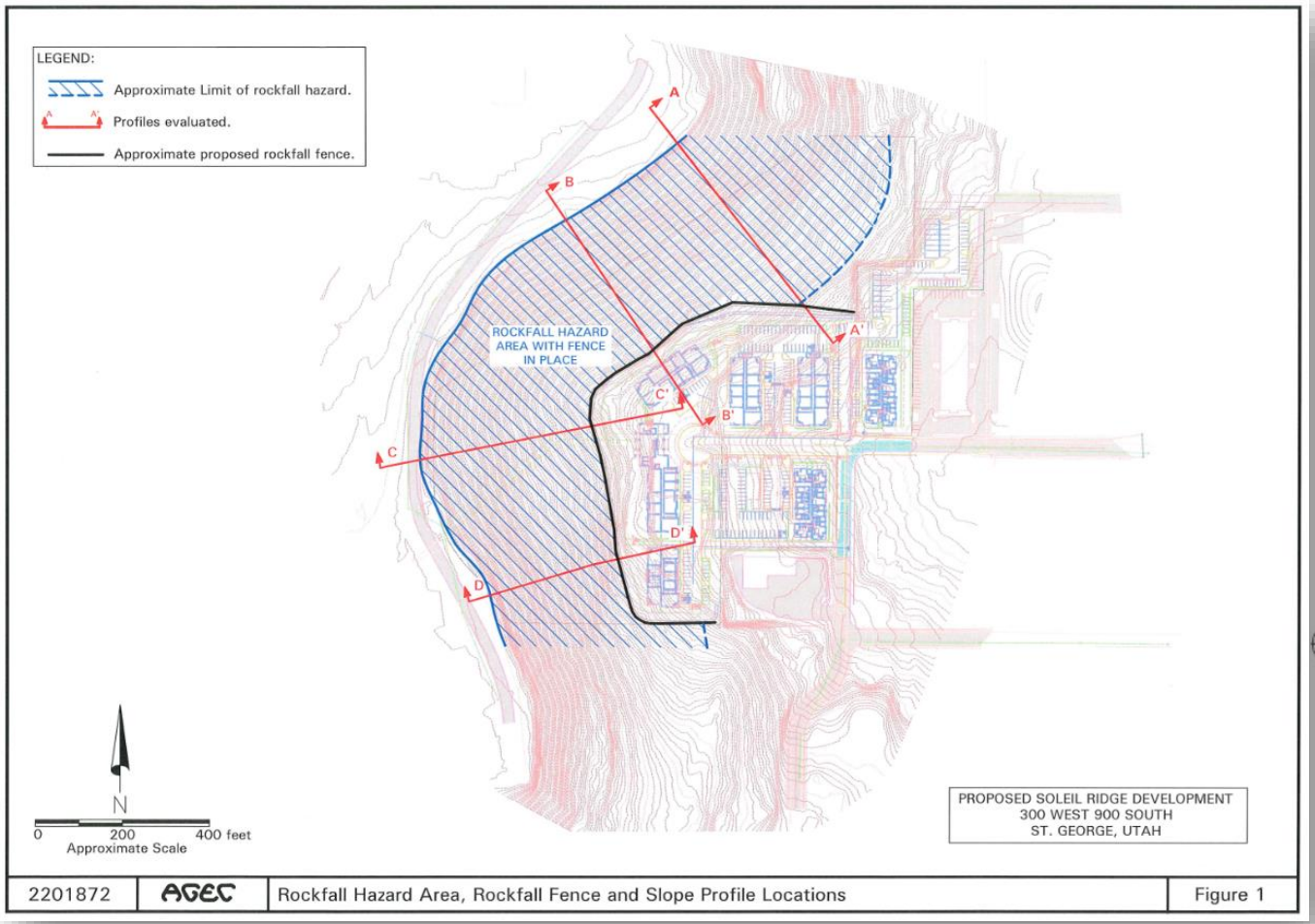
Photo No. 10 – View of rock fall fence - Sentierre

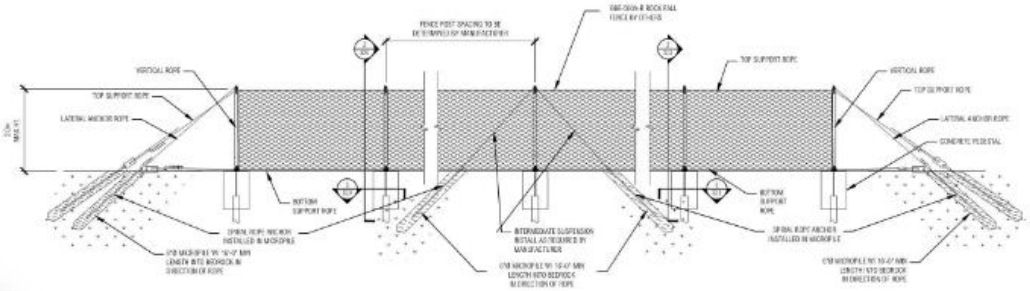
Rockfall Mitigation



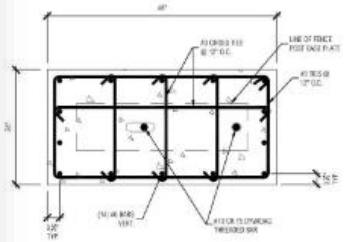


Rockfall Mitigation

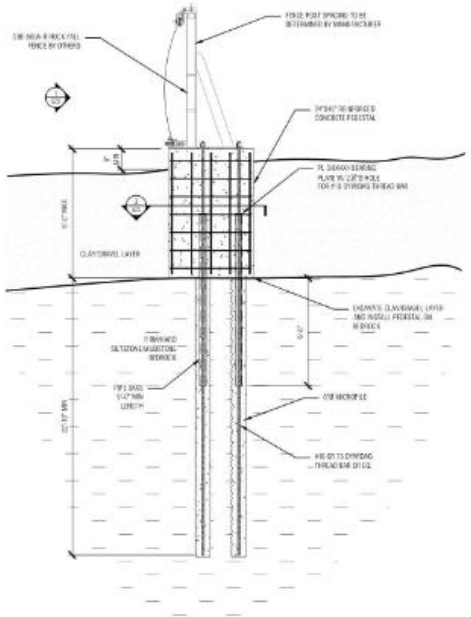




1 S2.0 ROCK FALL FENCE TYPICAL ELEVATION
SCALE: NTS



3 S2.0 REINFORCED CONCRETE PEDESTAL
SCALE: 1"=1'-0"



2 S2.0 ROCK FENCE POST FOUNDATION PLAN
SCALE: 3/8"=1'-0"

Rockfall Mitigation

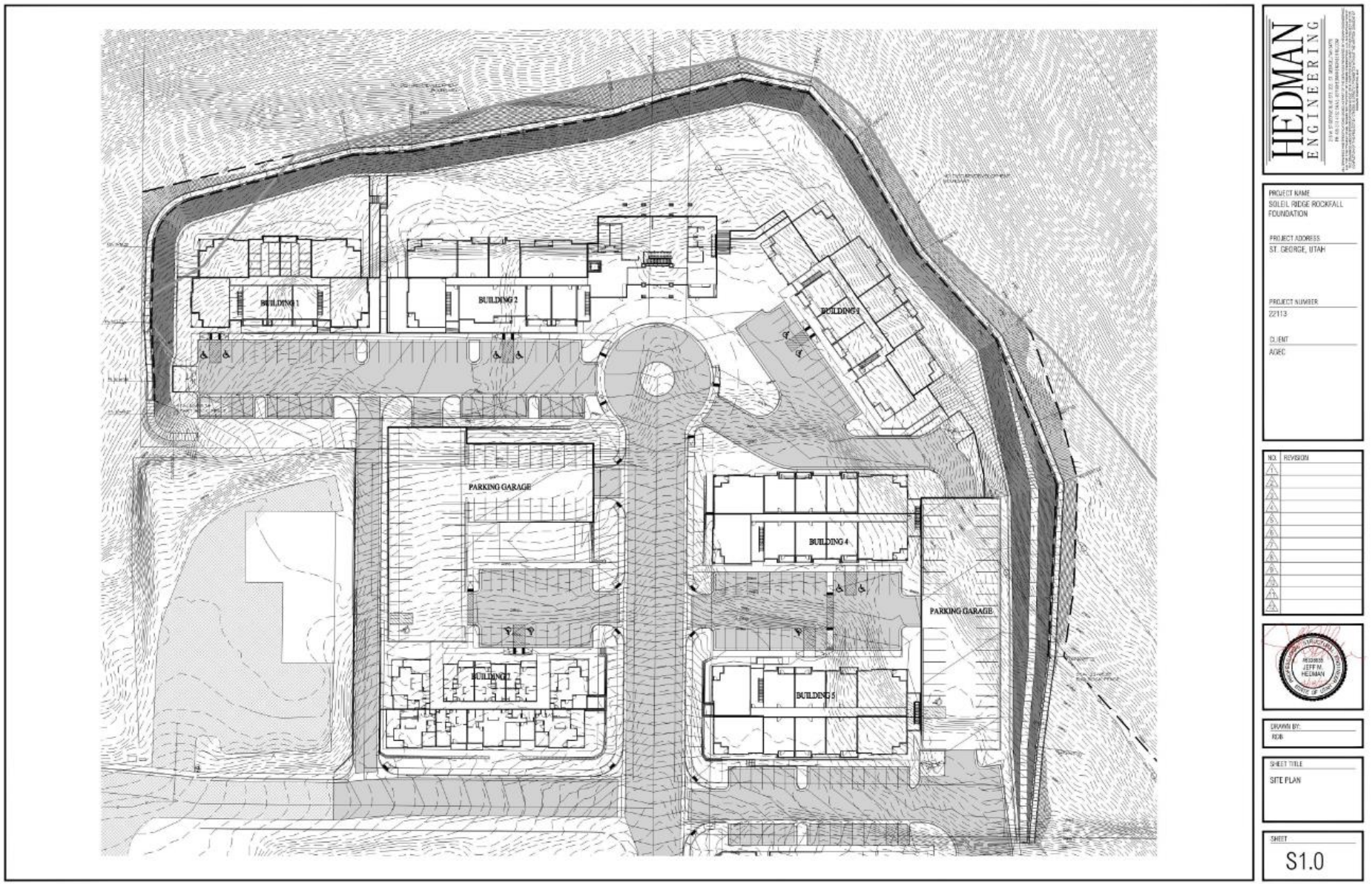


EXHIBIT D

DEVELOPMENT AGREEMENT

When Recorded Return to:
City of St. George
Attn: Legal Department
175 East 200 North
St. George, Utah 84770

Parcel Nos.: SG-6-2-36-110,
SG-VW-50-A-1, SG-VW-5-6-A,
SG-VW-50-B

DEVELOPMENT AGREEMENT
for
Soleil Ridge

THIS DEVELOPMENT AGREEMENT (herein "Agreement") is entered into this _____ day of _____, 2023 ("Effective Date"), by and between Soleil Ridge Partners, LLC, a Utah limited liability company (herein "Developer"), and the City of St. George, a municipal corporation and political subdivision of the State of Utah (herein "City"). Developer and the City are individually referred to herein as a "Party" or collectively as the "Parties".

RECITALS

A. Developer has real property located within the City limits of the City of St. George, Utah, and which is described as Parcel 1, Parcel 2, and Parcel 3 in **Exhibit A**; and

B. Developer desires to develop the Property as a residential planned development, to be known as "Soleil Ridge," comprised of multifamily residential and related uses (hereafter the "Project"); and

C. Due to the steep topography of portions of the Property, a risk of rockfall has been identified upon the Property, and the development of the Project requires that this risk be appropriately mitigated; and

D. Developer has undertaken the completion of certain engineering investigations and studies, which have been presented to the City and support a determination that, notwithstanding the existence of the rockfall risk on the Property, the risk can be uniquely mitigated through the construction of a rockfall fence in design and construction recommended by competent engineering professionals and rockfall mitigation experts; and

E. The City is relying on the investigations and recommendations of Developer's professional engineers that the rockfall risk can be mitigated; therefore, as a condition of

granting development approvals for the Project, the City requires that Developer indemnify the City against the risk that a rockfall, despite the presence of professionally recommended mitigation efforts, may cause property damage or personal injury; and

F. The City, acting pursuant to its authority under UTAH CODE ANN. §10-9a-101, *et seq*. and its ordinances, resolutions, and regulations and in furtherance of its land use policies, has made certain determinations with respect to the proposed Project, and, in the exercise of its legislative discretion, has elected to approve this Agreement.

G. Developer has accepted the conditions of approval and the terms set forth in this Agreement and has agreed to abide by each and every term.

NOW, THEREFORE, in consideration of the mutual covenants and conditions contained herein, the parties agree as follows:

1. **RECITALS.** The Recitals above are hereby incorporated into this agreement.

2. **DEFINITIONS**.

2.1 City Parcel. "City Parcel" means and refers to the parcel of real property located in St. George, Washington County, State of Utah, which is owned by the City but will be conveyed to Developer and made subject to this Agreement, and which is more particularly described with the legal description set forth as Parcel No. SG-VW-50-B (the "City Parcel") in **Exhibit A** hereto.

2.2 Developer. "Developer" means and refers to the initial owner of the Project. Developer is currently Soleil Ridge Partners, LLC, a Utah limited liability company, but this definition extends to successors and assigns of the same or portions thereof, provided such successors and assigns acquire all of the rights to the master development of the Project which are currently held by Soleil Ridge Partners, LLC.

2.3 Project. "Project" means and refers to the project known as "Soleil Ridge," anticipated to be developed upon the Property pursuant to the terms of this Agreement. The Developer, in its sole discretion, may change the name of the Project, provided that all subdivision plats within the Project comply with the naming requirements of Section 8. herein below.

2.4 Property. "Property" means and refers to the parcels of real property located in St. George, Washington County, State of Utah, which are owned by Developer and subject to this Agreement and which are more particularly described with the legal descriptions set forth as Parcels 1, 2, and 3 in **Exhibit A** hereto.

3. **Approved Use, Density, General Configuration and Development Standards**.

3.1 Property. The legal descriptions of the Property and City Parcel which are subject to this Agreement are attached hereto as **Exhibit A** which is incorporated by reference herein.

No additional property may be added to this description for the purposes of this Agreement except by written amendment to this Agreement executed and approved by Developer and the City.

3.2 Acquisition of City Parcel by Developer. The City agrees that it will convey to Developer the property identified as the City Parcel, which is a rectangular approximately eleven feet wide and 396 feet long, running north to south, and surrounded on three sides by Developer's Property. The City Parcel shall be conveyed to Developer by the City by quit claim deed. The City Parcel is more particularly described in **Exhibit A** hereto and is agreed to be made subject to this Agreement, regardless of whether the City Parcel is conveyed to Developer before or after the recording of this Agreement. As consideration for the purchase, Developer has agreed to provide deed restricted attainable housing (see Section 3.12) which is in excess of any requirement under the Code and is considered by the City to be a public amenity of great value.

3.3 Approved Use, Density & Configuration. The Project as defined is approved for XX multi-family apartment buildings of XX stories (XX height), each containing residential units for a total of XX multi-family residential units as well as structured and surface parking, amenities, and roads as depicted in the attached **Exhibit B** which is incorporated by reference herein.

3.4 Development Plan. Upon installation of all necessary infrastructure and acceptance by City, Developer shall have full discretion as to the time of commencement, construction, phasing, and completion of any and all vertical development of the Project within the term of this Agreement.

3.5 Specific Design Conditions. As part of the development of the Project, the Parties acknowledge that Developer's engineer previously identified a geologic hazard on the Property related to a risk of rockfall. The parties agree that, as supported by the report of Applied Geotechnical Engineering Consultants, Inc., dated February 4, 2022 ("AGEC Report") which is attached hereto as **Exhibit C**, the risk of rockfall may be mitigated by the design and construction of rockfall fences to protect the areas of the Property to be developed for the Project as set forth in Section 8.[1] The Parties acknowledge that permitting the use of mitigation to allow development in a rock fall zone is based on the conditions of the slope of this specific site and risk reductions the mitigation will provide.

3.6 Improvement Costs. Developer will bear the cost of all development and improvement costs necessitated by development of the Project, and City will bear the cost

[1] "This information [contained in the AGEC Report] can be used to design rockfall fences to protect the development areas from rockfall." **Exhibit C**, AGEC Report, p. 3.

of any City-requested upsizing or additional capacities or additional improvements, consistent with City policy, including improvements specifically related to City owned trails, parks, and public buildings to be constructed, unless otherwise specifically agreed to be borne by Developer.

3.6.1 *Construction Period*. Except as otherwise provided in this Agreement, Developer shall have one year from the Effective Date of this Agreement, or from the date of issuance of any required permits by the City (whichever is later) to construct and install the necessary public infrastructure for the Project.

3.6.2 *Utility Improvements, Extensions and Oversizing*. Improvements and utility extensions or oversizing which may be required by the City shall, whenever feasible, be installed on a joint and cooperative basis by City and Developer to avoid conflicts in construction and to achieve economies of scale. The Developer's Engineer and City representative(s) shall meet and work together as needed (i) to ensure that the improvements and development contemplated therein are coordinated (ii) the extent possible, to develop such improvements in cooperation, and (iii) to allocate the costs for such improvements on a fair and reasonable basis, consistent with existing law, the other provisions of this Agreement, and other agreements for sharing costs of power, water, and other improvements between and among City, Developer, and third parties (if any). In the event that upsizing of utility improvements is required, City shall be responsible for the costs of such upsizing consistent with City policy regarding upsizing. Developer may, at the time that Developer is installing and/or constructing public improvements, be eligible for impact fee credit or reimbursement, if any, that the City may grant Developer for the installation or construction of the improvements.

3.7 Maintenance and Operation by Owner. The Project is not being subdivided and will remain in single ownership. Developer, and its successors and assigns to the title ownership of the Project, shall be responsible for operation, maintenance, and repair of the rockfall barrier and foundation and all other improvements upon the Property.

3.8 Project Streets and Drives Satisfy Requirements of City Streets Master Plan. The parties agree that the streets and drives depicted in the approved site plan for the Project satisfy the requirements for connectivity of adjoining public streets through the Project, specifically with respect to the connection between 900 South Street and 950 South Street.

3.9 Compliance with City Design and Construction Standards. Developer acknowledges and agrees that unless expressly stated otherwise in this Agreement, nothing in this Agreement shall be deemed to relieve Developer from the obligation to comply with all applicable laws and requirements of the City necessary for development of the Project, including the payment of fees and compliance with the City's design and construction standards.

3.10 Compliance with PUD. Developer acknowledges and agrees that nothing in this Agreement shall be deemed to relieve it from the obligation to comply with the Planned Unit Development as presented and approved by the St. George City Council.

3.11 Conflicts.

3.11.1 To the extent there is any ambiguity in or conflict with the provisions of this Agreement, the more specific provision or language shall take precedence over more general provisions or language.

3.11.2 The City has reviewed the Code, General Plan, and Rezone Ordinance and has determined that Developer has substantially complied with the provisions thereof and hereby finds that the Project is consistent with the purpose and intent of the relevant provisions of the City Code and General Plan and the Planned Development Residential Zone. The parties further agree that the omission of a limitation or restriction herein shall not relieve Developer of the necessity of complying with all applicable City Ordinances and Resolutions not in conflict with the provisions of this Agreement, along with all applicable state and federal laws.

3.12 Attainable Housing Requirement. Developer agrees that in consideration of development approval within a rockfall area as well as the acquisition of City owned land, it shall provide an attainable housing component to the Project by renting no fewer than seven (7) attainable housing units ("Units") in the Project to tenants whose income is at or below eighty percent (80%) of area median income ("AMI") for St. George, Utah. For purposes of this requirement, AMI for St. George shall be the Median Family Income for the St. George Utah Metropolitan Statistical Area (MSA) as published annually by the U.S. Department of Housing and Urban Development.[2] Maximum permitted rental rates shall be imposed upon the Units so that four (4) of the required Units shall be rented to households qualifying at 70% to 80% AMI, and three (3) Units shall be rented to households qualified at 60% or below AMI.[3] Developer and City shall Execute a Housing Agreement as part of this Agreement which is attached hereto as **Exhibit F** which sets forth the specific administration and terms for the Units. The City may review compliance with this requirement in conjunction with any inspection of such attainable housing units which is permitted under City Code §4-7-4 governing inspection of rental dwelling units.

4. AMENDMENTS.

4.1 Substantial Amendments. Unless otherwise addressed or allowed in this Agreement, any amendment to this Agreement that: (i) materially alters or modifies the Term, (ii) materially alters a substantive term of this Agreement; (iii) materially alters the

[2] As of the Effective Date of this Agreement, the published Median Family Income for the St. George Utah MSA is $83,900, of which 80% is $67,120. Source: https://www.huduser.gov/portal/datasets/il/il2022/2022summary.odn

[3] FY 2022 MTSP IL Documentation System -- Summary for St. George, UT MSA (huduser.gov)

approved development or Development Plan in a manner not provided for herein; (iv) alters the Allowed Uses, (v) increases the approved Density; (vi) results in a material increase in the intensity of use; (vi) the requirement of any material amenity described herein that is available to the public; (vii) provisions for reservation and dedication of necessary or substantial portions of land; or (viii) any approved mechanism that imposes financial obligations on Developer or the property owners within Project (including a substantive increase in the assessments through any association of owners within the Project) shall be deemed a "Substantial Amendment" and shall require mutual written agreement of the Parties and, if applicable, shall be processed as a legislative land use regulation consistent with the requirements of the City Code and the Utah Code and recorded with the Washington County Recorder.

4.2 Administrative Amendments. Unless otherwise provided by law, all amendments to this Agreement that are not Substantial Amendments shall be deemed "Administrative Amendments" may be approved and executed by the Director. The City Council hereby designates the Director as the authorized administrative authority and empowers that official to make all final Administrative Amendment decisions. Administrative Amendments shall be reflected in a written approval by the Director which shall be recorded with the Washington County Recorder.

4.3 Effect of Amendment. Any amendment to this Agreement shall be operative only as to those specific portions of this Agreement expressly subject to the amendment, with all other terms and conditions remaining in full force and effect without interruption.

5. CITY APPROVALS.

5.1 Preliminary Approvals. The Developer applied for and received approvals amending the General Plan and Zoning prior to submitting an application for the Project, consistent with the provisions of City Code §10-7F-2. The General Plan amendment was approved by the City Council on XXXX, and a Zone Change Amendment to Planned Development – Residential (PD-R) was approved by the City Council on XXX.

5.2 Approval Process. Following lawfully advertised public hearings before the Planning Commission on (date), the Application received a (positive/negative) recommendation by Motion of the Planning Commission taken on (date), with a ___ vote. The matter thereafter came before the City Council who considered and deliberated regarding the matter at appropriately noticed public meetings on (list all dates). The City Council thereafter approved the Project and this Agreement on _____, under the processes and procedures set forth in the Code. With respect to the terms and conditions of approval, the City Council made such findings of fact and conclusions of law as are required as a condition to the approvals, as reflected in the staff recommendation and adopted with any modifications, as reflected in the minutes of the above referenced public meetings, and as reflected by the other enumerated findings herein.

6. VESTED RIGHTS AND RESERVED LEGISLATIVE POWERS.

6.1 Vested Rights and Vested Projects. As of the Effective Date, Developer has the vested right to develop and construct the Project, and to develop and construct necessary infrastructure and other improvements in accordance with the uses, densities or intensities permitted to be constructed consistent with the application of the other provisions of this Agreement.

6.2 Compelling, Countervailing Public Interest. Nothing in this Agreement shall limit the future exercise of the police power of the City in enacting generally applicable Land Use Laws after the Effective Date. Notwithstanding the retained power of the City to enact such legislation under the police powers, such legislation shall only be applied to modify the rights described in Section 3.2.1 based upon policies, facts and circumstances meeting the compelling, countervailing public interest exception to the vested rights doctrine in the State of Utah. (*Western Land Equities. Inc. v. City of Logan*, 617 P.2d 388 (Utah 1980) or successor case and statutory law). Any such proposed change affecting the vested rights of the Project, shall be of general application to all development activity in City; and unless the City declares an emergency, Developer shall be entitled to prior written notice and an opportunity to be heard with respect to the proposed change and its applicability to the Project under the compelling, countervailing public policy exception to the vested rights doctrine. The regulations, ordinances, policies, and plans governing the permitted uses, densities or intensities permitted to be constructed consistent with the other provisions of this Agreement shall be the terms and conditions of this Agreement, and those Land Use Laws in effect on the Effective Date that are not inconsistent with the terms and conditions of this Agreement.

6.3 Duration. The term of this Agreement shall commence on the Effective Date and shall extend for a period of twenty-five (25) years thereafter unless this Agreement is earlier terminated or modified by written amendment signed and duly adopted by the Parties (the "Term").

6.4 Governing Land Use Laws. The respective rights of the parties in the event the City seeks to apply or enforce Land Use Laws to the Project in a manner that is inconsistent with the terms and conditions of this Agreement shall be governed by then existing state and federal land use case law and statutes.

7. FEES AND EXACTIONS.

7.1 Development Application and Review Fees. Developer has paid all City required application and review fees for the approval of this Agreement and nothing herein shall obligate the City to pay any third-party fees, costs, and/or expenses incurred by Developer for the application, processing, and negotiation of this Agreement, as Developer is solely responsible therefore. No further City required fees or engineering

expenses shall be charged to Developer for the review and approval of this Agreement. All application and review fees for the Project Building Permits, Plats and Final Site Plans shall be paid at the time of application submission.

7.2 Plan Engineering Review Fees. The City shall have the right to charge and collect such standard engineering review fees for Final or amended Final Site Plans, development, or construction approvals for the Project or a Project Area as are generally applicable on a non-discriminatory basis at the time of application for any such approval.

7.3 Other Fees. The City may charge other fees that are generally applicable, including but not limited to standard Building Permit review fees for improvements to be constructed on improved parcels.

7.4 Impact Fees. Developer agrees that the Project shall be subject to all impact fees, which are (1) imposed at the time of issuance of Building Permits, and (2) generally applicable to other property in the City; and Developer waives its position with respect to any vested rights to the imposition of such fees but shall be entitled to similar treatment afforded other vested projects if the impact fee ordinance makes any such distinction. If fees are properly imposed under the preceding tests, the fees shall be payable in accordance with the payment requirements of the particular impact fee ordinance and implementing resolution. Notwithstanding the agreement of Developer to subject the Project to impact fees under the above-stated conditions, Developer does not waive Developer's rights under any applicable law to challenge the reasonableness of or the amount of the fees within the time frame(s) set forth in Utah Code §11-36a-702.

7.4.1 Impact Fee Credits. If eligible, Developer shall receive reimbursement of or credit for impact fees as may be normally assessed by the City for "system improvements" as defined in the Utah Impact Fee Act, Utah Code Title 11, Chapter 36a, to the extent said improvements are designed and constructed at Developer's cost. City and Developer agree that specific details with respect to the mechanisms and timing of reimbursement or credit of impact fees, may be addressed by separate agreement as needed.

8. SPECIFIC PROJECT REQUIREMENTS.

8.1 Rock Fall Hazard. Based upon the following findings of the AGEC Report attached as **Exhibit C** hereto, and prior to any development on the Project, Developer shall mitigate the rock fall hazard identified in paragraph 3.4:

A. The specific rock fall hazard is considered low due to the amount of rock littered on the existing slope that have previously fallen and will ultimately restrict further rock fall from reaching the developed area.

B. The specific rock fall hazard is considered low due to the smaller size of the rock with fall potential at the top of the slope. The smaller rock is restricted due to the existing littered rock along the slope.

C. The specific rock fall hazard is considered low due to the angularity of the rock and lack of potential energy or momentum to reach the developed portion of the site.

D. The proposed mitigation plan will act as a barrier and reduces the risk of rockfall to an acceptable risk.

E. The proposed mitigation plan utilizes a proven product and is designed by experts and experienced professionals.

8.1.1 Developer understands and agrees that as a condition of development of the Project, Developer shall comply with the recommendations and standards set forth in the Structural Design or Foundation Design, as defined below. Developer and City further acknowledge that the nature of the hazard, and the availability of mitigation for the hazard, together are unique to the Property and the City's acceptance of the AGEC Report does not create any precedent with respect to any other real property in the City.

8.1.2 Rockfall Fence Design and Construction. Consistent with the recommendations in the AGEC Report, the City acknowledges that Developer has obtained structural design calculations and a rockfall fence foundation design. The structural design calculations were prepared by Hedman Engineering and dated April 18, 2022 (the "Structural Design Calculations"), and are attached hereto as **Exhibit D**. The rockfall fence foundation design was also prepared by Hedman Engineering and dated April 18, 2022 (the "Foundation Design"), and is attached hereto as **Exhibit E**. Developer agrees to construct the rockfall fence foundation in a manner consistent with the Structural Design Calculations and the Foundation Design, and to install rockfall barrier with specifications equal to or exceeding Geobrugg GBE-500A-R rockfall barrier.

8.2 Essential Project Infrastructure. If not otherwise completed, Developer agrees to design and obtain all required approvals and construct the infrastructure necessary for the operation of Project. All infrastructure shall be constructed to City engineering and planning standards as set forth in the Code.

8.2.1 Internal Roads and Secondary Access. Developer shall construct or cause to be constructed any roads and secondary access not otherwise constructed which are necessary to serve the Project in connection with the development.

8.2.2 Water, Fire Flow and Public Safety. Developer shall pay all impact fees necessary to satisfy culinary water service from the Washington County Water Conservancy District sufficient to meet the culinary and irrigation requirements for the Project. If available or required by Code, Developer shall also connect to the City secondary irrigation water system for landscaping and outdoor water use. All water systems shall be designed and obtained all necessary approvals for the construction and operation of water systems with sufficient fire flow and storage to meet the culinary, irrigation and public safety standards for development in accordance with the Development Standards. Developer shall be required to comply with the City's regulations regarding water, landscaping, and secondary water systems in connection with the issuance of all Building Permits.

8.2.3 Other Infrastructure. In connection with or prior to the approval of the next Final Site Plan within the Project, Developer shall have designed and obtained all required approvals for the construction and operation of any other onsite and any necessary offsite utility infrastructure with sufficient capacity to meet the requirements of the next phase of development. Developer shall thereafter construct or cause to be constructed any such other utility infrastructure necessary to serve a Project in connection with the development and improvement of each subsequent Final Site Plan.

8.2.4 Drainage and Flood Control. Drainage and flood control facilities or infrastructure not already constructed, shall be constructed by Developer as a part of completion of other major facilities and development of the Project in accordance with the City and State Storm Water permits and requirements. Developer shall not be required to accommodate additional storm water drainage caused by development of any adjoining lands outside of the Project. Major infrastructure and retention facilities, where appropriate, will be owned and maintained by (Developer,/City/property owners, or owner's association) who shall provide to the City the appropriate long-term storm water management plan upon completion. The City shall conduct annual inspections to ensure compliance with the management plan.

8.3 Sewer Improvements on Tech Ridge. The City agrees that the sewer improvements beyond those required solely for the Project and are required of Developer to service the Tech Ridge development above the Project to the west shall be eligible for impact fee credits or reimbursement under this Agreement. If applicable the Parties shall separately execute a separate reimbursement agreement to that effect detailing the amount of said credit or reimbursement which shall not exceed the actual cost to Developer of such improvements. Developer shall provide to the City documentation evidencing such cost prior to receipt of such credit or reimbursement.

9. DEFAULT, TERMINATION AND DISPUTES.

9.1 Events of Default. Developer is in default under this Agreement upon the failure to cure one or more of the following events or conditions (each an "Event of Default") in accordance with section 9.2.

9.1.1 If a warranty, representation, or statement made or furnished by Developer to the City is false or proves to have been false in any material respect when it was made.

9.1.2 Developer has not complied with one or more of the terms or conditions of this Agreement, the City Code provisions set forth in Title 10, or the Utah Code.

9.2 Procedure Upon Event of Default.

9.2.1 After the occurrence of an Event of Default, the City Council may exercise a right to declare an Event of Default by authorizing the City Manager to give Developer written notice specifying the nature of the alleged default. Developer shall have sixty (60) days after receipt of written notice to cure the Event of Default. In the event the nature of the Event of Default reasonably requires more than sixty (60) days to cure and provided Developer has commenced actions reasonably designed to cure the Event of Default within the sixty (60) day cure period and thereafter diligently proceeds to cure the alleged default, the cure period shall be extended for one additional sixty (60) day period or for such other time period agreed to by the City, for Developer to cure the Event of Default to completion. If the Event of Default is not cured within the cure period described above, the City may terminate this Agreement and the associated development approvals by giving written notice to the Developer. Failure or delay in declaring or giving notice of an Event of Default shall not constitute a waiver of any Event of Default under Section 10, nor shall it change the time of such default. In the event Developer fails to cure such Event of Default in addition to the other remedies, the City may suspend all permitting and approval processes under this Agreement and place stop-work orders on continuing construction, and otherwise use all means available to mitigate and address any such Event of Default.

9.2.2 The City does not waive any claim of default in performance by Developer, if on periodic review the City does not declare an Event of Default.

9.2.3 Any default or inability to cure a default caused by strikes, lockouts, pandemics or health related crisis, labor disputes, acts of God, inability to obtain labor or materials or reasonable substitutes therefor, governmental restrictions, governmental regulations, governmental controls, enemy or hostile governmental action, civil commotion, fire or other casualty, and other similar causes beyond the reasonable control of the Party obligated to perform, shall excuse the performance by such Party for a period equal to the period during which any such event prevented, delayed, or stopped any required performance or effort to cure a default.

9.2.4 Adoption of a law or other governmental activity making performance by the Developer unprofitable or more difficult or more expensive does not excuse the performance of the obligation by Developer. Notwithstanding the foregoing, adoption of a law or other governmental activity making performance by the Developer impossible shall excuse the performance of the obligation by Developer.

9.2.5 All other remedies at law or in equity which are not inconsistent with the provisions of this Agreement are available to the Parties to pursue in the event there is an incurred Event of Default.

10. RELATIONSHIP BETWEEN THE PARTIES.

10.1 Relationship of Parties. The contractual relationship between the City and Developer arising out of this Agreement is one of independent contractor and not agency. This Agreement does not create any third-party beneficiary rights. It is specifically understood by the Parties that: (a) the Project is a private development; (b) the City has no interest in or responsibilities for or duty to third parties concerning any improvements Property until the City accepts dedication, ownership or maintenance of the improvements pursuant to a specific written agreement providing for acceptance of dedication, ownership or maintenance; and (c) Developer shall have the full power and exclusive control of the PC Junction Property subject to the terms, conditions, limitations, restrictions, and obligations of Developer set forth in this Agreement.

10.2 Mutual Releases. At the time of, and subject to, (i) the expiration of any applicable appeal period with respect to the approval of this Agreement without an appeal having been filed or (ii) the final determination of any court upholding this Agreement, whichever occurs later, and excepting the Parties' respective rights and obligations under this Agreement, Developer, on behalf of itself and Developer's partners, officers, directors, employees, agents, attorneys and consultants, hereby releases the City and the City's employees, agents, attorneys and consultants; and the City, on behalf of itself and the City's board members, officials, employees, agents, attorneys and consultants, hereby releases Developer and Developer's partners, officers, directors, employees, agents, attorneys and consultants; from and against any and all claims, demands, liabilities, costs, expenses of whatever nature, whether known or unknown, and whether liquidated or contingent, arising on or before the Effective Date in connection with the application, processing or approval of applications relating to the rock fall area of the Project, to include any past claims for vested development rights that are not provided for in this Agreement.

10.3 Hold Harmless. Developer agrees, for itself and its successors and assigns, that it shall hold harmless the City and its officers, agents, and employees for any injury, loss, or damage the City may suffer as a result of claims, demands, losses, or judgments, other than those caused by the negligence of the City or its officers, agents, or employees,

arising in connection with any rockfall on the Property, irrespective of the performance of any mitigation efforts made upon the Property.

10.3.1 Exceptions to Hold Harmless. The agreements of Developer in this Section 6 shall not be applicable to (i) any claim arising by reason of the gross negligence or intentional misconduct of the City, or (ii) any claim reserved by Developer for itself or any owner of any portion of the Property under the terms of this Agreement for just compensation or attorney fees.

10.3.2 Hold Harmless and Indemnification Procedures. Except in the Event of Default, the City shall give written notice of any claim, demand, action or proceeding which is the subject of Developer's hold harmless or indemnification agreement as soon as practicable but not later than ten (10) business days after the assertion or commencement of the claim, demand, action or proceeding; provided however, the City's inadvertent failure to provide such notice within such time period shall not be a breach of this Agreement unless such failure materially impairs Developer's defenses in such action. In the event any such notice is given; the City shall be entitled to participate in the defense of such claim. Each Party agrees to cooperate with the other in the defense of any claim and to minimize duplicative costs and expenses.

10.4 Indemnity Against Rockfall Hazard. Developer agrees that it shall indemnify and defend the City and its officers, agents, and employees for any injury, loss, or damage the City may suffer as a result of claims, demands, losses, or judgments, other than those caused by the negligence of the City or its officers, agents, or employees, arising in connection with any rockfall on the Property, irrespective of the performance of any mitigation efforts made upon the Property.

10.4.1 The obligation to indemnify and defend the City shall, following the expiration of Developer's administrative control period in relation to the Project and Association, pass fully to the Association as the successor to Developer's responsibilities to maintain the common areas and common facilities in the Project. At such time, Developer shall be released from its obligation to indemnify and defend (while still remaining subject to the hold harmless set forth herein).

11. GENERAL PROVISIONS

11.1 Agreement to Run With the Land. This Agreement shall be recorded in the Office of the Washington County Recorder, shall be deemed to run with the Property, shall encumber the same, and shall be binding on and inure to the benefit of all successors and assigns of Developer in the ownership or development of any portion of the Property.

11.2 Assignment. Neither this Agreement nor any of the provisions, terms or conditions hereof can be assigned any other party, individual or entity without assigning

also the responsibilities arising hereunder. This restriction on assignment is not intended to prohibit or impede the sale by Developer.

11.3 No Joint Venture, Partnership or Third Party Rights. This Agreement does not create any joint venture, partnership, undertaking or business arrangement between the parties hereto nor any rights or benefits to third parties, except as expressly provided herein.

11.4 Integration. This Agreement contains the entire agreement between the parties with respect to the subject matter hereof and integrates all prior conversations, discussions or understandings of whatever kind or nature any may only be modified by a subsequent writing duly executed and approved by the parties hereto.

11.5 Notices. Any notices, requests, or demands required or desired to be given hereunder shall be in writing and should be delivered personally to the party for who intended, or, if mailed by certified mail, return receipt requested, postage prepaid to the parties as follows:

City:	**Developer:**
City Manager St. George City Hall 175 East 200 North St. George, Utah 84770	Soleil Ridge Partners, LLC Attn: Matthew Smoot 710 Brentwood Lane North Salt Lake, Utah 84054
With a copy to:	*With a copy to:*
City Attorney St. George City Hall 175 East 200 North St. George, Utah 84770	Matthew J. Ence Snow Jensen & Reece, PC 912 West 1600 South, Suite B200 St. George, UT 84770

If personally delivered, notices and other communications under this Agreement shall be deemed to have been given and received and shall be effective when personally delivered. If sent by mail in the form specified in this section, notices and other communications under this Agreement shall be deemed to have been given and received and shall be effective three (3) days after deposit in the U.S. Mail.

Any party may change its address by giving written notice to the other party in accordance with the provision of this section.

11.6 Choice of Law. Any dispute regarding this agreement shall be heard and settled under the laws of the State of Utah. Whenever the context requires, the singular shall include the plural, the plural shall include the singular, the whole shall include any part thereof, any gender shall include both genders, and the term “person” shall include an

individual, partnership (general or limited), corporation, trust, or other entity or association, or any combination thereof. This Agreement shall bind and insure to the benefit of the parties hereto and their respective successors and assigns. The provisions of this Agreement shall be constructed as both covenants and conditions in the same manner as though the words importing such covenants and conditions were used in each separate provision hereof.

11.7 Expenses. The Developer and the City each shall pay their own costs and expenses incurred in preparation and execution of and performance under this Agreement, except as otherwise expressly provided herein.

11.8 Waiver. Acceptance by either party of any performance less than required hereby shall not be deemed to be a waiver of the rights of such party to enforce all of the terms and conditions hereof. No waiver of any such right hereunder shall be binding unless reduced to writing and signed by the party to be charged therewith.

11.9 Construction of Agreement. This Agreement should be construed so as to effectuate the public purpose of implementing long-range planning objectives, obtaining public benefits, and protecting any compelling, countervailing public interest while providing reasonable assurances of continuing vested development rights. Where there is a conflict between the terms of this Agreement and any Exhibit, the more specific provision shall be controlling.

11.10 Rights of Third Parties. This Agreement is not intended to affect or create any additional rights or obligations on the part of third parties.

11.11 Third Party Legal Challenges. In those instances where, in this Agreement, Developer has agreed to waive a position with respect to the applicability of current City policies and requirements, or where Developer has agreed to comply with current City policies and requirements, Developer further agrees not to participate either directly or indirectly in any legal challenges to such City policies and requirements by third parties, including but not limited to appearing as a witness, amicus, making a financial contribution thereto, or otherwise assisting in the prosecution of the action.

11.12 Computation of Time. Unless otherwise specified, in computing any period of time pursuant to this Agreement, the day of the act, event or default from which the designated period of time begins to run shall be included, and the time shall be computed on a calendar, not work-day, basis.

11.13 Titles and Captions. All section titles or captions contained in this Agreement are for convenience only and shall not be deemed part of the context nor affect the interpretation hereof.

11.14 Severability. If any provision of this Agreement, or the application of such provision to any person or circumstance, is held invalid, void, or unenforceable, but the remainder of this Agreement can be enforced without failure of material consideration to any Party, then the remainder of this Agreement shall not be affected thereby and it shall remain in full force and effect, unless amended or modified by mutual consent of the Parties. If any material provision of this Agreement is held invalid, void, or unenforceable or if consideration is removed or destroyed, Developer or the City shall have the right in their sole and absolute discretion to terminate this Agreement by providing written notice of such termination to the other Party.

11.15 Exhibits Incorporated. All Exhibits to this Agreement are incorporated by reference as if fully set forth herein.

11.16 Execution of Agreement. This Agreement may be signed in counterparts and each such counterpart shall constitute an original document. All such counterparts, taken together, shall constitute one and the same instrument. Any signature on this Agreement transmitted by facsimile, electronically in PDF format, or by other generally accepted means of conveying digital signatures (e.g. DocuSign) shall be deemed an original signature for all purposes and the exchange of copies of this Agreement and of signature pages by any such transmission, or by a combination of such means, shall constitute effective execution and delivery of this Agreement as to the Parties and may be used in lieu of the original for all purposes.

IN WITNESS WHEREOF, this Agreement has been executed by the Mayor, acting by and through the City Council pursuant to Ordinance No. _____, authorizing such execution, and by a duly authorized representative of Developer as of the above-stated date.

CITY OF ST. GEORGE

Attest:

_____ _____

Michele Randall, Mayor Christina Fernandez, City Recorder

Approved as to form:

_____

Jami R. Brackin, Deputy City Attorney

STATE OF UTAH)
ss.

COUNTY OF WASHINGTON)

On the _____day of _____, 2022, personally appeared before me Michele Randall who being duly sworn, did say that she is the Mayor of St. George City and the foregoing instrument was signed on behalf of the City for the uses and purposes set forth herein.

_____
Notary Public

SOLEIL RIDGE PARTNERS, LLC

_____
By:
Its:

Approved as to form:

_____
Attorney for Soleil Ridge Partners, LLC

STATE OF UTAH)
ss.
COUNTY OF WASHINGTON)

On the _____day of _____, 2022, personally appeared before me _____, who being duly sworn, did say that he/she is the _____ of Soleil Ridge Partners, LLC, and the foregoing instrument was signed on behalf of said company for the uses and purposes set forth herein.

_____
Notary Public

EXHIBIT A

LEGAL DESCRIPTION
OF THE
PROPERTY

Parcel 1:

WORTHEN BLK 4 (SG) Lot: 2, Subdivision: WORTHEN BLK 5 (SG) Lot: 5, Subdivision: WORTHEN BLK 7 (SG) Lot: 1 THRU:- Lot: 4 S: 36 T: 42S R: 16W BEG S89*48'07 W 448.72 FT ALG SEC/L & S0*55'36 E 440.42 FT FM NE COR SEC 36 T42S R16W; TH S89*04'24 W 220.44 FT; TH S54*52'49 W 1056.16 FT; TH 2363.47 FT RAD CUR LFT; TH SLY 213.94 FT ALG ARC CUR TO PT TNGY & 290 FT RAD CUR LFT; TH SLY 222.23 FT ALG ARC CUR TO PT TNGY & 483.39 FT RAD CUR RGT; TH SLY 147.01 FT ALG ARC CUR;TH N89*04'24 E 480.605 FT; TH N0*55'36 W 429 FT; TH N89*04'24 E 264 FT; TH N0*55'36 W 264 FT; TH N89*04'24 E 41.50 FT; TH N0*55'36 W 132 FT; TH N89*04'24 E 132 FT; TH N0*55'56 W 297 FT TO POB

Containing approx. 15.99 acres, more or less.

Parcel No. SG-6-2-36-110

Parcel 2:

WORTHEN BLK 8 (SG) Lot: 1 THRU:- Lot: 4 A PORTION OF LOTS 1, 2 AND 3, AND ALL OF LOT 4, OF BLOCK 8, 1948 ADDITION TO WORTHEN SUBDIVISION, OFFICIAL RECORDS OF WASHINGTON COUNTY, UTAH, MORE PARTICULARLY DESCRIBED AS: BEGINNING AT THE NORTHEAST CORNER SAID BLOCK 8, WHICH POINT LIES S 0*43'00" E 1129.85 FEET AND WEST 627.55 FEET FROM THE NORTHEAST CORNER OF SECTION 36, TOWNSHIP 42 SOUTH, RANGE 16 WEST, SALT LAKE BASE AND MERIDIAN, AND RUNNING THENCE S 0*43'00" E ALONG THE EAST LINE OF BLOCK 8 215.00 FEET TO; THENCE S 89*17'00" W 132.00 FEET, TO THE COMMON LINE OF LOTS 1 AND 2 SAID BLOCK; THENCE S 0043'00" E ALONG SAID LINE 10.50 FEET: THENCE S 89*17'00" W 121.00 FEET TO THE WEST LINE SAID BLOCK; THENCE N 0*43'00" W ALONG SAID WEST LINE 225.50 FEET TO THE NORTHWEST CORNER SAID BLOCK; THENCE N 89*17'00" E ALONG THE NORTH LINE SAID BLOCK 253.00 FEET TO THE POINT OF BEGINNING.

Containing approximately 1.28 acres, more or less.

Parcel No. SG-VW-50-A-1

Parcel 3:

WORTHEN BLK 5 (SG) Lot: 6 AND:- Lot: 7 AND:- Lot: 2 THRU:- Lot: 4 AND:- Lot: 7 DESCRIBED AS: BEGINNING AT A POINT NORTH 89*28'15" WEST 13.50 FEET

EXHIBIT A

FROM THE NORTHWEST CORNER OF BLOCK 2, OF THE WORTHEN SUBDIVISION, OFFICIAL RECORDS, WASHINGTON COUNTY, STATE OF UTAH, SAID POINT BEING SOUTH 00*31'45" WEST ALONG THE SECTION LINE 560.98 FEET AND NORTH 89*28'15" WEST 294.00 FEET FROM THE NORTHEAST CORNER OF SECTION 36, TOWNSHIP 42 SOUTH, RANGE 16 WEST, SALT LAKE BASE AND MERIDIAN, AND RUNNING THENCE SOUTH 0*31'45" WEST 184.50 FEET; THENCE NORTH 89*28'15" WEST 160.00 FEET TO THE EAST LINE OF LOT 4, BLOCK 5, OF THE 1948 ADDITION TO THE WORTHEN SUBDIVISION, OFFICIAL RECORDS, WASHINGTON COUNTY, STATE OF UTAH; THENCE SOUTH 0*31'45" WEST ALONG SAID LOT 4 AND THE EAST LINE OF LOTS 3 AND 2, SAID BLOCK 5, 335.00 FEET TO A POINT ON THE NORTH LINE OF A CERTAIN PARCEL OF LAND CONVEYED IN DEED OF DEDICATION DOCUMENT NUMBER 0356671, OFFICIAL RECORDS, WASHINGTON COUNTY, STATE OF UTAH; THENCE NORTH 89*28'15" WEST ALONG SAID LINE 132.00 FEET TO THE WEST LINE OF LOT 2, SAID BLOCK 5; THENCE NORTH 0*31'45" EAST ALONG THE WEST LINE OF LOTS 2, 3 AND 4, SAID BLOCK 5 387.50 FEET TO THE NORTHWEST CORNER OF LOT 4, SAID BLOCK 5; THENCE SOUTH 89*28'15" EAST ALONG THE NORTH LINE OF LOT 4 132.00 FEET TO THE SOUTHWEST CORNER OF LOT 6, SAID BLOCK 5; THENCE NORTH 0*31'45" EAST ALONG THE WEST LINE OF LOT 6 132.00 FEET TO A POINT ON THE NORTH LINE OF SAID BLOCK 5; THENCE SOUTH 89*28'15 EAST ALONG SAID LINE AND ITS EXTENSION EAST 160.00 FEET TO THE POINT OF BEGINNING.

Containing approximately 1.85 acres, more or less.

Parcel No. SG-VW-5-6-A

City Parcel:

WORTHEN BLK 8 (SG) Lot: 3 BEG AT NW COR LOT 3 BLK 8 WORTHEN SUB SEC 36 T42S R16W, TH E 11 FT TH S 396 FT TH W 11 FT TH N 396 FT TO BEG.

Containing approximately .46 acres, more or less.

Parcel No. SG-VW-50-B

EXHIBIT B

Site Plan

TO BE DEDICATED TO THE CITY

PROPOSED ACCESS EASEMENT

ROW TO BE VACATED

TO BE PURCHASED FROM THE CITY
4,495 SQ. FT.

SEWER TO BE ABANDONED

EXISTING PUBLIC ROW

DATE: 06/16/22
JOB NO.: 12560-21
DESIGNED BY: NAME
CHECKED BY: NAME
DWG: Agreement Exhibits

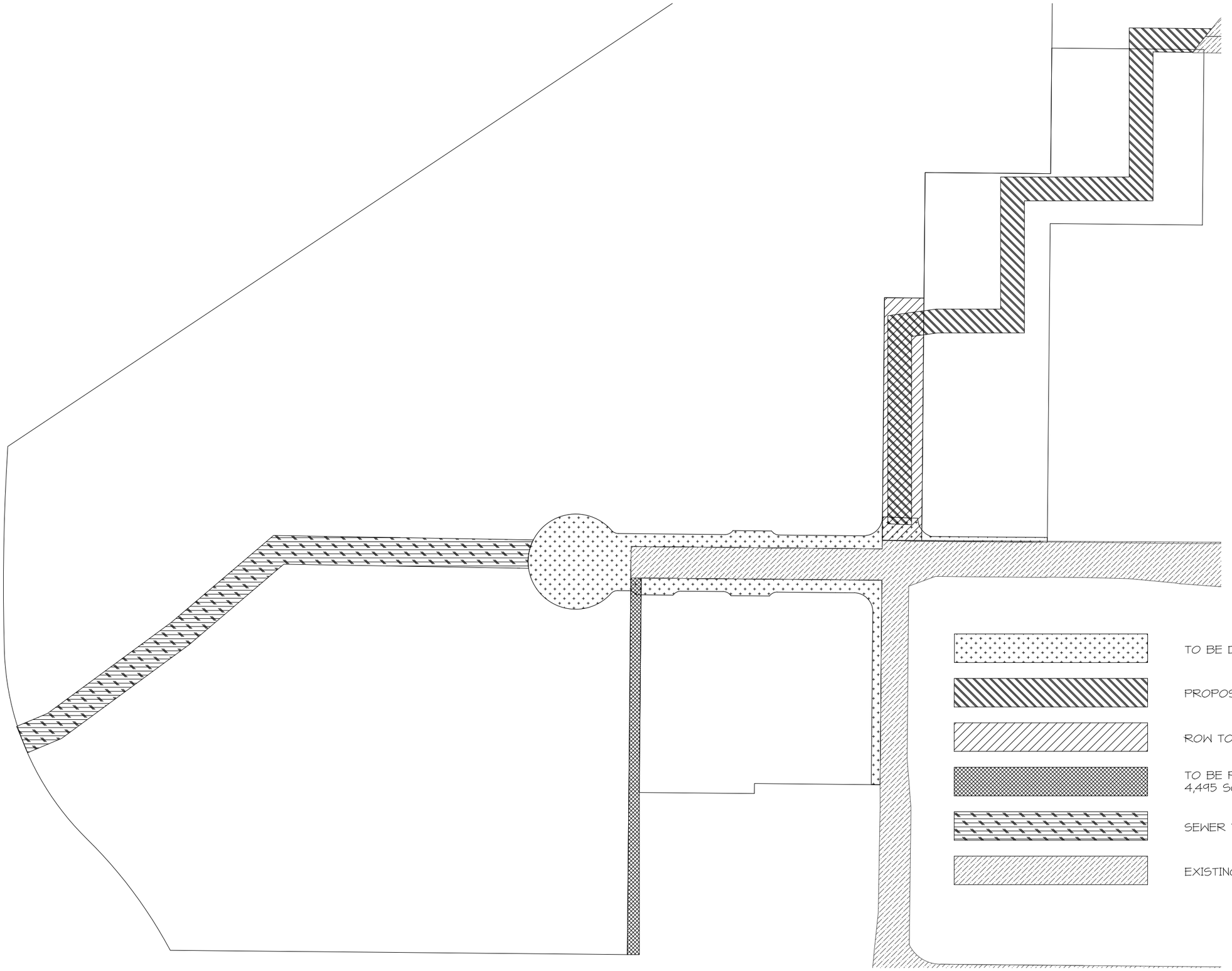
REVISIONS
DATE

ROSENBERG ASSOCIATES
CIVIL ENGINEERS • LAND SURVEYORS

352 East Riverside Drive, Suite A-2
St. George, Utah 84790
Ph (435) 673-8586 Fx (435) 673-8397
www.racivil.com

DEVELOPMENT AGREEMENT EXHIBIT
FOR
SOLEIL RIDGE
SAINT GEORGE, UT

SHEET
EX-1
1 OF 2 SHEETS



DATE: 06/16/22
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DEVELOPMENT AGREEMENT EXHIBIT
FOR
SOLEIL RIDGE
SAINT GEORGE, UT

SHEET
EX-2
2 OF 2 SHEETS

EXHIBIT C

AGEC REPORT

(see following pages)

AGEC
Applied GeoTech

February 4, 2022

Wasatch Commercial Builders, LLC
1820 West 2300 South, Suite 100
West Valley City, UT 84119

Attention: Scott Overman
email: rsoverman@wasatchcb.com

Subject: Additional Rockfall Hazard Assessment
Soleil Ridge
300 West 900 South
St George, Utah
Project No. 2201872

Gentlemen:

Applied Geotechnical Engineering Consultants, Inc. (AGEC) was requested to provide rockfall barrier design information for the north and west sides of the proposed Soleil Ridge development planned for 300 West 900 South in St George, Utah. We previously performed a geologic-hazard assessment of the property for Holdaway Construction and reported our findings and recommendations in a letter dated January 6, 2020 under Project No. 2192092.

PROPOSED CONSTRUCTION

We understand that apartment buildings, carports and paved drives and parking are planned for the area. A fence is planned to be installed between the slope and the proposed development to mitigate the rockfall hazard.

GEOLOGY

The geology of the site is mapped by Hayden and Willis (2011) to consist of talus and landslide deposits on the hillside and bedrock near the base of the slope. The relatively flat east side of the property is mapped as mixed eolian and alluvial deposits. The bedrock is the Springdale Sandstone Member of the Kayenta Formation overlying the Whitmore Point Member of the Moenave Formation overlying the Dinosaur Canyon Member of the Moenave Formation. The bedrock dips gently down to the north.

