NOTICE OF MEETING
HILLSIDE REVIEW BOARD
CITY OF ST. GEORGE
WASHINGTON COUNTY, UTAH

Public Notice

Notice is hereby given that the Hillside Review Board of the City of St. George, Washington County, Utah, will hold meetings at the referenced site on **Wednesday, September 29, 2021** commencing on-site at approximately 8:30 a.m.

The estimated site times are in bold.
The agenda for the meeting is as follows:

1. Consider a request for a hillside development permit at the Banded Hills Subdivision. The applicant is proposing to adjust the no-build area designated on the plat. The property is located at 2973 E Banded Hills Drive. The property is currently zoned R-1-10 (Single-Family Residential, 10,000 sq ft minimum lot size). The applicant is Split Rock Custom Homes. Case No. 2021-HS-010. (*See 'Meeting Place' exhibit below*). **Meeting time approx. 8:30 am**
2. Consider a request for a hillside development permit to allow disturbance of areas greater than 20% slope areas. This application is in anticipation of a new hotel. The property is generally located on the north-west corner of 250 West and Blackridge Drive and is zoned PD-C (Planned Development Commercial). The applicant is New England Alliance, LLC/Glen Overton. Case No. 2021-HS-008. **Meeting time approx. 9:30 am**
3. Consider a request for a hillside development permit to allow disturbance of areas greater than 20% slope areas. The application is in anticipation of the construction of a city park and trail. The property is generally located on 700 East (University Blvd), north of St. George Blvd and is currently zoned OS (Open Space) and C-2 (Highway Commercial). The applicant is the City of St. George. Case No. 2021-HS-009. **Meeting time approx. 10:30 am**
4. Consider approval of the meeting minutes from August 18, 2021.

Dan Boles, AICP
Senior Planner
Development Services

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.

Meeting Locations

Item #1 2973 E Banded Hills Drive



Item #2 North-West Intersection Black Ridge Dr. & 250 W



Item #3 700 East (University Ave) – North of St. George Blvd



St.George
Community Development

ITEM 1

Hillside Permit

HILLSIDE REVIEW BOARD AGENDA REPORT: **09/29/2021**

HILLSIDE DEVELOPMENT PERMIT
Banded Hills Lot 2
Case No. 2021-HS-010

Request: This is a request for a Hillside Development Permit to allow development on a portion of a single lot of an existing subdivision that is currently restricted due to potential rockfall hazard. This would affect only Lot 2 of Banded Hills subdivision.

Hillside History: In 2018, a hillside permit was granted to allow an eleven-lot subdivision to be created (Banded Hills). The following year, another hillside permit was granted to add a 12th lot to the subdivision. Part of the approval of the hillside permit was that, due to the potential for rock fall from adjacent hillside, no building would be permitted adjacent to Banded Hills Drive on lots 1-7 and a portion of lot 8.

Exhibits Provided:

1) Exhibit A – AGEC Letter Dated June 2, 2021
"Exhibit A" – This is a letter provided by the applicant from Applied Geotechnical Engineering Consultants, Inc. (AGEC) recommending a reduction in setback.

2) Exhibit B – Rock Fall Study dated February 05, 2018
"Exhibit B" – This report outlined the possible geologic hazards in the area and how that may affect the subject property.

3) Exhibit C – AGEC Report dated February 23, 2018
"Exhibit C" is the study produced by AGEC on February 13, 2018.

4) Exhibit D – Staff Report dated April 18, 2018
"Exhibit D" is the staff report for the original request for hillside development permit. This was included for historical context only.

5) Exhibit E – Recorded Banded Hills Subdivision Plat
"Exhibit E" is the official plat that was recorded at the Washington County Recorders office on October 29, 2019.

Proposal: The applicant's desire is to be able to build a home on lot two that encroaches into the current area that is labeled as non-buildable. The letter provided to staff by AGEC states this proposal and that they would like to build into the no build area 35 feet. This no build area extends along the north side lot line approximately 166 feet and the south side lot line 119 feet and is approximately

17,200 sq ft of the 41,241 sq ft lot. This is approximately 41% of the overall lot size. If the request for a hillside development permit is granted, the applicant will need to submit an amended plat to adjust the boundary of the no build area.

Owner: Philip Geurts

Applicant: Split Rock Custom Homes

APN: SG-BAN-2

Location: 2973 E Banded Hills Drive

Acreage: 41,241 sq ft (0.94 acres)

Zoning: R-1-10 (single-family residential, 10,000 sq ft minimum lot size)

Adjacent zones: The property is surrounded by R-1-10 zoning with the exception of the property to the north-west which is zoned OS (open space).

Powers & Duties: Section 10-13A-8(B) of the city code states:

Powers and Duties*: The Hillside Review Board shall have the following responsibilities:*

1. Review proposed development within the hillside development overlay zone or in a high category rockfall area and make a recommendation to the planning commission to adopt, modify, or reject a proposal.

2. Provide advice and support as needed to the city staff, planning commission and city council in connection with reviewing requests for zone changes or other development applications within the hillside development overlay zone or in a high category rockfall area.

Permit required: Section 10-13A-7 states:

For developments on a development parcel of more than one (1) acre containing slopes greater than twenty percent (20%) or in a rockfall hazard area, certification by a Utah registered engineer that the development has been completed in compliance with the approved HDOZ permit, including satisfaction of any conditions contained in the permit, is required. The improvements required by the HDOZ permit are essential for the life, health and safety of the future users and occupants of the property. All essential improvements shall be completed prior to approval of permanent electric power service. Failure to complete all essential improvements shall result in the suspension of the building permit. The financial assurance shall not be released until such certification has been received by the city engineer or designee of satisfaction of all conditions contained in the permit.

HSRB Motion Options: The hillside board can recommend several different options to the Planning Commission and the City Council:

1. Denial
2. Approval as presented
3. Approval with specific conditions and comments added as required.

Example Motion: The Hillside Review Board recommends (approval/denial) of the request for a Hillside Development Permit to allow development of Netta's Knoll as requested and outlined the staff report… (with the following comments):

1. _____

2. _____

3. _____

Vicinity Map

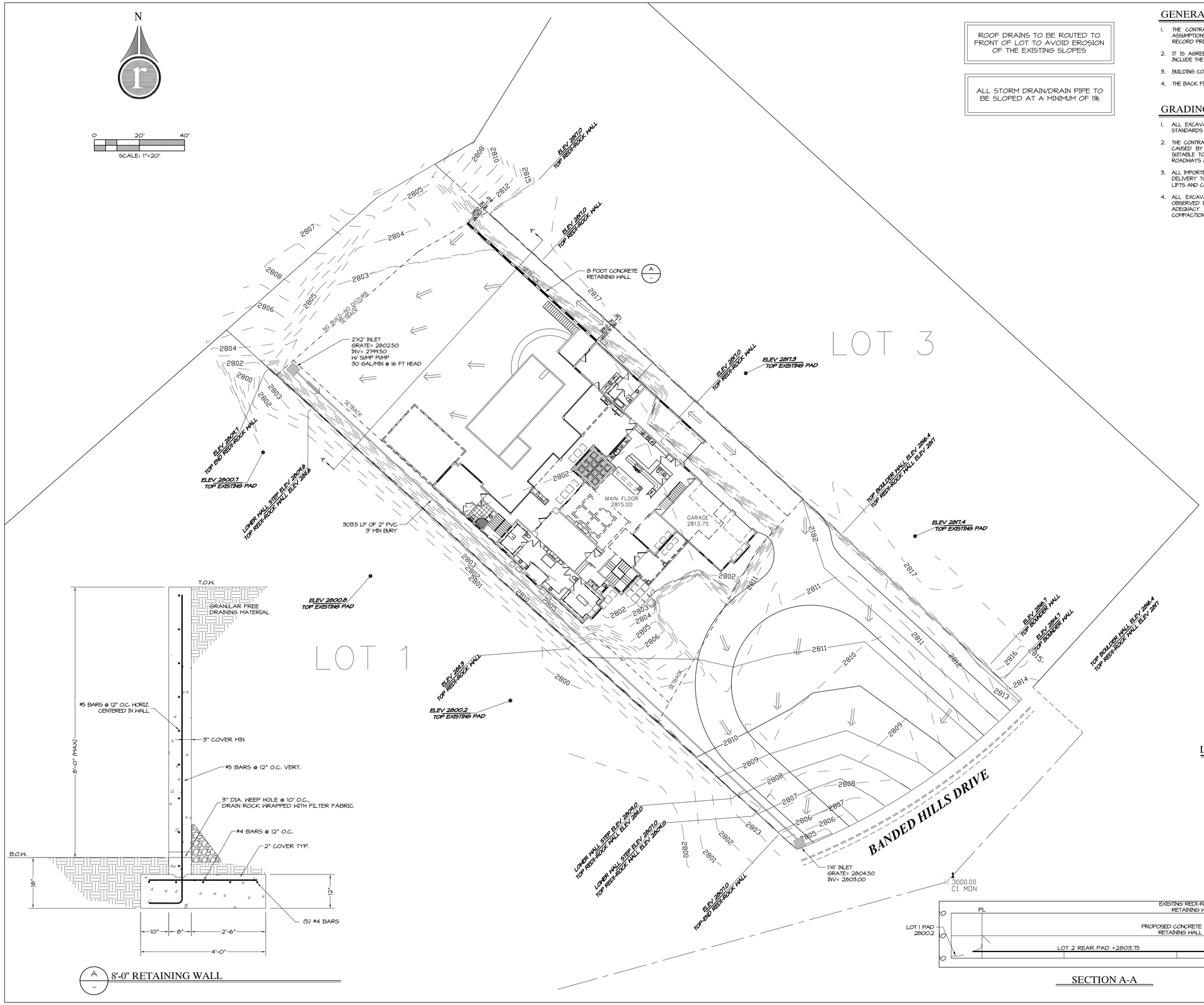


General Plan - MDR



Zoning - R-2


R-12.5
R-1-10
OS
ASBP
Banded Hills Lot 2 Zoning Map
0 235 470 940 1,410 1,880
Feet
N



GENERAL REQUIREMENTS:

1. THE CONTRACTOR SHALL VERIFY ALL FIELD DIMENSIONS, EXISTING CONDITIONS, AND NOTED ASSUMPTIONS. ANY DISCREPANCIES SHALL BE COORDINATED WITH THE ACTING ENGINEER OF RECORD PRIOR TO PROCEEDING WITH ANY WORK RELATED TO THE DEVIATION.
2. IT IS AGREED THAT THE PROFESSIONAL SERVICES OF THE ENGINEER DO NOT EXTEND TO OR INCLUDE THE REVIEW OR SITE OBSERVATION OF THE CONTRACTORS WORK OR PERFORMANCE.
3. BUILDING CODE: UNIFORM BUILDING CODE - 2018 EDITION
4. THE BACK FILL SHALL BE A GRANULAR, FREE DRAINING MATERIAL.

GRADING NOTES:

1. ALL EXCAVATIONS AND GRADING SHALL BE IN ACCORDANCE WITH THE CITY OF ST. GEORGE STANDARDS AND THE REQUIREMENTS INCLUDED IN THE GEOTECHNICAL REPORT.
2. THE CONTRACTOR SHALL PROVIDE SUITABLE EQUIPMENT TO CONTROL DUST AND AIR POLLUTION CAUSED BY CONSTRUCTION OPERATIONS. THE CONTRACTOR SHALL ALSO PROVIDE MATERIAL SUITABLE TO CONTAIN MUD AND DIRT AND CONTAINMENT TO MAINTAIN THE WORK SITE, ACCESS ROADWAYS AND ADJACENT PROPERTIES IN A CLEAN CONDITION.
3. ALL IMPORTED STRUCTURAL FILL SHALL BE APPROVED BY THE GEOTECHNICAL ENGINEER PRIOR TO DELIVERY TO THE SITE. ALL STRUCTURAL FILL SHALL BE PLACED IN 8 INCH LOOSE HORIZONTAL LIFTS AND COMPACTED TO A MINIMUM OF 95 PERCENT OF MAXIMUM DRY DENSITY (ASTM D-1557).
4. ALL EXCAVATIONS, GRADING AND FILL OPERATIONS WITHIN THE BUILDING AREA SHOULD BE OBSERVED BY THE GEOTECHNICAL ENGINEER TO VERIFY SUB-SOIL CONDITIONS AND DETERMINE ADEQUACY OF SITE PREPARATION, SUITABILITY OF FILL MATERIALS AND COMPLIANCE WITH COMPACTION REQUIREMENTS.

NOTICE:
EXISTING UTILITIES ARE SHOWN ON PLANS FOR THE CONVENIENCE OF THE CONTRACTOR ONLY. THE CONTRACTOR IS RESPONSIBLE FOR THE LOCATION AND PROTECTION OF ALL UTILITIES. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR UTILITIES NOT SHOWN OR SHOWN INCORRECTLY.

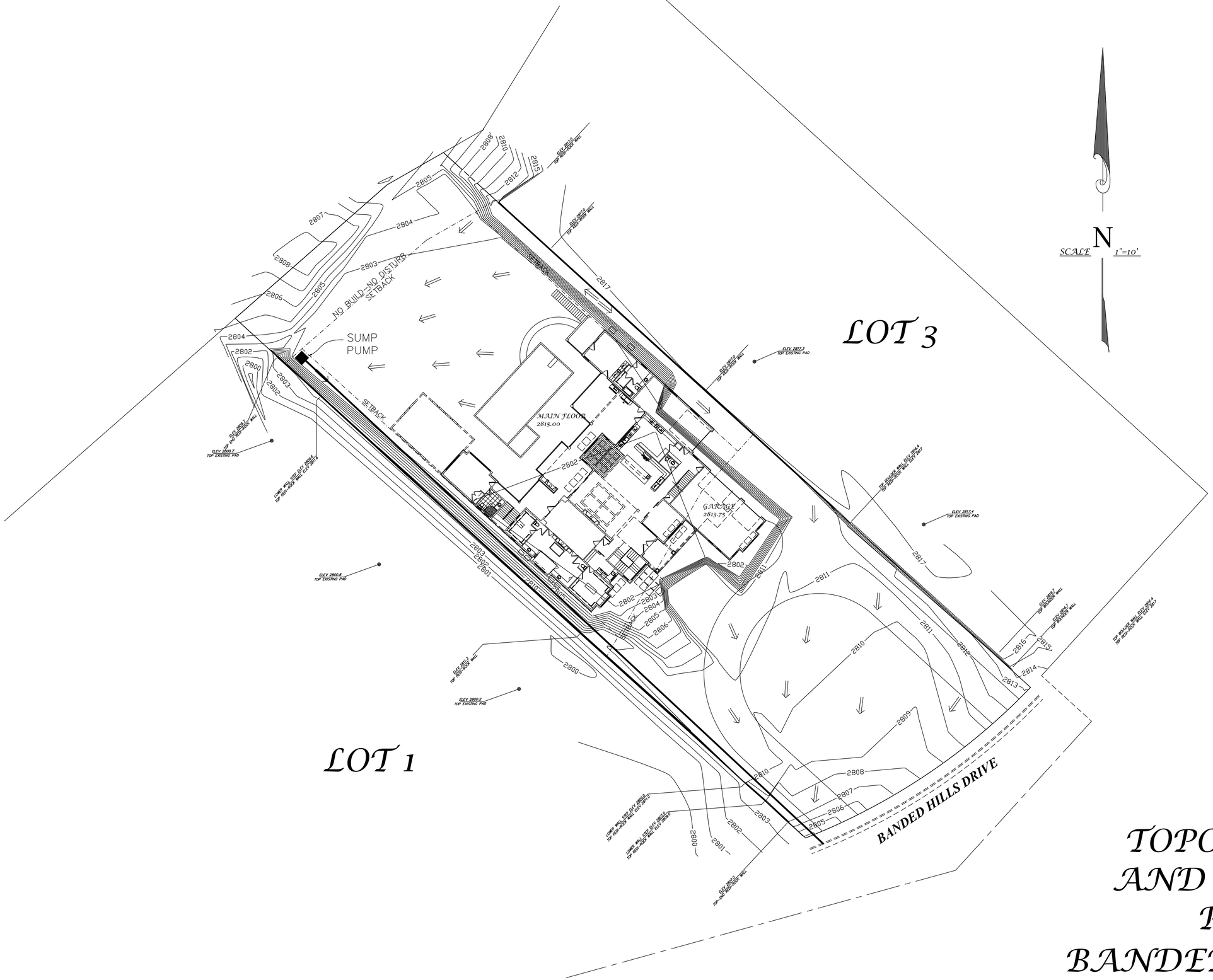
DATE: 9/2/2021
JOB NO.: 10588-18
DESIGNED BY: JLN
CHECKED BY: JSS
DWG: Grade
REVISIONS DATE

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

Lot Grading Plan
FOR
Banded hills Lot 2
Split Rock Construction
St. George, Utah

LICENSED PROFESSIONAL ENGINEER No. 7602428 JASON S. SMITH 9/9/2021 STATE OF UTAH

SHEET 1
1 OF 1 SHEETS



TOPOGRAPHY AND GRADING PLAN BANDED HILLS LOT 2

Exhibit A

AGEC
Applied GeoTech

June 2, 2021

Split Rock Construction, LLC
1449 North 1400 West #15
St. George, Utah 84770

Attention: Brett Boyce
EMAIL: brett@splitrockinc.com

Subject: Rockfall Consultation
Geurts Residence
Banded Hills, Lot 2
St. George, Utah
Project No. 2211463

Gentlemen:

Applied Geotechnical Engineering Consultants, Inc. (AGEC) was requested to conduct additional evaluation on the rockfall hazard setback criteria recommended for the Banded Hills subdivision for use only on Lot 2. We previously submitted a geologic hazard study which included setback recommendations from the rockfall hazard in a letter dated February 21, 2019 under Project No. 2172453.

The home design drawings prepared by Landforms Design, dated May 5, 2021, indicate that the design includes the garage extending approximately 35 feet closer to the front of the lot, encroaching on the original rockfall setback recommendation.

Based on the original study, a setback line was established and is located approximately 135 to 165 feet from the front property corners.

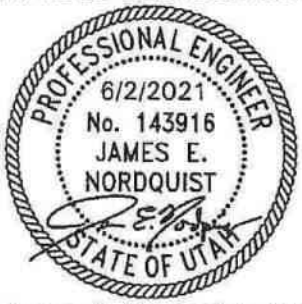
A representative of AGEC visited the site on May 19, 2021 and obtained location, specific elevations and measurements.

Based on the proposed raise in grade and our findings with this additional study, the rockfall hazard setback can be moved 35 feet towards the front of Lot 2.

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

Sincerely,

APPLIED GEOTECHNICAL ENGINEERING CONSULTANTS, INC.



James E. Nordquist, P.E., D G.E.

JEN/rs

Exhibit B

AGEC
Applied GeoTech

February 5, 2018

Development Solutions
120 East St. George Blvd. #300
St George, Utah 84770

Attention: Steve Kamlowsky

Subject: Geologic-hazard Study
Banded Hills Subdivision
Banded Hills Drive
St George, Utah
Project No. 2172453

Gentlemen:

Applied Geotechnical Engineering Consultants, Inc. (AGEC) was requested to perform a geologic-hazards study for the proposed Banded Hills Subdivision located below the airport bluff, northwest of Banded Hills Drive in St. George, Utah (see Figure 1).

PROPOSED CONSTRUCTION

We understand the area is planned for single-family residences. The approximate area planned for development is shown on Figure 1.

GEOLOGY

The geology for the area was mapped by Hayden and Willis (2011) to consist of the upper unit of the Triassic-age Moenkopi Formation. This unit consists of interbedded siltstone and sandstone. The Triassic-age Shnabkaib Member of the Moenkopi underlies this unit and consists predominantly of siltstone. The Shinarump Conglomerate Member of the Chinle Formation overlies the Moenkopi Formation and makes up the rock near the top of the bluff southeast of the site, the source of the rockfall for the southeast portion of the property. The bedrock exposed on the property is that of the Moenkopi Formation. The bedrock in the area dips down toward the southeast at approximately 17 degrees.

GEOLOGIC-HAZARD EVALUATION

Low-sun-angle aerial photographs from 1960 and aerial photographs from 1938 were reviewed along with site reconnaissance to determine what potential geologic hazards may affect the proposed development. Rockfall and faulting are the two geologic hazards that

may affect development in the area. Fault hazard does not extend into the property or proposed building areas. Liquefaction, landslide and debris flow are not considered potential hazards at this site.

A. Fault Hazard

Fault hazard was evaluated based on review of aerial photographs and geologic maps for the area and site reconnaissance.

Hayden and Willis (2011) map a fault southwest of the site. This fault is considered potentially an active fault by Lund and others (2008). The approximately location of the fault based on aerial photograph and geologic literature review and site reconnaissance is presented on Figure 2.

Bedding of the Moenkopi Formation is visible at the ground surface for the east/west length of the property and is unfaulted on the property. Thus with the lack of faulted bedrock below the site, surface fault rupture is not considered a hazard for the proposed buildings.

B. Rockfall Hazard

A site visit was made on January 16, 2018. Source boulders for rockfall hazard originate from the Shinarump Conglomerate Member of the Chinle Formation, which forms cliffs at the top of the hill southeast of the property. Reconnaissance of the rockfall source area finds that there are numerous rock outcrops that could potentially dislodge from the cliffs above the site. These blocks of bedrock are similar to or larger in size to the boulders along the slopes and base of the hill. It appears that the boulders originating from the cliffs typically break into smaller particles as they roll down the slope. Based on observation of the area, a boulder size of 6 feet was assumed for the rockfall analysis.

Rockfall modeling using the Colorado Rockfall Simulation Program was performed for the slope based on the topography provided. Results of the modeling indicate that a 12-foot high berm could be constructed along the southeast side of the proposed building lots near Banded Hills Drive to mitigate the rockfall hazard.

The rockfall-protection berm, assumed to be constructed along the southeast side of proposed building lots needing rockfall protection, should have a height of at least 12 feet, a top width of at least 4 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 can be reinforced using geogrid to maintain a steep upslope face. In some areas, bedrock may be intact enough to provide at least part of the berm. The reinforcement spacing and slope construction will depend on the type of fill

used and reinforcement selected. Design of the reinforced berm could be provided upon request.

C. Other Geologic Hazards

Liquefaction and associated lateral spread are not considered hazards at the site because bedrock underlies the site. Bedrock is not considered susceptible to liquefaction.

Review of the aerial photographs and geology show no evidence of landslides on or near the site. Landslide is not considered a hazard at the site. Slope stability of cut and fill slopes would be addressed in the geotechnical report for the project.

Debris flow is not considered a hazard at the site due to the lack of a source for debris flow. A drainage with a drainage area of about 25 acres or more is needed to develop debris flows (VanDine, 1984). There are no such drainages up gradient of the site.

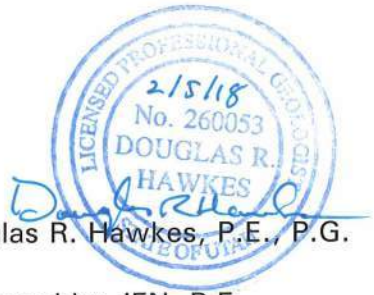
LIMITATIONS

This letter has been prepared in accordance with generally accepted 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 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.

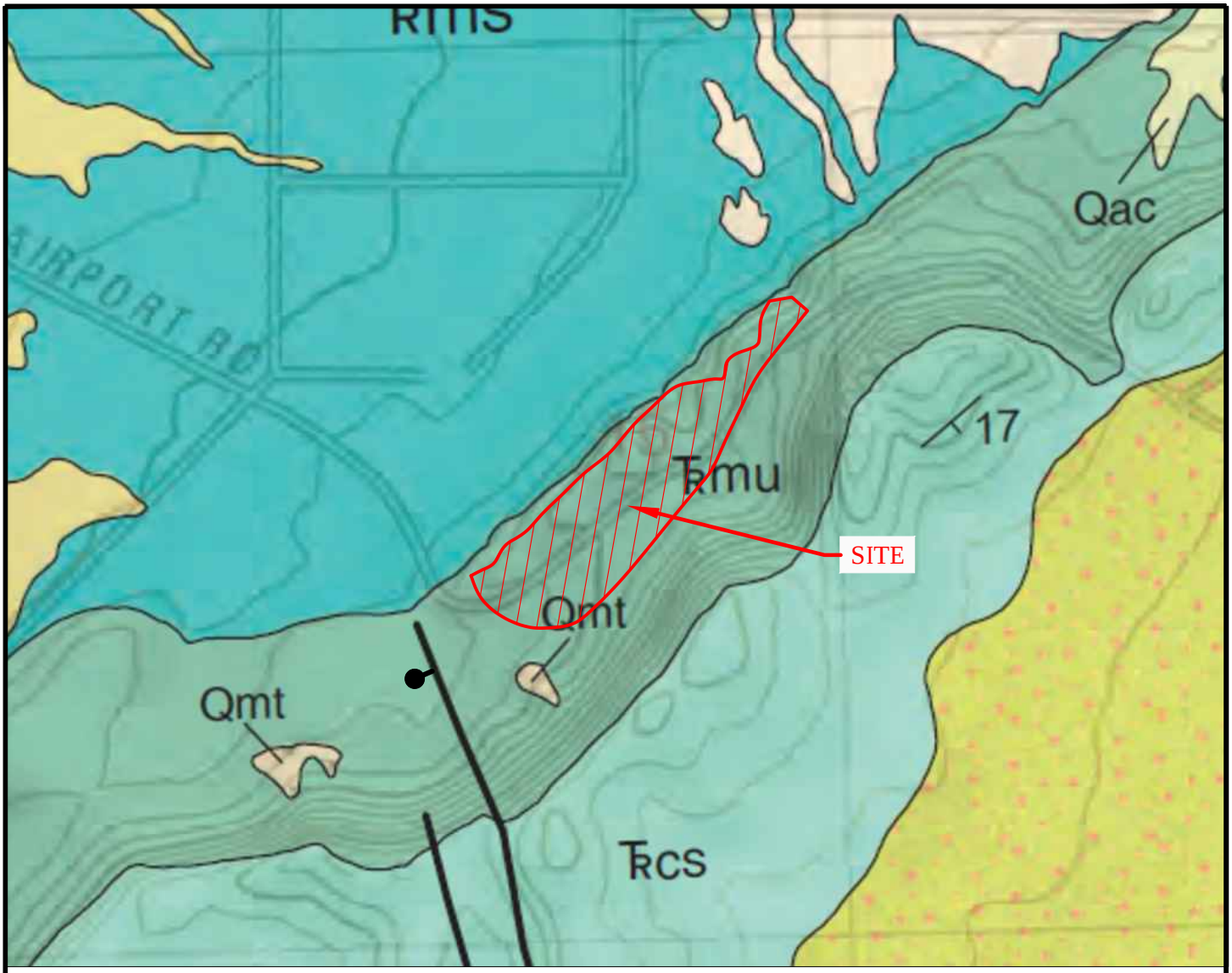
Enclosure

Reference:

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

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.

VanDine, D.F., 1984; Debris flow and debris torrents in the Southern Canadian Cordillera, 8th Canadian Geotechnical Colloquium, at the 37th Canadian Geotechnical Conference, Toronto.



From Hayden and Willis (2011)

EXPLANATION OF SYMBOLS AND GEOLOGIC UNITS IN AREA OF PROPOSED DEVELOPMENT

Qmt	-	Quartenary talus deposits - sand, gravel, cobbles and boulders.
Trcs	-	Triassic Shinarump Conglomerate Member of the Chinle Formation - sandstone and conglomerate.
Trmu	-	Triassic upper red member of the Moenkopi Formation - interbedded sandstone and siltstone.
Trms	-	Triassic Shnabkaib Member of the Moenkopi Formation - siltstone.

Contact between geologic units.

Normal fault, bar and ball on down thrown side.

17 Strike and dip of bedding.

N

0 600 1200 feet

Approximate Scale

PROPOSED BANDED HILLS SUBDIVISION
BANDED HILLS DRIVE
ST. GEORGE, UTAH

2172453	AGEC	Geologic Map	Figure 1

LEGEND:

Rockfall Hazard Area

Normal fault, bar and ball on down dropped side.

N

0 200 400 feet

Approximate Scale

PROPOSED BANDED HILLS SUBDIVISION
BANDED HILLS DRIVE
ST. GEORGE, UTAH

2172453	AGEC	Geologic - Rockfall Hazard Areas	Figure 2

Exhibit C

AGEC

Applied GeoTech

GEOTECHNICAL INVESTIGATION

BANDED HILLS SUBDIVISION

ST. GEORGE, UTAH

PREPARED FOR:

DEVELOPMENT SOLUTIONS
120 E ST. GEORGE BOULEVARD #300
ST. GEORGE, UTAH 84770

ATTENTION: STEVE KAMLOWSKY, P.E.

PROJECT NO. 2172452

FEBRUARY 23, 2018

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

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- Logs, Legend and Notes of Test Pits — Figure 3
- Consolidation Test Results — Figure 4
- Gradation and Moisture-Density Relationship — Figures 5 - 7

- Summary of Laboratory Test Results — Table 1

SUMMARY

1. The subsurface profile observed within the test pits excavated generally consists of near surface silty sand to sandy silt overlying interbedded sandstone, shale and siltstone bedrock to the maximum depth investigated, approximately 4 feet. Practical excavator refusal was encountered on bedrock in each of the test pits at depths ranging from 1 to 4 feet below the existing grade. Stockpiles of fill were also observed on the south and west sides of the site.

2. Groundwater was not encountered in test pits to the maximum depth investigated, approximately 4 feet below the existing grade. Fluctuations of groundwater levels may occur over time. An evaluation of such fluctuations over time is beyond the scope of this report.

3. The site is suitable for the proposed construction provided recommendations within this report are followed.

4. Laboratory testing and observations indicate the near surface soils exist in a loose condition. The underlying bedrock is relatively low to non plastic, moderately hard and suitable to support the proposed residences.

5. The proposed residences may be supported on conventional spread and spot footings bearing on directly on the underlying bedrock or on properly compacted structural fill underlain by a properly prepared subgrade. Specifically, the subgrade should be prepared during site grading by removing the full depth of unsuitable, loose soils (½ to 2 feet thick) as recommended in the Subgrade Preparation section of this report. The on-site natural soils, stockpiled fill and processed bedrock are suitable for use as structural fill provided they are properly moisture conditioned and compacted.

6. If basements are constructed, a subdrain system should be placed around the perimeters of the basements due to the possible infiltration of surface water which could result after development. If the groundwater becomes present, the drain would be in-place to remove groundwater.

7. The on-site soil and properly bedrock, free of organics, debris and material greater than 6 inches in size, are suitable for use as site grading fill, structural fill, wall backfill and utility trench backfill. The bedrock should be processed such that the maximum particle size is 6 inches and at least 40 percent of the material passes the No. 4 sieve.

8. This report does not address swimming pool support. Support of proposed pools should addressed with a lot specific subsurface investigation and report to provide pool support recommendations.

9. Detailed recommendations for subgrade preparation, materials, foundations, and drainage are included in the report.

10. The information provided in this summary should not be used independent of that provided within the body of this report.

SCOPE

This report presents the results of a geotechnical investigation for the proposed Banded Hills Subdivision 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. This report was prepared in general accordance with the Proposal for Professional Geotechnical Services dated December 27, 2017 under Project No. 2172452.

Field exploration was 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.

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. Design parameters and a discussion of geotechnical engineering considerations related to construction are included in the report.

SITE CONDITIONS

The subject site consists of an approximately 4 acres of undeveloped hillside property located on the south side of Little Valley in St. George, Utah as shown on Figure 2. The site consists of an elevated plateau which overlooks Little Valley to the north. The north portion of the site is relatively undisturbed and covered with sparse desert brush. The southern and west portion of the site, which is adjacent to the old Airport Road (Banded Hills Drive), has been partially graded and disturbed. This area of the site contains minimal vegetation, fill piles, boulder piles and occasional large, naturally deposited boulders.

The site is bounded on the south and west by Banded Hills Drive on the east by undeveloped hillside and on the north of undeveloped property and Maple Estates, further to the north.

FIELD STUDY

On January 24, 2018, an engineer from AGEC visited the site and observed the excavation of 13 test pits at the approximate locations shown on Figure 2. The test pits were excavated using a mini rubber tracked excavator. The subsurface soil profile was logged and soil and bedrock samples were obtained at this time for laboratory testing.

SUBSURFACE CONDITIONS

The subsurface profile observed within the test pits excavated generally consists of near surface silty sand to sandy silt overlying interbedded sandstone, shale and siltstone bedrock to the maximum depth investigated, approximately 4 feet. Practical excavator refusal was encountered on bedrock in each of the test pits at depths ranging from 1 to 4 feet below the existing grade. Stockpiles of fill were also observed on the south and west sides of the site. Detailed descriptions of the soil and bedrock types encountered follow.

File Piles - Fill piles were observed on the south side of the site. Observations indicate the fill consists of a mixture of excavated bedrock and silty to clayey sand. Cobbles and boulders were also observed in the fill and in other piles. Based upon laboratory testing, the samples of the fill classify as silty sand with gravel to sandy silt.

Laboratory tests conducted on samples of the fill indicate an in-place moisture content of 7 percent, gravel contents (percent retained on the No. 4 sieve) ranging from 2 to 25 percent and fines contents (percent passing the No. 200 Sieve) ranging from 43 to 59 percent. Atterberg limits tests indicate the samples are non plastic.

One-dimensional consolidation tests were conducted on remolded samples of the fill and indicate the material is not expansive when wetted.

Two moisture-density relationship tests (Modified Proctor) completed on samples of the fill indicate maximum dry densities ranging from 131.0 to 136.0 pounds per cubic foot (pcf) with and optimum moisture contents ranging from 6.0 to 7.5 percent.

Silty Sand to Sandy Silt - The silty sand to sandy silt is loose, dry to slightly moist and reddish brown in color.

Laboratory tests conducted on a sample of the sandy silt indicate a gravel content of 3 percent and a fines content of 54 percent. An Atterberg limits test indicates the sample is non-plastic.

A moisture-density relationship test (Modified Proctor) completed on a sample of the sandy silt indicates a maximum dry density of 129.0 pcf with and optimum moisture content of 9.0 percent.

Bedrock - The bedrock consists of interbedded sandstone, siltstone and shale bedrock. It is moderately hard, dry, and red-brown in color.

Laboratory tests conducted on samples of the bedrock indicate fines contents ranging from 81 to 91 percent. Atterberg limits tests indicate Liquid Limits ranging from 28 to 34 percent and plasticity indexes ranging from non-plastic to 16 percent.

The Logs, Legend and Notes of Test Pits are shown on Figure 3. Results of the laboratory tests are also shown on Figure 3 and are summarized in the Summary of Laboratory Test Results, Table 1. The consolidation test results are shown graphically on Figure 4. The Gradation and Moisture-Density Relationships are shown on Figures 5 - 7.

SUBSURFACE WATER

Groundwater was not encountered in test pits to the maximum depth investigated, approximately 4 feet below the existing grade. Fluctuations of groundwater levels may occur over time. An evaluation of such fluctuations over time is beyond the scope of this report.

PROPOSED CONSTRUCTION

We understand that the site will be developed for construction of a residential subdivision containing 20 lots. We understand that wood framed residences will be constructed and 3 residences will include walkout basements. The residences will be supported on conventional spread footings. We estimate wall loads up to 4 kips per lineal foot and columns loads up to 75 kips.

Review of the proposed grading plan indicates the site will be graded by terracing the lots down from the east to the west using on site soils. The grading plan indicates cuts up to approximately 10 feet and fill depths up to 15 feet. The development will also include asphalt roadways, utilities and site improvements.

If the proposed construction, or building loads are significantly different from those listed, we should be notified so that we can reevaluate our recommendations.

RECOMMENDATIONS

Based on our experience in the area, the subsurface conditions encountered, laboratory test results, and the proposed construction, the following recommendations are given:

A. Site Grading

Based on the subsurface conditions and engineering analysis, the following site grading recommendations are provided:

1. Subgrade Preparation

Prior to placing fill or concrete beneath building areas, pavement/flatwork or improvements, the site should be grubbed to remove the existing vegetation and soil containing significant roots and organics. The thickness may vary across the site, but we anticipate this will generally require the removal of approximately 1 to 2 inches of soil across the site. The existing fill piles should also be removed, but may be replaced in properly moisture conditioned and compacted lifts after removal of debris and oversized particles.

The grubbed soil may be stockpiled for use in landscaped areas. If this soil is placed in landscaped areas, then CMU fence footings or other structures/improvements, which may be supported in these areas (above the grubbed soil), should be overexcavated to allow for the placement of properly compacted structural fill which extends to the appropriate depth as stated below.

Observations of the subsurface soil and bedrock during our investigation indicate the upper approximately ½ to 2 feet (varies across the site) of the near surface soil is loose and dry This soil is unsuitable in its existing condition.

Prior to placing site grading fill, base course or concrete, the full depth of the previously described unsuitable soils should be removed from beneath the proposed building pad and roadways.

The limits of the overexcavation should extend at least 5 feet beyond the perimeter of the proposed construction. The lateral extent of the overexcavation should be determined by survey and is the responsibility of the owner/contractor.

Subsequent to overexcavation and prior to placing fill, the exposed subgrade should be scarified to a depth of 8 inches, moisture conditioned and compacted. If the exposed subgrade consists of bedrock, scarification and compaction will not be necessary and the exposed subgrade may be wetted and proof rolled. The removed material may then be replaced in properly moisture conditioned and compacted lifts.

2. Excavation

We anticipate that excavation of the overburden soils and soft bedrock at the site can be accomplished with typical excavation equipment. Portions of deeper, more competent bedrock may require the use of heavy duty excavation equipment to excavate below the weathered zone.

3. Grading Slopes and Trenches

Permanent cut slopes excavated into the overburden soils and highly weathered bedrock should be cut no steeper than 2:1 (horizontal to vertical). Permanent cut slopes into the underlying firm to hard bedrock should be cut no steeper than ½:1 (Horizontal:vertical).

Unretained fill slopes constructed with properly compacted on-site soil and processed bedrock should be graded no steeper than 2½:1 (horizontal to vertical). Slopes should include benches in accordance with the 2015 IBC. The cut and fill slopes will be highly susceptible to erosion, particularly resulting from run off from the adjacent slopes. Water should be directed around slopes using drainage swales to reduce potential erosion. A lot specific drainage study should be conducted by the civil engineer to control localized runoff.

To reduce erosion, the fill slopes may be flattened to 3:1 (horizontal to vertical) or they may be retained. Fill slopes may also be protected from erosion with an appropriate geotextile or riprap underlain with filter fabric. More detailed recommendations for riprap erosion control can be provided if requested.

Fill slopes should be graded by overbuilding and then cut back to the desired grade to provide a compacted slope face. Fill placed on existing slopes steeper than 3:1 (horizontal to vertical) should be placed using a benching procedure to "key" the fill into the existing slope. Benches should be of sufficient width to allow adequate area for the compaction equipment.

Utility trenches excavated in the on-site soils and soft, highly weathered bedrock should be excavated in accordance with OSHA requirements using a OSHA Soil Class C (1½:1 Horizontal:Vertical) soils and Soil Class A (¾:1) for trenches excavated into the firm 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.

4. 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%
Underslab (upper 4 inches)	Base course	**-200** <12% Maximum size: 1 inch Solubility < 1%

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

The on-site silty sand to sandy silt, fill and properly processed bedrock, free of organics, debris and material greater than 6 inches in size, are suitable for use as site grading fill, structural fill, wall backfill and utility trench backfill. The bedrock should be processed such that the maximum particle size is 6 inches and at least 40 percent of the material passes the No. 4 sieve.

5. Compaction

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

Area	Percent Compaction
Subgrade	90
Footings/building pad	95
Site grading	95
Utility trenches	95
Wall backfill	95

To facilitate the compaction process, the fill should be moisture conditioned to within 2 percentage points of the optimum moisture content as determined by ASTM D-1557 prior to placement. Fill should be placed in loose lift thicknesses which do not exceed the capacity of the equipment being utilized. Generally, 6 to 8-inch loose lifts are adequate. Lift thicknesses should be reduced to 4-inches for hand compaction equipment.

6. Surface Drainage

Positive site drainage should be maintained during the course of construction. After construction has been completed, positive drainage of the surface water away from the buildings in each direction must be maintained. To reduce infiltration adjacent to foundations we recommend the following:

a. A minimum slope of 6 inches in the first 10 feet from the perimeters of the structures should be provided.

b. Roof gutter systems should be installed around the perimeters of the structures. Roof downspouts should discharge away from the buildings so as to prevent ponding adjacent to foundations. We recommend piping roof drains to the curb and gutter downslope from the structures.

c. Placement of 3 to 4 foot wide concrete aprons around the perimeters of the structures.

d. Landscaping requiring water should not be placed adjacent to or within 5 feet of foundations.

e. We also recommend that desert landscaping, which requires no water, be used adjacent to concrete walls and masonry walls or other cement containing elements which will be backfilled to reduce salt migration of soluble salts and the subsequent salt weathering on cement containing elements. Further, 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 on concrete/masonry.

7. Subsurface Drainage

We recommend placement of a perimeter subdrain around the basement walls due to possible presence of future groundwater which may become perched on the underlying bedrock resulting from development. The drain should consist of a 4 inch perforated PVC pipe placed around the perimeter of the of the basement footings. It should be placed such that the bottom of the pipe is at least 12 inches below the finished floor elevation and should slope at a 2% minimum grade to drain by gravity or to a sump. A sump pump should be placed, if necessary, to remove water which may become present in the future. The perforated pipe should be backfilled with 1 inch minus crushed gravel to an elevation at least 1 foot above the highest anticipated groundwater level. Prior to backfilling the basement walls with properly compacted fill, Mirafi 140N filter fabric should be placed over the gravel to prevent sand from migrating into the gravel.

B. Foundations

This report does not address swimming pools. Support of proposed pools should addressed with a lot specific subsurface investigation and report to provide pool support recommendations. Recommendations for design of conventional spread and spot footing are provided below.

1. Bearing Material

The proposed residences may be supported on conventional spread and spot footings bearing on directly on the underlying bedrock or on properly compacted structural fill underlain by a properly prepared subgrade. Specifically, the subgrade should be prepared during site grading by removing the full depth of unsuitable, loose soils (½ to 2 feet) as recommended in the Subgrade Preparation section of this report. Basement footings may be supported on a minimum of 1 foot of properly compacted structural fill or directly on bedrock.

2. Bearing Pressure

Footings bearing on properly compacted structural fill may be designed for a net allowable bearing pressure of 2,500 psf. The net allowable bearing pressure may be increased to 3,500 psf for footings which will be supported directly on bedrock.

3. Footing Width and Embedment

Footings should have a minimum width of 18 inches and should be embedded at least 12 inches below the lowest adjacent grade.

4. Temporary Loading Conditions

The allowable bearing pressures may be increased by one-half for temporary loading conditions such as wind or seismic loads.

5. Settlement

We estimate that settlement will be approximately 1 inch for footings designed as indicated above due to the load of the structure. Differential settlement is estimated to be approximately ½ inch.

6. Foundation Base

The base of excavations should be cleared of loose or deleterious material prior to placement of fill or concrete.