There are outcrops of basalt above the property with some areas of rock that could potentially become dislodged, particularly during a major earthquake, and result in rockfall hazard for the proposed development. The rocks are generally less than 5 feet in size. The approximate extent of the rockfall hazard is presented on Figure 1. This is based on field observation and experience with similar sites in the area. The extent of the potential rockfall hazard cannot be well defined due to land disturbance and likely removal of rocks in the runout zone.

ROCKFALL EVALUATION

Four slope profiles were developed from the topographic information provided as shown on Figure 1. The profiles were entered into the Colorado Rockfall Simulation Program to assist in identifying potential rock velocities, bounce heights and kinetic energy for locations expected for the rockfall fence. These values are for a rock size of 5 feet, which is the approximate maximum size of source rock.

The proposed rockfall fence is below the estimated rockfall runout zone so the Colorado Rockfall Simulation Program did not have rock impact parameters. The following values were obtained from the Colorado Rockfall Simulation Program for potential fence locations at Profiles B, C and D shown on Figure 1:

PROFILE B

Cumulative Probability (%)	Velocity (fps)	Energy (ft-lb)	Bounce Height (ft)
50	13.4	43,800	0.2
75	16.8	64,400	4.8
90	19.8	83,000	8.9
95	21.5	94,200	11.3
98	23.6	106,700	14.1

PROFILE C

Cumulative Probability (%)	Velocity (fps)	Energy (ft-lb)	Bounce Height (ft)
50	14.2	55,500	0.6
75	14.8	58,900	1.7
90	15.4	61,900	2.7
95	15.7	63,800	3.3
98	16.1	65,800	3.9

PROFILE D

Cumulative Probability (%)	Velocity (fps)	Energy (ft-lb)	Bounce Height (ft)
50	15.3	57,700	0.3
75	19.2	86,000	4.6
90	22.7	111,500	8.5
95	24.8	126,800	10.8
98	27.2	143,900	13.4

This information can be used to design rockfall fences to protect the development areas from rockfall. The higher values of rock energy presented are recommended for use in design of the rockfall fences.

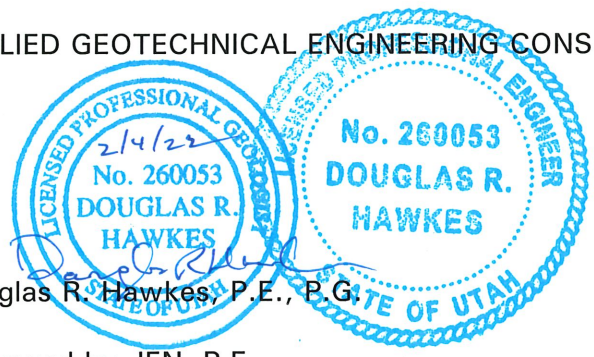
LIMITATIONS

This letter has been prepared in accordance with generally accepted geologic engineering practices in the area for use by the client. The conclusions and recommendations included in the letter are based on conditions observed during our field study, the topographic information provided and use of the Colorado Rockfall Simulation Program. If conditions are significantly different from those described in this letter, we should be notified to reevaluate the recommendations given.

If you have questions or if we can be of further service, please call.

Sincerely,

APPLIED GEOTECHNICAL ENGINEERING CONSULTANTS, INC.



Douglas R. Hawkes, P.E., P.G.

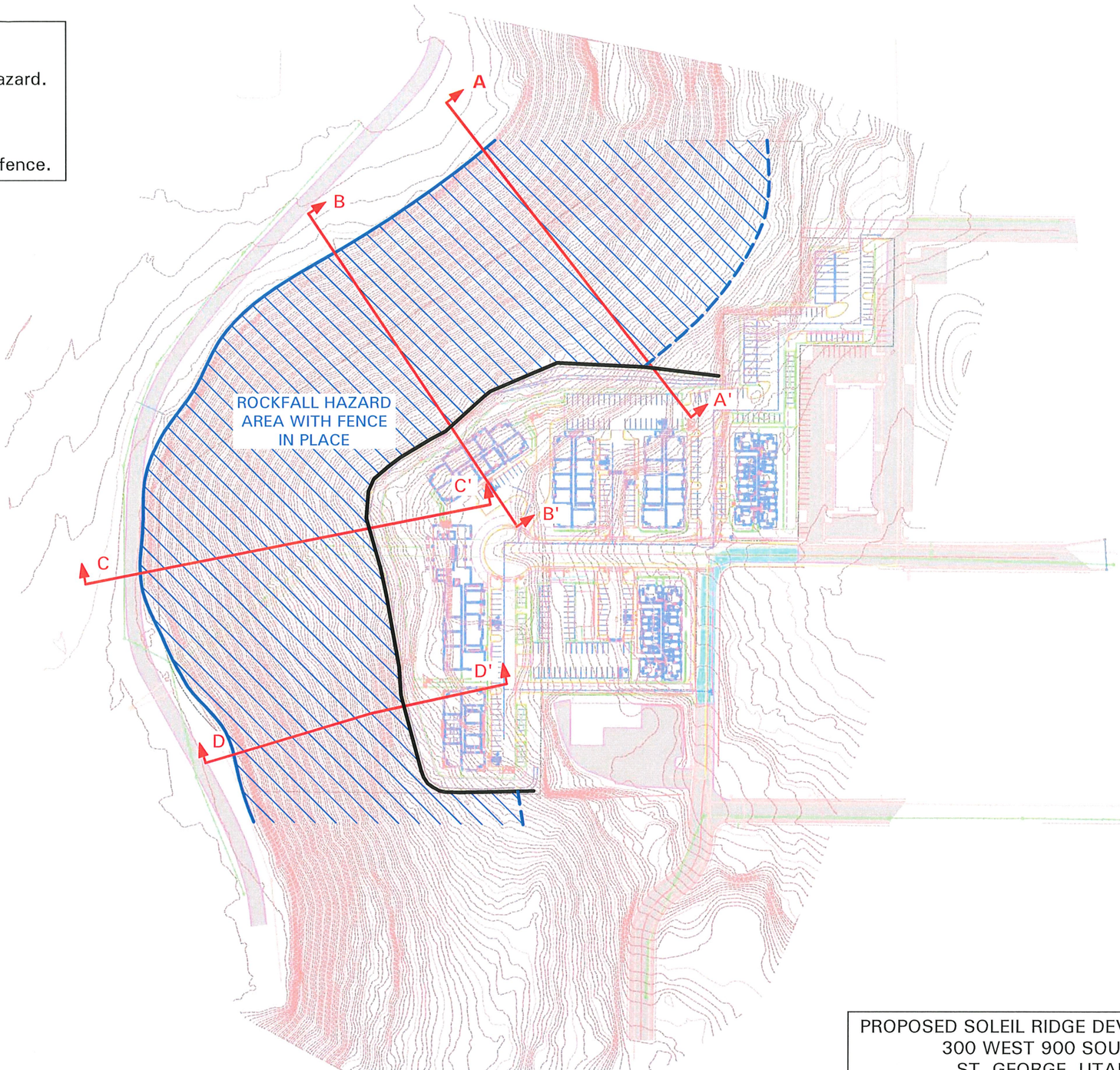
Reviewed by JEN, P.E.
DRH/rs
Enclosure

Reference:

Hayden, J.M. and Willis, G.C., 2011; Geologic map of the St George 7.5' quadrangle, Washington County, Utah, Utah Geological Survey Map 251DM.

LEGEND:

- Approximate Limit of rockfall hazard.
- A A' Profiles evaluated.
- Approximate proposed rockfall fence.



N

0 200 400 feet

Approximate Scale

PROPOSED SOLEIL RIDGE DEVELOPMENT
300 WEST 900 SOUTH
ST. GEORGE, UTAH

2201872	AGEC	Rockfall Hazard Area, Rockfall Fence and Slope Profile Locations	Figure 1

EXHIBIT D

STRUCTURAL DESIGN CALCULATIONS

(see following pages)

STRUCTURAL DESIGN CALCULATIONS

SOLEIL RIDGE ROCKFALL FOUNDATION

PREPARED FOR AGEC

PROJECT NO: 22113

PROJECT LOCATION

300 E 900 S

ST. GEORGE, UT

HEDMAN ENGINEERING

216 W. ST.GEORGE BLVD STE. 203 , ST. GEORGE,UTAH 84770

PH: 435-313-4162 EMAIL: JEFF@HEDMANENGINEERING.COM

PROJECT INFORMATION

Project Number: 22113
Project Name: SOLEIL RIDGE ROCKFALL FOUNDATION
Project Location: 300 E 900 S
St. George, UT

PROJECT DESIGN CRITERIA PER IBC 2018

GRAVITY LOADS

Self weight of fence and foundation

LATERAL LOADS

Rock Fall Impact Load = 30,000 lbs (130 Kn)
Rockfall Fence Tension Force = 49,500 lbs (220 Kn)
Rockfall Fence Compression Force = 45,000 lbs (200 Kn)
Rockfall Fence Shear Force = 30,000 lbs (130 Kn)

PROJECT SPECIFICATIONS

Soils Report = #2201872 by AGEC dated March 3, 2022.
Pedestal Concrete f'c = 4,500 psi Type V cement 0.50 max w/c ratio
Micropiles:

- Concrete f'c = 6,000 psi Type V cement, 0.45 max W/C ratio.
- Grout specific gravity range 1.8 to 1.9
- Reinforcing Gr.75 Dywiag Thread Bar

Structural steel = Steel Pipe – ASTM A53 Gr. B, Fy = 35 ksi

** Materials provided to construct this project shall conform to the specifications listed above. No material specifications are to be changed without the consent of the engineer of record. Some aspects of the structural design may require different material specifications than what is listed above. In that case, those requirements will be noted in the construction drawings.**

GENERAL NOTES AND REQUIREMENTS

Install Simpson straps, tie downs, and other hardware and meet all nailing, reinforcement and other structural requirements as noted on the construction drawings and within the pages of this document. The structural calculations are based on the structural criteria listed above. If the conditions listed herein are not met or are different from what was assumed, it shall be brought to the attention of the engineer. Roof truss system is to be engineered by the supplier and reviewed and approved by the engineer of record. All structural engineering has been performed according to the project soils report provided to this firm. In the event that a project soils report is not provided to this firm or does not exist, this engineering assumes that the building site is dry and stable with no adverse conditions or soils such as: a high water table, expansive clays, plastic clays, collapsible soils, fills etc. that could cause future flooding, settlement, site instability, or other adverse conditions. Any site engineering including grading, drainage, and site retaining walls is the responsibility of others. These calculations and engineering are for the building structure only and do not provide any engineering analysis of or liability/warranty for the non-structural portions of the building, or the site itself. The purpose of these calculations and engineering is to help reduce structural damage and loss of life due to seismic activity and/or high wind conditions. The contractor shall verify all conditions, dimensions and structural details of the drawing. Multiple uses of structural design calculations are not permitted.

1. Contractor to verify all dimensions, spans, and conditions and notify engineer of any errors, omissions, or discrepancies prior to construction.
2. If discrepancies are found in the project specifications, the more stringent specification shall be followed.
3. Contractor shall assure that all materials are used per manufactures recommendations.
4. Site engineering and liability shall be provided by the owner/builder as required.
5. Contractor shall assure that soil footings bear on is properly drained and dry prior to pouring foundation. Footings shall bear on undisturbed native soil or soil approved by the project geotechnical engineer a minimum of 14 inches below finished grade. Foundation shall have a minimum horizontal clearance from ascending slopes shall be a minimum of 25 feet unless approved by the project geotechnical engineer.
6. The contractor shall conform to all building codes and practices as per the IBC 2018 edition and its referenced standards.
7. Builder shall follow all recommendations found in the project soils report and all referenced documents, letters, and addendums.
8. Contractor to verify all dimensions, spans, and conditions with architectural drawings. If any omissions, mistakes, or discrepancies exist within the construction drawings, the engineer shall be promptly notified so that he may have the opportunity to take whatever steps necessary to resolve them. Failure to promptly notify the engineer of such conditions shall absolve the engineer from any responsibility for the consequences of such a failure.
9. If discrepancies are found, the more stringent specification shall be followed. Contractor is responsible for adequate bracing of structural members, walls, and non-structural items during construction.
10. The engineer and his consultants do not warrant or guarantee the accuracy and completeness of the work herein beyond a reasonable diligence. If any omissions, mistakes, or discrepancies are found to exist within the work product, the engineer shall be promptly notified so that he may have the opportunity to take whatever steps necessary to resolve them. Failure to promptly notify the engineer of such conditions shall absolve the engineer from any responsibility for the consequences of such a failure.
11. Many portions of the construction documents, notes, and specifications are the result of demands by various approving agencies that must be performed as part of this work product. Any actions taken without the knowledge and consent of the engineer shall become the responsibility not of the engineer, but of the parties responsible for making the change and taking action to do so. Action taken without the knowledge and consent of the engineer or the contradiction of the engineer's work product, the intent, and/or recommendations, shall become the responsibility not of the engineer, but of the parties responsible for taking such action. The engineer should be contacted in matters of any and all changes to the drawings and specifications herein without exception.
12. Non structural framing requirements are not specified on the structural drawings. See architectural drawings for any additional framing required.
13. Contractor shall assure that all products and hardware are used and installed per manufacturer's recommendations and requirements.

****Refer to Sheet S0.0 of the construction documents for additional project specifications and requirements****

REQUIRED PROJECT SPECIAL INSPECTIONS

Concrete special Inspection per IBC 1705.3 & Table 1705.3
Cast in place deep foundation elements per IBC 1705.8, 1705.3 & Tables 1705.8 and 1705.3

DESIGN FORCES

TENSION = 220 KN (0.2248) = 49.5K

COMPRESSION = 200 KN (0.2248) = 45K

SHEAR = 130 KN (0.2248) = 30K

DIMENSIONS OF BASE = 1m x 0.5m x 0.2m

= 1 (39.37) = 39.37 IN

= 0.5 (39.37) = 19.69 IN

= 0.2 (39.37) = 7.874 IN

CONCRETE PEDESTAL DIMENSIONS USE 48"x24"x5'-6" TALL

PEDESTAL SHALL BE CONSTRUCTED ON BEDROCK AT BOTTOM OF CLAYEY SAND AND GRAVEL LAYER ON TOP OF WEATHERED BEDROCK TO REDUCE FLEXURE IN MICROPILES

LATERAL TIES REQUIRE 30K ANCHORAGE FORCE

ALLOWABLE TENSION FRICTION = 925 psf IN TOP 5'-0" (FS=2.0)
1350 psf BELOW TOP 5'-0" (FS=2.0)

MICROPILE CIRCUMFERENCE = $\pi D = \pi(0.5) = 1.5708$ ft/ft

$1.5708(925)(5) = 7264.93$ lbs

$30{,}000 - 7264.93 = 22{,}735.07$ lbs

$\frac{22735.07}{(1.5708)(1350)} = 10.72 + 5 = 15.72 \approx 16'-0"$ MIN EMBEDMENT

DETERMINE DIAMETER OF BAR REQD

$\frac{30{,}000}{0.55(75{,}000)} = A_{BAR\,MIN} = 0.73\,in^2$

$D = \sqrt{\frac{4(0.73)}{\pi}} = 0.96\,in^2$ USE #8 DYWIDAG THREADBAR OR EQUAL

SEE SPREADSHEETS FOR MICROPILE AND PEDESTAL DESIGN

CONCRETE COLUMN DESIGN V2.2.0 (3/16/15)

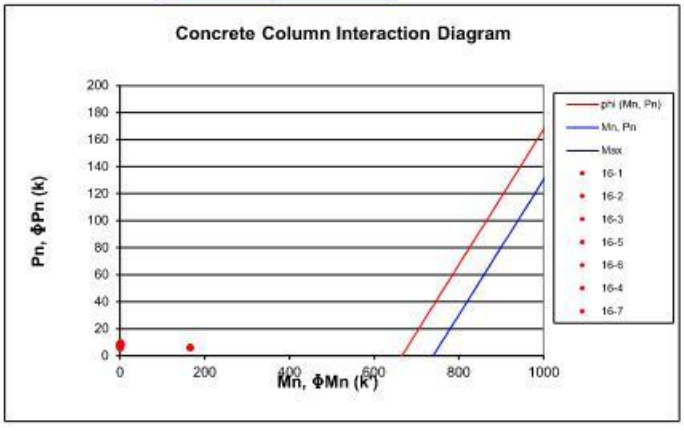
CONCRETE COLUMN DESIGN FOR: 22113 Soleil Ridge Rock Fall Fence Post Pedestal

Concrete Column Properties and Specs			
Concrete Strength	f'c	4500	ksi
Yield Strength	fy	60	ksi
Width of Column	b	24	in.
Depth of Column	h	48	in.
Unbraced column height	lu	5.5	ft
Gross Total Area of Column	A_g	1152	in^2

Reinforcement Properties and Specs			
Spiral Confinement? (Y or blank)			
Depth to Centroid Rebar 1	d_1	3.25	in.
Depth to Centroid Rebar 2	d_2	17.08	in.
Depth to Centroid Rebar 3	d_3	30.92	in.
Depth to Centroid Rebar 4	d_4	44.75	in.
Modulus of Elasticity of Steel	E_s	29000	ksi
Number of Rebar 1		4	
Rebar 1 Size		6	
Rebar 1 Cross Sectional Area		0.440	in^2
Total Rebar 1 Area	As_1	1.76	in^2
Number of Rebar 2		3	
Rebar 2 Size		6	
Rebar 2 Cross Sectional Area		0.440	in^2
Total Rebar 2 Area	As_2	1.32	in^2
Number of Rebar 3		3	
Rebar 3 Size		6	
Rebar 3 Cross Sectional Area		0.440	in^2
Total Rebar 3 Area	As_3	1.32	in^2
Number of Rebar 4		4	
Rebar 4 Size		6	
Rebar 4 Cross Sectional Area		0.440	in^2
Total Rebar 4 Area	As_4	1.76	in^2
Total Steel Cross sectional area	As_t	6.16	in^2

Design Factors			
Phi Factor	ϕ	0.652	
Maximum Axial Capacity of Conc.	Po	4383207.6	
Factored Max Axial Capacity	ϕPo	2856642	kips
	Pn	3506566	
	ϕPn	2285314	kips
Factor Relating a to c	β_1	0.65	
Concrete Yield Strain	ε_y	0.00207	

Max ϕMn	0	17



Column Loading

Axial controlled by = 1.4D
Bending controlled by = 0.9D+1.0E
Axial + Bending controlled by = 0.9D+1.0E

Roof Tributary width =	A_r	1		ft^2
Floor tributary width =	A_f			ft^2
		Vertical	Horizontal	
Roof Dead Load =	D_R	6600		psf, lbs
Roof Live Load =	Lr			psf, lbs
Roof Snow Load =	S			psf, lbs
Roof Rain Load =	R			psf, lbs
Floor Dead Load =	D_F			psf, lbs
Floor Live Load =	LL			psf, lbs
Wind Lateral load =	W			lbs,lbs
Seismic lateral load =	E		30000	lbs,lbs
Axial Load =	Pu	9.240	kips	
Eccentricity =	e	0	in.	
Factored Moment =	Mu	166.010	kip-ft	
ϕMn from interaction diagram for Pu =		683.70	kip-ft	
	ϕPn =	2285314	kips	
	Pu/ ϕPn =	0.0000	OK	
	Mu/ ϕMn =	0.2428	OK	

Column slenderness check

$I = bh^3/12$ =	221184.00	in^4
$r = (I/A)^{0.5}$ =	13.86	in^3
k =	1.0	for pinned column
klu/r =	4.76	<= 22, column is not slender

Moment magnification for slender column

Min eccentricity =	2.04	in
$C_m = 0.6+0.4*M1/M2$ =	1	
βdns =	1	
Ec =	120915	ksi
Es =	29000	ksi
EI =	########	$k\text{-}in^2$
$Pc = \pi^2 EI/(klu)^2$ =	6113587	k
$\delta = Cm/(1-Pu/(0.75Pc))$ =	1.000	
Magnified moment, $Mc = \delta M_2$ =	166.010	k-ft

Column Shear design

Max Vu =	13.750	kips
Concrete capacity, $\Phi Vc = 2*f'c^{1/2}*b*d$ =	3417.45	kips
	OK	

Minimum reinforcement check

Min. As = 0.005*Ag =	5.76	in^2	
As =	6.16	in^2	OK

Vertical Confinement

Rebar Size	#	3	bars
Spacing	@	12	o.c.

Project: 22113 Soleil Ridge Rock Fall Fence Micropiles compression loads **Date :** 4/18/2022 17:18

Micropile Geotechnical Design Parameters

Active zone =	8.00	ft			Min. embed =	10.00	ft below active zone
Pier diameter =	6	in			Min. Pier Length =	10.00	ft
Min. DL pressure =	0	psf	=	0 lbs/pile	Passive Pressure =	0	pcf
					Depth of passive pressure =	0.00	ft

Soil layer Design Parameters (S.F. = 2.0 on friction values)

Soil Layer	Layer Description	Start depth ft	Friction psf	End Depth ft	Friction psf	Horz. Modulus pci
Layer 1	Soft siltstone/mudstone bedrock	0	925	5	925	1000
Layer 2	Firm/Hard siltstone/mudstone bedrock	5	1350	100	1350	2000
Layer 3						
Layer 4						
Layer 5						
Layer 6						
Layer 7						
Layer 8						

Micropile gravity Loads Geotechnical Capacity Required Depths

Pier #	DL lbs	Lr lbs	LL lbs	TL lbs	Embed for friction depth ft	Embed for DL Deficit ft	Embed for active zone ft	Min. Depth incl. active zone ft	Min. Pier length ft	Pier type
1	0	0	45000	45000	22.79	0.00	8.00	22.79	22.83	B
2	0	0	45000	45000	22.79	0.00	8.00	22.79	22.83	B
Design loads =	0	0	45000	45000	22.79	0.00	8.00	22.79	22.83	B

Micropile Lateral Loads

Lateral Loads to Piles

Project: 22113 Soleil Ridge Rock Fall Fence Micropiles tension loads **Date :** 4/18/2022 17:18

Micropile Geotechnical Design Parameters

Active zone =	8.00	ft			Min. embed =	10.00	ft below active zone
Pier diameter =	6	in			Min. Pier Length =	10.00	ft
Min. DL pressure =	0	psf	=	0 lbs/pile	Passive Pressure =	0	pcf
					Depth of passive pressure =	0.00	ft

Soil layer Design Parameters (S.F. = 2.0 on friction values)

Soil Layer	Layer Description	Start depth ft	Friction psf	End Depth ft	Friction psf	Horz. Modulus pci
Layer 1	Soft siltstone/mudstone bedrock	0	1400	5	1400	1000
Layer 2	Firm/Hard siltstone/mudstone bedrock	5	2000	100	2000	2000
Layer 3						
Layer 4						
Layer 5						
Layer 6						
Layer 7						
Layer 8						

Micropile gravity Loads Geotechnical Capacity Required Depths

Pier #	DL lbs	Lr lbs	LL lbs	TL lbs	Embed for friction depth ft	Embed for DL Deficit ft	Embed for active zone ft	Min. Depth incl. active zone ft	Min. Pier length ft	Pier type
1	0	0	45000	45000	15.82	0.00	8.00	18.00	18.00	B
2	0	0	45000	45000	15.82	0.00	8.00	18.00	18.00	B
Design loads =	0	0	45000	45000	15.82	0.00	8.00	18.00	18.00	B

Micropile Lateral Loads

Lateral Loads to Piles

Micropile Design Calculations V3.1.2 (Rev. 3/4/21)

Project: 22113 Soleil Ridge Rock Fall Fence Micropiles compression loads **Date :** 4/18/2022 17:18

Pile/Pier dimensions and material properties

Micropile height, h =	0.00	ft	Casing Section =	PIPE 3 XX-STRONG		Casing Plunge Depth =	6.00	ft
Micropile diameter, b =	0.50	ft	Casing Fy =	35000	psi	Micropile bar Fy =	75000	psi
Concrete strength, f'c =	6000	psi	Casing E =	29000000	psi	Micropile bar diameter =	1.43	(#10 Dywidag Threadbar or eq.)
Passive pressure =	0	psf	Casing OD =	3.50	in	Micropile bar As =	1.61	in^2
Allowable Skin friction =	925	psf	Casing ID =	2.30	in	Bearing Plate Fy =	36000	in
Micropile Tension Skin Friction =	925	psf	Casing Ag =	5.17	in^2	Bearing L & W =	4.00	in
Max Micropile Depth =	22.83	ft	Casing I =	5.79	in^4	Bearing Plate t =	0.388	in
Uncased Pile I =	63.62	in^4	Casing S =	3.31	in^3			
Ec = 57000*f'c$^{1/2}$ =	4415201	psi	Casing D/t =	6.26				
Uncased Pile EI =	280882952	$lb\text{-}in^2$						
Cased Pile EI =	84201492	$lb\text{-}in^2$						

Micropile Max Loads and Load Combinations

Lateral loads, P

Wind load, W =	0	lbs
Seismic load, E =	15000	lbs
Overstrength factor, Ω =	1.00	lbs
Soil load, H =		lbs

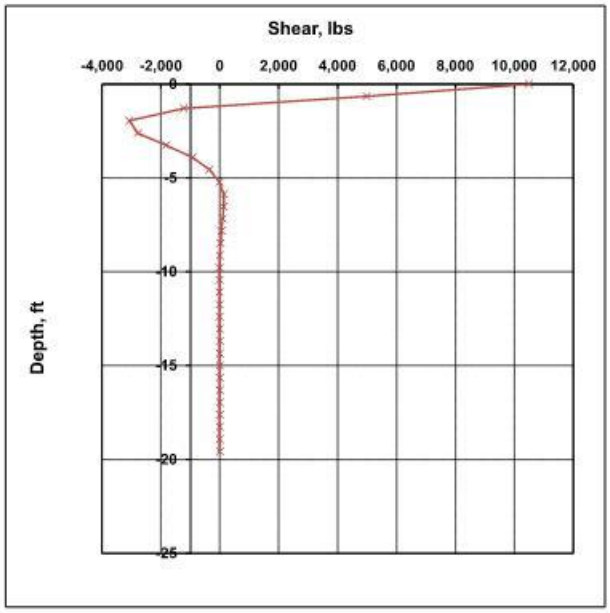
Gravity Loads

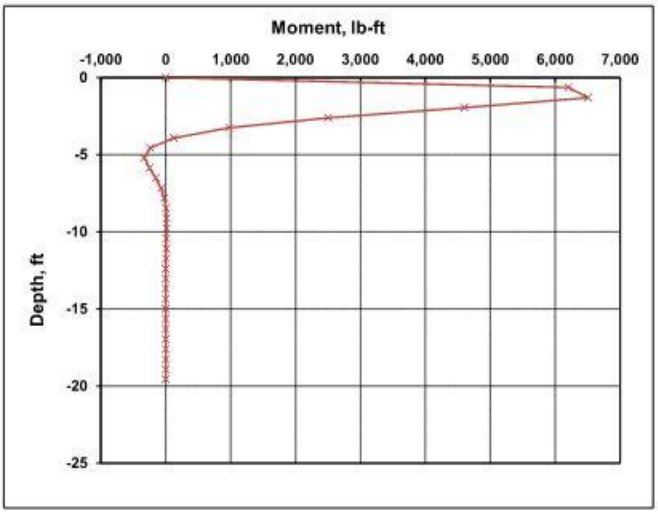
D =	0	lbs
L =	0	lbs
Lr =	0	lbs
S =	0	lbs
R =	0	lbs
W =	0	lbs
E =	45000	lbs

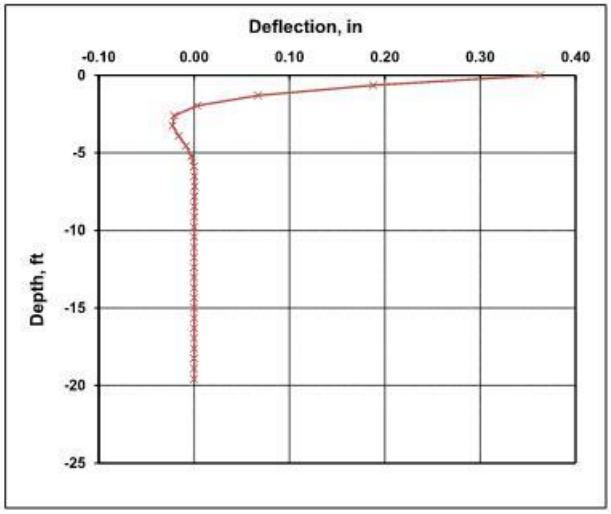
Load combinations	Loads, lbs	
	Gravity	Lateral
D	0	0
D+H+L	0	0
D+H+(Lr or S or R)	0	0
D+H+0.75L+0.75(Lr or S or R)	0	0
D+H+(0.6W or 0.7E)	31500	10500
D+H+0.75(0.6W)+0.75L+0.75(Lr or S or R)	0	0
D+H+0.75(0.7E)+0.75L+0.75(S)	23625	7875
0.6D+0.6W+H	0	0
0.6D+0.7E+H	31500	10500

Lpile anlysis for max loaded pile governed by D+(0.6W or 0.7E)

	Soil Stiffness	Pile EI	Depth	Deflection	Moment	Shear
Segment	lb/in/in	$lb\text{-}in^2$	ft	in	lb-ft	lbs
0	236220	84201492	0.00	0.36	0	10500
1	236220	84201492	-0.65	0.19	6204	4987
2	236220	84201492	-1.30	0.07	6506	-1226
3	236220	84201492	-1.96	0.00	4604	-3069
4	236220	84201492	-2.61	-0.02	2501	-2780
5	236220	84201492	-3.26	-0.02	977	-1821
6	236220	84201492	-3.91	-0.02	125	-930
7	236220	84201492	-4.57	-0.01	-236	-351
8	472441	84201492	-5.22	0.00	-334	-10
9	472441	84201492	-5.87	0.00	-249	141
10	472441	280882952	-6.52	0.00	-150	136
11	472441	280882952	-7.18	0.00	-72	98
12	472441	280882952	-7.83	0.00	-22	58
13	472441	280882952	-8.48	0.00	4	27
14	472441	280882952	-9.13	0.00	13	8
15	472441	280882952	-9.79	0.00	14	-2
16	472441	280882952	-10.44	0.00	10	-6
17	472441	280882952	-11.09	0.00	6	-6
18	472441	280882952	-11.74	0.00	3	-4
19	472441	280882952	-12.40	0.00	1	-2
20	472441	280882952	-13.05	0.00	0	-1
21	472441	280882952	-13.70	0.00	-1	0
22	472441	280882952	-14.35	0.00	-1	0
23	472441	280882952	-15.00	0.00	0	0
24	472441	280882952	-15.66	0.00	0	0
25	472441	280882952	-16.31	0.00	0	0
26	472441	280882952	-16.96	0.00	0	0
27	472441	280882952	-17.61	0.00	0	0
28	472441	280882952	-18.27	0.00	0	0
29	472441	280882952	-18.92	0.00	0	0
30	472441	280882952	-19.57	0.00	0	0
31	472441	280882952	-20.22	0.00	0	0
32	472441	280882952	-20.88	0.00	0	0
33	472441	280882952	-21.53	0.00	0	0
34	472441	280882952	-22.18	0.00	0	0
35	472441	280882952	-22.83	0.00	0	0







Micropile Design Calculations V3.1.2 (Rev. 3/4/21)

Project: 22113 Soleil Ridge Rock Fall Fence Micropiles compression loads **Date :** 4/18/2022 17:18

Micropile Axial Capacity Calculations

Micropile Axial Capacity - Cased length

$Pa = [0.4F'c_{grout}A_{grout}+0.47*Fy_{casing}*A_{casing}+0.47*Fy_{bar}*A_{bar}]$

F'c =	6000	psi
Agrout =	2.55	in^2
Fycasing =	35000	psi
Acasing =	5.17	in^2
Fybar =	75000	psi
Abar =	1.61	in^2
Pa =	**108000**	lbs (Pallow from AISC 360 Table 4-G)
P =	31500	lbs
	OK	

Micropile Axial Capacity - Uncased length

$Pa = 0.4F'c_{grout}A_{grout}+0.47*Fy_{bar}*A_{bar}$

F'c =	6000	psi
Agrout =	28.27	in^2
Fybar =	75000	psi
Abar =	1.606	in^2
Pa =	**124472**	lbs
P =	31500	lbs
	OK	

Micropile Bearing Capacity in grade beam - no bearing plate

$Fp = 0.85*\Phi*f'c*(A2/A1)1/2 \leq 1.7*\Phi*f'c$

Apile = A1 =	8.02	in^2
Agrade beam = A2 =	144	in^2
Fp =	6120	psi
Max Pu =	49052	lbs
Max P =	**30658**	lbs (ASD)

Micropile Bearing Capacity in grade beam PL6/16x4x4 bearing plate

$Fp = 0.85*\Phi*f'c*(A2/A1)1/2 \leq 1.7*\Phi*f'c$

Bearing Plate thickness =	0.388	in
Apile = A1 =	14.39	in^2
Agrade beam = A2 =	120	in^2
Fp =	6120	psi
Max Pu =	88091	lbs
Max P =	**55057**	lbs (based on bearing) (ASD)
Max P =	**67570**	lbs (based on plate thickness) (ASD)

Micropile axial capacity - no bearing plate = 30658 lbs (Pier A) use 25k (ASD)

Micropile axial capacity - w/ 1/4x4x4 bearing plate = 55057 lbs (Pier B) use 45k (ASD)

Micropile Flexural Capacity Calculations

Micropile Flexural Capacity - cased length

$Ma = 0.55*Fy*S$

Fy =	35000	psi
S =	3.31	in^3
Ma =	**8740**	lb-ft (Mallow from AISC 360 Table 4-G)
Max M =	6506	lb-ft
	OK	

Micropile combined stresses - cased length

P =	31500	lbs
Pa =	108000	lbs
M =	6506	lb-ft
Ma =	8740	lb-ft
P/Pa + M/Ma =	1.04	*> 1.0, NG*
	Combined loading overage is less than 5%, OK	

Micropile Flexural Capacity - uncased length below grade

S =	21.21	in^3
Ma =	428	lb-ft
M at bottom of casing =	150	lb-ft
	OK	

Micropile combined stresses - uncased length

P =	22782	lbs (minus load transferred from casing)
Pa =	124472	lbs
M =	150	lb-ft
Ma =	428	lb-ft
P/Pa + M/Ma =	0.53	*≤ 1.0, OK*

Micropile Shear Capacity Calculations

Micropile Shear Capacity - cased length

Lv =	6.00	ft
D/t =	6.260	
Fcr =	21000	psi
Va =(Fcr*Ag/2)/1.67 =	32506	lbs
Max V =	10500	lbs
	OK	

Micropile Shear Capacity - uncased length

Micropile Ag =	28.27	in^2
ΦVn = 0.6*4/3*f'c^0.5*Ag =	1752	lbs
Va =	1095	lbs
Max V =	136	lbs
	OK	

Micropile Tensile Capacity Calculations

Micropile Tensile Capacity

Active Zone depth =	8	ft
Skin Friction =	925	psf
Pile Tension Force, T =	11624	lbs
Fybar =	75000	psi
Abar =	1.606	in^2
Pt allowable = 0.55*Fybar*Abar =	66250	lbs
	OK	

Micropile Geotechnical Pullout Capacity

Active Zone depth =	8.00	ft
Skin Friction =	1350	psf
Pile Tension Force, T =	11624	lbs
Min depth for 1.5 SF =	20.00	ft
Min Pile depth =	22.83	ft
	OK	

Micropile Casing Development into Micropile Grout body Calculations

Plunge depth for gravity loads - friction

Bond strength = 0.04*f'c =	160	psi (not to exceed 160 psi)
Column surface area =	11.00	in^2
P =	31500	lbs
Required plunge depth =	1.49	ft
Actual Plunge depth =	6.00	ft
	OK	

Casing must be embedded to point of zero curvature (Less than 0.01 inches)

Plunge depth =	6.00	ft
Deflection at bottom of casing =	0.00	in
	OK	

Plunge depth for flexure - bearing stress of casing on grout

Section modulus of casing in pile =	3024.0	in^3
Bearing = M/S =	25.82	psi
	OK	

Plunge depth for shear

A =	180	in^2
ΦVn = Φ*4/3*f'c^0.5*A =	11154	lbs
Va =	6971	lbs
V =	136	lbs
	OK	

4

COMPOSITE PIPE 3

Table 4-G (continued)
Available Strength in Axial Compression, kips
Filled Pipe

F_y = 35 ksi
f'_c = 4 ksi

Shape		Pipe 3					
		XXS		XS		STD	
t_{des}, in.		0.559		0.280		0.201	
Steel, lb/ft		18.6		10.3		7.58	
Design		P_n/Ω_c	$\phi_c P_n$	P_n/Ω_c	$\phi_c P_n$	P_n/Ω_c	$\phi_c P_n$
		ASD	LRFD	ASD	LRFD	ASD	LRFD
Effective length, L_c (ft), with respect to the least radius of gyration, r	0	108	163	62.4	93.6	50.6	75.9
	1	108	162	62.0	93.0	50.3	75.4
	2	106	159	60.8	91.3	49.3	73.9
	3	102	154	58.9	88.4	47.8	71.6
	4	97.6	147	56.3	84.5	45.7	68.5
	5	92.0	138	53.2	79.8	43.1	64.7
	6	85.6	129	49.6	74.3	40.2	60.3
	7	78.6	118	45.6	68.4	37.0	55.5
	8	71.2	107	41.4	62.1	33.6	50.4
	9	63.7	95.7	37.5	56.3	30.2	45.3
	10	56.2	84.5	33.6	50.6	26.7	40.1
	11	49.0	73.6	29.9	44.9	23.4	35.1
	12	42.1	63.3	26.2	39.4	20.2	30.3
	13	35.9	53.9	22.7	34.1	17.5	26.2
	14	30.9	46.5	19.6	29.4	15.1	22.7
	15	26.9	40.5	17.1	25.6	13.1	19.8
	16	23.7	35.6	15.0	22.5	11.6	17.4
	17	21.0	31.5	13.3	20.0	10.2	15.4
	18			11.8	17.8	9.13	13.7
	19			10.6	16.0	8.19	12.3
Properties							
M_n/Ω_b	$\phi_b M_n$ kip-ft	8.74	13.1	5.42	8.14	4.19	6.29
$P_e(L_c)^2/10^4$, kip-in.^{2}		171		117		95.6	
r_m, in.		1.06		1.14		1.17	

ASD	LRFD
Ω_b = 1.67	ϕ_b = 0.90
Ω_c = 2.00	ϕ_c = 0.75

Notes: Heavy line indicates L_c/r equal to or greater than 200.
Dashed line indicates the L_c beyond which the bare steel strength controls.

AGEC

Applied GeoTech

Soleil Ridge Rockfall Foundations Design Parameters

AGEC Project No. 2201872 Updated April 15, 2022

Depth		Soil Properties			Lateral Design Parameters		Axial Design Parameters		Soil/Rock Type-Conditions
Top	Bottom	Effective Unit Weight (pcf)	Cohesion (psf)	Friction Angle (Degrees)	Horizontal Modulus (pci)	Ultimate Passive Resistance (psf)	Ultimate Downward Skin Friction (psf)	Ultimate Uplift Skin Friction (psf)	
0	5	110	0	32	75	1,000	0-2,000	0-1,650	Soil, clayey sand and gravel
5	10	130	3,000	0	1000	15,000	2,800	1,850	Soft Siltstone/mudstone Bedrock
10	30	130	6,000	0	2000	27,000	4,000	2,700	Firm/Hard Siltstone/Mudstone Bedrock

Note: Based on design, upper soil (0-5 ft) will be removed to construct micropile at bedrock surface.

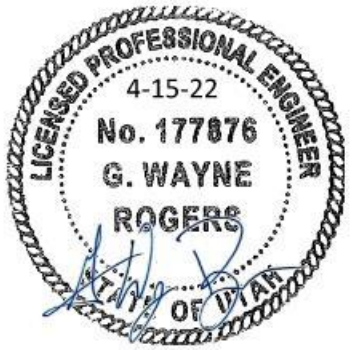


EXHIBIT E

FOUNDATION DESIGN

(see following pages)

STRUCTURAL REQUIREMENTS

REINFORCED CONCRETE NOTES

1. STRUCTURAL CONCRETE SHALL COMPLY WITH THE MOST RESTRICTIVE REQUIREMENTS ACCORDING TO ACI 318 TABLE 4.3.1 FOR THE EXPOSURE CATEGORIES AND CLASSES LISTED BELOW.

STRUCT. MEMBER	EXPOSURE CATEGORY AND CLASS	
FOOTINGS		
WALLS	F, FREEZING & THAWING:	F0 - NEGLIGIBLE
GRADE BEAMS		
SLABS	S, SULFATE:	S2 - SEVERE
	P, REQUIRING LOW PERMEABILITY:	P0 - NOT APPLICABLE
	C, CORROSION PROT. OF REINF.:	C0 - NOT APPLICABLE

2. MINIMUM CONCRETE MIX REQUIREMENTS:
   CONCRETE COMPRESSIVE STRENGTH, f'c: 4500 PSI.
   MAXIMUM WATER TO CEMENT RATIO: 0.45
   CEMENTITIOUS MATERIAL: TYPE V - POZZOLAN OR SLAG
3. STRUCTURAL CONCRETE SHALL REACH A MINIMUM 3-DAY COMPRESSIVE STRENGTH OF 1500 PSI AND SHALL REACH THE SPECIFIED COMPRESSIVE STRENGTH IN 28 DAYS. CONCRETE COMPRESSIVE TESTS SHALL CONFORM TO ASTM C 140 "TEST METHOD SAMPLING AND TESTING CONCRETE MASONRY UNITS AND RELATED UNITS". CEMENTITIOUS MATERIAL SHALL CONFORM TO ASTM C 150 "SPECIFICATION FOR PORTLAND CEMENT".
4. THE CONCRETE SHALL BE PROPORTIONED AND PRODUCED TO HAVE A SLUMP OF 4 INCHES OR LESS. A TOLERANCE OF 1 INCH ABOVE THIS AMOUNT SHALL BE PERMITTED FOR INDIVIDUAL BATCHES PROVIDED THE AVERAGE FOR ALL BATCHES DOES NOT EXCEED 4 INCHES. THE SLUMP SHALL BE DETERMINED BY "STANDARD TESTING METHOD FOR SLUMP OF PORTLAND CEMENT CONCRETE" (ASTM C 143). WHERE A SUPERPLASTICIZER ADMIXTURE IS USED, MAXIMUM SLUMP IS ALLOWED TO BE INCREASED 1-1/2" FOR EACH 1% OF SUPERPLASTICIZER UP TO A MAXIMUM INCREASE OF 3".
5. WATER USED IN MIXING CONCRETE SHALL BE CLEAN FROM INJURIOUS AMOUNTS OF OILS, ACIDS, ALKALIS, SALTS, ORGANIC MATERIALS, OR OTHER SUBSTANCES DELETERIOUS TO CONCRETE OR REINFORCEMENT. NONPOTABLE WATER SHALL NOT BE USED.
6. CONCRETE AGGREGATES SHALL CONFORM TO ASTM C 33 "STANDARD SPECIFICATIONS FOR CONCRETE AGGREGATES" OR ASTM C 330 "STANDARD SPECIFICATION FOR LIGHTWEIGHT AGGREGATES". THE NORMAL MAXIMUM SIZE OF COARSE AGGREGATES SHALL NOT BE LARGER THAN: 1/5 THE DISTANCE BETWEEN THE SIDES OF FORMS, 1/3 THE SLAB DEPTH, OR 3/4 THE MINIMUM CLEAR SPACING BETWEEN INDIVIDUAL REINFORCING BARS OR WIRES, BUNDLES OF BARS, INDIVIDUAL TENDONS, OR DUCTS.
7. DEFORMED CONCRETE REINFORCING SHALL BE GRADE 60 REINFORCING STEEL CONFORMING TO ASTM A 615 "STANDARD SPECIFICATION FOR DEFORMED AND PLAIN CARBON-STEEL BARS FOR CONCRETE REINFORCEMENT.
8. BAR MATS FOR CONCRETE REINFORCING SHALL CONFORM TO ASTM A 184 "STANDARD SPECIFICATION FOR WELDED DEFORMED STELL BAR MATS FOR CONCRETE REINFORCEMENT. REINFORCING BARS USED IN BAR MATS SHALL CONFORM TO ASTM A 515 OR ASTM A 706.
9. WELDED PLAIN WIRE FOR CONCRETE REINFORCEMENT SHALL NOT BE SMALLER THAN D4 AND SHALL CONFORM TO ASTM A 496 "STANDARD SPECIFICATION FOR STEEL WIRE, DEFORMED, FOR CONCRETE REINFORCEMENT". WELDED DEFORMED WIRE FOR CONCRETE REINFORCEMENT SHALL CONFORM TO ASTM A 497 "STANDARD SPECIFICATION FOR STEEL WELDED WIRE, DEFORMED, FOR CONCRETE REINFORCEMENT".
10. WELDED WIRE FOR CONCRETE REINFORCEMENT SHALL NOT BE SMALLER THAN D4 AND SHALL CONFORM TO ASTM A 496 "STANDARD SPECIFICATION FOR STEEL WIRE, DEFORMED, FOR CONCRETE REINFORCEMENT".
11. NO ADMIXTURES, OTHER THAN AIR-ENTRAINING ADMIXTURE CONFORMING ASTM C 260 OR SUPERPLASTICIZER ADMIXTURE CONFORMING TO ASTM C 494 MAY BE USED WITHOUT THE WRITTEN APPROVAL FROM THE ENGINEER. CALCIUM CHLORIDE AND CONCRETE ADMIXTURES CONTAINING CHLORIDE SALTS ARE NOT PERMITTED.
12. ALL REINFORCING LAP SPLICES SHALL BE CLASS 'B' SPLICES UNLESS NOTED OTHERWISE. LAP ALL REINFORCING BARS ACCORDING TO THE FOLLOWING LAP SPLICE SCHEDULE. WHERE BEAM REINFORCING IS REQUIRED TO BE SPLICED, SPLICING SHALL ONLY TAKE PLACE IN COMPRESSION REGIONS, I.E. BOTTOM REINFORCING SPLICES ALLOWED OVER SUPPORTS AND TOP REINFORCING SPLICES ALLOWED IN THE BEAM MIDSPANS. WHERE COLUMN VERTICAL REINFORCINGIS REQUIRED TO BE SPLICED, SPLICING WILL BE PERMITTED ONLY AT FLOOR LEVELS OR AREAS OF LATERAL SUPPORT.

REINFORCED CONCRETE LAP SPLICE SCHEDULE

F'c = 2500 PSI AT 28 DAYS		REINFORCMENT LENGTH (INCHES)					
SPLICE CLASS	REINFORCMENT LOCATION	#3 BARS	#4 BARS	#5 BARS	#6 BARS	#7 BARS	#8 BARS
A	TOP*	24	32	39	47	69	78
	BOTTOM	18	24	30	36	53	60
B	TOP*	31	41	51	61	89	102
	BOTTOM	24	32	39	47	69	78

*TOP DENOTES HORIZONTAL REINFORCING W/ 12" OF FRESH CONCRETE BELOW THE LEVEL OF REINFORCING

STATEMENT OF SPECIAL INSPECTION

1. ALL SPECIAL INSPECTION REPORTS, TESTS, QUALIFICATIONS, AND CERTIFICATES OF COMPLIANCE SHALL BE APPROVED BY THE ENGINEER OF RECORD AND SUBMITTED TO THE CITY BUILDING DEPARTMENT PRIOR TO CONSTRUCTION.
2. CONTRACTORS MUST SUBMIT A WRITTEN STATEMENT OF RESPONSIBILITY PER IBC 2018 SECTION 1704.4. CONTRACTOR IS REQUIRED TO FOLLOW QUALITY ASSURANCE PLAN PER IBC 2018 SECTION 1704.3.1.
3. IT IS THE CONTRACTORS SOLE RESPONSIBILITY TO SEE THAT THE TEST AND INSPECTIONS ARE PERFORMED. JOB SITE VISITS BY THE ENGINEER OF RECORD DO NOT CONSTITUTE AND ARE NOT A SUBSTITUTE FOR SPECIAL INSPECTIONS.
4. CONTRACTOR SHALL PROVIDE NAME OF APPROVED SPECIAL INSPECTION AGENCY AND QUALIFICATION OF INDIVIDUAL TO
5. BUILDING OFFICIAL FOR APPROVAL PRIOR TO CONSTRUCTION.
6. THE FOLLOWING SPECIAL INSPECTIONS ARE REQUIRED BY THE CURRENT EDITION OF THE IBC:

CAST-IN-PLACE DEEP FOUNDATION ELEMENTS - IBC 1705.8

TYPE	CONTINUOUS SPECIAL INSPECTION	PERIODIC SPECIAL INSPECTION
INSPECT DRILLING OPERATIONS AND MAINTAIN COMPLETE AND ACCURATE RECORDS FOR EACH ELEMENT	X	-
VERIFY PLACEMENT LOCATIONS AND PLUMBNESS, CONFIRM ELEMENT DIAMETERS, BELL DIAMETERS (IF APPLICABLE), LENGTHS, EMBEDMENT INTO BEDROCK (IF APPLICABLE) AND ADEQUATE END-BEARING STRATA CAPACITY. RECORD CONCRETE OR GROUT VOLUMES	X	-
FOR CONCRETE ELEMENTS, PERFORM TESTS AND ADDITIONAL SPECIAL IN ACCORDANCE WITH SECTION 1705.3	X	-

CONCRETE CONSTRUCTION - IBC 1705.3 AND TABLE 1705.3

TYPE	CONTINUOUS SPECIAL INSPECTION	PERIODIC SPECIAL INSPECTION	REFERENCE STANDARD	IBC REFERENCE
1. INSPECT REINFORCEMENT, INCLUDING PRESTRESSING TENDONS, AND VERIFY PLACEMENT.	-	X	ACI 318: CH.20,25.2 25.3, 26.6.1-26.6.3	1908.4
2. REINFORCING BAR WELDING: A. VERIFY WELDABILITY OF REINFORCING BARS OTHER THAN ASTM A706; B. INSPECT SINGLE-PASS FILLED WELDS, MAXIMUM 5/16", AND3 C. INSPECT ALL OTHER WELDS.	- - X	X X -	AWS D1.4 ACI 318: 26.6.4	-
3. INSPECT ANCHORS CAST IN CONCRETE	X	-	ACI 318: 17.8.2	-
4. INSPECT ANCHORS POST- INSTALLED IN HARDENED CONCRETE MEMBERS. A. ADHESIVE ANCHORS INSTALLED IN HORIZONTALLY OR UPWARDLY INCLINED ORIENTATIONS TO RESISTS SUSTAINED TENSION LOADS B. MECHANICAL ANCHORS AND ADHESIVE ANCHORS NOT DEFINED IN 4.A.	X -	- X	ACI 318: 17.8.4 ACI 318: 17.8.2	-
5. VERIFY USE OF REQUIRED DESING MIX.	-	X	ACI 318: 17.8.2	1904.1, 1904.2 1908.2, 1908.3
6. PRIOR TO CONCRETE PLACEMENT, FABRICATE SPECIMENS FOR STREGHT TEST, PERFORM SLUMP AND AIR CONTENT TEST, AND DETERMINE THE TEMPERATURE OF THE CONCRETE.	X	-	ASTM C172 ASTM C3 ACI 318: 26.5, 26.12	1904.1, 1904.2 1908.2, 1908.3
7. INSPECT CONCRETE AND SHOTCRETE PLACEMENT FOR PROPER APPLICATION TECHNIQUES	X	-	ACI 318: 26.5	1908.6, 1908.7 1908.8
8. VERIFY MAINTENANCE OF SPECIFIED CURING TEMPERATURE AND TECHNIQUES	-	X	ACI 318: 26.5.3, 26.5.5	1908.9
9. INSPECT PRESTRESSED CONCRETE FOR: A. APPLICATION OF PRESTRESSING FORCES; AND B. GROUTING OF BONDED PRESTRESSING TENDONS	X X	- -	ACI 318: 26.10	-
10. INSPECT ERECTION OF PRECAST CONCRETE MEMBERS	-	X	ACI 318: 26.9	-
11. VERIFY IN-SITU CONCRETE STRENGTH, PRIOR TO STRESSING OF TENDONS IN POST- TENSIONED CONCRETE AND PRIOR TO REMOVAL OF SHORES AND FORMS FROM BEAMS AND STRUCTURAL SLABS.	-	X	ACI 318: 26.11.2	-
12. INSPECT FORMWORK SHAPE, LOCATION AND DIMENSIONS OF THE CONCRETE MEMBER BEING FORMED	-	X	ACI 318: 26.11.2(b)	-

STRUCTURAL SHEET INDEX

STRUCTURAL CRITERIA

ANALYSIS ITEMS

IMPACT DESIGN PARAMETERS

ROCK FALL IMPACT LOAD	30,000 LBS (130 KN)
ROCKFALL FENCE TENSION FORCE	49,500 LBS (220 KN)
ROCKFALL FENCE COMPRESSION FORCE	45,000 LBS (200 KN)
ROCKFALL FENCE SHEAR FORCE	30,000 LBS (130 KN)

GENERAL NOTES

1. CONTRACTOR TO VERIFY ALL DIMENSIONS, SPANS, AND CONDITIONS WITH ARCHITECTURAL DRAWINGS. IF ANY OMISSIONS, MISTAKES, OR DISCREPANCIES ARE FOUND TO EXIST WITHIN THE CONSTRUCTION DRAWINGS, THE ENGINEER SHALL BE PROMPTLY NOTIFIED SO THAT HE MAY HAVE THE OPPORTUNITY TO TAKE WHATEVER STEPS NECESSARY TO RESOLVE THEM. FAILURE TO PROMPTLY NOTIFY THE ENGINEER OF SUCH CONDITIONS SHALL ABSOLVE THE ENGINEER FROM ANY RESPONSIBILITY FOR THE CONSEQUENCES OF SUCH A FAILURE.
2. IF DISCREPANCIES ARE FOUND, THE MORE STRINGENT SPECIFICATION SHALL BE FOLLOWED. CONTRACTOR RESPONSIBLE FOR ADEQUATE BRACING OF STRUCTURAL MEMBERS, WALLS, AND NON-STRUCTURAL ITEMS DURING CONSTRUCTION.
3. THE ENGINEER AND HIS CONSULTANTS DO NOT WARRANT OR GUARANTEE THE ACCURACY AND COMPLETENESS OF THE WORK HEREIN BEYOND A REASONABLE DILIGENCE. IF ANY OMISSIONS, MISTAKES, OR DISCREPANCIES ARE FOUND TO EXIST WITHIN THE WORK PRODUCT, THE ENGINEER SHALL BE PROMPTLY NOTIFIED SO THAT HE MAY HAVE THE OPPORTUNITY TO TAKE WHATEVER STEPS NECESSARY TO RESOLVE THEM. FAILURE TO PROMPTLY NOTIFY THE ENGINEER OF SUCH CONDITIONS SHALL ABSOLVE THE ENGINEER FROM ANY RESPONSIBILITY FOR THE CONSEQUENCES OF SUCH A FAILURE.
4. MANY PORTIONS OF THESE DRAWINGS, NOTES AND SPECIFICATIONS ARE THE RESULT OF DEMANDS BY VARIOUS APPROVING AGENCIES THAT MUST BE PERFORMED AS PART OF THIS WORK. ANY ACTIONS TAKEN WITHOUT THE KNOWLEDGE AND CONSENT OF THE ENGINEER SHALL BECOME THE RESPONSIBILITY NOT OF THE ENGINEER, BUT OF THE PARTIES RESPONSIBLE FOR MAKING THE CHANGE AND TAKING ACTION TO DO SO. ACTIONS TAKEN WITHOUT THE KNOWLEDGE AND CONSENT OF THE ENGINEER OR THE CONTRADICTION TO THE ENGINEER'S WORK PRODUCT, THE INTENT, AND/OR RECOMMENDATIONS, SHALL BECOME THE RESPONSIBILITY NOT OF THE ENGINEER, BUT OF THE PARTIES RESPONSIBLE FOR TAKING SUCH ACTION. THE ENGINEER SHOULD BE CONTACTED IN MATTERS OF ANY AND ALL CHANGES TO THE DRAWINGS AND SPECIFICATIONS HEREIN WITHOUT EXCEPTION.
5. NON STRUCTURAL FRAMING REQUIREMENTS ARE NOT SPECIFIED ON STRUCTURAL DRAWINGS. SEE ARCHITECTURAL DRAWINGS FOR ANY ADDITIONAL FRAMING REQUIRED.
6. CONTRACTOR SHALL ASSURE THAT ALL PRODUCTS AND HARDWARE ARE USED PER MANUFACTURER'S RECOMMENDATIONS.
7. CONTRACTOR SHALL PROVIDE NAME OF AN APPROVED FABRICATOR OR ICC EVALUATION REPORT FOR STEEL ROOF JOISTS, STEEL FLOOR JOISTS, AND STEEL DECKING TO BUILDING OFFICIAL FOR APPROVAL PRIOR TO CONSTRUCTION.
8. CONTRACTOR SHALL PROVIDE NAME OF AN APPROVED FABRICATOR FOR ALL FABRICATED STRUCTURAL COMPONENTS TO BUILDING OFFICIAL FOR APPROVAL PRIOR TO CONSTRUCTION.
9. CONTRACTOR SHALL PROVIDE NAME OF AN APPROVED SPECIAL INSPECTION AGENCY AND QUALIFICATION OF INDIVIDUAL TO BUILDING OFFICIAL FOR APPROVAL PRIOR TO CONSTRUCTION.
10. ALL LANDSCAPING AROUND THE HOME MUST BE GRADED AWAY FROM THE HOME AT A MINIMUM GRADE OF 5% FOR THE FIRST 10 FEET OR AS FAR AS POSSIBLE TO MINIMIZE WATER INFILTRATION INTO THE SUBGRADE.

MICROPILE FOUNDATION AND FLAT WORK NOTES

1. CONTRACTOR SHALL COMPLY WITH ALL RECOMMENDATIONS IN THE PROJECT SOILS REPORT#:
   AGEC PROJ. NO. 2201872 DATED APRIL 15, 2022.
   MICROPILE DESIGN PARAMETERS:
   MICROPILE GROUT COMPRESSIVE STRENGTH: f'c= 6000 PSI
   GROUT SPECIFIC GRAVITY RANGE 1.8 TO 1.9
   ACTIVE ZONE DEPTH = 10'-0".
   -REFER TO GEOTECHNICAL REPORT FOR SOIL FRICTION VALUES.
2. DRILLED MICROPILE HOLES SHALL BE PROPERLY CLEANED OF ALL LOOSE SOIL AND OTHER DELETERIOUS MATERIALS PRIOR TO PLACING CONCRETE.
3. THE GEOTECHNICAL ENGINEER SHALL BE PRESENT DURING DRILLING OF THE MICROPILE AND SHALL VERIFY THAT SOILS ARE AS ANTICIPATIED AT THE BOTTOM OF THE DRILLED HOLE.
4. CONCRETE SHALL BE PLACED IN THE MICROPILE THE SAME DAY THEY ARE DRILLED. IF CAVING OCCURS OR WATER ENTERS THE MICROPILE HOLES, CONCRETE MUST BE PLACED WITH A TREMMIE IMMEDIATELY AFTER THE MICROPILE HOLE DRILLING IS COMPLETED. FAILURE TO PLACE CONCRETE THE DAY OF DRILLING MAY REQUIRE REDRILLING FOR ADDITIONAL BEDROCK PENETRATION.
5. MICROPILE REINFORCING SHALL BE ASTM A615 GRADE 60 DEFORMED REINFORCING BARS UNLESS NOTED OTHERWISE.
6. CENTRALIZERS SHALL BE USED ON THE STEEL REINFORCING BAR AT APPROXIMATELY 8'-0" O.C. SPACING TO ENSURE APPROPRIATE GROUT COVER ON THE REINFORCING.
7. CONCRETE MICROPILE SHALL BE PLACED IN ONE POUR TO THE REQUIRED ELEVATIONS (BOTTOM OF GRADE BEAMS) SO NO CONSTRUCTION JOINTS ARE PRESENT IN THE MICROPILE.
8. CARE SHOULD BE TAKEN TO ASSURE DRILLED PIERS ARE NOT MUSHROOMED AT THE GROUND SURFACE.
9. GROUT SHALL BE PLACED WITH A TREMMIE EXTENDED TO NEAR THE BOTTOM OF THE DRILL HOLE TO ENSURE THE DRILL HOLE IS FILLED WITHOUT VOIDS. WATER TO CEMENT RATIO SHALL BE VERIFIED DURING CONSTRUCTION USING A GROUT SCALE. TO VERIFY THE GROUT HAS A SPECIFIC GRAVITY OF 1.8 GROUT VOLUME MUST BE RECORDED FOR EACH MICROPILE CONSTRUCTED.
10. CONTRACTOR TO FOLLOW ALL RECOMMENDATIONS IN THE PROJECT GEOTECHNICAL REPORT FOR SURFACE DRAINAGE, SUBSURFACE DRAINAGE, AND GRADING OF LOT AND AREAS AROUND THE STRUCTURE.
11. LAP CONTINUOUS REINFORCING BARS WITH CLASS B LAP SPLICE ACCORDING TO CONCRETE LAP SPLICE SCHEDULE. HOOK DISCONTINUOUS ENDS OF ALL TOP BARS WITH ACI STANDARD HOOKS.
12. REINFORCING COVER SHALL BE AS FOLLOWS:
    CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH (EXCEPT SLABS).....3"
    CONCRETE EXPOSED TO EARTH OR WEATHER BUT PLACED IN FORMS.....2"
    CONCRETE SLABS.....IN CENTER OF SLAB

HEDMAN ENGINEERING
216 W. ST GEORGE BLVD STE. 203 , ST. GEORGE,UTAH 84770
PH: 435-313-4182 EMAIL: JEFF@HEDMANENGINEERING.COM

PROJECT NAME
SOLEIL RIDGE ROCKFALL FOUNDATION

PROJECT ADDRESS
ST. GEORGE, UTAH

PROJECT NUMBER
22113

CLIENT
AGEC

NO.	REVISION
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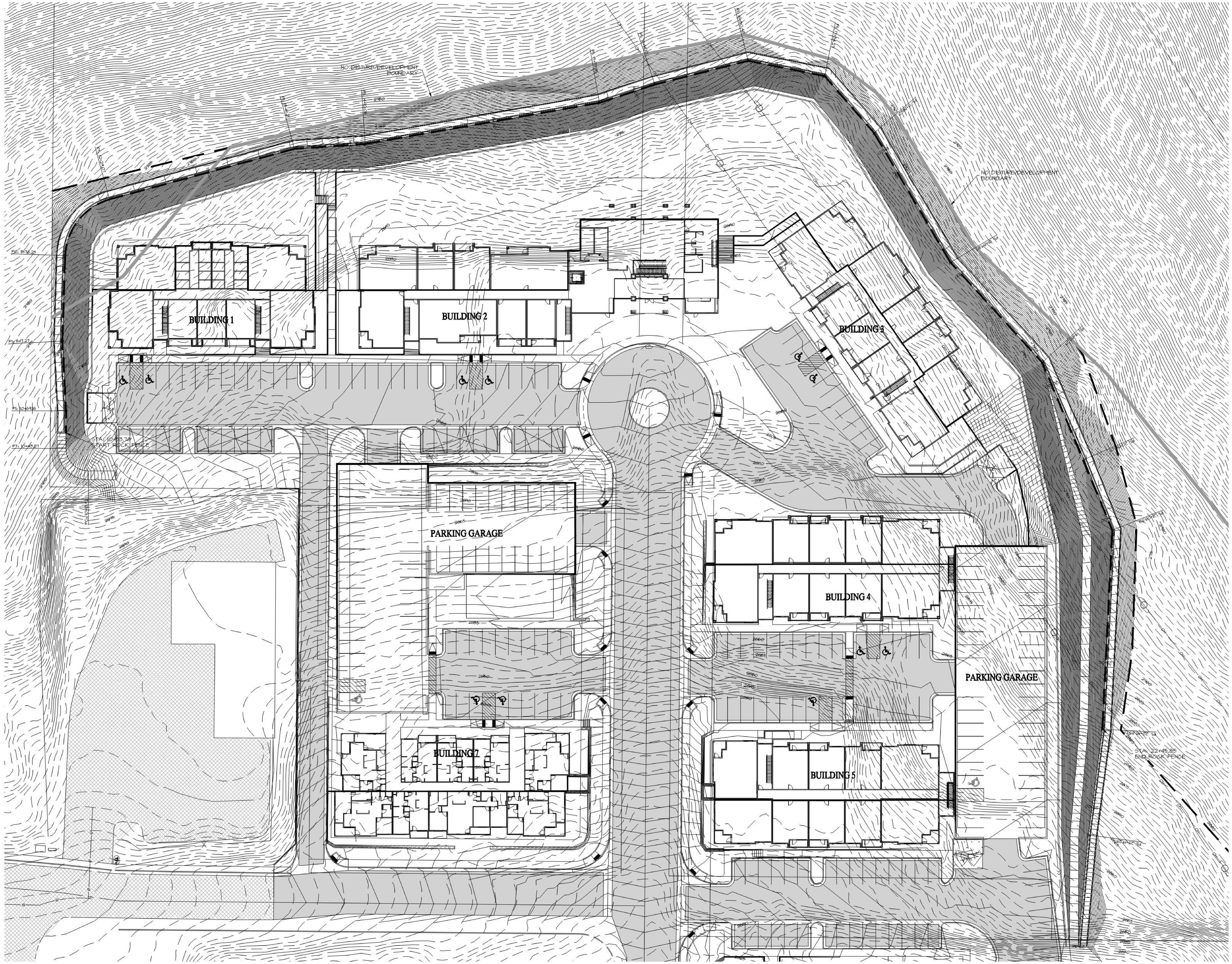
REGISTERED PROFESSIONAL STRUCTURAL ENGINEER
#5338635
JEFF M. HEDMAN
STATE OF UTAH
04/26/22

DRAWN BY:
RDB

SHEET TITLE
PROJECT NOTES AND SPECIFICATIONS

SHEET
S0.0



HEDMAN ENGINEERING

216 W. ST.GEORGE BLVD STE. 203 , ST. GEORGE,UTAH 84770
PH: 435-313-4162 EMAIL: JEFF@HEDMANENGINEERING.COM

PROJECT NAME
SOLEIL RIDGE ROCKFALL FOUNDATION

PROJECT ADDRESS
ST. GEORGE, UTAH

PROJECT NUMBER
22113

CLIENT
AGEC

NO.	REVISION
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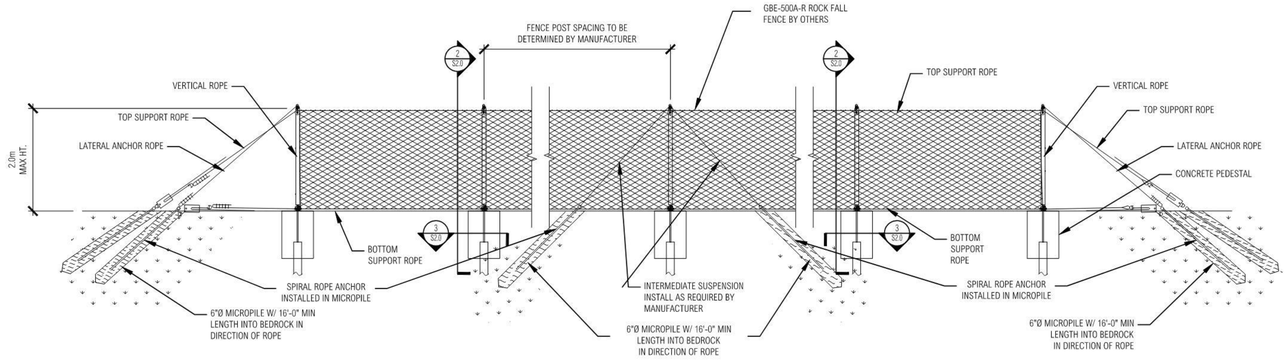
PROFESSIONAL STRUCTURAL ENGINEER
#5338635
JEFF M. HEDMAN
STATE OF UTAH

DRAWN BY:
RDB

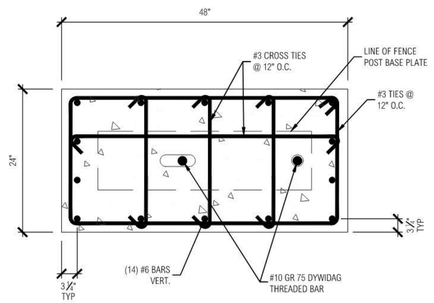
SHEET TITLE
SITE PLAN

SHEET
S1.0



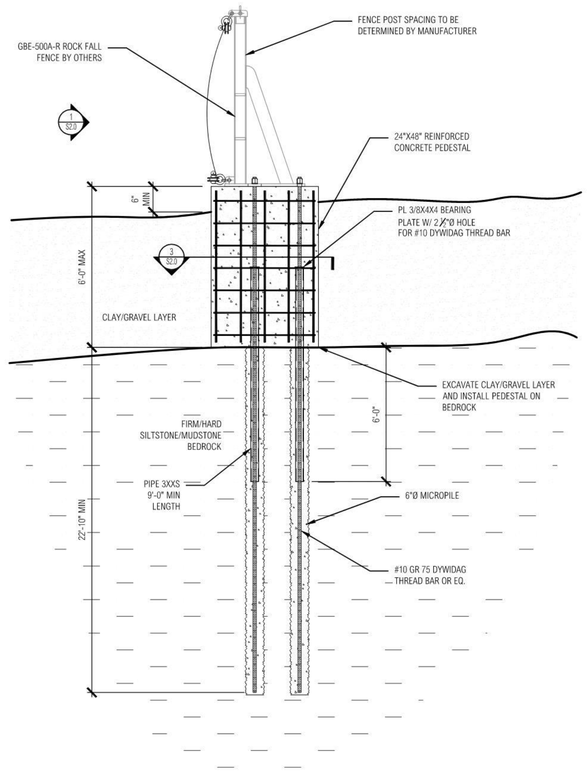
1 S2.0 ROCK FALL FENCE TYPICAL ELEVATION

SCALE: NTS



3 S2.0 REINFORCED CONCRETE PEDESTAL

SCALE: 1"=1'-0"



2 S2.0 ROCK FENCE POST FOUNDATION PLAN

SCALE: 3/8"=1'-0"

HEDMAN ENGINEERING
216 W. ST GEORGE BLVD STE. 203 . ST. GEORGE,UTAH 84770
PH: 435-313-4192 EMAIL: JEFF@HEDMANENGINEERING.COM

PROJECT NAME
SOLEIL RIDGE ROCKFALL FOUNDATION

PROJECT ADDRESS
ST. GEORGE, UTAH

PROJECT NUMBER
22113

CLIENT
AGEC

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PROFESSIONAL STRUCTURAL ENGINEER
#5338635
JEFF M. HEDMAN
STATE OF UTAH
4/18/22

DRAWN BY:
RDB

SHEET TITLE
FOUNDATION PLAN

SHEET
S2.0

EXHIBIT F

When Recorded Return to:
City of St. George
Attn: Legal Department
175 East 200 North
St. George, Utah 84770

Parcel No. _____

ATTAINABLE HOUSING AGREEMENT

This Attainable Housing Agreement (the "Agreement") is made by and between Soleil Ridge Partners, LLC, a Utah limited liability company (herein "Developer"), and the City of St. George, a municipal corporation and political subdivision of the State of Utah (herein "City") and shall be effective as of the last date of signature below ("Effective Date"). Developer and the City are each referred to below as a "party" and collectively as the "parties."

RECITALS

A. Developer is the owner of certain real property located in St. George, Utah, identified as Soleil Ridge (the "Property"), a multi-family residential project which contains seven (7) attainable housing units ("Unit" or "the Units").

B. In conjunction with this Agreement, the City has approved a Development Agreement ("DA") with the condition that four (4) of the Units be rented at a rental rate that is affordable to households earning 80% or below of the Area Median Income for St. George Utah MSA[4] ("AMI"), and three (3) Units rented at a rental rate that is affordable to households earning 60% or below of the AMI.

C. The City further requires that Developer enter into this agreement with the City to establish qualifications for and conditions of use of the Units and to monitor compliance of the Units;

AGREEMENT

NOW THEREFORE in consideration of the terms and conditions set forth hereinafter, it is agreed as follows:

1. **Definitions**:

1.1 "**Area Median Income (AMI)**": AMI, calculated annually by HUD, is the "middle" number of all of the incomes in St. George, Utah, with 50% of individuals in Summit City making more than that amount, and 50% making less than that amount. For purposes of this Agreement, AMI shall be rounded to the nearest tenth (for example, if the calculated AMI is 64%, it shall be

[4] FY 2022 MTSP IL Documentation System -- Summary for St. George, UT MSA (huduser.gov)

rounded down to 60%; if the calculated AMI is 65%, it shall be rounded up to 70%, and so forth).

1.2 "**Next Available Unit Rule**" means, with respect to the required number of Units, whenever there are fewer Units available than required under this Agreement, the next market rate unit of the same or larger size that becomes vacant will be designated and made available for lease as the appropriate Unit as applicable.

2. **Income Qualifications**: Units may be rented to individuals or households based upon the tables shown in Exhibit A to this Agreement, which tables shall be updated annually and agreed to by the City. In addition to the income qualifications, allowed rental rates and Waterfall requirements (Section 5 below) shall be reviewed annually to ensure compliance and continued qualification.

2.1 Process: Income qualification shall adhere the following process:

a. Determine the number of adults and children (all household members) to occupy the available Unit.

b. Collect either 1040 Federal Tax Returns for the most recent year (or "transcript of tax returns" issued by the Internal Revenue Service) or current pay stub for all household members generating income.

c. Add together the adjusted gross income for all household members to determine the total household income.

d. Review Exhibit C to determine whether total household income is greater or less than the income of a family of the same size earning 80% AMI.

2.2 "Over" Income: When the income of any household within a Unit exceeds 100% of the current AMI, the Unit shall be converted into a market rate unit with no rental price restrictions and another Unit or Units shall be made available for rental under this Agreement to ensure the required seven (7) Units are in use.

3. **Maximum Permitted Rents**: The maximum permitted rents shall be based on the household size, the household size's gross income and the number of bedrooms in the unit. Permitted monthly rents shall not exceed those found in the table in Exhibit A to this Agreement. Household size corresponds to the number of bedrooms in the Units as follows:

- Studio unit: use the income limit for a one-person household.
- One-bedroom unit: use the income limit for a two-person household.

- Two-bedroom unit: use the income limit for a three-person household.
- Three-bedroom unit: use the average income limit for a four person household

3.1 The maximum permitted rental amount shall be inclusive of the following:

a. Use and occupancy of the Unit and the associated land and facilities;

b. Any separately charged fees and service charges assessed by Developer, which are required by all tenants but does not include security deposits;

c. Unless subject to Section 4 below, utilities including garbage collection, sewer, water, electricity, gas and other heating, cooking, and refrigeration fuels but not to include telephone service, cable television, or high-speed modem; and

d. Possessory interest taxes or other fees and charges assessed for use of the associated land and facilities by a public or private entity other than Developer.

4. **Utility Allowance**: If the Unit tenant separately pays all or some of the utilities, fees, or costs which are to be included in the Maximum Permitted Rent, an allowance shall be determined, and maximum rents identified in Exhibit A to this Agreement shall be reduced by the amount of the allowance. The allowance shall initially be determined by a qualified third-party rater who shall estimate charges for garbage collection, sewer, water, electricity, gas and other heating, cooking, and refrigeration fuels as well as any applicable fees for each Unit based upon a complete set of building plans presented to him or her by Developer. The City shall approve the third-party rater and the allowance. In subsequent years, commencing in the year following the first complete year of occupancy, Developer shall provide copies of actual billings for utility providers and actual fees for at least five occupied Units of varying size to the City so that a new annual utility allowance can be determined and set.

5. **Employment Priorities (Waterfall Provision)**: It is the public policy of the City to house employees as close to the workplace as possible, thereby reducing traffic and congestion. Since Developer is providing on-site attainable housing, occupancy of such housing shall be on a priority basis as follows:

a. First Priority: Individuals and households meeting income limits with at least one person employed by a business located within the City.

b. Second Priority: Individuals and households meeting income limits with at least one person employed at a business located within Washington County.

c. Third Priority: Individuals and households meeting income limits.

6. **Marketing.** Developer will prepare and implement a marketing plan for the Units ("Marketing Plan") which complies with the applicable Waterfall Provisions (defined below) and is approved by the City.

7. **Reporting and Compliance**: Developer shall provide a monthly rent roll showing each tenants' name, Unit occupied, rent charged, household gross income, name and location of employment, term of lease and other information related to eligibility annually and as may be requested by the City from time-to-time. All lease terms shall be for a minimum of ninety (90) days or more. Use of any Unit for nightly or short-term (less than 90 days) rental is strictly prohibited. The City shall have the right to audit Developer's tenant files at least annually upon ten days advanced written notice to Developer.

8. **Monitoring and Stewardship Fee**: Commencing at the time the first certificate of occupancy is issued and annually thereafter Developer shall pay the sum of $500.00 to the City as a monitoring and stewardship fee. The amount shall increase 3% annually thereafter without notice and continuing until expiration of the DA.

9. **Parking**: Each Unit shall comply with City parking standards.

10. **Condominium Conversion**: In the event Developer desires to convert the Units to for-sale condominiums, this Agreement shall be amended and a deed restriction for each converted Unit shall be required to preserve the housing as attainable.

12. **Exhibits**: The parties understand and agree that Exhibit A to this Agreement are based upon 2022 HUD AMI which is annually updated by the Department of Housing and Urban Development and as such Exhibit A shall be amended annually to reflect changes in AMI and maximum permitted rents.

13. **Term**: The term of this Agreement shall be the same as the DA.

14. **Recordation of Agreement**: Upon execution, this Agreement shall be recorded as an exhibit to the DA in the office of the Recorder of Washington County, Utah.

15. **Notices**: All notices required to be sent under this Agreement shall be sent to:

City:

City Manager
St. George City Hall
175 East 200 North
St. George, Utah 84770

Developer:

Soleil Ridge Partners, LLC
Attn: Matthew Smoot
710 Brentwood Lane
North Salt Lake, Utah 84054

With a copy to:	*With a copy to:*
City Attorney St. George City Hall 175 East 200 North St. George, Utah 84770	Matthew J. Ence Snow Jensen & Reece, PC 912 West 1600 South, Suite B200 St. George, UT 84770

16. **Entire Agreement**: This Agreement represents the entire agreement between the parties and shall only be amended or modified by a written agreement signed by the parties hereto.

17. **Binding Agreement**: This Agreement shall be binding upon the successors and assigns of the parties hereto. Either party may assign its rights and obligations under this Agreement with 30-days advance written notice to the other party.

IN WITNESS WHEREOF, the parties have caused duplicate originals of this Agreement to be signed by the parties' respective duly authorized officers.

CITY OF ST. GEORGE

Attest:

_____ _____

Michele Randall, Mayor Christina Fernandez, City Recorder

Approved as to form:

_____

Jami R. Brackin, Deputy City Attorney

STATE OF UTAH)
ss.
COUNTY OF WASHINGTON)

On the _____day of _____, 2023, personally appeared before me Michele Randall who being duly sworn, did say that she is the Mayor of St. George City and the foregoing instrument was signed on behalf of the City for the uses and purposes set forth herein.

_____

Notary Public

EXHIBIT F

SOLEIL RIDGE PARTNERS, LLC

_____
By:
Its:

Approved as to form:

_____
Attorney for Soleil Ridge Partners, LLC

STATE OF UTAH)
ss.
COUNTY OF WASHINGTON)

On the _____day of _____, 2022, personally appeared before me _____, who being duly sworn, did say that he/she is the _____ of Soleil Ridge Partners, LLC, and the foregoing instrument was signed on behalf of said company for the uses and purposes set forth herein.

_____
Notary Public

EXHIBIT A TO THE HOUSING AGREEMENT

2022 INCOME QUALFICATION TABLE[5]

St George AMI = $83,900	50% AMI	60% AMI	70% AMI	80% AMI	100% AMI
1 person	$29,050	$34,860	$40,670	$46,480	$58,730
2 person	$33,200	$39,840	$46,480	$53,120	$67,120
3 person	$37,350	$44,820	$52,290	$59,760	$75,510
4 person	$41,450	$49,740	$58,030	$66,320	**$83,900**
5 person	$44,800	$53,760	$62,720	$71,680	$90,612
6 person	$48,100	$57,720	$67,340	$76,960	$97,324

2023 MAXIMUM PERMITTED MONTHLY RENTS INCLUDING UTILITIES BY MEDIAN INCOME
(AMI*30%/12)

Number of Bedrooms	Household Size	50% AMI	60% AMI	70% AMI	80% AMI	100% AMI
0	1	$726.25	$871.50	$1,016.75	$1,162.00	$1,468.25
1	2	$830.00	$996.00	$1,162.00	$1,328.00	$1,678.00
2	3	$933.75	$1,120.50	$1,307.25	$1,494.00	$1,887.75
3	4+	$1,036.25	$1,218.50	$1,450.75	$1,658.00	$2,097.50

[5] FY 2022 MTSP IL Documentation System -- Summary for St. George, UT MSA (huduser.gov)

St.George
Community Development

Item 1B
Hillside Permit

HILLSIDE REVIEW BOARD AGENDA REPORT: **08/18/2021**
PLANNING COMMISSION AGENDA REPORT: **09/28/2021 (Continued)**
PLANNING COMMISSION AGENDA REPORT: **06/13/2023 (Continued)**
PLANNING COMMISSION AGENDA REPORT: **06/27/2023**

HILLSIDE DEVELOPMENT PERMIT
Soleil Ridge
Case No. 2021-HS-007

Request: Consider approval of a Hillside Development Permit for "Soleil Ridge"

Location: The property is generally located west of Bluff Street at approximately 300 West and 900 South.

Proposed: The property is proposed to be developed into a multi-family residential project.

2023 Update: The hillside permit request in its current for was first heard by the Hillside Review Board in August of 2021. After it reached Planning Commission, several questions about the rockfall adjacent to the proposed project. The applicant is proposing a fencing component that is new to the city (see Exhibit H attached to this staff report). Staff has worked with the applicant to create a development agreement that will allow the use of this fencing which is being reviewed separately but in conjunction with this permit and a zoning map amendment.

Background: The City Council has approved a number of amendments to change a portion of OS (Open Space) and COM (Commercial) land use designations to HDR (High Density Residential) and areas of OS (Open Space) to COM (Commercial). The applicant intends to submit a zone change application after the hillside permit process. The applicant will need to submit all requirements for the zone change prior to being put on an agenda.

Owner: Soleil Ridge Partners, LLC

Applicant: Wasatch Commercial Builders

Geological Hazards: AGEC has provided a letter dated January 6, 2020, titled "Geological Hazard Assessment" and it was submitted with the hillside application. The hazards discussed in the letter include: 1) Rockfall Evaluation, 2) Landslide Evaluation, 3) Debris Flow, and 4) Fault Rupture

Geotech: Produced by AGEC, July 1, 2020, is attached to this report.

Drainage: A preliminary drainage study prepared by Rosenberg Associates and dated July 27, 2021; Job # 191258 was submitted with the hillside application.

Current Zoning: The current zoning on the property is primarily C-2. There is a small sliver of OS (Open Space) designated at the top of the bluff as well. Now that the General Plan amendment was approved by council, zoning will have to be changed in the future to conform to how the applicant would like to develop the property.

General Plan: The General Plan Land Use Map is HDR and Open Space.

Area: The area is just approximately 16 acres.

Surrounding: The surrounding properties to the south and east are commercial businesses. Properties to the north and west are currently undeveloped hillside.

Powers & Duties: Section 10-13A-8(B)(1) of the "Hillside Review Board Powers and Duties" states that the hillside board can make recommendations to "adopt, modify or reject a proposal" to the Planning Commission (PC).

Permit required: Section 10-13A-7 requires that all major development (i.e., cut greater than 4', etc.) on slopes above 20% requires a 'hillside development permit' granted by the City Council upon recommendation from the Hillside Review Board and the Planning Commission.

Applicable Ordinance(s):
(Selected portions)

10-13A-1: Density and Disturbance Standards

A. The hillside development overlay zone (HDOZ) limits development densities and provides specific development incentives to transfer underlying zone densities from hillsides (sending areas), to less steep slopes or more safe development areas (receiving areas), within a development.

Percent Natural Slope	Dwelling Units (DU) / Acre
0-19	See underlying zone
20-29	2 DU/acre provided the units are clustered on 30 percent (30%) or less of the land area within this slope category. 70 percent of this slope category shall remain undisturbed. The 70 percent area is based upon the overall area/development rather than per lot. Also see subsections A1, A2, and A3 of this section.

30-39	1 DU/10 acres provided no more than 5 percent (5%) of the site is disturbed, and 95 percent of the site remains undisturbed. If the cumulative area is at least 1 acre but less than 10 acres, the cumulative area shall be allowed 1 DU.
40	Development is not permitted (0%), **except** as provided for in subsection A2 of this section.

10-13A-2: Slope and Slope Areas Determined

A. Slope shall be determined for each significant portion of a development parcel.

B. *Procedure:* The applicant shall map the location of the natural slope by using the following procedure:

1. *Preparation of Contour Maps:* The applicant shall submit an accurate, current contour map, prepared and certified by a licensed professional engineer or surveyor, which shows all land contours at intervals no greater than five feet (5'), drawn at a one-inch equals one hundred feet (1" = 100') scale maximum.

2. *Verification through Field Surveys:* The city engineer or designee may require the applicant to submit a field survey to verify the accuracy of the contour map.

C. *Determination of Slope Areas:* Using the contour map, natural slopes shall be calculated using points identified as natural slopes of twenty percent (20%), thirty percent (30%), and forty percent (40%), and shall be located on the contour map and connected by a continuous line. That area bounded by said lines and intersecting property lines shall be used for determining project density. Small washes or outcrops, which have slopes distinctly different from surrounding property, and are not part of the contiguous topography, may be excluded from the slope determination.

Staff Comments: The Hillside Review Board has recommended approval of the hillside permit. The permit request now advances forward to the Planning Commission (PC) for review and recommendation and then on to the City Council (CC) for approval or denial.

1. Hillside Permit - A hillside permit is required per ordinance and the HSRB will make recommendations to the PC & CC.
2. Zoning – Currently the zoning is C-2 and OS, but the applicant will have to approach the city council with a zone change request in order to proceed with the development.
3. Development – It's proposed to grade the area as presented.

4. Geotechnical Investigation – All earthworks shall comply with the recommendations and mitigations presented in Geotech Report.
5. Drainage – Drainage shall comply with the Drainage Study by Rosenberg Associates dated July 27, 2021.
6. Grading Permit - If approved, the applicant will work with staff for submittal of a Grading Permit with the required accompanying civil engineering plan set (for plan review).

Example Motion: I move we forward a positive recommendation to the City Council for the Soleil Ridge Hillside Permit as recommended by the Hillside Review Board (HSRB) along with the conditions from the HSRB.

HSRB Conditions: The Hillside Review Board held a public meeting on August 18, 2021, regarding this request and issued a recommendation for approval with the following conditions:

1. They need a detailed final Geotechnical Report that addresses the rockfall mitigation plan, provides the slope detail on maximum stable slopes and protection against erosion or disturbance.
2. They address the mapped landslide on the south side of the project if it's actually on the project or not.
3. The drainage be accounted for at the top of these rock disturbed area and sloped walls.
4. A provision must be provided to clean out the drainage at the bottom of the walls so those don't get clogged up and not function all the time.
5. A provision to maintain unravelling of the slopes and have access to the slopes should that condition occur.
6. We recommend that they look at building three and try to either steepen the slope or adjust the location of the building so that the disturbance line behind building three matches the existing disturbance line or closely matches the disturbance line.

Exhibit A

Applicant Narrative

SOLEIL RIDGE

A Planned Luxury Apartment Community at 250 West 900 South, St. George, Utah

1.0 INTRODUCTION

Soleil Ridge, a luxury community located in the epicenter of the City of St. George, Utah. Designed to provide a premium living experience for Southern Utah's growing population that encompasses apartments homes and best-in-class amenities. Nestled at the base of Tech Ridge, Soleil Ridge features eco-friendly solar powered resources that offsets the impact on the community. The property meets the growth demands of the area by creating housing for the up-and-coming Tech Ridge development with 223 multi-family units.

The total property area is approximately 19.2 acres, of which it is anticipated that approximately 9.3 acres will be developed with this project. This leaves approximately 9.9 acres of the property undeveloped, most of which is in hillside areas.

2.0 USE OF LAND

2.1 Historic Use

The property was originally subdivided into blocks and lots in 1946 as the Worthen Subdivision. This subdivision was later amended and extended as the 1948 Addition to Worthen Subdivision and extended again in 1955. The lots were sold off and used primarily for corrals and sheds. Lots were graded and terraced to accommodate these uses. There is evidence of much activity and disturbance to the area as shown in 1965 and 1974 aerial photos. Refer to the appendix at the end of this narrative for these exhibits.

2.2 Existing Ground Slope Breakdown

Rosenberg Associates generated a slope analysis map utilizing Autodesk AutoCAD software programs, following the requirements outlined in the City of St. George Municipal Code, Chapter 13A, also known as the "Hillside Ordinance". The ordinance requires that slope maps show areas with the following slope categories:

- Flatter Terrain: Includes all terrain area within the property that has a slope equal to or less than 20%.
- Twenty-Thirty Percent (20-30%): Includes all natural terrain areas within the property that has a slope greater than 20%, but equal to or less than 30%.
- Thirty-Forty Percent (30-40%): Includes all natural terrain areas within the property that

has a slope greater than 30%, but equal to or less than 40%.

- Forty Percent (40%): Includes all natural terrain areas within the property that has a slope greater than 40%.

The slope analysis summary in Table 1 is based on the existing slopes with the terraced areas being broken out separately. Areas are summarized in Table 1:

TABLE 1 – SUMMARY OF EXISTING GROUND SLOPE MAP

CATEGORY	MIN SLOPE	MAX SLOPE	AREA	
Flatter Terrain	Flat	20.00	251,342 sq ft	5.77 acres
Twenty-Thirty Percent (20-30%)	20.01%	30.00%	67,083 sq ft	1.54 acres
Thirty-Forty Percent (30-40%)	30.01%	40.00%	71,003 sq ft	1.63 acres
Forty Percent (40%)	40.01%	Vertical	346,739 sq ft	7.96 acres
Terrace Slopes	40.01%	Vertical	96,704 sq ft	2.22 acres

This property was previously presented to the Hillside Review Committee in the summer of 2020 as *The Cove*. As part of that review, a previously disturbed hillside line was established. Using the previously disturbed line with the assumption that area west of the line is natural slopes and area east of the line is disturbed non-natural slopes, a slope analysis was prepared. The slope analysis summary in Table 2 shows disturbed slope areas as a separately broken out area. Areas are summarized in Table 2:

TABLE 2 – SUMMARY OF EXISTING GROUND SLOPE MAP

CATEGORY	MIN SLOPE	MAX SLOPE	AREA	
Flatter Terrain	Flat	20.00	246,115 sq ft	5.65 acres
Twenty-Thirty Percent (20-30%)	20.01%	30.00%	9,583 sq ft	0.22 acres
Thirty-Forty Percent (30-40%)	30.01%	40.00%	33,541 sq ft	0.77 acres
Forty Percent (40%)	40.01%	Vertical	286,626 sq ft	6.58 acres
Previously Disturbed Slopes	20.01%	Vertical	252,213 sq ft	5.79 acres

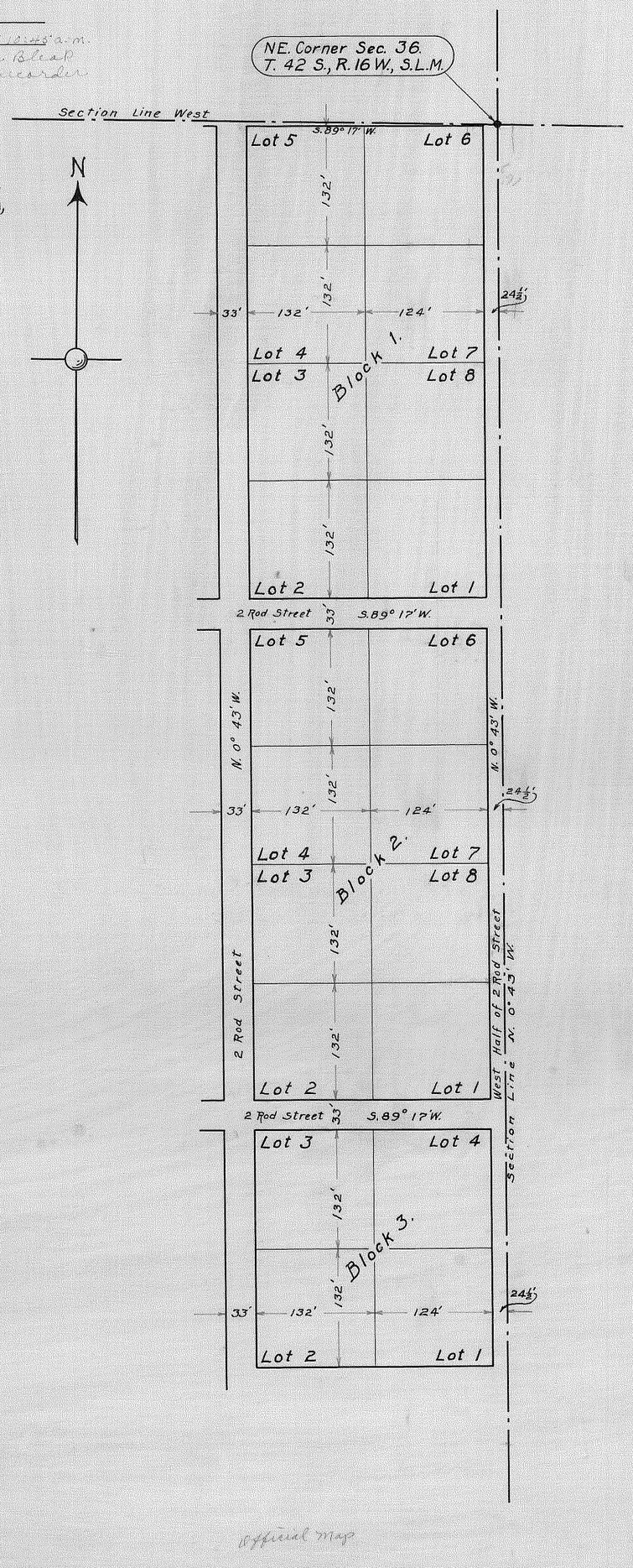
As part of the Hillside Review Application, an existing ground slope map was submitted. Refer to this map for data on proposed disturbance areas.

Entry No. 66477
Filed April 23, 1946 at 10:45 a.m.
Helen Bleak
Recorder

MAP OF
WORTHEN SUBDIVSION.

Located in the East half of the Northeast Quarter of Section 36, Township 42 South, Range 16 West, S. L. M.

Scale, 1 inch = 100 feet.



I, B. L. Kenworthy, a civil engineer, do hereby certify that this map is drawn to the designated scale from field notes of a survey made by me on the 9th day of March, 1946.

B. L. Kenworthy
Engineer.

I, Vernon Worthen, owner of the land shown in this map, do hereby approve this map and do hereby dedicate all streets shown thereon to the public use.

Vernon Worthen

State of Utah. S.S.
County of Washington.

Personally appeared before me on this 19 day of April 1946 Vernon Worthen, who duly acknowledged to me that he is the person who executed the foregoing instrument.

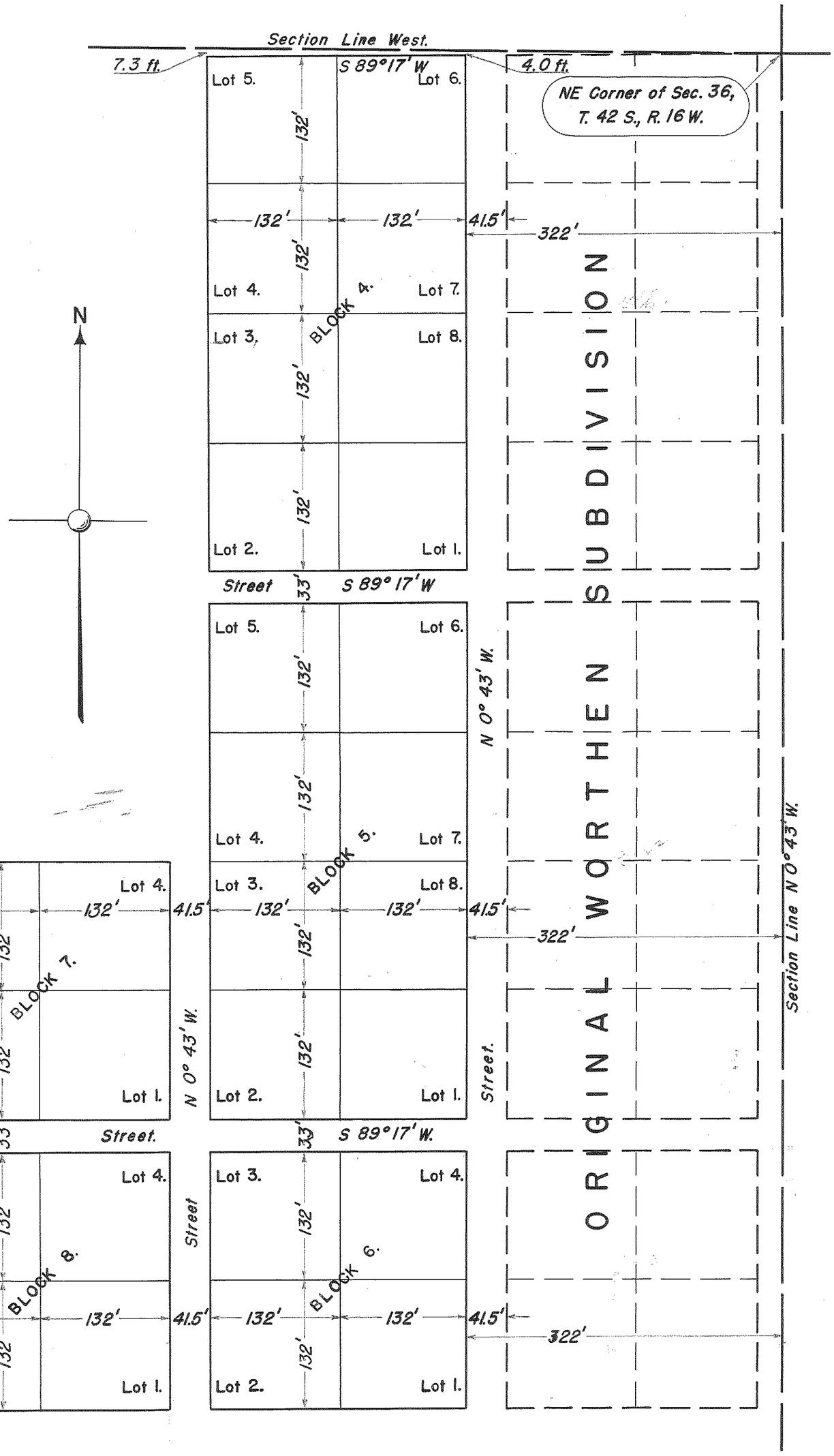
Notary Public.

Approved by action of the county commissioners of Washington County, Utah, this 9th day of April, 1946.

Evan J. Woodbury
Chairman.

Attest: Alice Pendleton
Clerk.

Official Map



I, B. L. Kenworthy, a civil engineer, do hereby certify that this map is drawn to the designated scale from the field notes of a survey made by me on the 2nd and 3rd days of January, 1948.

B. L. Kenworthy
SURVEYOR.

I, Vernon Worthen, owner of the land shown in this map, do hereby approve this map and do hereby dedicate all streets shown thereon to the public use.

Vernon Worthen

STATE of UTAH.
COUNTY of WASHINGTON. ss.

Personally appeared before me on this 6 day of February, 1948, Vernon Worthen, who duly acknowledged to me that he is the person who executed the foregoing instrument.

My Comm. Expires June 19, 1951

Maxwell Bentley
NOTARY PUBLIC.

Approved by action of the Board of Washington County Commissioners this 3rd day of February, 1948.

Attest:
Maxwell Bentley, Clerk

Evan J. Woodbury
Evan J. Woodbury, Chairman

ENTRY No. 51164
FILED February 6, 1948 5 P.M.
Helen Black
Co. Recorder

MAP
OF
1948 ADDITION TO WORTHEN SUBDIVISION
IN
E 1/2, NE 1/4, SEC. 36, T. 42 S., R. 16 W.
WASHINGTON COUNTY, UTAH.

Scale, 1 inch = 100 feet.

1974

Legend

Parcels

Ownership

- U.S. Forest Service
- U.S. Forest Service Wilderness
- Bureau of Land Management
- Bureau of Land Management Wilde
- National Park Service
- Shivwits Reservation
- Utah Division of Wildlife Resources
- Utah Division of Transportation
- State Park
- State of Utah
- Washington County
- Municipally Owned
- School District
- Privately Owned
- Water
- Water Conservancy District
- State Assessed Oil and Gas
- Mining Claim

Notes

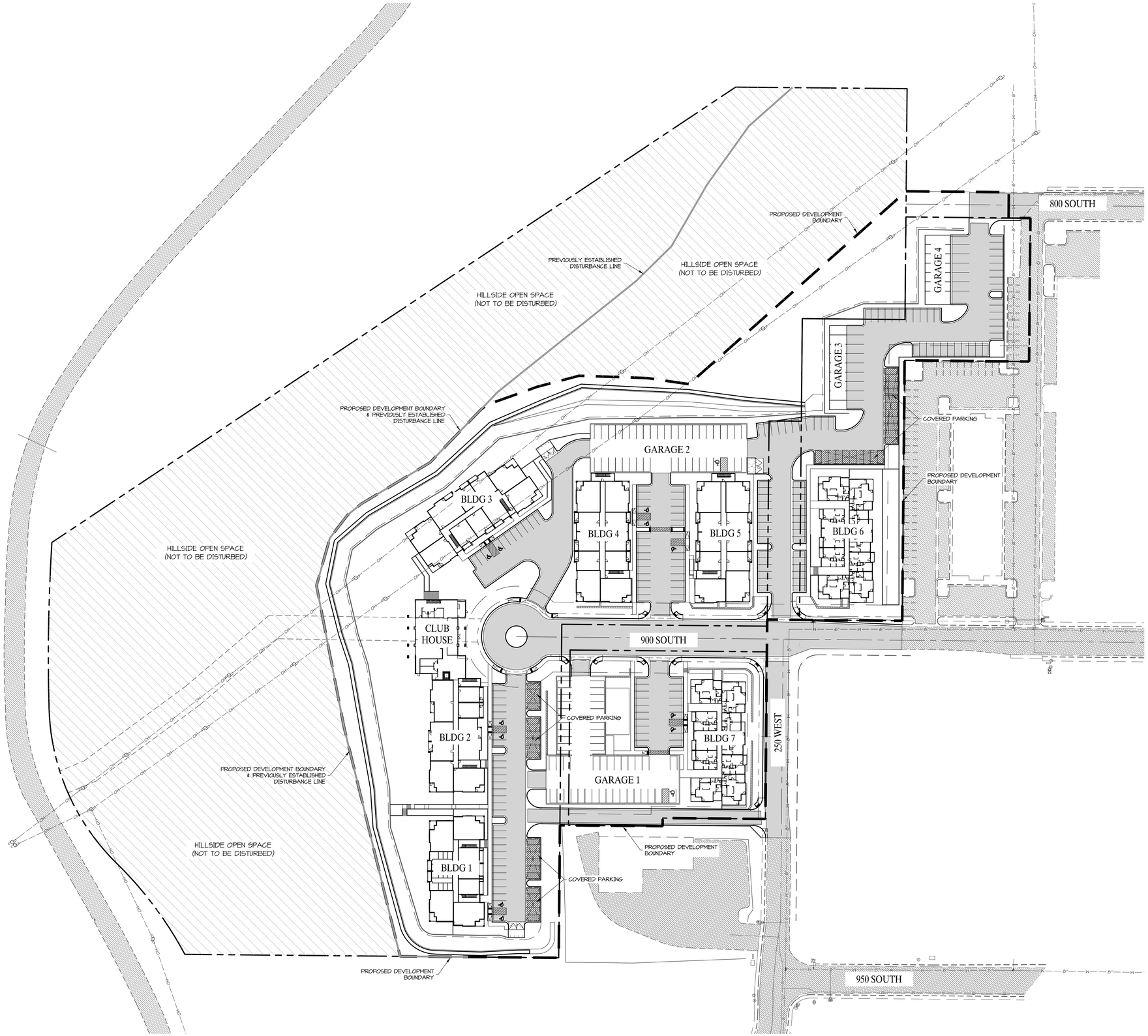
752.3 0 376.17 752.3 Feet

WGS_1984_Web_Mercator_Auxiliary_Sphere

DISCLAIMER: The information shown on this map was compiled from different GIS sources. The land base and facility information on this map is for display purposes only and should not be relied upon without independent verification as to its accuracy. Washington County, Utah will not be held responsible for any claims, losses or damages resulting from the use of this map.

Exhibit B

Proposed Site Plan



SITE DATA

TOTAL PROJECT AREA: 858,871 SF/19.72 AC

DEVELOPED AREA: 450,671 SF/10.34
OPEN SPACE AREA: 408,200 SF/9.38 AC

IMPROVEMENTS WITHIN DEVELOPED AREA:

BUILDING (FOUNDATION):	80,786 SF	(17.9%)
PARKING STRUCTURES & GARAGES:	35,706 SF	(7.9%)
ON-SITE HARDSCAPE:	110,902 SF	(24.6%)
(INCLUDES: PARKING, DRIVE AISLE, SIDEWALK, CURB & GUTTER)		
PUBLIC STREET:	29,038 SF	(6.4%)
LANDSCAPE:	135,178 SF	(30.0%)
CUT SLOPE:	59,076 SF	(13.2%)

LANDSCAPING CALCULATIONS

LANDSCAPE REQUIRED:
30% OF TOTAL DEVELOPED AREA: (135,203 SF)
5% OF PARKING AREA: (7,232 SF)
(PARKING LANDSCAPE INCLUDED WITHIN 30% REQUIREMENT)

LANDSCAPE PROVIDED:

DEVELOPED AREA:	126,450 SF	(28.0%)
PARKING AREA:	8,728 SF	(6.0%)

PARKING CALCULATIONS

GENERAL REQUIREMENT: 2 STALLS PER LIVING UNIT (1 MUST BE COVERED)
PLUS 1 GUEST STALL PER 3 UNITS

TOTAL LIVING UNITS: 223
REQUIRED PARKING: 520 (2.33 STALLS PER UNIT)

TOTAL A.D.A. PARKING STALLS REQUIRED (I.B.C., 2010)(501-1000): 10
TOTAL VAN ACCESSIBLE STALLS REQUIRED (I.B.C., 2010)(501-1000): 2

TOTAL A.D.A. PARKING STALLS PROVIDED: 13 (INCL. VAN)

COVERED PARKING BREAKDOWN:

SURFACE:	42
GARAGE 1 (LEVEL 1):	44
GARAGE 1 LEVEL 2):	53
GARAGE 2 (LEVEL 1):	41
GARAGE 2 (LEVEL 2):	34
GARAGE 3:	9
GARAGE 4:	7

COVERED PARKING PROVIDED: 240

TOTAL PARKING STALLS REQUIRED: 520 (2.33 STALLS PER UNIT)
TOTAL PARKING PROVIDED: 518 (2.32 STALLS PER UNIT)

DATE: 11/01/2021
JOB NO.: 12560-21
DESIGNED BY: FMD
CHECKED BY: RAR
DWG: PD SITE
DATE
REVISIONS

ROSENBERG ASSOCIATES
CIVIL ENGINEERS • LAND SURVEYORS
352 East Riverside Drive, Suite A-2
St. George, Utah 84790
Ph (435) 673-8586 Fx (435) 673-8397
www.racivil.com

SITE PLAN
FOR
SOLEIL RIDGE
ST. GEORGE, UT.