7. Foundation Setback

Foundations supporting the residences should be set back from the crest of the top ridge at least 30 feet.

C. **Concrete Slab-on-Grade**

1. Slab Support

Concrete slabs may be supported on a zone of properly prepared (overexcavated) and compacted fill as stated in the Subgrade Preparation section of this report with a minimum thickness of at least 12 inches.

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.

3. Vapor Barrier

A vapor barrier should be placed below slabs in areas which will receive sensitive floor coverings or coverings which are impermeable. Vapor barriers also provide protection from salt and sulfate attack.

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 on-site soils.

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
Imported or on site granular backfill (sand or gravel)	35 pcf	55 pcf	325 pcf
Imported or on site granular backfill - Earth pressure coefficient	0.28	0.44	-

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 build up 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 weight 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)
Active	20 pcf increase
At-rest	0 pcf increase
Passive	41 pcf decrease

The seismic increases and decrease assume a peak ground acceleration (PGA) of 0.23g and a 1 second period ground acceleration (S_1) of 0.17g using the Mononobe-Okabe pressure distribution. The resultant of the seismic increase should be placed up from the base of the wall a distance equal to ⅓ the height of the wall.

4. Safety Factors

The values recommended 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, Liquefaction and Faulting**

1. Seismic design parameters are provided below:

Description	Seismic Parameter
	2,500 yr event (≈2% PE in 50 yrs)
2015 IBC	C
Site Latitude	37.0435°
Site Longitude	-113.5223°
PGA - Site Class B	0.23g
S_s (0.2 second period) - Site Class B	0.56g
S_1 (1 second period) - Site Class B	0.17g
F_{pga} - Site Class Factor	1.17
F_a - Site Class Factor	1.18
F_v - Site Class Factor	1.63

2. Liquefaction

Based on subsurface conditions encountered in the test pits, the subsurface soils observed are non-liquefiable to the depths investigated during a seismic event.

3. Faulting

Based on a review of available geologic literature, there are no mapped faults extending near or through the site.

F. Soil Corrosion

Laboratory test results completed on samples collected at the site indicate water soluble sulfates concentrations ranging from 5,700 to 5,940 parts per million (ppm). 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-II. Table 4.2.1 and 4.2.1 of ACI 318-11 should be referenced for design of concrete elements utilizing a Sulfate Exposure Class of S2, and a sulfate exposure severity of "severe".

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

G. Pavement

1. Subgrade Support

We anticipate that the subgrade materials beneath the pavement areas will consist of properly compacted silty sand to sandy silt. Prior to placement of road base, the subgrade should be prepared as recommended in the subgrade preparation section of this report. A California Bearing Ratio (CBR) of 7 percent was assumed for a properly compacted sandy silt subgrade for purposes of design.

2. Pavement Thickness

Based on the assumed traffic loadings and St. George City traffic indexes, a 20-year design life, and AASHTO design methods, the following pavement sections are recommended.

Roadway	Asphalt (in.)	Base Course (in.)
45 foot right-of-way	2½	6
Banded Hills Drive	3	6

3. Pavement Materials

The pavement materials should meet City of St. George specifications for gradation and quality. The pavement thicknesses indicated above assume that the base course is a high quality material with a CBR of at least 50 percent and the asphaltic concrete has a minimum Marshall stability of 1,800 pounds. Other materials may be considered for use in the pavement section. The use of other materials may result in other pavement material thicknesses.

4. 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.

H. Construction Testing and Observations

We recommend the following testing and observations be done as a minimum as required by the City of St. George.

1. Observe grubbing and verify removal of soil containing roots and organics.

2. Verify that recommended overexcavation depths are achieved in the building pads and beneath roadways. The lateral extent of the building pad should be located by survey (not included in AGEC's Scope of Services) and includes an area which extends at least 5 feet beyond the buildable area as per city set-back requirements.

3. Verify that recommended structural fill depths are provided below foundations and slabs.

4. Conduct compaction testing on fill placed below foundations and in building pads. We recommend testing each foot of fill placed.

5. Conduct construction materials testing on city improvements at a frequency which meets or exceeds St. George City requirements.

I. **Geotechnical Recommendation Review**

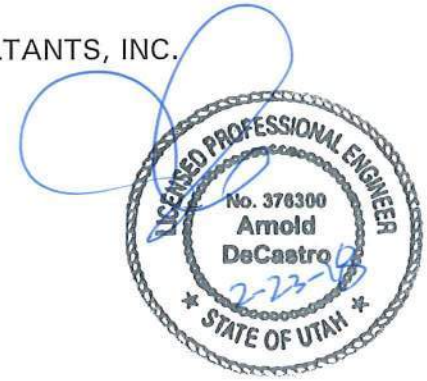
The client should familiarize themselves with the information contained in this report. If specific questions arise or if the client does not fully understand the conclusions/recommendations provided, AGEC should be contacted to provide clarification.

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 test pits excavated, the referenced report, the data obtained from laboratory testing, 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.

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

APPLIED GEOTECHNICAL ENGINEERING CONSULTANTS, INC.



Arnold DeCastro, P.E.

Reviewed by JRH, P.E.

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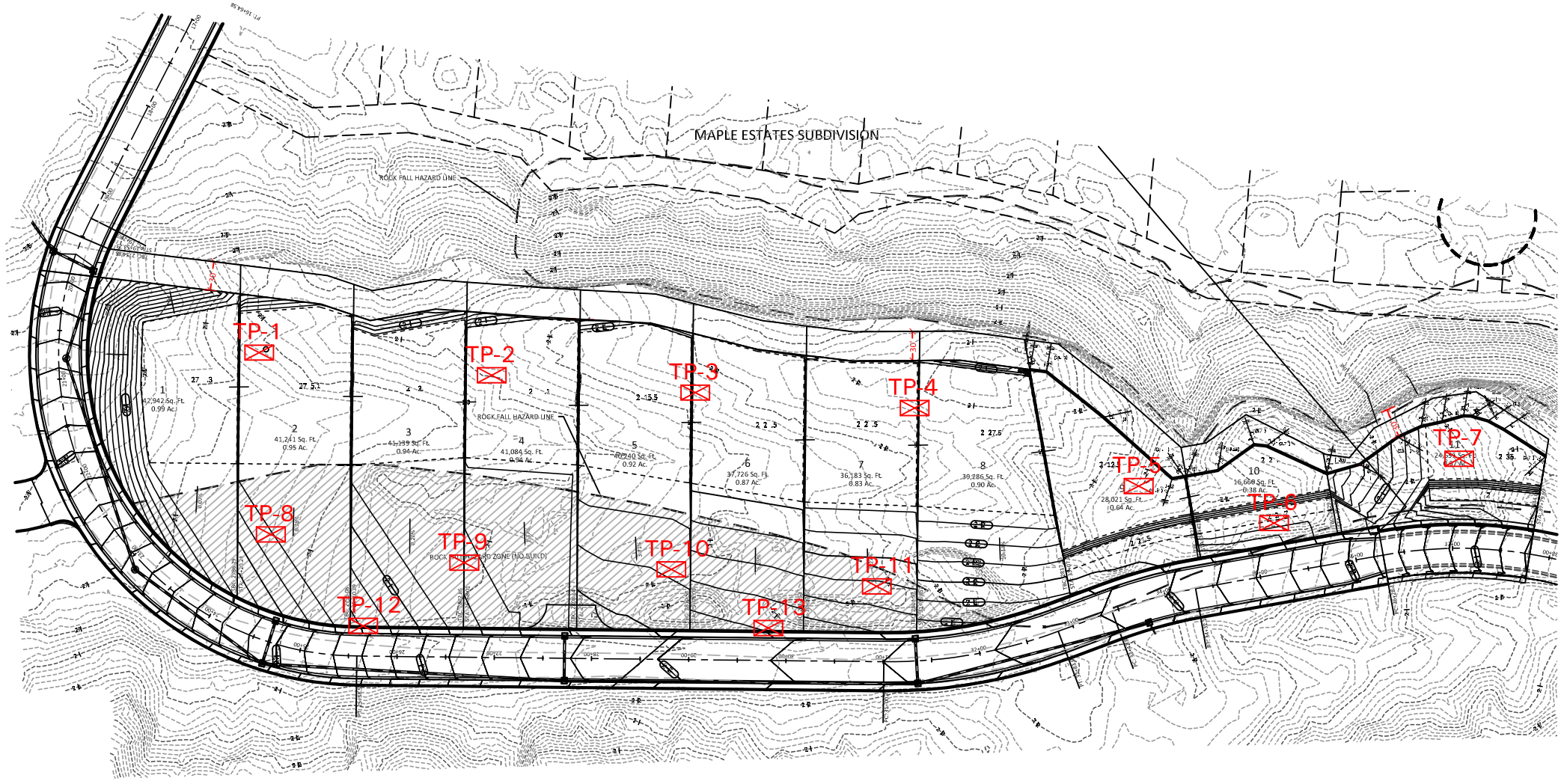
N

Not to Scale

BANDED HILLS SUBDIVISION
ST. GEORGE, UTAH

2172452	AGEC	Vicinity Map	Figure 1

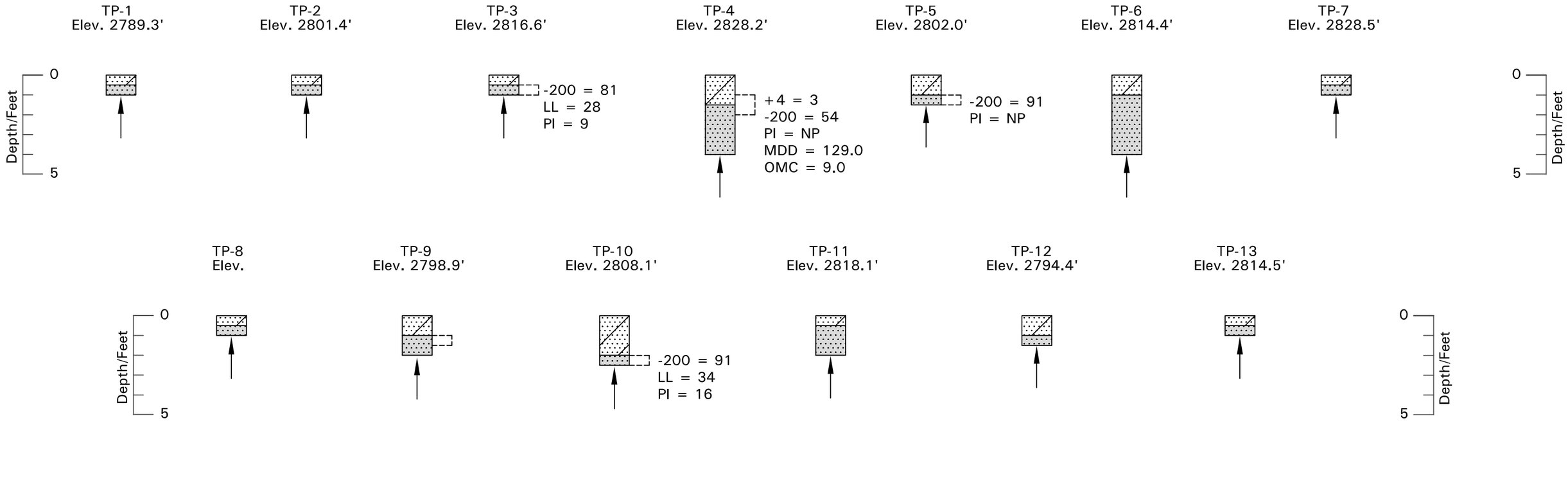
BANDED HILLS SUBDIVISION
ST. GEORGE, UTAH



Approximate test pit location

0 150 300 feet
Approximate Scale

2172452	AGEC	Site Plan	Figure 2



LEGEND:

Silty Sand (SM); loose, dry to slightly moist, and reddish brown in color.

Bedrock; interbedded sandstone, siltstone and shale bedrock, moderately hard, dry, and red/brown in color.

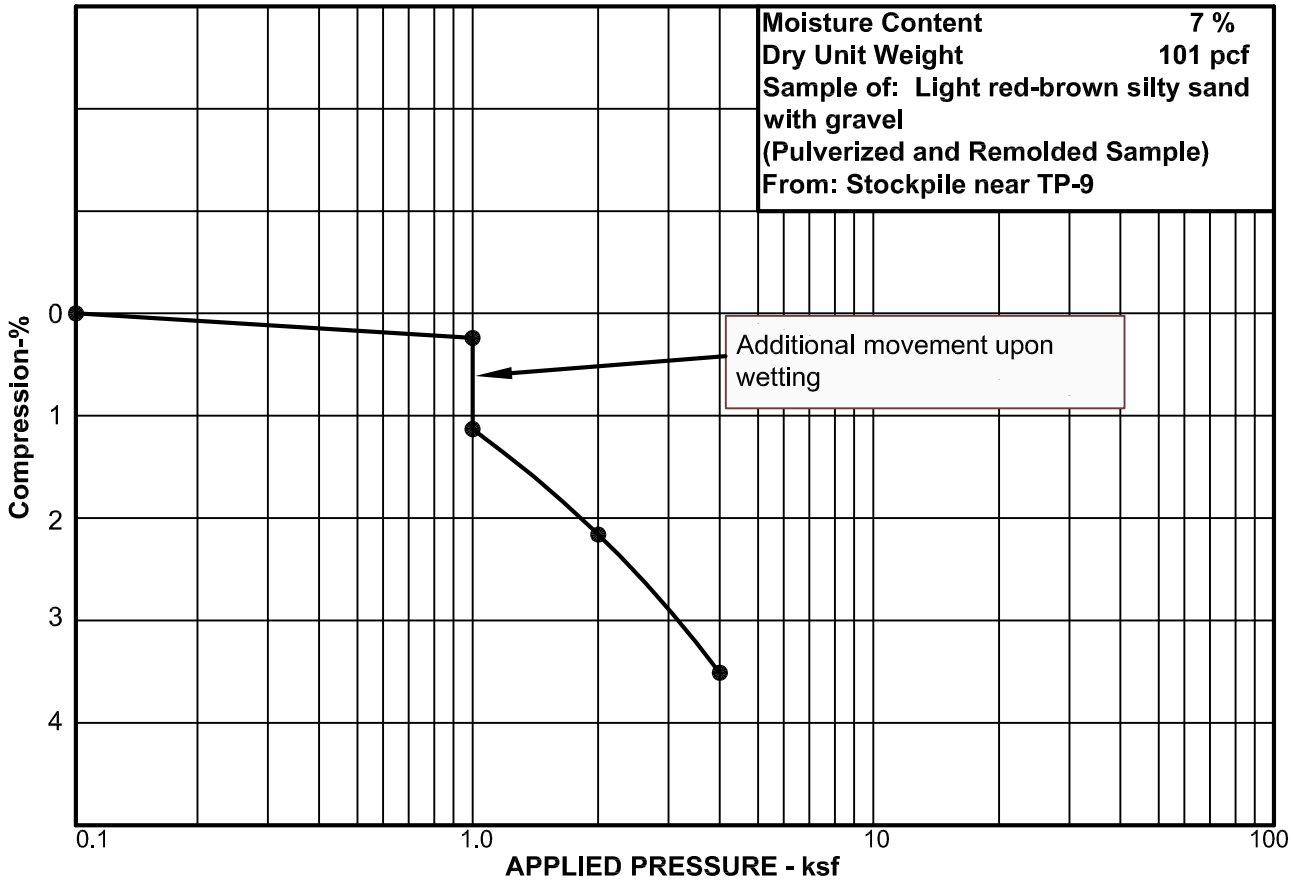
Indicates disturbed sample taken.

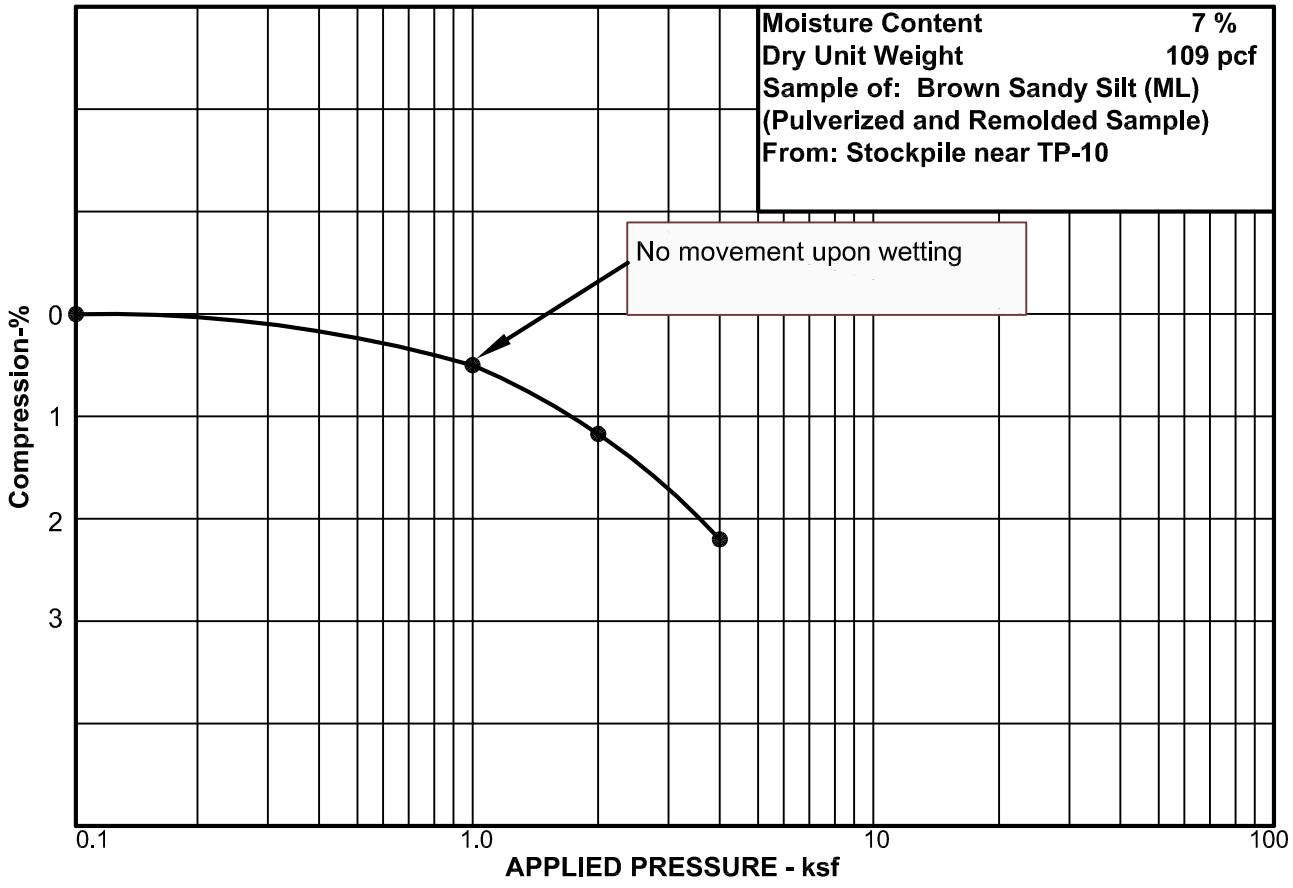
Indicates practical backhoe refusal on sandstone bedrock.

NOTES:

1. The test pits were excavated on January 24, 2018 with a mini excavator.
2. The locations of the test pits were measured by pacing from features shown on the site plan, Figure 2.
3. The elevations of the test pits were estimated using a hand level and are based on the benchmark shown on Figure 2.
4. The test pit locations and elevations should be considered accurate only to the degree implied by the method used.
5. The lines between the materials shown on the test pit logs represent the approximate boundaries between material types and the transitions may be gradual.
6. Free water was not encountered in the test pits at the time of excavation.
7. +4 = percent retained on the No. 4 sieve;
   -200 = percent passing No. 200 sieve;
   LL = liquid limit (%);
   PI = plasticity index (%);
   NP = non plastic;
   MDD = maximum dry density (pcf);
   OMC = optimum moisture content (%).

Applied Geotechnical Engineering Consultants, Inc.

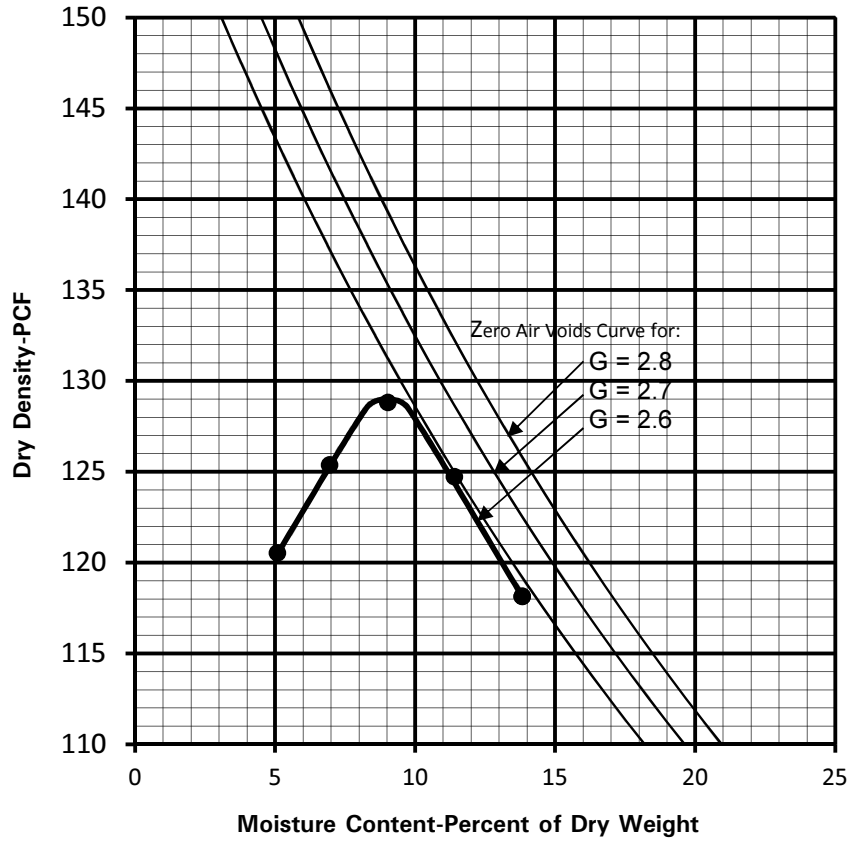




Project No. 2172452 **CONSOLIDATION TEST RESULTS** **Figure 4**

AGEC
Applied GeoTech

Project: Banded Hills



Sample Date:	1/24/18
Sample No.	180126D
Maximum Dry Density:	129.0
Optimum Moisture:	9.0

Atterberg Limits

Liquid Limit:	
Plasticity Index:	Non-Plastic

Gradation

Gravel:	3%
Sand:	43%
Silt & Clay:	54%

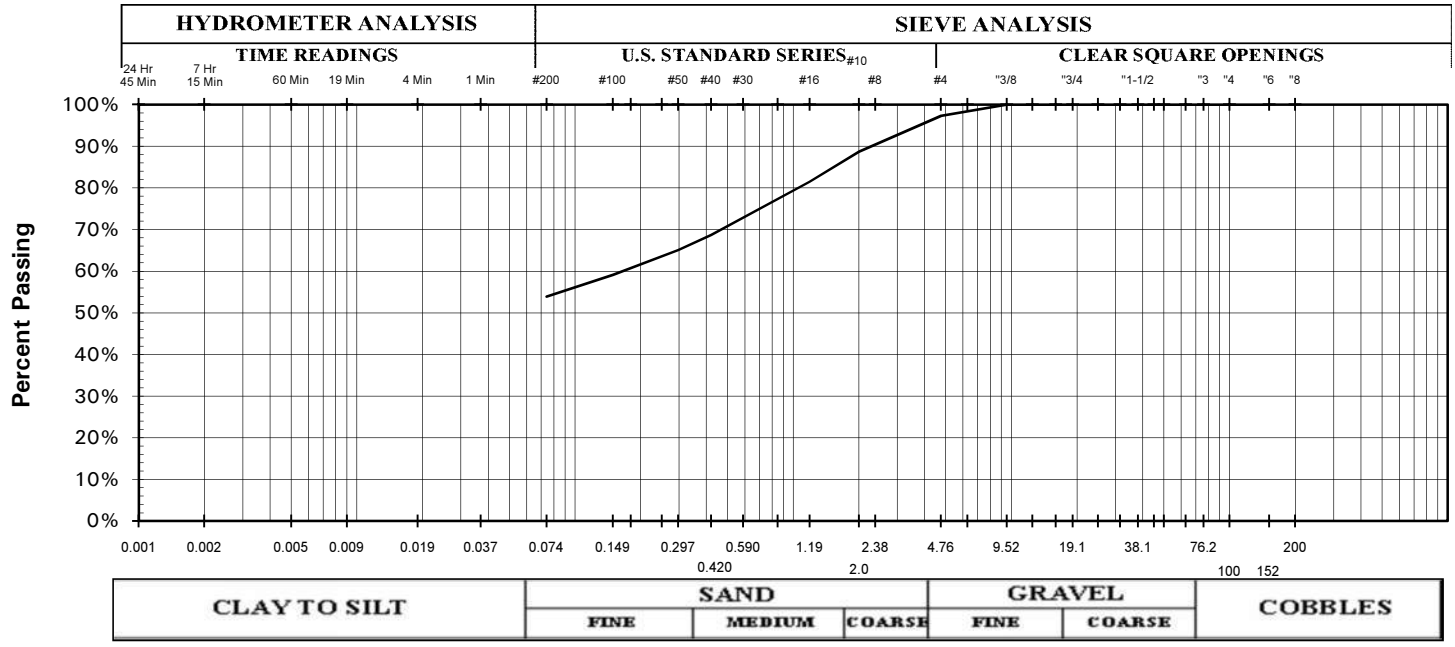
Moisture - Density Relationship Test Procedure: AASHTO T-180 B

Reviewed By: TT

USCS Classification: sandy silt (ML)

AASHTO Classification: A-4

Sample Location: TP-4 @ 1-2'



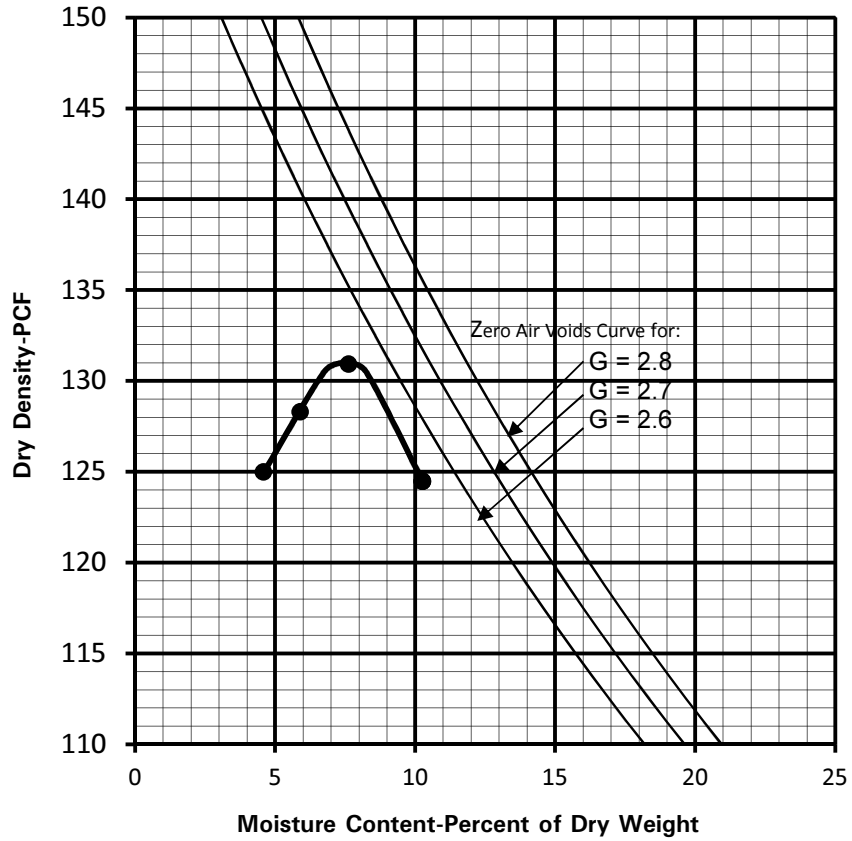
GRADATION AND MOISTURE-DENSITY RELATIONSHIP RESULTS

Project No.: 2172452

Figure: 5

AGEC
Applied GeoTech

Project: Banded Hills



Sample Date:	2/5/18
Sample No.	180206B
Maximum Dry Density:	131.0
Optimum Moisture:	7.5

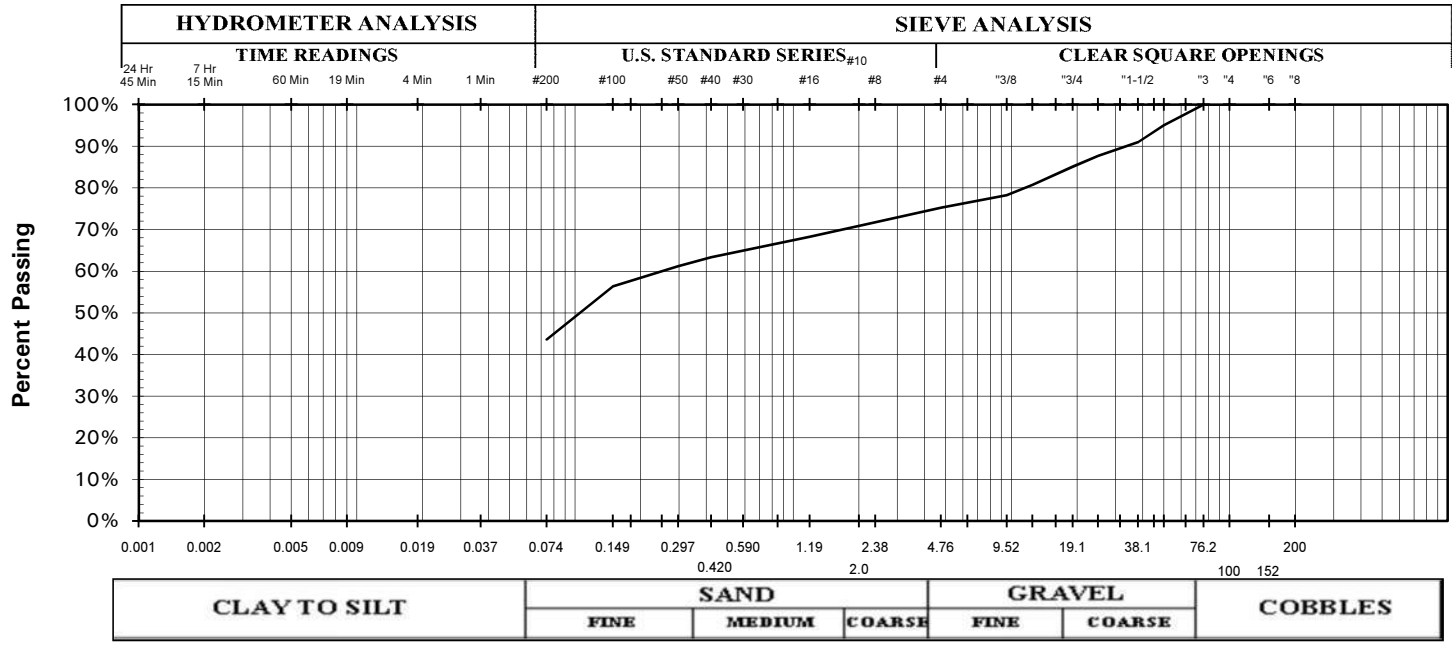
Atterberg Limits

Liquid Limit:	
Plasticity Index:	Non-Plastic

Gradation

Gravel:	25%
Sand:	32%
Silt & Clay:	43%

Moisture - Density Relationship Test Procedure: AASHTO T-180 B Reviewed By: TT
USCS Classification: Light red-brown, Silty Sand with Gravel (SM) Rock Corrected
AASHTO Classification: A-4
Sample Location: Onsite Stockpile Near TP-9

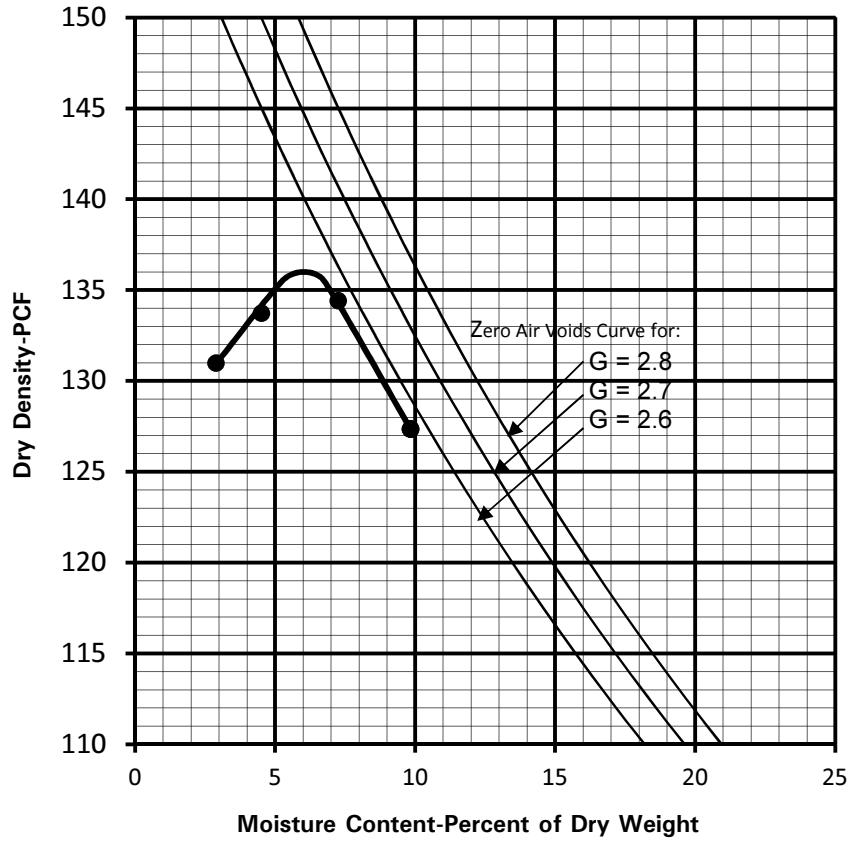


GRADATION AND MOISTURE-DENSITY RELATIONSHIP RESULTS

Project No.: 2172452 Figure: 6

AGEC
Applied GeoTech

Project: Banded Hills



Sample Date:	2/5/18
Sample No.	180206A
Maximum Dry Density:	136.0
Optimum Moisture:	6.0

Atterberg Limits

Liquid Limit:	
Plasticity Index:	Non-Plastic

Gradation

Gravel:	2%
Sand:	39%
Silt & Clay:	59%

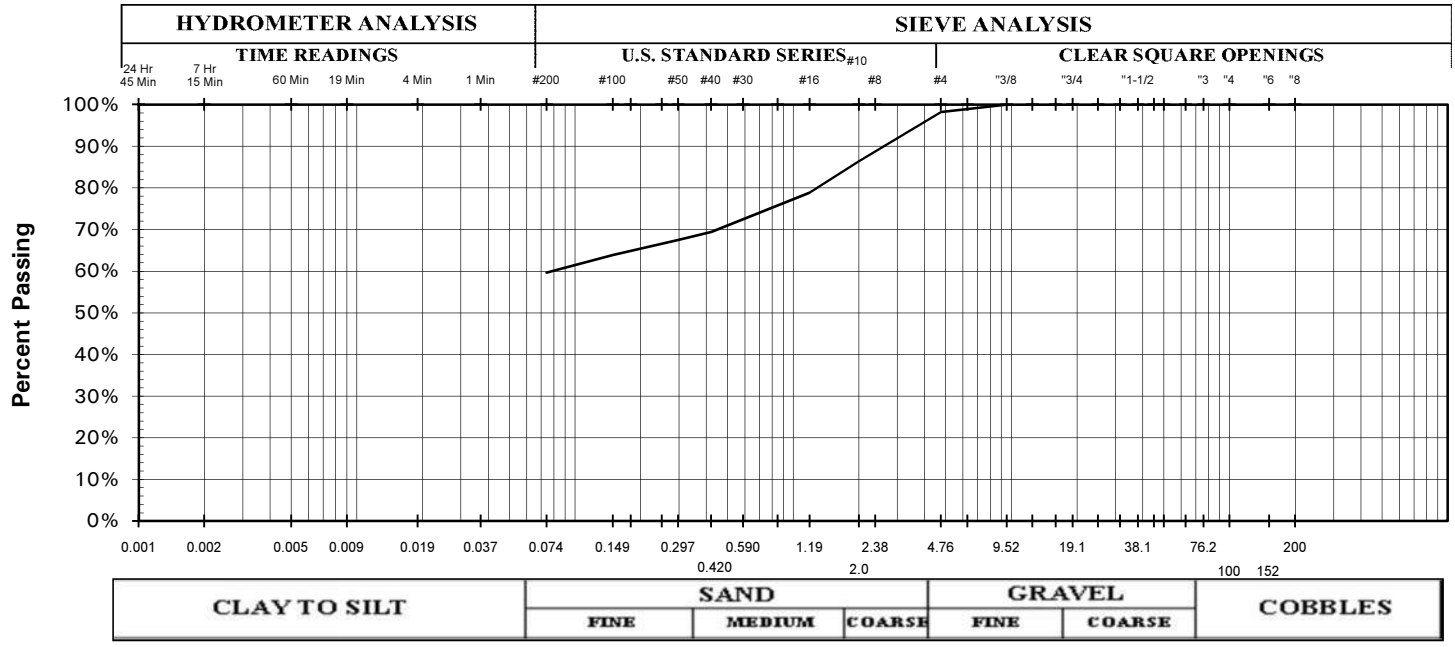
Moisture - Density Relationship Test Procedure: AASHTO T-180 B

Reviewed By: TT

USCS Classification: Brown, Sandy Silt (ML)

AASHTO Classification: A-4

Sample Location: Onsite Stockpile near TP-10



GRADATION AND MOISTURE-DENSITY RELATIONSHIP RESULTS

Project No.: 2172452

Figure: 7

Applied Geotechnical Engineering Consultants, Inc.

Table 1 - Summary of Laboratory Test Results

Banded Hills Subdivision

Project No. 2172452

Sample Location				Gradation			Atterberg Limits		Moisture-Density Relationship			
Test Pit No.	Depth (ft)	Natural Moisture Content (%)	Natural Dry Density (pcf)	Gravel (%)	Sand (%)	Silt/Clay (%)	Liquid Limit (%)	Plastic Index (%)	Maximum Dry Density (pcf)	Optimum Moisture Content (%)	Water Soluble Sulfates (ppm)	Soil Type
TP-3	½					81	28	9				Shale Bedrock
TP-4	1-2			3	43	54		NP	129.0	9.0		Sandy Silt (ML)
TP-5	1					91		NP				Siltstone Bedrock
TP-10	2					91	34	16				Shale Bedrock
Stockpile near TP-9		7		25	32	43		NP	131.0	7.5	5,700	Fill - Silty Sand with Gravel (SM)
Stockpile near TP-10		7		2	39	59		NP	136.0	6.0	5,940	Fill - Sandy Silt (ML)

Exhibit D

ITEM 1

HILLSIDE REVIEW BOARD AGENDA REPORT: **04/18/2018**

HILLSIDE DEVELOPMENT PERMIT
Banded Hills
Case No. 2018-HS-002

Request: A request for a Hillside Development Permit to allow development of a proposed single family residential development on "Banded Hills Drive."

Project: The purpose of this project is to develop eleven (11) residential lots in compliance with the hillside ordinance.

Owner: Quality Development

Representative: Steve Kamlowski

Engineer: Development Solutions Group

APN: SG-5-3-15-121-STL (SG-5-3-15-311)

Location: Located at approximately 2915 E Banded Hills Drive (*generally located between Copper Cliff Drive and Banded Hills Drive*)

Acreage: Site area = 9.12 acres
Disturbed area = 7.93 acres

Zone: R-1-10 (Single Family Residential 10,000 sq. ft. minimum lot size)

Adjacent zones: North = OS & R-1-10
South = ASBP (Airport)
East = OS
West = R-1-10

Powers & Duties: Section 10-13A-12.B.1 of the "Hillside Review Board Powers and Duties" states that the hillside board can make recommendations for approval, conditional approval, and denial to the Planning Commission (PC) and City Council (CC).

Permit required: Section 10-13A-6:A 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.

Geotech: A Geological Hazard Assessment and Preliminary Geotechnical Report was prepared by AGEC (*Applied Geotechnical Engineering Consultants, Inc.*) on February 23, 2018 (*Project No. 2172452*). The report includes a summary of conditions and recommended investigations and mitigations to occur with development.

Rockfall: AGEC prepared a rockfall report with recommendations for mitigations; its included in the "Geologic-Hazard Study" report dated February 13, 2018.

Drainage: A "Drainage Study" dated March 26, 2018, was prepared by Development Solutions Group, Inc. The report is an analysis of on-site and off-site hydrology under current conditions and with proposed development of the site. The report addresses proposed mitigations for handling drainage.

Applicable Ordinance(s):
(Selected portions)

10-13A-1: Purpose
The city finds that the health, safety and the general public welfare of the residents of the city will be promoted by establishing standards for the development and excavation of hillside and slope areas located in the city so as to minimize soil and slope instability and erosion, to minimize the adverse effects of grading, cut and fill operations, to preserve the character of the city's hillsides, and to otherwise supplement and amplify the city subdivision and zoning ordinances. The provisions herein are designated to accomplish the following:

A. Prohibit development of uses which would likely result in a hazardous situation due to slope instability, rock falls or excessive soil erosion.

B. Provide for safe vehicular circulation and access.

C. Encourage the location, design and development of building sites in a manner that will minimize the scarring and erosion effects of cutting, filling and grading of hillsides.

D. Encourage preservation of open space by encouraging clusters or other design techniques to preserve the natural terrain.

E. Where hillside excavation does occur, require that buildings be located in the cut area to minimize the visual effects of scarring. (1998 Document § 10A-1)

Section 10-13A-4: Density and Disturbance Standards

A. Schedule: In furtherance of the purposes set forth above, density and site disturbance within the hillside development overlay zone shall comply with the following schedule. Any portion of a development parcel having a slope greater than forty percent (40%) shall not be included in the calculation of the area of such parcel for the purposes of determining conformity with the density requirements below:

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 A4 of this section.