SHEET
1
1 OF 1 SHEETS

Exhibit C

Slope Map

PREVIOUSLY ESTABLISHED DISTURBANCE LINE

PREVIOUSLY ESTABLISHED DISTURBANCE LINE

PREVIOUSLY ESTABLISHED DISTURBANCE LINE

PREVIOUSLY ESTABLISHED DISTURBANCE LINE

COLOR	PERCENT NATURAL SLOPE	TOTAL ACREAGE	ALLOWED DISTURBANCE AREA/PERCENTAGE	PROPOSED DISTURBANCE ACREAGE	PROPOSED DISTURBANCE PERCENTAGE	ALLOWED DU/AC	CALCULATION (ALLOWED UNITS PER ACRE)
	0% - 20%	5.65	100% (5.65 AC.)	5.65	100%	22	5.65 x 22= 124
	20.01% - 30%	0.22	30% (0.06 AC.)	0.09	40.1%	2	0.09 x 2= 0
	30.01% - 40%	0.77	5% (0.04 AC.)	0.04	5%	1 PER 10	.4 AC < 10 AC= 1
	40.01% & GREATER	6.58	0%	0.02	3%	0	6.58 x 0= 0
	PREVIOUSLY DISTRUBED AREA	5.79	100% (5.79 AC.)	5.79	100%	22	5.79 x 22= 127
TOTALS		18.99	11.54	11.54			252 TOTAL UNITS

N

0 60' 120'

SCALE: 1"=60'

DATE: 06/23/2021
JOB NO.: 12560-21
DESIGNED BY: FMD
CHECKED BY: RAR
DWG: SLOPE MAP

REVISIONS
DATE:

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EXISTING GROUND SLOPE MAP
FOR
SOLEIL RIDGE APARTMENTS
ST. GEORGE, UTAH

STATE OF UTAH
No. 189106
ROBERT A. REID
LICENSED PROFESSIONAL ENGINEER

SHEET
1
1 OF 1 SHEETS

Exhibit D

Hillside Submittal Plans

SECTION 3 - PLAN VIEW

SCALE: 1" = 30'

SECTION 4 - PLAN VIEW

SCALE: 1" = 30'

SECTION 3 - PROFILE

SCALE: 1" = 30'

SECTION 4 - PROFILE

SCALE: 1" = 30'

0 30' 60'

SCALE: 1"=30'

DATE:	07/27/2021
JOB NO.:	12560-21
DESIGNED BY:	PMD
CHECKED BY:	RAR
DWG:	HILLSIDE

REVISIONS

DATE

ROSENBERG
ASSOCIATES
CIVIL ENGINEERS • LAND SURVEYORS

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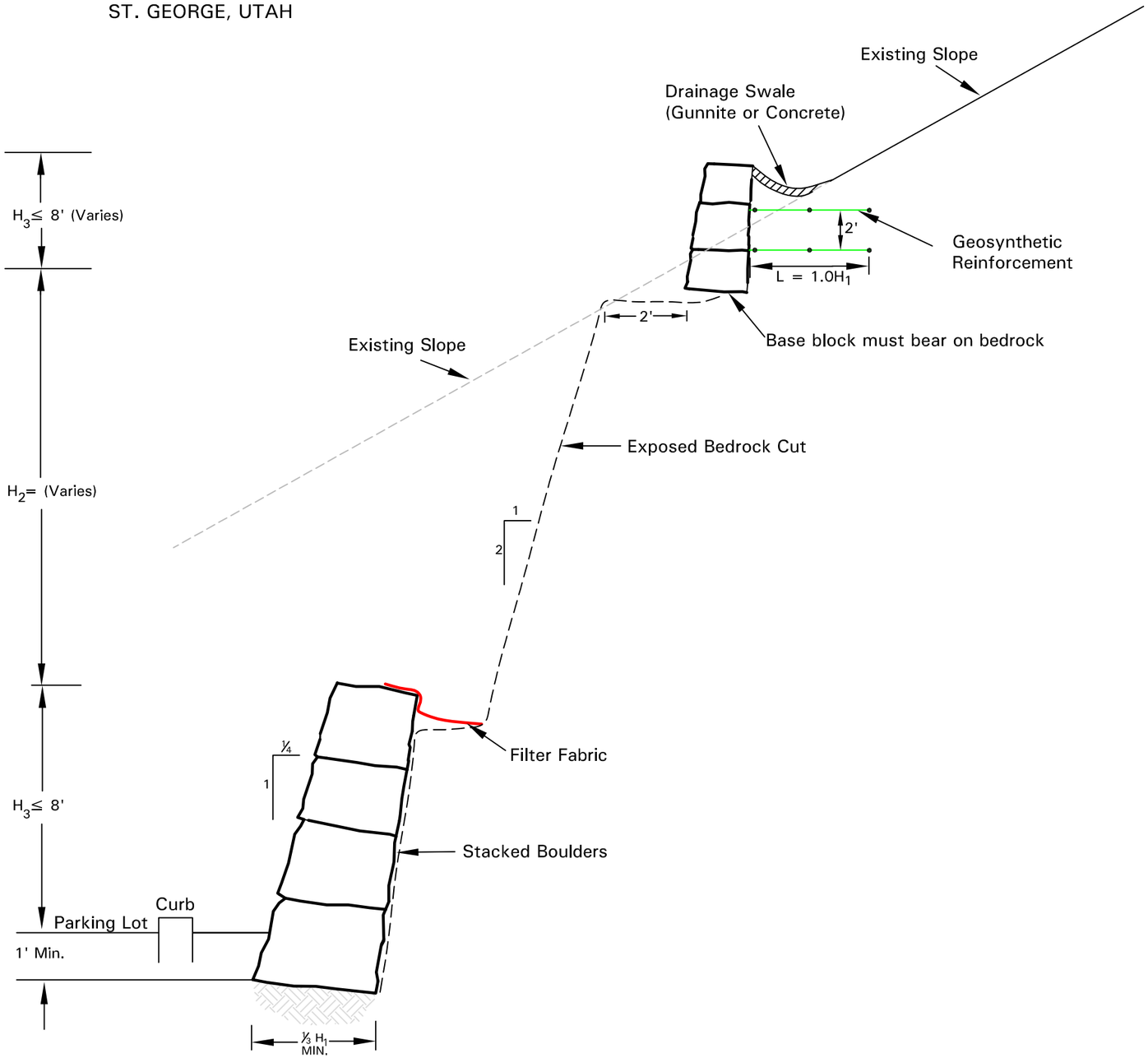
SITE CROSS SECTIONS - 2
FOR
SOLEIL RIDGE
ST. GEORGE, UT

SHEET
2
2 OF 2 SHEETS

THE COVE
ST. GEORGE, UTAH



LICENSED PROFESSIONAL ENGINEER
07/31/20
No. 177876
G. WAYNE
ROGERS
STATE OF UTAH

By: G. Wayne Rogers, P.E.

2192092	AGEC	ROCKERY FACED SLOPE DESIGN	Figure 1

THE COVE
ST. GEORGE, UTAH

Geosynthetic Reinforcement Schedule ¼:1 (H:V) Slope

Top Tier Boulder Faced Fill Slope Height (ft)	Geosynthetic Reinforcement Required	* Geogrid	Geosynthetic Vertical Spacing (ft)	Grid Lengths (L)
			S_1	L_1
$H_T \leq 8$	Yes	Mirafi 5XT	1	$1.0H_T$

* Approved Equivalents - Tensar UX1500HS = Miragrid 5XT = Fortrac 80/30-20 = Macaafari WG5

Boulder Slope Construction Notes:

1. Stacked boulders should consist of durable material resistant to weathering and approved by AGEC. Boulders should typically range from 2 to 4 feet in size with boulder sizes decreasing as they are stacked. Typical materials suitable for this application include basalt, limestone and some sandstones. The on-site sandstone should be suitable.
2. The slope/boulder foundation subgrade should be cleared of vegetation, rock or other obstacles and the surface level and smooth such that depressions and humps do not exceed 6 inches.
3. The boulders placed at the base of each tier should be embedded at least 1 foot below the lowest adjacent grade.
4. The subgrade should be properly prepared by compacting to at least 95% of ASTM D-1557.
5. The boulders should be stacked no steeper than ¼:1 (H:V). Less steep slopes may be required at the engineers discretion.

Geosythetic Notes:

1. Geosynthetic reinforcement should be placed continuously in the primary strength direction. It may not be spliced in the primary strength direction.
2. The placement of the geosynthetic reinforcement should be observed by a representative of AGEC to verify the specified geosynthetic is being used and properly placed. It should be stretched by hand until taut and free of wrinkles. Individual lengths of the geosynthetic reinforcement should be overlapped at least 1 foot.
3. The filter fabric should consist of Mirafi 140N non-woven filter fabric or equivalent.

Grading Notes:

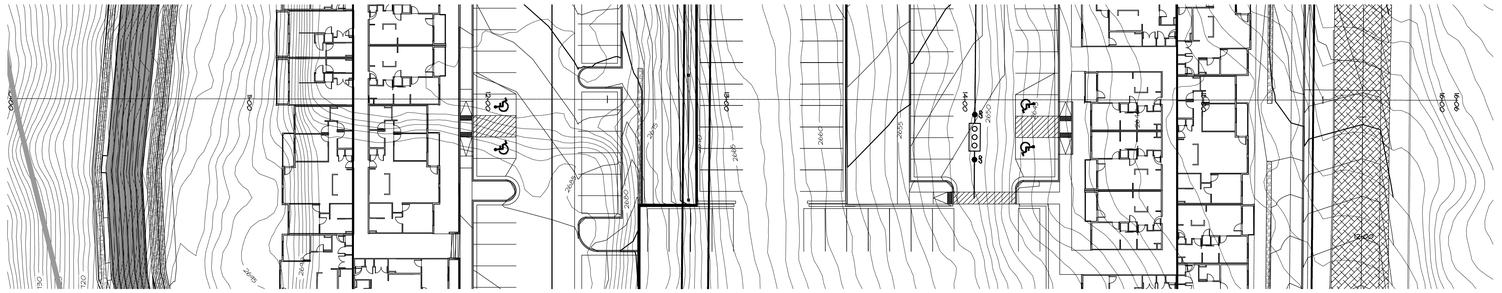
1. The onsite sand may be used as backfill.
2. Backfill placed behind boulders and in reinforced areas should be tested frequently to verify compaction is at least 95% of the maximum dry density as determined by ASTM D-1557. We recommend a testing frequency of each lift of fill placed staggered approximately every 50 lineal feet. If the fill is not properly compacted, the stability of the slope will be reduced.
3. Backfill should be placed/spread over layers of specified geosynthetic in such a way which minimizes wrinkles and/or movement of the geosynthetic. Backfill within 3 feet of the boulders should be compacted with hand compaction equipment. Rubber-tired equipment may be utilized to compact the fill without causing damage to the geosynthetic. Track-mounted equipment should not be operated directly on the geosynthetic. At least 12 inches of fill should be placed above the geosynthetic prior to operating track-mounted equipment.

LICENSED PROFESSIONAL ENGINEER
07/31/20
No. 177876
G. WAYNE
ROGERS
STATE OF UTAH

By: G. Wayne Rogers P.E.

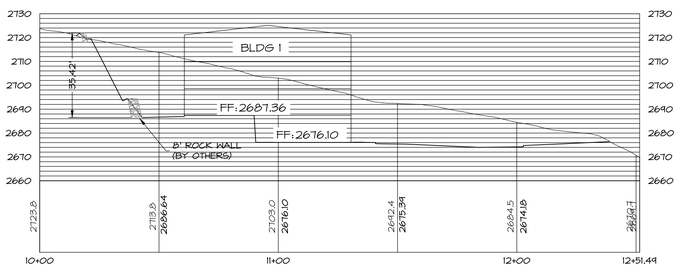
SECTION 1 - PLAN VIEW

SCALE: 1" = 30'



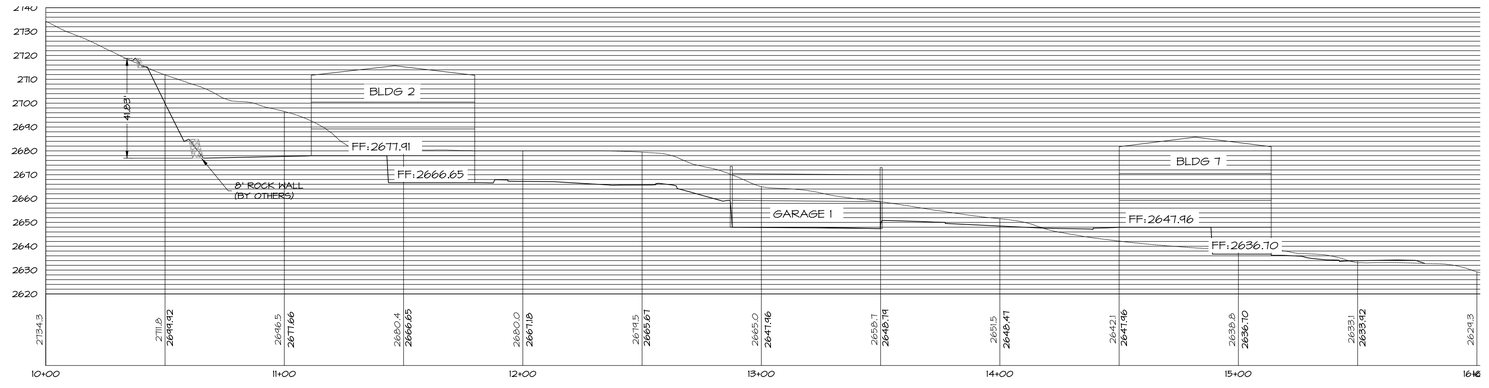
SECTION 2 - PLAN VIEW

SCALE: 1" = 30'



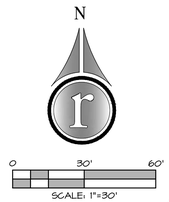
SECTION 1 - PROFILE

SCALE: 1" = 30'



SECTION 2 - PROFILE

SCALE: 1" = 30'



SCALE: 1"=30'

DATE: 01/21/2021
JOB NO.: 12560-21
DESIGNED BY: FMD
CHECKED BY: RAR
DWG: HILLSIDE

REVISIONS
DATE:

ROSENBERG ASSOCIATES
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SITE CROSS SECTIONS - 1
FOR
SOLEIL RIDGE
ST. GEORGE, UT

SHEET
1
1 OF 2 SHEETS

Exhibit E

Drainage Report

PLIMINARY DRAINAGE CONTROL REPORT

FOR HILSIDE REVEW
SOLEIL RIDGE APARTMENTS
St. George, Utah

Prepared For:

Wasatch Commercial Builders
1820 W Printers Row
West Valley City, Utah 84119

ROSENBERG ASSOCIATES
Project No: 12560-21

July 27, 2021

This report for the drainage design of the Soleil Ridge Apartments on 900 South Bluff Street was prepared by me (or under my direct supervision) in accordance with the provisions of the City of St. George Drainage Manual and was designed to comply with the provisions thereof. It is understood that the City of St. George does not assume liability for drainage facilities design.

ROSENBERG ASSOCIATES
CIVIL ENGINEERS LAND SURVEYORS

TABLE OF CONTENTS

APPENDIX

1.0 PROJECT LOCATION

The proposed study area is located near 250 West and 900 South in St. George, Utah. The site encompasses parcels SG-6-2-36-110, SG-VW-50-A-1, and SG-VW-5-6-A.

See Figure 1 – *Vicinity Map*

2.0 EXISTING DRAINAGE CONDITIONS

2.1 EXISTING ON-SITE DRAINAGE

The combined area of the properties is 19.12 total acres, of which it is anticipated that 9.29 acres will be developed with this project. The site is bound on the west side by Airport Road, to the east by 250 West St. and Red Lion Hotel (Parcel SG-VW-2-5-A), To the north by Parcels SG-6-2-36-14011 and SG-6-2-36-13312, and to the south by Parcel SG-VW-50-B and Auto Value Parts Store (Parcel SG-VW-49-C).

The site is currently undeveloped, the west portion of the site is not developable due to slopes exceeding 40%. There is evidence of previous rough grading and disturbance on the lower/east portions of the site. Current vegetation consists of grasses and small weeds and native sagebrush.

2.2 EXISTING OFF-SITE DRAINAGE

A 3-D surface was obtained of the site and immediate surrounding area for determining existing tributary drainage of the site. It has been determined that a portion of the upper mesa drains off the hill from east to west and continues onto the subject site. The site is generally sloped from west to east with existing storm water draining mostly as sheet flow accumulating and draining mainly onto 900 S St.

See Preexisting Exabit EX-1

2.3 PREVIOUS DRAINAGE STUDIES/RELATED DRAINAGE STUDIES

A preliminary drainage study was performed for *The Cove* by Bush and Gudgell Engineering dated 4/29/2020 for portions of this site.

2.4 FLOODPLAIN INFORMATION

According to the FEMA National Flood Hazard Layer FIRMette map the subject area is in an Area of Minimal Flood Hazard numbered 49053C1029G, dated April 2, 2009, the site is located Zone X. The project area is located outside the Erosion Hazard Zone.

2.5 REQUIRED PERMITS/PLANS

Proposed earthwork will require a grading permit and the proposed Storm Water Pollution Prevention Plan (SWPPP) should comply with the City of St. George's established best management practices. The grading plan, geotechnical report, and SWPPP (including NOI and NOT) will be submitted independent of this study prior to construction.

A completed Long-Term Storm Water Maintenance Plan will be submitted with the project construction plans accompanied by the Long-Term Storm Water Maintenance Agreement, signed by the property owner.

2.6 HILLSIDE CONCERNS

Hillside areas on the west portion of the property contribute drainage to the site. Grading and drainage plans will need special considerations to accommodate hillside drainage and control discharge velocities.

3.0 DEVELOPED DRAINAGE CONDITIONS

3.1 DEVELOPED ON-SITE DRAINAGE

The proposed development of the site will convey offsite runoff from the steep hillsides in drainage channels behind proposed retaining walls and then conveyed through the site with drain pipes. This offsite drainage is ultimately conveyed to Bluff Street. On-site drainage will be captured and directed to proposed underground detention basins located in the parking areas. Detained storm water will be released to 900 South Street and then to Bluff Street. The detention/retention areas will be sized for a 100-year 3-hour design storm event.

See Figure 3 – *Post Drainage Exhibit EX-2*

3.2 DEVELOPED OFF-SITE DRAINAGE

Offsite improvements are not proposed at this time with this development.

4.0 HYDROLOGIC ANALYSIS

4.1 HYDROLOGIC CALCULATIONS

HEC-HMS[1] Version 4.8 was used to perform the hydrologic analysis for this study. Curve numbers for existing and developed conditions were calculated using a custom Natural Resources Conservation Service (NRCS). The Farmer-Fletcher distribution is used for the 3-hour storm events and the SCS Type II distribution is used for the 24-hour storm events. Simulated precipitation values were determined using the Point Precipitation Frequency Estimates (St. George Gauge Station) from the NOAA Atlas 14[2]. Utilizing the model input values listed in Table 1, the HEC-HMS model yielded the design storm peak flow values summarized in Table 2.

TABLE 1 – HYDRAULIC MODEL INPUT

Hydraulic Element		Hydraulic Properties		Area		
		Lo (ft)	*S (%)*	*(sq ft)*	*(acre)*	*(sq mi)*
Pre SA-1	Pre-Developed Site	1,465	20.1	1,515,825	34.80	0.05437
Post Off	Offsite Only	847	23.8	1,111,297	25.51	0.03986
Post Site	Developed Site Area Only	758	14.0	404,528	9.29	0.01451

TABLE 2 – HYDRAULIC MODEL OUTPUT

Hydrologic Element	10-Year 3-Hour	100-Year 3-Hour
	(cfs)	(cfs)
Pre SA-1	9.00	9.50
Post Off	7.20	27.50
Post Site	12.40	43.20
Increase	3.40	33.70

4.2 Comparison of Peak Flow Values

Based on information shown in Table 2, the proposed project increases runoff within the site by 3.4 cfs during the 100-year 3-hour design storm event.

[1] U.S. Army Corps of Engineers, Hydraulic Engineering Circular Hydrologic Modeling System (HEC-HMS) software, Version 4.6.1.

[2] NOAA's National Weather Service. Precipitation Frequency Data Server. Retrieved February 24, 2017

5.0 PROPOSED DRAINAGE IMPROVEMENTS

5.1 DETENTION AND RETENTION REQUIREMENTS

The City of St. George Drainage Manual[3] requires the peak storm runoff exiting a site not be increased by new development and be limited to 0.20 cfs/acre. A detention volume of 56,340 cubic-feet has been estimated to limit the peak storm water runoff to 0.20 cfs/acre of 1.86 cfs. It is anticipated that detention will be provided with some surface detention basins along with underground detention networks to provide the required detention volume.

6.0 CONCLUSIONS

It is the opinion of Rosenberg Associates the proposed recommendations and drainage improvements included in this study and shown in the improvement plans will effectively convey storm water through the site. A final drainage control report should be prepared in conjunction with the grading and drainage improvement plans. Drainage improvement designs are intended to be compliant with the City of St. George drainage requirements and computations/methods used to create designs were completed using the current standard of care.

[3] City of St. George Drainage Manual, Bowen Collins and Associates, John Humphrey, May 2009.

APPENDIX

Figure 1 – *Vicinity Map*

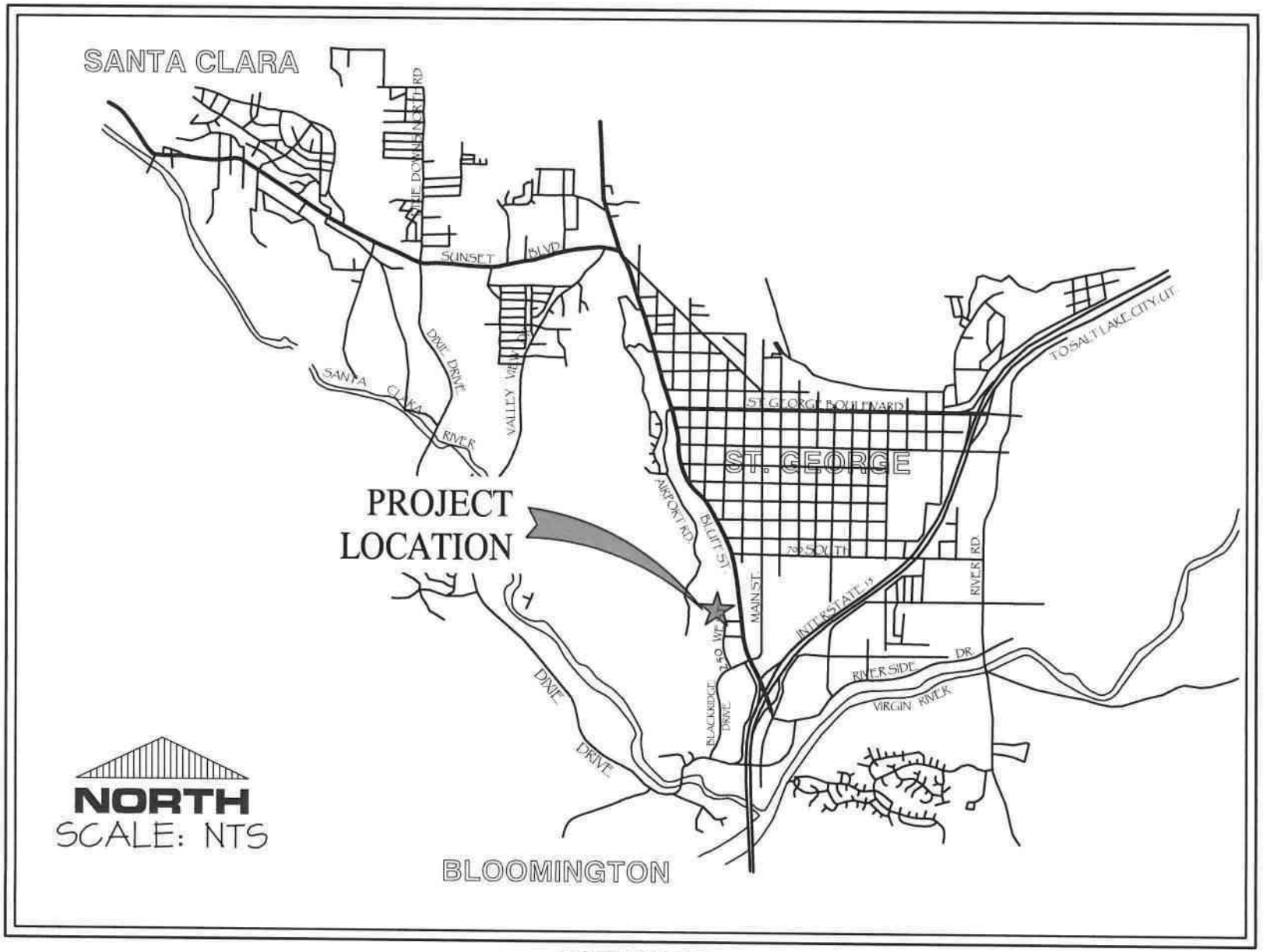
Figure 2 – *Existing Drainage Conditions*

Figure 3 – *Developed Drainage Conditions*

HEC-HMS Modeling Input Information

HEC-HMS Modeling Output Information

NRCS Soil Report



VICINITY MAP
FOR
WASATCH COMMERCIAL BUILDERS
1820 WEST PRINTERS ROW
WEST VALLEY CITY, UT 84116

PREEXISTING DRAINAGE EXHIBIT

FOR

SOLEIL RIDGE APARTMENTS

ST. GEORGE UT

SHEET EX-1

ROSENBERG ASSOCIATES
CIVIL ENGINEERS • LAND SURVEYORS
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St. George, Utah 84790
Ph (435) 673-8586 FX (435) 673-8397
www.rosenbergassociates.com

DATE: 06/24/22
JOB NO.: 12660-3
DESIGNED BY: DSH
CHECKED BY: RAR
DWG: EXPREDRAIN BASIN

POST DRAINAGE EXHIBIT

FOR

SOLEIL RIDGE APARTMENTS

ST. GEORGE UT

SHEET EX-2

ROSENBERG ASSOCIATES
CIVIL ENGINEERS • LAND SURVEYORS

352 East Riverside Drive, Suite A-2
St. George, Utah 84790
Ph (435) 673-8586 Fx (435) 673-8997
www.rosenbergassociates.com

DATE:	08/24/23
JOB NO:	12202-23
DESIGNED BY:	DSH
CHECKED BY:	RAR
DWG:	TOPO/DRAIN BASIN

National Flood Hazard Layer FIRMette

FEMA

Legend

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

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

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

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

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

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

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

N

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

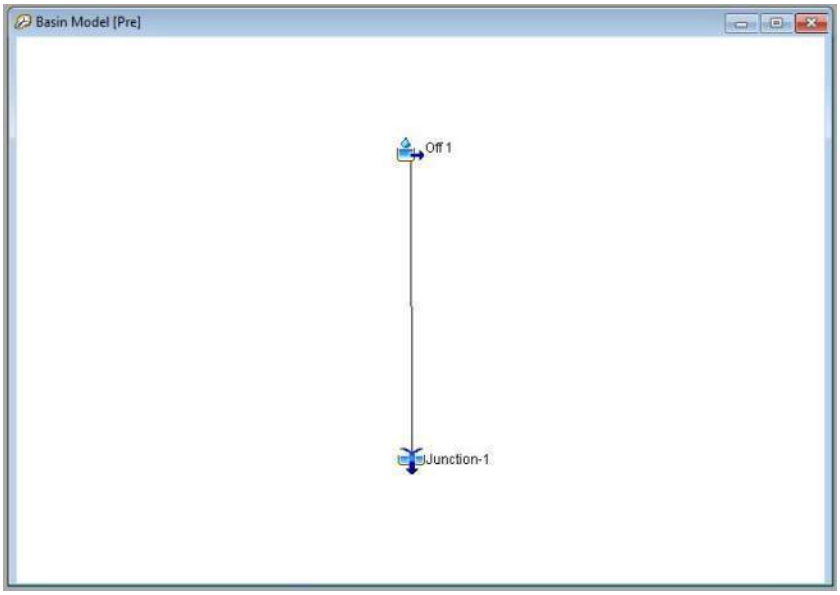
This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 7/28/2021 at 1:37 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

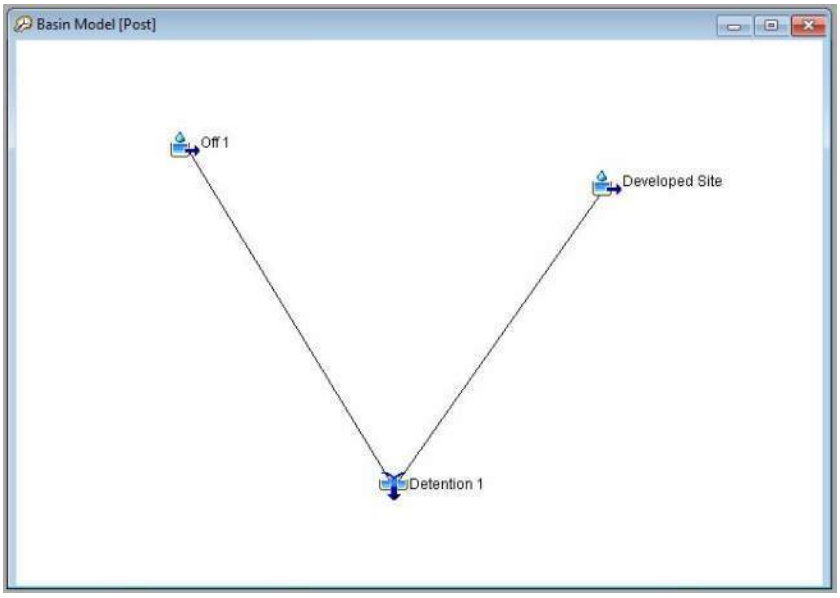
This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory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

HEC-HMS MODELING INPUT INFORMATION

PRE-DEVELOPED BASIN MODEL

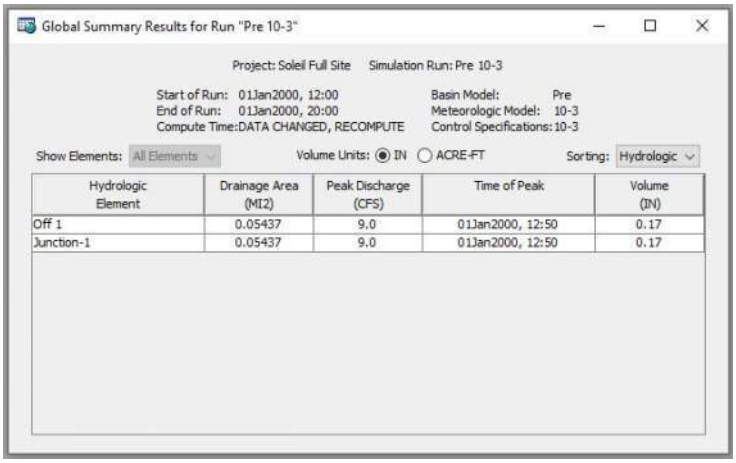


POST-DEVELOPED BASIN MODEL



HEC-HMS MODELING OUTPUT INFORMATION

PRE-DEVELOPED 10-YEAR 3-HOUR DESIGN STORM MODEL RESULTS



Global Summary Results for Run "Pre 10-3"

Project: Soleil Full Site Simulation Run: Pre 10-3

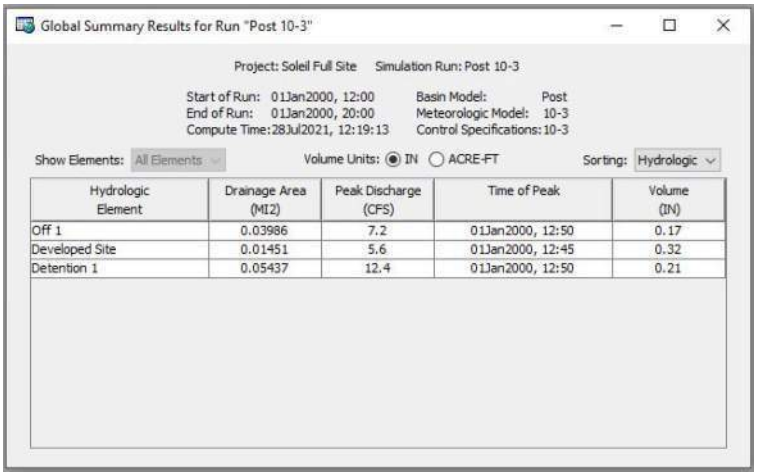
Start of Run: 01Jan2000, 12:00
End of Run: 01Jan2000, 20:00
Compute Time: DATA CHANGED, RECOMPUTE

Basin Model: Pre
Meteorologic Model: 10-3
Control Specifications: 10-3

Show Elements: All Elements | Volume Units: (•) IN ( ) ACRE-FT | Sorting: Hydrologic

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
Off 1	0.05437	9.0	01Jan2000, 12:50	0.17
Junction-1	0.05437	9.0	01Jan2000, 12:50	0.17

POST-DEVELOPED 10-YEAR 3-HOUR DESIGN STORM MODEL RESULTS



Global Summary Results for Run "Post 10-3"

Project: Soleil Full Site Simulation Run: Post 10-3

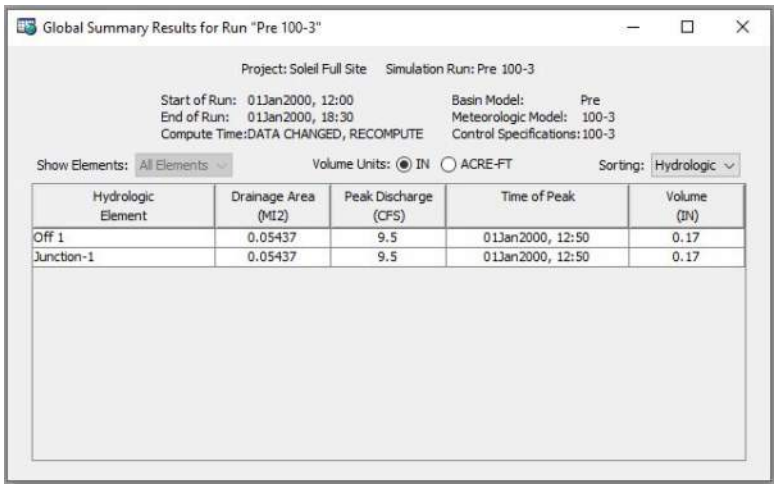
Start of Run: 01Jan2000, 12:00
End of Run: 01Jan2000, 20:00
Compute Time: 28Jul2021, 12:19:13

Basin Model: Post
Meteorologic Model: 10-3
Control Specifications: 10-3

Show Elements: All Elements | Volume Units: (•) IN ( ) ACRE-FT | Sorting: Hydrologic

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
Off 1	0.03986	7.2	01Jan2000, 12:50	0.17
Developed Site	0.01451	5.6	01Jan2000, 12:45	0.32
Detention 1	0.05437	12.4	01Jan2000, 12:50	0.21

PRE-DEVELOPED 100-YEAR 3-HOUR DESIGN STORM MODEL RESULTS



Global Summary Results for Run "Pre 100-3"

Project: Soleil Full Site Simulation Run: Pre 100-3

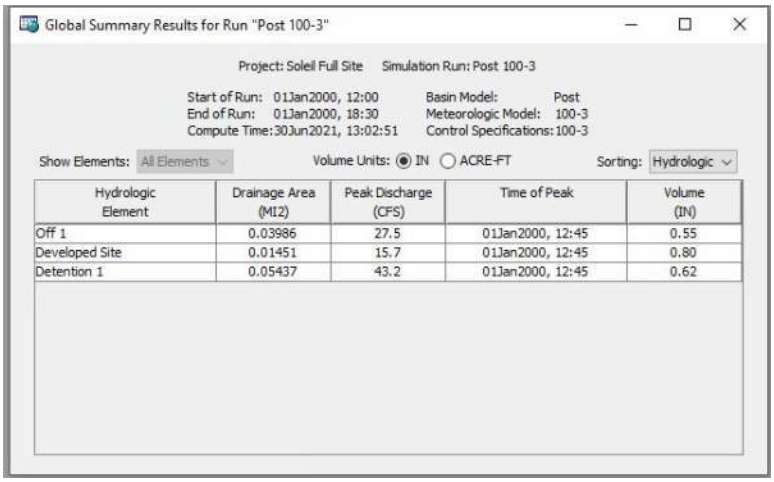
Start of Run: 01Jan2000, 12:00
End of Run: 01Jan2000, 18:30
Compute Time: DATA CHANGED, RECOMPUTE

Basin Model: Pre
Meteorologic Model: 100-3
Control Specifications: 100-3

Show Elements: All Elements | Volume Units: (•) IN ( ) ACRE-FT | Sorting: Hydrologic

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
Off 1	0.05437	9.5	01Jan2000, 12:50	0.17
Junction-1	0.05437	9.5	01Jan2000, 12:50	0.17

POST-DEVELOPED 100-YEAR 3-HOUR DESIGN STORM MODEL RESULTS



Global Summary Results for Run "Post 100-3"

Project: Soleil Full Site Simulation Run: Post 100-3

Start of Run: 01Jan2000, 12:00
End of Run: 01Jan2000, 18:30
Compute Time: 30Jun2021, 13:02:51

Basin Model: Post
Meteorologic Model: 100-3
Control Specifications: 100-3

Show Elements: All Elements | Volume Units: (•) IN ( ) ACRE-FT | Sorting: Hydrologic

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
Off 1	0.03986	27.5	01Jan2000, 12:45	0.55
Developed Site	0.01451	15.7	01Jan2000, 12:45	0.80
Detention 1	0.05437	43.2	01Jan2000, 12:45	0.62

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PROJECT NO. 12560-21

PROJECT: Soleil Ridge 900 South Bluff Civil BY: DSH DATE: 28-Jul-21

SUBJECT: Drainage Study Hydrology Information CHKD: RAR DATE: 28-Jul-21

EXISTING PRE-DEVELOPMENT CONDITION WATERSHED

Hydraulic Element		Hydraulic Properties		Area		
		Lo (ft)	*S (%)*	*(sq ft)*	*(acre)*	*(sq mi)*
Pre SA-1	Pre-Developed Site	1,465	20.1	1,515,825	34.80	0.05437
Post Off	Offsite Only	847	23.8	1,111,297	25.51	0.03986
Post Site	Developed Site Area Only	758	14.0	404,528	9.29	0.01451

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PROJECT NO. 12560-21

PROJECT: Soleil Ridge 900 South Bluff Civil BY: DSH DATE: 28-Jul-21

SUBJECT: Hydraulic Routing CHKD: RAR DATE: 28-Jul-21

Hydraulic Element		Routed Length (ft)	Average Slope (%)	Manning's Roughness (n)	Culvert Diameter (in)	Bottom Width (ft)	Side Slopes (H:1V)
C1	Routing 2580 to SA1	644	1.70	0.016	-	2.0	2.50
C2	Routing 2580 to SA1	894	0.50	0.010	24	N/A	N/A
C3	Routing 2580 to SA2	894	0.50	0.010	24	N/A	N/A

TYPICAL MANNING'S n VALUES

0.013 - Poly Pipe	0.023 - Dirt
0.017 - CM Pipe	0.026 - Grass
0.015 - Concrete	0.035 - Gravel
0.016 - Asphalt	0.040 - Riprap

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PROJECT NO. 12560-21

PROJECT: Soleil Ridge 900 South Bluff Civil BY: DSH DATE: 28-Jul-21

SUBJECT: NRCS Curve Number CHKD: RAR DATE: 28-Jul-21

NRCS CURVE NUMBER (CN) CHART

Land Use Description	SCS Curve Number (CN) Values									
	Group A		Group B		Group C		Group D		Totals	
	CN	%	CN	%	CN	%	CN	%	CN	%
Cultivated Land										
Cultivated Land; Without Conservation Treatment	72		81		88		91			
Cultivated Land; With Conservation Treatment	62		71		78		81			
Pasture or Range Land										
Pasture or Range Land; Poor Condition	68		79		86		89			
Pasture or Range Land; Good Condition	39		61		74		80			
Open Spaces (Lawns, Parks, etc.)										
Open Space; Poor Condition; Grass Cover < 50%	68		79		86		89			
Open Space; Fair Condition; Grass Cover 50% to 75%	49		69		79		84			
Open Space; Good Condition; Grass Cover > 75%	39		61		74		80			
Impervious Areas										
Impervious Areas; Paved Parking Lots, Roofs, Driveways	98		98		98		98			
Impervious Areas; Streets and Roads; Paved; Curbs and Storm Sewers	98		98		98		98			
Impervious Areas; Streets and Roads; Paved; Open Ditches (w/ Right-of-Way)	83		89		92		93			
Impervious Areas; Streets and Roads; Gravel (w/ Right-of-Way)	76		85		89		91			
Impervious Areas; Streets and Roads; Dirt (w/ Right-of-Way)	72		82		87		89			
Urban Commercial and Industrial Districts										
Urban Districts; Commercial and Business; Average 85% Impervious	89		92		94		95			
Urban Districts; Industrial; Average 72% Impervious	81		88		91		93			
Residential Districts										
Residential Districts; 1/8 Acre (Town Houses); Average 65% Impervious	77		85		90		92			
Residential Districts; 1/4 Acre; Average 38% Impervious	61		75		83		87			
Residential Districts; 1/3 Acre; Average 30% Impervious	57		72		81		86			
Residential Districts; 1/2 Acre; Average 25% Impervious	54		70		80		85			
Residential Districts; 1 Acre; Average 20% Impervious	51		68		79		84			
Residential Districts; 2 Acre; Average 12% Impervious	46		65		77		82			
Western Desert Urban Areas										
Natural Desert Vegetation (Pervious Areas Only)	63		77		85		88			
Artificial Desert Landscaping	96		96		96		96			
Developing Urban Area (No Vegetation)										
Newly Graded Area (Pervious Only)	77		86		91		94			

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PROJECT NO. 12560-21

PROJECT: Soleil Ridge 900 South Bluff Civil BY: DSH DATE: 28-Jul-21

SUBJECT: NRCS Curve Number CHKD: RAR DATE: 28-Jul-21

NRCS WEIGHTED AVERAGE CN VALUES

Land Use Description	SCS Curve Number (CN) Values									
	Group A		Group B		Group C		Group D		Totals	
	CN	%	CN	%	CN	%	CN	%	CN	%
Pre SA-1									85	100
Natural Desert Vegetation (Pervious Areas Only)	63		77		85	100	88		85	100
Post Off									85	100
Natural Desert Vegetation (Pervious Areas Only)	63		77		85	100	88		85	100
##									90	100
Residential Districts; 1/8 Acre (Town Houses); Average 65% Impervious	77		85		90	100	92		90	100

PROJECT NO. 12560-21

PROJECT: Soleil Ridge 900 South Bluff Civil BY: DSH DATE: 28-Jul-21

SUBJECT: SCS Lag Time CHKD: RAR DATE: 28-Jul-21

EXISTING PRE-DEVELOPMENT CONDITION

Hydrologic Element	SCS CN	Longest Length Lo (ft)	Average Slope S (%)	t_c (hr)	Lag Time (hr)	Lag Time (min)
Pre SA-1	85.0	1,465	20.10	0.136	0.082	4.90
Post Off	85.0	847	23.80	0.081	0.048	2.91
Post Site	90.0	758	14.00	0.080	0.048	2.87

TIME OF CONCENTRATION

$$t_c = \frac{1.67\, L_O^{\,0.8} \left(\frac{1000}{CN} - 9 \right)^{0.7}}{1900 \sqrt{S_{percent}}}$$

Where: CN = SCS runoff curve number
S = Average slope in percent
Lo = Length in ft

SCS LAG TIME

13.46 SCS Lag = 0.6*t_c

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PROJECT NO. 12560-21

PROJECT: Soleil Ridge 900 South Bluff Civil BY: DSH DATE: 28-Jul-21

SUBJECT: SCS TR-55 Tc and Lag CHKD: DATE:

SCS TR-55 LAG TIME **SUBAREA GRE-B130**

GRE-B130 SHEET FLOW TRAVEL TIME

Manning roughness, n	0.011		Smooth surfaces (concrete/asphalt/gravel/bare soil)
Flow length, L (300 ft max)	100	ft	
2-year 24-hour rainfall, P_2	1.160	in	
Average Slope, S	6.67	%	
Travel Time, T_t	0.0207	hr	$T_t = \frac{0.007\,(nL)^{0.8}}{P_2^{0.5} S^{0.4}}$
	1.24	min	

GRE-B130 SHALLOW CONCENTRATED FLOW TRAVEL TIME

Paved surface? (Y/N)	Y		
Flow length, L	760	ft	
Average Slope, S	12.30	%	
			$V = 16.1345\,(s)^{1/2}$ unpaved
Average velocity, V	7.13	ft/sec	$V = 20.3282\,(s)^{1/2}$ paved
Travel Time, T_t	0.0296	hr	$T_t = \frac{L}{3600V}$
	1.78	min	

GRE-B130 OPEN CHANNEL FLOW TRAVEL TIME 1

Estimated average channel geometry:

Bottom width	10	ft	
Side slopes	5.0	H:1V	
Flow depth	1.0	ft	
Manning roughness, n	0.032		sand/earth bottom w/ soil-cement sides
Flow length, L	3,229	ft	
Average Slope, S	6.90	%	
Hydraulic radius, r	0.743		r = area/wetted perimeter
Average velocity, V	10.0	ft/sec	$V = \frac{1.49\, r^{2/3} s^{1/2}}{n}$
Travel Time, T_t	0.0894	hr	$T_t = \frac{L}{3600V}$
	5.37	min	

GRE-B130TIME OF CONCENTRATION, Tc **0.1398 hr** **T_c = sum all travel times T_t**

PROJECT NO. 12560-21

PROJECT: Soleil Ridge 900 South Bluff Civil BY: DSH DATE: 28-Jul-21

SUBJECT: SCS TR-55 Tc and Lag CHKD: DATE:

8.39 min

GRE-B130 LAG TIME, L **0.0839 hr** **$L = 0.6\ T_c$**

5.03 min

MANNING ROUGHNESS VALUE FOR SHEET FLOW		USE
Smooth surfaces (concrete/asphalt/gravel/bare soil)		0.011
Fallow (no residue)		0.050
Cultivated soils:	Residue cover ≤20%	0.060
	Residue cover >20%	0.170
Grass:	Short grass prairie	0.150
	Dense grasses	0.240
	Bermuda grass	0.410
	Range (natural)	0.130
Woods:	Light underbrush	0.400
	Dense underbrush	0.800

MANNING ROUGHNESS VALUE FOR OPEN CHANNEL FLOW		USE
Asphalt surfaces:	Unobstructed	0.016
	Cars present	0.020
Pipeline:	Corrugated metal	0.025
	Plastic or HDPE smoothwall	0.010
Concrete surfaces:	Trowel finish	0.013
	Float or light broom finish	0.015
	Heavy broom finish	0.016
	Unfinished	0.017
Channels:	sand/earth bottom w/ bare earth sides	0.022
	sand/earth bottom w/earth/grass/weeds sides	0.025
	sand/earth bottom w/earth/trees/shrubs sides	0.032
	sand/earth bottom w/shotcrete sides	0.022
	sand/earth bottom w/ soil-cement sides	0.025
	sand/earth bottom w/ concrete sides	0.020
	sand/earth bottom w/ dry rubble or riprap sides	0.033
Natural channels:	sand bottom w/ tree/shrub sides	0.035
	sand bottom w/ rock sides	0.032
	rock bottom w/ rock sides	0.060
Overbank floodplain:	desert brush, normal density	0.060

PROJECT: Soleil Ridge 900 South Bluff Civil BY: DSH DATE: 28-Jul-21

SUBJECT: Model Results CHKD: RAR DATE: 28-Jul-21

EXISTING PRE-DEVELOPMENT CONDITION

Hydrologic Element	10-Year 3-Hour (cfs)	100-Year 3-Hour (cfs)
Pre SA-1	9.00	9.50
Post Off	7.20	27.50
Post Site	12.40	43.20
Increase	3.40	33.70

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PROJECT NO. 12560-21

PROJECT: Soleil Ridge 900 South Bluff Civil BY: DSH DATE: 28-Jul-21

SUBJECT: Detention Calculations CHKD: RAR DATE: 28-Jul-21

Total Developed Area ***9.29 acres***

MaximumRelease Allowed From Developed Area ***1.86 cfs*** *(0.2 cfs per acre)*

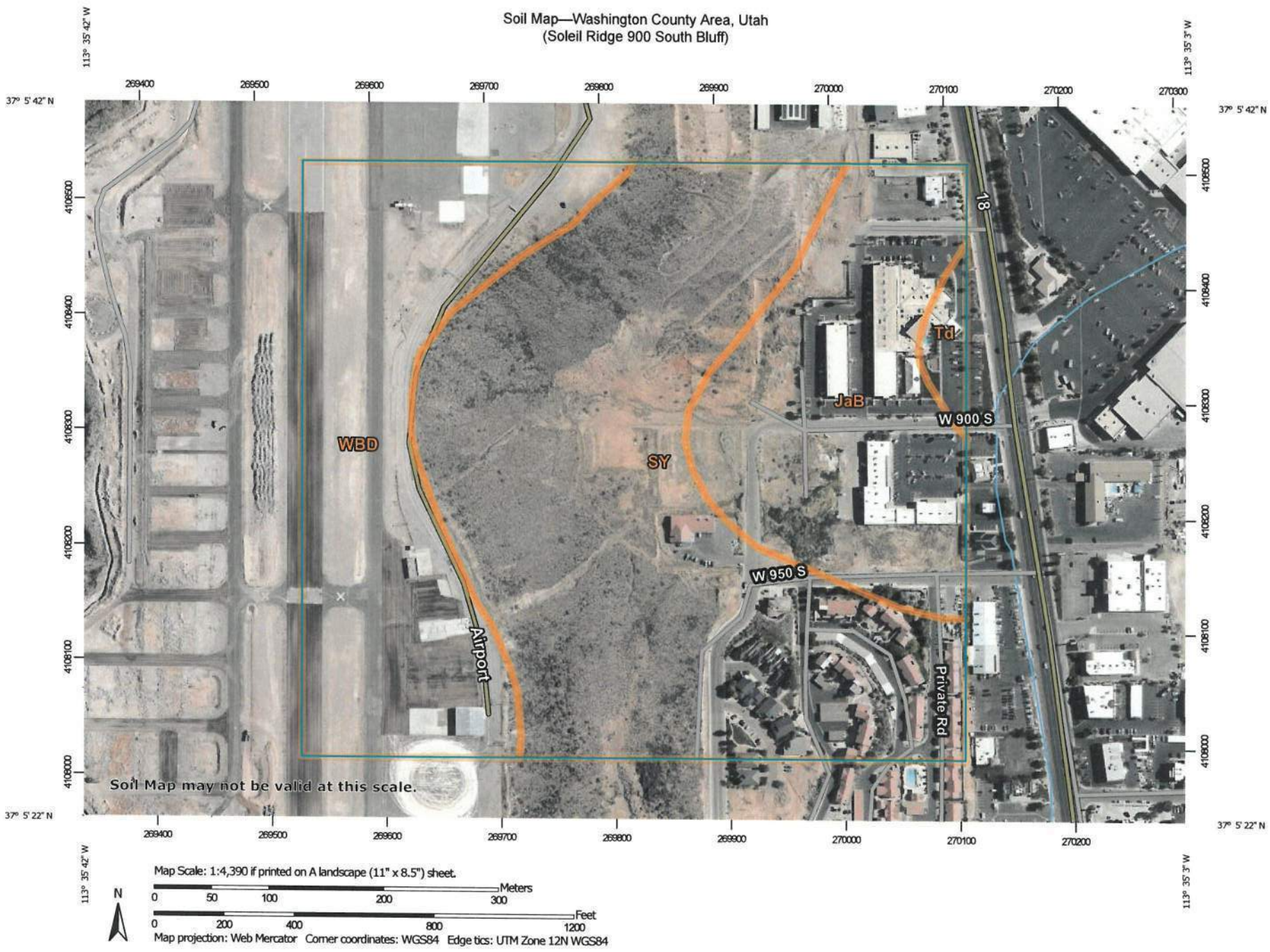
Max release allowed with offsite flows passing through:

100-year 3-hour storm = 1.86 cfs + 9.5 cfs OFF-1 **11.36 cfs**

100-YEAR 3-HOUR STORM HYDROGRAPHS

Time	Hydrographs			
	Post	Allowed	Detainied	Volume
(hour)	(cfs)	(cfs)	(cfs)	(cf)
12:25	0	11.36	0.0	0.00
12:30	0	11.36	0.0	0.00
12:35	4.8	11.36	0.0	0.00
12:40	31.3	11.36	31.3	9,390.00
12:45	43.2	11.36	43.2	12,960.00
12:50	38	11.36	38.0	11,400.00
12:55	27.2	11.36	27.2	8,160.00
13:00	20.5	11.36	20.5	6,150.00
13:05	15.6	11.36	15.6	4,680.00
13:10	12	11.36	12.0	3,600.00
13:15	9.3	11.36	0.0	0.00
13:20	8	11.36	0.0	0.00
13:25	7.1	11.36	0.0	0.00
13:30	6	11.36	0.0	0.00
13:35	3.1	11.36	0.0	0.00
13:40	2.2	11.36	0.0	0.00
13:45	2	11.36	0.0	0.00
13:50	1.9	11.36	0.0	0.00
13:55	1.9	11.36	0.0	0.00
14:00	1.9	11.36	0.0	0.00
14:05	1.9	11.36	0.0	0.00
14:10	1.9	11.36	0.0	0.00
14:15	1.9	11.36	0.0	0.00
14:20	1.9	11.36	0.0	0.00
14:25	1.9	11.36	0.0	0.00
14:30	1.9	11.36	0.0	0.00
14:35	1.9	11.36	0.0	0.00
14:40	1.9	11.36	0.0	0.00
14:45	1.9	11.36	0.0	0.00
14:50	1.9	11.36	0.0	0.00
14:55	1.9	11.36	0.0	0.00
15:00	2	11.36	0.0	0.00
15:05	0.6	11.36	0.0	0.00
15:10	0.1	11.36	0.0	0.00
15:15	0	11.36	0.0	0.00
15:20	0	11.36	0.0	0.00
15:25	0	11.36	0.0	0.00
15:30	0	11.36	0.0	0.00
Total				**56,340**

Soil Map—Washington County Area, Utah
(Soleil Ridge 900 South Bluff)



Map Scale: 1:4,390 if printed on A landscape (11" x 8.5") sheet.

N

0 50 100 200 300 Meters

0 200 400 800 1200 Feet

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 12N WGS84

MAP LEGEND

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

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

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

Water Features
- Streams and Canals

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

Background
- Aerial Photography

MAP INFORMATION

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

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

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

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

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

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

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

Soil Survey Area: Washington County Area, Utah
Survey Area Data: Version 14, Jun 8, 2020

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

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

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

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
JaB	Junction fine sandy loam, 1 to 2 percent slopes	16.2	21.8%
SY	Stony colluvial land	37.0	49.8%
Td	Tobler silty clay loam	1.1	1.4%
WBD	Winkel gravelly fine sandy loam, 1 to 8 percent slopes	20.0	27.0%
Totals for Area of Interest		**74.3**	**100.0%**

Exhibit F

Geotechnical Report

AGEC
Applied GeoTech

GEOTECHNICAL INVESTIGATION
& HILLSIDE EVALUATION

THE COVE

ST. GEORGE, UTAH

PREPARED FOR:

HOLDAWAY CONSTRUCTION
38 E. 590 N.
HURRICANE, UTAH 84737

ATTN:

BRENT HOLDAWAY

PROJECT NO. 2192092 **JULY 1, 2020**

1420 South 270 East • St. George, Utah 84790 • (435) 673-6850 • FAX (435) 673-1044

TABLE OF CONTENTS

SUMMARY

1. This report is a preliminary geotechnical study and also a part of the hillside submittal for St. George City Hillside Ordinance. A final report with details for design and construction will be provided up completion of the laboratory testing and evaluation of the proposed construction.

2. The site was evaluated by drilling 8 borings and observing the excavation of 4 test pits at the approximate locations shown on Figure 2 and 2a. The subsurface profile observed within the borings and test pits consisted of varied thicknesses of sand and gravel and clay overlying various types of bedrock. The bedrock varies from siltstone to shale to claystone.

   The bedrock is mapped as Dinosaur Canyon member of the Moenave Formation. Portions of the bedrock appear to be expansive. Laboratory testing is currently in progress to identify the layers and magnitude of the expansive characteristics.

3. Groundwater was encountered at various depths from 14 to 50 feet below the surface. Fluctuations in groundwater may occur over time. An evaluation of such fluctuations was beyond the scope of this report. Springs or seepages were not observed on the site. The affect of the groundwater will be evaluated and recommendations provided in the final report.

4. The topography of the site consists of a moderately steep to more gentle hillside sloping down to the east and south. The site is a cove or bowl type shape. The site is proposed to be graded by small cuts on the west and north and filling to the east and south. There will be significant cuts for the lower parking levels and building levels.

5. Based on the proposed grading, we anticipate that the majority of the cuts will be in the sands and gravels and will expose the various bedrock layers. We anticipate that the cuts for buildings will be shored temporarily and retained permanently. The upper cut on the parking area will be retained using stacked rock slopes.

6. AGEC has previously provided a Geologic hazard Assessment dated January 6, 2020. This report is attached. The geologic hazard of potentially expansive bedrock layers has not been addressed in the previous report. This hazard is discussed in this report.

7. The proposed structures may be supported on conventional spread footings bearing on a properly prepared subgrade. As an alternative, micropiles or deep foundations may be utilized. Following completion of the laboratory testing and final details of construction, detailed foundation recommendations will be provided.

8. The on-site sand and gravel soils, free of organics and debris, are suitable for use as structural fill, site grading fill, and utility trench backfill. There are occasional surface cobbles and boulders along with limited subsurface materials that are oversized for use as fill materials. The oversized material will require processing to remove the larger particles such that the maximum particle size is 6 inches and at least 50 percent of the material

passes the No. 4 sieve. Larger materials may be used on slopes for erosion protection or placed in deeper fills, provided they are properly nested. The on-site claystone bedrock is not suitable for use as structural fill, but may be used as fill in non-structural areas or as trench backfill, wall backfill, or at least 4 feet below pavement areas.

9. Positive drainage of the surface soils within the development is critical and should be maintained throughout the development. We recommend the piping of surface drainage and in no case should be ponding of water be allowed adjacent to or up-gradient of structures.

SCOPE

This report presents the results of a preliminary geotechnical investigation and hillside evaluation for the proposed Cove Development to be located in St. George, Utah, as shown in Figure 1. This report presents the subsurface conditions encountered, laboratory test results, and recommendations for the project. AGEC has previously completed a Geologic-hazard Assessment for the project dated January 6, 2020.

A field exploration of 8 borings and 4 test pits were conducted to obtain information on the subsurface conditions and to obtain samples for laboratory testing. Information obtained from the field and laboratory was used to define conditions at the site and to develop recommendations for the proposed development. AGEC has also utilized the proposed grading plans and conceptual plans to develop our recommendations. Additional details will be provided in a final report following completion of the laboratory testing.

This report has been prepared to summarize the data obtained during the study and to present our conclusions and recommendations based on the proposed construction and the subsurface conditions encountered. The report is intended to meet the requirements for evaluation for St. George City Hillside developments. The findings, conclusions and recommendations for design and construction are included in this report.

SITE CONDITIONS

The subject site consists of the parcel shown on Figure 1. The property is located west of the proposed 250 West at approximately 900 South and encompasses the hillside area or “bowl” type area as shown on the attached Figures 1, 2 and 2a. The property is moderately steep with a flatter area at the base of the hillside. Portions of the property have been previously graded with pad areas along the north and western portions of the planned construction area. The property is sparsely covered with vegetation consisting of small brush and grasses.

FIELD STUDY

On June 4-10, 2020, an engineer from AGEC visited the site for a subsurface investigation. Eight borings were drilled using a truck mounted rig using hollow stem augers. Portions of the bedrock were cored using mud rotary or air to removed cuttings from a 2.5 inch HQ core barrel for continuous sampling. The 4 test pits were excavated with a track excavator. The locations are shown on Figure 2 and 2a.

SUBSURFACE SOIL CONDITIONS

The subsurface profile observed within the borings and test pits consisted of varied thicknesses of sand and gravel and clay overlying various types of bedrock. The bedrock varies from siltstone to shale to claystone.

The bedrock is mapped as Dinosaur Canyon member of the Moenave Formation. Portions of the bedrock appear to be expansive. Laboratory testing is currently in progress to identify the layers and magnitude of the expansive characteristics.

The preliminary boring and test pit logs are shown on Figures 3 to 6 with the legend and notes on Figure 7. These logs will be updated following the classification data provided from laboratory testing in a final report.

GEOLOGY

The geologic conditions at the site were evaluated based on a review of geologic literature, and a site geologic reconnaissance.

A. **Geomorphology of the Area**

The site is located along the east slope of the West Black Ridge or edar Bench Lava Flow in St. George, Utah as shown on Figure 1. The site is also located on the north side of the Virgin River Anticline. This area is part of the St. George Basin which is bound on the north by the Pine Valley Mountains, on the east by the Hurricane Cliffs, on the west by the Beaver Dam Mountains, and on the south by the Mount Trumball area.

Bedrock in the St. George basin mainly consists of Upper Permian and Lower Jurassic sandstone, shale, siltstone, limestone, gypsum, and conglomerate. These beds are folded to the southeast into the northeast trending Virgin anticline. Several north-trending faults are present within the St. George Basin, the most prominent of which is the Washington Fault (Christensen and Deen, 1983).

The St. George Basin is characterized by basalt capped buttes and cuestas that were once stream channels along which lava flowed. Erosion of the surrounding softer sedimentary rocks over time has resulted in an inverted topography of old stream channel becoming resistant basalt ridges such as the Middleton Black Ridge and the West Black Ridge (Christenson and Deen, 1983).

The geologic structure within the basin is dominated by the Virgin anticline which trends northwest to southeast and is located south of the site. The Virgin anticline is a broad, generally symmetrical fold with maximum flank dips of 25 to 30 degrees to the northwest and southeast (Christenson and Deen, 1983).

The geologic conditions at the site were evaluated based on a review of geologic literature, boring and test pit exploration and a reconnaissance of the site.

B. Stratigraphy of the Area

The stratigraphy of the area consists of Upper Triassic to Lower Jurassic- aged bedrock of the Moenave Formation. There is alluvium (Holocene to lower Pleistocene aged) deposits over the Chinle that cover the majority of the site. The top of the ridge is capped by the Lava Ridge lava flow, which consists of Basalt of the lower Pleistocene aged deposit.

GEOLOGIC HAZARDS

Based on review of geologic literature and site reconnaissance, the following information is provided concerning geologic hazards.

A. Liquefaction

Relatively shallow bedrock was encountered across the site. Thus, based upon subsurface conditions encountered our experience in the area, the subsurface soils below the developed areas are considered to be a non-liquefiable during a severe seismic event to the depths investigated.

B. Expansive Soil/Bedrock

The presence of potentially expansive layers of bedrock is identified by the geologic mapping hazard by Lund and others, 2008. The expansive bedrock is mapped as the Dinosaur Canyon member of the Moenave Formation. Our laboratory testing is currently in progress. Our experience in the area also indicate that claystone bedrock on the project site is moderately expansive.

An evaluation and analysis along with detailed recommendations to address this concern for expansive layers will be provided in a final report.

D. Landslides

See attached document.

E. Rock Fall

See attached document.

F. Faults

Based on previous work by Christenson and Deen (1983), Willis and Higgins (1995) Lund and others (2008), the inferred location of the St. George Fault is located further east near River Road.

PROPOSED CONSTRUCTION

The Cove Development will consist of developing the property with two 2 apartment/townhome type buildings. The buildings will be multiple levels with underground parking. The buildings are to be constructed with reinforced concrete on the garage level and wood framing on the above grade levels. We anticipate wall loads on the order of 8 to 10 kips per lineal foot and column loads up to 300 kips.

There will be access to the site from 900 South and 250 West which will be further improved as a part of the site development. There is an existing sewer up the 900 South roadway alignment. The anticipated traffic for the different areas consists of a Traffic Index of 7 for the Public Roads and a 5 for the parking and access areas.

The proposed grading consists of significant temporary cuts for construction. The cuts will be retained or shored during construction. The hill side cuts above the parking area are proposed to be retained by rockery faced slopes. The fills will be located in walkout areas and in the lower area on the west side of the project.

The proposed construction, or building loads are estimated and should be verified to refine our recommendations in the final report.

RECOMMENDATIONS

Based on our experience in the area, the subsurface conditions encountered, our engineering analysis, and the proposed construction, the following recommendations are provided. A final report will be provided that defines the expansive bedrock characteristics following completion of the lab testing. The final report will include overexcavation depths for buildings, foundation alternatives such as micropiles and shoring recommendations.

A. Site Grading

Based on the subsurface conditions and proposed grading provided by Bush & Gudgell Engineering, the following is provided:

1. Subgrade Preparation

General: Prior to placing structural fill, site grading fill or concrete, the site should be grubbed to remove vegetation and soil containing roots and organics.

Expansive Bedrock Removal - Buildings and Structures: We recommend that a separation be provided between the expansive claystone and the building pad grades. The thickness of removal will be defined and provided in a final report as the laboratory testing is completed. The claystone should be removed below structures, entry areas and canopies, extending at least 5 feet beyond the perimeter of the structure. The limits of removal should be determined by survey and documented following removal.

Expansive Bedrock Removal - Roadways and Flatwork*:* We recommend providing at least a separation of 4 feet below the proposed subgrade elevation and the surface of the expansive mudstone. The material should be removed a distance of at least 2 feet beyond the edge of roadway/flatwork improvements .

2. Excavation/Slopes

Based on the proposed grading, we anticipate that the majority of the cuts will be in bedrock. The cuts are significant and will require shoring or permanent retaining. Details will be provided in a final report.

The upper cuts will be in the sands and gravels with portions of the parking cuts extending into the bedrock. In order to maintain stable slopes, they should be retained or slopes should be graded no steeper than 2:1 Horizontal to Vertical (H:V). Fill slopes should be graded no steeper than 2:1 (H:V).

To control erosion and weathering, the bedrock cut slopes should be protected by erosion protection. This would be particularly critical where softer bedrock is exposed. Benches may also be cut into the slopes to assist in controlling drainage and erosion. Benches should be at least 5 feet in width and should be constructed at intervals in accordance with the 2018 IBC. In lieu of facing bedrock cuts, they could be flattened to a 3:1 (H:V) slope.

Fill slopes should be constructed by overbuilding the slope and then cutting back the slope face to the desired grade to provide a properly compacted slope face. Fill placed on existing slopes steeper than 3:1 (H:V) should be keyed into the existing slope using a benching procedure. Benches should be of sufficient width to allow for operation of compaction equipment.

Utility trenches excavated in the on-site soils should be excavated in accordance with OSHA requirements using a OSHA Soil Class C (1½:1 H:V) for overburden soils and Soil Class A (½:1 H:V) for trenches excavated into the bedrock. Steeper trenches may require the use of shoring or a trench box to provide as safe work environment. Safe trench excavation is the responsibility of the contractor.

3. Materials

Import materials should be non-expansive, non-gypsiferous, granular soil. Listed below are the materials recommended for imported fill.

Area	Fill Type	Recommendations
Foundations/slabs	Site grading/ structural fill	**-200** <35%, **LL** <30% Maximum size: 4 inches Solubility < 1%
Roadways	Base course	CBR>50%, **200** <12% Maximum size: ¾ inch
Underslab	Base course	**-200** <12% Maximum size: 1 inch

-200 = Percent Passing the No. 200 Sieve
LL = Liquid Limit

The on-site silt, sand and gravel soils and fill soils, free of organics and debris, are suitable for use as structural fill, site grading fill, and utility trench backfill. The on-site claystone is not suitable for use as structural fill or site grading fill, but may be used as fill in non structural areas, trench backfill, wall backfill, or at least 4 feet below pavement areas. An AGEC engineer should observed the bedrock removal to determine suitability for its intended use.

4. Compaction

Compaction of fill materials placed at the site should equal or exceed the following percentages when compared to the maximum dry density as determined by ASTM D-698 or ASTM D-1557:

Area	Percent Compaction ASTM D-698*	Percent Compaction ASTM D-1557**
Subgrade	90	90
Footings/foundations	NA	95
Slabs/Pad Fill (over excavation)	100	95
Utility trench backfill (Structural Areas)	100	95
Wall Backfill (Structural Areas)	100	95

* Fine-grained or processed mudstone/clay.

** Granular site grading/structural fill

Fill should be placed in lifts which do not exceed the capability of the equipment used. Generally 6 to 8 inch lifts are adequate for heavy rubber tire equipment. Lift thicknesses should be reduced to 4 inches for hand compaction equipment. Fill placed at the site should be properly moisture conditioned prior to placement and should be tested to verify proper compaction.

Fill materials should be properly moisture conditioned prior to placement. Fine-grained should be moisture conditioned to 0 to 4 percentage points over the optimum moisture content as determined by ASTM D-698. Granular soil should be

moisture conditioned to within 2 percentage points of the optimum moisture content as determined by ASTM D-1557.

5. Drainage

The following drainage recommendations should be implemented:

- Positive site drainage should be maintained during the course of construction. In no case should water be allowed to pond adjacent to buildings/foundations.

- After construction has been completed, positive drainage of surface water away from the structures should be maintained throughout the life of the structures. We recommend a minimum slope of 6 inches in the first 10 feet from the perimeter of the structures. Hard or impermeable surfaces may be used to direct water away from buildings.

- Roof gutters should also be utilized with downspouts which extend out away and down slope from buildings. Preferably, downspouts should discharge off-site.

- Landscaping that requires water (grass) should be limited to reduce the potential for wetting of foundation support soils and to reduce the potential future accumulation of perched water on top of the bedrock.
- We also recommend that desert landscaping, which requires little to no water, be used adjacent to concrete or masonry walls which will be backfilled to reduce salt migration of soluble salts and the subsequent salt weathering on cement containing elements. The below grade portions of walls/fences which are backfilled with soil should be protected with an impermeable membrane and a subsurface drain. A gravel covered, perforated PVC pipe should also be placed at the base of the wall to carry water to a discharge point. This is intended to reduce the potential for salt weathering and sulfate attack on concrete/masonry.

6. Subsurface Drainage Protection

A perimeter subsurface drain should be provided around the basement of each structure.

The drain system should consist of 1 foot of gravel adjacent the perimeter foundation supporting the building. A 4 inch perforated PVC pipe should be placed in the bottom of the gravel zone sloped at a 1% grade (minimum) to drain by gravity. Prior to backfilling, Mirafi 140N filter fabric should be placed over the gravel.

B. Foundation Recommendations

Based on the subsurface conditions, the proposed grading provided by Bush & Gudgell Engineering and that the proper separation from expansive soils has been provided, the following foundation recommendations are provided for support of slab on grade foundations. If the expansive soils are not removed to provide the proper separation, the use of micropiles or a deep foundation system should be used. Recommendations for deep foundation systems are not included in this report. If requested, those recommendations can be provided.

1. Foundations

   The proposed structures may be supported on conventional spread footings with slab-on-grade floors supported on a properly prepared subgrade as indicated in the Subgrade Preparation section of this report.

2. Bearing Material

   Footings should bear on properly compacted structural fill underlain by a properly prepared subgrade as recommended in the Subgrade Preparation section of this report.

3. Bearing Pressure

   Spread footings bearing on properly compacted structural fill may be designed for a net allowable bearing pressure of 2,500 pounds per square foot (psf). Spot footings supporting columns or footings with a width of greater than 3 feet may be

designed for a net allowable bearing pressure of 3,000 psf. If larger footings are anticipated, the bearing pressures may be increased with further evaluation.

4. Temporary Loading Conditions

The bearing pressure indicated above may be increased by one-half for temporary wind and seismic loads.

5. Footing Width and Embedment

Spread footings should have a minimum width of 18 inches and exterior or unheated footings should be embedded at least 12 inches below the lowest adjacent grade.

6. Settlement/Heave

Based on the subsoil conditions encountered and the anticipated building loads, we estimate a total settlement/heave for the foundation designed as indicated above to be up to approximately 1 inch. Differential settlement is estimated to be approximately ½ inch.

C. Concrete Slab-on-Grade

1. Slab Support

Concrete slabs may be supported on a properly compacted subgrade as recommended in the Subgrade Preparation section of this report. Fill placed in slab areas should be tested to verify compaction meets the recommendations provided within this report.

2. Underslab Base Course

A 4-inch layer of properly compacted base course should be placed below slabs to provide a firm and consistent subgrade and promote even curing of the concrete.

D. Lateral Earth Pressures

1. Lateral Resistance for Footings

Lateral resistance for spread footings is controlled by sliding resistance developed between the footing and the subgrade soil. An ultimate friction value of 0.45 may be used in design for ultimate lateral resistance of footings bearing on properly compacted structural fill.

2. Retaining Structures

The following equivalent fluid weights are given for design of subgrade walls and retaining structures. The active condition is where the wall moves away from the soil. The passive condition is where the wall moves into the soil and the at-rest condition is where the wall does not move. We recommend the basement walls be designed in an at-rest condition.

The values listed below assume a horizontal surface adjacent the top and bottom of the wall.

Description	Active	At-Rest	Passive
Granular Backfill (Sand or Gravel)	35 pcf	55 pcf	350 pcf
Granular Backfill - Earth Pressure Coefficient	0.28	0.44	-
On-site Clay Soil/Processed claystone	50 pcf	65pcf	190 pcf
On-site Clay Soil/Processed claystone - Earth Pressure Coefficient	0.45	0.59	-

The above values account for the lateral earth pressures due to the soil and level backfill conditions and do not account for hydrostatic pressures or surcharge loads.

Lateral loading should be increased to account for surcharge loading using the appropriate earth pressure coefficient and a rectangular distribution if structures are placed above the wall and are within a horizontal distance equal to the height of the

wall. If the ground surface slopes up away from the wall, the equivalent fluid weights should also be increased.

Care should be taken to prevent percolation of surface water into the backfill material adjacent to the retaining walls. The risk of hydrostatic buildup can be reduced by placing a subdrain behind the walls consisting of free-draining gravel wrapped in a filter fabric.

3. Seismic Conditions

Under seismic conditions, the equivalent fluid weights should be modified as follows according to the Mononobe-Okabe method assuming a level backfill condition:

Lateral Earth Pressure Condition	Seismic Modification (2% PE in 50 yrs)
	Granular Backfill
Active	7 pcf increase
At-rest	no increase
Passive	18 pcf decrease

The resultant of the seismic increase should be placed up ⅓ from the base of the wall.

4. Safety Factors

The given values assume mobilization of the soil to achieve the assumed soil strength. Conventional safety factors used for structural analysis for such items as overturning and sliding resistance should be used in design.

E. Seismicity

Listed below is a summary of the site parameters as required by the 2018 International Building Code and ASCE 7, Chapter 20:

Description	Seismic Event - 2% PE in 50 Yrs
	Value
2018 IBC Site Class	C
PGA	0.22g
S_s (0.2 second period)	0.505g
S_1 (1 second period)	0.164g
F_{PGA}	1.2
F_a	1.298
F_v	1.5

The values provided above were generated using the ASCE 7-16 Siesmic Hazard tool.

Based on the observed subsurface conditions, a ground motion hazard analysis (GMHA) as per ASCE 7-16 is not required by the 2018 International Building Code. A 10-percent decrease in design seismic load might be achieved if shear wave velocities are measured on site. If this is requested, we propose to perform a Refraction Microtremor (ReMi) survey to measure subsurface shear wave velocity.

F. Soil Corrosion

Our experience has shown that portions of the on-site soil/bedrock and many imported soils may contain sulfates in sufficient concentration to be corrosive to concrete. Therefore, we recommend concrete elements that will be exposed to the on-site soils be designed in accordance with provisions provided in the American Concrete Institute Manual of Concrete Practice (ACI) 318-14. Tables 19.3.1.1 and 19.3.2.1 of ACI 318-14 should be referenced for design of concrete elements utilizing a Sulfate Exposure Class of S2.

Consideration should also be given to cathodic protection of buried metal pipes. We recommend utilizing PVC pipes where local building codes allow.

G. Pavement

Based on the subsoil conditions encountered and the laboratory test results, the following recommendations are given:

1. Analysis

Asphaltic Concrete: The flexible pavement analysis is based on UDOT and AASHTO design methods and a 20 year design life. The following parameters were considered for our analysis:

- Base course that meets specifications which would correspond to a Structural Coefficient (a_2) of at least 0.12. Asphalt that provides a Structural Coefficient (a_1) of at least 0.40.

- Drainage Coefficient = 1.0.
- The subgrade support soils consists generally of silty sand to gravel. Based on the on-site soils, a M_R value of 15,000 psi was used for the subgrade based upon an estimated California Bearing Ratio (CBR) value of 10 percent and the relationship between CBR and Resilient Modulus (M_R).
- Serviceability Index: P_o=4.2, P_t=2.5.
- Reliability of 90 percent.
- Standard Deviation (S_o) = 0.45.

2. Subgrade Support

We anticipate the subgrade materials will consist of compacted on-site silty sand to gravel. Our design assumes a properly compacted subgrade. Prior to placing base course or pavement area grading fill, the subgrade should be prepared as recommended in the Subgrade Preparation section of this report.

3. Pavement Thickness

Based on the anticipated traffic, a 20 year design life, PCC and AASHTO design methods, the following pavement sections are recommended.

	Flexible Pavement	
Area	Asphaltic concrete (inches)	Base Course (inches)
300 West, 900 South	3	8
Acces/Entrance Road	2.5	8
Parking areas	2.5	6

4. Pavement Materials

The pavement materials should meet AASHTO and City of St. George Specifications for gradation and quality. The pavement thicknesses indicated above assume that the base course is high quality material with a CBR of at least 60 percent. Asphalt material should have a Marshall stability of at least 1,800 pounds.

5. Drainage

The collection and diversion of drainage away from the pavement surface is extremely important to the satisfactory performance of the pavement section. Proper drainage should be provided. We further recommend a yearly maintenance program including crack sealing and a surface treatment such as a “slurry seal” to extend the pavement life and reduce water infiltration into the subsurface soils.

H. Construction Testing and Observations

We recommend testing fill, concrete, and asphalt materials at a frequency which meets or exceeds St. George City minimum testing frequency requirements for city improvements.

We also recommend the following:

1. Verify the subgrade is properly prepared/compacted in accordance with the recommendations provided in the Subgrade Preparation section of this report.

2. Verify that foundation subgrade is properly compacted prior to placement of concrete.

3. Conduct compaction testing on fill placed below foundations, in building pads, and paved areas. We recommend testing each foot of fill placed.

4. Conduct construction materials testing of soils, concrete and asphalt materials and special inspections as required for the proposed construction by St. George City and the structural engineer.

5. Conduct special inspections on the proposed building as required by the 2018 International Building Code and the structural engineer.

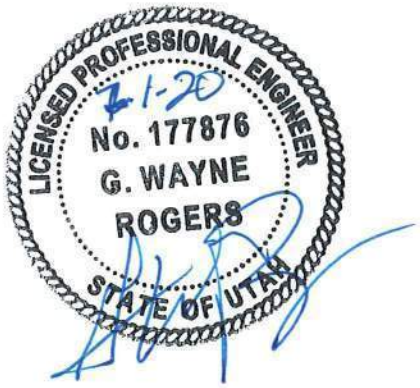
I. Geotechnical Recommendation Review

The client should familiarize themselves with the information contained in this report. If specific questions arise or if the client does not fully understand the conclusions/recommendations provided, AGEC should be contacted to provide clarification.

LIMITATIONS

This report has been prepared in accordance with generally accepted soil and foundation engineering practices in the area for the use of the client for design purposes. The conclusions and recommendations included within the report are based on the information obtained from the subsurface investigation, laboratory test results and our experience in the area. Variations in the subsurface conditions may not become evident until excavation is conducted. If the subsurface conditions or groundwater level are found to be significantly different from those described above, we should be notified to reevaluate our recommendations.

APPLIED GEOTECHNICAL ENGINEERING CONSULTANTS, INC.



G. Wayne Rogers, P.E.

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REFERENCES:

Christenson, G.E. and Deen, R.D., 1983, Engineering Geology of the St. George area Washington County, Utah: Utah Geological and Mineral Survey Special Studies 58, 32 p., scale 1:24,000.

Lund, W.R., Knudsen, T.R., Vice, G.S., and Shaw, L.M., 2008, Geologic hazards and adverse construction conditions, St. George-Hurricane Metropolitan Area, Washington County, Utah, Utah Geological Survey Special Study 127, 14 plates, scale 1:24,000.

Hayden, Janice, M and Willis, Grant C. UGS Map 251DM. 2011, Geologic Map of the St. George Quadrangle, Washington County, Utah, Utah Geological Survey.

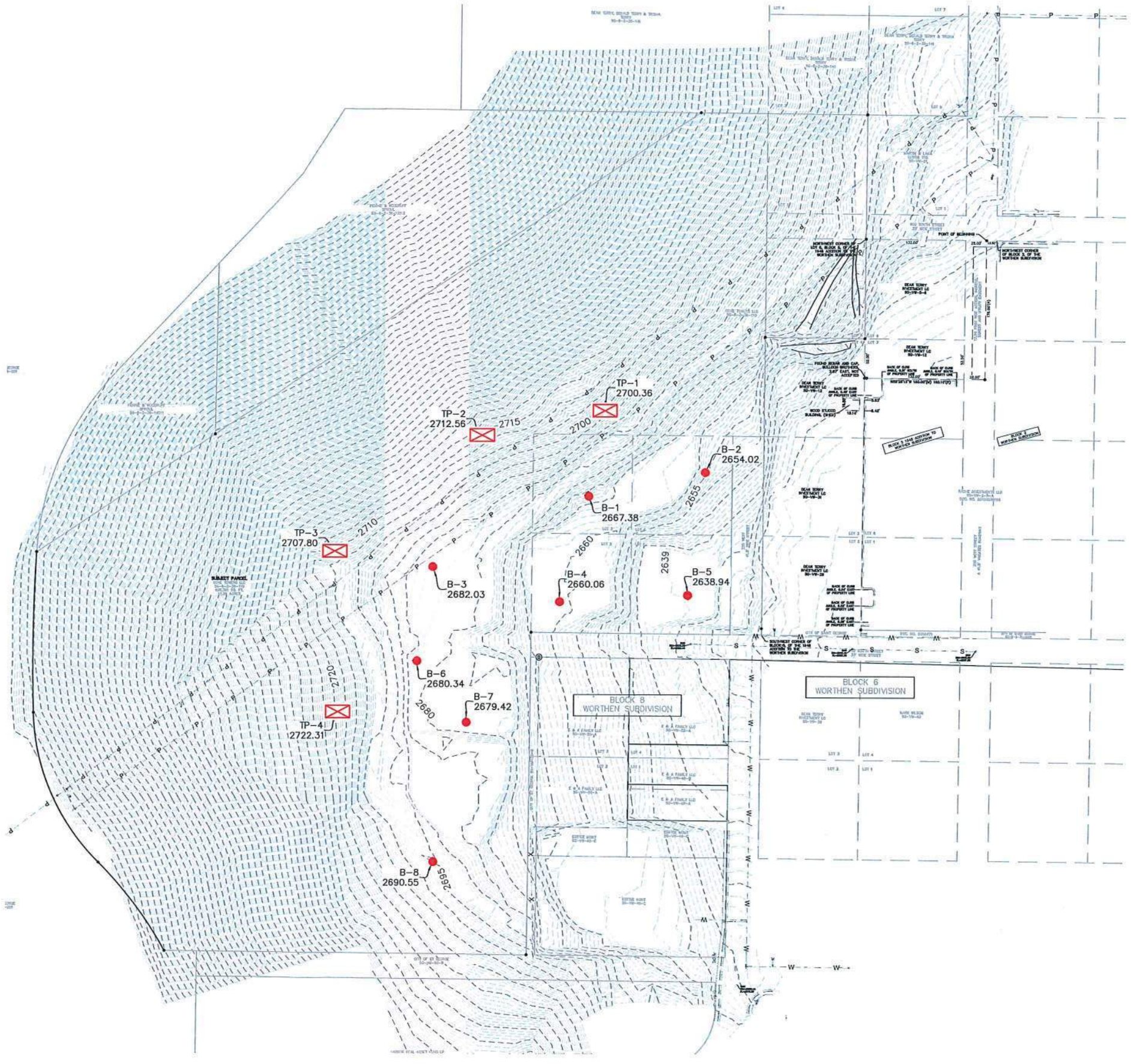
THE COVE
ST. GEORGE, UTAH

N

Not to Scale

2192092	AGEC	Vicinity Map	Figure 1

THE COVE
ST. GEORGE, UTAH



- Approximate boring location
- Approximate test pit location

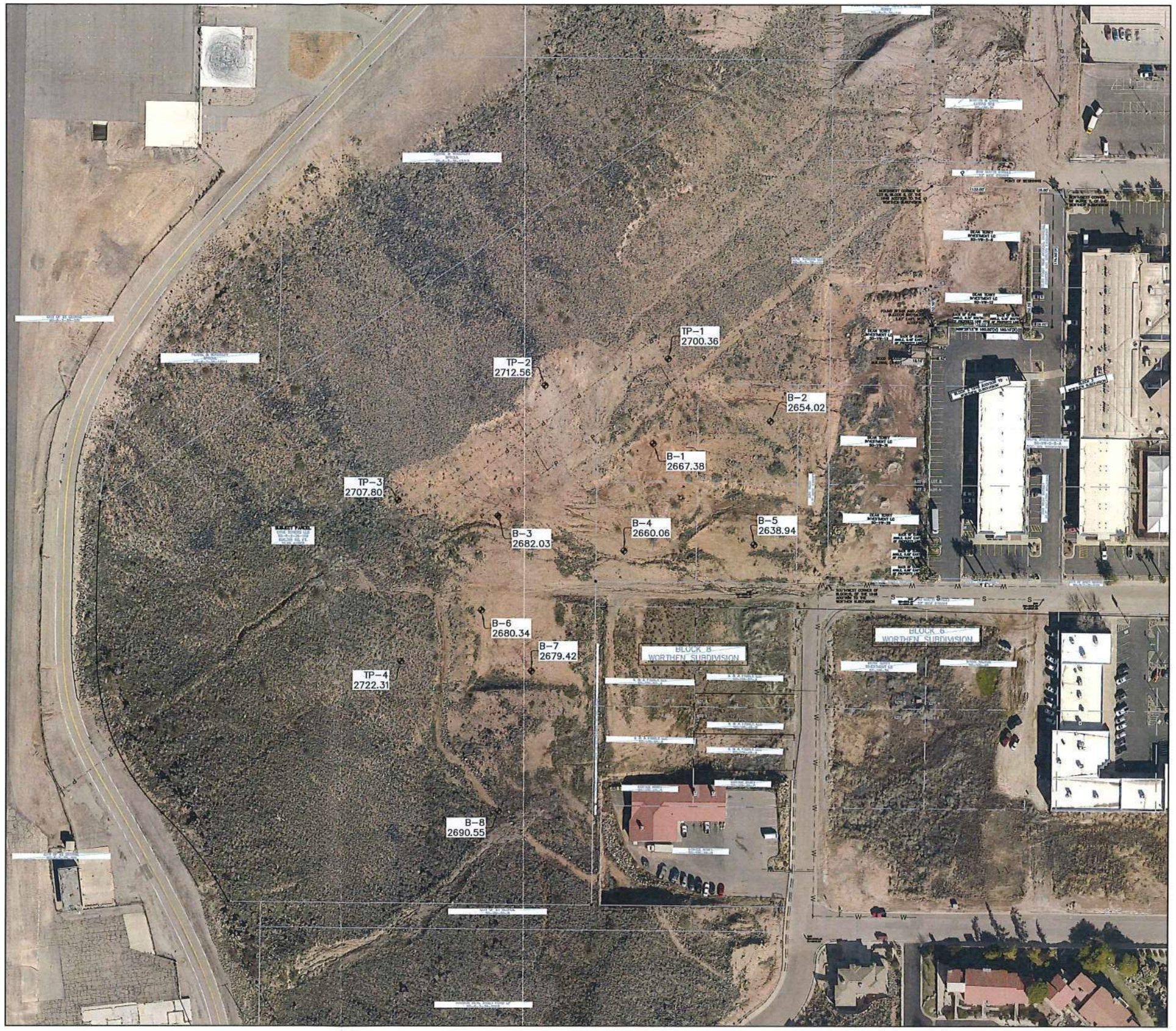
N

0 150 300 feet

Approximate Scale

2192092	AGEC	Site Plan	Figure 2

THE COVE
ST. GEORGE, UTAH

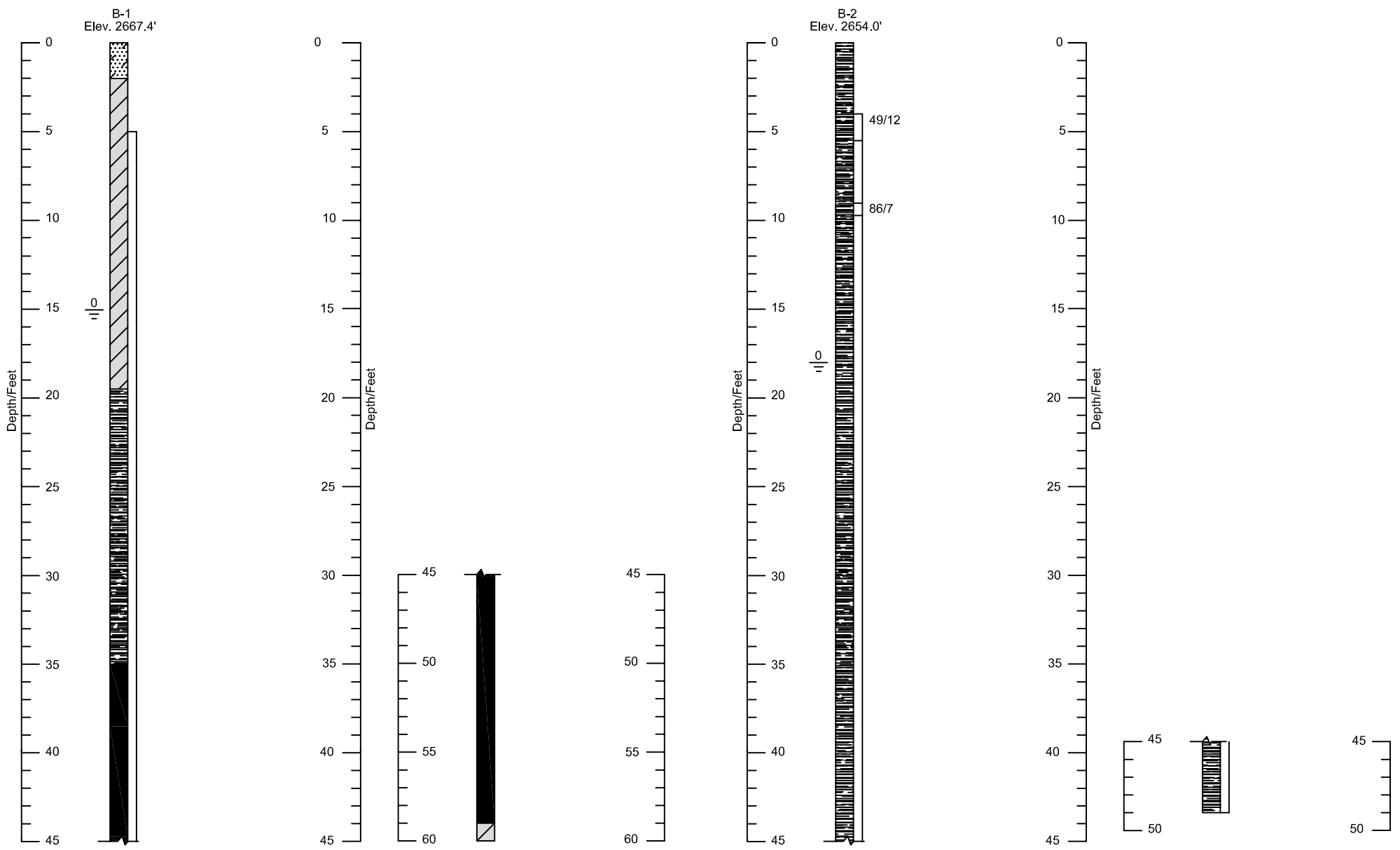


N

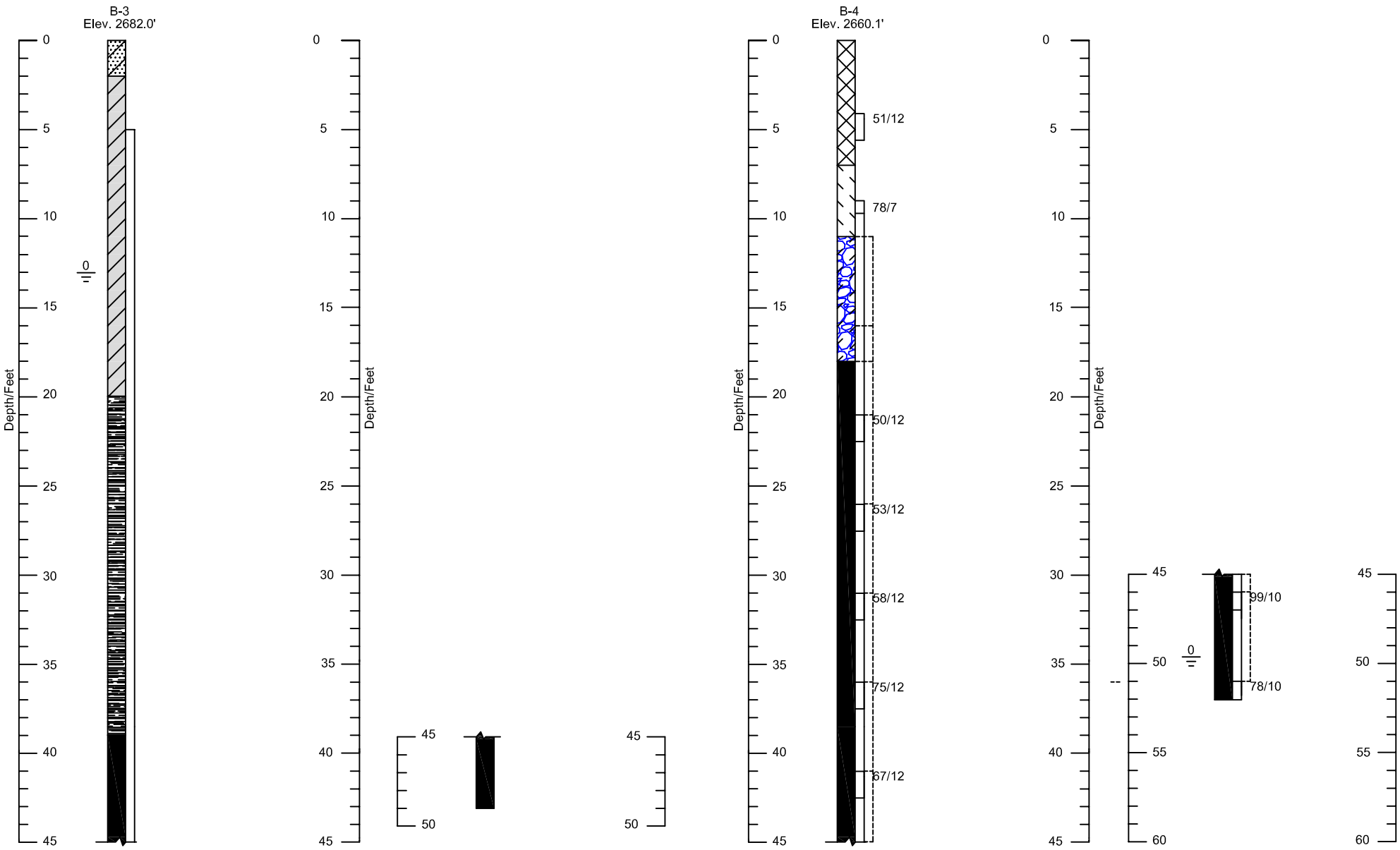
0 200 400 feet

Approximate Scale

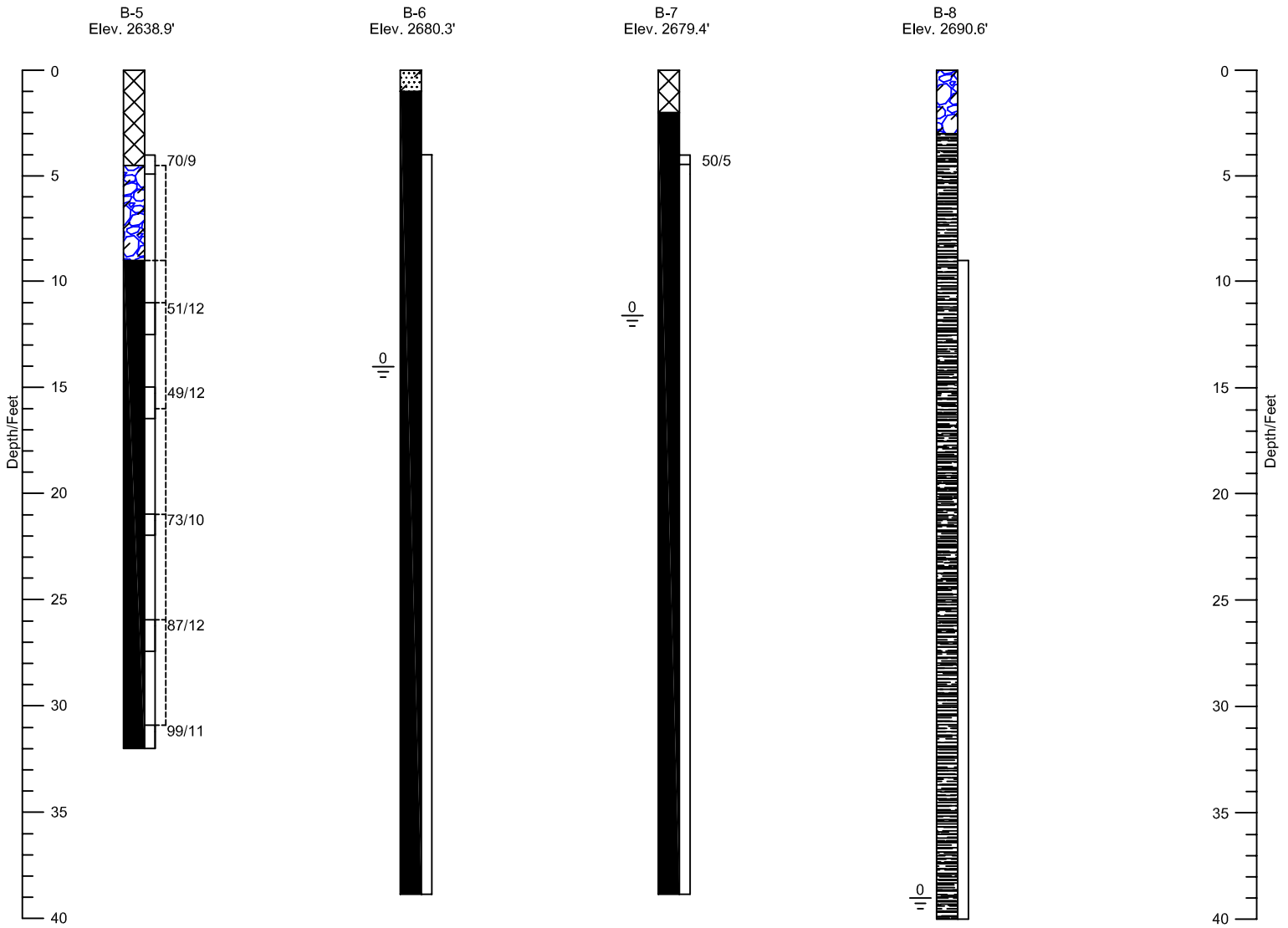
2192092	AGEC	Site Plan	Figure 2a



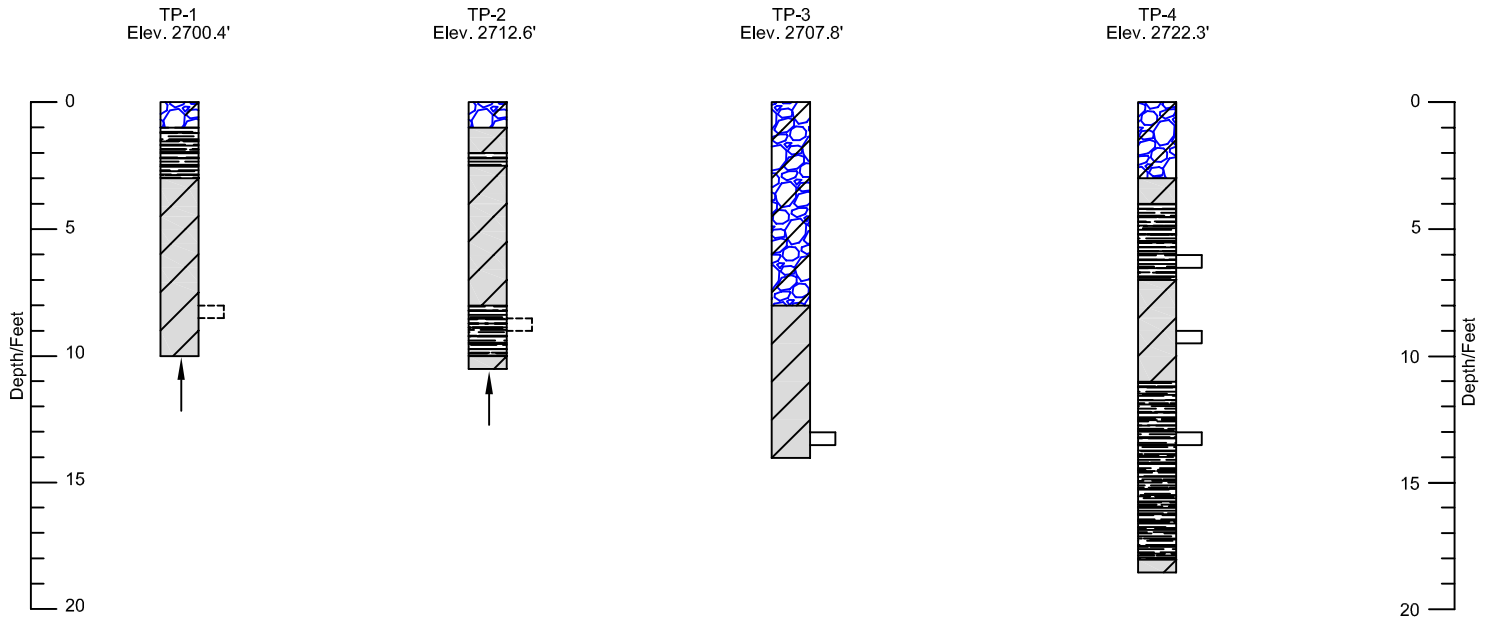
2192092 | AGEC | Logs of Exploratory Borings | Figure 3



2192092 | AGEC | Logs of Exploratory Borings | Figure 4



2192092	AGEC	Logs of Exploratory Borings	Figure 5



2192092	AGEC	Logs of Exploratory Borings	Figure 6

LEGEND:

Fill; Silty to Clayey Sand with Gravel, poorly compacted, slightly moist, and reddish brown in color.

Fat Clay (CH); medium stiff, moist, and reddish brown in color.

Clayey Sand (SC); medium dense, slightly moist, and reddish brown in color.

Silty Sand (SM); medium dense, moist, and reddish brown in color.

Clayey Gravel (GC); dense, moist, basalt cobbles and boulders, and black to red in color.

Silty Gravel with Sand (GM); dense, moist, basalt cobbles and boulders, and black to red in color.

Shale Bedrock; moderately hard, slightly moist, low to medium plastic, layered, gypsum, and red in color.

Claystone Bedrock; soft to moderately hard, moist, medium to high plastic, gypsum streaks, and red with white in color.

Siltstone Bedrock; moderately hard, slightly moist, non to low plastic, sandstone lenses/layers, and red-brown in color.

California drive sample taken. The symbol 10/12 indicates that 10 blows from a 140 pound hammer falling 30 inches were required to drive the sampler 12 inches.

Indicates core sample taken.

Indicates relatively undisturbed block sample taken.

Indicates disturbed sample taken.

Indicates the depth to free water and the number days after excavation the measurement was taken.

Indicates practical trackhoe refusal on boulders, sandstone bedrock, or limestone bedrock.

NOTES:

1. The borings were drilled on June 4, 5, 8, 9, and 10 with a truck mounted drill rig equipped with 8-inch hollow-stem augers. The test pits were excavated on June 9 and 10, 2020 with a trackhoe. Portions of the bedrock were cored using a 2½ inch diameter HQ bit using either air or mud rotary.
2. The locations and elevations of the borings and test pits were measured by survey by Bush and Gudgell, Inc.
3. The boring and test pit locations and elevations should be considered accurate only to the degree implied by the method used.
4. The lines between the materials shown on the logs represent the approximate boundaries between material types and the transitions may be gradual.
5. Water level readings shown on the logs were made at the time and under the conditions indicated. Fluctuations in the water level may occur with time.

B-1 @ 5-15 ft.

B-1 @ 15-24 ft

B-1 @ 24-32 ft.

B-1 @ 32-41 ft.

B-1 @ 41-50 ft.

B-1 @ 50-58 ft.

B-1 @ 58-60 ft.

B-2 @ 9-23 ft.

B-2 @ 23-32 ft.

B-2 @ 32-42 ft.

B-2 @ 42-44 ft.

B-3 @ 4-19 ft.

B-3 @ 19-29 ft.

B-3 @ 29-39 ft.

B-3 @ 39-49 ft.

B-6 @ 4-14 ft.

B-6 @ 14–26 ft.

B-6 @ 26-34 ft.

B-6 @ 34-39 ft.

B-7 @ 4-17 ft.

B-7 @ 17-26 ft.

B-7 @ 26-36 ft.

B-7 @ 36-39 ft.

B-8 @ 9-22 ft.

B-8 @ 22-29 ft.

B-8 @ 29-34 ft.

B-8 @ 34-39 ft.

AGEC
Applied GeoTech

January 6, 2020

Holdaway Construction
38 East 590 North
Hurricane, Utah 84737

Attention: Brent Holdaway
EMAIL: bholdaway@live.com

Subject: Geologic-hazard Assessment
Proposed Cove Development
300 West 900 South
St George, Utah
Project No. 2192092

Gentlemen:

Applied Geotechnical Engineering Consultants, Inc. (AGEC) was requested to evaluate geologic hazards for the proposed Cove development to be constructed at approximately 300 West 900 South in St George, Utah.

PROPOSED CONSTRUCTION

We understand a mixed-use development consisting of retail, restaurant and residential facilities is planned for the east portion of the property. The west side of the developed area will be cut into the slope of the hillside.

GEOLOGY

The geology of the site is mapped by Hayden and Willis (2011) to consist of talus and landslide deposits on the hillside and bedrock near the base of the slope. The relatively flat east side of the property is mapped as mixed eolian and alluvial deposits. The bedrock is the Springdale Sandstone Member of the Kayenta Formation overlying the Whitmore Point Member of the Moenave Formation overlying the Dinosaur Canyon Member of the Moenave Formation. The bedrock dips gently down in a north/east direction.

Low-sun-angle aerial photographs from 1981, color aerial photographs from 2000, black and white aerial photographs from 1960 and lidar data from 2017 were reviewed to evaluate geologic hazards in the area. The resolution of the photographs along is not sufficient to allow evaluation of rockfall. In addition, the area planned for development had been disturbed

by the time of the photographs. Landslide deposits can be identified on the aerial photographs south of the site. The landslide mapped on the northwest slope above the proposed development area is not apparent from the aerial photographs or lidar. The area mapped as landslide is terraced suggesting there may be creep or shallow-depth movement of the ground in this area. The affected soil does not appear to extend more than about 2 or 3 feet deep.

ROCKFALL EVALUATION

There are outcrops of basalt above the property with some areas of rock that could potentially become dislodged, particularly during a major earthquake, and result in rockfall hazard for the proposed development. The rocks are generally less than 5 feet in size. The approximate extent of the rockfall hazard is presented on Figure 2. This is based on field observation and experience with similar sites in the area. The extent of the potential rockfall hazard cannot be well defined due to land disturbance and likely removal of rocks in the runout zone.

The area planned for buildings could be protected from rockfall hazards by constructing a barrier along the uphill side of the development or removal of the source rocks.

The rockfall-protection berm, assumed to be constructed just up slope of the west and northwest cut slopes for the development, should have a height of at least 8 feet, a top width of at least 6 feet and an upslope face of ½ horizontal to 1 vertical or steeper. It is important to have a steep upslope face for the berm so rocks are not directed over the berm. The berm should be reinforced using geogrid to maintain a steep upslope face. The reinforcement spacing and slope construction will depend on the type of fill used and reinforcement selected. Internal design of the berm reinforcement could be provided upon request.

LANDSLIDE EVALUATION

The landslide on the northwest side of the property appears to be less than 2 or 3 feet deep and is not expected to be a hazard for the proposed development if slopes are adequately reinforced. This should be evaluated in the geotechnical study for the site.

OTHER GEOLOGIC HAZARDS

Other geologic hazards considered for this study are debris flow and fault rupture. Based on geologic mapping for the area, our site reconnaissance, and review of aerial photographs and lidar data, these are not considered hazards at the site.

LIMITATIONS

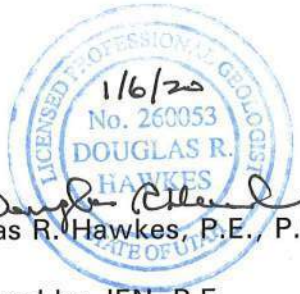
This letter has been prepared in accordance with generally geologic engineering practices in the area for the use of the client. The conclusions and recommendations included in the letter are based on conditions observed during our field study, topographic information provided and

our experience with similar type projects. If conditions are significantly different from those described in this letter, we should be notified to reevaluate the recommendations given.

If you have questions or if we can be of further service, please call.

Sincerely,

APPLIED GEOTECHNICAL ENGINEERING CONSULTANTS, INC.

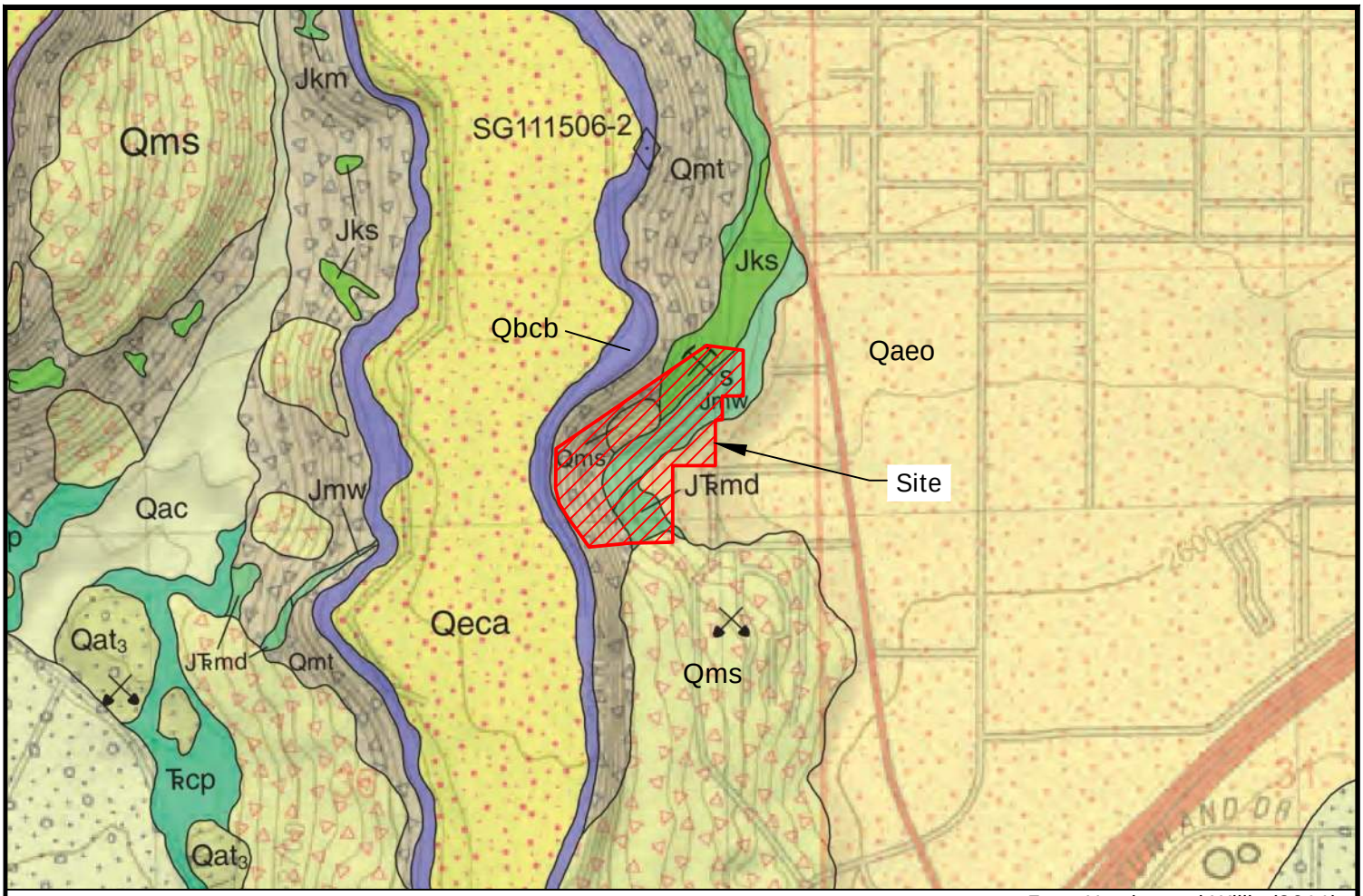


Douglas R. Hawkes, P.E., P.G.

Reviewed by JEN, P.E.
DRH/rs
Enclosures

Reference:

Hayden, J.M. and Willis, G.C., 2011; Geologic map of the St George 7.5' quadrangle, Washington County, Utah, Utah Geological Survey Map 251DM.



From Hayden and Willis (2011)

EXPLANATION OF SYMBOLS AND GEOLOGIC UNITS IN AREA OF PROPOSED DEVELOPMENT

Qmt - Talus deposits (Holocene to upper Pleistocene)

Qms - Landslide deposits (Holocene to middle Pleistocene).

Qeca - Eolian and alluvial deposits with thick calcic soil on lava flows (Holocene to lower Pleistocene).

Qaeo - Mixed alluvial and eolian deposits (Holocene to middle Pleistocene).