A.4. The city council, after considering the recommendation from the hillside review board, and from the planning commission may approve the removal of small hills which contain slopes forty percent (40%) or greater subject to determining the application conforms to all of the following requirements:

a. The hill is not contiguous to nor part of a major hillside formation, and
b. The removal of such landform will not create a negative aesthetic impact in the opinion of the city council, and
c. The land area is zoned for residential, commercial, or industrial development. (Ord. 2013-01-001, 1-3-2013)

Section 10-13A-5: Slope and Slope Areas Determined

B. Procedure: The location of the natural twenty percent (20%), thirty percent (30%) and forty percent (40%) slopes for the purposes of this article shall be determined using the following procedure: (Ord. 2005-07-007, 7-21-2005)

3. Determination of Slope Areas for Density Calculations: Using the contour maps, slopes shall be calculated in intervals no greater than forty feet (40') along profile lines. Points identified as slopes of twenty percent (20%), thirty percent (30%), and forty percent (40%) 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 dwelling unit density. Small washes or rock outcrops which have slopes

> distinctly different from surrounding property and not part of the contiguous topography may be excluded from slope determination if, in the opinion of the hillside review board, the exclusion of such small areas from slope determination will not be contrary to the overall purpose of this article. For the purpose of determining developable areas and allowable densities, previously disturbed hillside areas shall be considered on a pre-disturbance natural slope basis, where feasible, as proposed by the applicant's engineer and approved by the hillside review board. Where a property owner restores a previously disturbed area to a natural or near natural condition, the area may be included within a required no disturbance area. (Ord. 2005-07-007, 7-21-2005)

Comments: If the HSRB recommends approval of a hillside permit, then the permit request advances forward to the Planning Commission (PC) for review and recommendation and then on to the City Council (CC) for approval or denial.

If approved, staff would work with the applicant for submittal of a SPR (Site Plan Review) application with the required accompanying civil engineering plan set (*for plan review*).

1. Hillside Permit - A hillside permit is required per ordinance and the HSRB will make recommendations to the PC & CC.

2. Zoning – For this project, no zone change is proposed because the project would fit into the existing R-1-10 zone.

3. Development – It's proposed to develop eleven (11) single family residences. A thirty (30) foot setback line from an established ridge line will be required as presented. Retaining walls will be incorporated. No disturb (*no build*) areas will be established on lots 1 thru 8 as presented. The 'Minor Hills' may be removed as presented (*minor hills and/or cuts left over from the Banded Hills Road construction*).

4. Drainage – Drainage shall comply with the 'Drainage Study' dated March 26, 2018 by Development Solutions Group.

5. Geotechnical Investigation – All earthworks shall comply with the recommendations and mitigations presented in AGEC Geotech Report for project #2172452 dated February 23, 2018.

6. Rockfall – Rockfall hazards shall be mitigated in compliance with the recommendations found in the AGEC "Geologic-Hazard Study" report dated February 13, 2018.

HSRB Motion: The following are examples of possible motions;

1. Denial - This application is recommended for denial because _____.

2. Table – This application is recommended to be tabled to allow the applicant an opportunity to provide the following information _____.

3. Approval - A motion to recommend approval to remove insignificant slope areas to allow development of a proposed single family residential development off of Banded Hills Drive. The recommended areas to be removed are depicted on Sheet SAM-1 titled "Slope Analysis Map" (*dated 3/26/2018*). This removal is justified with the **findings** that the areas within the identified "limits of disturbance" per Section 10-13A-4.A.4.a) are not contiguous nor part of a major hillside formation, b) the removal of such areas will not create a negative aesthetic impact in the opinion of the City Council, and c) the land area is zoned for residential development. The applicant shall work with staff during the construction plan review process to address any rockfall hazards, geotech hazartds, and drainage and sediment issues, and will follow the recommendations of the drainage report, geotechnical report, and rockfall report.

Street Photos – Banded Hills








Airport Rd

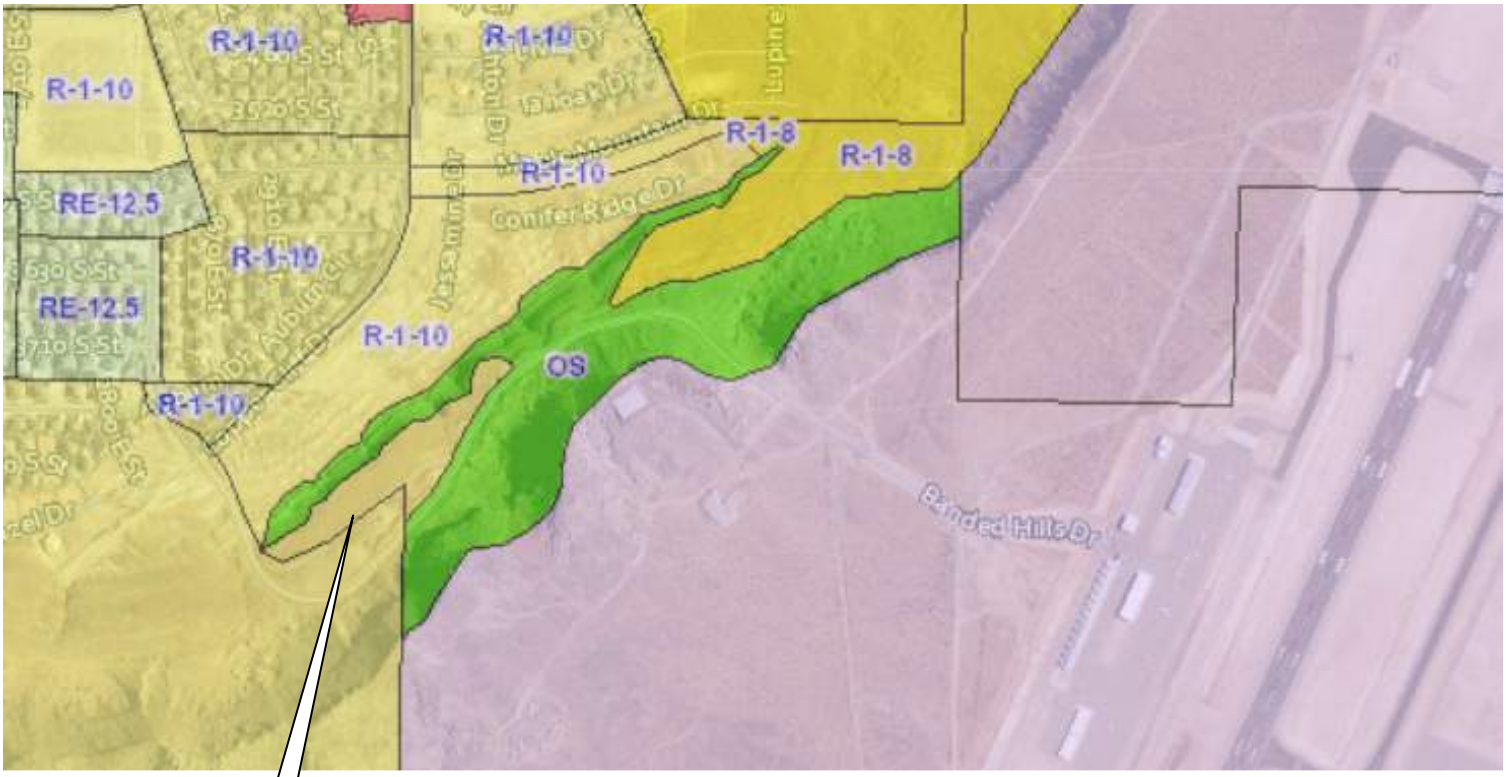

Airport Rd


Airport Rd

Vicinity - Aerial Map



Zoning Map

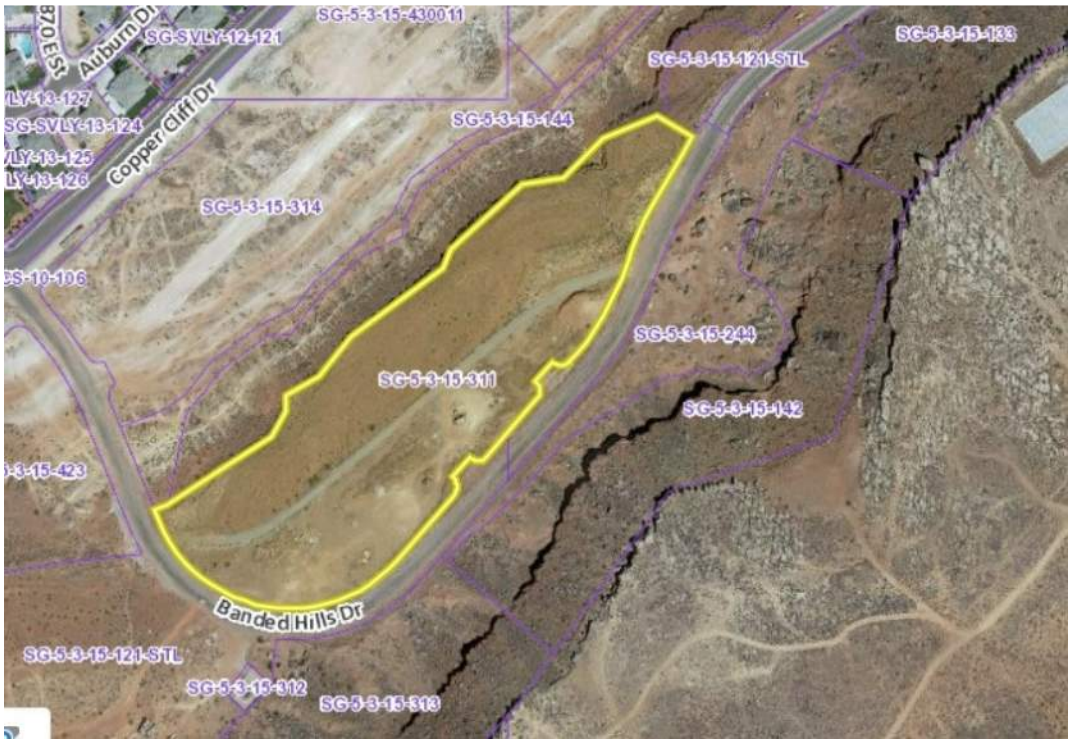

R-1-10
R-1-10
R-1-10
R-1-10
R-1-8
R-1-8
RE-12.5
R-1-10
RE-12.5
R-1-10
OS
R-1-10
Banded Hills Dr
Site

Property

City GIS



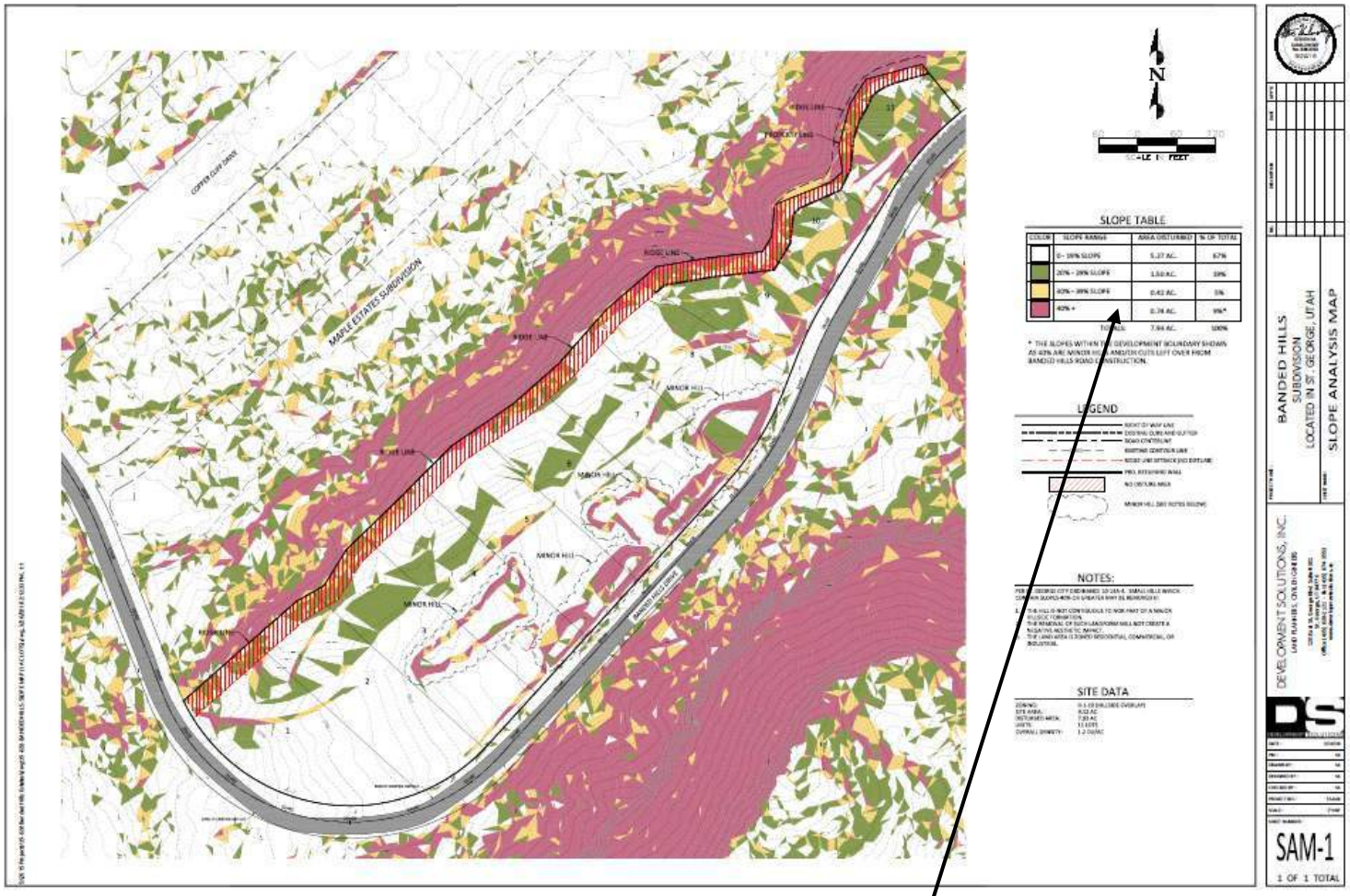
Washington County



Slope Map – Full Sheet

(Colored Contour Map)

(Full size plan is in the HSRB packet)



SLOPE TABLE

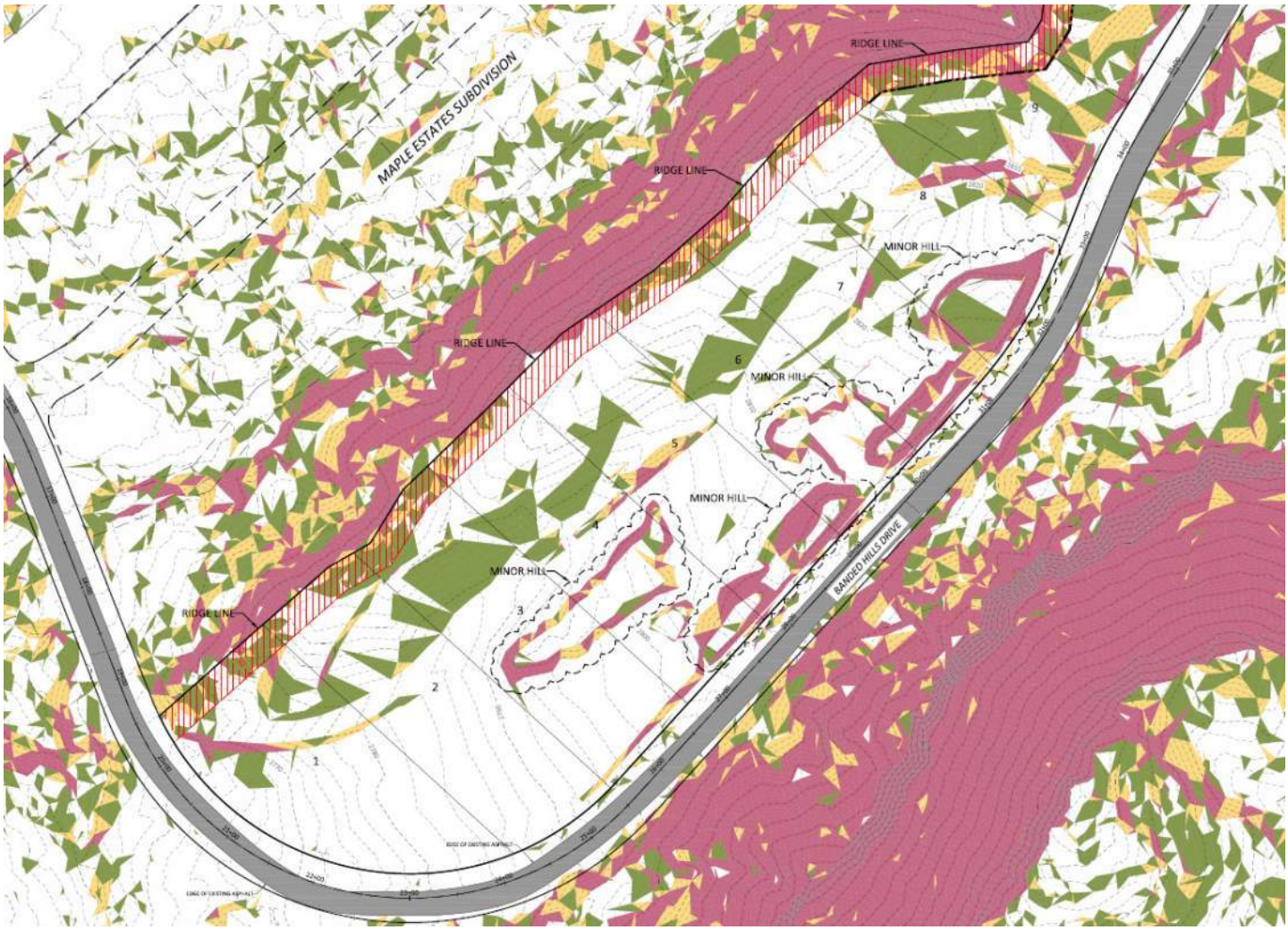
COLOR	SLOPE RANGE	AREA DISTURBED	% OF TOTAL
	0 - 19% SLOPE	5.27 AC.	67%
	20% - 29% SLOPE	1.50 AC.	19%
	30% - 39% SLOPE	0.42 AC.	5%
	40% +	0.74 AC.	9%*
	TOTALS:	7.93 AC.	100%

* THE SLOPES WITHIN THE DEVELOPMENT BOUNDARY SHOWN AS 40% ARE MINOR HILLS AND/OR CUTS LEFT OVER FROM BANDED HILLS ROAD CONSTRUCTION.

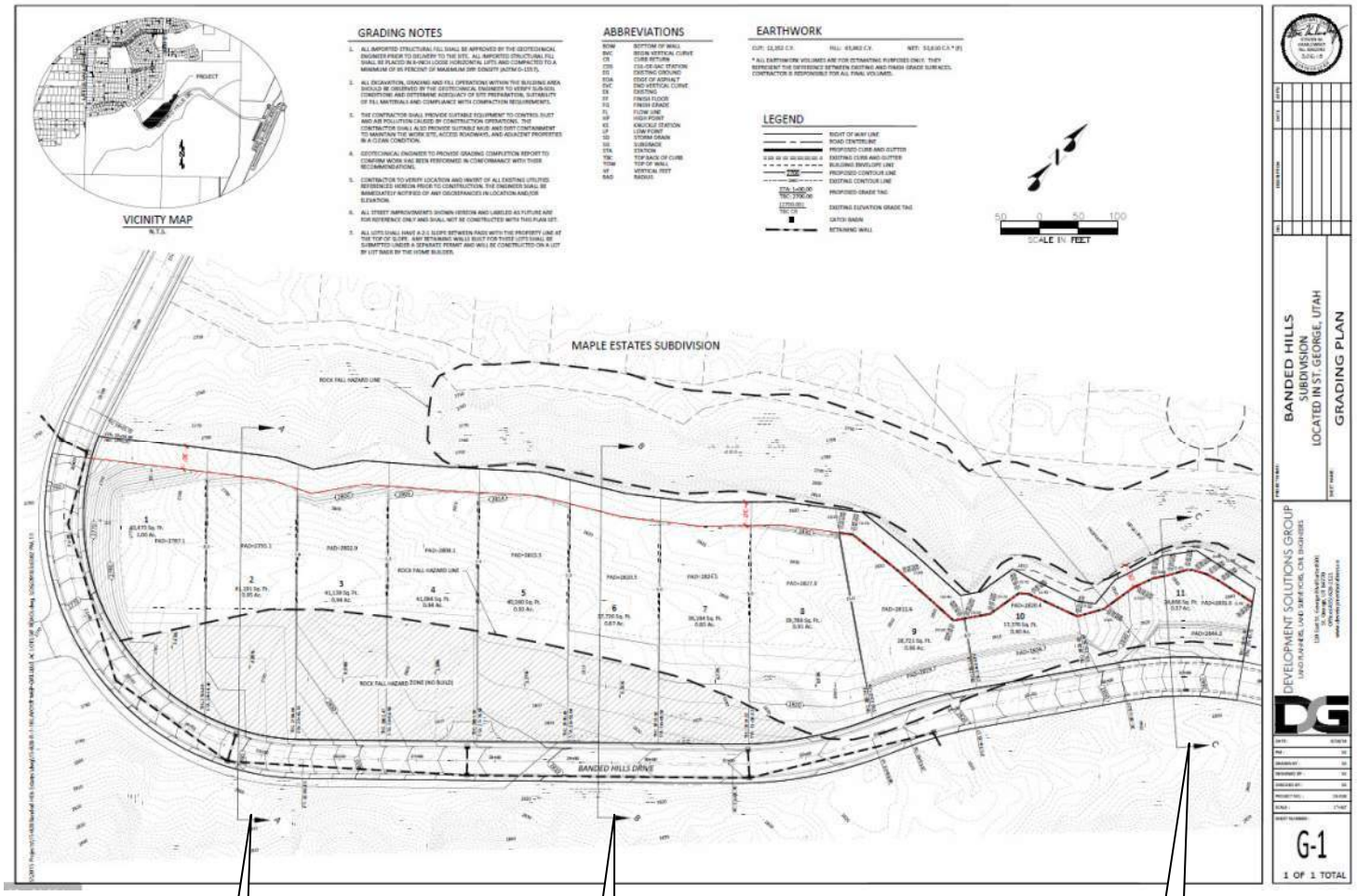
Slope Map – Detail

(Colored Contour Map)

(Full size plan is in the HSRB packet)



Grading Plan

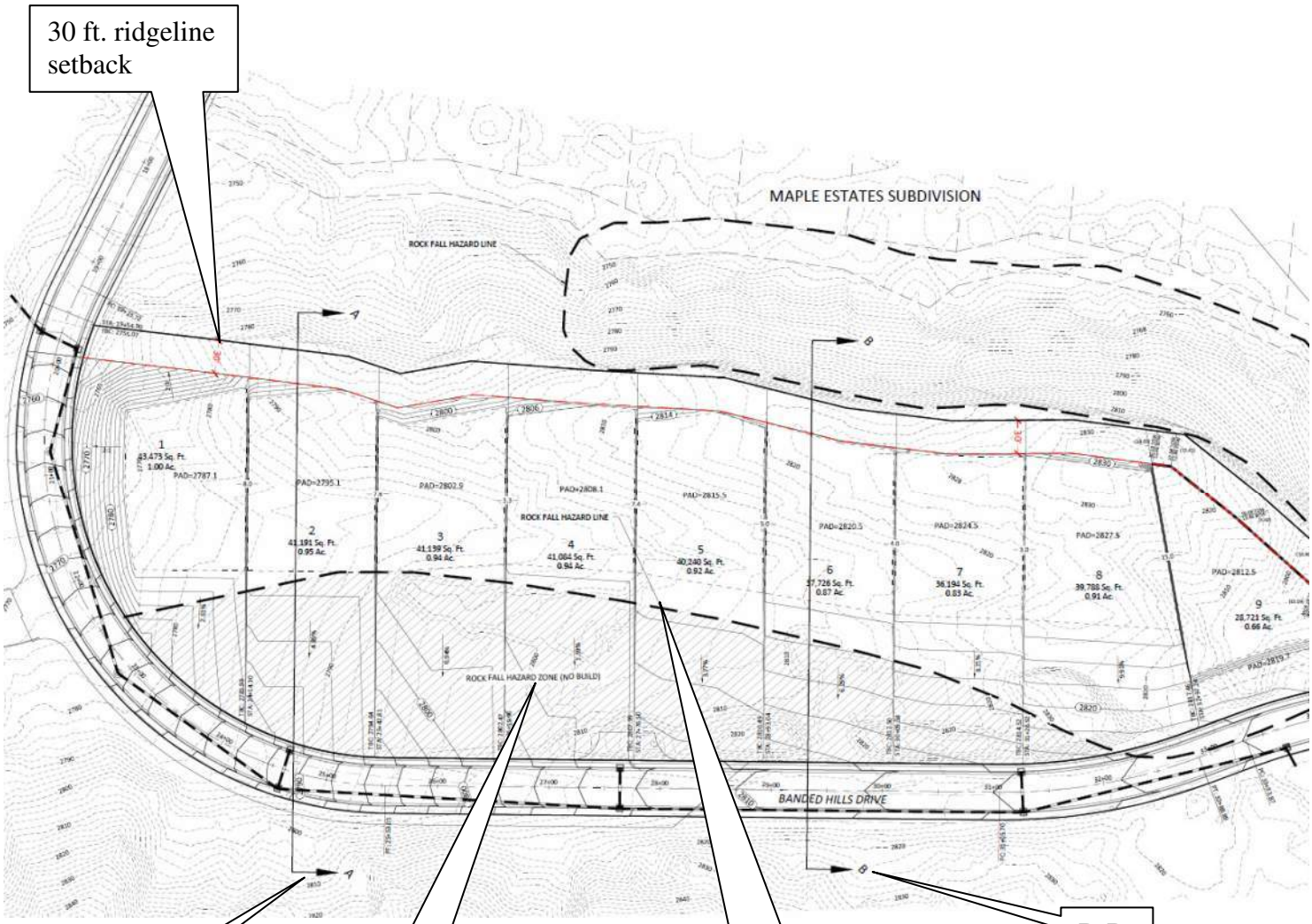


A-A

B-B

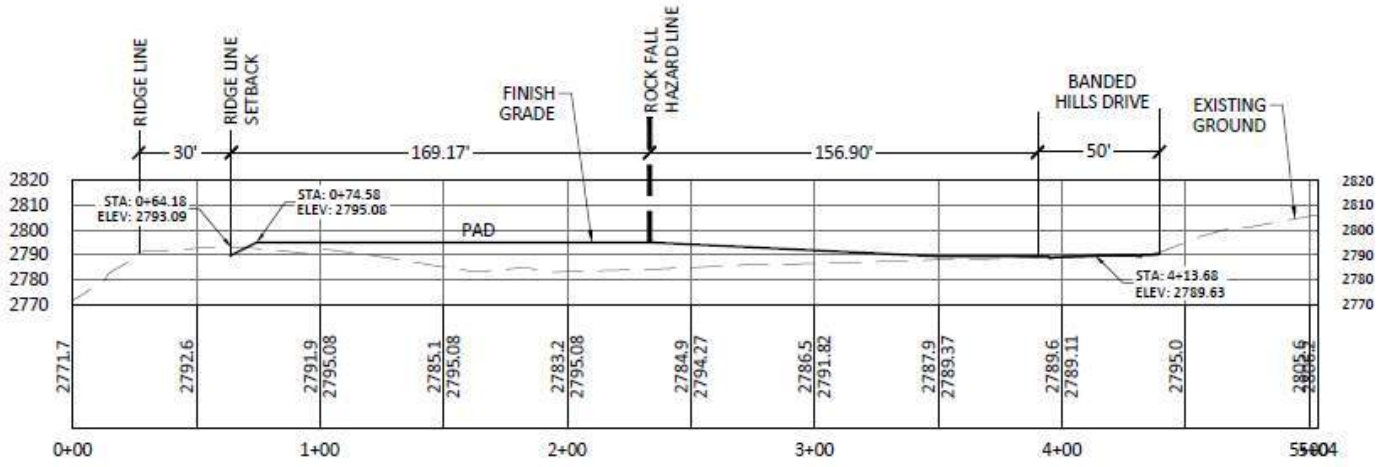
C-C

Detail – Grading Plan



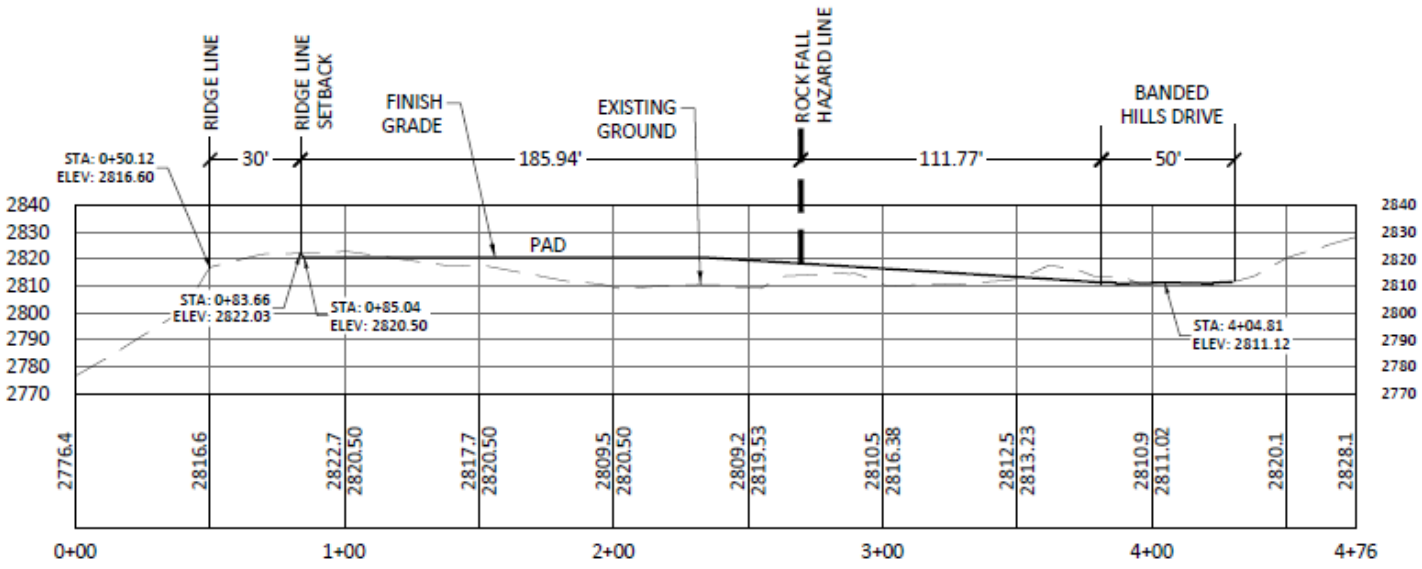
Cross Sections

A-A



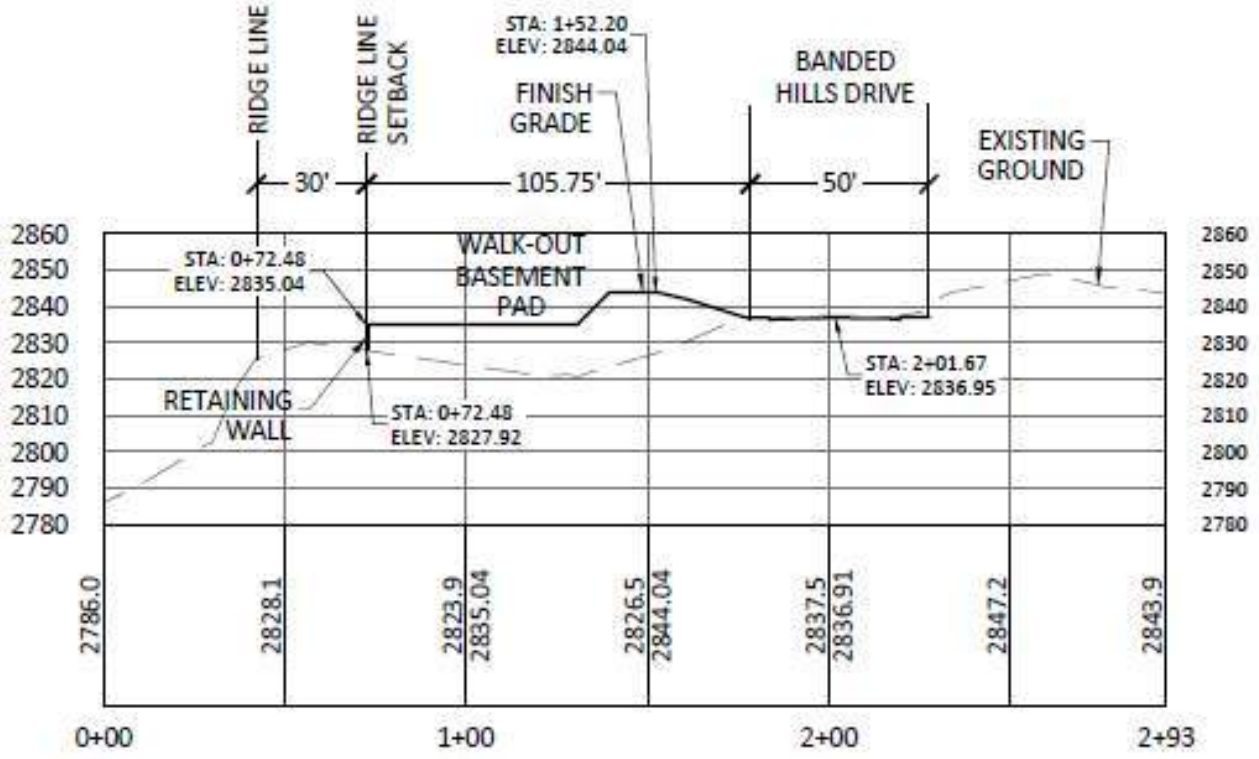
SECTION A
H: 1"=50'
V: 1"=50'

B-B



SECTION B
H: 1"=50'
V: 1"=50'

C-C



SECTION C
H: 1"=50'
V: 1"=50'

Drainage Report

(Only the cover is shown; the full report is 26 pages and is in the HSRB packet and in the project case file)

BANDED HILLS SUBDIVISION

Drainage Study

St. George, Utah



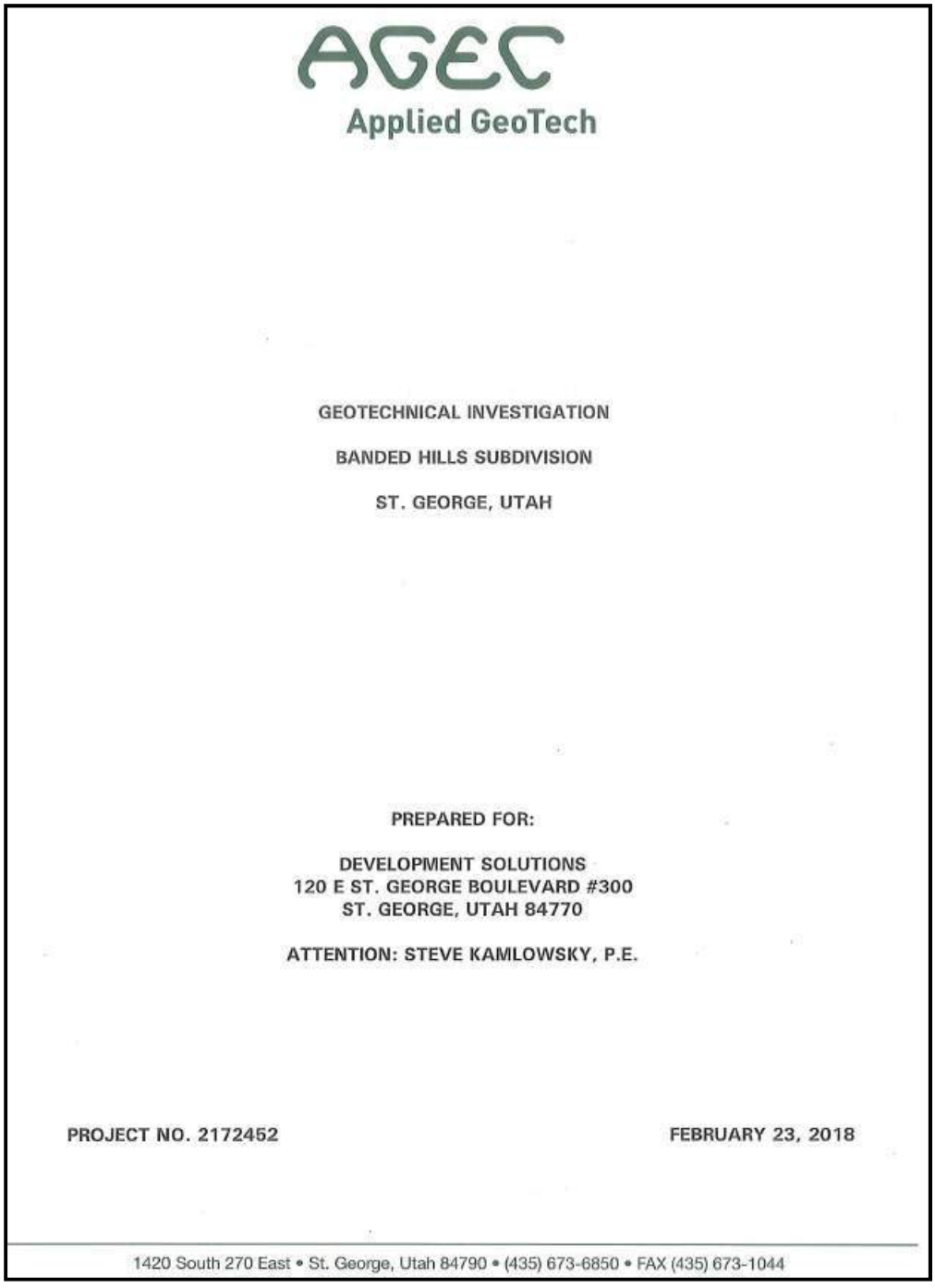
Prepared By:

Development Solutions Group, Inc.
120 East St. George Boulevard
St. George, Utah 84770
(435) 628-2121

March 26, 2018

Geotechnical Report

(Cover only is shown; the full report is 30 pages long and is in the HSRB packet and in the project case file)



AGEC
Applied GeoTech

GEOTECHNICAL INVESTIGATION

BANDED HILLS SUBDIVISION

ST. GEORGE, UTAH

PREPARED FOR:

DEVELOPMENT SOLUTIONS
120 E ST. GEORGE BOULEVARD #300
ST. GEORGE, UTAH 84770

ATTENTION: STEVE KAMLOWSKY, P.E.

PROJECT NO. 2172452

FEBRUARY 23, 2018

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

Hazard – Rock Fall Report

(Only the cover is shown; the full report is 6 pages and is in the HSRB packet and in the project case file)

AGEC
Applied GeoTech

February 5, 2018

Development Solutions
120 East St. George Blvd. #300
St George, Utah 84770

Attention: Steve Kamlowsky

Subject: Geologic-hazard Study
Banded Hills Subdivision
Banded Hills Drive
St George, Utah
Project No. 2172453

Gentlemen:

Applied Geotechnical Engineering Consultants, Inc. (AGEC) was requested to perform a geologic-hazards study for the proposed Banded Hills Subdivision located below the airport bluff, northwest of Banded Hills Drive in St. George, Utah (see Figure 1).

PROPOSED CONSTRUCTION

We understand the area is planned for single-family residences. The approximate area planned for development is shown on Figure 1.

GEOLOGY

The geology for the area was mapped by Hayden and Willis (2011) to consist of the upper unit of the Triassic-age Moenkopi Formation. This unit consists of interbedded siltstone and sandstone. The Triassic-age Shnabkaib Member of the Moenkopi underlies this unit and consists predominantly of siltstone. The Shinarump Conglomerate Member of the Chinle Formation overlies the Moenkopi Formation and makes up the rock near the top of the bluff southeast of the site, the source of the rockfall for the southeast portion of the property. The bedrock exposed on the property is that of the Moenkopi Formation. The bedrock in the area dips down toward the southeast at approximately 17 degrees.

GEOLOGIC-HAZARD EVALUATION

Low-sun-angle aerial photographs from 1960 and aerial photographs from 1938 were reviewed along with site reconnaissance to determine what potential geologic hazards may affect the proposed development. Rockfall and faulting are the two geologic hazards that

600 West Sandy Parkway • Sandy, Utah 84070 • (801) 566-6399 • FAX (801) 566-6493

Application

Banded Hills Subdivision

CITY OF ST GEORGE
3/27/2018 11:00 AM
PLANNING FEES
200.00
1 CHECK(S)
APPLIED: 200.00-
CHANGE: 0.00

HILLSIDE REVIEW
APPLICATION

FILE #: 2018-HS-002 FILING DATE: _____ RECEIVED BY: _____
FEE: $200 FEES PAID: _____ PSR Date: _____

APPLICANT INFORMATION

LEGAL OWNER(S) OF SUBJECT PROPERTY: Quality Development

MAILING ADDRESS: 1472 E. 3950 S. St. George, UT 84790

PHONE: 634-0111 CELL: _____ FAX: _____

APPLICANT: Development Solutions Group
(If different than owner)

MAILING ADDRESS: 120 E. St. George Blvd., St. George, UT 84770

PHONE: 628-2121 CELL: _____ FAX: _____

CONTACT PERSON/REPRESENTATIVE: Steve Kamlowsky
(If different than owner)

MAILING ADDRESS: _____

PHONE: _____ CELL: _____ FAX: _____

PROPERTY INFORMATION

STREET ADDRESS OF PROPERTY: 2915 E. Banded Hills Drive

ASSESSOR'S PARCEL NUMBER(S): SG-5-3-15-311

ZONING: R-1-10 GENERAL PLAN: LDR

LEGAL DESCRIPTION: (Attach separate sheet if necessary) See Attached
Lot / Plat

EXISTING USE: None
Use of property and/or Buildings

PROPOSED USE: Single Family Residential
Use of property and/or Buildings

SUBMITTAL "CHECK LIST"

Note: The applicant is responsible for familiarizing themselves with Title 10, Chapter 13-A "Hillside Development Overlay Zone" of the St. George City Code Zoning Regulations from which this check list was condensed.

Density and Disturbance Standards
Any area greater than 40% will not be reviewed for development.
No portion of the parcel having a slope greater than 40% shall be included in the calculations for conformity with the density requirements shown below.

Complete the following checklist:

Submitted

Yes	No	N/A		
✓			1-19%:	See the underlying zone.
✓			20-29%:	2 d.u. per acre, provided clustering is done on 30% or less of the land in this category. 70% remained undisturbed.
✓			30-39%:	1 d.u. per 10 acres, provided no more than 5% of the site is disturbed. 95% is to remain undisturbed.
✓			40% +:	Development is not permitted.
✓				Contour intervals, maps and calculations prepared by a professional civil engineer.
✓				Engineer's certification and signature on reports and plans.

Slope Determination
The location of the natural 20%, 30%, or 40% is determined by a professional licensed engineer or surveyor who is to prepare contour maps, conduct a field survey, and calculate the slope area.

✓			Slope Analysis Map
✓			Contours at intervals no greater than five (5) feet.
✓			Scale to be drawn at one-inch equals one hundred (1"= 100') feet scale maximum.