Qbcb - Cedar Bench lava flow (lower Pleistocene)

Jks - Springdale Sandstone Member of the Kayenta Formation (Lower Jurasic)

Jmw - Whitmore Point Member of the Moenave Formation (Lower Jurassic)

JTrmd - Dinosaur Canyon Member of the Moenave Formation (Lower Jurassic to Upper Triassic).

——— — — Geologic contact between units, dashed where approximate.

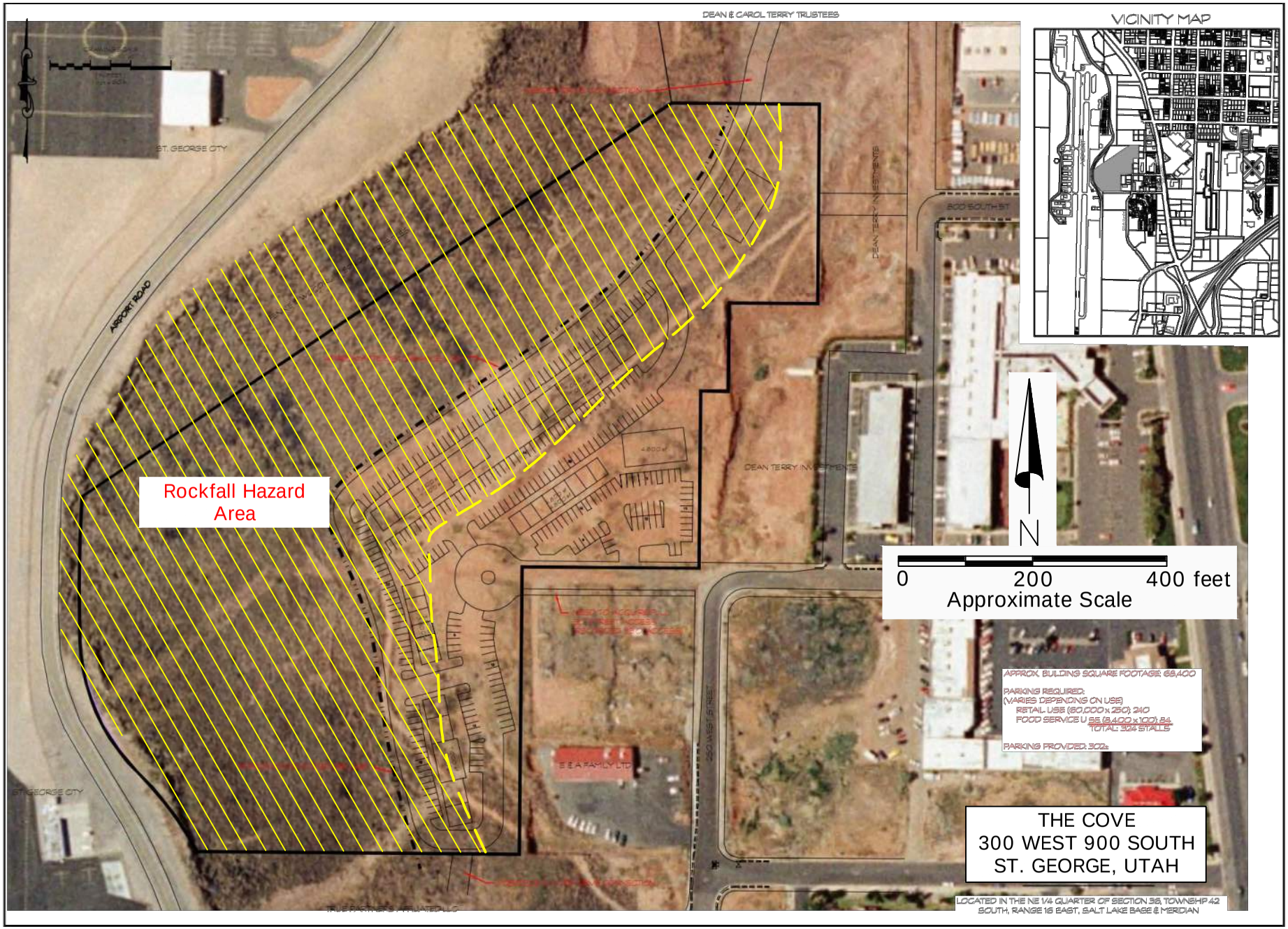
Normal fault, bar and ball on down thrown side, dashed where approximate, dotted where concealed.

N

0 1000 2000 feet

Approximate Scale

THE COVE
300 WEST 900 SOUTH
ST. GEORGE, UTAH



2192092	AGEC	Rockfall Hazard Area	Figure 2

Exhibit G

Hazards Report

AGEC
Applied GeoTech

January 6, 2020

Holdaway Construction
38 East 590 North
Hurricane, Utah 84737

Attention: Brent Holdaway
EMAIL: bholdaway@live.com

Subject: Geologic-hazard Assessment
Proposed Cove Development
300 West 900 South
St George, Utah
Project No. 2192092

Gentlemen:

Applied Geotechnical Engineering Consultants, Inc. (AGEC) was requested to evaluate geologic hazards for the proposed Cove development to be constructed at approximately 300 West 900 South in St George, Utah.

PROPOSED CONSTRUCTION

We understand a mixed-use development consisting of retail, restaurant and residential facilities is planned for the east portion of the property. The west side of the developed area will be cut into the slope of the hillside.

GEOLOGY

The geology of the site is mapped by Hayden and Willis (2011) to consist of talus and landslide deposits on the hillside and bedrock near the base of the slope. The relatively flat east side of the property is mapped as mixed eolian and alluvial deposits. The bedrock is the Springdale Sandstone Member of the Kayenta Formation overlying the Whitmore Point Member of the Moenave Formation overlying the Dinosaur Canyon Member of the Moenave Formation. The bedrock dips gently down in a north/east direction.

Low-sun-angle aerial photographs from 1981, color aerial photographs from 2000, black and white aerial photographs from 1960 and lidar data from 2017 were reviewed to evaluate geologic hazards in the area. The resolution of the photographs along is not sufficient to allow evaluation of rockfall. In addition, the area planned for development had been disturbed

by the time of the photographs. Landslide deposits can be identified on the aerial photographs south of the site. The landslide mapped on the northwest slope above the proposed development area is not apparent from the aerial photographs or lidar. The area mapped as landslide is terraced suggesting there may be creep or shallow-depth movement of the ground in this area. The affected soil does not appear to extend more than about 2 or 3 feet deep.

ROCKFALL EVALUATION

There are outcrops of basalt above the property with some areas of rock that could potentially become dislodged, particularly during a major earthquake, and result in rockfall hazard for the proposed development. The rocks are generally less than 5 feet in size. The approximate extent of the rockfall hazard is presented on Figure 2. This is based on field observation and experience with similar sites in the area. The extent of the potential rockfall hazard cannot be well defined due to land disturbance and likely removal of rocks in the runout zone.

The area planned for buildings could be protected from rockfall hazards by constructing a barrier along the uphill side of the development or removal of the source rocks.

The rockfall-protection berm, assumed to be constructed just up slope of the west and northwest cut slopes for the development, should have a height of at least 8 feet, a top width of at least 6 feet and an upslope face of ½ horizontal to 1 vertical or steeper. It is important to have a steep upslope face for the berm so rocks are not directed over the berm. The berm should be reinforced using geogrid to maintain a steep upslope face. The reinforcement spacing and slope construction will depend on the type of fill used and reinforcement selected. Internal design of the berm reinforcement could be provided upon request.

LANDSLIDE EVALUATION

The landslide on the northwest side of the property appears to be less than 2 or 3 feet deep and is not expected to be a hazard for the proposed development if slopes are adequately reinforced. This should be evaluated in the geotechnical study for the site.

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Other geologic hazards considered for this study are debris flow and fault rupture. Based on geologic mapping for the area, our site reconnaissance, and review of aerial photographs and lidar data, these are not considered hazards at the site.

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This letter has been prepared in accordance with generally geologic engineering practices in the area for the use of the client. The conclusions and recommendations included in the letter are based on conditions observed during our field study, topographic information provided and

our experience with similar type projects. If conditions are significantly different from those described in this letter, we should be notified to reevaluate the recommendations given.

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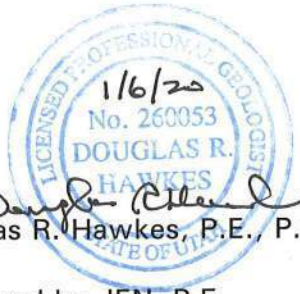

Douglas R. Hawkes, P.E., P.G.

Reviewed by JEN, P.E.
DRH/rs
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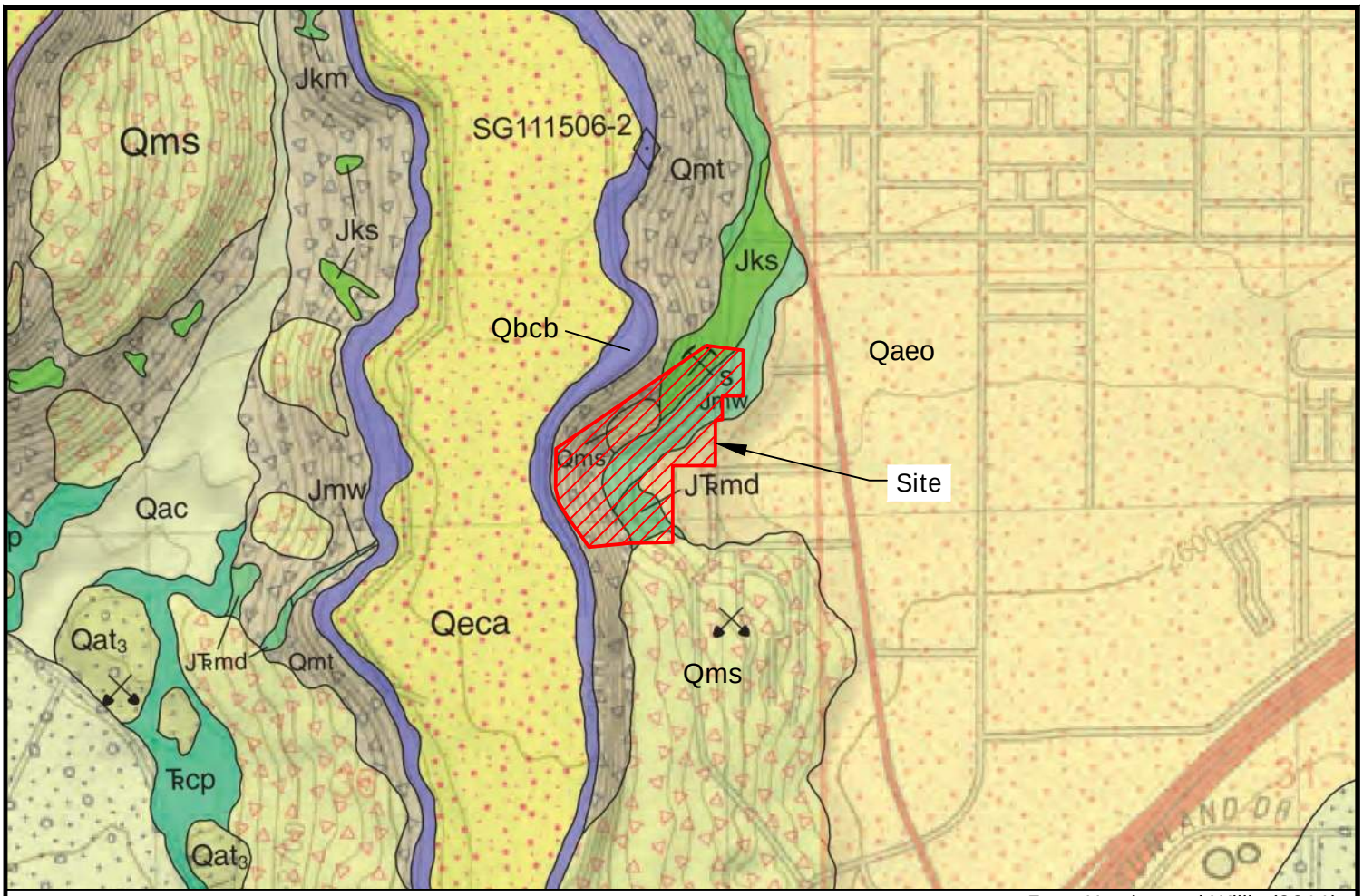

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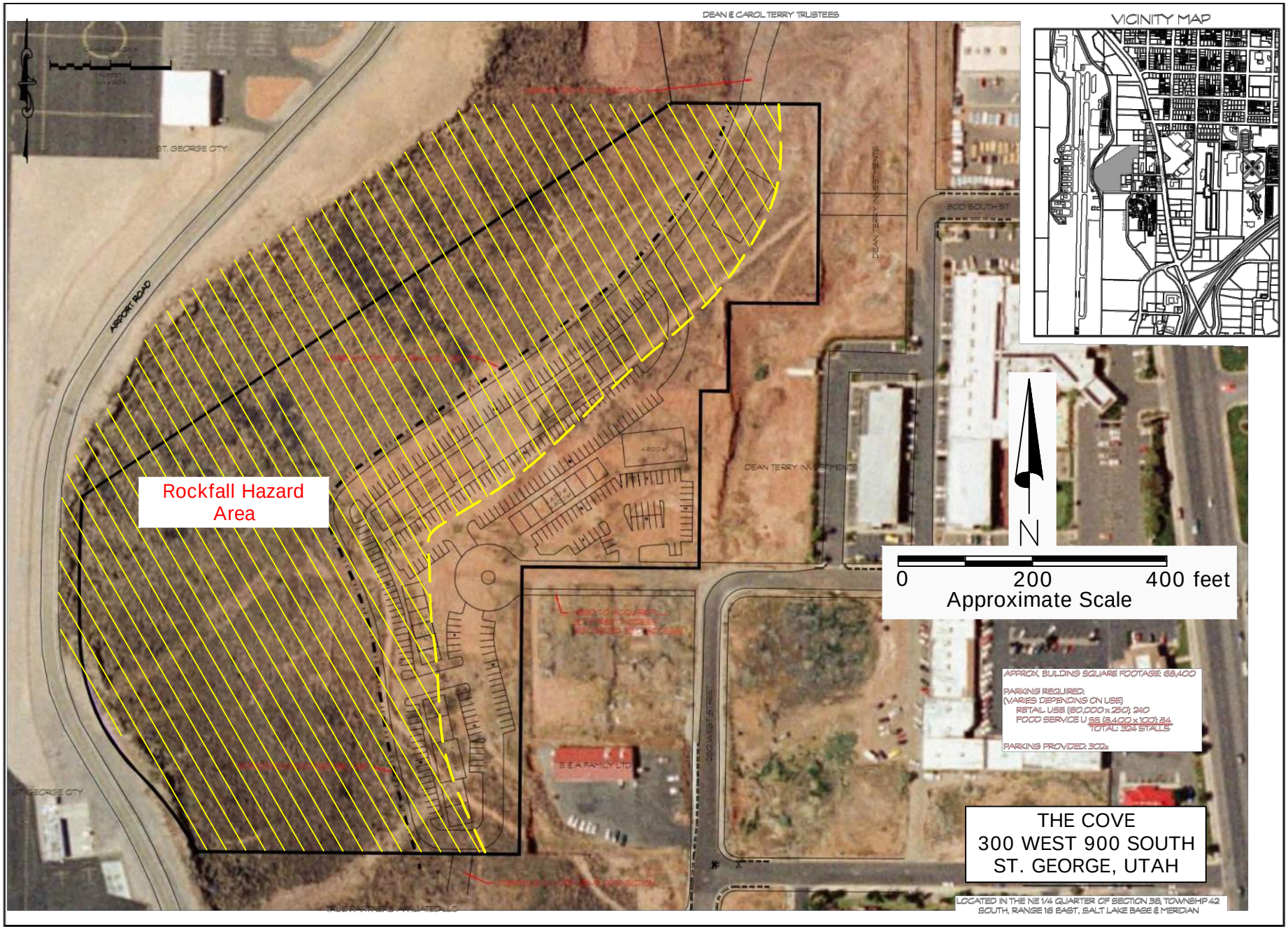


2192092	AGEC	Rockfall Hazard Area	Figure 2

Exhibit H

Rockfall Mitigation Report 2023

October 6, 2021

Wasatch Commercial Builders, LLC
40 East Galivan Way 2nd Floor
Salt Lake City, Utah 84111

Attn: Josh Lyon
email: jlyon@wasatchcb.com

Subject: Rockfall Mitigation and Slope Protection Recommendations
Soleil Ridge
St, George, Utah
AGEC Project No. 2201872

Applied Geotechnical Engineering Consultants, Inc. (AGEC) was requested to provide recommendations for rockfall mitigation and slope protection for the above referenced project. AGEC has previously provided a Rock Fall Study for the property under Project No. 2192092. As a part of the project, a rockfall hazard has been identified and evaluated by AGEC. During the study, the rockfall hazard was defined and a rockfall "runout line" was determined. AGEC was requested to provide options for mitigation of the rock fall hazard. The rockfall hazard area includes the hillside perimeter of the property on the northwest, west and southwest. See photos No. 1 and 2 for typical slope conditions.

AGEC has further evaluated the rockfall into levels of hazard areas that have been designated as Zones for various levels of rock fall hazard (See Figure 1). The rock fall hazard was divided into Zone 1 (High), Zone 2 (moderate) and Zone 3 (low). These zones were based on our evaluation of the potential risk of rockfall, source of rock, steepness of the slope and the proximity of planned adjacent buildings.

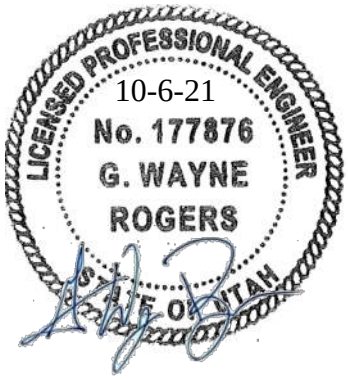
AGEC has previously provided a preliminary slope detail during the original hillside review. The original detail was provided prior to the current plan. This detail has been modified to assist with rockfall mitigation due to the current plan and building locations. Based on the additional evaluation and changes in the proposed construction, a revised detail has been provided on Figure 2 with the notes on Figure 3. The detail includes that the existing slope will be cut into bedrock at approximately ½ to 1 (horizontal to vertical) with benches per IBC Chapter 18, Appendix J. The base of the cut slope will have a rock slope with a

drainage catchment or ditch at the top of the wall. The top of the slope will include a rockfall berm that varies in size depending on the rockfall Zone designation shown on Figure 1. Several photos of an adjacent project, Monster Storage and another similar project, Red Rock Commons (Dicks Sporting Goods) showing the slopes is provided in photos 3-7. The Monster Storage project is nearby with similar layers of materials anticipated and the Red Rock Commons project shows a similar condition. In each case, it will be necessary to provide some long term weathering or raveling of smaller particles over time.

As an alternative to the rockfall berm in Zone 1, AGEC is evaluating the potential use of a Rockfall Fence product called Geobrugg. AGEC has utilized the product for this purpose previously on a local project in Ivins called Sentierre (south of Tucahn). Several photos of the product are attached. The rock fall fence would be a preferred mitigation and would be able to minimize the bench and slope cut at the top of the cut zone. The design for the rock fall fence would include foundations supported on micropiles also used for lateral support. The fence product is primarily a high strength steel mesh product with cables that absorbs the energy from a rock fall event. If this alternative is to be utilized, AGEC will assist in the design along with a structural engineer and engineers from Geobrugg.

If you have any questions, or if we can provide additional information, please contact us.

Sincerely,
APPLIED GEOTECHNICAL ENGINEERING CONSULTANTS, INC.



G. Wayne Rogers, P.E.
P:\2020 Project Files\2201800\2201872 - GT Soleil Ridge (The Cove)\slope letter.docx

Photo No. 1, View of SW portion of hillslope

Photo No. 2, View of North Slope area

Photo No. 3, View of Monster Storage cut slope

Photo No. 4, View cut face on back side of Monster Storage- Sandstone Rock

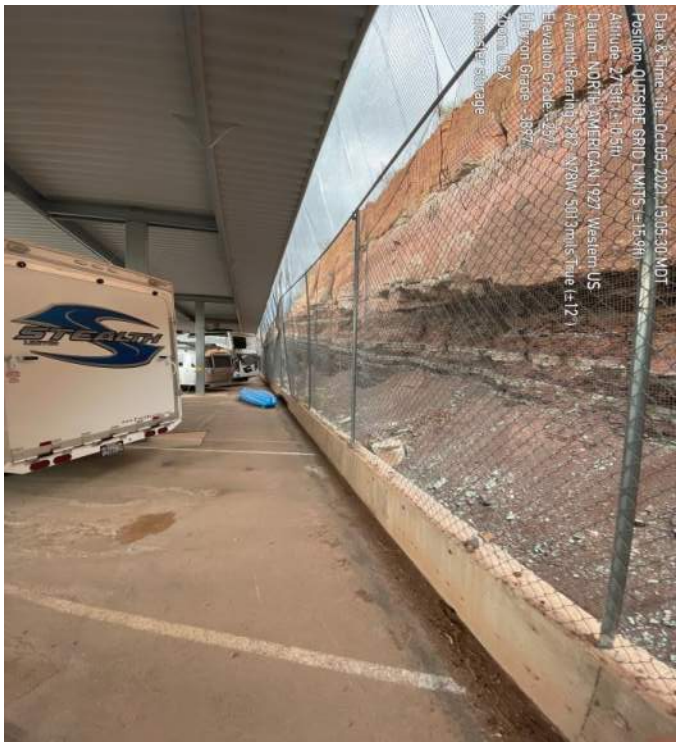


Photo no. 5 – View of cut face in mudstone- Monster Storage

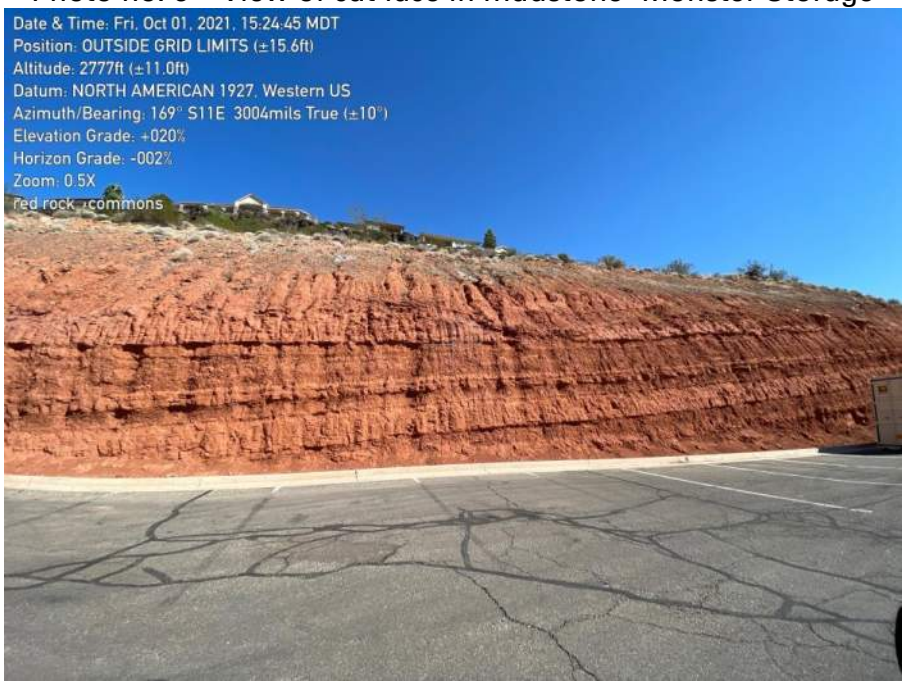


Photo No. 6 – View of cut face in shale bedrock – Red Rock Commons

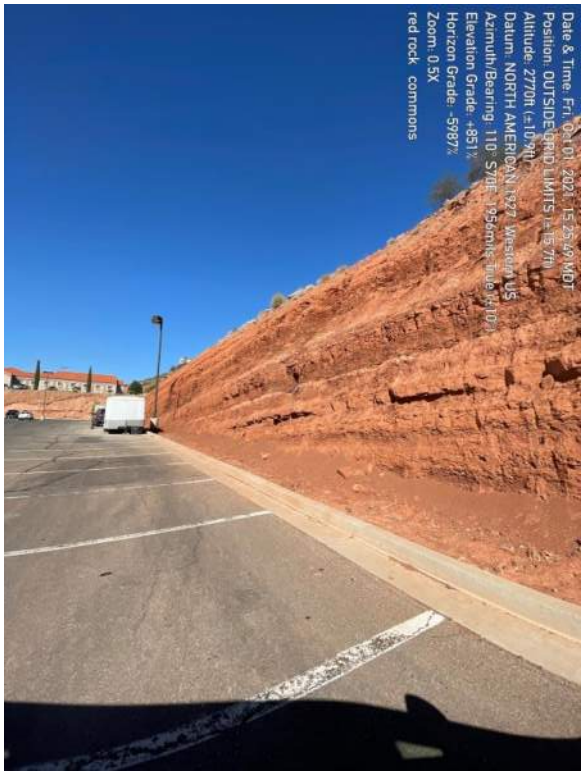


Photo No. 7, View of cut face – Dicks Sporting Goods


Photo No. 8 – View of rock fall fence – Sentierre

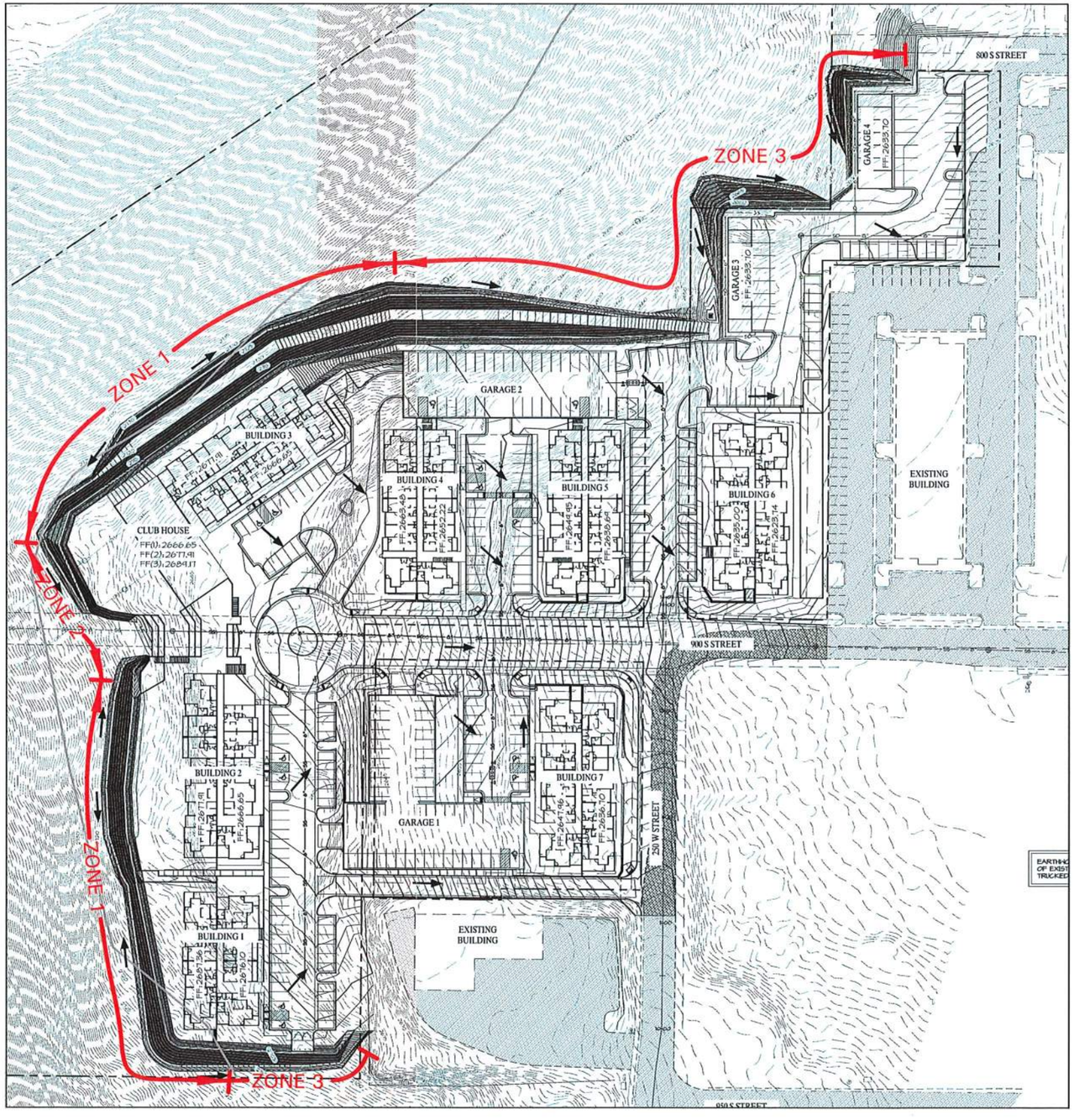
Photo No. 9 – Veiw of rock fall fence - Sentierre

Photo No. 10 – View of rock fall fence - Sentierre

Photo No. 11 – View of rock fall fence - Sentierre

SOLEIL RIDGE
ST. GEORGE, UTAH

Zone	Height Total (H)(ft)	Crest Width (ft)
1	8	8
2	6	6½
3	4	5



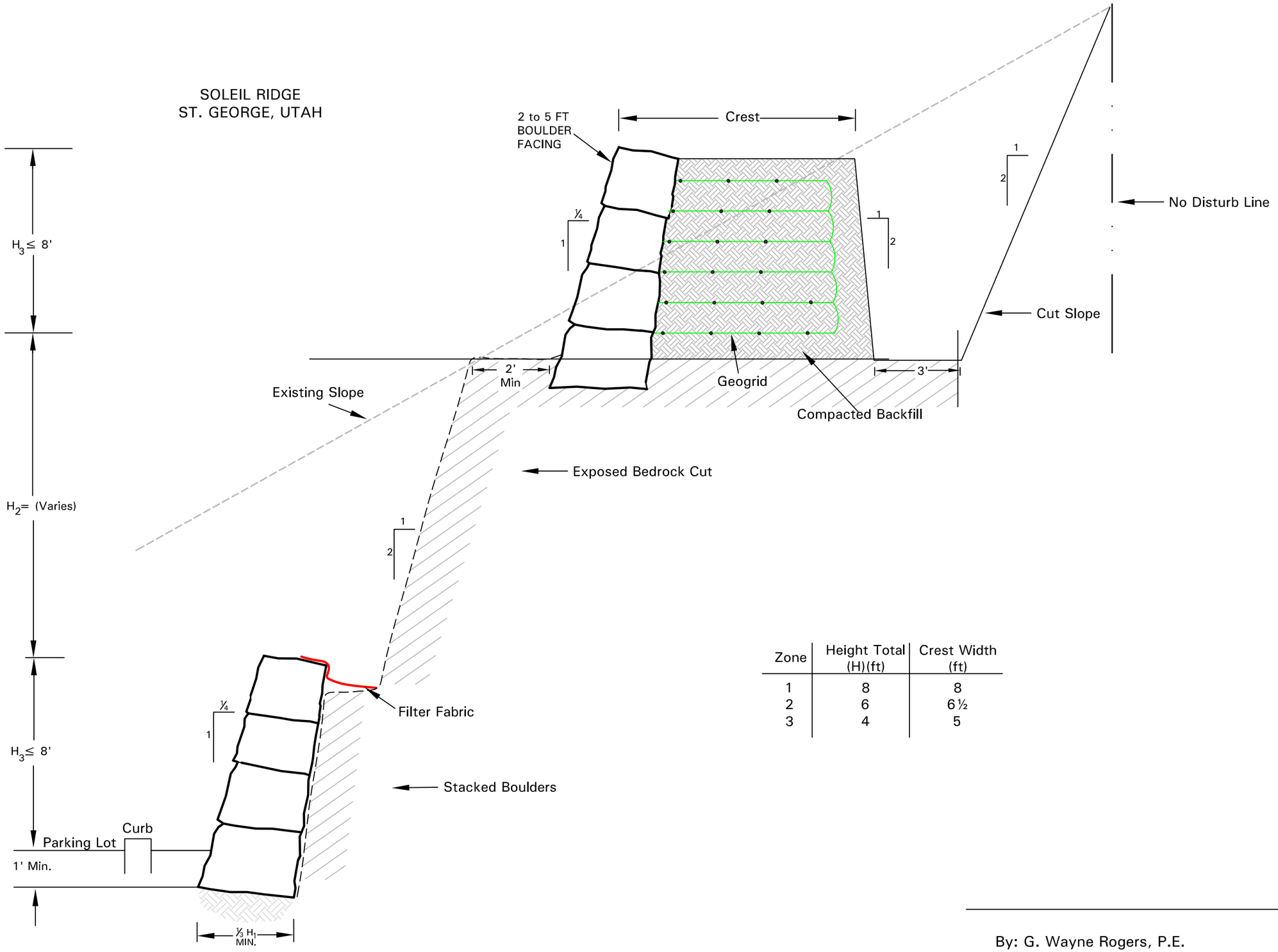
N

0 120 240 feet

Approximate Scale

2201872	AGEC	Site Plan	Figure 1

SOLEIL RIDGE
ST. GEORGE, UTAH



Zone	Height Total (H)(ft)	Crest Width (ft)
1	8	8
2	6	6½
3	4	5

By: G. Wayne Rogers, P.E.

2201872	AGEC	ROCKERY FACED SLOPE DESIGN	Figure 2

SOLEIL RIDGE
ST. GEORGE, UTAH

Geosynthetic Reinforcement Schedule ¼:1 (H:V) Slope

Top Tier Boulder Faced Fill Slope Height (ft)	Geosynthetic Reinforcement Required	* Geogrid	Geosynthetic Vertical Spacing (ft)	Grid Lengths (L)
			S_1	L_1
$H_T \leq 8$	Yes (upper)	Mirafi 5XT	1	Full Berm

* Approved Equivalents - Tensar UX1500HS = Miragrid 5XT = Fortrac 80/30-20 = Macaafari WG5

Boulder Slope Construction Notes:

1. Stacked boulders should consist of durable material resistant to weathering and approved by AGEC. Boulders should typically range from 2 to 4 feet in size with boulder sizes decreasing as they are stacked. Typical materials suitable for this application include basalt, limestone and some sandstones. The on-site sandstone should be suitable.
2. The slope/boulder foundation subgrade should be cleared of vegetation, rock or other obstacles and the surface level and smooth such that depressions and humps do not exceed 6 inches.
3. The boulders placed at the base of each tier should be embedded at least 1 foot below the lowest adjacent grade.
4. The subgrade should be properly prepared by compacting to at least 95% of ASTM D-1557.
5. The boulders should be stacked no steeper than ¼:1 (H:V). Less steep slopes may be required at the engineers discretion.

Geosythetic Notes:

1. Geosynthetic reinforcement should be placed continuously in the primary strength direction. It may not be spliced in the primary strength direction.
2. The placement of the geosynthetic reinforcement should be observed by a representative of AGEC to verify the specified geosynthetic is being used and properly placed. It should be stretched by hand until taut and free of wrinkles. Individual lengths of the geosynthetic reinforcement should be overlapped at least 1 foot.
3. The filter fabric should consist of Mirafi 140N non-woven filter fabric or equivalent.

Grading Notes:

1. The onsite sand may be used as backfill.
2. Backfill placed behind boulders and in reinforced areas should be tested frequently to verify compaction is at least 95% of the maximum dry density as determined by ASTM D-1557. We recommend a testing frequency of each lift of fill placed staggered approximately every 50 lineal feet. If the fill is not properly compacted, the stability of the slope will be reduced.
3. Backfill should be placed/spread over layers of specified geosynthetic in such a way which minimizes wrinkles and/or movement of the geosynthetic. Backfill within 3 feet of the boulders should be compacted with hand compaction equipment. Rubber-tired equipment may be utilized to compact the fill without causing damage to the geosynthetic. Track-mounted equipment should not be operated directly on the geosynthetic. At least 12 inches of fill should be placed above the geosynthetic prior to operating track-mounted equipment.

By: G. Wayne Rogers P.E.

PLANNING COMMISSION AGENDA REPORT: 05/09/2023
PLANNING COMMISSION AGENDA REPORT: 06/27/2023

ZONING REGULATION AMENDMENT
Food Truck Park
(2023-ZRA-002)

Amendment to Title 10-8D-1
Allowed Uses in the PD-C Zone

Amendment to Title 10-17A
Permitted with Standards and Conditional Uses

Amendment to Title 10-19-5
Off-Street Parking Requirements

REQUEST:
Consider a request to amend portions of the City Code, to add Food Truck Park and to allow this use as a permitted with standards use in the PD-C (Planned Development Commercial) zone. The applicant is Yori Ludvigson. (Case No. 2023-ZRA-002)

BACKGROUND:
Food Trucks are permitted within the City of St. George as a portable or mobile unit. They are allowed on private property with an existing business on the lot, and the owner must provide a route of their intended points of sale. The gathering of food trucks on a vacant lot, or food truck parks, are not permitted within the City at this time. This proposal will add this use as a permitted with standards in the PD-C zone and define the standards for this particular use.

UPDATE FOR 06/13/2023:
At the May 9, 2023, Planning Commission meeting, a public hearing was held for this item, but before a motion was made this item was continued. Please refer to Exhibit B for the minutes of this discussion from the May 9, 2023, Planning Commission meeting. Since this meeting, staff has had discussions with the applicant and the Pretreatment Department on questions that were brought up during the Planning Commission meeting. The revisions made to this proposed code address the hours of operation, grease interceptors, and commissary kitchens. The revisions shown below address all of staff's concerns.

Proposed Changes:
The proposed revisions are shown below:

- The changes made since the May 9, 2023, PC meeting are highlighted in yellow.

Title 10-8D-1

Allowed Uses

	PD-AP	PD-C	PD-M	PD-MU
Food Truck Park		PS		

Title 10-17A-19 Food Truck Parks

Food Truck Parks shall meet the following additional standards:

A. Lot Requirements:
   1. All parcels dedicated to Food Truck Parks shall meet the lot size and width requirements of the zone in which it is located.
   2. No Food Trucks shall be allowed to remain on site between the hours of 12:00 AM to 6:00 AM. All Food Trucks shall be removed from the site when not open for business serving customers.

B. Site Improvements:
   1. A staff-approved wastewater disposal facility is required.
      a. The facility shall include a properly sized grease interceptor in accordance with Title 8-4-14 of City Code with the minimum allowable size of 1,000 gallons, larger food truck parks may require a larger size.
      b. The facility must meet Utah Code R392-301-6(2)(b) & (c).
      c. Approval of the grease waste clean out is required.
   2. Public restrooms are required onsite.
   3. Main access shall be permitted only from a public street.
   4. All Food Trucks are required to park on designated paved pads.
   5. All Food Truck Parks shall have an approved site plan before opening. The site plan must include the following:
      a. Location and orientation of each vendor pad
      b. Location of access(es) to public street
      c. Location of trash enclosures
      d. Size and Location of seating areas
      e. Landscaping in accordance with Title 10-23 of City Code
      f. The location of all proposed activities on site
      g. Vehicle and pedestrian circulation
      h. Location of required parking
      i. Lighting Plan in accordance with Title 10-14 of City Code
      j. Sign Plan in accordance with Title 10-13 of City Code
      k. Utility plan in accordance with Title 10-8-3, including the location of all utility hookups provided for each pad
      l. Location of all permanent structure
      m. If a commissary kitchen is included in the Food Truck Park, the purpose and use of the kitchen will need to be provided
      n. Wastewater management plan

C. Each Food Truck shall have an active business license in accordance with Title 3, Chapter 2R of City Code and Utah Code §11-56-103. Each Food Truck Park shall have an active business license in accordance with Title 3-1 of City Code.

D. All proposed activity within a Food Truck Park shall not occur within a dedicated public right-of-way.

E. Food Truck Parks shall be managed by a common manager or entity.

F. Food Truck Parks are not permitted to operate drive-thru services.

Title 10-19-5 Nonresidential Area Requirements

Food Truck Parks	3 spaces per food truck

RECOMMENDATION:
Staff recommends approval of the amendment to Title 10-8D-1, 10-17A-19, and 10-19-5 of the City Code to add provisions for Food Truck Parks as a permitted with standards (PS) use in the PD-C zone.

ALTERNATIVES:
1. Recommend approval as presented.
2. Recommend approval with changes.
3. Recommend denial.
4. Continue the proposed zoning regulation amendment to a specific date.

POSSIBLE MOTION:
The Planning Commission recommends approval of the Zoning Regulation Amendment to Title 10-8D-1, 10-17A-19, and 10-19-5 of the City Code to add provisions for Food Truck Parks as a permitted with standards (PS) use in the PD-C zone.

FINDINGS:
1. It is in the best interest of the city to update city zoning regulations periodically.
2. The proposed revisions will allow the city to welcome appropriate business activity at approved locations.

EXHIBIT A
Applicant's Narrative

We are asking that you amend the zoning ordinance to allow food truck parks. We are requesting to have a food truck park at 185 N Bluff Street St George. We will build a commercial kitchen that will be designed for food trucks. This will offer community food trucks a commissary especially for food trucks. We will also build public restrooms. We will have adequate parking, power, water, dump stations, garbage, pest/rodent control, covered seating, and a safe enverment for the whole family to enjoy.

Food Truck Parks have become very popular across America & here in Utah. St George has gone from a handful of food trucks to many food trucks in town. A food truck park will help the city and health department regulate and inspect food trucks at one location. St George will now also have a commissary designed for food trucks. This will be a bright spot for locals & visitors to St George to enjoy great food with many different options provided by local food trucks. This new food truck ordinance will help the city regulate the quick expansion of so many food trucks now in the area.

St George City Food Truck Park Ordinance.

All Mobile Food Units shall obtain all applicable permits and inspections from the City of St George (including Fire Department) and the Public Health District

All Mobile Food Units shall be removed from the Food Truck Park upon closing of the park. If a commissary is provided on-site and the Mobile Food Unit is approved to use the site's commissary, then the Mobile Food Unit will not have to be removed from the site.

On-site Manager: There must be a designated manager of the site that is responsible for the orderly organization of Mobile Food Units, the cleanliness of the park, and the site's compliance with all rules and regulations during business hours.

Mobile Food Units shall not be parked on unimproved surfaces and at a minimum be parked on compacted gravel base.

Parking will be provided by the food truck park and breaks down accordingly. 100 square feet equals 1 parking spot. Also a 10' x 10' landing area in front of each food truck. The community seating area offers 1 parking spot for every 150 square feet.
For example if a food truck was 8' x 25' total of 200 square feet it would require 2 parking places. Then a 10' x 10' landing area of 100 square feet would require 1 more parking place. If the community seating was 30' x 30' total if 900 square feet it would require 6 parking places.

Signs: On-premise signs are permitted at the entrance(s) identifying the Food Truck Park and advertising the trucks in the park. Each Food truck/trailer may have one A-fram type sign 36" by 24" or less for menu/advertisement.

Park owners are encouraged to provide for an aesthetically-pleasing environment which includes shade and seating

A platted plan of the proposed site and the boundaries thereof;

a. The location of each proposed permanent structure on the site and pads for Mobile Food Units, and identification of any proposed outdoor entertainment locations and fixed seating areas.
b. The location, width, of driving lanes, parking and Mobile Food Unit pads;
c. The location of fire hydrants;
d. The dimensions and capacities of parking areas and loading areas including (ADA);
e. All pedestrian walks, patios and open areas for use by tenants or the public;
f. Location of the parks waste receptacle;
g. Location of buildings, including location of restrooms;
h. Location and type of electrical outlets, water hookups and waste dumps provided for each corresponding pad site.

The number of food truck/trailer spaces allowed at a food park is a minimum of two and a maximum of ten.

There shall be a minimum of five (5) feet of separation between each individual food truck/trailer vendor.

During hours of operation, each food truck/trailer vendor shall be responsible for providing a trash receptacle for use by customers and shall ensure the area is kept clear of litter and debris at all times. A common dumpster will be provided within the food truck park.

The Food truck park management will be responsible for rodent and insect control.

The food truck park may establish a permanent structure for covered seating, entertainment venue, or similar purposes provided the structures comply with all applicable requirements.

Each food truck park shall provide facilities to accommodate for a minimum of two (2) restrooms. Temporary portable restroom facilities may be considered while building restrooms.

On-site lighting shall be provided within a food truck park and shall be in accordance with exterior lighting standards, with exception that string lights shall be permitted throughout a food truck park. String lights shall adhere to the UL standards and shall not be placed in a manner

Greg Yori Ludvigson
Signature of Applicant

EXHIBIT B
Minutes from May 9, 2023 PC Meeting

ZONING REGULATION AMENDMENT (ZRA) (*Public Hearing)* Legislative

Consider a request to amend portions of the City Code, to add Food Truck Park as a use and to allow this use as permitted with standards use in the C-2, C-3 and/or C-4 zone. The applicant is Yori Ludvigson. Case No. 2023-ZRA-002. (Staff – Carol Winner)

Carol Winner presented the following:

Carol Winner – Right now we allow food trucks, we don't allow food truck parks. We don't really have a place where they would be able to gather in one spot. This is to allow for permission to allow this. We looked into adding it to the Commercial Districts and we decided to add it to the PD-C section. We will need to change the code for that section as well as the permitted with standards section and the off-street parking section as well.

Chair Fisher – I thought you said you talked about adding to the commercial zones, why just the PD-C zones?

Carol Winner – If we put it in the PD-C zones it allows the Council to control what will be put in and to add any conditions that they may require. Carol went through the proposed requirements that are included in the packet. The regulations that you are seeing are regulations that the applicant has put forth, then staff worked with, and these are what staff is comfortable with. I do know that the applicant has some issues with the operating hours, and he will present his case after I finish. The reason why staff indicated that trucks cannot be at the food truck park between 12:00 am and 6:00 am is 1. They have a chance to do the proper disposal at the proper disposal station for their waste and 2. It obviously keeps the food trucks mobile, because food trucks are mobile in nature, and we don't want it to be a permanent structure there and 3. We feel if a food truck was allowed to stay in the park then we would need to drastically increase the parking requirement. You no longer have a food truck going and bringing their group with them, the staff would be driving cars to get to the food truck to work.

Commissioner Fisher – Would it be fair to summarize that they are required to provide the same things a building would need to provide?

Carol Winner – Yes.

Yori Ludvigson – Here are some of the advantages of a food truck park. We would build a commercial kitchen. This will allow food trucks to prep food here, right now there is only one place in town Catering Concepts that everyone is trying to use now. There really won't be a need for the trucks to leave at night because you will have everything onsite. They will be able to dump onsite because we will have utilities, kitchen, and bathrooms onsite. We will have 2 food trucks that we run and then there will be others

that will rotate through. As we met with the City and the Public Health Department then they wanted a commissary kitchen onsite.

Chair Kemp – But you don't need that onsite, most Commissary kitchens are in the Industrial Parks.

Jami Brackin – It's actually more than just a dump for sewer. That is what we are going to clarify. It is specific waste water that has to be separated from the regular waste water which is why you have the grease separator and why they require that they dump at the Waste Water Treatment Plant right now. They may or may not be able to get that kind of treatment onsite.

Yori Ludvigson – They wouldn't have to move their truck every night because they would have everything right there. It would be just like Catering Concepts, there is a dump right in front of the building and everybody dumps there. Looking at other Cities it's helpful that you have one place for the health department to check trailers. It would help here because everybody is hunting for spots, everybody is in the same boat that way.

Chair Kemp – How many stalls can you fit on there?

Yori Ludvigson – 8 stalls.

Chair Kemp – How will you rotate them through? Will it be who will pay the most, how will it work?

Yori Ludvigson – They will rotate through. I have about everyone in town talk to us already. Obviously, we will leave our trucks there.

Commissioner Rogers – If you have this planned, do you have circulation for a truck pulling a trailer to circulate through and park the trailer?

Yori Ludvigson – Yes. A lot of BBQ trucks are big. Our plan was a 30 x 30 table seating under covered seating. It's a place to hang out. It's clean, it's safe, it's a place to hang out. I don't see the point of making them move every day if they have everything there that they need.

Chair Kemp – How would you feel if you didn't have to leave every night, but you need to rotate them to a different spot every week or two. I think the staff is trying to ensure that it does not become a permanent location on wheels. So instead of saying you have to leave from midnight to 6:00 am, they can stay but they have to rotate to a different spot so that keeps them mobile.

Commissioner Rogers – But if they do that it creates additional parking requirements because it puts a strain on the design to fit everything in there. You park your food truck, then the people working the food truck have to drive their vehicles to the site every day.

Jami Brackin – When we were drafting these we talked to our Waste Water and I'm not sure that they will be able to dump the waste water onsite, all the waste dumped in one location can be a big stress on the system. I'm not sure they are going to approve a dump site. The waste water department may want them to dump it at the waste water department. These trucks may have to leave to go dump anyway and if they have to leave to go dump they may as well go home and keep the mobility of the process.

Commissioner Kemp – We are requiring Mr. Ludvigson 99%, maybe 105% of what we are a brick-and-mortar business. It would be easier to build a small building and have a bunch of outdoor seating, which gets you completely away from the concept of a food truck park. The fact that the pads have to be paved, I don't see why the pads have to be paved. Does the car park have to be paved?

Yori Ludvigson – In other locations it's gravel plus.

Jami Brackin – Food trucks have to be on pavement, under the current regulations.

Discussion continued regarding mobility of the trucks and whether they should be required to move each night.

Commissioner Rogers – I think the rest rooms are a great idea. The commissary kitchen I don't think is necessary, that puts more stress on the developer.

Chair Kemp – This is a proposal you have made and now we are looking at making it code. Every food truck will have to use your recommendations from now on or it will have to change the code.

Yori Ludvigson – My recommendation wasn't to do all that at first, but after talking with the City and the Health Department that has been here is what you need to do. So, we are willing to do that.

Chair Kemp – So if you build all of that then it will be a permanent thing. That's what it will be from now on.

Yori Ludvigson – Yes, so why would I move my truck?

Jami Brackin – The question is what makes this different than a restaurant? Does it need a Commissary, no, that was the proposal, but what are the public safety, health, and welfare that we want? We try to look at this for every possible property. As we go through this and make these recommendations how do you balance the mobility and the fixed site. Also, to balance the parking regulations. In terms of regulating food trucks, the state statute prevent us from regulating the number of days, but not the hours.

Commissioner Fisher – This is an ordinance, it will affect him, and we should listen to what he is trying to propose. But then we should discuss this as an ordinance and see what we are trying to accomplish. It may be that we say that a commissary kitchen isn't necessary.

Yori Ludvigson – It may be that a commissary kitchen wouldn't need to be required maybe make minimum requirements and then if they want to go above and beyond that it's up to them. The average parking spaces throughout the industry for a food truck park is 1.5 spots per truck, we went to 3 because that will be better. We talked with the fire department and made the lanes wider so that we could get the fire trucks through.

Chair Kemp opened the public hearing.

Sydni Ludvigson – I like how you mentioned the integrity, innovation, and efficiency. I think to support your ideas and find creative solutions is great and I think that is exactly what the food truck park is here to do. I love that you guys are willing to work with it and to find the creative solution cause that's what we need. I think right now it's hard to follow the rules. They are already putting out seating. I think a food truck park would make it easier for them to follow the rules. I like what you brought up about having the minimum requirements.

Chair Kemp closed the public hearing.

Commissioner Rogers – I think the idea is a great idea. I am in support of the ordinance minus the specific requirement of a commissary kitchen.

Chair Kemp – It feels like we are creating a restaurant with a big open area, the commissary kitchen would make it like that. Bathrooms, I feel that would be important otherwise you're talking about port a potties. And if you're going to bring bathrooms in then you are already bringing in water, power, and sewer. It feels like there is a lot of stuff in here that makes this not a food truck park, that makes it more of a permanent situation.

Commissioner Andrus – I agree, I think the way that this is written now, they basically meet all the requirements for any other commercial building. I think at the very least they should be able to park their trucks overnight. For me, the bare minimum for a food truck park would be paved pads for the trucks, trash disposal, restrooms, and minimum utilities. I don't know how I feel about landscaping and permanent seating. I like the idea of permanent seating. I think it would be cool to have. The same with landscaping, it would be nice, but I don't necessarily think you have to have it either.

Commissioner Kemp – How do you feel about the garbage requirement? Requiring people to haul off their garbage is required now.

Commissioner Fisher – One thing we need to be careful of is, I get that we are trying to not impose too much burden on what seems to be a transitory business. But the reality is that a park is going to be permanent and that there is always going to be at least one truck will be there. If that is the case, it seems like that everything that would come with a commercial site needs to be there. As far as the commissary kitchen is concerned, the only question I have is it seems like we are requiring it but if Jami is saying that Waste Water isn't going to allow the dumping there.

Jami Brackin – I think they are saying that what would be required to allow all the trucks to dump at the same site is going to be prohibitively expensive and I don't know that the Waste Water folks would approve anything less than that. If you just have a paved lot and you have trucks that come on, that is a commercial enterprise. We still need to have parking and trash and all of those other things that even if it's a paved quarter acre, you are still going to need things. What are you going to have to do? Is that really where you want to store all the vehicles? The public is going to be invited. What will you need?

Commissioner Fisher – If we don't think that it's likely that the Waste Water Treatment would like to see a dumping facility there or that what they would have to put in is very expensive, it seems like to me, if we require the Commissary kitchen then if they can dump I don't know why they would move. Unless as a City we don't want to see another site where they can dump. So really it's two issues, 1. An area where other trucks can come and dump, whether they are serving there or not. 2. Just a location for food trucks to come and conduct business. If there is no kitchen on a park, then the ordinance needs to be different then what it would be if there were a kitchen. And if there is a kitchen then I think there needs to be an additional ordinance that addresses the dumping portion. I don't know that we are there yet with this ordinance. I think we need to decide if we say a kitchen or not.

Chair Kemp – I think the kitchen is a good idea. When we had the food truck discussion there was a concern about driving out to Bloomington to dump because it was a significant time and expense for a truck that gets 4 miles to the gallon. I think you would need to put the bathrooms in, and I think if everyone is going to dump there then you will need to put in a trash enclosure and have the trash dumped.

Commissioner Rogers – I agree with having the dumpster enclosure, but I don't agree that if you are going to have a commissary kitchen that you need to have additional dump sites for the trucks. That increases significantly the cost of the grease separator, and it puts undue stress on the developer. If you put the kitchen in you can put in the sand oil separator for just that kitchen.

Discussion continued regarding dumping.

Commissioner Fisher – It seems to me that we are at separate ordinances. There is no reason to add the expense of the kitchen if we figure out a way to manage the conditions that are created by one or several food trucks in one park with regards to the permanency of that. As much as we want to consider this transitory, it is not, it is permanent. I think we have to have an ordinance that addresses all of those things that are the concerns, just like a commercial building. We want it to be someplace nice, so it's not an eyesore, so we don't see trash. In fact, I think there are more issues concerning these outside-type services than we will have in an actual restaurant because a lot of things can be contained within the walls, and you don't see them. I really think that the burden is going to be a little bit more severe on this type of area because so much will be outside the trucks. That is ok, it is all manageable, but it seems to me that as to the kitchen and the dumping area, we need to separate it into two different ordinances. I think as we

analyze it separately we will start to see more issues than just trucks and dumping. I would rather anticipate the potential problems before we take them out. I think if we don't do that we will create an eyesore. Will it be convenient for people? Sure, but it won't be what we want to see when we are driving down Bluff Street or down the Boulevard. What I would suggest is this might be a little early in the stages. We could perhaps get some more drafting. We need to see it independent of a project and deal with it as a City. I worry about all those areas that are traditional zones that are not PD zones, and they want to have this.

Chair Kemp – What happens when someone wants to do one of these out in one of the industrial parks? I think that the commissary kitchen and some of these other issues, I agree with Nathan, there needs to be some separation to where the code says you can do this but if you want to do more, or if you are in these certain areas, which we will control because it's PD-C then you need to up your game to this and this.

Commissioner Rogers – I am in big support of landscaping trees and tables. In addition to that, if you have that many trucks coming, I think there needs to be a manager's office at the location so that they are there the entire time to manage the trucks. That would be more critical to me than a commissary kitchen, to have somebody onsite. I think that's problematic if you don't, especially if the developer is taking responsibility for the site, for the cleanup.

Discussion on hours of operation or leaving the trucks onsite overnight.

Commissioner Rogers – I see that there could be temporary locations. Washington City is doing a temporary food truck park on Telegraph and Main Street.

Chair Kemp – Maybe staff could take into account temporary or permanent locations.

MOTION: Commissioner Rogers made a motion to continue this item. SECOND: Commissioner Fisher ROLL CALL VOTE: AYES (4) Chair Kemp Commissioner Rogers Commissioner Fisher Commissioner Andrus NAYS (0) Motion Carries unanimous vote

EXHIBIT C
PowerPoint Presentation

FOOD TRUCK PARK

ZONING
REGULATION
AMENDMENT

2023-ZRA-002

FOOD TRUCK PARKS IN ST. GEORGE

AMENDMENT TO TITLE 10-8D-1
ALLOWED USES IN THE PD-C ZONE

AMENDMENT TO TITLE 10-17A
PERMITTED WITH STANDARDS AND CONDITIONAL USES

AMENDMENT TO TITLE 10-19-5
OFF-STREET PARKING REQUIREMENTS

AMENDMENT TO TITLE 10-8D-1

ALLOWED USES
IN THE PD-C ZONE

	PD-AP	PD-C	PD-M	PD-MU
Food Truck Park		PS		

Amendment to Title 10-17A

Permitted with Standards

Food Truck Parks shall meet the following additional standards:

A. Lot Requirements:

1. All parcels dedicated to Food Truck Parks shall meet the **lot size** and width requirements of the **zone** in which it is located.

2. No Food Trucks shall be allowed to remain on site between the hours of **12:00 AM to 6:00 AM. All Food Trucks shall be removed from the site when not open for business serving customers.**

B . Site Improvements:

1. A staff-approved wastewater disposal facility is required.
   a. The facility shall include a properly sized grease interceptor in accordance with Title 8-4-14 of City Code with the minimum allowable size of 1,000 gallons, larger food truck parks may require a larger size.
   b. The facility must meet Utah Code R392-301-6(2)(b) & (c).
   c. Approval of the grease waste clean out is required.

B . Site Improvements:

2. Public **restrooms** are required onsite.
3. Main **access** shall be permitted only from a public street.
4. All Food Trucks are required to park on designated **paved pads**.
5. All Food Truck Parks shall have an approved **site plan** before opening. The site plan must include the following:
   a. Location and orientation of each **vendor pad**
   b. Location of **access**(es) to public street
   c. Location of **trash** enclosures
   d. Size and Location of **seating areas**
   e. Landscaping in accordance with Title 10-23 of City Code
   f. The location of all proposed **activities** on site
   g. Vehicle and pedestrian **circulation**
   h. Location of required **parking**
   i. Lighting Plan in accordance with Title 10-14 of City Code
   j. Sign Plan in accordance with Title 10-13 of City Code
   k. Utility plan in accordance with Title 10-8-3, including the location of all utility hookups provided for each pad.
   l. Location of **all permanent structures**
   m. If a **commissary kitchen** is included in the Food Truck Park, the purpose and use of the kitchen will need to be provided
   n. Wastewater management plan

C. Each Food Truck shall have an active **business license** in accordance with Title 3, Chapter 2R of City Code and Utah Code §11-56-103. Each Food Truck Park shall have an active business license in accordance with Title 3-1 of City Code.

D. All proposed activity within a Food Truck Park shall not occur within a dedicated **public right-of-way.**

E. Food Truck Parks shall be managed by a common **manager** or entity.

F. Food Truck Parks are not permitted to operate **drive-thru** services.

Amendment to Title 10-19-5
Off-Street Parking Requirements

Food Truck Parks	3 spaces per food truck

DISCUSSION AND RECOMMENDATION

FOOD TRUCK PARK

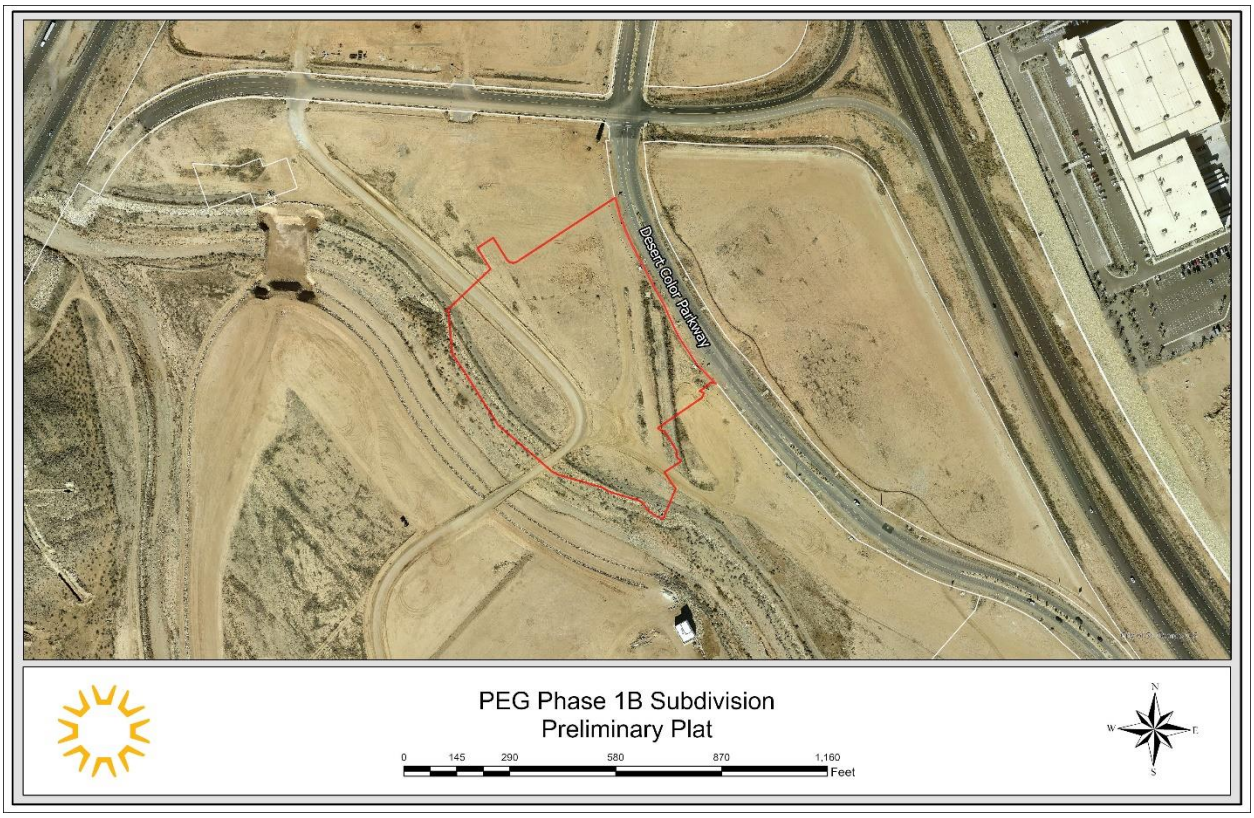
ZONING REGULATION AMENDMENT

2023-ZRA-002

PLANNING COMMISSION AGENDA REPORT: 06/27/2023

Preliminary Plat
PEG Phase 1B Preliminary Plat
Case No. 2023-PP-021

Request:	The applicant is requesting approval of a preliminary plat to create a single lot for the northern portion of the PEG apartments development.
Representative:	Bob Hermandson (Bush & Gudgell)
Parcel Number:	SG-5-3-31-433-SLL
Location:	The property is located along Desert Color Parkway just south of Black Mountain Drive.
Total Acreage:	Approximately 8.62 acres
Existing Zoning:	Planned Development Commercial (PD-C) (w/ Horizontal Mixed-Use Overlay)



General Plan: TC (Town Center)

Background & Analysis: In February of 2022, a PD amendment was approved on the subject site. Subsequently, a site plan has also been approved for the development. As a reminder, the PEG development will provide 344 apartment units when fully developed.

The proposed plat shows a single lot for the first phase of the development to be constructed. This lot will have four buildings containing 180 units, parking, landscaping. It will also include the clubhouse and pool amenity area. There is shown an easement that runs through the site. This easement will be abandoned with the final plat.

The single lot is 375,496 ft² or 8.62 acres in size.

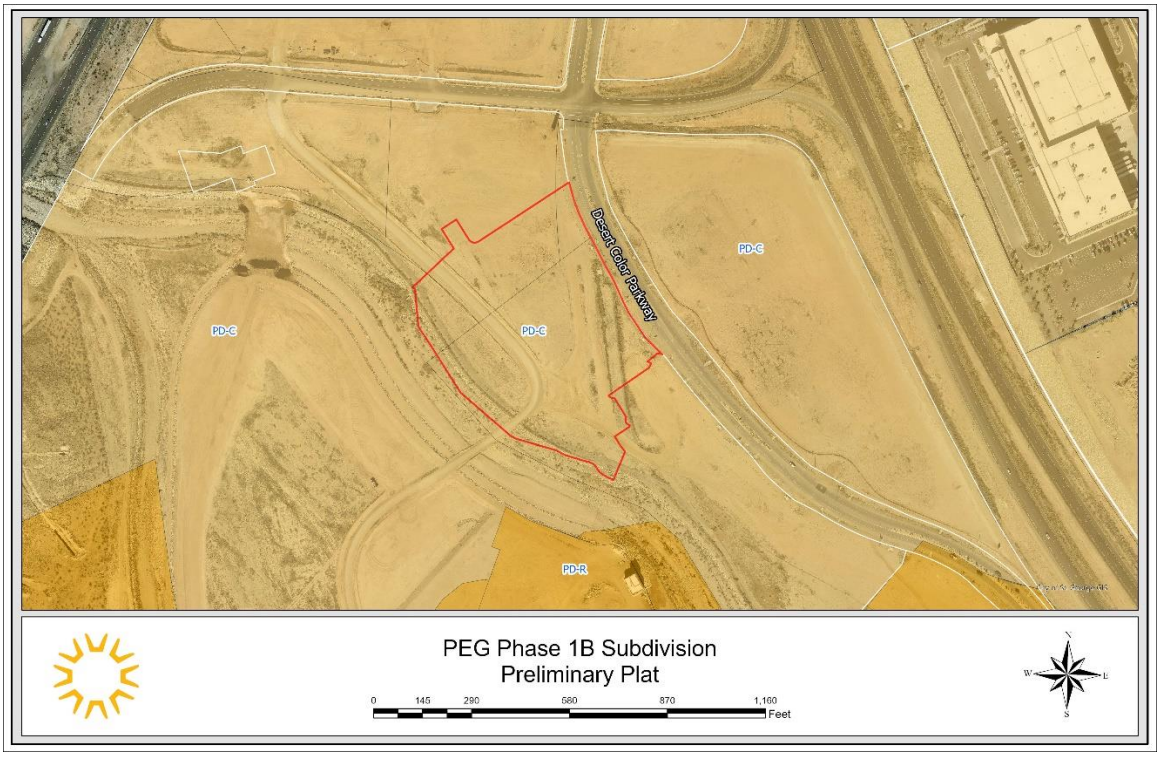
Recommendation: Staff recommends approval of this preliminary plat.

Alternatives:
1. Recommend approval as presented.
2. Recommend denial.
3. Continue the proposed preliminary plat into the future.

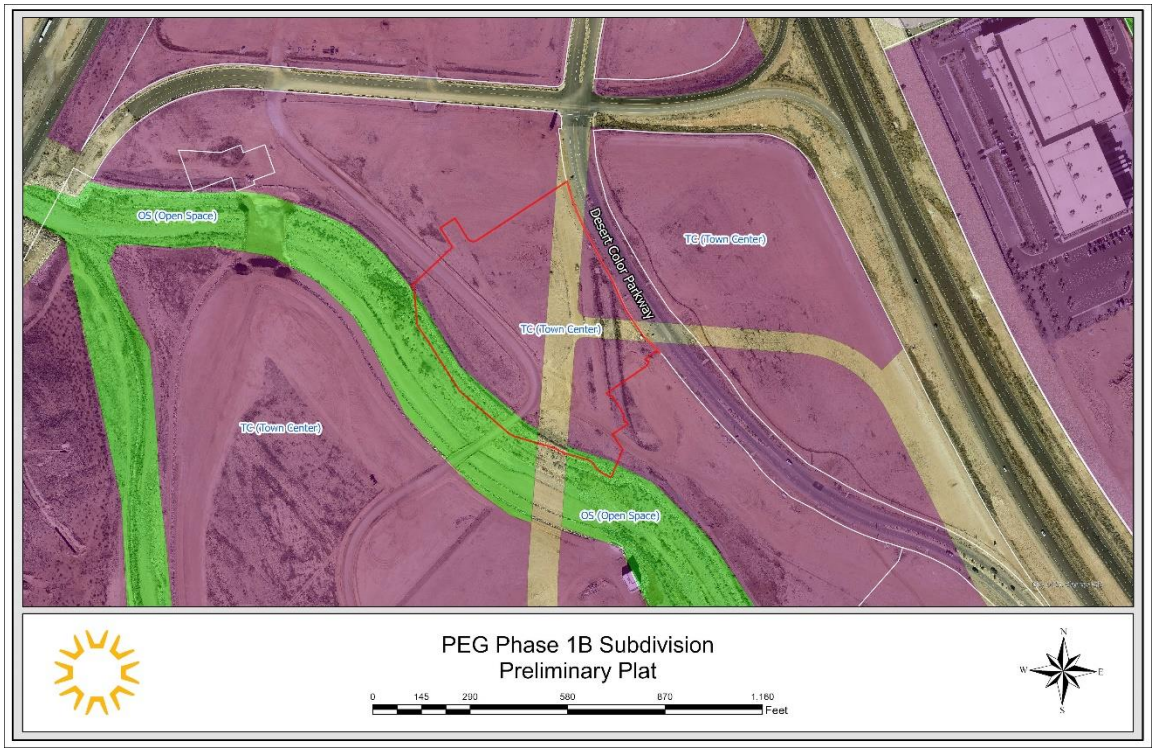
Sample Motion: I move that we forward a positive recommendation to the City Council for the PEG Phase 1B Preliminary Plat request, application number 2023-PP-021, based on the findings noted in the staff report.

Possible Findings:
1. That the plat is consistent with and compliant to the zoning on the property.
2. That the plat will not leave any remnant property unaccounted for.
3. That development in the plat is consistent with the PD amendment previously proposed by the applicant.

Zoning Map



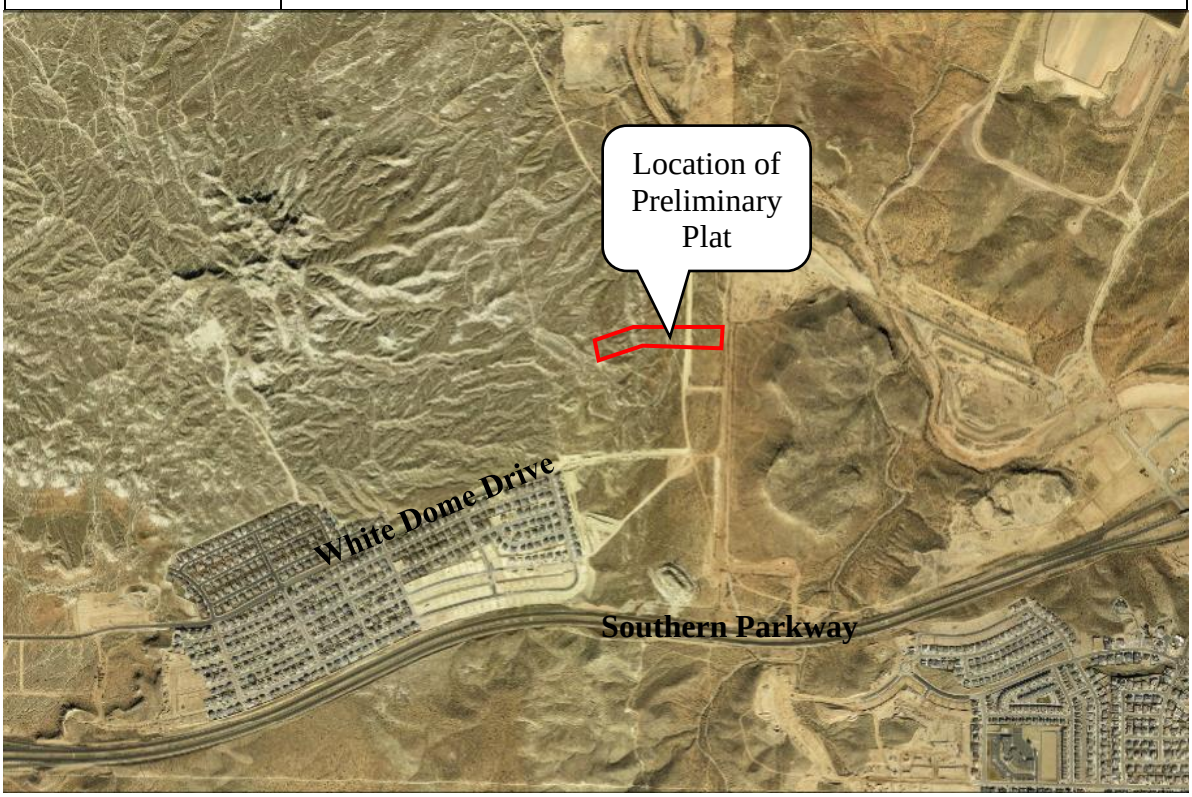
General Plan Map



Presentation

PLANNING COMMISSION AGENDA REPORT: **06/27/2023**

Cove Valley Preliminary Plat (Case No. 2023-PP-022)	
Request:	The applicant is requesting approval of an 11-lot residential preliminary plat to be called Cove Valley.
Applicant:	CRS Holdings, LLC
Representative:	Ken Miller
Location:	Located at approximately 2500 East and 5550 South – on the extension of Malitsoh Way, north of White Dome Drive
General Plan:	MDR (Medium Density Residential)
Existing Zoning:	R-1-7 (Single Family Residential, 7,000 sf Minimum Lot Size)
Land Area:	Approximately 2.61 acres



BACKGROUND:
This parcel of land is in the Southern Hills East Area Zone Plan. It is located north of White Dome Drive and west of the future Southern Hills Parkway. Directly to the west is the approved South Desert single family home development. This preliminary plat proposes to subdivide this 2.61-acre piece of land into eleven single family home lots. There will be three phases. Phase one will contain one lot, phase two will contain five lots, and phase three will contain five lots. This location is zoned R-1-7 (Single Family Residential, 7,000 sf minimum lot size), and all lots are proposed to be over 7,000 square feet with the density of 4.2 dwelling units per acre.

The purpose of this subdivision is to create lots for the Washington County School District building program. The building program gives the opportunity for high school students to gain valuable skills while learning how to build a house. The houses that the students build are a part of the annual Southern Utah Parade of Homes. This program will be moved to the new high school located on White Dome Drive and River Road. The plan is use these eleven lots for the new houses the students will build. It is located close to the high school which will bring more convenience to the students.

RECOMMENDATION:
Staff recommends approval of this preliminary plat.

ALTERNATIVES:
1. Recommend approval as presented.
2. Recommend approval with conditions.
3. Recommend denial.
4. Table or Continue the proposed preliminary plat to a specific date.

POSSIBLE MOTION:
The Planning Commission recommends approval of the Cove Valley preliminary plat.

FINDINGS FOR APPROVAL:
1. The proposed Preliminary Plat meets the requirements found in Section 10-25C-3 of the Subdivision Regulations.
2. The proposed project meets the lot size requirements found in Section 10-8B-2.

EXHIBIT A
Preliminary Plat

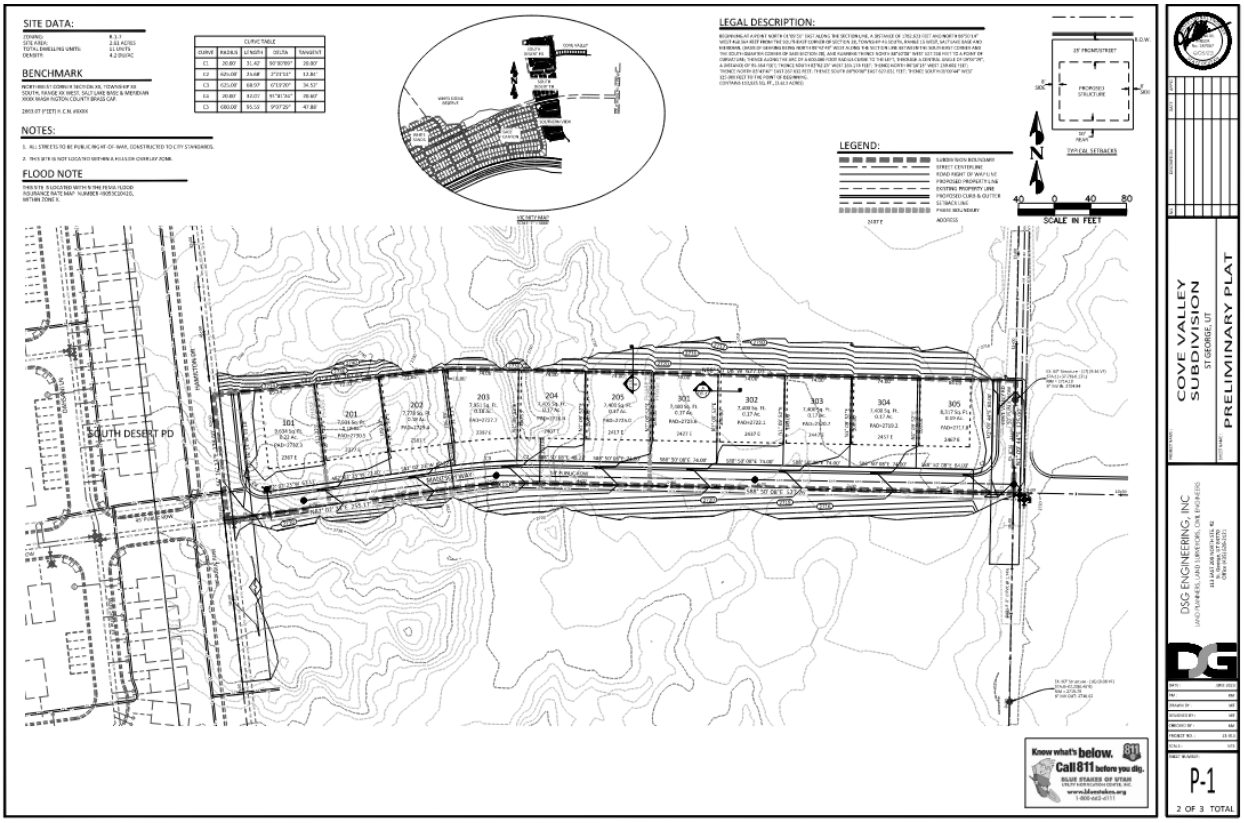


EXHIBIT B
PowerPoint Presentation

COVE VALLEY

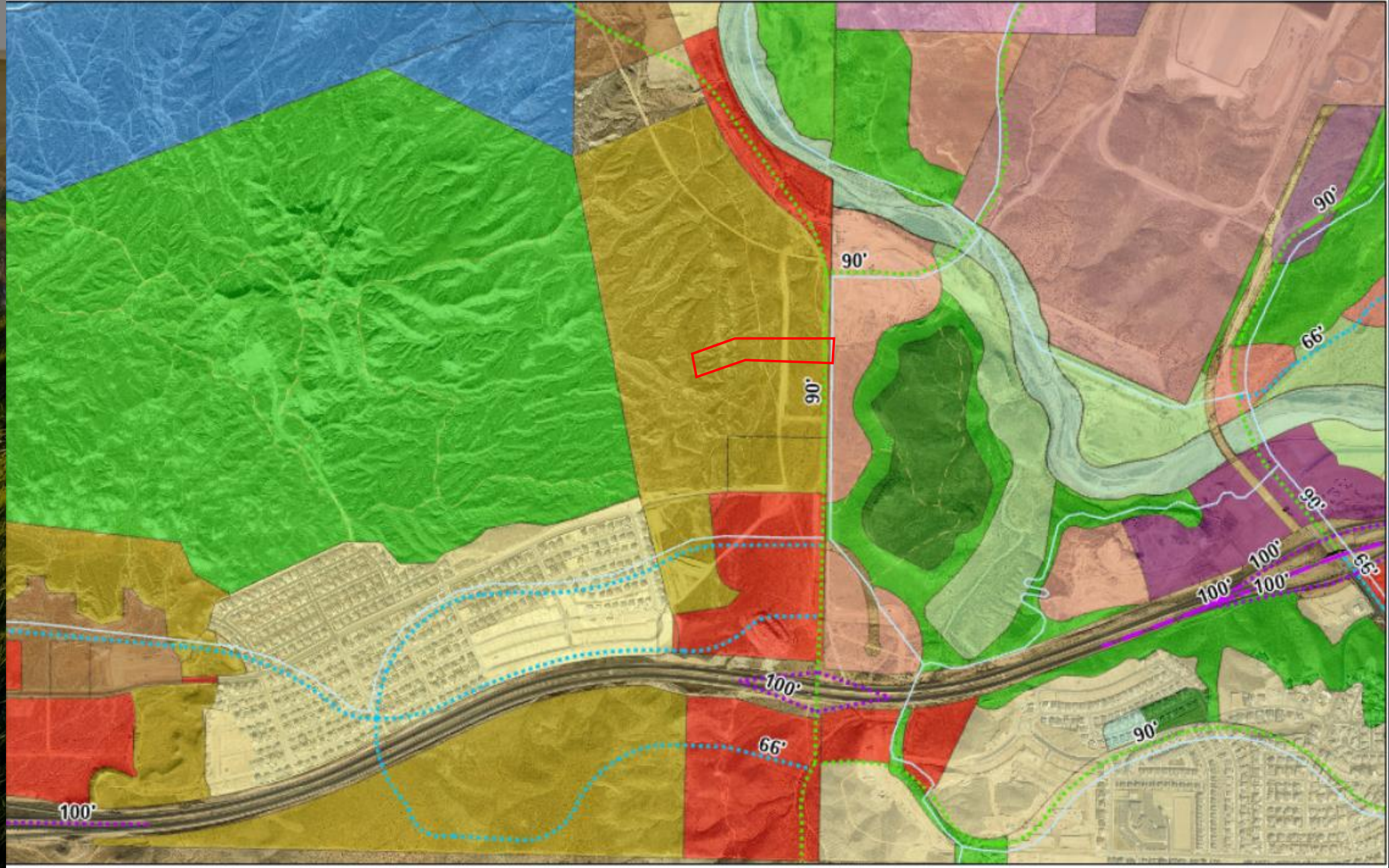
Preliminary Plat

2023-PP-006

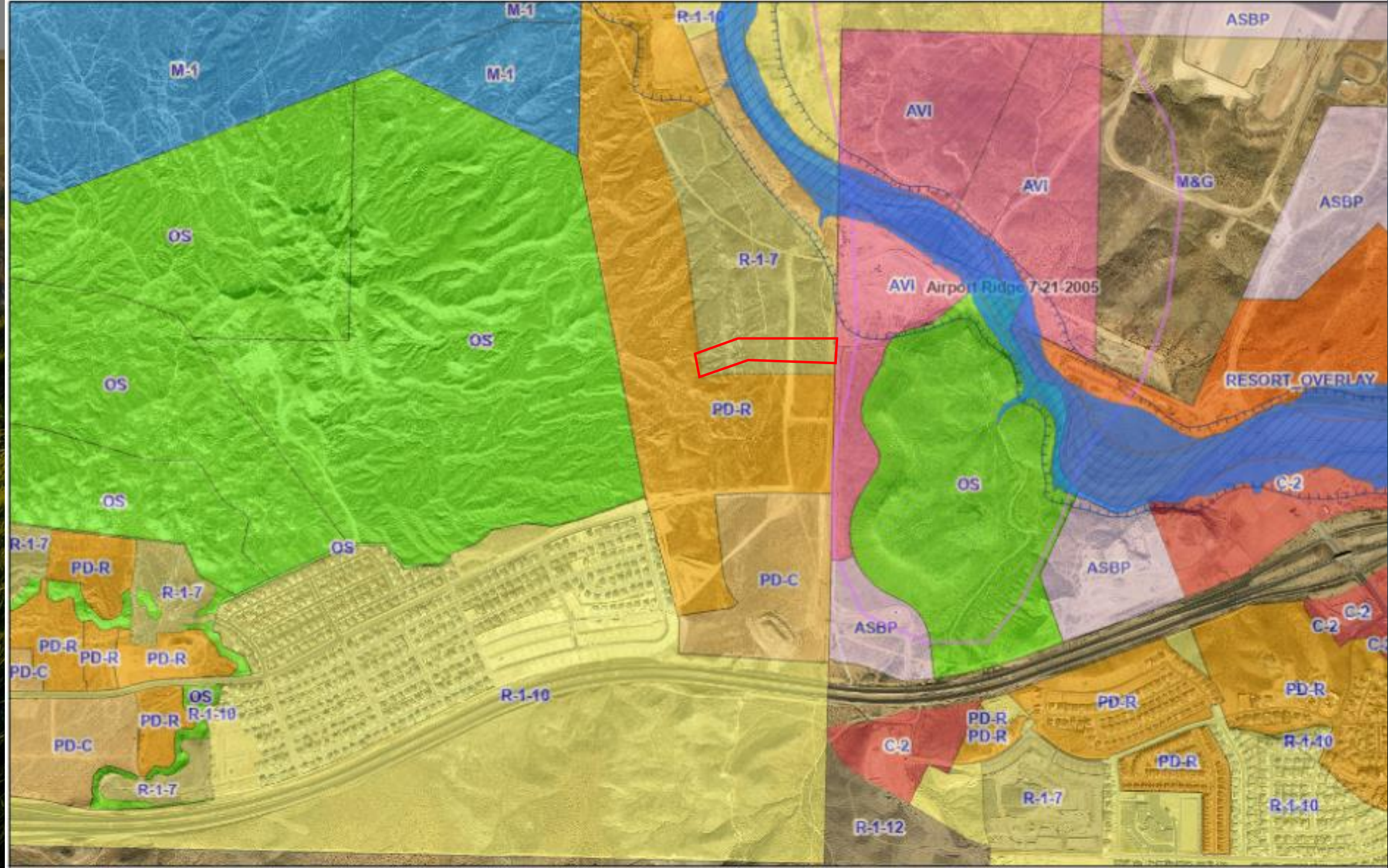
LOCATION


SOUTHERN HILLS
N
300 0 300 600
SCALE IN FEET
WHITE DOVE NATURE CONSERVANCY
OS
SAGE CANYON R-1-10
AREA 1 SOUTH DESERT TOWNHOMES PDR
AREA 2 SOUTH DESERT PDR
AREA 5 ROLLING DESERT PDR
AREA 9 PDR
AREA 16 M-1
AREA 17 M-1
AREA 14 SOUTH FORT APTS PDR
AREA 10 SOUTHERN VIEW PDR
AREA 11 PD-COMM
AREA 12 PD COMM
AREA 13 C2
AREA 3 SOUTHERN TRAILS RESORT PDR
AREA 4 EAST DOME RESORT PDR
AREA 6 COVE VALLEY R-1-7
AREA 7 DRY WASH R-1-7
AREA 8 R-1-7
AREA 22 TRAIL SIDE PD COMM
R-1-10
SOUTHERN PARKWAY
ASBP
AVI
AVI
AVI

LAND USE



ZONING


M-1
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ASBP
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OS
R-1-7
AVI
Airport Ridge 7-21-2005
OS
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PD-R
RESORT OVERLAY
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PD-R
PD-C
C-2
PD-R
R-1-10
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R-1-12

PLAT

SITE DATA:

ZONING:	R-1-7
SITE AREA:	2.61 ACRES
TOTAL DWELLING UNITS:	11 UNITS
DENSITY:	4.2 DU/AC

BENCHMARK

NORTHWEST CORNER SECTION XX, TOWNSHIP XX SOUTH, RANGE XX WEST, SALT LAKE BASE & MERIDIAN XXXX WASHINGTON COUNTY BRASS CAP.

2663.07 (FEET) H.C.N. #XXXX

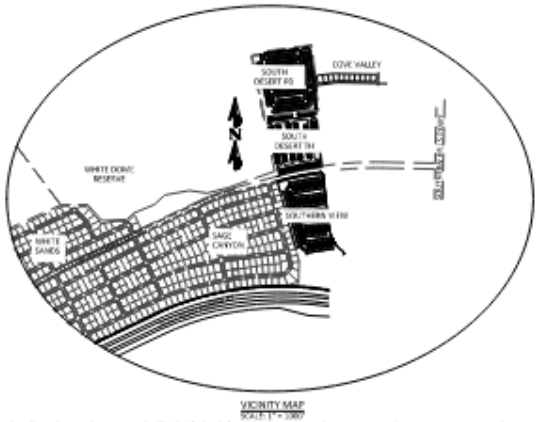
NOTES:

1. ALL STREETS TO BE PUBLIC RIGHT-OF-WAY, CONSTRUCTED TO CITY STANDARDS.
2. THIS SITE IS NOT LOCATED WITHIN A HILLSIDE OVERLAY ZONE.

FLOOD NOTE

THIS SITE IS LOCATED WITHIN THE FEMA FLOOD INSURANCE RATE MAP NUMBER 49053C1042G, WITHIN ZONE X.

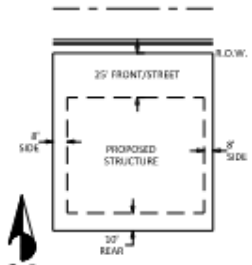
CURVE TABLE				
CURVE	RADIUS	LENGTH	DELTA	TANGENT
C1	20.00'	31.42'	90°00'09"	20.00'
C2	625.00'	25.68'	2°21'13"	12.84'
C3	625.00'	68.97'	6°19'20"	34.52'
C4	20.00'	32.01'	91°41'24"	20.60'
C5	600.00'	95.55'	9°07'29"	47.88'



VICINITY MAP
SCALE: 1" = 1000'

LEGAL DESCRIPTION:

BEGINNING AT A POINT NORTH 01°09'52" EAST ALONG THE SECTION LINE, A DISTANCE OF 1782.628 FEET AND NORTH 88°50'08" WEST 668.564 FEET FROM THE SOUTHEAST CORNER OF SECTION 28, TOWNSHIP 40 SOUTH, RANGE 15 WEST, SALT LAKE BASE AND MERIDIAN, (BASIS OF BEARING BEING NORTH 88°42'48" WEST ALONG THE SECTION LINE BETWEEN THE SOUTHEAST CORNER AND THE SOUTH QUARTER CORNER OF SAID SECTION 28), AND RUNNING THENCE NORTH 88°50'08" WEST 527.258 FEET TO A POINT OF CURVATURE; THENCE ALONG THE ARC OF A 600.000 FOOT RADIUS CURVE TO THE LEFT, THROUGH A CENTRAL ANGLE OF 08°07'29", A DISTANCE OF 85.554 FEET; THENCE SOUTH 82°02'23" WEST 255.174 FEET; THENCE NORTH 80°50'13" WEST 139.682 FEET; THENCE NORTH 82°42'47" EAST 267.632 FEET; THENCE SOUTH 88°50'08" EAST 627.031 FEET; THENCE SOUTH 01°09'46" WEST 125.000 FEET TO THE POINT OF BEGINNING.
CONTAINS 113,825 SQ. FT., (2.613 ACRES)



TYPICAL SETBACKS

LEGEND:

- SUBDIVISION BOUNDARY
- STREET CENTERLINE
- ROAD RIGHT OF WAY LINE
- PROPOSED PROPERTY LINE
- EXISTING PROPERTY LINE
- PROPOSED CURB & GUTTER
- SETBACK LINE
- PHASE BOUNDARY
- ADDRESS (2407 E)

N

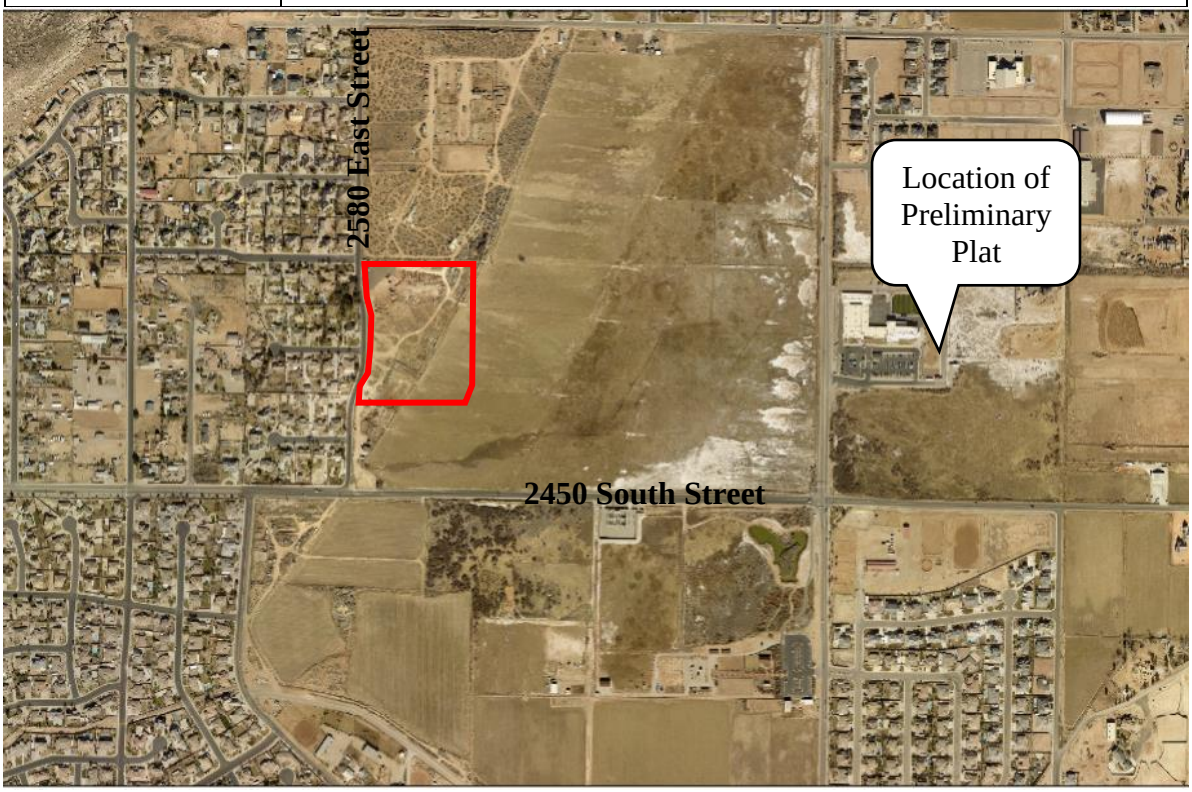
40 0 40 80
SCALE IN FEET

St.George
Community Development

ITEM 5
Preliminary Plat

PLANNING COMMISSION AGENDA REPORT: **06/27/2023**

Estates at Old Farm Preliminary Plat (Case No. 2023-PP-023)	
Request:	The applicant is requesting approval of a 21-lot residential preliminary plat to be called Estates at Old Farm.
Applicant:	Red Sands F-1 LC
Representative:	Ryan Lay
Location:	Located at north of 2450 South Street and east of 2580 East Street
General Plan:	LDR (Low Density Residential)
Existing Zoning:	R-1-20 (Single Family Residential, 20,000 sf Minimum Lot Size)
Land Area:	Approximately 14.50



BACKGROUND:
On March 17, 2023, the City Council approved a zone change that included these 14.50 acres, changing the zone from A-20 (Agricultural, 20-acre minimum lot size) to R-1-20 (Residential, 20,000 sf minimum lot size). After this approval, on April 6, 2023, the 4-lot 76.04-acre Old Farm Preliminary Plat was approved. The applicant is requesting to further subdivide Lot 1 of that approved preliminary plat.

The Estates at Old Farm is an amended preliminary plat of Lot 1 of the Old Farm Preliminary Plat. The request is to create 21 residential lots. Each lot will contain over the required 20,000 square feet, with the smallest lot containing 21,579 square feet.

RECOMMENDATION:
Staff recommends approval of this preliminary plat.

ALTERNATIVES:
1. Recommend approval as presented.
2. Recommend approval with conditions.
3. Recommend denial.
4. Table or Continue the proposed preliminary plat to a specific date.

POSSIBLE MOTION:
The Planning Commission recommends approval of the Estates at Old Farm Preliminary Plat.

FINDINGS FOR APPROVAL:
1. The proposed Preliminary Plat meets the requirements found in Section 10-25C-3 of the Subdivision Regulations.
2. The proposed project meets the lot size requirements found in Section 10-8B-2.

EXHIBIT A
Preliminary Plat

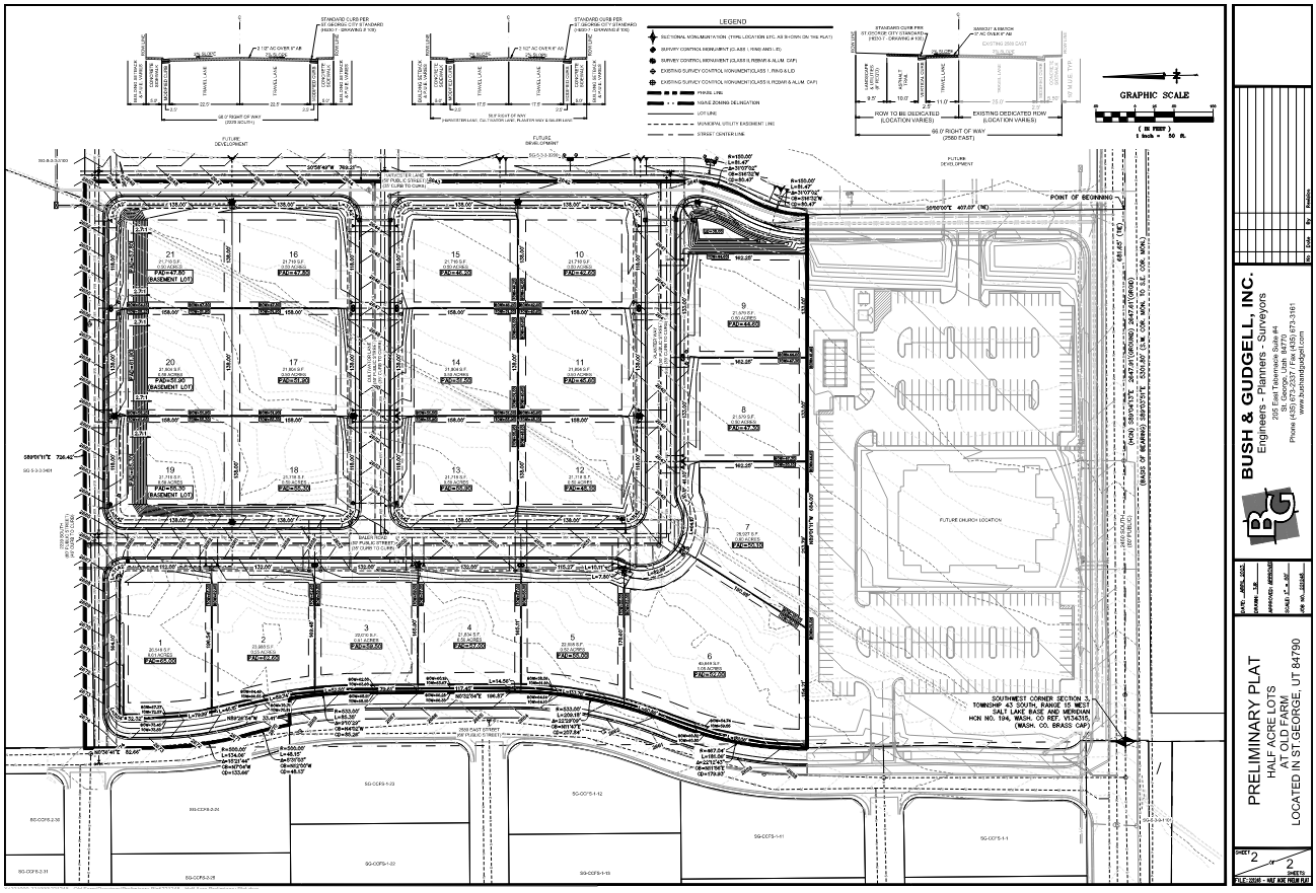


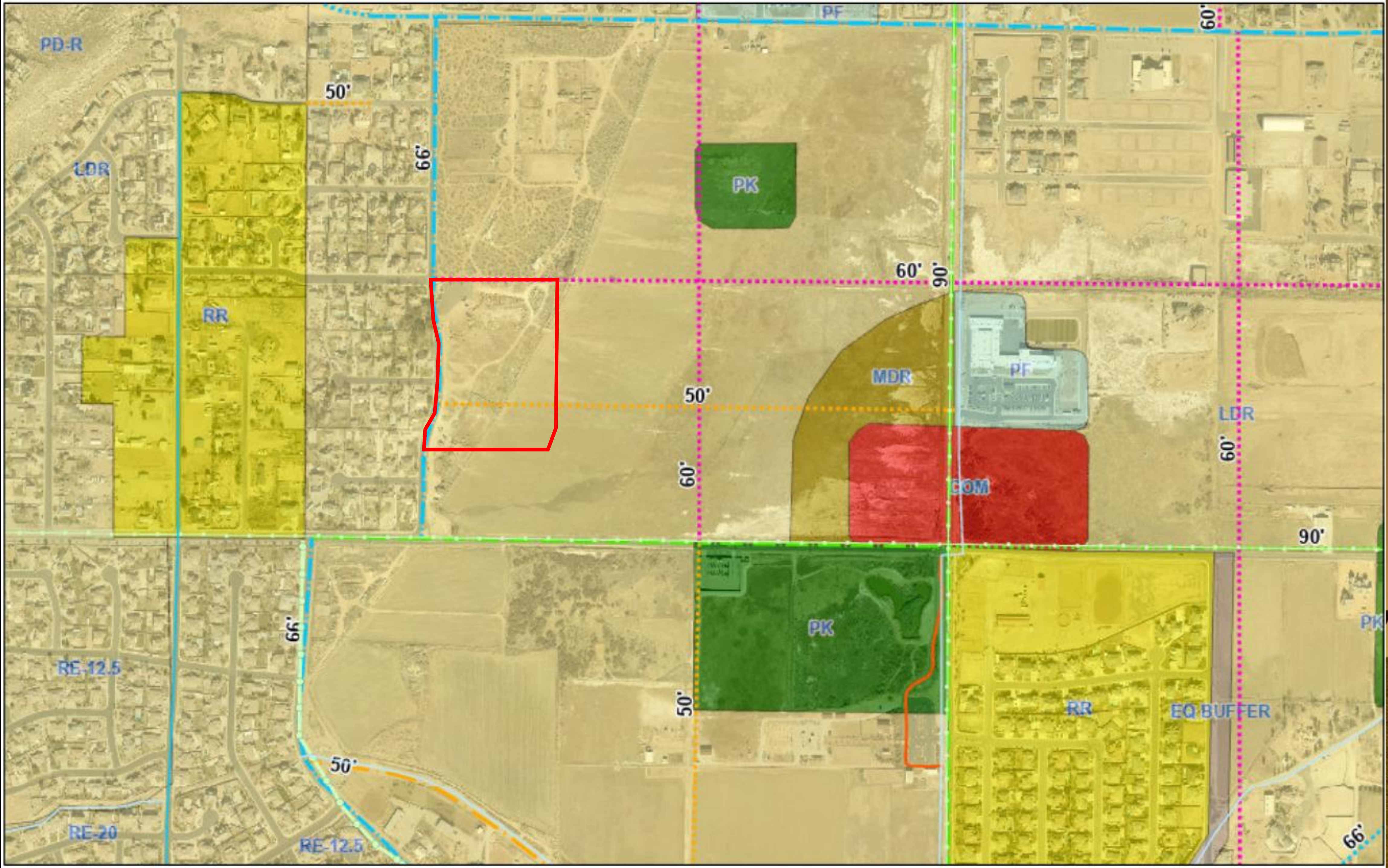
EXHIBIT B
PowerPoint Presentation

Estates at Old Farm

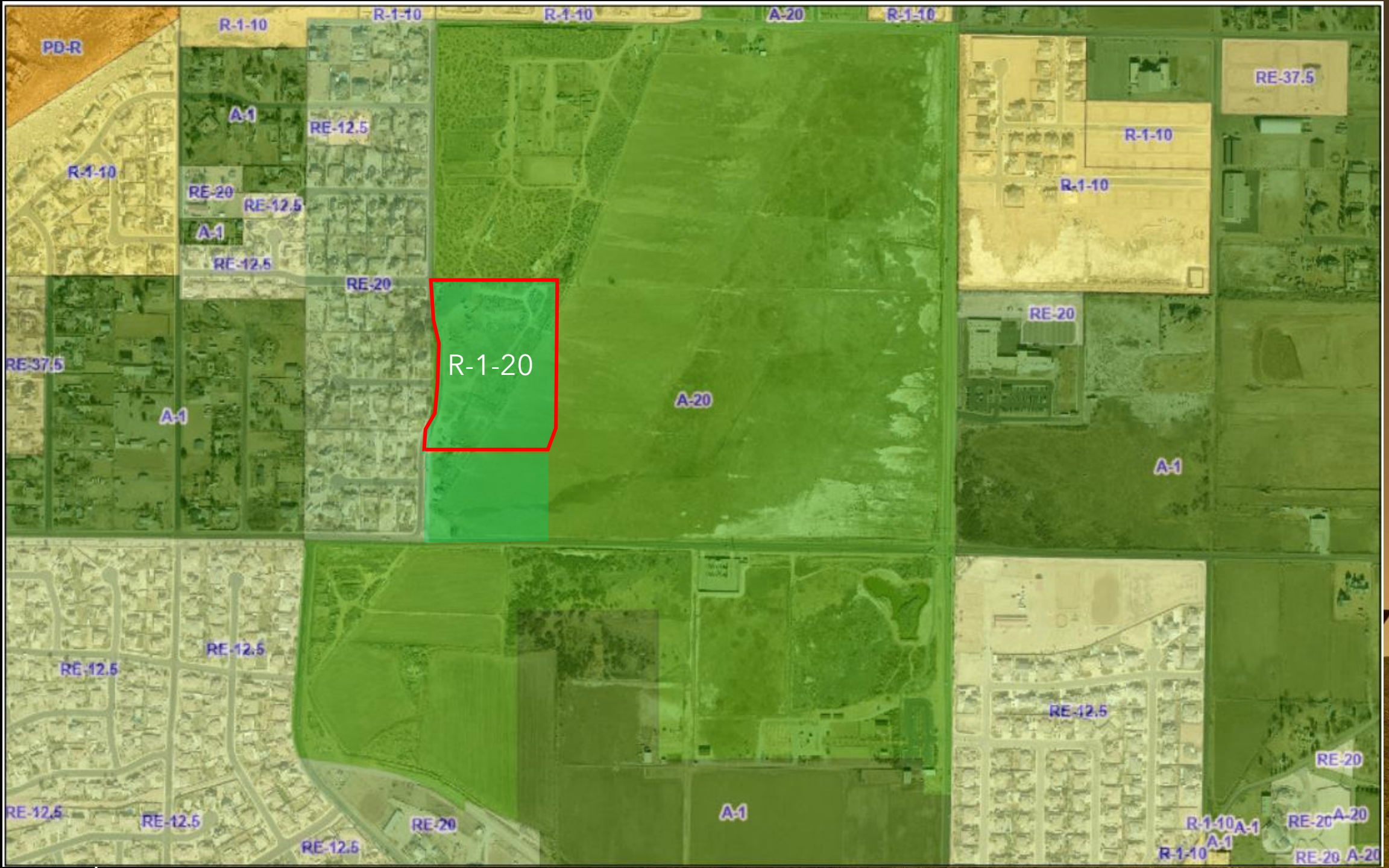
Preliminary Plat

2023-PP-023

LOCATION


PD-R
PF
60'
50'
LDR
66'
PK
RR
60'
90'
MDR
PF
50'
LDR
COM
60'
60'
90'
PK
PK
66'
RE-12.5
50'
RR
EQ BUFFER
50'
RE-20
RE-12.5
66'

LAND USE


R-1-10
R-1-10
R-1-10
A-20
R-1-10
PD-R
A-1
RE-12.5
R-1-10
RE-20
RE-12.5
A-1
RE-12.5
RE-20
R-1-20
A-20
RE-37.5
A-1
RE-37.5
R-1-10
R-1-10
RE-20
A-1
RE-12.5
RE-12.5
RE-12.5
A-1
RE-12.5
RE-20
RE-12.5
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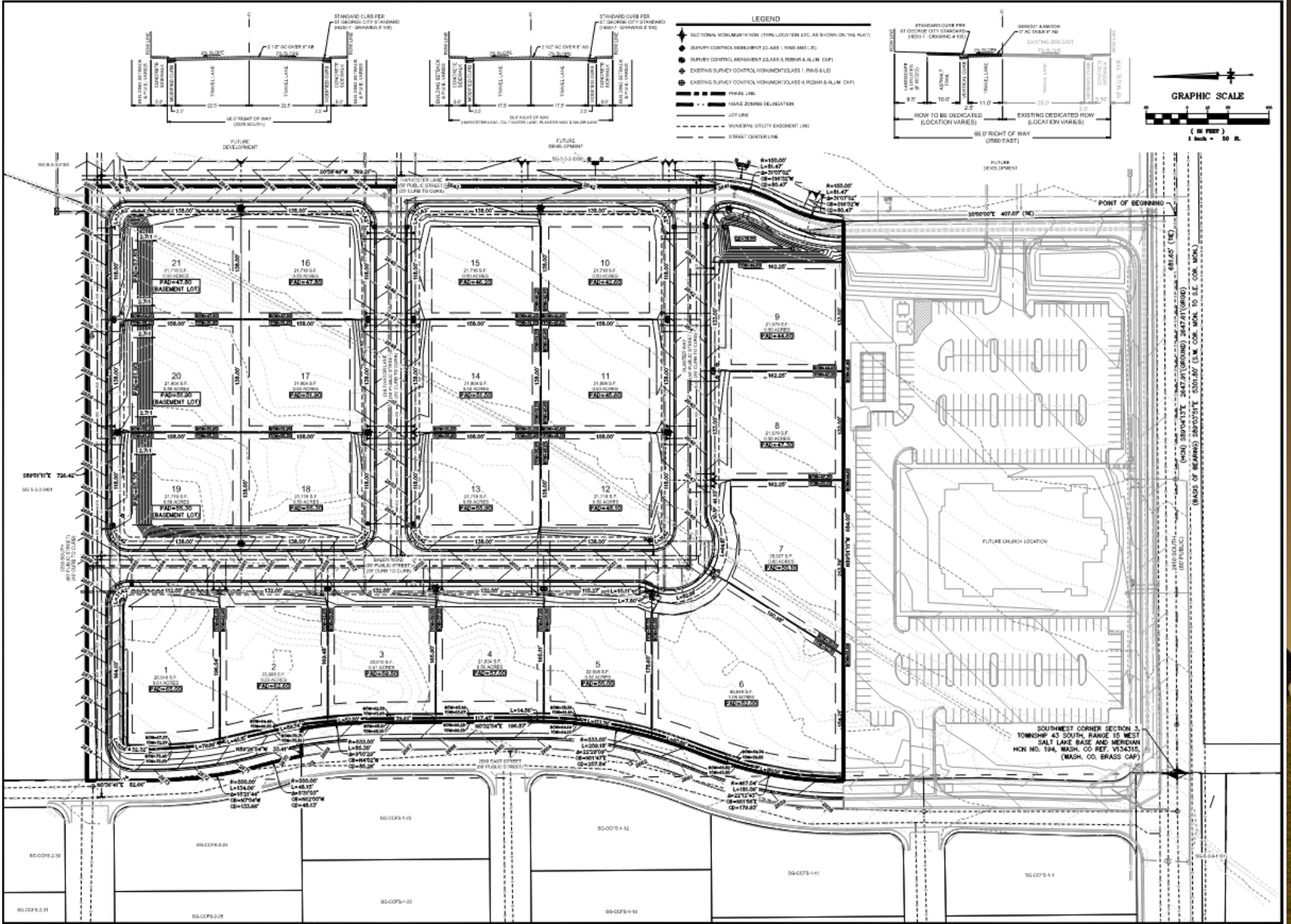
A-20
R-1-10
A-1
R-1-10
A-1
RE-20
A-20

ZONING



PRELIMINARY PLAT

St.George
Community Development

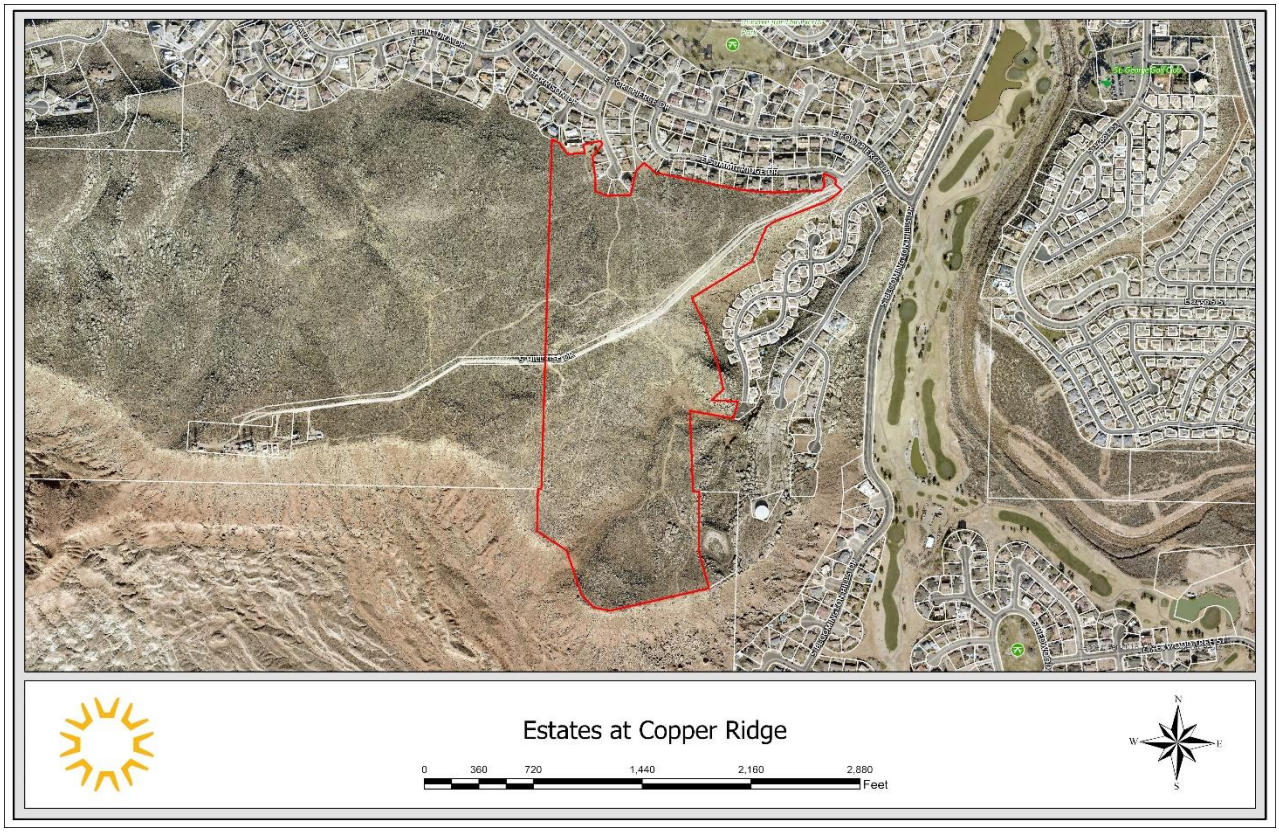
Item 6

Preliminary Plat

PLANNING COMMISSION AGENDA REPORT: 06/27/2023

Preliminary Plat
Estates at Copper Ridge Preliminary Plat
Case No. 2023-PP-013

Request:	The applicant is requesting approval of a preliminary plat to divide the property into 42 single-family lots.
Representative:	Tony Carter (Horrocks Engineering)
Parcel Number:	SG-5-3-5-32001
Location:	The site is generally located on Hillrise Drive, south of Summit Ridge Drive.
Total Acreage:	Approximately 70.83 acres
Existing Zoning:	PD-R (Planned Development Residential)
General Plan:	OS (Open Space)



Adjacent zones: The property is surrounded by R-1-40 on the west, R-1-8 to the north, PD-R (Planned Development Residential) on the east, and OS (Open Space) on the south.