Lot Size

✓			Lot size determined

Site Plan

✓			A grading plan showing existing and proposed contours extending at least 100 feet beyond property has been submitted.
✓			All excavations and fills conform to Appendix "K" of the Utah Uniform Building Standards Act rules and the current adopted edition of the International Building Code.
✓			The height of cut(s) does not exceed 10'. (Combined height of cuts and fills does not exceed 20')

✓	—	—	Detailed plans of all surface and subsurface drainage systems are shown.
✓	—	—	Location of existing and proposed streets, buildings, structures, and easements have been shown.
✓	—	—	Detailed site plans and elevation drawings showing the location of all structures and mitigation of cuts or fills.
✓	—	—	Cross sections provided

Earth Moving Plan (Shall be prepared by a licensed Civil Engineer and shall include but not be limited to the following items)

✓	—	—	Topography. 2' for tableland. 5' for steep slopes.
✓	—	—	Terrain details
✓	—	—	Proposed earth-moving details
✓	—	—	Description of the method used to dispose of earth, etc.
✓	—	—	A time table for each step of the project has been submitted. This shall include the starting and completion dates.

Drainage

✓	—	—	A drainage control plan (study) has been prepared by a licensed Civil Engineer.

Geology & Soils Report (Study)
(Shall be prepared by a licensed professional engineer trained in geo-technical engineering) (A geology & soils report/study shall include but not be limited to the following items)

✓	—	—	Slope stability analysis.
✓	—	—	Foundation investigation.
—	—	✓	Location and yield of springs.
✓	—	—	Structural features.
✓	—	—	Existence of surface hazards.
✓	—	—	Conclusions and recommendations regarding effect of geological conditions.

Landscape & Vegetation Plan (Shall be prepared by a qualified professional prior to Final Plat and approved) (A landscape and vegetation plan shall include but not be limited to the following items)

—	—	✓	Replant disturbed areas.
—	—	✓	Types of retention to be used
—	—	✓	Sprinkler plans and projected water usage.

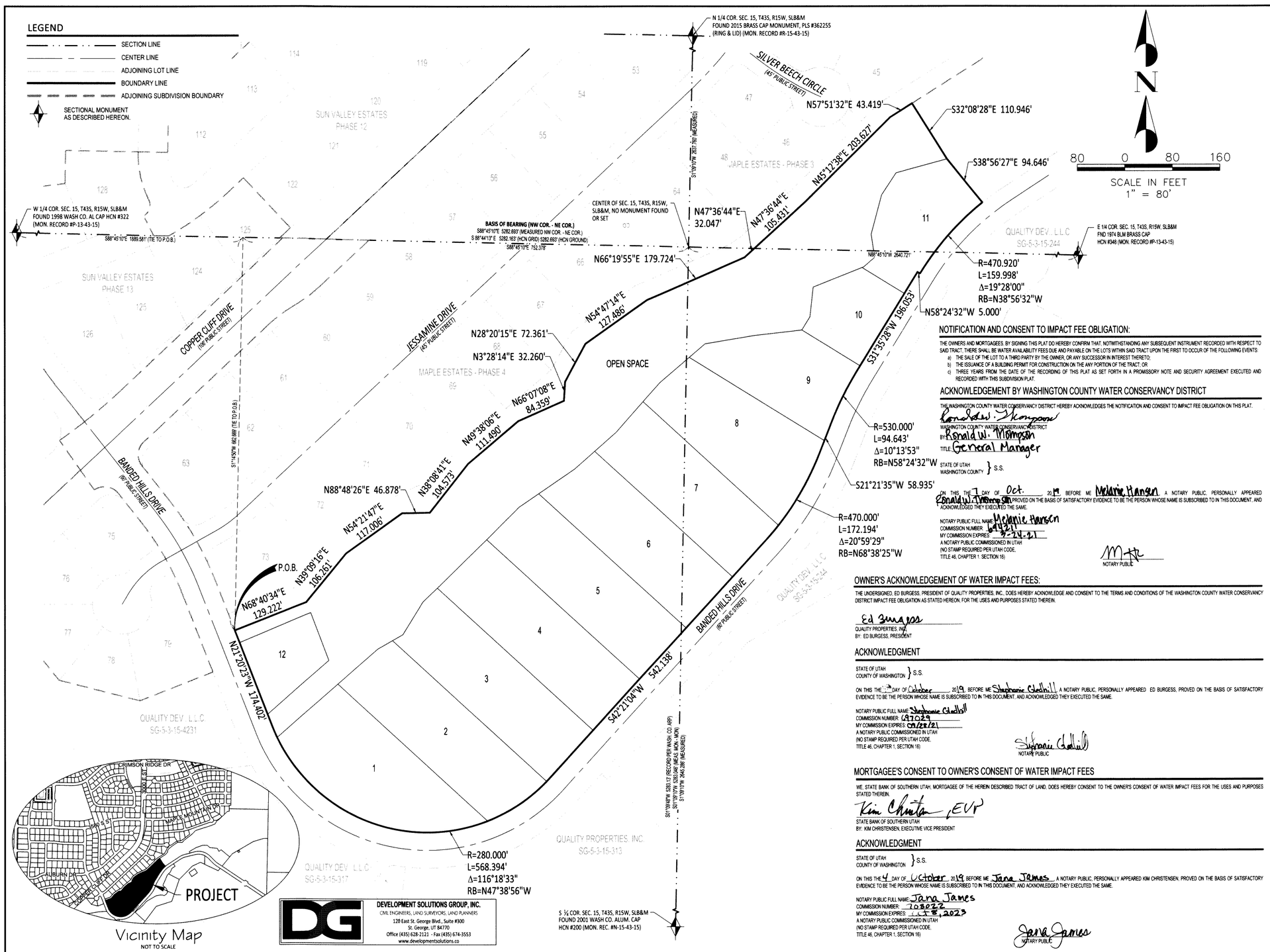
Street Design

✓	—	—	Street design conforms to City standards.

Submitted by

Steve Kamlowsky — Steve Kamlowsky — 3/26/18
(Print Name) (Signature) (Date)

Exhibit E



Vicinity Map
NOT TO SCALE

DEVELOPMENT SOLUTIONS GROUP, INC.
CIVIL ENGINEERS, LAND SURVEYORS, LAND PLANNERS
120 East St. George Blvd., Suite #300
St. George, UT 84770
Office (435) 628-2121 - Fax (435) 674-3553
www.developmentsolutions.co

SURVEYOR'S CERTIFICATE:

I, D. BRADFORD PETERSEN, DO HEREBY CERTIFY THAT I AM A PROFESSIONAL LAND SURVEYOR, AND THAT I HOLD CERTIFICATE NO. 362255, IN ACCORDANCE WITH TITLE 58, CHAPTER 22, OF THE PROFESSIONAL ENGINEERS AND LAND SURVEYORS LICENSING ACT OF THE STATE OF UTAH. I FURTHER CERTIFY THAT BY AUTHORITY OF THE OWNERS, I HAVE MADE A SURVEY OF THE TRACT OF LAND SHOWN ON THIS PLAT AND DESCRIBED BELOW, HAVE VERIFIED ALL MEASUREMENTS, HAVE PLACED MONUMENTS AS SHOWN IN ACCORDANCE WITH SECTION 17-23-17 AND HAVE SUBDIVIDED SAID TRACT OF LAND INTO LOTS, PUBLIC STREETS, OPEN SPACE AND MUNICIPAL UTILITY EASEMENTS HEREAFTER KNOWN AS:

BANDED HILLS SUBDIVISION

I FURTHER CERTIFY THAT TO THE BEST OF MY KNOWLEDGE, THE LOTS SHOWN ON THIS PLAT MEET THE CURRENT ZONING ORDINANCE.

DATE: SEPTEMBER 30, 2019

D. BRADFORD PETERSEN No. 362255 STATE OF UTAH

LEGAL DESCRIPTION:

BEGINNING AT THE SOUTHWESTERLY BOUNDARY CORNER OF MAPLE ESTATES - PHASE 4 SUBDIVISION, AS RECORDED AND ON FILE WITH THE WASHINGTON COUNTY RECORDER'S OFFICE, SAID POINT BEING SOUTH 88°45'10" EAST ALONG THE SECTION LINE A DISTANCE OF 1889.581 FEET AND SOUTH 1°14'50" WEST 662.669 FEET FROM THE WEST QUARTER CORNER OF SECTION 15, TOWNSHIP 43 SOUTH, RANGE 15 WEST, SALT LAKE BASE & MERIDIAN, (BASIS OF BEARING BEING SOUTH 88°45'10" EAST BETWEEN THE WEST QUARTER CORNER AND THE EAST QUARTER CORNER OF SAID SECTION 15); AND RUNNING THENCE ALONG THE SOUTHERLY BOUNDARY OF SAID SUBDIVISION AND THE SOUTHERLY BOUNDARY OF MAPLE ESTATES - PHASE 3 SUBDIVISION AS RECORDED AND ON FILE WITH THE WASHINGTON COUNTY RECORDER'S OFFICE THE FOLLOWING (15) FIFTEEN COURSES: (1) NORTH 68°40'34" EAST 129.222 FEET; (2) NORTH 39°09'16" EAST 106.261 FEET; (3) NORTH 54°21'47" EAST 117.006 FEET; (4) NORTH 88°48'26" EAST 46.878 FEET; (5) NORTH 38°08'41" EAST 104.573 FEET; (6) NORTH 49°38'06" EAST 111.490 FEET; (7) NORTH 66°07'08" EAST 84.359 FEET; (8) NORTH 03°28'14" EAST 32.260 FEET; (9) NORTH 28°20'15" EAST 72.361 FEET; (10) NORTH 54°47'14" EAST 127.486 FEET; (11) NORTH 66°19'55" EAST 179.724 FEET; (12) NORTH 47°36'44" EAST 32.047 FEET; (13) NORTH 47°36'44" EAST 105.431 FEET; (14) NORTH 45°12'38" EAST 203.627 FEET; AND (15) NORTH 57°51'32" EAST 43.419 FEET; THENCE SOUTH 32°08'28" EAST 110.946 FEET; THENCE SOUTH 38°56'27" EAST 94.646 FEET TO A POINT ON THE ARC OF A NON-TANGENT CURVE, (RADIUS POINT BEARS SOUTH 38°56'27" EAST), SAID POINT BEING ON THE NORTHERLY RIGHT-OF-WAY LINE OF THE BANDED HILLS DRIVE ROADWAY DEDICATION RECORDED AS DOCUMENT NO. 20100003974, WITH THE WASHINGTON COUNTY RECORDER'S OFFICE THENCE ALONG SAID ROADWAY DEDICATION AND THE ARC OF A 470.920 FOOT RADIUS CURVE TO THE LEFT, THROUGH A CENTRAL ANGLE OF 19°28'00", A DISTANCE OF 159.998 FEET TO A POINT ON THE NORTHERLY RIGHT-OF-WAY LINE OF THE BANDED HILLS DRIVE ROADWAY DEDICATION RECORDED AS DOCUMENT NO. 20090021919 WITH THE WASHINGTON COUNTY RECORDER'S OFFICE; THENCE ALONG SAID ROADWAY DEDICATION THE FOLLOWING (8) EIGHT COURSES: (1) NORTH 58°24'32" WEST 5.000 FEET; (2) SOUTH 31°35'28" WEST 196.053 FEET TO A POINT OF CURVATURE; (3) RUNNING SOUTHWESTERLY ALONG THE ARC OF A 530.000 FOOT RADIUS CURVE TO THE LEFT, THROUGH A CENTRAL ANGLE OF 10°13'53", A DISTANCE OF 94.643 FEET; (4) SOUTH 21°21'35" WEST 58.935 FEET TO A POINT OF CURVATURE; (5) RUNNING SOUTHWESTERLY ALONG THE ARC OF A 470.000 FOOT RADIUS CURVE TO THE RIGHT, THROUGH A CENTRAL ANGLE OF 20°59'29", A DISTANCE OF 172.194 FEET; (6) SOUTH 42°21'04" WEST 542.138 FEET TO A POINT OF CURVATURE; (7) RUNNING WESTERLY ALONG THE ARC OF A 280.000 FOOT RADIUS CURVE TO THE RIGHT, THROUGH A CENTRAL ANGLE OF 116°18'33", A DISTANCE OF 568.394 FEET; AND (8) NORTH 21°20'23" WEST 174.402 FEET TO THE POINT OF BEGINNING.

CONTAINS 577,042 SQ. FT. (13.247 ACRES)

OWNER'S DEDICATION

KNOW ALL MEN BY THESE PRESENTS THAT THE UNDERSIGNED OWNER(S) OF ALL THE ABOVE DESCRIBED TRACT OF LAND HAVING CAUSED THE SAME TO BE SUBDIVIDED INTO LOTS, PUBLIC STREETS, OPEN SPACE AND MUNICIPAL UTILITY EASEMENTS, HEREAFTER KNOWN AS:

BANDED HILLS SUBDIVISION

FOR GOOD AND VALUABLE CONSIDERATION RECEIVED, THE UNDERSIGNED OWNERS DO HEREBY DEDICATE AND CONVEY TO THE CITY OF ST. GEORGE FOR PERPETUAL USE OF THE PUBLIC, ALL PARCELS OF LAND SHOWN ON THIS PLAT AS PUBLIC STREETS, OPEN SPACE AND MUNICIPAL UTILITY EASEMENTS. ALL LOTS, PUBLIC STREETS, OPEN SPACE AND MUNICIPAL UTILITY EASEMENTS, ARE AS NOTED OR SHOWN. THE OWNERS DO HEREBY WARRANT TO THE CITY OF ST. GEORGE, IT'S SUCCESSORS AND ASSIGNS, TITLE TO ALL PROPERTY DEDICATED AND CONVEYED TO PUBLIC USE HEREIN AGAINST THE CLAIMS OF ALL PERSONS. THE LOTS SHOWN ON THIS PLAT ARE SUBJECT TO THE DECLARATION OF COVENANTS, CONDITIONS AND RESTRICTIONS OF THE BANDED HILLS SUBDIVISION RECORDED ON THE 29 DAY OF October 20 19 AS DOC. NO. 20190044964 IN THE OFFICE OF THE WASHINGTON COUNTY RECORDER. SAID DECLARATION OF COVENANTS, CONDITIONS AND RESTRICTIONS IS HEREBY INCORPORATED AND MADE A PART OF THIS PLAT.

IN WITNESS WHEREOF I HAVE HEREUNTO SET MY HAND THIS 4th DAY OF OCTOBER 20 19

Ed Burgess
QUALITY PROPERTIES, INC.
BY: ED BURGESS, PRESIDENT

NOTIFICATION AND CONSENT TO IMPACT FEE OBLIGATION:

THE OWNERS AND MORTGAGEES, BY SIGNING THIS PLAT DO HEREBY CONFIRM THAT, NOTWITHSTANDING ANY SUBSEQUENT INSTRUMENT RECORDED WITH RESPECT TO SAID TRACT, THERE SHALL BE WATER AVAILABILITY FEES DUE AND PAYABLE ON THE LOTS WITHIN SAID TRACT UPON THE FIRST TO OCCUR OF THE FOLLOWING EVENTS:

a) THE SALE OF THE LOT TO A THIRD PARTY BY THE OWNER, OR ANY SUCCESSOR IN INTEREST THERETO;
b) THE ISSUANCE OF A BUILDING PERMIT FOR CONSTRUCTION ON THE ANY PORTION OF THE TRACT; OR
c) THREE YEARS FROM THE DATE OF THE RECORDING OF THIS PLAT AS SET FORTH IN A PROMISSORY NOTE AND SECURITY AGREEMENT EXECUTED AND RECORDED WITH THIS SUBDIVISION PLAT.

ACKNOWLEDGEMENT BY WASHINGTON COUNTY WATER CONSERVANCY DISTRICT

THE WASHINGTON COUNTY WATER CONSERVANCY DISTRICT HEREBY ACKNOWLEDGES THE NOTIFICATION AND CONSENT TO IMPACT FEE OBLIGATION ON THIS PLAT.

Ronald W. Thompson
WASHINGTON COUNTY WATER CONSERVANCY DISTRICT
BY: Ronald W. Thompson
TITLE: General Manager

STATE OF UTAH
WASHINGTON COUNTY } S.S.

ON THIS THE 7 DAY OF Oct. 20 19 BEFORE ME Melanie Hansen A NOTARY PUBLIC, PERSONALLY APPEARED Ronald W. Thompson PROVED ON THE BASIS OF SATISFACTORY EVIDENCE TO BE THE PERSON WHOSE NAME IS SUBSCRIBED TO IN THIS DOCUMENT, AND ACKNOWLEDGED THEY EXECUTED THE SAME.

NOTARY PUBLIC FULL NAME: Melanie Hansen
COMMISSION NUMBER: 694921
MY COMMISSION EXPIRES: 3-24-21
A NOTARY PUBLIC COMMISSIONED IN UTAH
(NO STAMP REQUIRED PER UTAH CODE, TITLE 46, CHAPTER 1, SECTION 16)

NOTARY PUBLIC

OWNER'S ACKNOWLEDGEMENT OF WATER IMPACT FEES:

THE UNDERSIGNED, ED BURGESS, PRESIDENT OF QUALITY PROPERTIES, INC., DOES HEREBY ACKNOWLEDGE AND CONSENT TO THE TERMS AND CONDITIONS OF THE WASHINGTON COUNTY WATER CONSERVANCY DISTRICT IMPACT FEE OBLIGATION AS STATED HEREON, FOR THE USES AND PURPOSES STATED THEREIN.

Ed Burgess
QUALITY PROPERTIES, INC.
BY: ED BURGESS, PRESIDENT

ACKNOWLEDGMENT

STATE OF UTAH
COUNTY OF WASHINGTON } S.S.

ON THIS THE 1st DAY OF October 20 19 BEFORE ME Stephanie Gladwill A NOTARY PUBLIC, PERSONALLY APPEARED ED BURGESS, PROVED ON THE BASIS OF SATISFACTORY EVIDENCE TO BE THE PERSON WHOSE NAME IS SUBSCRIBED TO IN THIS DOCUMENT, AND ACKNOWLEDGED THEY EXECUTED THE SAME.

NOTARY PUBLIC FULL NAME: Stephanie Gladwill
COMMISSION NUMBER: 697029
MY COMMISSION EXPIRES: 09/28/21
A NOTARY PUBLIC COMMISSIONED IN UTAH
(NO STAMP REQUIRED PER UTAH CODE, TITLE 46, CHAPTER 1, SECTION 16)

NOTARY PUBLIC

MORTGAGEE'S CONSENT TO OWNER'S CONSENT OF WATER IMPACT FEES

WE, STATE BANK OF SOUTHERN UTAH, MORTGAGEE OF THE HEREIN DESCRIBED TRACT OF LAND, DOES HEREBY CONSENT TO THE OWNER'S CONSENT OF WATER IMPACT FEES FOR THE USES AND PURPOSES STATED THEREIN.

Kim Christen, EVP
STATE BANK OF SOUTHERN UTAH
BY: KIM CHRISTENSEN, EXECUTIVE VICE PRESIDENT

ACKNOWLEDGMENT

STATE OF UTAH
COUNTY OF WASHINGTON } S.S.

ON THIS THE 4 DAY OF October 20 19 BEFORE ME Jana James A NOTARY PUBLIC, PERSONALLY APPEARED KIM CHRISTENSEN, PROVED ON THE BASIS OF SATISFACTORY EVIDENCE TO BE THE PERSON WHOSE NAME IS SUBSCRIBED TO IN THIS DOCUMENT, AND ACKNOWLEDGED THEY EXECUTED THE SAME.

NOTARY PUBLIC FULL NAME: Jana James
COMMISSION NUMBER: 708022
MY COMMISSION EXPIRES: Oct. 5, 2023
A NOTARY PUBLIC COMMISSIONED IN UTAH
(NO STAMP REQUIRED PER UTAH CODE, TITLE 46, CHAPTER 1, SECTION 16)

NOTARY PUBLIC

MORTGAGEE'S CONSENT TO RECORD

WE, STATE BANK OF SOUTHERN UTAH, MORTGAGEE OF THE HEREIN DESCRIBED TRACT OF LAND, DO HEREBY GIVE OUR CONSENT OF SAID TRACT OF LAND TO BE USED FOR THE USES AND PURPOSES DESCRIBED ON THIS PLAT, RECORDING OF ANNEXATION INTO COVENANTS, CONDITIONS AND RESTRICTIONS, AND JOINS IN ALL DEDICATIONS AND CONVEYANCES.

Kim Christen, EVP
STATE BANK OF SOUTHERN UTAH
BY: KIM CHRISTENSEN, EXECUTIVE VICE PRESIDENT

ACKNOWLEDGMENT

STATE OF UTAH
COUNTY OF WASHINGTON } S.S.

ON THIS THE 4 DAY OF October 20 19 BEFORE ME Jana James A NOTARY PUBLIC, PERSONALLY APPEARED KIM CHRISTENSEN, PROVED ON THE BASIS OF SATISFACTORY EVIDENCE TO BE THE PERSON WHOSE NAME IS SUBSCRIBED TO IN THIS DOCUMENT, AND ACKNOWLEDGED THEY EXECUTED THE SAME.

NOTARY PUBLIC FULL NAME: Jana James
COMMISSION NUMBER: 708022
MY COMMISSION EXPIRES: Oct. 5, 2023
A NOTARY PUBLIC COMMISSIONED IN UTAH
(NO STAMP REQUIRED PER UTAH CODE, TITLE 46, CHAPTER 1, SECTION 16)

NOTARY PUBLIC

Subdivision Final Plat for

BANDED HILLS SUBDIVISION

Located in Section 15, Township 43 South, Range 15 West, SLB&M

SHEET 1 OF 2

APPROVAL OF THE COMMUNITY DEVELOPMENT DIRECTOR

I, COMMUNITY DEVELOPMENT DIRECTOR FOR THE CITY OF ST. GEORGE, HAVE THIS THE 15 DAY OF OCT A.D. 2019, REVIEWED THE ABOVE SUBDIVISION FINAL PLAT AND RECOMMENDED THE SAME FOR ACCEPTANCE BY THE CITY OF ST. GEORGE, UT.

COMMUNITY DEVELOPMENT DIRECTOR
CITY OF ST. GEORGE

ENGINEER'S APPROVAL

THE HEREON SUBDIVISION FINAL PLAT HAS BEEN REVIEWED AND IS APPROVED IN ACCORDANCE WITH THE INFORMATION ON FILE IN THIS OFFICE THIS 28TH DAY OF OCTOBER, A.D. 20 19

ENGINEER
CITY OF ST. GEORGE

APPROVAL AS TO FORM

APPROVED AS TO FORM, THIS THE 13TH DAY OF Oct, A.D. 20 19

CITY ATTORNEY
CITY OF ST. GEORGE

APPROVAL OF THE PLANNING COMMISSION

ON THIS THE 8 DAY OF OCTOBER A.D. 20 19 THE PLANNING COMMISSION OF THE CITY OF ST. GEORGE, HAVING REVIEWED THE ABOVE SUBDIVISION FINAL PLAT AND HAVING FOUND THAT IT COMPLIES WITH THE REQUIREMENTS OF THE CITY'S PLANNING ORDINANCES, AND BY AUTHORITY OF SAID COMMISSION HEREBY APPROVE SAID SUBDIVISION FOR ACCEPTANCE BY THE CITY OF ST. GEORGE, UT.

CHAIRMAN PLANNING COMMISSION
CITY OF ST. GEORGE

APPROVAL AND ACCEPTANCE BY THE CITY OF ST. GEORGE, UTAH

WE, THE MAYOR AND CITY COUNCIL OF THE CITY OF ST. GEORGE, UT, HAVE REVIEWED THE ABOVE SUBDIVISION FINAL PLAT AND BY AUTHORIZATION OF SAID CITY COUNCIL, RECORD IN THE MINUTES OF IT'S MEETING OF THE 17 DAY OF OCTOBER A.D. 20 19 HEREBY ACCEPT SAID FINAL PLAT WITH ALL COMMITMENTS AND OBLIGATIONS PERTAINING THERETO.

ATTEST: CITY RECORDER
CITY OF ST. GEORGE

CITY OF ST. GEORGE UTAH

MAYOR
CITY OF ST. GEORGE

TREASURER APPROVAL

I, WASHINGTON COUNTY TREASURER, CERTIFY ON THIS 29 DAY OF October A.D. 2019 THAT ALL TAXES, SPECIAL ASSESSMENTS, AND FEES DUE AND OWING ON THIS SUBDIVISION HAVE BEEN PAID IN FULL.

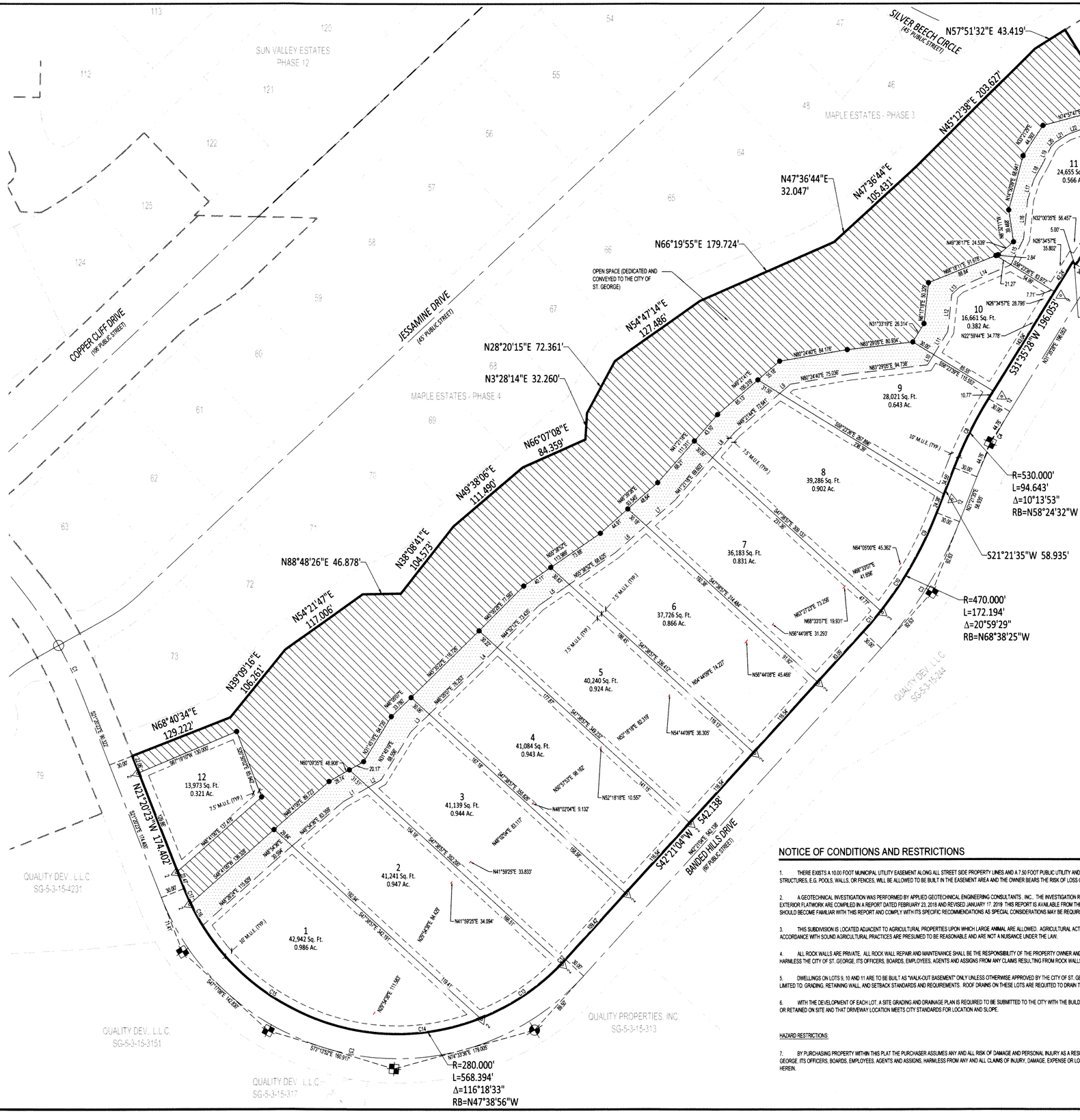
WASHINGTON COUNTY TREASURER

STATE OF UTAH COUNTY OF WASHINGTON

RECORDED NUMBER

DOC # 20190044863
Map (Conveying Property) Page 1 of 3
Russell Shirts Washington County Recorder
10/29/2019 02:42:48 PM Fee $ 124.00
By SOUTHERN UTAH TITLE CO

WASHINGTON COUNTY RECORDER



LEGEND

- SECTION LINE
- MUNICIPAL UTILITY EASEMENT (M.U.E.)
- CENTER LINE
- ADJOINING LOT LINE
- BOUNDARY LINE
- ADJOINING SUBDIVISION BOUNDARY
- CLASS II (REBAR & ALUM. CAP) MONUMENT SET
- CLASS I (ST. GEORGE CITY BRASS CAP, IN RING & LID) MONUMENT SET
- EXISTING CLASS I (RING & LID) MONUMENT FOUND
- DSG REBAR AND CAP LS NO. 382255 SET AT ALL REAR PROPERTY CORNERS
- CONCRETE ANCHOR SET IN SIDEWALK. EXTENSION DISTANCE ALONG THE PROPERTY LINE FROM THE THE FRONT PROPERTY CORNER IN FEET IS INDICATED BY ADJACENT NUMBER
- OPEN SPACE (DEDICATED AND CONVEYED TO THE CITY OF ST. GEORGE WITH THIS PLAT)
- NO BUILD ROCK FALL HAZARD AREA. NO HABITABLE STRUCTURES ALLOWED
- NO BUILD / NO DISTURB AREA, TO REMAIN NATURAL. NO STRUCTURES, BUILDINGS, LANDSCAPE, FENCES, WALLS, POOLS, ETC.

CURVE TABLE					
CURVE	RADIUS	LENGTH	DELTA	CH. BRG.	CH. DIST.
C1	500.000'	68.830'	7°53'14"	N25°17'00"W	68.775'
C2	310.000'	629.293'	116°18'33"	S79°29'39"E	526.674'
C3	500.000'	183.185'	20°59'29"	N31°51'20"E	182.162'
C4	500.000'	89.286'	10°13'53"	S26°28'32"W	89.167'
C5	445.920'	194.383'	24°58'34"	S44°04'45"W	192.848'
C6	470.920'	45.272'	5°30'29"	S53°48'48"W	45.254'
C7	470.920'	159.998'	19°28'00"	S41°19'28"W	159.229'
C8	530.000'	94.643'	10°13'53"	S26°28'32"W	94.517'
C9	470.000'	58.117'	7°05'05"	N24°54'08"E	58.080'
C10	470.000'	80.602'	9°49'33"	N33°21'27"E	80.504'
C11	470.000'	33.474'	4°04'51"	N40°18'39"E	33.467'
C12	280.000'	7.117'	1°27'23"	N43°04'46"E	7.117'
C13	280.000'	120.959'	24°45'06"	N56°11'00"E	120.021'
C14	280.000'	146.470'	29°58'19"	N83°32'42"E	144.806'
C15	280.000'	243.195'	49°45'52"	S56°35'13"E	235.623'
C16	280.000'	30.806'	6°18'13"	S28°33'10"E	30.790'
C17	280.000'	19.847'	4°03'41"	S23°22'13"E	19.843'

LINE TABLE		
LINE	BEARING	LENGTH
L1	N60°09'35"E	35.424'
L2	N60°09'35"E	18.122'
L3	N46°05'07"E	31.967'
L4	N44°52'12"E	40.488'
L5	N55°38'52"E	44.366'
L6	N48°39'38"E	47.228'
L7	N48°39'38"E	47.234'
L8	N41°21'18"E	41.524'
L9	N49°21'44"E	17.247'
L10	N31°33'19"E	14.583'
L11	N31°33'19"E	33.065'
L12	N6°17'18"E	45.815'
L13	N47°21'43"E	12.945'
L14	N66°21'12"E	68.281'
L15	N26°05'11"E	35.249'
L16	N5°55'02"E	47.979'
L17	N17°21'36"E	26.500'
L18	N29°24'14"E	21.943'
L19	N25°58'29"E	22.872'
L20	N43°11'21"E	7.787'
L21	N57°59'03"E	18.123'
L22	N69°46'54"E	18.295'
L23	N74°20'39"E	51.523'

60 0 60 120
SCALE IN FEET
1" = 60'

NOTICE OF CONDITIONS AND RESTRICTIONS

1. THERE EXISTS A 10.00 FOOT MUNICIPAL UTILITY EASEMENT ALONG ALL STREET SIDE PROPERTY LINES AND A 7.50 FOOT PUBLIC UTILITY AND DRAINAGE EASEMENT ALONG ALL SIDE AND BACK LOT LINES UNLESS OTHERWISE NOTED. NO BUILDINGS OR STRUCTURES, E.G. POOLS, WALLS, OR FENCES, WILL BE ALLOWED TO BE BUILT IN THE EASEMENT AREA AND THE OWNER BEARS THE RISK OF LOSS OR DAMAGE TO THOSE IMPROVEMENTS RESULTING FOR THE EXERCISE OF THE EASEMENT RIGHTS.

2. A GEOTECHNICAL INVESTIGATION WAS PERFORMED BY APPLIED GEOTECHNICAL ENGINEERING CONSULTANTS , INC.. THE INVESTIGATION RESULTS AND SPECIFIC RECOMMENDATIONS FOR THE CONSTRUCTION OF FOUNDATIONS, FLOOR SLABS, SOILS AND EXTERIOR FLATWORK ARE COMPILED IN A REPORT DATED FEBRUARY 23, 2018 AND REVISED JANUARY 17, 2019. THIS REPORT IS AVAILABLE FROM THE DEVELOPER AND A COPY IS ON FILE WITH THE CITY OF ST. GEORGE. OWNERS, BUILDERS, AND CONTRACTORS SHOULD BECOME FAMILIAR WITH THIS REPORT AND COMPLY WITH ITS SPECIFIC RECOMMENDATIONS AS SPECIAL CONSIDERATIONS MAY BE REQUIRED FOR STRUCTURES AND LANDSCAPING.

3. THIS SUBDIVISION IS LOCATED ADJACENT TO AGRICULTURAL PROPERTIES UPON WHICH LARGE ANIMAL ARE ALLOWED. AGRICULTURAL ACTIVITIES CONDUCTED IN THE NORMAL AND ORDINARY COURSE OF AGRICULTURAL OPERATIONS OR CONDUCTED IN ACCORDANCE WITH SOUND AGRICULTURAL PRACTICES ARE PRESUMED TO BE REASONABLE AND ARE NOT A NUISANCE UNDER THE LAW.

4. ALL ROCK WALLS ARE PRIVATE. ALL ROCK WALL REPAIR AND MAINTENANCE SHALL BE THE RESPONSIBILITY OF THE PROPERTY OWNER AND SUBSEQUENT PURCHASERS. SAID OWNER AND SUBSEQUENT PURCHASERS SHALL INDEMNIFY AND HOLD HARMLESS THE CITY OF ST. GEORGE, ITS OFFICERS, BOARDS, EMPLOYEES, AGENTS AND ASSIGNS FROM ANY CLAIMS RESULTING FROM ROCK WALLS LOCATED WITHIN THIS SUBDIVISION.

5. DWELLINGS ON LOTS 9, 10 AND 11 ARE TO BE BUILT AS "WALK-OUT BASEMENT" ONLY UNLESS OTHERWISE APPROVED BY THE CITY OF ST. GEORGE, BASED ON A SITE GRADING PLAN THAT MEETS ALL APPLICABLE CITY STANDARDS, INCLUDING BUT NOT LIMITED TO: GRADING, RETAINING WALL, AND SETBACK STANDARDS AND REQUIREMENTS. ROOF DRAINS ON THESE LOTS ARE REQUITED TO DRAIN TO THE FRONT OF EACH LOT.

6. WITH THE DEVELOPMENT OF EACH LOT, A SITE GRADING AND DRAINAGE PLAN IS REQUIRED TO BE SUBMITTED TO THE CITY WITH THE BUILDING PERMIT APPLICATION THAT ADDRESSES HOW DRAINAGE WILL BE CONVEYED TO THE PUBLIC RIGHT-OF-WAY OR RETAINED ON SITE AND THAT DRIVEWAY LOCATION MEETS CITY STANDARDS FOR LOCATION AND SLOPE.

HAZARD RESTRICTIONS:

7. BY PURCHASING PROPERTY WITHIN THIS PLAT THE PURCHASER ASSUMES ANY AND ALL RISK OF DAMAGE AND PERSONAL INJURY AS A RESULT OF ITS PROXIMITY TO A HILLSIDE AND/OR ROCK FALL AND DOES INDEMNIFY AND HOLD THE CITY OF ST. GEORGE, ITS OFFICERS, BOARDS, EMPLOYEES, AGENTS AND ASSIGNS, HARMLESS FROM ANY AND ALL CLAIMS OF INJURY, DAMAGE, EXPENSE OR LOSS OF WHATEVER NATURE WHICH MAY ARISE AS A DIRECT OR INDIRECT RESULT OF HAZARDS REFERRED TO HEREIN.

Subdivision Final Plat for

BANDED HILLS SUBDIVISION

Located in Section 15, Township 43 South, Range 15 West, SLB&M

St.George
Community Development

ITEM 2
Hillside Permit

HILLSIDE REVIEW BOARD AGENDA REPORT: **09/29/2021**

Black Ridge Hotel Hillside Development Permit (Case No. 2021-HS-008)		
Request:	A Hillside Development Permit to allow disturbance of areas in the 20-30%, 30-40% and 40% and above slope areas. This application is in anticipation of the construction of a new hotel.	
Applicant:	New England Alliance, LLC / Glen Overton	
Representative:	Oscar Covarrubias	
Location:	Northwest corner of 250 W. Street and Blackridge Drive	
General Plan:	COM (Commercial)	
Existing Zoning:	PD-C (Planned Development Commercial)	
Surrounding Zoning:	North	PD-C (Planned Development Commercial)
	South	R-1-10 (Single Family Residential)
	East	PD-C (Planned Development Commercial) and C-2 (Highway Commercial)
	West	R-1-10 (Single Family Residential)
Land Area:	Approximately 16.47 acres	



BACKGROUND

This is a request to obtain a hillside permit for the property located on the northwest corner of 250 W. Street and Blackridge Drive. The applicants are proposing to build a hotel on this property. This hotel was originally approved in 2019 (2019-HS-005) to be built on the property located at 1150 South and 250 West (the northeast corner of 250 W St. and Blackridge Dr.). However, the applicants have decided to move locations, directly across the street.

This property is in the hillside overlay. Section 10-13A-7 of the Zoning Regulations 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.

SLOPES TABLE

NUMBER	MINIMUM SLOPE	MAXIMUM SLOPE	COLOR
1	1.00%	20.00%	
2	20.00%	30.00%	
3	30.00%	40.00%	
4	40.00%	100.00%	

This location has previously been disturbed and already has retaining elements along the street right-of-ways. The applicant has provided a slope analysis table in relation to the slope analysis map.

In the Slope Analysis Breakdown, the percentage of slopes is shown in three different areas:

1. Total Phase Area
   This area is outlined in blue.
2. Net Area
   This is outlined with a black dotted line. Nothing outside this line will be disturbed.
3. Net Area Less Artificial Slope
   Since much of this area has previously been disturbed. These calculations show the percentage of slope being disturbed that is not manmade.

SLOPE ANALYSIS BREAKDOWN:

TOTAL PHASE 1 AREA:	285,557.61 SF	
AREA 20% OR LESS:	180,271.09 SF	TOTAL % OF SITE: 63.2%
AREA 20%-30%:	27,112.97 SF	TOTAL % OF SITE: 9.5%
AREA 30%-40%:	23,843.59 SF	TOTAL % OF SITE: 8.3%
AREA 40% OR MORE:	54,329.99 SF	TOTAL % OF SITE: 19.0%

NET AREA PHASE 1: LIMITS OF DISTURBANCE:	230,986.07 SF	
AREA 20% OR LESS:	152,463.07 SF	TOTAL % OF SITE: 66%
AREA 20%-30%:	25,040.45 SF	TOTAL % OF SITE: 10.8%
AREA 30%-40%:	20,878.54 SF	TOTAL % OF SITE: 9.1%
AREA 40% OR MORE:	32,604.01 SF	TOTAL % OF SITE: 14.11%

NET AREA LESS ARTIFICIAL SLOPE:	230,986.07 SF	
AREA 20% OR LESS:	188,346.20 SF	TOTAL % OF SITE: 82%
AREA 20%-30%:	18,372.10 SF	TOTAL % OF SITE: 8%
AREA 30%-40%:	13,190.83 SF	TOTAL % OF SITE: 6%
AREA 40% OR MORE:	11,076.94 SF	TOTAL % OF SITE: 4%

BASED ON THE NET AREA LESS ARTIFICIAL SLOPE CALCULATIONS, THE AREAS BEING DISTURBED AND DEVELOPED ARE UNDER THE PERCENTAGES IN THE CITY ORDINANCE.

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.

B. For those portions of a proposed development with natural slopes twenty percent (20%) or less, development density follows the density and development standards in the underlying zone.

C. For those portions of a proposed development with natural slopes from twenty-one percent (21%) to thirty percent (30%), development activity shall not disturb more than thirty percent (30%) of the parcel within this slope category.

D. For those portions of a proposed development with natural slopes from thirty-one percent (31%) to forty percent (40%), development activity shall not disturb more than five percent (5%) of the area within this slope category.

E. A proposed development may not disturb slopes in excess of forty percent (40%).

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.

EXHIBITS PROVIDED

1. Exhibit A – Site Plan/ Grading and Drainage Plan

"Exhibit A" in the packet shows the overall site plan for the project as well as curb and gutter, utility connections, storm water connections, signage, cross sections of grading, and an expanded slope analysis

2. Exhibit B – Slope Analysis Map
   "Exhibit B" in the packet shows the overall slope analysis for the area to be disturbed.