Background & Analysis: The property has a long history including real estate exchanges which culminated in a development agreement between the City of St. George, Bureau of Land Management (BLM), and Leucadia Financial Corporation in July of 1998. In the development agreement, the City agreed to allow the construction of Sienna Canyon, Sienna Ridge and the remaining property on Webb Hill (the subject property). Between Sienna Ridge (13 lots) and Sienna Canyon (55 lots), 68 units have been platted. Out of 118 total units allowed by the development agreement, this leaves a total of 50 lots left to be developed. The applicant is proposing 42 new lots.

The developer of the site approached the Planning Commission and City Council in 2021 and received approval of a hillside permit, PD (Planned Development) amendment, and preliminary plat. Preliminary plat approvals expire after a year if a final plat has not been recorded within that time frame. As a result, this particular plat expired requiring the applicant to make a new application in accordance with the approved PD zone. This is a reinstatement of the plat that expired.

The lots range in size from approximately 89,000 ft² for the hotel and approximately 13,700 ft² and 16,500 ft² for villas B/C and A/C/D/F respectively.

The location falls within the Hillside Development Zone, and the applicant has received approval along with the zone change previously. Engineering staff has noted that some of the retaining walls will need to reconcile and be checked against the standards of the code. This will be done at the construction drawings are reviewed and approved.

Recommendation: Staff recommends approval of the preliminary plat with the following conditions:

1. That all retaining walls meet the requirements of the hillside and retaining wall ordinances.

Alternatives:

1. Recommend approval as presented.
2. Recommend denial.
3. Continue the proposed preliminary plat into the future.

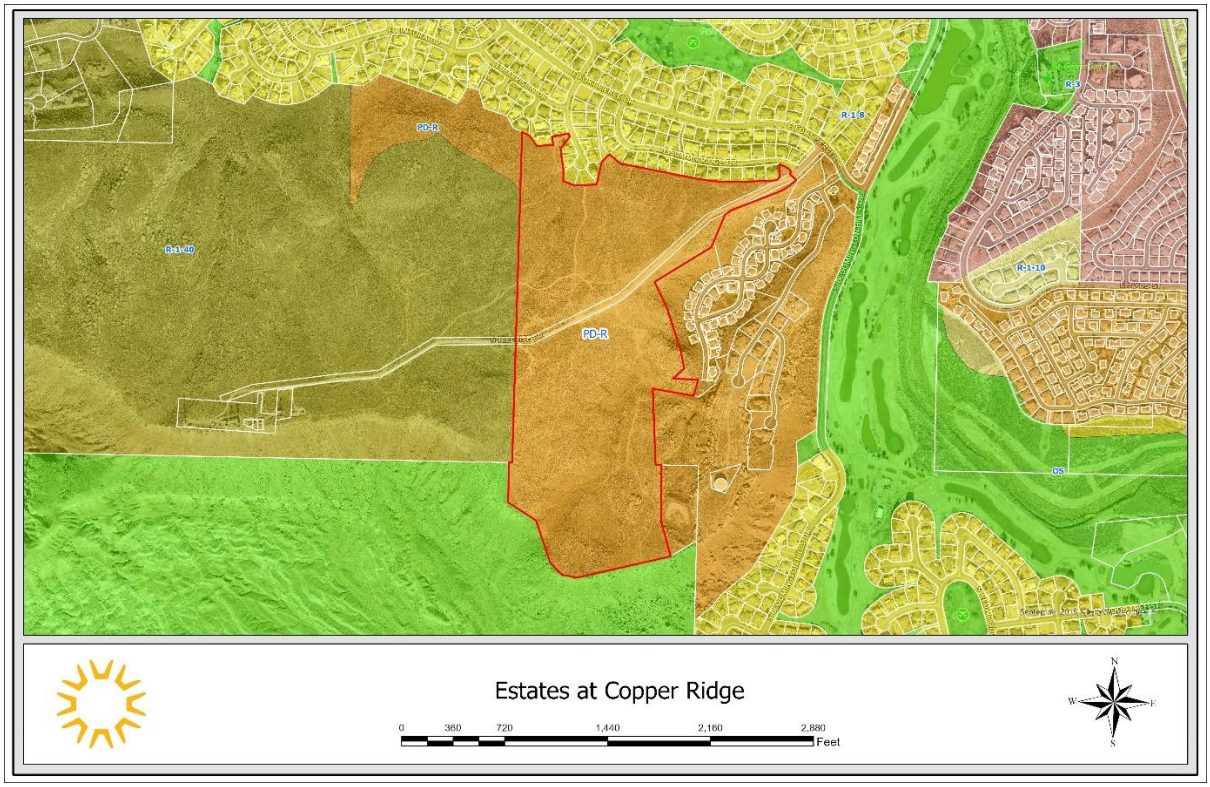
Sample Motion: I move that we forward a positive recommendation to the City Council for the Estates at Copper Ridge Preliminary Plat request,

application number 2023-PP-013, based on the findings and subject to the conditions listed in the staff report.

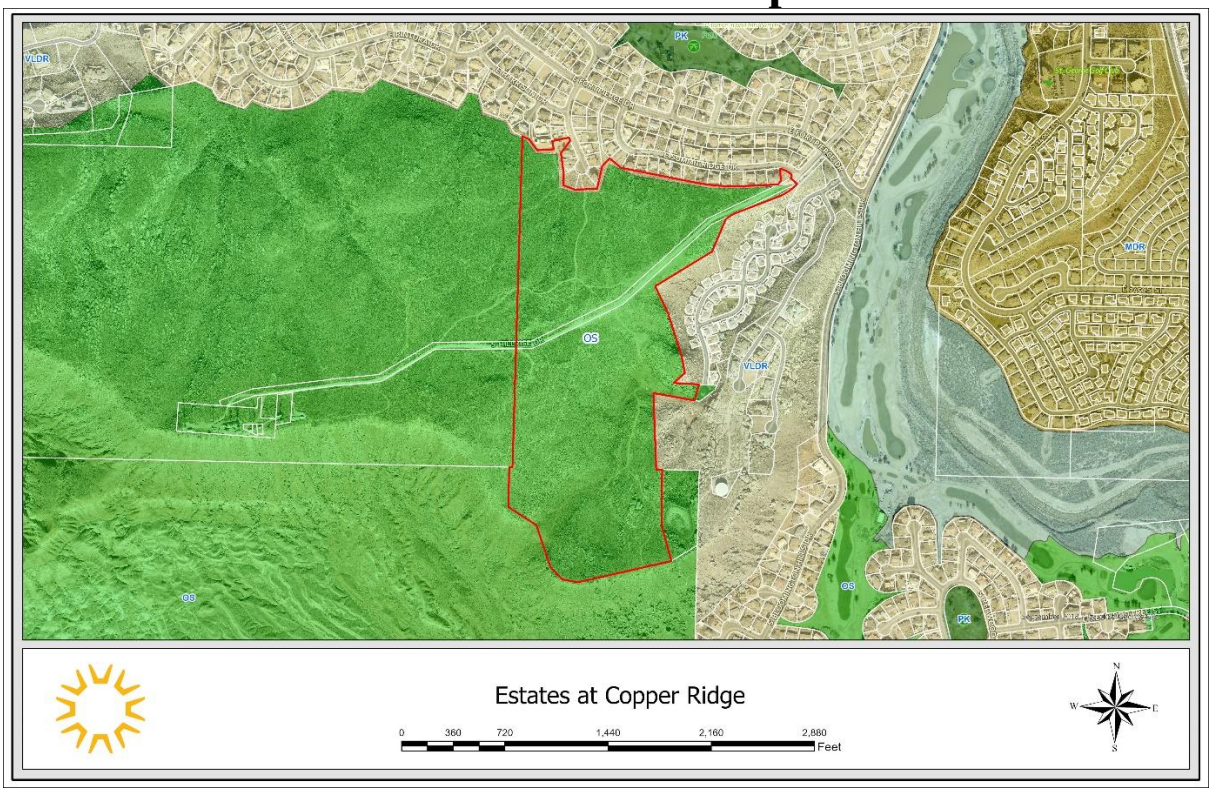
Possible Findings:

1. That the plat is consistent with and compliant to the zoning on the property.
2. That the plat will not leave any remnant property unaccounted for.
3. That development in the plat is consistent with the PD previously proposed by the applicant.
4. That this application is

Zoning Map



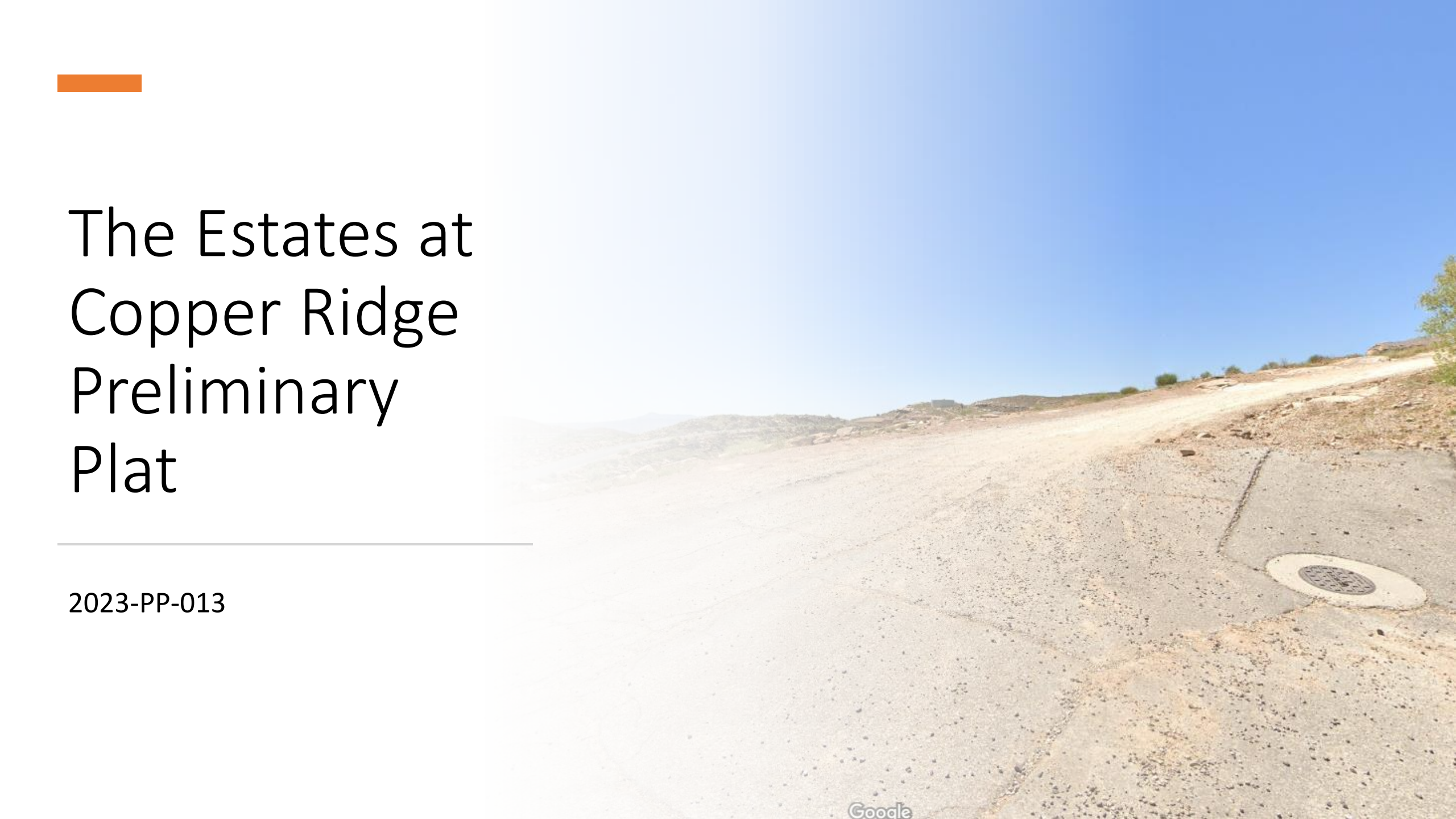
General Plan Map



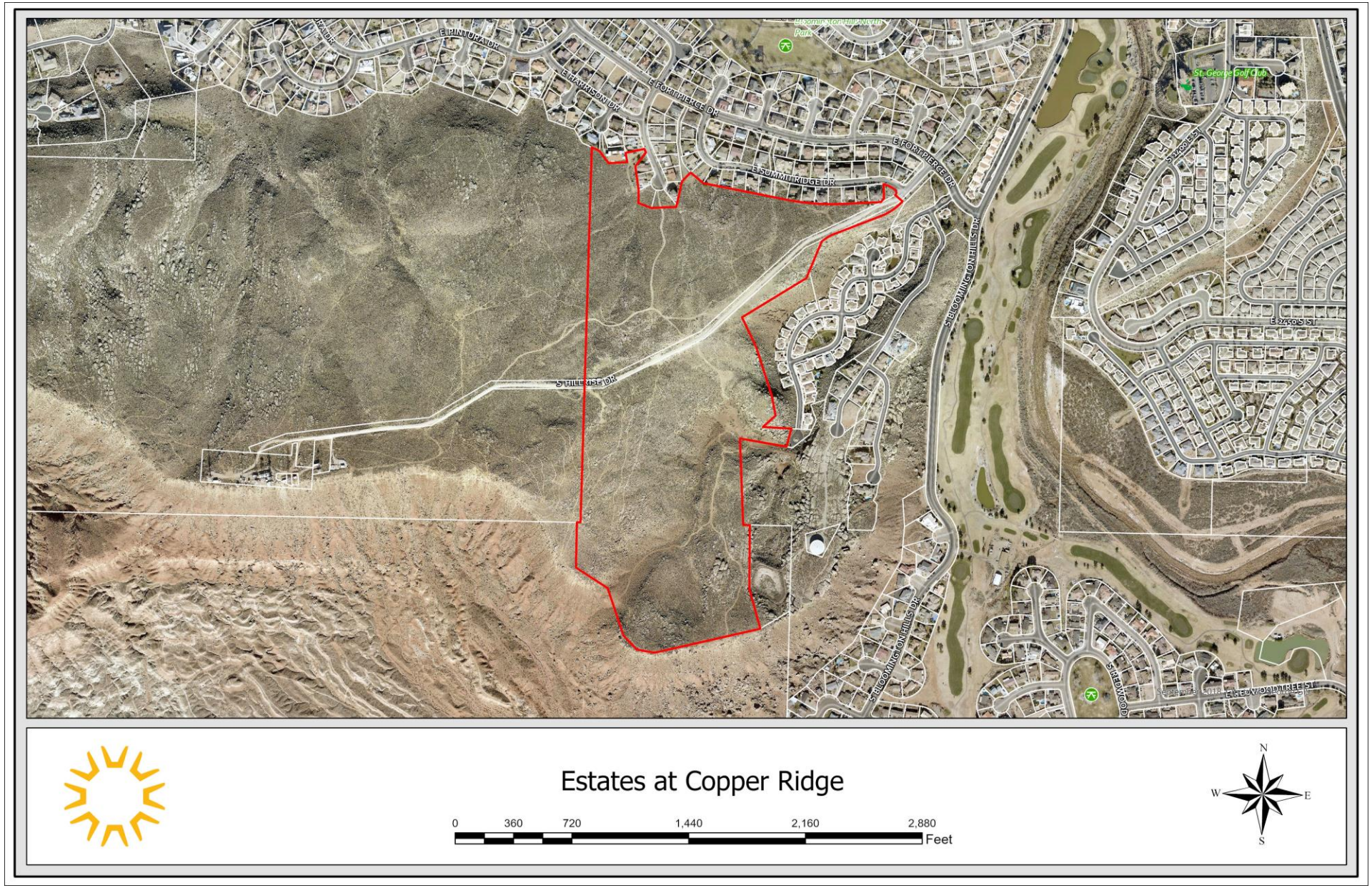
Presentation

The Estates at Copper Ridge Preliminary Plat

2023-PP-013



Aerial Map


E PINTURA DR
E HARRISON DR
E FORT PIERCE DR
E SUMMIT RIDGE DR
S HILLSIDE DR
S BLOOMINGTON HILLS DR
E 2450 S ST
S REDWOOD
St. George Golf Club
Estates at Copper Ridge
0
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720
1,440
2,160
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Feet
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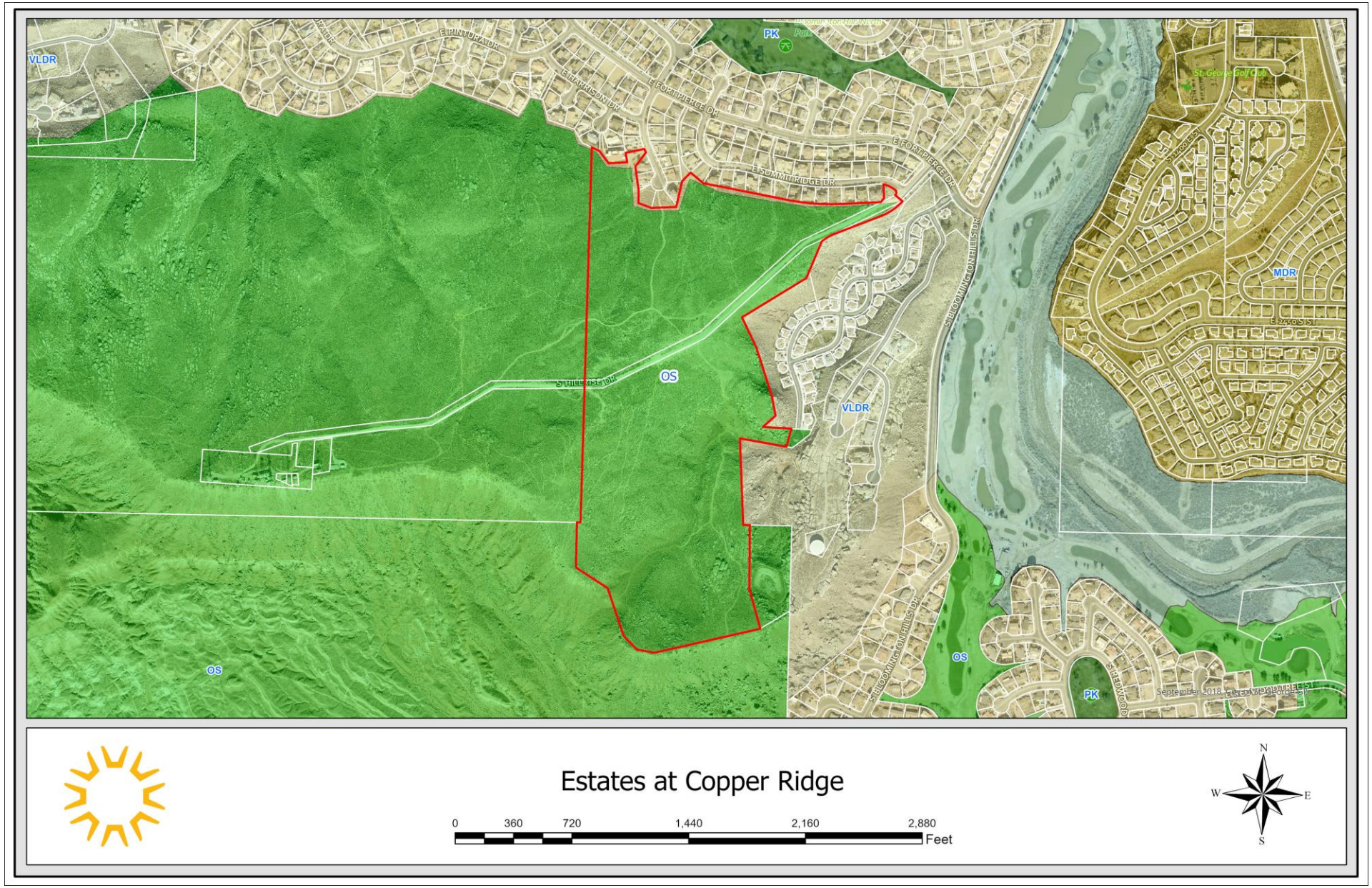
Land Use Map


VLDR
PK
E PINTURA DR
E HARRISON DR
E FORT PIERCE DR
E SUMMIT RIDGE DR
S BLOOMINGTON HILLS DR
St. George Golf Club
MDR
E 2650 S ST
OS
VLDR
OS
PK
S REDWOOD
Estates at Copper Ridge
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2,160
2,880
Feet
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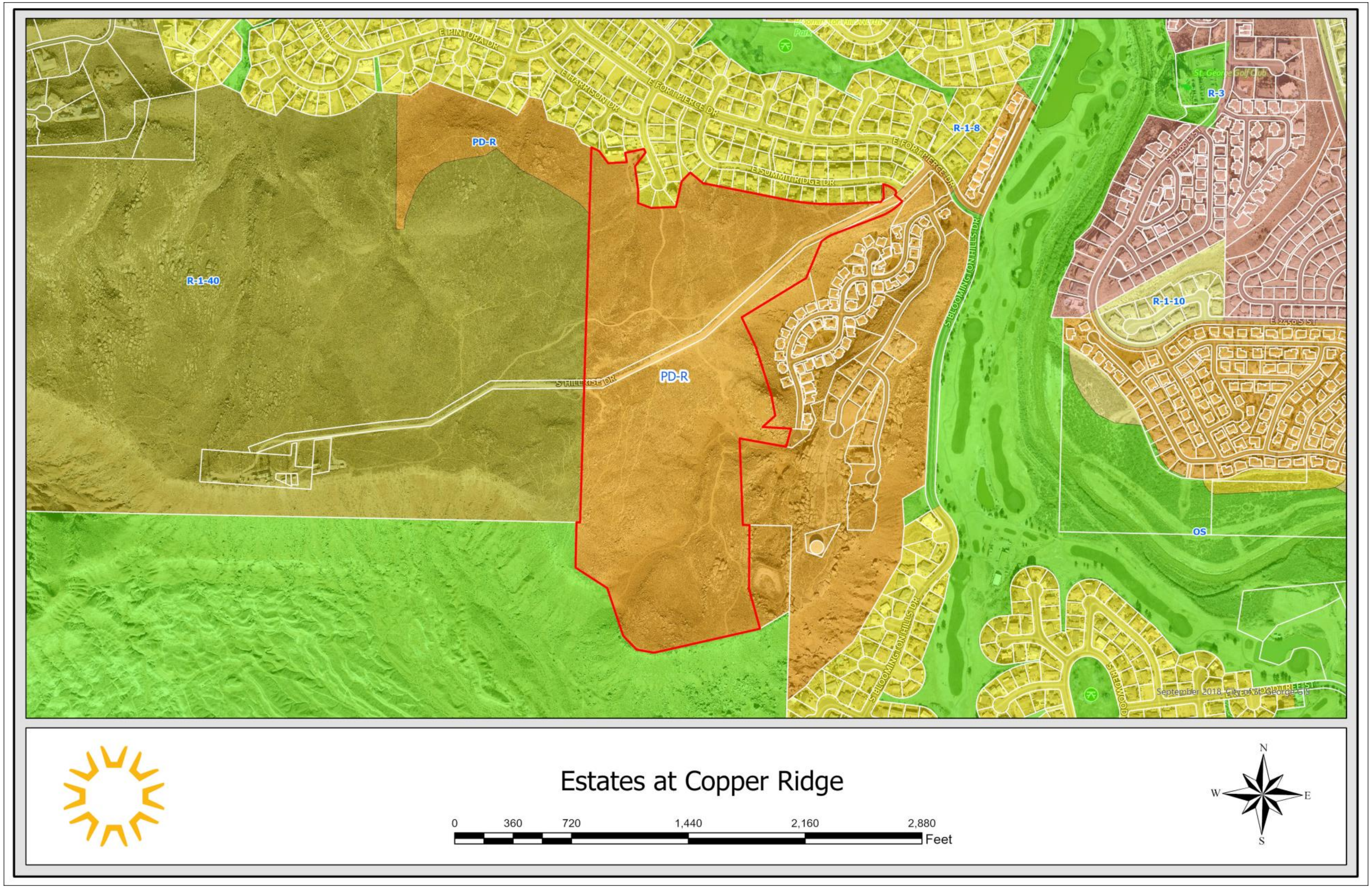
Zoning Map


PD-R
R-1-40
PD-R
R-1-8
R-3
R-1-10
OS
Estates at Copper Ridge
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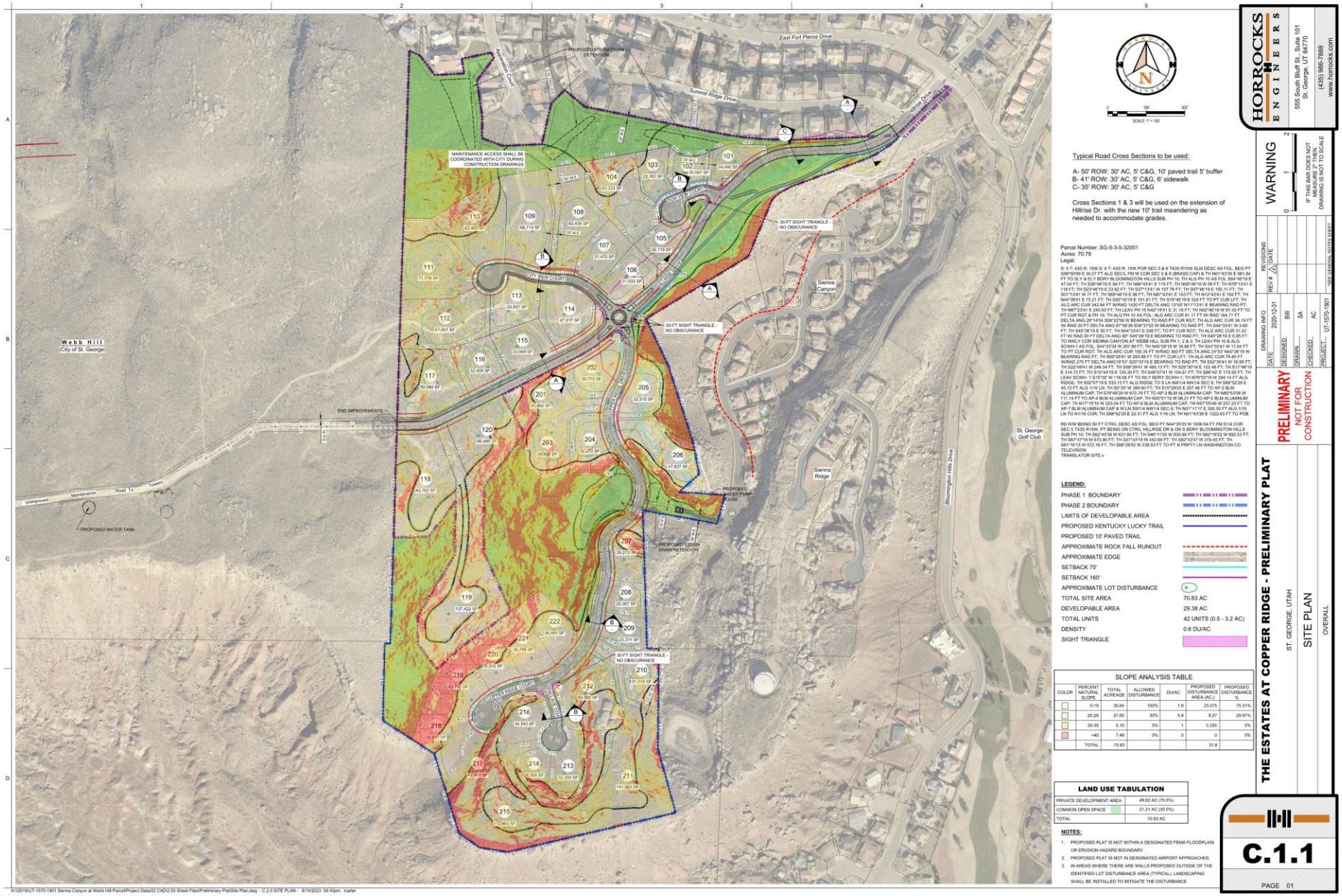
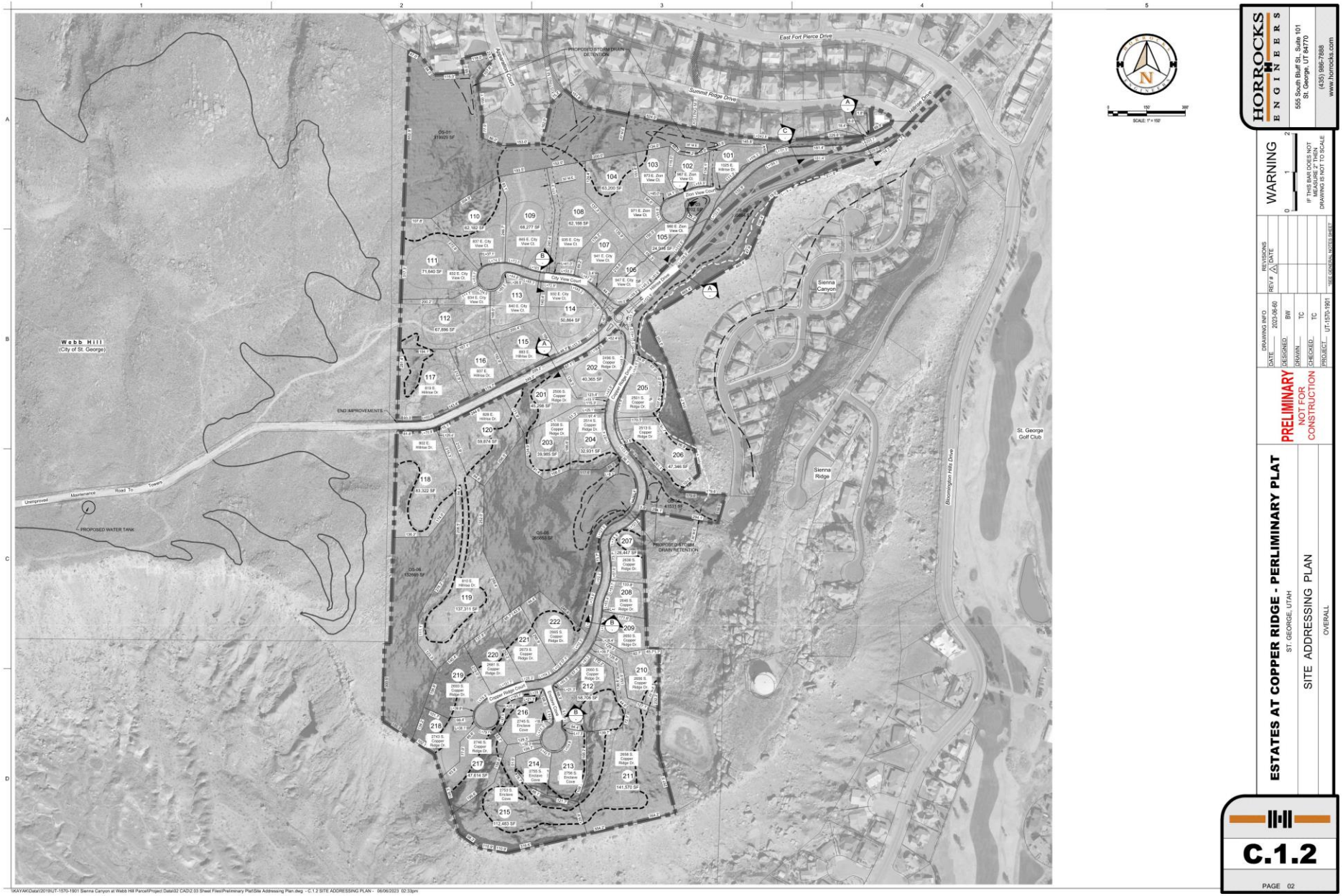
Proposed Plat



Proposed Plat



NOTICE OF MEETING
PLANNING COMMISSION
CITY OF ST. GEORGE
WASHINGTON COUNTY, UTAH

Public Notice

Notice is hereby given that the Planning Commission of the City of St. George, Washington County, Utah, will hold a **Planning Commission** meeting in the City Council Chambers, 175 East 200 North, St George, Utah, on **Tuesday, June 13, 2023,** commencing at **5:00 p.m**.

PRESENT:

Commissioner Nathan Fisher
Commissioner Emily Andrus
Commissioner Ben Rogers
Commissioner Lori Chapman

CITY STAFF:

Community Development Director Jim Bolser
City Civil Attorney Jami Brackin
Planner III Carol Winner
Planner III Mike Hadley
Planner III Dan Boles
Development Office Supervisor Brenda Hatch

EXCUSED: Chair Steve Kemp
Commissioner Austin Anderson

Pro Tem Chair Andrus called the meeting to order. Commissioner Anderson led us in the Pledge of Allegiance.

1. **Soleil Ridge Apartments, Development Agreement, Hillside Development Permit and Zoning Map Amendment** – Josh Lyon, representing Wasatch Commercial Builders is requesting approval of a Development Agreement, a Hillside Development Permit and a Zoning Map Amendment on the property located generally west of the 900 South and 250 West intersection for the purpose of constructing 224 units on 19.72 acres. The project is known as Soleil Ridge Apartments. This project was previously heard at the September 28, 2021, Planning Commission meeting. (Staff – Dan Boles)

   Dan Boles presented the following:

   Dan Boles – As of about noon today we received a request from the applicant to continue this item to another date.

   Pro Tem Chair Andrus opened the public hearing.

   Pro Tem Chair Andrus closed the public hearing.

   a. **PUBLIC HEARING:** Consider a request for a Development Agreement that will allow the developer acquire city owned property and implement rockfall hazard mitigation in return for supplying attainable housing units. **Case No. 2023-DA-003**

MOTION: Commissioner Rogers made a motion to continue Item 1a, b and c.
SECOND: Commissioner Chapman
ROLL CALL VOTE:
AYES (4)
Commissioner Rogers
Commissioner Fisher
Commissioner Andrus
Commissioner Chapman
NAYS (0)
Motion Carries unanimous vote

b. Consider a request for a Hillside Development Permit in order to allow construction in grades that exceed 20% and to approve plans for rockfall hazard mitigation. **Case No. 2021-HS-007**

MOTION: Commissioner
SECOND: Commissioner Chapman
ROLL CALL VOTE:
AYES (4)
Commissioner Rogers
Commissioner Fisher
Commissioner Andrus
Commissioner Chapman
NAYS (0)
Motion Carries unanimous vote

c. **PUBLIC HEARING:** Consider a request to change the zoning from C-2 (Commercial) to PD-R (Planned Development Residential) in order to construct a multifamily development. **Case No. 2023-ZC-006**

MOTION: Commissioner
SECOND: Commissioner Chapman
ROLL CALL VOTE:
AYES (4)
Commissioner Rogers
Commissioner Fisher
Commissioner Andrus
Commissioner Chapman
NAYS (0)
Motion Carries unanimous vote

2. **<u>STG Inn Planned Development Amendment</u>** – **PUBLIC HEARING:** Stacey Young is requesting approval of a Planned Development Amendment to amend the PD-C (Planned Development Commercial) zone for the purpose of adding a 12-room boutique hotel to this 0.27-acre site which is

generally located at 184 North 200 West Street in St. George Utah. **Case No. 2023-PDA-008.** (Staff – Carol Winner)

Carol Winner presented the following:

Carol Winner – We heard this item a few months ago for the initial zone change to PD-C. The land use map has this as connected corridor. The surrounding zones are RCC and AP. This will be a 3-story boutique hotel. There is one entrance off of 100 North. There will be 14 parking spaces underneath the hotel. They are meeting the required parking. The applicant is proposing to set back right up against the right of way line on 200 W. The applicant is proposing to purchase some of the right of way along 100 S. They are required to have a 10 ft landscape buffer on 100 W. The staff recommends that there are enhanced trees and plants between this and the Barton home to enhance the buffer. There is already a wall there. The parks department does have some concerns with the trees directly in the hardscape. The main floor will have some public space, some meeting rooms. The hotel rooms will be on the second and third floors. The applicant is proposing a mural on 200 North. The rendering here shows that the 2nd and 3rd floors will be stepped back from the right of way, but the roof and the decks of the balconies will come right out to the right of way area. The downtown area states that the 3rd and 4th stories should be stepped back from the street edge to soften the impact on the character area. That is the one concern that staff has. The mural depicted on the left is not exactly the mural that you will see but it will be similar. The applicant would like to put in soft lighting on the roof top. The recommendations and conditions are included in the packet. Carol read the conditions.

Pro Tem Chair Andrus – The right of way is being purchased, is that supposed to be a condition?

Jami Brackin – It has been to a work session, it has been agreed to, so it is just a matter of moving forward at the next meeting.

Pro Tem Chair Andrus – Do we have mural standards?

Carol Davidson – We don't for murals, only signs. If they had the name of the business then it would be considered a sign and treated as such, but murals are considered art.

Commissioner Chapman – How much of a step back is required?

Carol Winner – We don't have a definite amount currently; the code has not been written for the Downtown Area Plan yet.

Commissioner Chapman – What about the second floor?

Carol Winner – The plan reads the third and fourth floors so we wouldn't be as worried about the second floor.

Pro Tem Chair Andrus – Could they do an awning because it is west facing?

Carol Winner – It is up to interpretation. The intent was to soften the look and not have immense massing. So, if this Planning Commission feels like an awning fits the interpretation, that can work.

Commissioner Fisher – At some point there is going to be detail in the code. There is a feel that we are trying to create in the downtown area. How that is accomplished, it's going to take some massaging. I can see where you could be literal and say everything on that third floor, everything has to be stepped back. But I could see our code saying that perhaps columns extending out over the first and second floor are allowed if they are open air columns, which means that I could see a roofline coming out as well, if you've got open air columns so you can actually see through that whole corridor as well then it does open it up, it doesn't feel like it's towering over the street. But we don't have that yet, I imagine that will be discussed as we start working on the code we just don't have that detail yet and now is the time that we have to obviously address an application that is in front of us and do our best to try and protect the plan that has been created.

Commissioner Chapman – That ivy area in the front, or the green area, that obviously also comes out further, right to the right of way, to the sidewalk. Is that, would that have to be moved as well, in order to meet that step back requirement?

Carol Winner – I guess that is the topic that we are discussing, it is not necessarily a requirement. We do try to stick to what the Downtown area plan has suggested, and it does say stepped back. Like Nathan was explaining, it doesn't say specifically, it is up to interpretation. It's how this Planning Commission wants to deal with that, it's up to interpretation.

Commissioner Chapman – On the rooftop patio, is there restriction on the noise and the lights?

Carol Winner – The lights, definitely, they will have to follow the lighting regulations. If they are going to be putting up the string lights they will have to be in that lower lumens so that it's not disturbing. We do have a noise ordinance as well that they will need to follow.

Commissioner Chapman – Is there anything in the plan restricting the architecture because it's next to that old pioneer home so that it fits in the historic district?

Carol Winner – It's mentioned that we need to be aware of it, but there is nothing that specifically says that the building right next to a historical property needs to match it. In fact, part of the discussion was we didn't want exact replicas, we didn't want fake, make it look old, but it's really not, buildings. What you are seeing is what the applicant is interpreting that would fit in this neighborhood. Of course, all of this is up to interpretation on how you feel if it does or does not fit.

Commissioner Rogers – I appreciate the comment that things are up to interpretation. There was a discussion a couple months ago about roof height at 50 ft. and that is to the parapet cap and that is open to interpretation because I can put a 15 ft mechanical room on top of that and be a 65 ft tall building. So, is this the same as the roof over the third floor? You could say that the roof is not able to go past the façade, but I could put a canopy out there and hang it with cables and it would be the exact same distance as the roof. So, there is a fine line of what is and isn't acceptable and what does and doesn't work. There are projects just like this all through the historic district in Salt Lake in the Capitol Hill District. It is a fine line and again, it is open to interpretation. Architectural ambiguity is all in the eye of the beholder, some might like it, some might not.

Pro Tem Chair Andrus – On the west side with the roof is that specifically to screen from the sun or were there other reasons that you had for pulling that out?

Stacey Young – Yes, that is for shade. Secondly, the esthetics of having just that roofline pulled back a bit, it looks so much better. The intent was really to try to apply the language of the General Plan to avoid monolithic big plain walls, so try to create as much perforation with the stairwell elements, anything like that, that was a wall up against the sidewalk to have either the glazing of the windows or other things breaking it up. That was the intent, to get away from the big blank walls. The materials and color are meant to be rooted in the local landscape, the sandstone and the lava colors and those elements. The flat roof was to keep it to the lower roof, you could do gables, but it just ends up pushing the roof height quite a bit higher, so it was a tradeoff. I was trying to keep it to 35 ft of a typical single-family neighborhood height.

Pro Tem Chair Andrus opened the public hearing.

David Richens – I appreciate the comments on architectural integrity. When we built our building, and it wasn't very long ago, they were very strict guidelines as to how we could build, what it needed to look like, how it was going to fit into the neighborhood. I think this would be a good addition to the neighborhood if it is done properly and it fits in the neighborhood. But to put this next to that beautiful little home, right down the street from Brigham Young house, from the law office on the corner, to everything that we did with our building, I don't feel that this fits architecturally. I would hope that somebody would take a closer look at putting some elements into it so that it did fit. I appreciate what they have done with the parking, 14 spots is probably enough so that the streets aren't drowned, but 14 spots with employees isn't that many. Our building wasn't that long ago so you could look and see what the requirements were and the materials that we had to use, all the things that they required us to do.

Scott Arbor – We own 2 houses that we put significant investment in, in the historic district. I'm going to echo the comments that were just made. It's a beautiful project, open to interpretation, it does not fit in this area. I feel like there is a little camel's nose in the tent. We and some of my neighbors, my wife was here at the last meeting where we did the zoning adjustment. We were told don't worry, it's just a zoning adjustment, but that allowed the height to go up. Now were determining roof lines to go out. It doesn't feel like a good trendline. It doesn't feel like we are balancing the needs of the developer with the needs of the town, the needs of the neighborhood. That whole area, it's all homes, there are no other 3 story structures there.

Fr. David Bittmenn – I'm the Pastor of the Catholic Church off to the west side. I have a question about parking. Does the proposed amendment impact the required number of parking spaces?

Sharon Richens – We built our building in 2010. We went way out of our way to try and maintain the architectural features of the neighborhood. The Advenire downtown has done some of the same by trying to mirror the gables and shapes that are echoed in the homes in that neighborhood. There are some beautiful homes that are historic landmarks there and enjoy landmark status. I think that's an interesting building, but it just really doesn't fit on that corner. If my understanding is correct, there are supposed to be 12 lodging spaces and there are 14 parking spaces. So only 1 per room and 2 employees. I don't know if that is really realistic. I would echo the other comments and I would ask that the architectural features that are really lovely and specific to this neighborhood be honored in whatever goes into this space and that the parking really be given full consideration for commercial property. I know for ours there were parking requirements on square footage that limited the size of our building and we honored that. The envelope is what it is and the setbacks. Three stories straight up, it just doesn't fit.

Pro Tem Chair Andrus closed the public hearing.

Commissioner Fisher – I was around for the plan as we worked through it. In my opinion it was a compromise to warm ourselves to the idea that we are going to go vertical. That is the only way we are going to be able to afford to redevelop downtown. My guess is that is why the language is not specific. With the balconies then people will have access to them and will be able to be looking out over them. It will soften the way the buildings look. I think we may regret the way we force builders to step back the third story and up. I don't think it imposes on this area. There are commercial buildings a half a block away. If we have a project that looks good, we want to be careful about picking it apart too much.

Commissioner Rogers – I will address parking, as far as City code goes this project meets the code for parking. I have been working with multiple clients on mixed use projects. We have been trying for 20 years with vision Dixie to go vertical. I agree with Commissioner Fisher, I appreciate what this project is trying to do to this downtown core. I somewhat disagree with the rooftop stepping back. You would see this scale of project in any town across the country. There are other buildings very close to this. There are many buildings with flat roofs that are historic that have been around longer than 50 years. I believe it relates to the atmosphere and the scale we are trying to create.

Commissioner Chapman – I appreciate the development. But I don't think it fits the historic district. It is a very modern-looking building. I think the size is intimidating. And maybe it's the flat roof. It doesn't necessarily fit to me.

Pro Tem Chair Andrus – In the landscape plan it shows the mature trees on the west side where the soil enhancements are needed. Is that the plan for that side? I think the big trees will soften this all along that street.

Carol Winner – Yes, and just for your information, our code because this is in the Central Business District, we don't necessarily require that 15 ft. landscape strip within this location, so adding just a few street trees in there helps.

Commissioner Fisher – Just across the street is a three-story building. Right across the street is the parking lot for that three-story building, it's the flat roof, it actually looks more modern and more imposing because it has solid walls all the way up without any relief. One thing I do like about the color scheme that we have here is because of the lighter color below and the darker color above it actually looks like we are setting off the bottom story from the top story. I am a little color blind, so I don't know the colors, but in shades, it looks like it to me.

Commissioner Chapman – But it is setback further, it's not on the right of way, it's setback further. To me visually it doesn't look like the Grand Canyon, it's back a ways.

Commissioner Fisher – What is the height of the three-story, do we know? Can we tell by the picture? I can't imagine it's shorter than this project.

Commissioner Chapman – Probably not.

Commissioner Rogers – That setback and the scale from the sidewalk is exactly what the city core and the planning process creates. You want the building at the sidewalk for pedestrians and the pedestrian scale. To set it back 20 ft like a residence it creates a disconnect.

Commissioner Chapman – But at least set it back enough to have a little bit of a landscape area. Are we having a landscape area?

Commissioner Rogers – The trees were in the front of the building; they possibly would bring that up to the sidewalk.

Carol Winner – I would mention that the applicant has provided older pictures from St. George that are older pictures.

Commissioner Fisher – And I think, Commissioner Rogers, that is what you're trying to get at is that this kind of a scape here, you want the buildings up against the sidewalk, the pedestrian area, to not create a disconnect.

Commissioner Rogers – When you look at the historic photos in the District of St. George they are right on the sidewalk.

Commissioner Chapman – And I don't a problem with that if you are in a commercial district that has building after building after building in commercial because it makes sense.

Commissioner Rogers – But that's what our new General Plan is trying to accomplish.

Commissioner Chapman – But that isn't what it is now, there are houses everywhere.

Commissioner Fisher – Right, and that's what the future General Plan is showing, we are trying to develop this area, it's residential character anymore.

Commissioner Chapman – I thought this was in the transition area where there is supposed to be both.

Stacy Young – This side of the street is in what is defined as the Central Business District. That implies that it is eventually intended to become a more intense vibrant part of the City. The future is to return to the past. These pictures are from the 50's and 60's when the population of St. George was 5,000 people. At that time the buildings right to the sidewalks were common. St. George architecture has always been really eclectic. In some ways we are really going back to our true roots.

Commissioner Fisher – There is no way to make this residential, nobody is going to pay to come in and tear down a house and build another house. If we were really thinking that hey there are houses there and we really need to keep houses there then the Richen's building wouldn't be there. And just across the street and down the street is all commercial. What would really be nice if we could make everybody take the homes that are there and turn them into commercial but it's not gonna happen.

Commissioner Chapman – I think it should be commercial to be honest. I think there is something to be said for scale.

Carol Winner – This is connected corridor; it is meant to be eclectic. Carol read the definition of connected corridor from the Downtown Plan.

Pro Tem Chair Andrus – It's called Connected Corridor, which means it's on major roads downtown or close to it, like a block or two. In my mind it's a transition area now, but in the future we're planning things like transit and pedestrian corridors and things that feel like a part of the downtown. This meets that vision of what we want to see in those types of areas of pedestrian friendly. The street trees, the balconies, the lights, those are the types of things we want to see in this area.

MOTION: Commissioner Fisher made a motion to recommend approval of item 2 adopting all of the staff comments except to the roofline as to the conditions regarding the landscape area but not stepping the roofline back.
SECOND: Commissioner Rogers
Clarification on the motion:
Commissioner Fisher – On the recommendations there are 3 by staff, my motion is to include all of the recommendations except the first one, which is as to the roof line.
ROLL CALL VOTE:
AYES (4)
Commissioner Rogers
Commissioner Fisher
Commissioner Andrus
NAYS (1)
Commissioner Chapman
Moves forward without recommendation

3. **Food Truck Park Zoning Regulation Amendment** – Yori Livingston is requesting to amend portions of the St. George City Code, to add Food Truck Park as a use and to allow this use as a permitted with standards use in the C-2, C-3 and/or C-4 zone. This item was continued from the May 9, 2023, Planning Commission meeting. Case No. 2023-ZRA-002. (Staff – Carol Winner)

Carol Winner presented the following:

Carol Winner – The applicant has contacted staff and would like to continue this item to another meeting.

MOTION: Commissioner Rogers made a motion to continue this item to another meeting.
SECOND: Commissioner Fisher
ROLL CALL VOTE:
AYES (4)
Commissioner Rogers
Commissioner Fisher
Commissioner Andrus
Commissioner Chapman
NAYS (0)
Motion Carries unanimous vote

4. **UFFCU Dino Crossing Preliminary Plat** – Brandee Walker, representing Civil Science is requesting approval of a preliminary plat to divide the property into two (2) lots The purpose for this preliminary plat is to create a legal lot for a credit union on the corner of Mall Drive and Riverside Drive. The property is

approximately 3.96 acres. The property is zoned C-2 (Highway Commercial). **Case No. 2023-PP-020** (Staff – Dan Boles)

Dan Boles presented the following:

Dan Boles – There is an entrance point on Riverside and an access point on Mall Drive. If lot number 2 wants to split further they will need to come back and amend this plot. For now, they are creating lot number 1 for a credit union.

Commissioner Fisher – Is that full access on the south side?

Dan Boles – It's right in right out.

Commissioner Fisher – So are they going to provide separate written access agreements, not just a note on the plat, right?

MOTION: Commissioner Rogers made a motion to recommend approval of item 4.
SECOND: Commissioner Chapman
ROLL CALL VOTE:
AYES (4)
Commissioner Rogers
Commissioner Fisher
Commissioner Andrus
Commissioner Chapman
NAYS (0)
Motion Carries unanimous vote

5. Minutes

Consider a request to approve the meeting minutes from the May 23, 2023, meeting.

MOTION: Commissioner Chapman made a motion to approve the minutes.
SECOND: Commissioner Fisher
ROLL CALL VOTE:
AYES (4)
Commissioner Rogers
Commissioner Fisher
Commissioner Andrus
Commissioner Chapman
NAYS (0)
Motion Carries unanimous vote

6. City Council Items

Jim Bolser the Community Development Director will report on items heard at the June 1, 2023, City Council meeting.

1. 22023-PP-016 Townsite Estates

7. <u>Adjourn</u>

MOTION: Commissioner Fisher made a motion to adjourn SECOND: Commissioner Rogers ROLL CALL VOTE: AYES (4) Commissioner Rogers Commissioner Fisher Commissioner Andrus Commissioner Chapman NAYS (0) Motion Carries unanimous vote