3. Exhibit C – Drainage Report
   "Exhibit C" – This is the drainage report for this location.

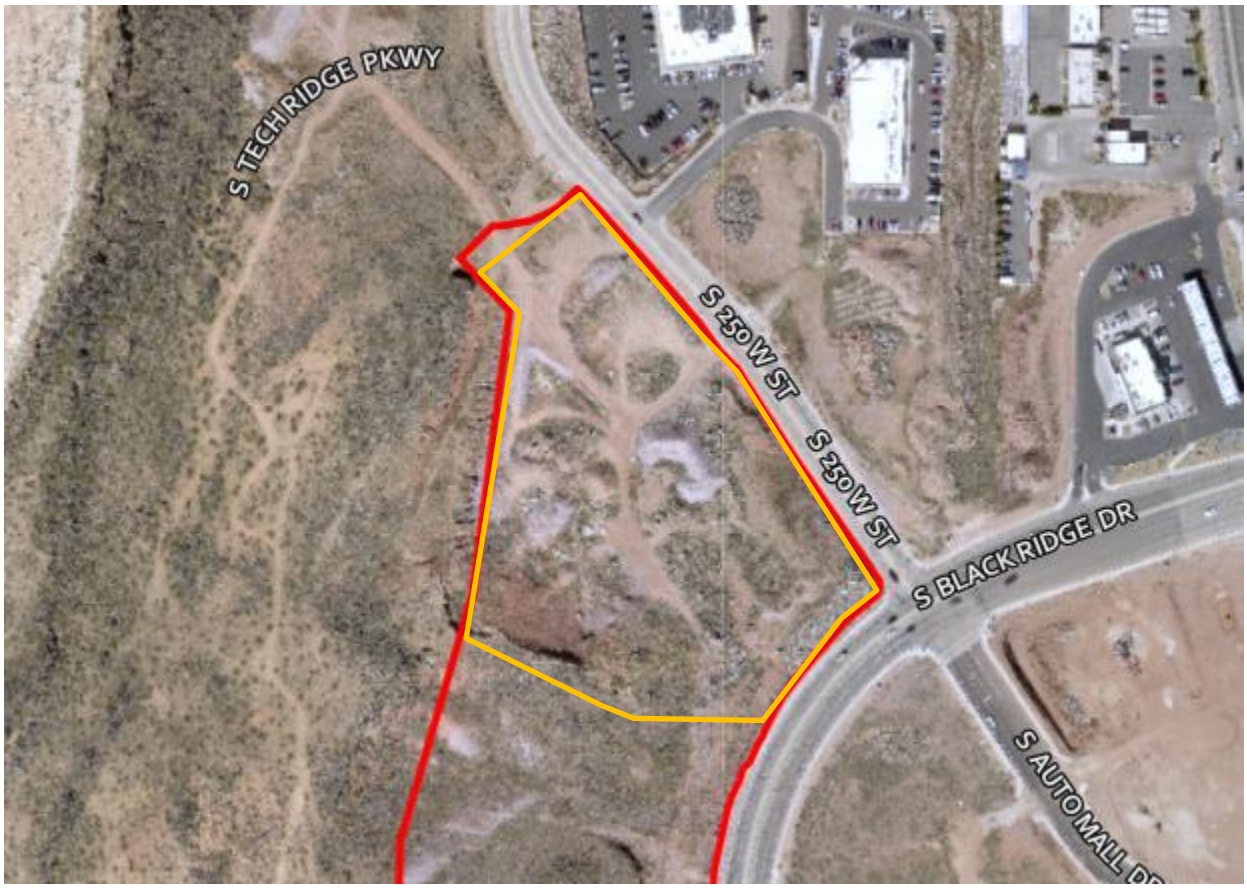
4. Exhibit D – Geotechnical Report
   "Exhibit D" is a report investigating the geological hazards, slope stability, subsurface, and groundwater at this location.

5. Exhibit E – Landscape Plan
   "Exhibit E" is the landscape plan for the new hotel.

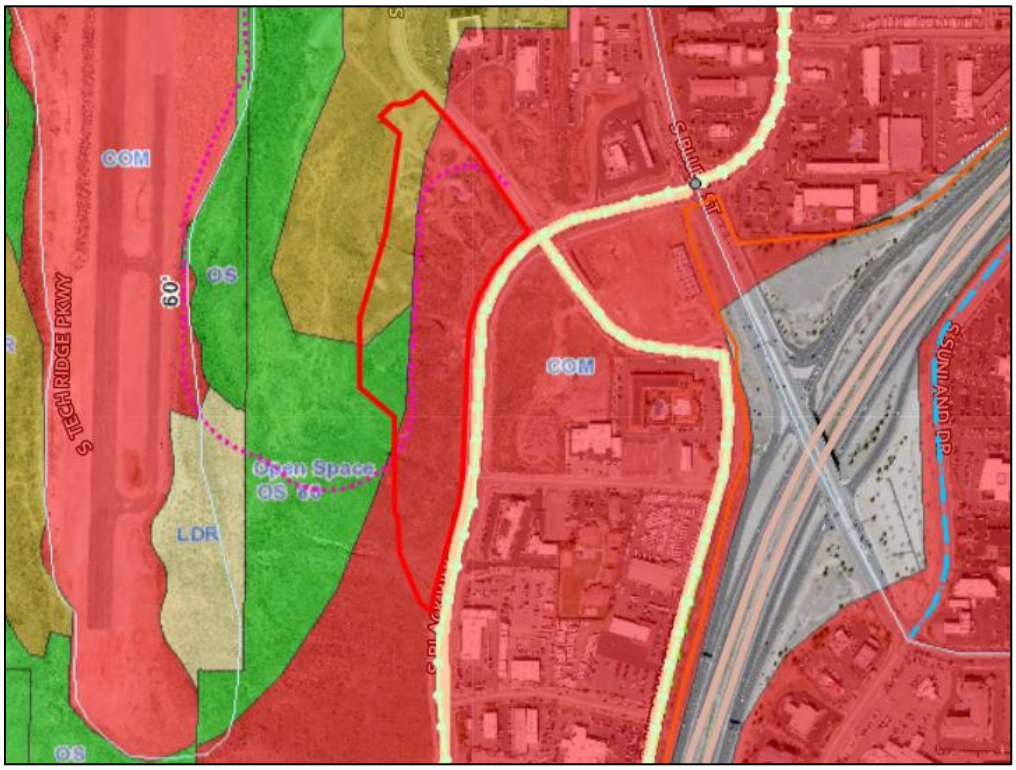
RECOMMENDATION

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).

Area to be Disturbed



General Plan - COM



Zoning - R-2

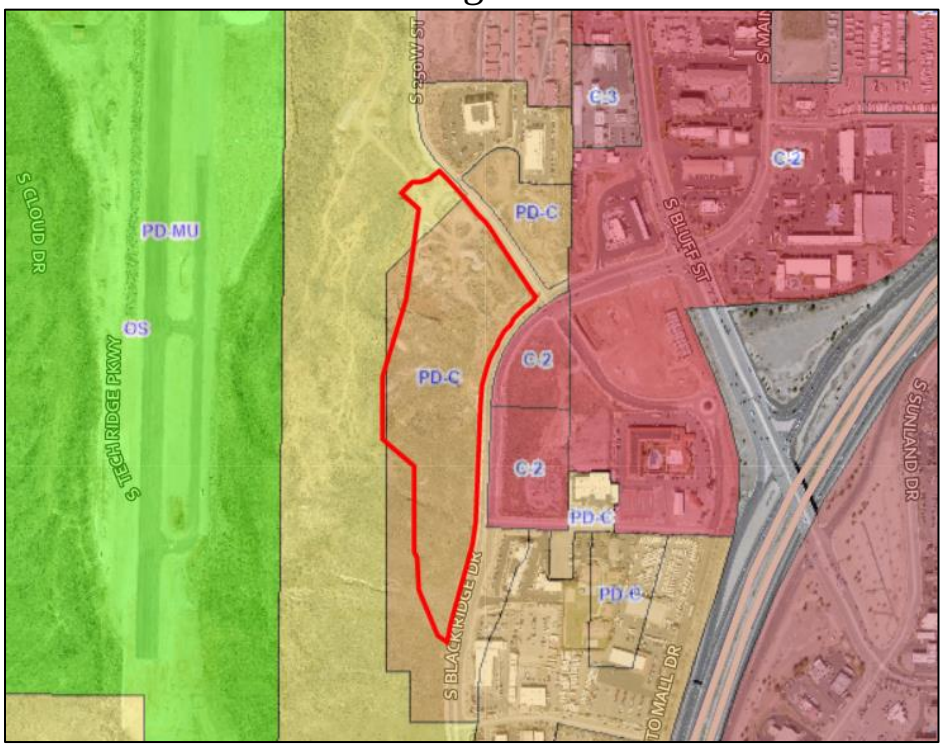


Exhibit A
SITE PLAN/GRADING & DRAINAGE PLAN

811
Know what's below.
Call before you dig.

ST. GEORGE HOTEL

250 WEST, BLACK RIDGE DR.
ST. GEORGE, UTAH

FOR REVIEW
NOT FOR CONSTRUCTION

DATE PRINTED
07/28/2021

INDEX OF DRAWINGS

C-001	GENERAL NOTES
C-200	SITE PLAN
C-300	GRADING AND DRAINAGE PLAN
C-500	DETAILS
C-CS	SITE CROSS SECTIONS
C-SA	SLOPE ANALYSIS PLAN

NOTICE TO CONTRACTOR

ALL CONTRACTORS AND SUBCONTRACTORS PERFORMING WORK SHOWN ON OR RELATED TO THESE PLANS SHALL CONDUCT THEIR OPERATIONS SO THAT ALL EMPLOYEES ARE PROVIDED A SAFE PLACE TO WORK AND THE PUBLIC IS PROTECTED. ALL CONTRACTORS AND SUBCONTRACTORS SHALL COMPLY WITH THE "OCCUPATIONAL SAFETY AND HEALTH REGULATIONS OF THE U.S. DEPARTMENT OF LABOR AND THE STATE OF UTAH DEPARTMENT OF INDUSTRIAL RELATIONS CONSTRUCTION SAFETY ORDERS." THE CIVIL ENGINEER SHALL NOT BE RESPONSIBLE IN ANY WAY FOR THE CONTRACTORS AND SUBCONTRACTORS COMPLIANCE WITH SAID REGULATIONS AND ORDERS.

CONTRACTOR FURTHER AGREES TO ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB-SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THIS PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY, THAT THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS, AND THAT THE CONTRACTOR SHALL DEFEND, INDEMNIFY AND HOLD THE OWNER AND THE CIVIL ENGINEER HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT, EXCEPTING FOR LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF THE OWNER OR ENGINEER.

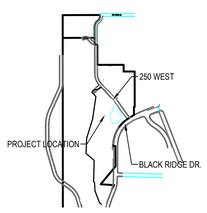
NOTICE TO DEVELOPER/CONTRACTOR

UNAPPROVED DRAWINGS REPRESENT WORK IN PROGRESS, ARE SUBJECT TO CHANGE, AND DO NOT CONSTITUTE A FINISHED ENGINEERING PRODUCT. ANY WORK UNDERTAKEN BY DEVELOPER OR CONTRACTOR BEFORE PLANS ARE APPROVED IS UNDERTAKEN AT THE SOLE RISK OF THE DEVELOPER, INCLUDING BUT NOT LIMITED TO BIDS, ESTIMATION, FINANCING, BONDING, SITE CLEARING, GRADING, INFRASTRUCTURE CONSTRUCTION, ETC.

UTILITY DISCLAIMER

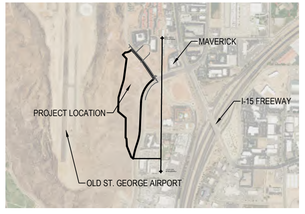
THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND / OR ELEVATIONS OF EXISTING UTILITIES AS SHOWN ON THESE PLANS IS BASED ON RECORDS OF THE VARIOUS UTILITY COMPANIES AND WHERE POSSIBLE, MEASUREMENTS TAKEN IN THE FIELD. THE INFORMATION IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE. THE CONTRACTOR MUST CALL THE LOCAL UTILITY LOCATION CENTER AT LEAST 48 HOURS BEFORE ANY EXCAVATION TO REQUEST EXACT FIELD LOCATIONS OF UTILITIES. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES WHICH CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THE PLANS.

KEY MAP



NO SCALE

VICINITY MAP



NO SCALE

GENERAL NOTES

1. ALL WORK SHALL CONFORM TO ST. GEORGE CITY STANDARDS & SPECIFICATIONS.
2. CALL BLUE STAKES AT LEAST 48 HOURS PRIOR TO THE COMMENCEMENT OF ANY CONSTRUCTION ACTIVITIES.
3. BENCHMARK ELEVATION = NORTH QUARTER CORNER SECTION 25, T3N, R1W SALT LAKE BASE & MERIDIAN ELEV. = 42XX.XX.

ENSIGN
THE STANDARD IN ENGINEERING

CEDAR CITY
88 E. Fiddlers Canyon Road
Suite 210
Cedar City, UT. 84720
Phone: 435.865.1453

SALT LAKE CITY
Phone: 801.255.0529

TOOELE
Phone: 435.843.3590

LAYTON
Phone: 801.547.1100

RICHFIELD
Phone: 435.896.2983

WWW.ENSIGNENG.COM

FOR:
OSCAR COVARRUBIAS
784 RESORT DR.
MIDWAY, UTAH 84049
CONTACT:
OSCAR@LODGINGANDHOSPITALITY.COM
PHONE: 801-828-0234

ST. GEORGE HOTEL
PHASE I
ST GEORGE
ST. GEORGE, UTAH

PROJECT NUMBER 10928
PRINT DATE 7/28/21
DRAWN BY
CHECKED BY
PROJECT MANAGER

GENERAL NOTES

1. ALL CONSTRUCTION MUST STRICTLY FOLLOW THE STANDARDS AND SPECIFICATIONS SET FORTH BY: THE DESIGN ENGINEER, LOCAL AGENCY JURISDICTION, APWA (CURRENT EDITION), AND THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (M.U.T.C.D.). THE ORDER LISTED ABOVE IS ARRANGED BY SENIORITY. THE LATEST EDITION OF ALL STANDARDS AND SPECIFICATIONS MUST BE ADHERED TO. IF A CONSTRUCTION PRACTICE IS NOT SPECIFIED BY ANY OF THE LISTED SOURCES, CONTRACTOR MUST CONTACT DESIGN ENGINEER FOR DIRECTION.

2. CONTRACTOR TO STRICTLY FOLLOW THE MOST CURRENT COPY OF THE SOILS REPORT FOR THIS PROJECT. ALL GRADING INCLUDING BUT NOT LIMITED TO CUT, FILL, COMPACTION, ASPHALT SECTION, SUBBASE, TRENCH EXCAVATION/BACKFILL, SITE GRUBBING, AND FOOTINGS MUST BE COORDINATED DIRECTLY WITH SOILS REPORT.

3. CONTRACTOR MUST VERIFY ALL EXISTING CONDITIONS BEFORE BIDDING, AND BRING UP ANY QUESTIONS BEFORE SUBMITTING BID.

4. CONTRACTOR SHALL PROVIDE A CONSTRUCTION SCHEDULE IN ACCORDANCE WITH THE CITY, STATE, OR COUNTY REGULATIONS FOR WORKING IN THE PUBLIC WAY.

5. CONTRACTOR SHALL BE RESPONSIBLE FOR DUST CONTROL ACCORDING TO GOVERNING AGENCY STANDARDS. WET DOWN DRY MATERIALS AND RUBBISH TO PREVENT BLOWING.

6. CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE TO ADJACENT SURFACE IMPROVEMENTS.

7. CONTRACTOR SHALL BE RESPONSIBLE FOR CORRECTING ANY SETTLEMENT OF OR DAMAGE TO EXISTING UTILITIES.

8. THE CONTRACTOR IS RESPONSIBLE TO FURNISH ALL MATERIALS TO COMPLETE THE PROJECT.

9. ALL EXPOSED SURFACES WILL HAVE A TEXTURED FINISH, RUBBED, OR BROOMED. ANY "PLASTERING" OF NEW CONCRETE WILL BE DONE WHILE IT IS STILL "GREEN".

10. PRIOR TO STARTING CONSTRUCTION, THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THAT ALL REQUIRED PERMITS AND APPROVALS HAVE BEEN OBTAINED. NO CONSTRUCTION OR FABRICATION SHALL BEGIN UNTIL THE CONTRACTOR HAS RECEIVED AND THOROUGHLY REVIEWED ALL PLANS AND OTHER DOCUMENTS APPROVED BY ALL OF THE PERMITTING AUTHORITIES.

11. THE LOCATIONS OF UNDERGROUND FACILITIES SHOWN ON THESE PLANS ARE BASED ON FIELD SURVEYS AND LOCAL UTILITY COMPANY RECORDS. IT SHALL BE THE CONTRACTOR'S FULL RESPONSIBILITY TO CONTACT THE VARIOUS UTILITY COMPANIES TO LOCATE THEIR FACILITIES PRIOR TO PROCEEDING WITH CONSTRUCTION. NO ADDITIONAL COMPENSATION SHALL BE PAID TO THE CONTRACTOR FOR DAMAGE AND REPAIR TO THESE FACILITIES CAUSED BY HIS WORK FORCE. CONTRACTOR SHALL START INSTALLATION AT LOW POINT OF ALL NEW GRAVITY UTILITY LINES.

12. ALL DIMENSIONS, GRADES, AND UTILITY DESIGN SHOWN ON THE PLANS SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION. CONTRACTOR SHALL NOTIFY THE ENGINEER IF ANY DISCREPANCIES EXIST, PRIOR TO PROCEEDING WITH CONSTRUCTION FOR NECESSARY PLAN OR GRADE CHANGES. NO EXTRA COMPENSATION SHALL BE PAID TO THE CONTRACTOR FOR WORK HAVING TO BE REDONE DUE TO THE DIMENSIONS OR GRADES SHOWN INCORRECTLY ON THESE PLANS, IF SUCH NOTIFICATION HAS NOT BEEN GIVEN.

13. NO CHANGE IN DESIGN LOCATION OR GRADE WILL BE MADE BY THE CONTRACTOR WITHOUT THE WRITTEN APPROVAL OF THE PROJECT ENGINEER.

14. NATURAL VEGETATION AND SOIL COVER SHALL NOT BE DISTURBED PRIOR TO ACTUAL CONSTRUCTION OF A REQUIRED FACILITY OR IMPROVEMENT. MASS CLEARING OF THE SITE IN ANTICIPATION OF CONSTRUCTION SHALL BE AVOIDED.

15. CONTRACTOR SHALL BE RESPONSIBLE FOR FURNISHING, MAINTAINING, OR RESTORING ALL MONUMENTS AND MONUMENT REFERENCE MARKS WITHIN THE PROJECT SITE. CONTACT THE CITY OR COUNTY SURVEYOR FOR MONUMENT LOCATIONS AND CONSTRUCTION DETAILS.

16. EXISTING UTILITY INFORMATION SHOWN IS FOR INFORMATIONAL PURPOSES ONLY. IT IS DERIVED FROM ON-SITE SURVEY AND/OR UTILITY MAPPING PROVIDED TO THE ENGINEER, AND THEREFORE UTILITIES MAY NOT BE LOCATED CORRECTLY, EITHER HORIZONTALLY OR VERTICALLY, AND MAY NOT BE ALL INCLUSIVE. CONTRACTOR IS REQUIRED TO FOLLOW THE PROCEDURE OUTLINED BELOW:
    - 16.1. CONTRACTOR IS REQUIRED TO LOCATE AND POTHOLE ALL EXISTING UTILITY LINES (BOTH HORIZONTALLY AND VERTICALLY) THAT AFFECT THE PROJECT CONSTRUCTION, EITHER ON-SITE OR OFF-SITE, AND DETERMINE IF THERE ARE ANY CONFLICTS WITH THE DESIGN OF THE SITE AS SHOWN ON THE APPROVED PLANS PRIOR TO ANY CONSTRUCTION. IF IT IS DETERMINED THAT CONFLICTS EXIST BETWEEN EXISTING UTILITIES AND DESIGN UTILITIES (OR ANOTHER ASPECT OF PROPOSED CONSTRUCTION) THE ENGINEER MUST BE NOTIFIED IMMEDIATELY TO CORRECT THE CONFLICTS BEFORE ANY WORK CAN BEGIN. IF THE CONTRACTOR FAILS TO FOLLOW THIS ABSOLUTE REQUIREMENT AND CONFLICTS ARISE DURING CONSTRUCTION THE CONTRACTOR WILL BEAR THE SOLE RESPONSIBILITY TO FIX THE CONFLICTS.
    - 16.2. CONTRACTOR IS REQUIRED TO VERIFY THAT PROPER COVER AND PROTECTION OF EXISTING UTILITY LINES IS MAINTAINED OR ATTAINED WITHIN THE DESIGN ONCE VERIFICATION OF THE EXISTING UTILITIES IS COMPLETED AS OUTLINED IN 16.1 ABOVE.
    - 16.3. IN ADDITION TO 16.1 AND 16.2 ABOVE THE CONTRACTOR WILL VERIFY DEPTHS OF UTILITIES IN THE FIELD BY "POTHOLING" A MINIMUM OF 300 FEET AHEAD OF PROPOSED PIPELINE CONSTRUCTION TO AVOID POTENTIAL CONFLICTS WITH DESIGNED PIPELINE ALIGNMENT AND GRADE AND EXISTING UTILITIES.
    - 16.4. IF A CONFLICT ARISES BETWEEN EXISTING UTILITIES AND DESIGN UTILITIES (OR ANOTHER ASPECT OF PROPOSED CONSTRUCTION) AS DETERMINED UNDER 16.1, 16.2 OR 16.3 THE CONTRACTOR WILL NOTIFY THE ENGINEER IMMEDIATELY TO RESOLVE THE CONFLICT.
    - 16.5. IF A CONFLICT ARISES BETWEEN EXISTING UTILITIES AND DESIGN UTILITIES (OR ANOTHER ASPECT OF PROPOSED CONSTRUCTION) RESULTING FROM THE CONTRACTOR'S NEGLIGENCE TO IDENTIFY AND/OR "POTHOLE" EXISTING UTILITIES AS REQUIRED IN 16.1, 16.2 AND 16.3 ABOVE, THE CONTRACTOR WILL BE REQUIRED TO RESOLVE THE CONFLICT WITHOUT ADDITIONAL COST OR CLAIM TO THE OWNER OR ENGINEER.

17. ANY AREA OUTSIDE THE LIMIT OF WORK THAT IS DISTURBED SHALL BE RESTORED TO ITS ORIGINAL CONDITION AT NO COST TO OWNER.

18. CONSULT ALL OF THE DRAWINGS AND SPECIFICATIONS FOR COORDINATION REQUIREMENTS BEFORE COMMENCING CONSTRUCTION.

19. AT ALL LOCATIONS WHERE EXISTING PAVEMENT ABUTS NEW CONSTRUCTION, THE EDGE OF THE EXISTING PAVEMENT SHALL BE SAWCUT TO A CLEAN, SMOOTH EDGE.

20. ALL CONSTRUCTION AND MATERIALS SHALL BE IN ACCORDANCE WITH THE MOST RECENT, ADOPTED EDITION OF ADA ACCESSIBILITY GUIDELINES.

21. CONTRACTOR SHALL, AT THE TIME OF BIDDING AND THROUGHOUT THE PERIOD OF THE CONTRACT, BE LICENSED IN THE STATE OF UTAH AND SHALL BE BONDABLE FOR AN AMOUNT REQUIRED BY THE OWNER.

22. CONTRACTOR SHALL BE RESPONSIBLE TO PROVIDE ALL WATER, POWER, SANITARY FACILITIES AND TELEPHONE SERVICES AS REQUIRED FOR THE CONTRACTOR'S USE DURING CONSTRUCTION.

23. CONTRACTOR SHALL BE RESPONSIBLE FOR ADEQUATELY SCHEDULING INSPECTION AND TESTING OF ALL FACILITIES CONSTRUCTED UNDER THIS CONTRACT. ALL TESTING SHALL CONFORM TO THE REGULATORY AGENCY'S STANDARD SPECIFICATIONS. ALL RE-TESTING AND/OR RE-INSPECTION SHALL BE PAID FOR BY THE CONTRACTOR.

24. IF EXISTING IMPROVEMENTS NEED TO BE DISTURBED AND/OR REMOVED FOR THE PROPER PLACEMENT OF IMPROVEMENTS TO BE CONSTRUCTED BY THESE PLANS, THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING EXISTING IMPROVEMENTS FROM DAMAGE. COST OF REPLACING OR REPAIRING EXISTING IMPROVEMENTS SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEMS REQUIRING REMOVAL AND/OR REPLACEMENT. THERE WILL BE NO EXTRA COST DUE TO THE CONTRACTOR FOR REPLACING OR REPAIRING EXISTING IMPROVEMENTS.

25. WHENEVER EXISTING FACILITIES ARE REMOVED, DAMAGED, BROKEN, OR CUT IN THE INSTALLATION OF THE WORK COVERED BY THESE PLANS OR SPECIFICATIONS, SAID FACILITIES SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE WITH MATERIALS EQUAL TO OR BETTER THAN THE MATERIALS USED IN THE ORIGINAL EXISTING FACILITIES. THE FINISHED PRODUCT SHALL BE SUBJECT TO THE APPROVAL OF THE OWNER, THE ENGINEER, AND THE RESPECTIVE REGULATORY AGENCY.

26. CONTRACTOR SHALL MAINTAIN A NEATLY MARKED SET OF FULL-SIZE RECORD DRAWINGS SHOWING THE FINAL LOCATION AND LAYOUT OF ALL STRUCTURES AND OTHER FACILITIES. RECORD DRAWINGS SHALL REFLECT CHANGE ORDERS, ACCOMMODATIONS, AND ADJUSTMENTS TO ALL IMPROVEMENTS CONSTRUCTED. WHERE NECESSARY, SUPPLEMENTAL DRAWINGS SHALL BE PREPARED AND SUBMITTED BY THE CONTRACTOR. PRIOR TO ACCEPTANCE OF THE PROJECT, THE CONTRACTOR SHALL DELIVER TO THE ENGINEER ONE SET OF NEATLY MARKED RECORD DRAWINGS SHOWING THE INFORMATION REQUIRED ABOVE. RECORD DRAWINGS SHALL BE REVIEWED AND THE COMPLETE RECORD DRAWING SET SHALL BE CURRENT WITH ALL CHANGES AND DEVIATIONS REDLINED AS A PRECONDITION TO THE FINAL PROGRESS PAYMENT APPROVAL AND/OR FINAL ACCEPTANCE.

27. WHERE THE PLANS OR SPECIFICATIONS DESCRIBE PORTIONS OF THE WORK IN GENERAL TERMS BUT NOT IN COMPLETE DETAIL, IT IS UNDERSTOOD THAT ONLY THE BEST GENERAL PRACTICE IS TO PREVAIL AND THAT ONLY MATERIALS AND WORKMANSHIP OF THE FIRST QUALITY ARE TO BE USED.

28. ALL EXISTING GATES AND FENCES TO REMAIN UNLESS OTHERWISE NOTED ON PLANS. PROTECT ALL GATES AND FENCES FROM DAMAGE.

29. ALL EXISTING TREES ARE TO REMAIN UNLESS OTHERWISE NOTED ON PLANS. PROTECT ALL TREES FROM DAMAGE.

30. ASPHALT MIX DESIGN MUST BE SUBMITTED AND APPROVED BY THE GOVERNING AGENCY PRIOR TO THE PLACEMENT.

31. CONTRACTORS ARE RESPONSIBLE FOR ALL OSHA REQUIREMENTS ON THE PROJECT SITE.

32. A UPDES (UTAH POLLUTANT DISCHARGE ELIMINATION SYSTEM) PERMIT IS REQUIRED FOR ALL CONSTRUCTION ACTIVITIES 1 ACRE OR MORE AS WELL AS A STORM WATER POLLUTION PREVENTION PLAN.

UTILITY NOTES

1. ALL CONSTRUCTION AND MATERIALS SHALL BE IN ACCORDANCE WITH THESE CONTRACT DOCUMENTS, CITY AND STATE REQUIREMENTS AND THE MOST RECENT EDITIONS OF THE FOLLOWING: THE INTERNATIONAL PLUMBING CODE, UTAH DRINKING WATER REGULATIONS, APWA MANUAL OF STANDARD PLANS AND SPECIFICATIONS. THE CONTRACTOR IS REQUIRED TO ADHERE TO ALL OF THE ABOVE-MENTIONED DOCUMENTS UNLESS OTHERWISE NOTED AND APPROVED BY THE ENGINEER.

2. CONTRACTOR SHALL COORDINATE LOCATION OF NEW "DRY UTILITIES" WITH THE APPROPRIATE UTILITY COMPANY, INCLUDING BUT NOT LIMITED TO: TELEPHONE & INTERNET SERVICE, GAS SERVICE, CABLE, AND POWER.

3. EXISTING UTILITIES HAVE BEEN SHOWN ON THE PLANS BASED ON ON-SITE SURVEY. PRIOR TO COMMENCING ANY WORK, IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO HAVE EACH UTILITY COMPANY LOCATE, IN THE FIELD, THEIR MAIN AND SERVICE LINES. THE CONTRACTOR SHALL NOTIFY BLUE STAKES AT 1-800-662-4111 48 HOURS IN ADVANCE OF PERFORMING ANY EXCAVATION WORK. THE CONTRACTOR SHALL RECORD THE BLUE STAKES ORDER NUMBER AND FURNISH ORDER NUMBER TO OWNER AND ENGINEER PRIOR TO ANY EXCAVATION. IT WILL BE THE CONTRACTOR'S SOLE RESPONSIBILITY TO DIRECTLY CONTACT ANY OTHER UTILITY COMPANIES THAT ARE NOT MEMBERS OF BLUE STAKES. IT SHALL BE THE CONTRACTOR'S SOLE RESPONSIBILITY TO PROTECT ALL EXISTING UTILITIES SO THAT NO DAMAGE RESULTS TO THEM DURING THE PERFORMANCE OF THIS CONTRACT. ANY REPAIRS NECESSARY TO DAMAGED UTILITIES SHALL BE PAID FOR BY THE CONTRACTOR. THE CONTRACTOR SHALL BE REQUIRED TO COOPERATE WITH OTHER CONTRACTORS AND UTILITY COMPANIES INSTALLING NEW STRUCTURES, UTILITIES AND SERVICE TO THE PROJECT.

4. CARE SHOULD BE TAKEN IN ALL EXCAVATIONS DUE TO POSSIBLE EXISTENCE OF UNRECORDED UTILITY LINES. EXCAVATION REQUIRED WITHIN PROXIMITY OF EXISTING UTILITY LINES SHALL BE DONE BY HAND. CONTRACTOR SHALL REPAIR ANY DAMAGE TO EXISTING UTILITY LINES OR STRUCTURES INCURRED DURING CONSTRUCTION OPERATIONS AT CONTRACTOR'S EXPENSE.

5. TRENCH BACKFILL MATERIAL AND COMPACTION TESTS ARE TO BE TAKEN PER APWA STANDARD SPECIFICATIONS (CURRENT EDITION), SECTION 02320 - BACKFILLING TRENCHES, OR AS REQUIRED BY THE GEOTECHNICAL REPORT IF NATIVE MATERIALS ARE USED. NO NATIVE MATERIALS ARE ALLOWED IN THE PIPE ZONE. THE MAXIMUM LIFT FOR BACKFILLING EXCAVATIONS IS DETERMINED BY THE GEOTECHNICAL RECOMMENDATIONS.

6. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR CONFORMING TO LOCAL AND FEDERAL CODES GOVERNING SHORING AND BRACING OF EXCAVATIONS AND TRENCHES AND FOR THE PROTECTION OF WORKERS.

7. THE CONTRACTOR IS REQUIRED TO KEEP ALL CONSTRUCTION ACTIVITIES WITHIN THE APPROVED PROJECT LIMITS. THIS INCLUDES, BUT IS NOT LIMITED TO VEHICLE AND EQUIPMENT STAGING, MATERIAL STORAGE AND LIMITS OF TRENCH EXCAVATION. IT IS THE CONTRACTOR'S RESPONSIBILITY TO OBTAIN PERMISSION AND/OR EASEMENTS FROM THE APPROPRIATE GOVERNING ENTITY AND/OR INDIVIDUAL PROPERTY OWNER(S) FOR WORK OR STAGING OUTSIDE OF THE PROJECT LIMITS.

8. THE CONTRACTOR IS RESPONSIBLE FOR REPAIRING ANY DAMAGE, CAUSED BY ANY CONDITION INCLUDING SETTLEMENT, TO EXISTING UTILITIES FROM WORK PERFORMED AT OR NEAR EXISTING UTILITIES. THE CONTRACTOR SHALL TAKE ALL MEASURES NECESSARY TO PROTECT ALL EXISTING PUBLIC AND PRIVATE ROADWAY AND UTILITY FACILITIES. DAMAGE TO EXISTING FACILITIES CAUSED BY THE CONTRACTOR MUST BE REPAIRED BY THE CONTRACTOR AT HIS/HER EXPENSE TO THE SATISFACTION OF THE OWNER OF SAID FACILITIES.

9. ALL WATER LINE AND SEWER LINE INSTALLATION AND TESTING TO BE IN ACCORDANCE WITH LOCAL GOVERNING AGENCY'S STANDARDS AND SPECIFICATIONS.

10. ALL MANHOLES, HYDRANTS, VALVES, CLEANOUT BOXES, CATCH BASINS, METERS, ETC. MUST BE RAISED OR LOWERED TO FINAL GRADE PER APWA (CURRENT EDITION) STANDARDS AND INSPECTOR REQUIREMENTS. CONCRETE COLLARS MUST BE CONSTRUCTED ON ALL MANHOLES, CLEANOUT BOXES, CATCH BASINS, AND VALVES PER APWA STANDARDS. ALL MANHOLE, CATCH BASIN, OR CLEANOUT BOX CONNECTIONS MUST BE MADE WITH THE PIPE CUT FLUSH WITH THE INSIDE OF THE BOX AND GROUTED OR SEALED.

11. CONTRACTOR SHALL NOT ALLOW ANY GROUNDWATER OR DEBRIS TO ENTER THE NEW OR EXISTING PIPE DURING CONSTRUCTION.

12. SILT AND DEBRIS ARE TO BE CLEANED OUT OF ALL STORM DRAIN BOXES. CATCH BASINS ARE TO BE MAINTAINED IN A CLEANED CONDITION AS NEEDED UNTIL AFTER THE FINAL BOND RELEASE INSPECTION.

13. CONTRACTOR SHALL CLEAN ASPHALT, TAR OR OTHER ADHESIVES OFF OF ALL MANHOLE LIDS AND INLET GRATES TO ALLOW ACCESS.

14. EACH TRENCH SHALL BE EXCAVATED SO THAT THE PIPE CAN BE LAID TO THE ALIGNMENT AND GRADE AS REQUIRED. THE TRENCH WALL SHALL BE SO BRACED THAT THE WORKMEN MAY WORK SAFELY AND EFFICIENTLY. ALL TRENCHES SHALL BE DRAINED SO THE PIPE LAYING MAY TAKE PLACE IN DEWATERED CONDITIONS.

15. CONTRACTOR SHALL PROVIDE AND MAINTAIN AT ALL TIMES AMPLE MEANS AND DEVICES WITH WHICH TO REMOVE PROMPTLY AND TO PROPERLY DISPOSE OF ALL WATER ENTERING THE TRENCH EXCAVATION.

16. ALL SEWER LINES AND SEWER SERVICES SHALL HAVE A MINIMUM SEPARATION OF 10 FEET, EDGE TO EDGE, FROM THE WATER LINES. IF A 10 FOOT SEPARATION CAN NOT BE MAINTAINED, CONSTRUCT PER GOVERNING AGENCY'S MINIMUM SEPARATION STANDARDS.

17. CONTRACTOR SHALL INSTALL THRUST BLOCKING AT ALL WATERLINE ANGLE POINTS AND TEES.

18. ALL UNDERGROUND UTILITIES SHALL BE IN PLACE PRIOR TO INSTALLATION OF CURB, GUTTER, SIDEWALK AND STREET PAVING.

19. CONTRACTOR SHALL INSTALL MAGNETIC LOCATING TAPE CONTINUOUSLY OVER ALL NONMETALLIC PIPE.

TRAFFIC CONTROL AND SAFETY NOTES

1. TRAFFIC CONTROL AND STRIPING TO CONFORM TO THE CURRENT MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (M.U.T.C.D.).

2. BARRICADING AND DETOURING SHALL BE IN CONFORMANCE WITH THE REQUIREMENTS OF THE CURRENT M.U.T.C.D.

3. NO STREET SHALL BE CLOSED TO TRAFFIC WITHOUT WRITTEN PERMISSION FROM THE APPROPRIATE AGENCY, EXCEPT WHEN DIRECTED BY LAW ENFORCEMENT OR FIRE OFFICIALS.

4. THE CONTRACTOR SHALL MAKE EVERY EFFORT TO PROVIDE FOR SMOOTH TRAFFIC FLOW AND SAFETY. ACCESS SHALL BE MAINTAINED FOR ALL PROPERTIES ADJACENT TO THE WORK.

5. DETOURING OPERATIONS FOR A PERIOD OF SIX CONSECUTIVE CALENDAR DAYS, OR MORE, REQUIRE THE INSTALLATION OF TEMPORARY STREET STRIPING AND REMOVAL OF INTERFERING STRIPING BY SANDBLASTING. THE DETOURING STRIPING PLAN OR CONSTRUCTION TRAFFIC CONTROL PLAN MUST BE SUBMITTED TO THE GOVERNING AGENCY FOR REVIEW AND APPROVAL.

6. ALL TRAFFIC CONTROL DEVICES SHALL BE RESTORED TO THEIR ORIGINAL CONDITION AT THE END OF THE WORK TO THE SATISFACTION OF THE GOVERNING AGENCY.

7. TRAFFIC CONTROL DEVICES (TCDs) SHALL REMAIN VISIBLE AND OPERATIONAL AT ALL TIMES.

8. ALL PERMANENT TRAFFIC CONTROL DEVICES CALLED FOR HEREON SHALL BE IN PLACE AND IN FINAL POSITION PRIOR TO ALLOWING ANY PUBLIC TRAFFIC ONTO THE PORTIONS OF THE ROAD(S) BEING IMPROVED HEREUNDER, REGARDLESS OF THE STATUS OF COMPLETION OF PAVING OR OTHER OFF-SITE IMPROVEMENTS CALLED FOR BY THESE PLANS.

9. THE CONTRACTOR SHALL PROVIDE BARRICADES, SIGNS, FLASHERS, OTHER EQUIPMENT AND FLAG PERSONS NECESSARY TO INSURE THE SAFETY OF WORKERS AND VISITORS.

10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFYING UTAH TRANSIT AUTHORITY (UTA) IF THE CONSTRUCTION INTERRUPTS OR RELOCATES A BUS STOP OR HAS AN ADVERSE EFFECT ON BUS SERVICE ON THAT STREET TO ARRANGE FOR TEMPORARY RELOCATION OF STOP.

DEMOLITION NOTES

1. EXISTING UTILITY INFORMATION SHOWN IS FOR INFORMATIONAL PURPOSES ONLY. IT IS DERIVED FROM ON-SITE SURVEY AND MAY NOT BE LOCATED CORRECTLY AND IS NOT ALL INCLUSIVE. CONTRACTOR SHALL FIELD LOCATE ALL UTILITIES WITHIN THE PROJECT LIMITS BEFORE BEGINNING DEMOLITION/CONSTRUCTION.

2. THERE MAY BE BURIED UTILITIES WITHIN THE LIMITS OF DISTURBANCE THAT ARE NOT SHOWN ON THE PLANS DUE TO LACK OF MAPPING OR RECORD INFORMATION. CONTRACTOR SHALL NOTIFY THE ENGINEER WHEN UNEXPECTED UTILITIES ARE DISCOVERED.

3. THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR LOCATING AND PROTECTING FROM DAMAGE ALL EXISTING UTILITIES AND IMPROVEMENTS WHETHER OR NOT SHOWN ON THESE PLANS. THE FACILITIES AND IMPROVEMENTS ARE BELIEVED TO BE CORRECTLY SHOWN BUT THE CONTRACTOR IS REQUIRED TO SATISFY HIMSELF AS TO THE COMPLETENESS AND ACCURACY OF THE LOCATIONS. ANY CONTRACTOR PERFORMING WORK ON THIS PROJECT SHALL FAMILIARIZE HIMSELF WITH THE SITE AND SHALL BE HELD SOLELY RESPONSIBLE FOR ANY DAMAGE TO EXISTING FACILITIES RESULTING DIRECTLY, OR INDIRECTLY, FROM HIS OPERATIONS, WHETHER OR NOT SAID FACILITIES ARE SHOWN ON THESE PLANS.

GRADING AND DRAINAGE NOTES

1. SITE GRADING SHALL BE PERFORMED IN ACCORDANCE WITH THESE PLANS AND SPECIFICATIONS AND THE RECOMMENDATIONS SET FORTH IN THE GEOTECHNICAL REPORT AND ALL RELATED ADDENDUMS.

2. THE CONTRACTOR SHALL STRIP AND CLEAR THE TOPSOIL, MAJOR ROOTS AND ORGANIC MATERIAL FROM ALL PROPOSED BUILDING AND PAVEMENT AREAS PRIOR TO SITE GRADING. (THE TOPSOIL MAY BE STOCKPILED FOR LATER USE IN LANDSCAPED AREAS.)

3. THE CONTRACTOR SHALL REMOVE ALL ORGANIC MATERIAL AND OTHER DELETERIOUS MATERIALS PRIOR TO PLACING GRADING FILL OR BASE COURSE. THE AREA SHOULD BE PROOF-ROLLED TO IDENTIFY ANY SOFT AREAS. WHERE SOFT AREAS ARE ENCOUNTERED, THE CONTRACTOR SHALL REMOVE THE SOIL AND REPLACE WITH COMPACTED FILL.

4. ALL DEBRIS PILES AND BERMS SHOULD BE REMOVED AND HAULED AWAY FROM SITE OR USED AS GENERAL FILL IN LANDSCAPED AREAS.

5. THE CONTRACTOR SHALL CONSTRUCT THE BUILDING PAD TO THESE DESIGN PLANS AS PART OF THE SITE GRADING CONTRACT, AND STRICTLY ADHERE TO THE SITE PREPARATION AND GRADING REQUIREMENTS OUTLINED IN THE GEOTECHNICAL REPORT.

6. THE CONTRACTOR SHALL GRADE THE PROJECT SITE TO PROVIDE A SMOOTH TRANSITION BETWEEN NEW AND EXISTING ASPHALT, CURB AND GUTTER, AND ADJOINING SITE IMPROVEMENTS.

7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DAMAGE AND DEBRIS ON ADJACENT STREETS WHEN EQUIPMENT IS TRAVELING THOSE STREETS.

8. THE CONTRACTOR SHALL BE FAMILIAR WITH ALL CONDITIONS AND RECOMMENDATIONS OUTLINED IN THE GEOTECHNICAL REPORT AND TAKE ALL NECESSARY PRECAUTIONS AND RECOMMENDED PROCEDURES TO ASSURE SOUND GRADING PRACTICES.

9. THE CONTRACTOR SHALL TAKE APPROPRIATE GRADING MEASURES TO DIRECT STORM SURFACE RUNOFF TOWARDS CATCH BASINS.

10. THE LOCATIONS OF UNDERGROUND FACILITIES SHOWN ON THESE PLANS ARE BASED ON ON-SITE SURVEY. IT SHALL BE THE CONTRACTORS' FULL RESPONSIBILITY TO CONTACT THE VARIOUS UTILITY COMPANIES TO LOCATE THEIR FACILITIES PRIOR TO PROCEEDING WITH CONSTRUCTION. NO ADDITIONAL COMPENSATION SHALL BE PAID TO THE CONTRACTOR FOR DAMAGE AND REPAIR TO THESE FACILITIES CAUSED BY HIS WORK FORCE.

11. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO PERFORM ALL NECESSARY CUTS AND FILLS WITHIN THE LIMITS OF THIS PROJECT AND THE RELATED OFF-SITE WORK, SO AS TO GENERATE THE DESIRED SUBGRADE, FINISH GRADES, AND SLOPES SHOWN.

12. THE CONTRACTOR IS WARNED THAT AN EARTHWORK BALANCE WAS NOT NECESSARILY THE INTENT OF THIS PROJECT. ANY ADDITIONAL MATERIAL REQUIRED OR LEFTOVER MATERIAL FOLLOWING EARTHWORK OPERATIONS BECOMES THE RESPONSIBILITY OF THE CONTRACTOR.

13. THE GRADING CONTRACTOR IS RESPONSIBLE TO COORDINATE WITH THE OWNER TO PROVIDE FOR THE REQUIREMENTS OF THE PROJECT STORM WATER POLLUTION PREVENTION PLAN (SWPPP) AND ASSOCIATED PERMIT. ALL CONTRACTOR ACTIVITIES 1 ACRE OR MORE IN SIZE ARE REQUIRED TO PROVIDE A STORM WATER POLLUTION PREVENTION PLAN.

14. ALL CUT AND FILL SLOPES SHALL BE PROTECTED UNTIL EFFECTIVE EROSION CONTROL HAS BEEN ESTABLISHED.

15. THE USE OF POTABLE WATER WITHOUT A SPECIAL PERMIT FOR BUILDING OR CONSTRUCTION PURPOSES INCLUDING CONSOLIDATION OF BACKFILL OR DUST CONTROL IS PROHIBITED. THE CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS FOR CONSTRUCTION WATER FROM GOVERNING AGENCY.

16. THE CONTRACTOR SHALL MAINTAIN THE STREETS, SIDEWALKS, AND ALL OTHER PUBLIC RIGHT-OF-WAYS IN A CLEAN, SAFE AND USABLE CONDITION. ALL SPILLS OF SOIL, ROCK OR CONSTRUCTION DEBRIS SHALL BE PROMPTLY REMOVED FROM THE PUBLICLY-OWNED PROPERTY DURING CONSTRUCTION AND UPON COMPLETION OF THE PROJECT. ALL ADJACENT PROPERTY, PRIVATE OR PUBLIC, SHALL BE MAINTAINED IN A CLEAN, SAFE, AND USABLE CONDITION.

ABBREVIATIONS

APWA	AMERICAN PUBLIC WORKS ASSOCIATION
AR	ACCESSIBLE ROUTE
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS
AWWA	AMERICAN WATER WORKS ASSOCIATION
BOS	BOTTOM OF STEP
BVC	BEGIN VERTICAL CURVE
C	CURVE
CB	CATCH BASIN
CF	CURB FACE OR CUBIC FEET
CL	CENTER LINE
CO	CLEAN OUT
COMM	COMMUNICATION
CONC	CONCRETE
CONT	CONTINUOUS
DIA	DIAMETER
DIP	DUCTILE IRON PIPE
ELEC	ELECTRICAL
ELEV	ELEVATION
EOA	EDGE OF ASPHALT
EVC	END OF VERTICAL CURVE
EW	EACH WAY
EXIST	EXISTING
FF	FINISH FLOOR
FG	FINISH GRADE
FH	FIRE HYDRANT
FL	FLOW LINE OR FLANGE
GB	GRADE BREAK
GF	GARAGE FLOOR
GV	GATE VALVE
HC	HANDICAP
HP	HIGH POINT
IRR	IRRIGATION
K	RATE OF VERTICAL CURVATURE
LD	LAND DRAIN
LF	LINEAR FEET
LP	LOW POINT
MEX	MATCH EXISTING
MH	MANHOLE
MJ	MECHANICAL JOINT
NG	NATURAL GROUND
NIC	NOT IN CONTRACT
NO	NUMBER
OC	ON CENTER
OCEW	ON CENTER EACH WAY
OHP	OVERHEAD POWER
PC	POINT OF CURVATURE OR PRESSURE CLASS
PCC	POINT OF COMPOUND CURVATURE
PI	POINT OF INTERSECTION
PIV	POST INDICATOR VALVE
PL	PROPERTY LINE
PRC	POINT OF REVERSE CURVATURE
PRO	PROPOSED
PT	POINT OF TANGENCY
PVC	POINT OF VERTICAL CURVATURE
PVI	POINT OF VERTICAL INTERSECTION
PVT	POINT OF VERTICAL TANGENCY
R	RADIUS
RD	ROOF DRAIN
ROW	RIGHT OF WAY
S	SLOPE
SAN SWR	SANITARY SEWER
SD	STORM DRAIN
SEC	SECONDARY
SS	SANITARY SEWER
STA	STATION
SW	SECONDARY WATER LINE
TBC	TOP BACK OF CURB
TOG	TOP OF GRATE
TOA	TOP OF ASPHALT
TOC	TOP OF CONCRETE
TOF	TOP OF FOUNDATION
TOW	TOP OF WALL
TOS	TOP OF STEP
TYP	TYPICAL
VC	VERTICAL CURVE
WIV	WALL INDICATOR VALVE
W	WATER LINE

NOTE: MAY CONTAIN ABBREVIATIONS THAT ARE NOT USED IN THIS PLAN SET.

LEGEND

SECTION CORNER	EXISTING EDGE OF ASPHALT
EXISTING MONUMENT	PROPOSED EDGE OF ASPHALT
PROPOSED MONUMENT	EXISTING STRIPING
EXISTING REBAR AND CAP	PROPOSED STRIPING
SET ENSIGN REBAR AND CAP	EXISTING FENCE
EXISTING WATER METER	PROPOSED FENCE
PROPOSED WATER METER	EXISTING FLOW LINE
EXISTING WATER MANHOLE	PROPOSED FLOW LINE
PROPOSED WATER MANHOLE	GRADE BREAK
EXISTING WATER BOX	EXISTING STORM DRAIN LINE
EXISTING WATER VALVE	PROPOSED STORM DRAIN LINE
PROPOSED WATER VALVE	ROOF DRAIN LINE
EXISTING FIRE HYDRANT	CATCHMENTS
PROPOSED FIRE HYDRANT	HIGHWATER LINE
PROPOSED FIRE DEPARTMENT CONNECTION	EXISTING SANITARY SEWER
EXISTING SECONDARY WATER VALVE	PROPOSED SANITARY SEWER LINE
PROPOSED SECONDARY WATER VALVE	PROPOSED SAN. SWR. SERVICE LINE
EXISTING IRRIGATION BOX	EXISTING LAND DRAIN LINE
EXISTING IRRIGATION VALVE	PROPOSED LAND DRAIN LINE
PROPOSED IRRIGATION VALVE	PROPOSED LAND DRAIN SERVICE LINE
EXISTING SANITARY SEWER MANHOLE	EXISTING CULINARY WATER LINE
PROPOSED SANITARY SEWER MANHOLE	PROPOSED CULINARY WATER LINE
EXISTING SANITARY CLEAN OUT	PROPOSED CULINARY WATER SERVICE LINE
EXISTING STORM DRAIN CLEAN OUT BOX	EXISTING SECONDARY WATER LINE
PROPOSED STORM DRAIN CLEAN OUT BOX	PROPOSED SECONDARY WATER LINE
EXISTING STORM DRAIN INLET BOX	PROPOSED SEC. WATER SERVICE LINE
EXISTING STORM DRAIN CATCH BASIN	EXISTING IRRIGATION LINE
PROPOSED STORM DRAIN CATCH BASIN	PROPOSED IRRIGATION LINE
EXISTING STORM DRAIN COMBO BOX	EXISTING OVERHEAD POWER LINE
PROPOSED STORM DRAIN COMBO BOX	EXISTING ELECTRICAL LINE
EXISTING STORM DRAIN CLEAN OUT	EXISTING GAS LINE
EXISTING STORM DRAIN CULVERT	EXISTING TELEPHONE LINE
PROPOSED STORM DRAIN CULVERT	ACCESSIBLE ROUTE
TEMPORARY SAG INLET PROTECTION	SAW CUT LINE
TEMPORARY IN-LINE INLET PROTECTION	STRAW WATTLE
ROOF DRAIN	TEMPORARY BERM
EXISTING ELECTRICAL MANHOLE	TEMPORARY SILT FENCE
EXISTING ELECTRICAL BOX	LIMITS OF DISTURBANCE
EXISTING TRANSFORMER	EXISTING WALL
EXISTING UTILITY POLE	PROPOSED WALL
EXISTING LIGHT	EXISTING CONTOURS
PROPOSED LIGHT	PROPOSED CONTOURS
EXISTING GAS METER	BUILDABLE AREA WITHIN SETBACKS
EXISTING GAS MANHOLE	PUBLIC DRAINAGE EASEMENT
EXISTING GAS VALVE	EXISTING ASPHALT TO BE REMOVED
EXISTING TELEPHONE MANHOLE	PROPOSED ASPHALT
EXISTING TELEPHONE BOX	EXISTING CURB AND GUTTER
EXISTING TRAFFIC SIGNAL BOX	PROPOSED CURB AND GUTTER
EXISTING CABLE BOX	PROPOSED REVERSE PAN CURB AND GUTTER
EXISTING BOLLARD	TRANSITION TO REVERSE PAN CURB
PROPOSED BOLLARD	CONCRETE TO BE REMOVED
EXISTING SIGN	EXISTING CONCRETE
PROPOSED SIGN	PROPOSED CONCRETE
EXISTING SPOT ELEVATION	BUILDING TO BE REMOVED
PROPOSED SPOT ELEVATION	EXISTING BUILDING
EXISTING FLOW DIRECTION	PROPOSED BUILDING
EXISTING TREE	
DENSE VEGETATION	

NOTE: MAY CONTAIN SYMBOLS THAT ARE NOT USED IN THIS PLAN SET.

ENSIGN
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ST. GEORGE HOTEL
PHASE I
ST GEORGE
ST. GEORGE, UTAH

GENERAL NOTES

PROJECT NUMBER 10928
PRINT DATE 7/28/21
DRAWN BY
CHECKED BY
PROJECT MANAGER

C-001



HORIZONTAL GRAPHIC SCALE

40 0 20 40 80

(IN FEET)
HORZ: 1 inch = 40 ft.

GENERAL NOTES

1. ALL WORK TO COMPLY WITH THE GOVERNING AGENCY'S STANDARDS AND SPECIFICATIONS.
2. ALL IMPROVEMENTS MUST COMPLY WITH ADA STANDARDS AND RECOMMENDATIONS.
3. SEE LANDSCAPE/ARCHITECTURAL PLANS FOR CONCRETE MATERIAL, COLOR, FINISH, AND SCORE PATTERNS THROUGHOUT SITE.
4. ALL PAVEMENT MARKINGS SHALL CONFORM TO THE LATEST EDITION OF THE M.U.T.C.D. (MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES).
5. ALL SURFACE IMPROVEMENTS DISTURBED BY CONSTRUCTION SHALL BE RESTORED OR REPLACED, INCLUDING TREES AND DECORATIVE SHRUBS, SOD, FENCES, WALLS AND STRUCTURES, WHETHER OR NOT THEY ARE SPECIFICALLY SHOWN ON THE CONTRACT DOCUMENTS.
6. NOTIFY ENGINEER OF ANY DISCREPANCIES IN DESIGN OR STAKING BEFORE PLACING CONCRETE OR ASPHALT.
7. THE CONTRACTOR IS TO PROTECT AND PRESERVE ALL EXISTING IMPROVEMENTS, UTILITIES, AND SIGNS, ETC. UNLESS OTHERWISE NOTED ON THESE PLANS.

SCOPE OF WORK:

PROVIDE, INSTALL AND/OR CONSTRUCT THE FOLLOWING PER THE SPECIFICATIONS GIVEN OR REFERENCED, THE DETAILS NOTED, AND/OR AS SHOWN ON THE CONSTRUCTION DRAWINGS:

1. ASPHALT PAVEMENT PER GEOTECHNICAL REPORT AND DETAIL 1/C-500.
2. 4" WIDE CONCRETE SIDEWALK PER ST. GEORGE STANDARDS PER DRAWING 120. SEE SHEET C-500.
3. 5" WIDE CONCRETE SIDEWALK PER ST. GEORGE STANDARDS PER DRAWING 120. SEE SHEET C-500.
4. 24" CURB AND GUTTER PER APWA STANDARD DRAWING 205.2. SEE SHEET C-500.
5. 24" REVERSE PAN CURB AND GUTTER PER STANDARD 7. SEE SHEET C-500.
6. ADA ACCESSIBLE RAMP PER ST. GEORGE STANDARDS DRAWING 121. SEE SHEET C-500.
7. INSTALL 6' CROSS GUTTER PER ST. GEORGE STANDARD DRAWING 151. SEE SHEET C-500.
8. STREET SIGNS TO BE INSTALLED PER ST. GEORGE STANDARD DRAWINGS 400 AND 410. SEE SHEET C-506.
9. ROAD TO BE CONSTRUCTED PER 45' TYPICAL ROAD CROSS SECTION PER ST. GEORGE STANDARDS. SEE SHEET C-504 ST. GEORGE DETAIL R4 AND SHEET C-504 DETAIL 1.
10. TYPICAL KNUCKLE FOR 45' STREET PER ST. GEORGE STANDARDS. SEE SHEET C-504 ST. GEORGE DETAIL R7.
11. STREET LIGHT TO BE INSTALLED PER ST. GEORGE STANDARD. SEE SHEET C-505 ST. GEORGE DETAIL R14.
12. STOP SIGNS TO BE INSTALLED SIGN PER ST. GEORGE STANDARD DRAWING R10. SEE SHEET C-505.
13. STOP BAR MARKING PER M.U.T.C.D. STANDARD PLANS.
14. INSTALL 4' CROSS GUTTER PER ST. GEORGE STANDARD DRAWING 150. SEE SHEET C-500.
15. INSTALL DRIVEWAY PER ST. GEORGE STANDARDS DRAWING 111. SEE SHEET C-507.

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ST. GEORGE HOTEL
PHASE I
ST GEORGE
ST. GEORGE, UTAH

SITE PLAN

PROJECT NUMBER 10928
PRINT DATE 7/28/21
DRAWN BY
CHECKED BY
PROJECT MANAGER

C-200



HORIZONTAL GRAPHIC SCALE

40 0 20 40 80

(IN FEET)
HORZ: 1 inch = 40 ft.

CONSTRUCTION NOTE:

1. ALL EXCAVATIONS AND FILLS CONFORM TO APPENDIX "K" OF THE UTAH UNIFORM BUILDING STANDARDS ACT RULES AND THE CURRENT ADAPTED EDITION OF INTERNATIONAL BUILDING CODE.
2. SEE SHEET C-CS1 FOR CROSS SECTIONS.

GENERAL NOTES

1. ALL WORK TO COMPLY WITH THE GOVERNING AGENCY'S STANDARDS AND SPECIFICATIONS.
2. ALL IMPROVEMENTS MUST COMPLY WITH ADA STANDARDS AND RECOMMENDATIONS.
3. ALL WORK SHALL COMPLY WITH THE RECOMMENDATIONS OF THE GEOTECHNICAL ENGINEER POSSIBLY INCLUDING, BUT NOT LIMITED TO, REMOVAL OF UNCONSOLIDATED FILL, ORGANICS, AND DEBRIS, PLACEMENT OF SUBSURFACE DRAIN LINES AND GEOTEXTILE, AND OVEREXCAVATION OF UNSUITABLE BEARING MATERIALS AND PLACEMENT OF ACCEPTABLE FILL MATERIAL.
4. THE CONTRACTOR SHALL BECOME FAMILIAR WITH THE EXISTING SOIL CONDITIONS.
5. ELEVATIONS HAVE BEEN TRUNCATED FOR CLARITY. XX.XX REPRESENTS AN ELEVATION OF 48XX.XX ON THESE PLANS.
6. LANDSCAPED AREAS REQUIRE SUBGRADE TO BE MAINTAINED AT A SPECIFIC ELEVATION BELOW FINISHED GRADE AND REQUIRE SUBGRADE TO BE PROPERLY PREPARED AND SCARIFIED. SEE LANDSCAPE PLANS FOR ADDITIONAL INFORMATION.
7. SLOPE ALL LANDSCAPED AREAS AWAY FROM BUILDING FOUNDATIONS TOWARD CURB AND GUTTER OR STORM DRAIN INLETS.
8. EXISTING UNDERGROUND UTILITIES AND IMPROVEMENTS ARE SHOWN IN THEIR APPROXIMATE LOCATIONS BASED UPON RECORD INFORMATION AVAILABLE AT THE TIME OF PREPARATION OF THESE PLANS. LOCATIONS MAY NOT HAVE BEEN VERIFIED IN THE FIELD AND NO GUARANTEE IS MADE AS TO THE ACCURACY OR COMPLETENESS OF THE INFORMATION SHOWN. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO DETERMINE THE EXISTENCE AND LOCATION OF THE UTILITIES SHOWN ON THESE PLANS OR INDICATED IN THE FIELD BY LOCATING SERVICES. ANY ADDITIONAL COSTS INCURRED AS A RESULT OF THE CONTRACTOR'S FAILURE TO VERIFY THE LOCATIONS OF EXISTING UTILITIES PRIOR TO THE BEGINNING OF CONSTRUCTION IN THEIR VICINITY SHALL BE BORNE BY THE CONTRACTOR AND ASSUMED INCLUDED IN THE CONTRACT. THE CONTRACTOR IS TO VERIFY ALL CONNECTION POINTS WITH THE EXISTING UTILITIES. THE CONTRACTOR IS RESPONSIBLE FOR ANY DAMAGE CAUSED TO THE EXISTING UTILITIES AND UTILITY STRUCTURES THAT ARE TO REMAIN. IF CONFLICTS WITH EXISTING UTILITIES OCCUR, THE CONTRACTOR SHALL NOTIFY THE ENGINEER PRIOR TO CONSTRUCTION TO DETERMINE IF ANY FIELD ADJUSTMENTS SHOULD BE MADE.
9. ALL STORM DRAIN INFRASTRUCTURE TO BE INSTALLED PER GOVERNING AGENCY OR APWA STANDARD PLANS AND SPECIFICATIONS.
10. ENSURE MINIMUM COVER OVER ALL STORM DRAIN PIPES PER MANUFACTURER'S RECOMMENDATIONS. NOTIFY ENGINEER IF MINIMUM COVER CANNOT BE ATTAINED.
11. ALL FACILITIES WITH DOWNSPOUTS/ROOF DRAINS SHALL BE CONNECTED TO THE STORM DRAIN SYSTEM. SEE PLUMBING PLANS FOR DOWNSPOUT/ROOF DRAIN LOCATIONS AND SIZES. ALL ROOF DRAINS TO HAVE MINIMUM 1% SLOPE.
12. THE CONTRACTOR SHALL ADJUST TO GRADE ALL EXISTING UTILITIES AS NEEDED PER LOCAL GOVERNING AGENCY'S STANDARDS AND SPECIFICATIONS.
13. NOTIFY ENGINEER OF ANY DISCREPANCIES IN DESIGN OR STAKING BEFORE PLACING CONCRETE, ASPHALT, OR STORM DRAIN STRUCTURES OR PIPES.
14. THE CONTRACTOR IS TO PROTECT AND PRESERVE ALL EXISTING IMPROVEMENTS, UTILITIES, AND SIGNS, ETC. UNLESS OTHERWISE NOTED ON THESE PLANS.

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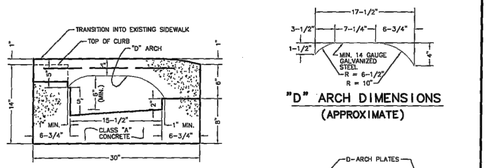
ST. GEORGE HOTEL PHASE I

ST GEORGE
ST. GEORGE, UTAH

SITE PLAN

PROJECT NUMBER 10928
PRINT DATE 7/28/21
DRAWN BY
CHECKED BY
PROJECT MANAGER

C-300



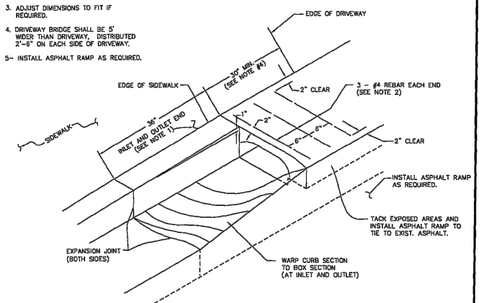
"D" ARCH DIMENSIONS (APPROXIMATE)



"D" ARCH OVERLAP DETAIL

NOTES:

1. MATCH SIDEWALK AT TOP OF CURB AND TOP OF BRIDGE IN 36" TRANSITION.
2. REBAR AT ENDS REQUIRED
3. ADJUST DIMENSIONS TO FIT IF REQUIRED.
4. DRIVEWAY BRIDGE SHALL BE 5' WIDER THAN DRIVEWAY, DISTRIBUTED 2'-6" ON EACH SIDE OF DRIVEWAY.
5- INSTALL ASPHALT RAMP AS REQUIRED.

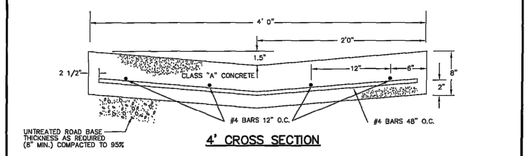


(FOR USE WITH HB 30-8 CURB AND GUTTER ONLY)

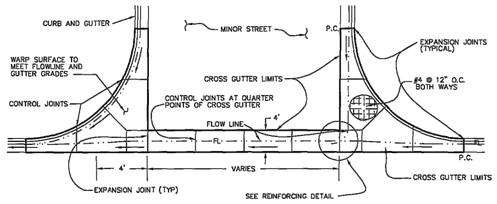
CITY OF ST. GEORGE ENGINEERING DEPARTMENT

REVISIONS			STANDARD DWG. NO.
DATE	DESCRIPTION	BY	112 | 1 OF 1
			APPROVED:
			DATE: | BY: LBB

STANDARD DRIVEWAY BRIDGE



4' CROSS SECTION



PLAN

NOTES:

1- FOR USE ON RESIDENTIAL STREETS ONLY.

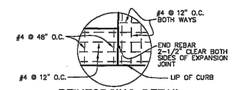
2- CROSS GUTTERS ARE USED AT INTERSECTIONS ONLY UNLESS OTHERWISE APPROVED.

3- CROSS GUTTER SHALL CROSS THE MINOR STREET.

4- ALL REINFORCING STEEL SHALL HAVE 2-INCH MINIMUM CLEAR COVER. SUPPORT CHAIRS, BLOCKS OR OTHER APPROVED EQUAL SHALL BE USED TO RAISE STEEL OFF GROUND.

5- REINFORCING TO EXTEND TO LIMITS OF CROSS GUTTER.

6- ALL REINFORCING STEEL SHALL BE GRADE 60 ASTM A 615.

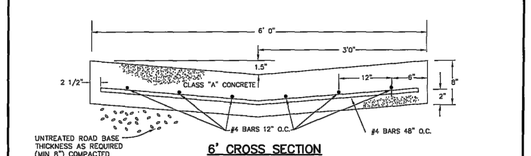


REINFORCING DETAIL

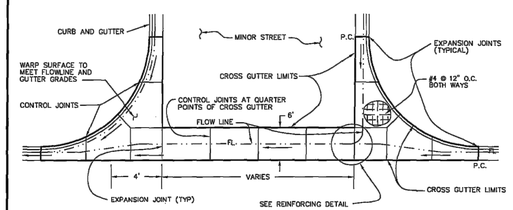
CITY OF ST. GEORGE ENGINEERING DEPARTMENT

REVISIONS			STANDARD DWG. NO.
DATE	DESCRIPTION	BY	150 | 1 OF 1
			APPROVED:
			DATE: | BY: LBB

STANDARD 4' CROSS GUTTER



6' CROSS SECTION



PLAN

NOTES:

1- FOR USE ON RESIDENTIAL & COMMERCIAL STREETS.

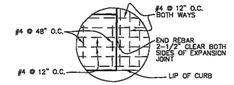
2- CROSS GUTTERS ARE USED AT INTERSECTIONS ONLY UNLESS OTHERWISE APPROVED.

3- CROSS GUTTER SHALL CROSS THE MINOR STREET.

4- ALL REINFORCING STEEL SHALL HAVE 2-INCH MINIMUM CLEAR COVER. SUPPORT CHAIRS, BLOCKS OR OTHER APPROVED EQUAL SHALL BE USED TO RAISE STEEL OFF GROUND.

5- REINFORCING TO EXTEND TO LIMITS OF CROSS GUTTER.

6- ALL REINFORCING STEEL SHALL BE GRADE 60 ASTM A 615.

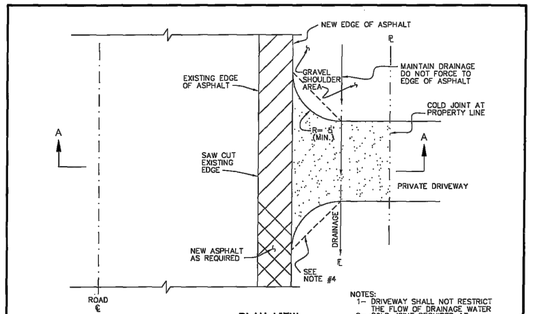


REINFORCING DETAIL

CITY OF ST. GEORGE ENGINEERING DEPARTMENT

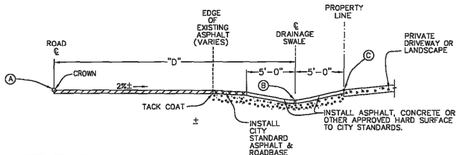
REVISIONS			STANDARD DWG. NO.
DATE	DESCRIPTION	BY	151 | 1 OF 1
			APPROVED:
			DATE: | BY: LBB

STANDARD 6' CROSS GUTTER



PLAN VIEW

NOTES:
1- DRIVEWAY SHALL NOT RESTRICT THE FLOW OF DRAINAGE WATER
2- COLD JOINT REQUIRED AT PROPERTY LINE.
3- DO NOT PAVE BETWEEN NEW EDGE OF ASPHALT AND DRAINAGE CENTERLINE EXCEPT AT DRIVEWAY.
4- 45° ANGLE MAY REPLACE RADIUS.



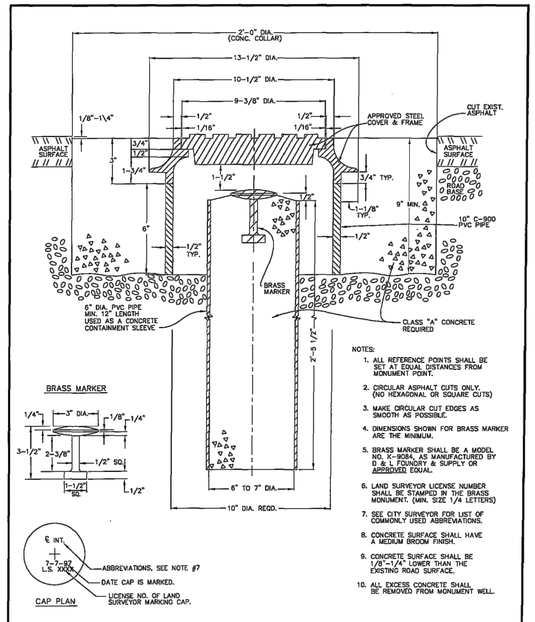
	ROADWAY WIDTH	
MARK	50'	60'
A	VARIES	VARIES
B(MIN.)	A-6"	A-7"
C	A+1"	A+1"
D	20'	25'

SECTION-A

CITY OF ST. GEORGE ENGINEERING DEPARTMENT

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			APPROVED:
			DATE: | BY: LBB

DRIVEWAY ACCESS WITHOUT CURBING (50' & 60' RIGHT OF WAY)



NOTES:

1. ALL REFERENCE POINTS SHALL BE SET AT EQUAL DISTANCES FROM MONUMENT POINT.
2. CIRCULAR ASPHALT CUTS ONLY. (NO HEXAGONAL OR SQUARE CUTS)
3. MAKE CIRCULAR CUT EDGES AS SMOOTH AS POSSIBLE.
4. DIMENSIONS SHOWN FOR BRASS MARKER ARE THE MINIMUM.
5. BRASS MARKER SHALL BE A MODEL NO. K-906A, AS MANUFACTURED BY D & L FOUNDRY & SUPPLY OR APPROVED EQUAL.
6. LAND SURVEYOR LICENSE NUMBER SHALL BE STAMPED IN THE BRASS MONUMENT. (MIN. SIZE 1/4 LETTERS)
7. SEE CITY SURVEYOR FOR LIST OF COMMONLY USED ABBREVIATIONS.
8. CONCRETE SURFACE SHALL HAVE A MEDIUM BROOM FINISH.
9. CONCRETE SURFACE SHALL BE 1/8"-1/4" LOWER THAN THE EXISTING ROAD SURFACE.
10. ALL EXCESS CONCRETE SHALL BE REMOVED FROM MONUMENT WELL.

CITY OF ST. GEORGE ENGINEERING DEPARTMENT

REVISIONS			STANDARD DWG. NO.
DATE	DESCRIPTION	BY	160 | 1 OF 1
9/02	REVISED CAP	LLB	APPROVED:
			DATE: | BY: LBB

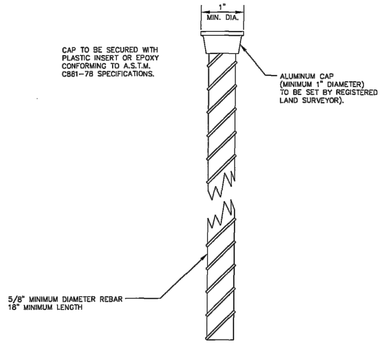
CLASS I STANDARD MONUMENT DETAILS

NOTES:

1- TYPE II MONUMENTS TO BE SET AT ALL CENTERLINE CONTROL POINTS NOT OTHERWISE IDENTIFIED BY A TYPE I MONUMENT AND AS REQUIRED BY THE CITY SURVEYOR.

2- THE REGISTERED LAND SURVEYOR'S NUMBER, AND A PUNCH MARK ARE TO APPEAR ON THE SURFACE OF THE CAP.

3- ALUMINUM CAP SHALL BE SET FLUSH WITH SURFACE OF ROAD.

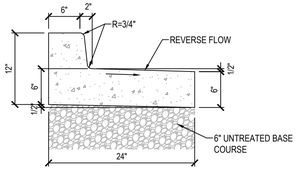


TYPE II MONUMENT

CITY OF ST. GEORGE ENGINEERING DEPARTMENT

REVISIONS			STANDARD DWG. NO.
DATE	DESCRIPTION	BY	161 | 1 OF 1
			APPROVED:
			DATE: | BY: LBB

CLASS II MONUMENT

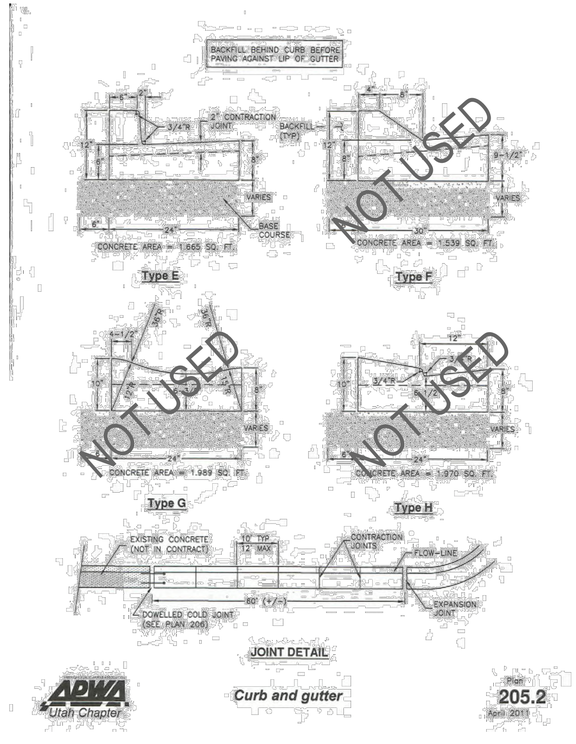


NOTE:

1. CONSTRUCT PER NOTES AND SPECIFICATIONS ASSOCIATED WITH APWA STANDARD PLAN NO. 205.

7 24" REVERSE PAN CURB AND GUTTER

SCALE: NONE



JOINT DETAIL

APWA Utah Chapter

Curb and gutter

Plan 205.2 April 2011

ENSIGN
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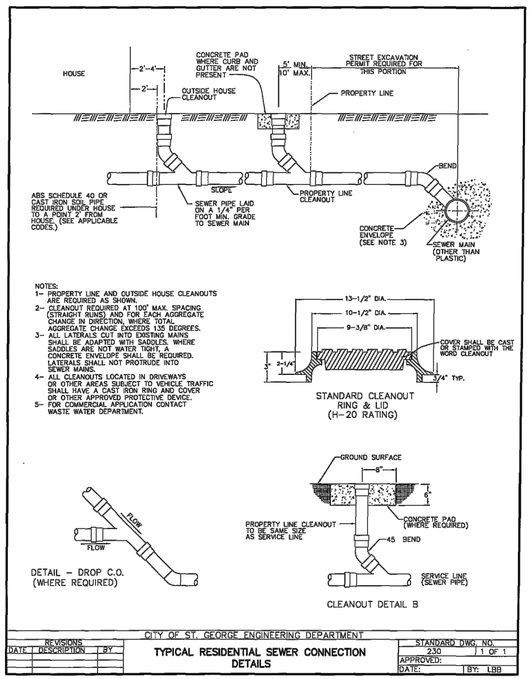
ST. GEORGE HOTEL PHASE I
ST GEORGE
ST. GEORGE, UTAH

N.T.S.

DETAILS

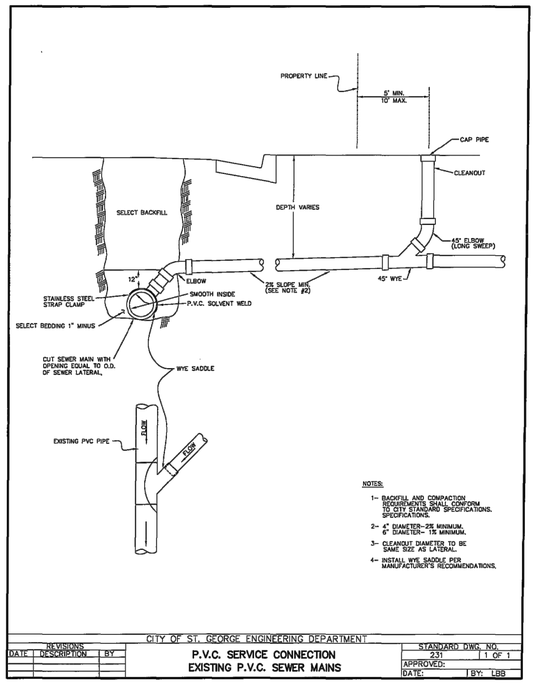
PROJECT NUMBER 10928 | PRINT DATE 7/28/21
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PROJECT MANAGER

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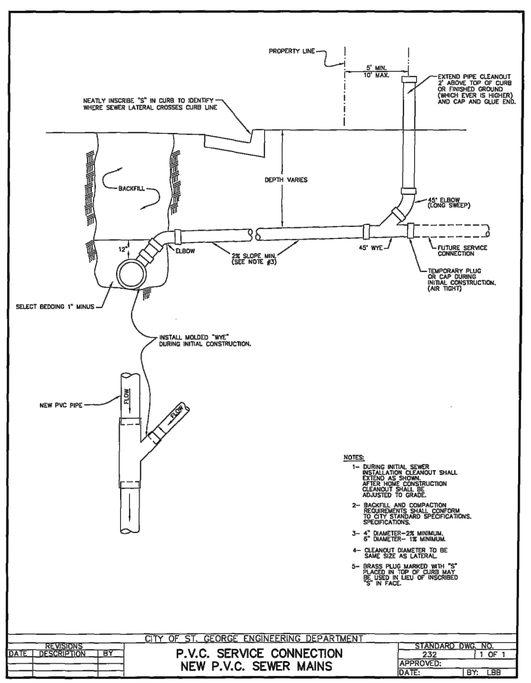
CITY OF ST. GEORGE ENGINEERING DEPARTMENT

REVISIONS			TYPICAL RESIDENTIAL SEWER CONNECTION DETAILS	STANDARD DWG. NO. 230 | 1 OF 1
DATE	DESCRIPTION	BY		APPROVED:
				DATE: | BY: LBB



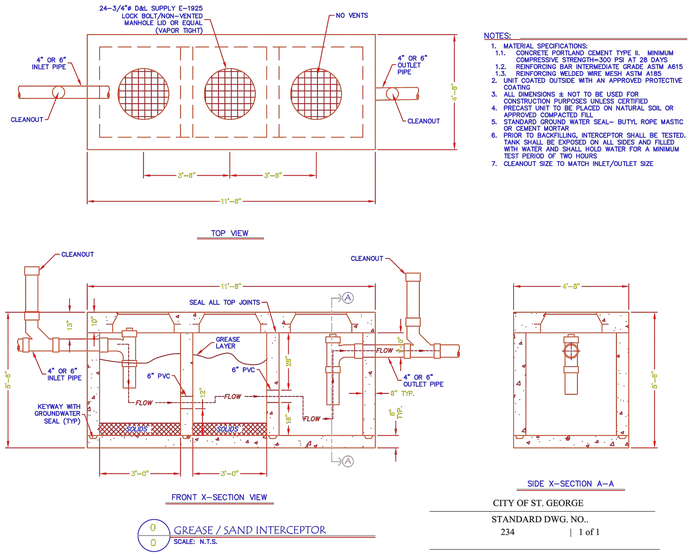
CITY OF ST. GEORGE ENGINEERING DEPARTMENT

REVISIONS			P.V.C. SERVICE CONNECTION EXISTING P.V.C. SEWER MAINS	STANDARD DWG. NO. 231 | 1 OF 1
DATE	DESCRIPTION	BY		APPROVED:
				DATE: | BY: LBB



CITY OF ST. GEORGE ENGINEERING DEPARTMENT

REVISIONS			P.V.C. SERVICE CONNECTION NEW P.V.C. SEWER MAINS	STANDARD DWG. NO. 232 | 1 OF 1
DATE	DESCRIPTION	BY		APPROVED:
				DATE: | BY: LBB



GREASE / SAND INTERCEPTOR
SCALE: N.T.S.

CITY OF ST. GEORGE
STANDARD DWG. NO..
234 | 1 of 1

ENSIGN
THE STANDARD IN ENGINEERING

CEDAR CITY
88 E. Fiddlers Canyon Road
Suite 210
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Phone: 435.865.1453

SALT LAKE CITY
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TOOELE
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LAYTON
Phone: 801.547.1100

RICHFIELD
Phone: 435.896.2983

WWW.ENSIGNENG.COM

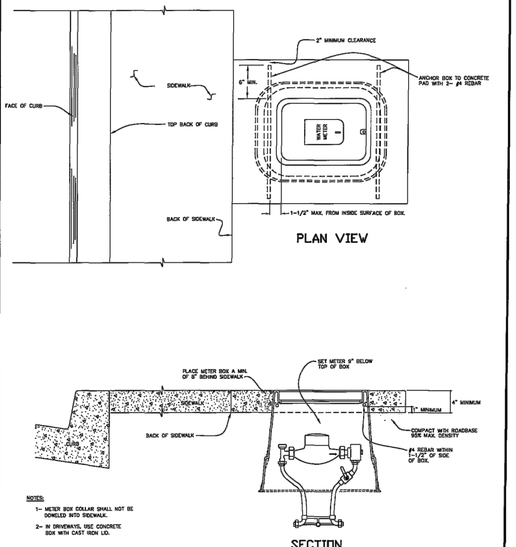
FOR:
OSCAR COVARRUBIAS
784 RESORT DR.
MIDWAY, UTAH 84049
CONTACT:
OSCAR@LODGINGANDHOSPITALITY.COM
PHONE: 801-628-0234

ST. GEORGE HOTEL
PHASE I
ST GEORGE
ST. GEORGE, UTAH

DETAILS

PROJECT NUMBER 10928
PRINT DATE ~~7/28/21~~
DRAWN BY
CHECKED BY
PROJECT MANAGER

C-501

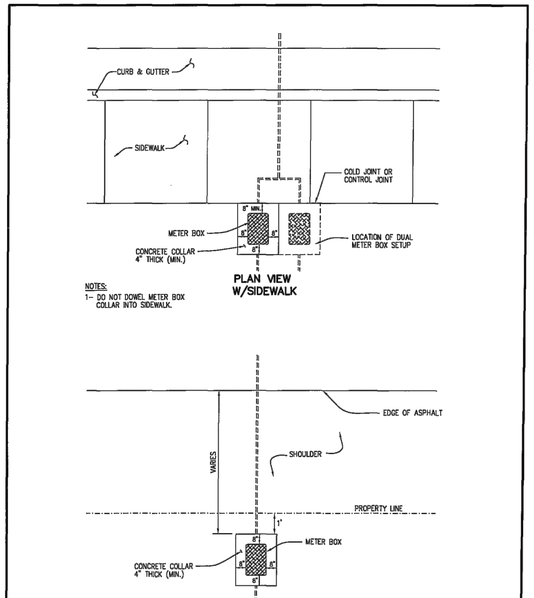


CITY OF ST. GEORGE ENGINEERING DEPARTMENT

REVISIONS DATE	DESCRIPTION	BY

WATER METER BOX DETAILS

STANDARD DWG. NO. 300 | 1 OF 1
APPROVED:
DATE: | BY: LBB

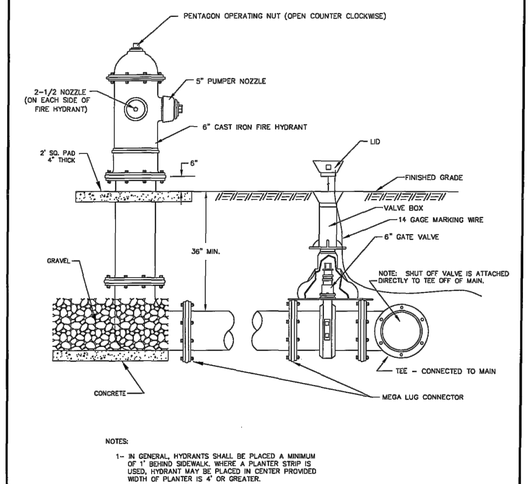


CITY OF ST. GEORGE ENGINEERING DEPARTMENT

REVISIONS DATE	DESCRIPTION	BY

WATER METER BOX LOCATION DETAILS

STANDARD DWG. NO. 301 | 1 OF 1
APPROVED:
DATE: | BY: LBB

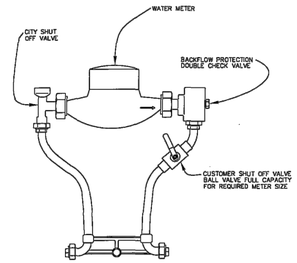


CITY OF ST. GEORGE ENGINEERING DEPARTMENT

REVISIONS DATE	DESCRIPTION	BY

STANDARD FIRE HYDRANT DETAILS

STANDARD DWG. NO. 302 | 1 OF 1
APPROVED:
DATE: | BY: LBB

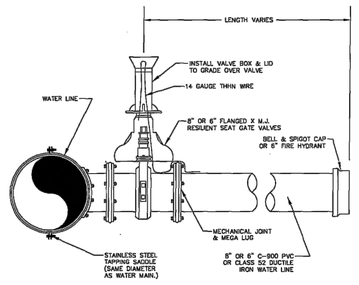


CITY OF ST. GEORGE ENGINEERING DEPARTMENT

REVISIONS DATE	DESCRIPTION	BY

WATER METER SETTER DETAILS

STANDARD DWG. NO. 303 | 1 OF 1
APPROVED:
DATE: | BY: LBB

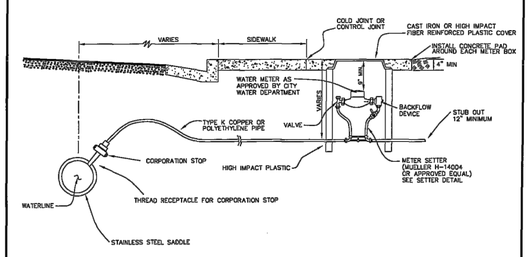


CITY OF ST. GEORGE ENGINEERING DEPARTMENT

REVISIONS DATE	DESCRIPTION	BY

8" OR 6" WATER LATERAL (CONNECTION TO EXISTING LINE)

STANDARD DWG. NO. 304 | 1 OF 1
APPROVED:
DATE: | BY: LBB



CITY OF ST. GEORGE ENGINEERING DEPARTMENT

REVISIONS DATE	DESCRIPTION	BY

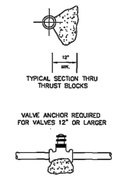
3/4" WATER SERVICE CONNECTION & METER

STANDARD DWG. NO. 305 | 1 OF 1
APPROVED:
DATE: | BY: LBB

THRUST BLOCK BEARING AREA IN SQUARE FEET

PIPE SIZE	CONDITION I	II	III	IV	V	VI	VII	VIII
4"	2.8	3.3	2.6	1.3	1.3	2.0	3.3	2.6
6"	4.6	6.5	3.9	2.0	2.0	3.3	6.5	4.6
8"	7.5	11.0	5.9	3.3	3.9	5.9	11.0	7.8
10"	12.4	17.5	9.8	5.2	6.5	9.1	17.5	12.4
12"	17.5	24.8	13.6	7.8	9.1	12.3	24.8	17.5
14"	24.0	33.8	18.2	9.7	12.3	16.9	33.8	24.0
16"	31.1	44.0	23.8	12.7	15.5	23.2	44.0	31.1

1. CALCULATED ON 225 LB. TEST PRESSURE & ALLOWABLE BEARING PRESSURE OF 2000 LBS. PER SQUARE FOOT.
2. IN POOR SOILS SPECIAL DESIGN IS REQUIRED.
3. CONCRETE SHALL BE CLASS "C" OR BETTER.
4. ALL THRUST BLOCK BEARING FACES SHALL BE POURED AGAINST UNDISTURBED SOIL OR APPROVED COMPACTED BACKFILL.
5. PRIOR APPROVAL FROM THE WATER DEPARTMENT REQUIRED FOR USE OF CONCRETE THRUST BLOCKS.

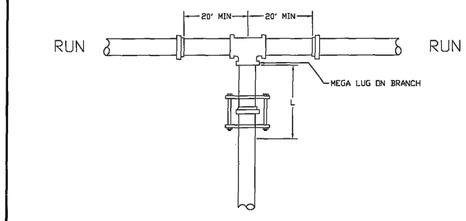


CITY OF ST. GEORGE ENGINEERING DEPARTMENT

REVISIONS DATE	DESCRIPTION	BY

WATER LINE THRUST BLOCK DETAILS

STANDARD DWG. NO. 306 | 1 OF 1
APPROVED:
DATE: | BY: LBB



RUN SIZE DIAMETER

BRANCH SIZE DIAMETER	4	6	8	10	12	14	16	18	20	24
4	*	*	*	*	*	*	*	*	*	*
6		*	*	*	*	*	*	*	*	*
8			*	*	*	*	*	*	*	*
10				*	*	*	*	*	*	*
12					28	12	4	*	*	*
14						45	31	17	3	*
16							62	49	37	11
18								78	67	44
20									95	74
24										127

* - FOR THIS CONDITION NEED ONLY RESTRAIN THE BRANCH OUTLET OF THE TEE.

RESTRAINED LENGTHS, "L" (IN FEET)

1. RESTRAIN THE TWO MECHANICAL JOINTS ON THE RUN SIDES OF THE TEE. THERE SHOULD BE A FULL 20' LENGTH OF PIPE INSTALLED ON EACH SIDE OF THE RUN.
2. ALL JOINTS WITHIN THE LENGTH "L" ON THE BRANCH MUST BE RESTRAINED. USE RETAINER GLAND AT MECHANICAL JOINTS AND HARNESS ON PUSH-ON PIPE PER CITY SPECIFICATION.
3. FOR TEST PRESSURES AND LAYING CONDITIONS SEE SECTION ON GENERAL NOTES FOR USE OF RESTRAINED JOINT LENGTHS.

CITY OF ST. GEORGE ENGINEERING DEPARTMENT

REVISIONS DATE	DESCRIPTION	BY

STANDARD TEE PVC RESTRAINING SYSTEM DETAIL

STANDARD DWG. NO. 307 | 1 OF 1
APPROVED:
DATE: | BY: LBB

ENSIGN
THE STANDARD IN ENGINEERING

CEDAR CITY
88 E. Fiddlers Canyon Road
Suite 210
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TOOELE
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Phone: 801.547.1100

RICHFIELD
Phone: 435.896.2983

WWW.ENSIGNENG.COM

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784 RESORT DR.
MIDWAY, UTAH 84049
CONTACT:
OSCAR@LODGINGANDHOSPITALITY.COM
PHONE: 801-628-0234

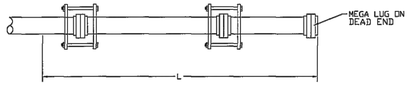
ST. GEORGE HOTEL
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ST GEORGE
ST. GEORGE, UTAH

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DETAILS

PROJECT NUMBER 10928
PRINT DATE 7/28/21
DRAWN BY
CHECKED BY
PROJECT MANAGER

C-502



1. ALL JOINTS WITHIN LENGTH "L" MUST BE RESTRAINED. USE RETAINER GLAND AT MECHANICAL JOINTS AND HARNESS WITH PUSH-ON PIPE PER CITY SPECIFICATION.
2. FOR TEST PRESSURES AND LAYING CONDITIONS SEE SECTION ON GENERAL NOTES FOR USE OF RESTRAINED JOINT LENGTHS.

PIPE SIZE IN INCHES

4	6	8	10	12	14	16	18	20
44	62	82	99	118	135	153	169	187

RESTRAINED LENGTHS, "L" (IN FEET)

RESTRAINED JOINT LENGTHS USAGE GENERAL NOTES

RESTRAINED LENGTH CALCULATIONS ARE BASED ON THE FOLLOWING DESIGN TYPICALLY USED WITH BACKFILL IN ST. GEORGE.

1. THREE (3) FEET MINIMUM DEPTH OF COVER.
2. A SAFTEY FACTOR OF 1.5
3. SOIL TYPE SANDY CLAY
4. TYPE 5 TRENCH COMPACTION FROM FOUR (4) INCHES MINIMUM UNDER THE PIPE TO THE CENTER LINE OF THE PIPE, AND COMPACTED GRANULAR OR SELECTED MATERIAL FROM THE CENTER LINE OF THE PIPE TO THE TOP OF THE PIPE (90 PERCENT STANDARD PROCTOR DENSITY, AASHTO T-99).
5. 200 PSI TEST PRESSURES FOR FOUR (4) THROUGH SIXTEEN (16) INCH SIZE PIPES.

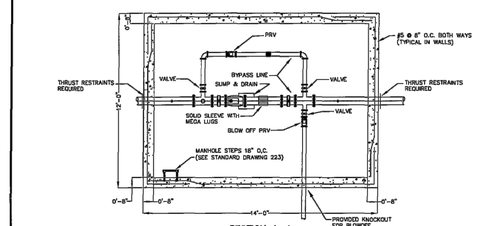
IF ACTUAL CONDITIONS DIFFER FROM THOSE LISTED ABOVE OR THE REQUIRED RESTRAINED LENGTH CANNOT BE MET, THE RESTRAINED JOINT LENGTH SHALL BE DETERMINED BY THE WATER AND POWER ENGINEER.

CITY OF ST. GEORGE ENGINEERING DEPARTMENT

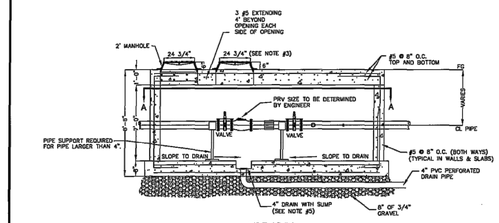
REVISIONS DATE	DESCRIPTION	BY

IN LINE VALVE\DEAD END ON PVC PIPE DETAIL

STANDARD DWG. NO. 312 1 OF 1
APPROVED:
DATE: BY: LBB



SECTION A-A



SIDE VIEW

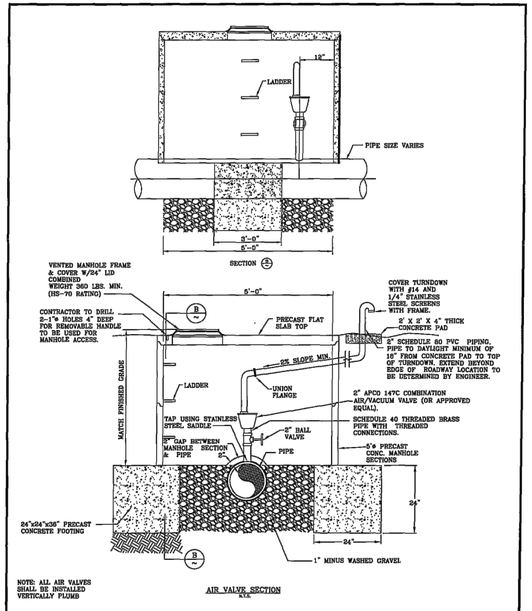
NOTES:
1. IF VAULT IS IN SIDEWALK THE FINISH GRADE OF TOP OF VAULT SHALL MATCH SLOPE OF EXISTING SIDEWALK.
2. ALL FITTINGS SHALL BE FLANGED AND MEGA LUGGED.
3. MANHOLE RING & LID WILL VARY WITH SIZE OF P.R.V. CONTACT WATER DEPARTMENT.
4. IF VAULT IS IN ROADWAY, FINISH GRADE OF TOP OF VAULT SHALL MATCH SUBGRADE.
5. SUMP SIZE SHALL BE 12" X 12" X 4" DEEP.

CITY OF ST. GEORGE ENGINEERING DEPARTMENT

REVISIONS DATE	DESCRIPTION	BY

STANDARD PRESSURE REDUCING VALVE & VALUT FOR NEW CONSTRUCTION

STANDARD DWG. NO. 315 1 OF 2
APPROVED:
DATE: BY: GM



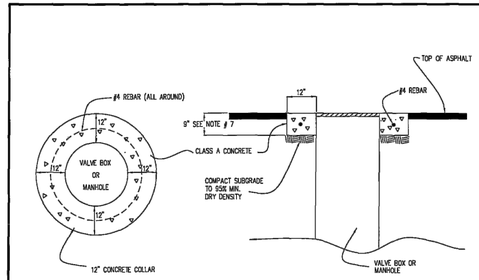
AIR VALVE SECTION

CITY OF ST. GEORGE ENGINEERING DEPARTMENT

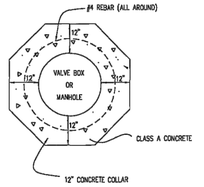
REVISIONS DATE	DESCRIPTION	BY

STANDARD AIR VAC DETAIL

STANDARD DWG. NO. 316 1 OF 1
APPROVED:
DATE: BY: GM



PLAN



PLAN
OPTIONAL

SECTION

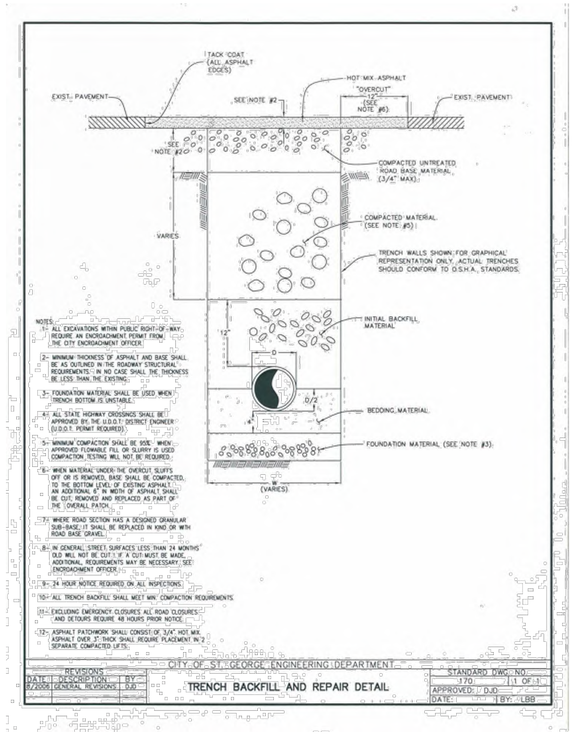
NOTES:
1- MANHOLES, VALVE BOXES AND OTHER SIMILAR ITEMS SHALL BE ADJUSTED TO GRADE AFTER PAVING IS COMPLETE.
2- THE SURFACE OF THE ADJUSTED RING SHALL MATCH THE GRADE OF THE CONCRETE COLLAR. CONCRETE COLLAR SHALL BE 1/8" - 1/4" LOWER THAN ASPHALT.
3- ASPHALT SHALL BE CUT IN STRAIGHT VERTICAL LINES.
4- ADJUSTMENTS TO GRADE SHALL BE MADE WITH STANDARD RINGS OR EXTENTIONS OR AS APPROVED BY THE CITY REPRESENTATIVE.
5- ALL MANHOLES, VALVE BOXES AND OTHER SIMILAR ITEMS SHALL HAVE CONCRETE COLLAR AS REQUIRED UNLESS OTHERWISE APPROVED.
6- 9" THICK COLLARS SHALL BE REINFORCED. 12 " THICK COLLARS DO NOT REQUIRE REINFORCEMENT.
7- MARK CONCRETE COLLAR ON WATER VALVE BOXES WITH ARROW INDICATING DIRECTION OF FLOW.

CITY OF ST. GEORGE ENGINEERING DEPARTMENT

REVISIONS DATE	DESCRIPTION	BY

MANHOLES & VALVE BOXES CONCRETE COLLAR

STANDARD DWG. NO. 171 1 OF 1
APPROVED:
DATE: BY: LBB



NOTES:
1- ALL EXCAVATIONS WITHIN PUBLIC RIGHT-OF-WAY REQUIRE AN ENCROACHMENT PERMIT FROM THE CITY ENCROACHMENT OFFICER.
2- MINIMUM THICKNESS OF ASPHALT AND BASE SHALL BE AS OUTLINED IN THE ROADWAY STRUCTURAL REQUIREMENTS. IN NO CASE SHALL THE THICKNESS BE LESS THAN THE EXISTING.
3- FOUNDATION MATERIAL SHALL BE USED WHEN TRENCH BOTTOM IS UNSTABLE.
4- ALL STATE HIGHWAY CROSSINGS SHALL BE APPROVED BY THE U.D.O.T. DISTRICT ENGINEER (U.D.O.T. PERMIT REQUIRED).
5- MINIMUM COMPACTION SHALL BE 95%. WHEN APPROVED FLOWABLE FILL OR SLURRY IS USED COMPACTION TESTING WILL NOT BE REQUIRED.
6- WHEN MATERIAL UNDER THE OVERCUT SLUFFS OFF OR IS REMOVED, BASE SHALL BE COMPACTED TO THE BOTTOM LEVEL OF EXISTING ASPHALT. AN ADDITIONAL 6" IN WIDTH OF ASPHALT SHALL BE CUT, REMOVED AND REPLACED AS PART OF THE OVERALL PATCH.
7- WHERE ROAD SECTION HAS A DESIGNED GRANULAR SUB-BASE, IT SHALL BE REPLACED IN KIND OR WITH ROAD BASE GRAVEL.
8- IN GENERAL, STREET SURFACES LESS THAN 24 MONTHS OLD WILL NOT BE CUT. IF A CUT MUST BE MADE, ADDITIONAL REQUIREMENTS MAY BE NECESSARY. SEE ENCROACHMENT OFFICER.
9- 24 HOUR NOTICE REQUIRED ON ALL INSPECTIONS.
10- ALL TRENCH BACKFILL SHALL MEET MIN. COMPACTION REQUIREMENTS.
11- EXCLUDING EMERGENCY CLOSURES ALL ROAD CLOSURES AND DETOURS REQUIRE 48 HOURS PRIOR NOTICE.
12- ASPHALT PATCHWORK SHALL CONSIST OF 3/4" HOT MIX ASPHALT OVER 3" THICK SHALL REQUIRE PLACEMENT IN 2 SEPARATE COMPACTED LIFTS.

CITY OF ST. GEORGE ENGINEERING DEPARTMENT

REVISIONS DATE	DESCRIPTION	BY
8/2008	GENERAL REVISIONS	DJD

TRENCH BACKFILL AND REPAIR DETAIL

STANDARD DWG. NO. 170 1 OF 1
APPROVED: DJD
DATE: BY: LBB

ENSIGN
THE STANDARD IN ENGINEERING

CEDAR CITY
88 E. Fiddlers Canyon Road
Suite 210
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SALT LAKE CITY
Phone: 801.255.0529

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Phone: 435.843.3590

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Phone: 801.547.1100

RICHFIELD
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FOR:
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784 RESORT DR.
MIDWAY, UTAH 84049
CONTACT:
OSCAR@LODGINGANDHOSPITALITY.COM
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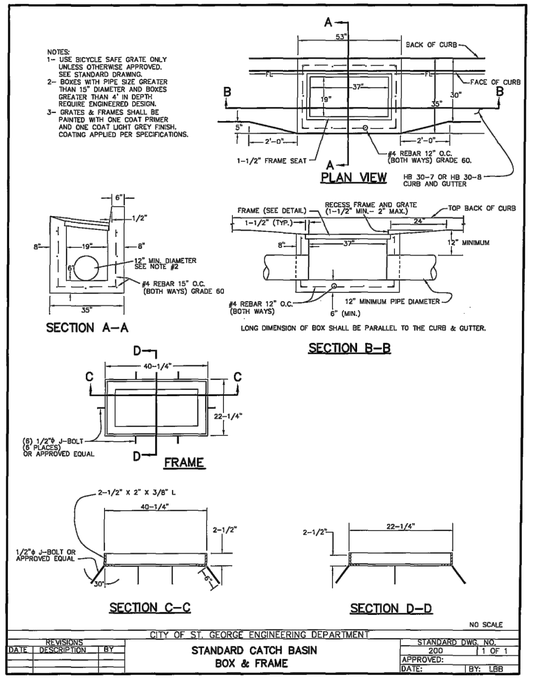
ST. GEORGE HOTEL
PHASE I
ST GEORGE
ST. GEORGE, UTAH

N.T.S.

DETAILS

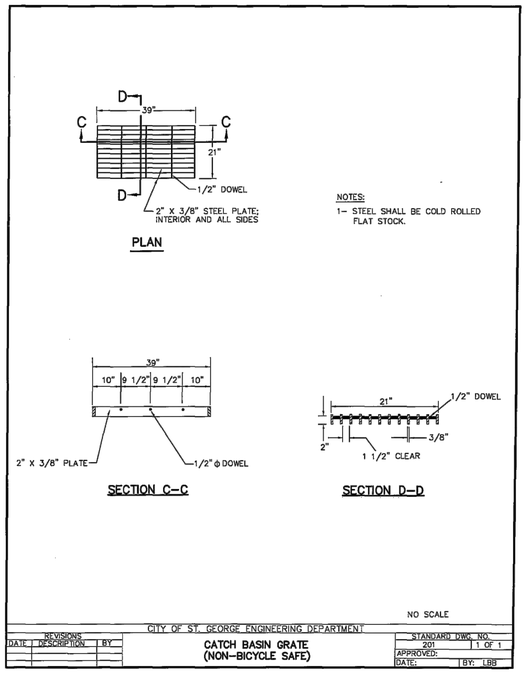
PROJECT NUMBER 10928
PRINT DATE 7/28/21
DRAWN BY
CHECKED BY
PROJECT MANAGER

C-503



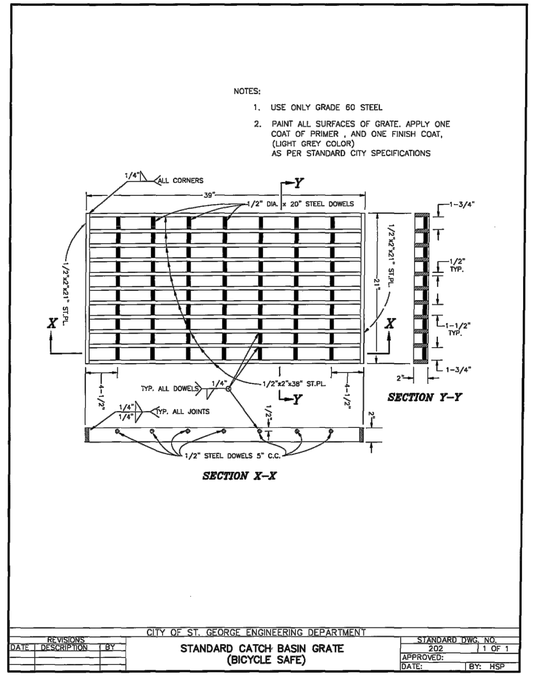
NO SCALE

CITY OF ST. GEORGE ENGINEERING DEPARTMENT				
REVISIONS			STANDARD DWG. NO.	
DATE	DESCRIPTION	BY	STANDARD CATCH BASIN BOX & FRAME	200 | 1 OF 1
			APPROVED:	
			DATE:	BY: LBB

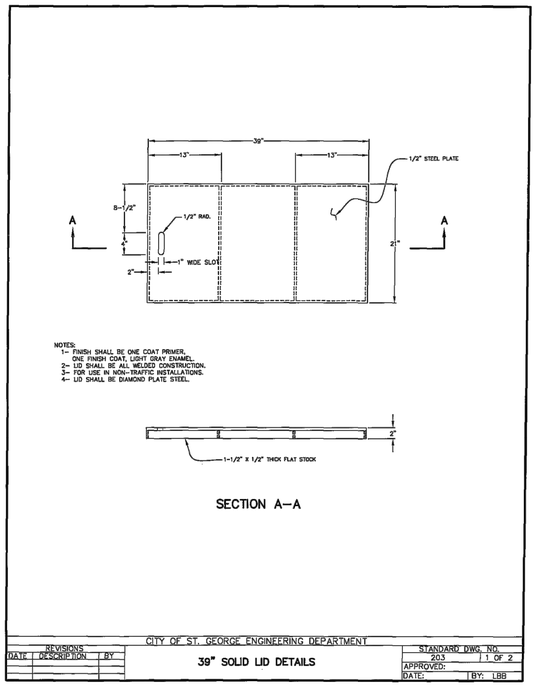


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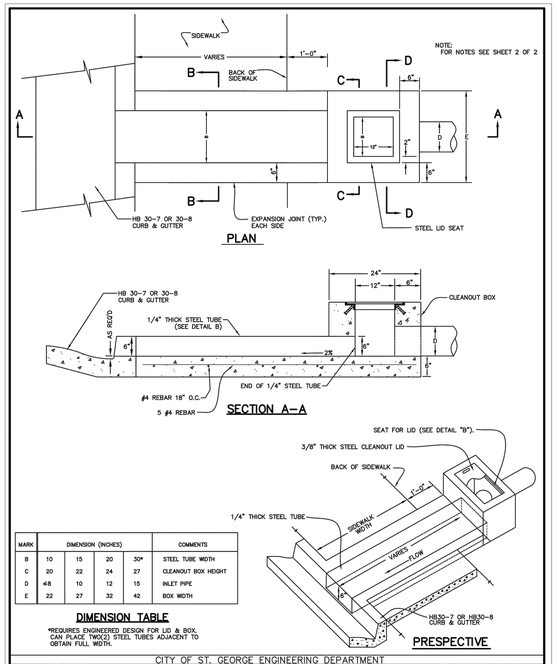
CITY OF ST. GEORGE ENGINEERING DEPARTMENT				
REVISIONS			STANDARD DWG. NO.	
DATE	DESCRIPTION	BY	CATCH BASIN GRATE (NON-BICYCLE SAFE)	201 | 1 OF 1
			APPROVED:	
			DATE:	BY: LBB



CITY OF ST. GEORGE ENGINEERING DEPARTMENT				
REVISIONS			STANDARD DWG. NO.	
DATE	DESCRIPTION	BY	STANDARD CATCH BASIN GRATE (BICYCLE SAFE)	202 | 1 OF 1
			APPROVED:	
			DATE:	BY: HSP



CITY OF ST. GEORGE ENGINEERING DEPARTMENT				
REVISIONS			STANDARD DWG. NO.	
DATE	DESCRIPTION	BY	39" SOLID LID DETAILS	203 | 1 OF 2
			APPROVED:	
			DATE:	BY: LBB

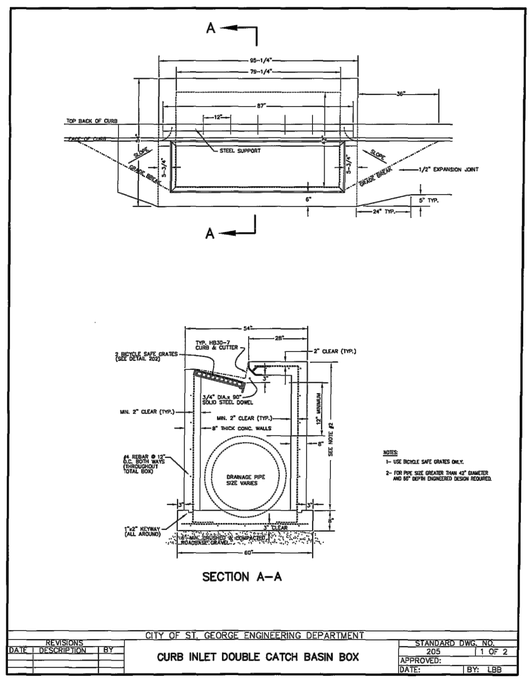


MARK	DIMENSION (INCHES)				COMMENTS
B	10	15	20	30*	STEEL TUBE WIDTH
C	20	22	24	27	CLEANOUT BOX HEIGHT
D	4⅝	10	12	15	INLET PIPE
E	22	27	32	42	BOX WIDTH

DIMENSION TABLE

*REQUIRES ENGINEERED DESIGN FOR LID & BOX, CAN PLACE TWO(2) STEEL TUBES ADJACENT TO OBTAIN FULL WIDTH.

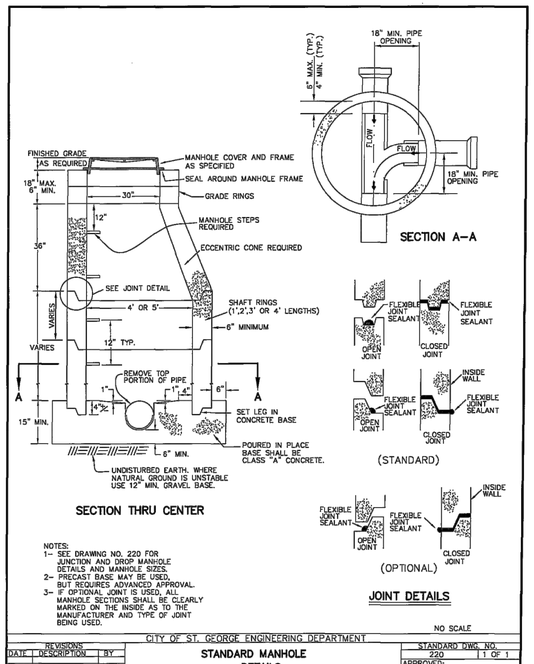
CITY OF ST. GEORGE ENGINEERING DEPARTMENT				
REVISIONS			STANDARD DWG. NO.	
DATE	DESCRIPTION	BY	SIDEWALK DRAINAGE STRUCTURE	204 | 1 OF 2
			APPROVED:	
			DATE:	BY: LBB



CITY OF ST. GEORGE ENGINEERING DEPARTMENT				
REVISIONS			STANDARD DWG. NO.	
DATE	DESCRIPTION	BY	CURB INLET DOUBLE CATCH BASIN BOX	205 | 1 OF 2
			APPROVED:	
			DATE:	BY: LBB

CONTACT ENGINEERING DEPARTMENT FOR DETAILS

CITY OF ST. GEORGE ENGINEERING DEPARTMENT				
REVISIONS			STANDARD DWG. NO.	
DATE	DESCRIPTION	BY	CURB INLET SINGLE CATCH BASIN BOX	206 | 1 OF 1
			APPROVED:	
			DATE:	BY: LBB



NO SCALE

CITY OF ST. GEORGE ENGINEERING DEPARTMENT				
REVISIONS			STANDARD DWG. NO.	
DATE	DESCRIPTION	BY	STANDARD MANHOLE DETAILS	220 | 1 OF 1
			APPROVED:	
			DATE:	BY: LBB

ENSIGN
THE STANDARD IN ENGINEERING

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784 RESORT DR.
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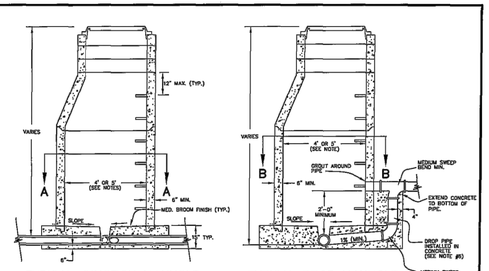
ST. GEORGE HOTEL
PHASE I
ST GEORGE
ST. GEORGE, UTAH

N.T.S.

DETAILS

PROJECT NUMBER	PRINT DATE
10928	7/28/21
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PROJECT MANAGER	

C-504

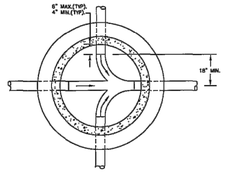


TYPICAL JUNCTION MANHOLE
(SECTION THRU CENTER)

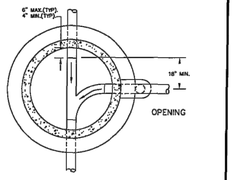
TYPICAL DROP MANHOLE
(SECTION THRU CENTER)

NOTES:

1- FOR SEWER PIPES LESS THAN 12-INCH DIAMETER USE 4-FOOT DIAMETER MANHOLE.
2- FOR SEWER PIPES WITH 12-INCH OR GREATER DIAMETER USE 5-FOOT DIAMETER MANHOLE.
3- SEE DRAWING NO. ____ FOR ADDITIONAL DETAILS.
4- WHEN SEWER DEPTH IS 12 FEET OR GREATER USE A 5-FOOT DIAMETER MANHOLE.
5- SEE DRAWING NO. ____ FOR ADDITIONAL DETAILS.
6- VERTICAL CIRCUMFERENCE AND FITTINGS SHALL BE THE SAME SIZE AS THE INCOMING SEWER PIPE.



SECTION A–A

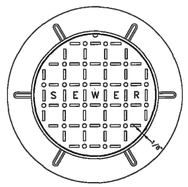


SECTION B–B

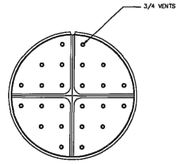
NO SCALE

CITY OF ST. GEORGE ENGINEERING DEPARTMENT

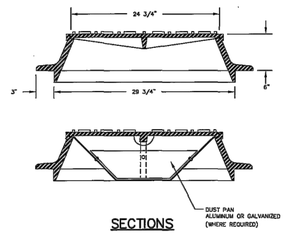
REVISIONS			JUNCTION & DROP MANHOLE DETAILS	STANDARD DWG. NO. 221 1 OF 1
DATE	DESCRIPTION	BY		APPROVED:
				DATE: BY: LBB



PLAN OF COVER & RING



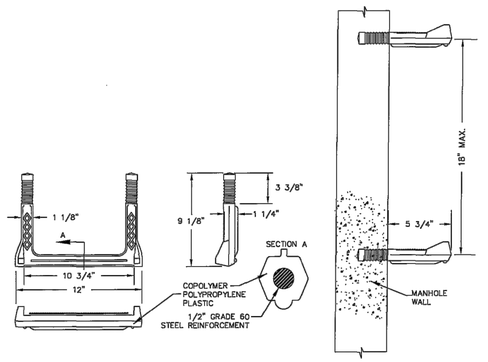
BOTTOM VIEW OF COVER



SECTIONS

CITY OF ST. GEORGE ENGINEERING DEPARTMENT

REVISIONS			MANHOLE FRAME & COVER DETAILS	STANDARD DWG. NO. 222 1 OF 1
DATE	DESCRIPTION	BY		APPROVED:
				DATE: BY: LBB



MANHOLE STEPS

NOTES:

1- INSTALL STEPS PER MANUFACTURERS RECOMMENDATIONS.
2- STEPS SHALL BE ALIGNED VERTICALLY.

CITY OF ST. GEORGE ENGINEERING DEPARTMENT

REVISIONS			MANHOLE STEP DETAILS	STANDARD DWG. NO. 223 1 OF 1
DATE	DESCRIPTION	BY		APPROVED:
				DATE: BY: LBB

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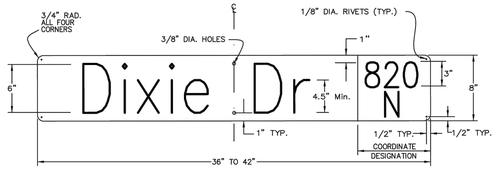
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ST. GEORGE, UTAH

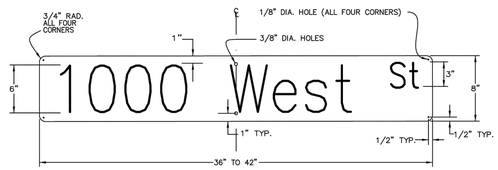
N.T.S.

DETAILS

PROJECT NUMBER 10928
PRINT DATE 7/28/21
DRAWN BY
CHECKED BY
PROJECT MANAGER

C-505





NOTES:
1- BACKGROUND SHALL BE GREEN, LEGEND AND LETTERS SHALL BE WHITE.
2- ALL SHEETING SHALL BE HIGH INTENSIRY REFLECTIVE SHEETING. (FP-85 TYPE III A)
3- SIGNS SHOULD BE MADE BY THE "REVERSE OUT" PROCESS. NO STICK ON LETTERS. CONTACT CITY SIGN SHOP FOR DETAILS.
4- SIGN BLANK SHALL BE 6061-T6 HEAT TREATED HIGH TENSILE DEGREASED ALUMINUM WITH ALODINE 1200 FINISH. MIN. THICKNESS SHALL BE 0.080".
5- EACH SIGN SHALL CONSIST OF TWO PLATES RIVETED TOGETHER AND MOUNTED AS REQUIRED.
6- SIGNS ON PRIVATE ROADS ARE REQUIRED AND SHOULD MEET SAME SPECIFICATIONS OF STANDARD SIGNS EXCEPT FOR BACKGROUND COLOR.
7- ALL STREETS WITH NAMES SHALL ALSO HAVE THE COORDINATE DESIGNATION ON THE SIGN IN THE APPROPRIATE LOCATION UNLESS OTHERWISE APPROVED.
8- ADDRESS COORDINATOR SHALL BE CONTACTED PRIOR TO MAKING SIGNS TO VERIFY PROPER NAMES AND COORDINATES.
9- ALL LETTERS AND NUMBERS SHALL CONFORM TO THE HEIGHT, WIDTH, STROKE WIDTH, AND SPACING AS PER THE U.S. DEPT. OF TRANSPORTATION PUBLICATION "STANDARD ALPHABET FOR HIGHWAY SIGNS".

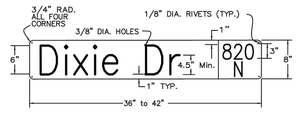
CITY OF ST. GEORGE ENGINEERING DEPARTMENT

REVISIONS DATE	DESCRIPTION	BY

STANDARD STREET SIGN

STANDARD DWG. NO. 400 | 1 OF 1
APPROVED:
DATE: | BY: LBB

SIGN DESIGNATION FORM



STANDARD ST. GEORGE CITY SIGN

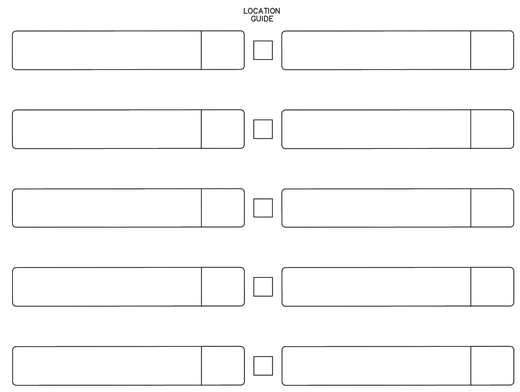
THIS FORM TO BE COMPLETED BY THE CITY ADDRESS COORDINATOR PRIOR TO ORDERING OF STREET SIGNS BY DEVELOPER.

PROJECT NAME

DATE BY

NOTES:
1- SEE DRAWINGS #400 & 401 FOR SIGN SPECIFICATIONS.
2- SIGNS ON PRIVATE ROADS WHEN REQUIRED BY THE CITY ENGINEER SHALL MEET ALL SPECIFICATIONS OF STANDARD SIGNS EXCEPT BACKGROUND SHALL BE BLUE.
3- ADDRESS COORDINATOR MUST BE CONTACTED PRIOR TO MAKING SIGNS TO VERIFY PROPER NAMES AND COORDINATES.
4- ALL STREETS WITH NAMES WILL ALSO HAVE COORDINATES DESIGNATED ON SIGN.

LOCATION GUIDE

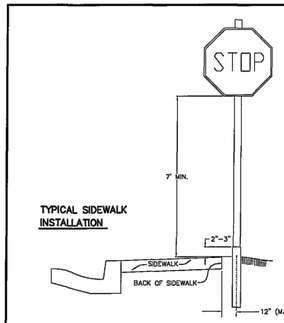


CITY OF ST. GEORGE ENGINEERING DEPARTMENT

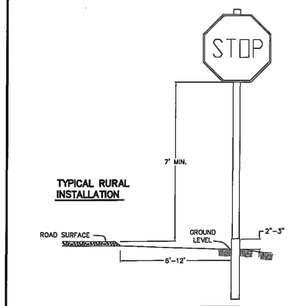
REVISIONS DATE	DESCRIPTION	BY

SIGN DESIGNATION FORM

STANDARD DWG. NO. 402 | 1 OF 1
APPROVED:
DATE: 6/20/96 | BY: LBB



TYPICAL SIDEWALK INSTALLATION



TYPICAL RURAL INSTALLATION

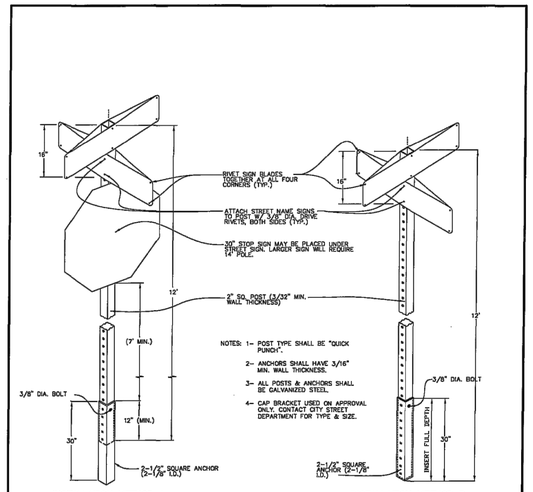
NOTES:
1- SIGNS SHALL BE PLACED IN CONFORMANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES. (M.U.T.C.D.).
2- STREET NAME SIGNS SHALL BE REQUIRED ON ALL CITY STREETS.
3- ALL POST COMPONENTS SHALL BE GALVANIZED STEEL.
4- STREET NAME SIGNS PLACED ABOVE STOP SIGN SHALL BE AS SHOWN IN DRAWING 110 (2 OF 2).
5- WHERE PLANTER STRIP LIES BETWEEN SIDEWALK AND CURB, SIGNS SHALL BE INSTALLED IN PLANTER STRIP AS PER M.U.T.C.D.
6- SIGNS SHALL BE PLACED TO BE CLEARLY VISABLE. ALL OBSTRUCTIONS SUCH AS TREES, POLES, OTHER SIGNS, ETC. SHALL BE AVOIDED.

CITY OF ST. GEORGE ENGINEERING DEPARTMENT

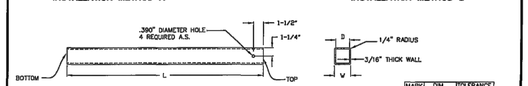
REVISIONS DATE	DESCRIPTION	BY

SIGN, POST AND INSTALLATION DETAILS

STANDARD DWG. NO. 410 | 1 OF 1
APPROVED:
DATE: | BY: LBB



INSTALLATION METHOD A **INSTALLATION METHOD B**



SIGN ANCHOR DETAIL

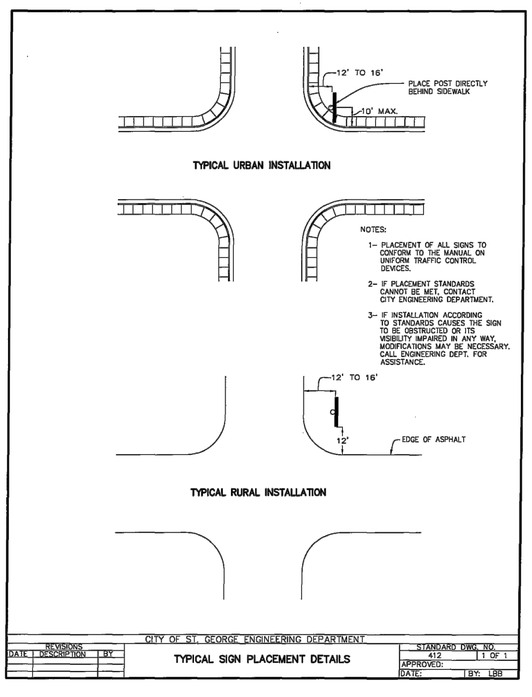
MARK	DIM.	TOLERANCE
D	2-1/8"	+1/16", -0"
L	30"	±1/4"
W	2-1/2"	±1/64"

CITY OF ST. GEORGE ENGINEERING DEPARTMENT

REVISIONS DATE	DESCRIPTION	BY

SIGN POST & MOUNTING DETAILS

STANDARD DWG. NO. 411 | 1 OF 1
APPROVED:
DATE: | BY: LBB



CITY OF ST. GEORGE ENGINEERING DEPARTMENT

REVISIONS DATE	DESCRIPTION	BY

TYPICAL SIGN PLACEMENT DETAILS

STANDARD DWG. NO. 412 | 1 OF 1
APPROVED:
DATE: | BY: LBB

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ST. GEORGE HOTEL PHASE I

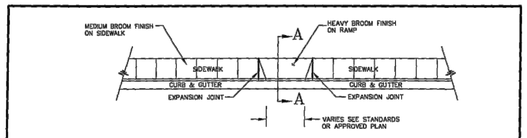
ST GEORGE
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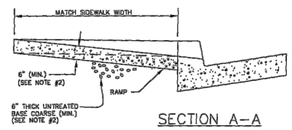
DETAILS

PROJECT NUMBER 10928
PRINT DATE 7/28/21
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C-506

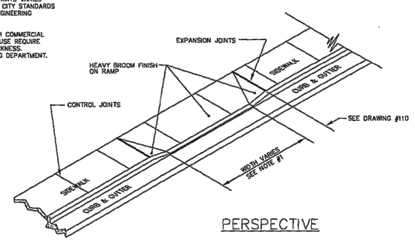


PLAN



SECTION A–A

NOTES:
1– WIDTH OF DRIVEWAYS VARIES WITH USE– SEE CITY STANDARDS OR CONTACT ENGINEERING DEPARTMENT.
2– DRIVEWAYS WITH COMMERCIAL OR INDUSTRIAL USE REQUIRE ADDITIONAL THICKNESS. SEE ENGINEERING DEPARTMENT.



PERSPECTIVE

CITY OF ST. GEORGE ENGINEERING DEPARTMENT

REVISIONS			DRIVEWAY APRON DETAILS	STANDARD DWG. NO. 111	1 OF 1
DATE	DESCRIPTION	BY		APPROVED:	
				DATE:	BY: LBB

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ST. GEORGE HOTEL
PHASE I
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DETAILS

PROJECT NUMBER 10928
PRINT DATE 7/28/21
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PROJECT MANAGER

C-507





HORIZONTAL GRAPHIC SCALE

40 0 20 40 80

(IN FEET)
HORZ: 1 inch = 40 ft.

CONSTRUCTION NOTE:

1. ALL EXCAVATIONS AND FILLS CONFORM TO APPENDIX "K" OF THE UTAH UNIFORM BUILDING STANDARDS ACT RULES AND THE CURRENT ADAPTED EDITION OF INTERNATIONAL BUILDING CODE.
2. SEE SHEET C-CS1 FOR CROSS SECTIONS.

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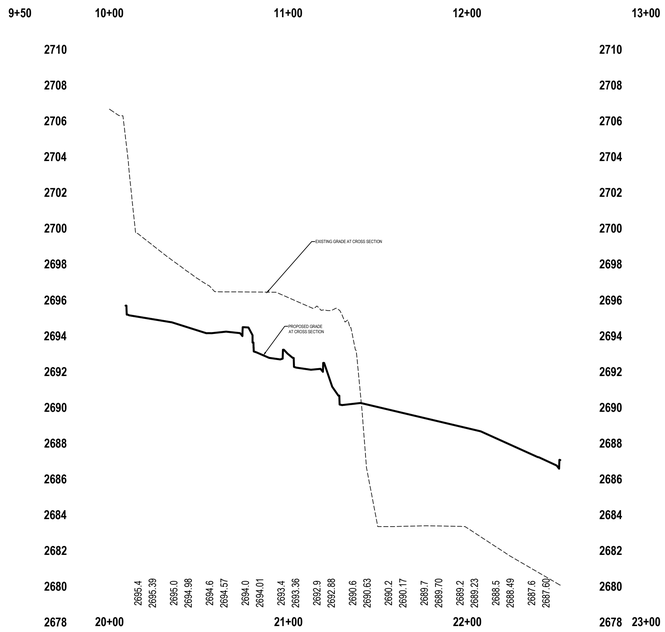
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PHONE: 801-528-0234

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PHASE I
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CROSS SECTIONS

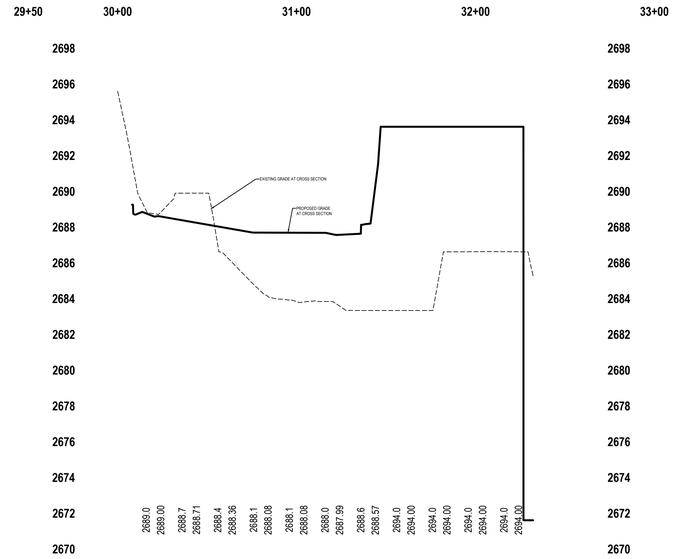
PROJECT NUMBER 10928
PRINT DATE 7/28/21
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C-CS



A SECTION A-A

SCALE: NONE



B SECTION B-B

SCALE: NONE

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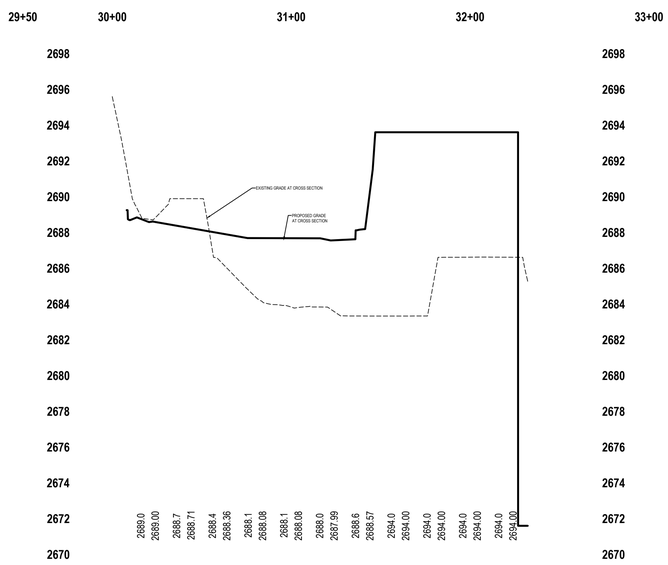
ST. GEORGE HOTEL PHASE I

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CROSS SECTIONS

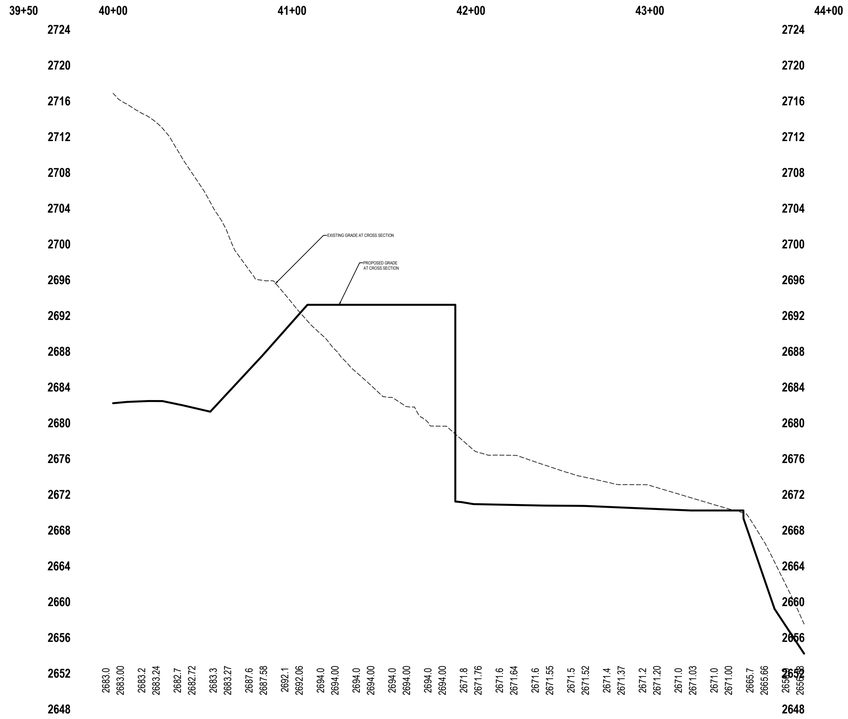
PROJECT NUMBER 10928
PRINT DATE 7/28/21
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PROJECT MANAGER

C-CS1



C SECTION C-C

SCALE: NONE



D SECTION D-D

SCALE: NONE

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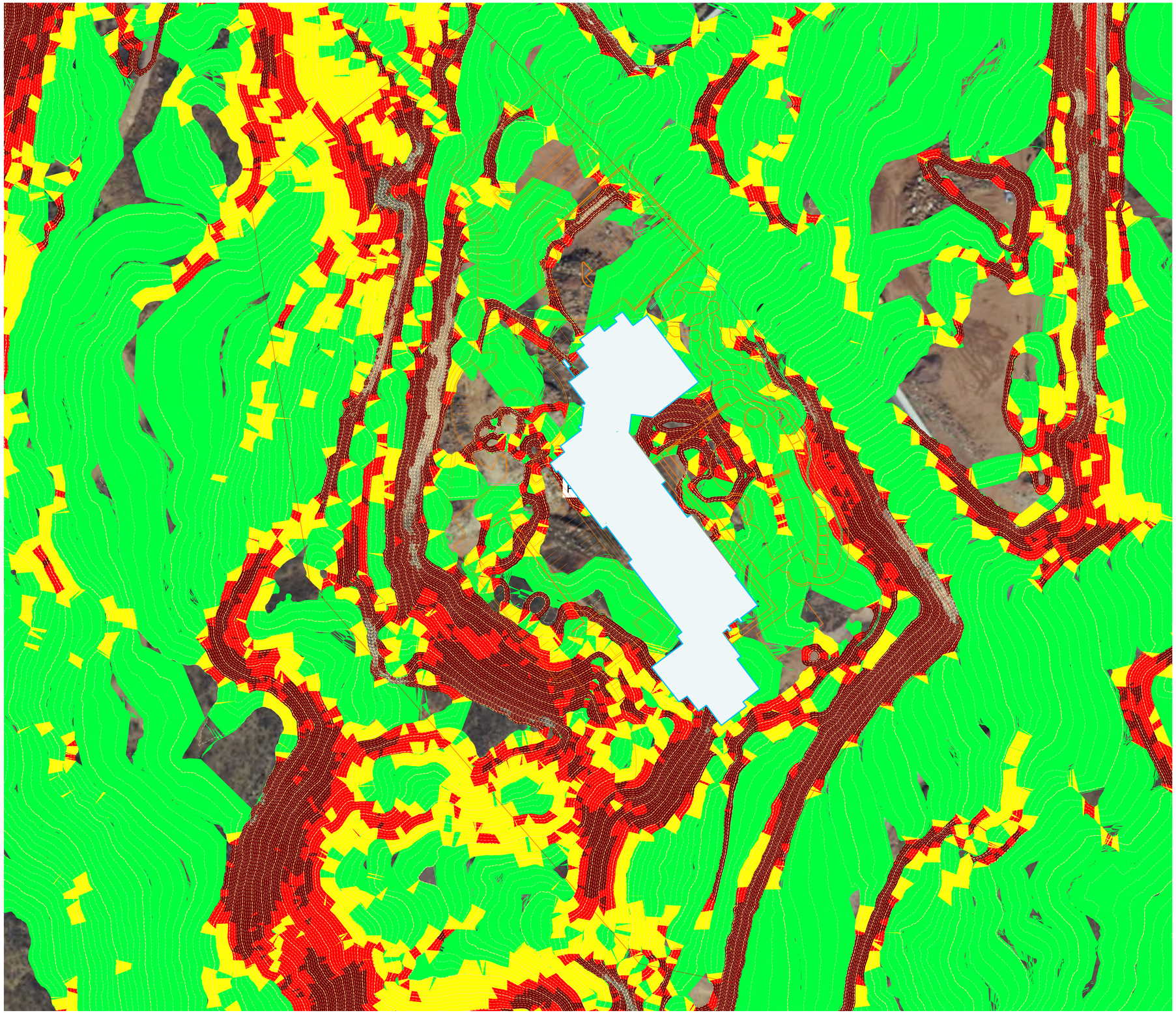
ST GEORGE

ST. GEORGE, UTAH

CROSS SECTIONS

PROJECT NUMBER 10928
PRINT DATE 7/28/21
DRAWN BY
CHECKED BY
PROJECT MANAGER

C-CS2



SLOPES TABLE			
NUMBER	MINIMUM SLOPE	MAXIMUM SLOPE	COLOR
1	1.00%	20.00%	
2	20.00%	30.00%	
3	30.00%	40.00%	
4	40.00%	100.00%	

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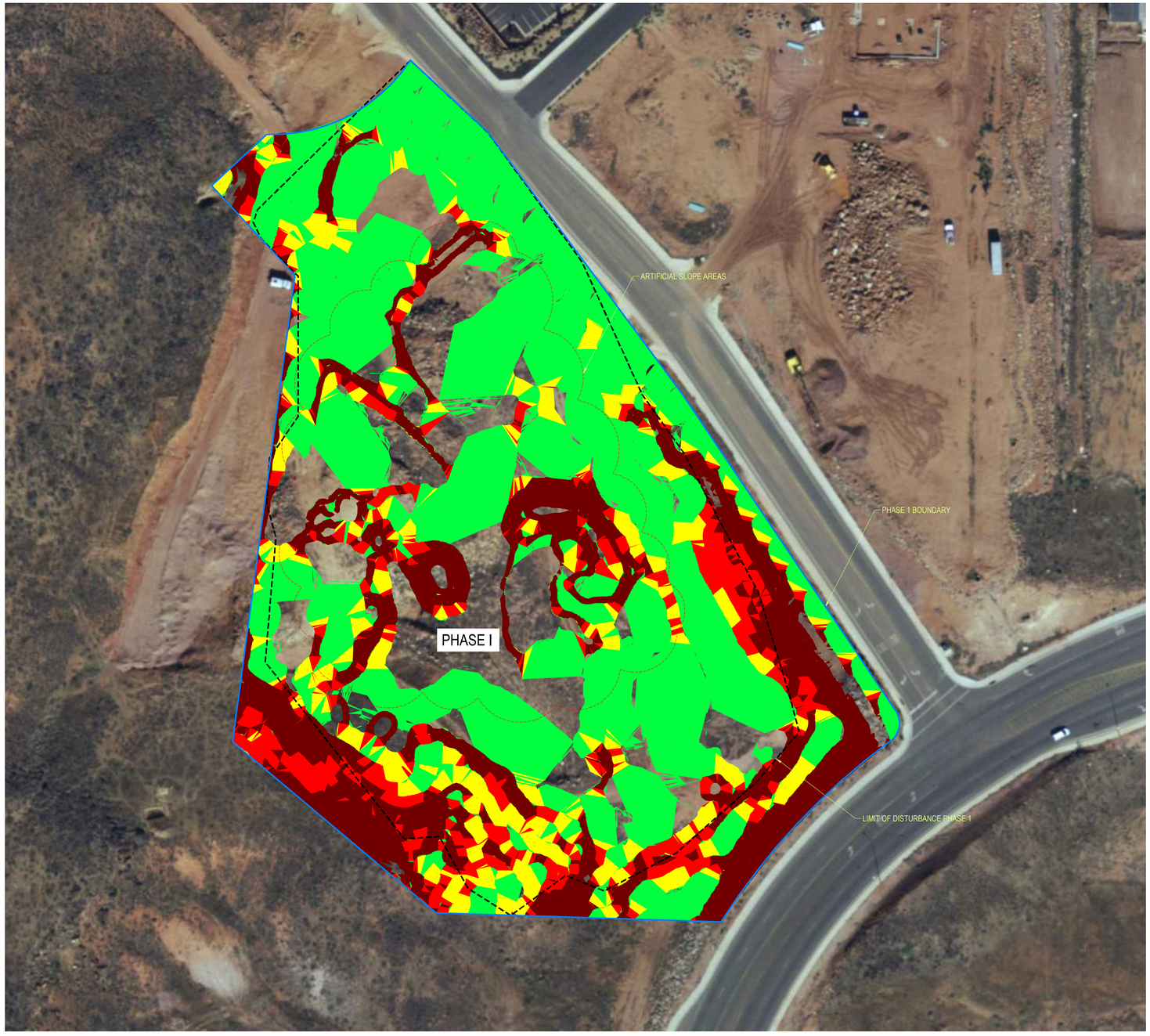
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SLOPE ANALYSIS

PROJECT NUMBER 10928
PRINT DATE 7/27/21
DRAWN BY
CHECKED BY
PROJECT MANAGER

EX-01

Exhibit B
Slope Analysis





HORIZONTAL GRAPHIC SCALE

30 0 15 30 60

(IN FEET)

HORZ. 1 inch = 30 ft.

SLOPES TABLE			
NUMBER	MINIMUM SLOPE	MAXIMUM SLOPE	COLOR
1	1.00%	20.00%	
2	20.00%	30.00%	
3	30.00%	40.00%	
4	40.00%	100.00%	

SLOPE ANALYSIS BREAKDOWN:

TOTAL PHASE 1 AREA:	285,557.61 SF	
AREA 20% OR LESS:	180,271.09 SF	TOTAL % OF SITE: 63.2%
AREA 20%-30%:	27,112.97 SF	TOTAL % OF SITE: 9.5%
AREA 30%-40%:	23,843.59 SF	TOTAL % OF SITE: 8.3%
AREA 40% OR MORE:	54,329.99 SF	TOTAL % OF SITE: 19.0%

NET AREA PHASE 1: LIMITS OF DISTURBANCE:	230,986.07 SF	
AREA 20% OR LESS:	152,463.07 SF	TOTAL % OF SITE: 66%
AREA 20%-30%:	25,040.45 SF	TOTAL % OF SITE: 10.8%
AREA 30%-40%:	20,878.54 SF	TOTAL % OF SITE: 9.1%
AREA 40% OR MORE:	32,604.01 SF	TOTAL % OF SITE: 14.11%

NET AREA LESS ARTIFICIAL SLOPE:	230,986.07 SF	
AREA 20% OR LESS:	188,346.20 SF	TOTAL % OF SITE: 82%
AREA 20%-30%:	18,372.10 SF	TOTAL % OF SITE: 8%
AREA 30%-40%:	13,190.83 SF	TOTAL % OF SITE: 6%
AREA 40% OR MORE:	11,076.94 SF	TOTAL % OF SITE: 4%

BASED ON THE NET AREA LESS ARTIFICIAL SLOPE CALCULATIONS, THE AREAS BEING DISTURBED AND DEVELOPED ARE UNDER THE PERCENTAGES IN THE CITY ORDINANCE.

LEGEND:

PHASE 1 BOUNDARY

LIMIT OF DISTURBANCE

ARTIFICIAL SLOPE AREA

ENSIGN
THE STANDARD IN ENGINEERING

CEDAR CITY
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DELTA BY MARRIOT ST. GEORGE I UTAH
PHASE I
250 WEST BLACKRIDGE DR.
ST. GEORGE, UTAH (SG-6-2-36-20031)

SLOPE ANALYSIS

PROJECT NUMBER 10928
PRINT DATE 08/13/21
DRAWN BY TMG
CHECKED BY JTN
PROJECT MANAGER CLN

EX-01

Exhibit C
Drainage Report

DRAINAGE REPORT

ST. GEORGE HOTEL PHASE 1

ST. GEORGE, UTAH

PREPARED FOR:

NEW ENGLAND ALLIANCE, LLC
PO BOX 680039
PARK CITY, UT

PREPARED BY:

BRENNAN REES, EIT

REVIEWED BY:

ROBERT Q. ELDER, PE

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TABLE 3-1: RATIONAL METHOD RUNOFF COEFFICIENTS (PRE-DEVELOPMENT) 3

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1.0 PROJECT OVERVIEW/LOCATION

The subject property is located in St George Utah, in the southeast half of Section 36, Township 31 South, Range 16 West, Salt Lake Base, and Meridian, Washington County, Utah. The development is bounded by 250 West to the east, Black Ridge Dr to the south, and Techridge to the north and west.

The purpose of this report is to present the conceptual drainage design for the proposed commercial St. George Hotel site. The proposed project sits on approximately 7.08 acres of the previously excavated site and will include the construction of a new commercial hotel. The proposed site is part of a subject parcel including 17.03 acres. Because of the topography and location of the proposed site, a sub-basin can be delineated that only includes the 7.08 acres. All runoff will be managed and detained on-site through curb & gutter, pipe networks, and underground detention facilities. All stormwater will be managed on-site and discharged at a controlled rate into the city's storm drain system.

2.0 EXISTING DRAINAGE CONDITIONS

The existing watershed consists of mixed-use of previously excavated hillside and spoil piles, rock piles, cut banks. Vegetation consists of short grasses and weeds, and desert brush. This area is contained by 250 West to the east, Black Ridge Dr. to the west, and private undeveloped land to the north, and Techridge to the west.

Overall, the site has steep slopes and cut banks, but naturally drains from the northwest to the southeast side of the property. Onsite slopes range from 3-99%. Offsite slopes that will impact the site range from 4-35%. The rational method was used to calculate the pre-development runoff for the site. The USGS Web Soil Survey (WSS) illustrated the different soil types but did not provide a hydraulic soil group. Being familiar with the area, a soil group D was assumed. Using table 2-6 in the St. George City Drainage Manual, the following coefficients were used.

TABLE 2-1: RATIONAL METHOD RUNOFF COEFFICIENTS (PRE-DEVELOPMENT)

Land Use	*Curve Number by Soil Type*		
	B	*C*	*D*
Land Cover Category			
Bare Soil: Newly Graded Areas	0.10	0.30	0.50
Desert Shrub: 30% to 70% ground cover	0.05	0.10	0.15

- Hydrologic soil group: This value is classified by the Natural Resources Conservation Service (NRCS) and is based on a soil's runoff potential. The soil group for this area is assumed D classification as defined by the NRCS and found through the Web Soil Survey.

The total pre-development runoff for the 100-yr, 24-hr storm event is 0.50 cfs or 0.03 cfs/acre. This value takes into account the offsite drainage area of 9.54 acres that will impact the site. See appendix B for calculations regarding pre-development areas and flows.

3.0 DESIGN OBJECTIVES AND METHODOLOGY

The site drainage system will be designed to meet the requirements of St. George City. This report will address the proposed drainage system, which is intended to both reduce the post-developed peak runoff as well as reduce the impact of the development on the environment. The proposed construction of this project will increase the amount of impervious areas on the site, which will increase the amount of site runoff. To address this increase, curb & gutter, a pipe network system, and an underground detention system have been designed to help reduce runoff. The site has been analyzed as one large drainage area and divided into smaller sub-basins. The sub-basins are associated with each respective undergroung detention structure as shown on the grading plan as well as attached in the appendix of this report.

The hydrology and hydraulics of this project area watershed was completed using the Rational Method to provide a conservative approach to sizing and stormwater management. Watersheds or sub-basins were delineated based upon the local topography from land survey data and the proposed finish-grade surface using AutoCAD Civil 3D. The sub-basins were then split into onsite and offsite areas. Each respective sub-basin and catchment was assigned a runoff coefficients based on the ground cover, impervious area, and Hydrologic Soil Group. The coefficients used were analyzed appropriate for the area of this study.

TABLE 3-1 RATIONAL METHOD RUNOFF COEFFICIENTS (POST-DEVELOPMENT)

Land Use	*Curve Number by Soil Type*		
	B	*C*	*D*
Land Cover Category			
Commercial	0.95	0.95	0.95
Bare Soil: Newly Graded Areas	0.10	0.30	0.50
Desert Shrub: 30% to 70% ground cover	0.05	0.10	0.15

Per the new UPDES MS4 permit, new developments shall retain the 80th percentile storm on site. Along with the MS4 permit requirements, the design criteria required by St. George City and implemented by Ensign during the modeling includes:

- Conveyance systems designed for the 100-year, 3-hour storm event.
- Detention designed for the 100-year, 24-hour storm event.
- Post-development discharges not to exceed 0.20 cfs/acre (pre-development = 0.30 cfs/acre)

The following rainfall distribution was used to analyze the system (Rainfall data obtained from NOAA's Atlas 14 Point Precipitation Frequency Estimates system):

TABLE 3-2 RAINFALL DATA

Frequency (years)	Precipitation (inches)
2	1.13
10	1.63
25	1.93
100	2.40

Precipitation depths shown are for a 24-hour time period. NOAA ATLAS 14 point precipitation frequency estimates for the subject site shows a precipitation depth of 1.60 inches for the 10-year, 24-hr storm event.

4.0 PROPOSED DRAINAGE CONDITIONS

The proposed site will be designed to direct runoff from paved and other hardscape areas into curb & gutter and waterways which will be collected in catch basins and discharged into underground detention structures. Once storm water has entered a series of pipes and catch basins, it will be conveyed to two detention structures on-site. Water will then be managed/treated and infiltrated and discharged at a controlled rate into the city's stormdrain system. The pre-development release rate of the system was computed to be 0.30 cfs/acre for the 100-year storm while the post-development release rate will be 0.20 cfs/acre.

The roadways, pipes, structures, and sumps are designed to be able to convey runoff and manage the 100-year, 3-hour storm event.

The site has been designed to detain the 100-year storm event at a 0.20 cfs/acre release rate. There is a totalk of 16.63-acres of contributing area that will be detained. This results in a total allowable release rate of 3.33 cfs $\left(Q_{allowable} = 16.63\ acres\ x\ 0.2\ {}^{cfs}/_{acre} = 3.33\ cfs\right)$ which is less than the pre-developed flow of 4.99 cfs.

Storage volumes to manage the 100-year event is calculated to be 27,166 cu.ft. See appendix B for calculations regarding pre-development areas and flows.

Refer to Appendix A Grading Plan for sub-basin delineation and associated detention structures..

5.0 CONCLUSIONS

The drainage system as outlined will safely convey storm water to and manage on-site storm water. In addition, the design will limit post-construction stormwater flow rates to less than pre-developed rates. All pipe sizes shown are adequate to convey runoff from the 100-year, 3-hour storm event and detention has been sized to manage the 100-year, 24-hr event.

Ensign Engineering

Brennan Rees, EIT
Design Engineer

Robert Q. Elder, P.E.
Principle

6.0 APPENDIX A – OVERALL GRADING PLAN / BASIN DELINEATION

7.0 APPENDIX B – RATIONAL METHOD CALCULATIONS

PRE-DEVELOPMENT

Hotel Site in St. George

PROJECT TITLE: St. George Hotel	PROJECT NUMBER: 10928
LOCATION: St. George, Utah	DATE: 07/28/21
OWNER: New England Alliance, LLC	SHEET: 1 OF 1

DESIGNED BY:	CHECKED BY:	APPROVED BY:
B. Rees	J. Nowell	R. Elder

AREA CALCULATION

HARDSCAPE AREA :	0.00	acres	runoff coeff. C :	0.95
Offsite	9.54			0.15
NATIVE AREA :	7.09	acres	runoff coeff. C :	0.50
TOTAL AREA :	**16.63**	acres	WEIGHTED C :	**0.30**

RUNOFF CALCULATION

100 Year Design Storm

Allowable Runoff cfs/ac

Total allowable runoff cfs

Time (min)	CA (Acres)	Precipitation (in/hr)	Time (sec)	Cumulative Runoff (ft^3)	Allowed Runoff (ft^3)	Storage (ft^3)
5	4.97	5.8	300	8,655	0	8,655
10	4.97	4.42	600	13,191	0	13,191
15	4.97	3.65	900	16,339	0	16,339
30	4.97	2.46	1,800	22,024	0	22,024
60	4.97	1.52	3,600	27,217	0	**27,217**
120	4.97	0.809	7,200	28,972	0	28,972
180	4.97	0.551	10,800	29,599	0	29,599
360	4.97	0.326	21,600	35,024	0	35,024
720	4.97	0.181	43,200	38,892	0	38,892
1440	4.97	0.1	86,400	42,974	0	42,974

Total Pre-development runoff (cfs) (Cumulative Runoff (ft^3)/ Time (sec)) = 0.50

Total Pre-development total runoff (cfs/ac) = 0.03

POST-DEVELOPMENT

Hotel Site in St. George

PROJECT TITLE: St. George Hotel	PROJECT NUMBER: 10928
LOCATION: St. George, Utah	DATE: 07/28/21
OWNER: New England Alliance, LLC	SHEET: 1 OF 1

DESIGNED BY:	CHECKED BY:	APPROVED BY:
B. Rees	J. Nowell	R. Elder

AREA CALCULATION

HARDSCAPE AREA :	4.85	acres	runoff coeff. C :	0.95
Offsite	9.54			0.15
NATIVE AREA :	2.24	acres	runoff coeff. C :	0.50
TOTAL AREA :	**16.63**	acres	WEIGHTED C :	**0.43**

RUNOFF CALCULATION

100 Year Design Storm

Allowable Runoff 0.2 cfs/ac

Total allowable runoff **3.330** cfs

Time (min)	CA (Acres)	Precipitation (in/hr)	Time (sec)	Cumulative Runoff (ft^3)	Allowed Runoff (ft^3)	Storage (ft^3)
5	7.16	5.8	300	12,450	999	11,451
10	7.16	4.42	600	18,976	1,998	16,978
15	7.16	3.65	900	23,505	2,997	20,508
30	7.16	2.46	1,800	31,684	5,994	25,690
60	7.16	1.52	3,600	39,154	11,988	**27,166**
120	7.16	0.809	7,200	41,678	23,976	17,702
180	7.16	0.551	10,800	42,580	35,964	6,616
360	7.16	0.326	21,600	50,385	71,928	0
720	7.16	0.181	43,200	55,949	143,856	0
1440	7.16	0.1	86,400	61,822	287,712	0
				STORAGE REQUIRED :		**27,166**

Exhibit D
Geotechnical Report

GEOTECHNICAL INVESTIGATION

BLACKSTONE HOTEL SITE
WEST PARCEL

250 WEST BLACKRIDGE DRIVE

ST. GEORGE, UTAH

PREPARED FOR:

BLACK RIDGE DEVELOPMENT, LLC
2001 PARK AVENUE
PARK CITY, UTAH 84060

ATTENTION: OSCAR COVARRUBIAS

PROJECT NO. 2211175 **SEPTEMBER 8, 2021**

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EXECUTIVE SUMMARY

1. Two geologic hazards exist at the site which could impact the project. The hazards include the potential for landslide movement and heave due to the highly expansive soil and bedrock.

2. The stability of the slope, upon which the hotel is planned does not meet the minimum standard criteria for stability using saturated soil strengths. AGEC is conducting additional studies to evaluate the stability of the slope incorporating unsaturated strengths of the landslide and undisturbed materials.

3. Due to the expansive characteristics of the on site clay and bedrock, there is the potential for significant heave up wetting of the subgrade soil and bedrock. We understand that the foundation system is planned to be a deep foundation system consisting of caissons or micropiles to address this issue.

4. The subsurface investigation include the drilling of Six borings were drilled at the locations shown on Figure 2. The borings were drilled to depths of 24 to 124 feet below the existing ground surface. The borings were drilled entirely in the landslide deposit. The subsurface profile observed in the borings drilled generally consists clay mixed with rock (talus) overlying mudstone bedrock to the maximum depth investigated. There were layers of sandstone within the mudstone.

5. Groundwater was measured at an elevation of approximately 2,576½ feet, which is approximately 113 feet below the proposed “0" level of the hotel.

6. Detailed recommendations for subgrade preparation, grading, materials, foundations, pavement and drainage are included in the report.

SCOPE OF WORK

This report presents the results of a geotechnical investigation for the proposed Blackstone Hotel to be located in St. George, Utah, as shown on Figure 1. This report presents the subsurface conditions encountered and recommendations for the geotechnical aspects of the project.

Field exploration was conducted to obtain information on the subsurface conditions and to obtain samples for laboratory testing. Results of the field exploration and laboratory testing were analyzed to develop conclusions, professional opinions and recommendations for the proposed development.

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. Design parameters and a discussion of geotechnical engineering considerations related to construction are included in the report. Our scope of work was conducted in general accordance with our proposal dated April 19, 2021 and signed May 19, 2021.

An additional slope stability report will be provided that will address the landslide hazard.

PREVIOUS STUDIES

AGEC has conducted various levels of studies on the property and adjacent properties since 1998. The following studies were referenced as a part of our study.

1. Blackridge Development, Geologic Hazard Assessment and Preliminary Geotechnical Recommendations, AGEC Project No. 980473, dated March 5, 1999.

2. Blackridge Drive Special Improvement District, AGEC Project No. 981307, dated April 25, 2000.

3. Grading Recommendations and West Slope Grading Recommendations, AGEC Project No. 2991121, dated September 15, 1999 and November 15,1999.

4. Tech Ridge South Access Road, AGEC Project No. 2180187, dated October 19, 2018.

5. Black Stone Hotel, (east parcel), AGEC Project No. 2180187, dated December 14, 2018.

6. Black Stone Hotel Slope Stability Consultation, AGEC Project No. 2180187, dated September 23, 2019.

SITE CONDITIONS

The site consists of a previously graded parcel of undeveloped property in the Black Ridge Development in St. George, Utah. A large amount of soil and bedrock was removed from the site resulting in a relatively level site with a few stockpiles of soil.

The graded area has a significant cut slope along the west side of the property and a moderately steep cut slope along the south portion of the property. The graded area is generally lower through the center of the site with several piles of fill. Due to the lower area, storm water has not been allowed to drain off the property and is generally retained on the site.

A containment area of deposited pieces of asbestos pipe is also located on the property. The area is shown on a recorded survey map included in Appendix A of this report. The asbestos removal and disposal is not included in our scope of work.

There is a roadway, (250 West Street) located along the eastern portion of the site which slopes down from the north to the south to the intersection with Blackridge Drive. The slope, which was cut to grade the roadway is partially lined with stacked basalt boulders.

The property to the south consists of additional hillside and slopes from the top of Tech Ridge to the west down to Blackridge Drive.

The property immediately to the west, above the graded slopes up to the top of Tech Ridge (the previous airport property). The top of the ridge is a basalt capped ridge with talus or littered rocks along the upper slope.

The area to the north is relatively level with additional small knolls and bench areas.

Across 250 West Street to the east is vacant, previously graded property along with two office buildings.

Several photos of the site conditions are included in the appendix.

FIELD STUDY

An engineer from AGEC visited the site on June 14-16, 2021 and observed the drilling of six borings as shown on Figure 2. The borings were drilled utilizing a truck-mounted rill rig equipped with augers and coring tools. Boring B-4 was drilled using a 2½ inch HQ core barrel with a carbide and carbonado bit using mud rotary techniques. The other borings were drilled with auger. The subsurface conditions were logged and samples were obtained.

In addition, five test pits were excavated on July 6, 2021 with a track excavator at the approximate locations shown on Figure 2.

SUBSURFACE CONDITIONS

The subsurface profile observed in the borings drilled and test pits excavated generally consists lean clay mixed with rock (talus) overlying mudstone bedrock, all within the landslide deposit. There were layers of sandstone within the mudstone.

Descriptions of each soil and bedrock type observed follow.

Fill - The fill varies from clayey gravel to lean/fat clay. It contains occasional cobbles and boulders. Consistency appears poorly compacted and is red to brown to purple in color. The clay varies from low to high plasticity. The cobbles and boulders are mixed with basalt and sandstone/shale bedrock chunks.

Lean/Fat Clay (CL/CH) - The lean clay is medium stiff to very stiff and is slightly moist. It is generally medium to highly plastic an red to brown to purple in color.

Clayey Gravel GC) - The clayey gravel is dense and generally dry. The gravel is angular and generally contains cobbles and boulder size particles. It is brown to red in color. The basalt gravel is gray and black in color.

Mudstone Bedrock - The mudstone consists of lean to fat clay with varied amounts of sand. It is soft to moderately hard, slightly moist to very moist to wet, medium to high plastic, and is purple to red to grey in color.

Laboratory tests conducted on samples of the mudstone bedrock indicate in-place moisture contents ranging from 7 to 24 percent, in-place dry densities ranging from 93 to 126 pounds per cubic foot (pcf) and percent passing the No. 200 sieve (fines contents) ranging from 60 to 94 percent. Atterberg Limits tests indicate liquid limits ranging from 53 to 77 percent and plasticity indexes ranging from 37 to 54 percent. Water soluble sulfate tests indicate water soluble sulfate concentrations ranging from

370 to 11,707 ppm. Unconfined compressive strength tests indicate unconfined compressive strengths ranging from 1,540 to 6,900 psf.

Relatively undisturbed, one-dimensional consolidation tests conducted on samples of the mudstone indicate it is non to highly expansive when wetted under a constant pressure of 1,000 psf. Swell percentages up to 7½ percent were measured. Swell pressures ranging from approximately 3 to 13 kips per square foot (ksf) were also measured.

The Logs of Exploratory Borings are shown on Figures 3 to 6. Legend and Notes of the Exploratory Borings are shown on Figure 7. The laboratory test results are also shown on Figures 3 to 6 and are summarized in the Summary of Laboratory Testing, Table 1. The consolidation/swell test results are shown graphically on Figures 8 to 12.

SUBSURFACE WATER

The depth to groundwater was measured on August 11, 2021 (in deeper borings in the area) and found to be approximately 113 feet below the proposed "0" level of the hotel.

PROPOSED CONSTRUCTION

It is currently proposed to develop the site for a resort style hotel. The resort hotel will include a conference center, a restaurant, a gym as well as other amenities. There will also be a below grade swimming pool/spa on the east side of the hotel.

Architectural drawings of the development indicate the hotel will consist of a four-story structure with perimeter parking. The hotel will require excavation on the order of 10 to 15 feet below the existing grade. The front or east side of the hotel will expose the lower level, while the back or west side will be backfilled up to the main or 2nd level.

We understand the upper levels of the hotel will consist of conventional wood framing and we anticipate the below grade portions will utilize reinforced concrete construction. The swimming pool will use a reinforced gunnite shell.

Due to the presence of the underlying expansive soil and bedrock, the buildings and pool will be supported on deep foundation elements consisting of micropiles or drilled concrete piers in conjunction with grade beams and structural floors.

The development will also include underground utilities, asphalt concrete pavement and concrete retaining walls.

Additional details regarding the design, site improvements and building loads are currently not available. If the proposed construction, loading conditions, or grading are significantly different from what is described above, we should be notified so we may reevaluate our recommendations.

GEOLOGIC HAZARDS

Review of geologic hazard mapping by Lund et. al. (2008) and our experience in the area indicate the following conditions that could adversely impact the site:

A. Landslide

The site for the proposed new hotel is located in the lower section of a 300-foot high slope. The lower ⅔ of the slope has been mapped as a landslide deposit. The ground surface of the landslide deposit slopes on average approximately 7:1 H:V (horizontal to vertical). The landslide deposit is estimated to extend up to a depth of approximately 200 feet below the existing ground surface at the site.

Old landslides are often marginally stable and may reactivate with new loadings or other changes in condition that tend to reduce their stability. With the site located on a landslide deposit, the subsurface conditions need to be carefully investigated and the stability of the slope evaluated under static and seismic conditions in order to estimate the risk. The risk of future movement needs to then be recognized, potential impact of ground movement identified, appropriate consideration given to remedial measures and then a decision made if the benefit is worth the risk.

B. Expansive Soil and Bedrock

Geologic mapping indicates that the site is situated where the Chinle Formation, which consists of highly expansive bedrock, is present. It is high plastic and also has a high shrink/swell susceptibility.

SLOPE STABILITY

A. Earlier Evaluations

Earlier studies by AGEC on the stability of the east slope of Tech Ridge (slope on which the hotel is proposed) indicate that the stability of the slope is marginal.

Previous studies included the installment of five inclinometers. The inclinometers were installed in order to determine if movement is occurring on the slope, five inclinometers were installed in 2007 on the east slope of Tech Ridge extending to depths of 92 to 250 feet. When measured in 2018, four of the five inclinometer measurements indicated that there had been no movement since 2007. Ground movement was measured in 2011 at multiple depths in the inclinometer north of the proposed hotel site. The inclinometer was located immediately west of the vacant fast food restaurant located at 1090 South Bluff Street.

With the lack of measured movement in the four inclinometers over a time period of 10½ years, along with the lack of surficial evidence of movement, it appears that the portion of the slope, for this project, is currently maintaining its stability. Using the information available from our subsurface exploration, the laboratory test results and our experience in the area, it is our professional opinion that the stability of the slope is marginal even with the lack of apparent movement.

B. Site Specific Stability

Based on our experience in the area along with the information that we have gathered from studies on this landslide, we have analyzed the stability of the slope in the area of the proposed hotel.

1. Prior Slope Modifications

   A number of years ago, a relatively large amount of soil and bedrock was removed from the area currently proposed for the hotel and placed on the lower portions of the slope (east of the hotel site). These changes have not significantly changed the stability of the slope.

2. Proposed Site Grading

   The ground surface profile proposed for the hotel, does not change the stability of the slope.

3. Stability Analysis

   The stability analysis indicates the following:

   a. A calculated factor of safety using saturated soil and bedrock strengths is near 1. A factor of safety on the order of 1.5 is typically desired for slopes upon which human occupied improvements are constructed when using saturated soil and bedrock strengths. Lower factors of

safety can be considered appropriate when weaker strengths are included in the analysis.

b. Changes in the internal conditions and the surficial geometry modifications may improve or reduce the ability of the slope to maintain its stability.

4. Possible Impact of Current Conditions

Assuming that strength characteristics of the landslide mass have improved (soils behaving as if they are unsaturated) since the ancient landslide movements occurred, overall calculated stability of the slope is estimated to increase approximately 20 to 30 percent.

The stability under a seismic event, assuming the improved strength characteristics described above, is estimated to have a safety factor of less than 1. A major seismic event could potentially result in displacement of the slope.

The potential increase in the calculated safety factor using un-saturated soil strength needs further evaluation and substantiation in order to quantify this improvement.

5. Other Mitigating Factors

If the decision is made to continue with further design and potential construction of the hotel at this location, we recommend that the following items be considered:

a. Minimize, if not eliminate the introduction of moisture into the subgrade. This could be accomplished by,

i. Collecting and transporting surface drainage off of the site in water tight storm drainage systems. This type of construction is not standard and therefore it would require specific attention to verify that the improvements are water tight.

ii. Water ways should be lined to prevent seepage into the ground.

iii. Measures need to be taken to eliminate the potential for water to pond on the slope.

b. Positive steps would need to be taken on other improvements on the landslide mass to help maintain the overall stability of the slope.

RECOMMENDATIONS

Based on our experience in the area, subsurface conditions encountered, laboratory test results, and proposed construction, the following recommendations are provided:

A. Site Grading

Based on the subsurface conditions observed and the proposed grading, the following recommendations are provided.

1. Subgrade Preparation

a. General: Prior to placing site grading fill or concrete, the existing sparse vegetation should be removed. The piles of fill and boulders should also be removed.

b. Flatwork and Pavement Support: We recommend removing the existing fill, which appears to vary from 1 to 4 feet prior to placing additional fill in

these areas. We anticipate improvements (pool and decking) will be supported on deep foundation elements.

The Asbestos Deposit area subgrade preparation will be addressed by others.

We recommend flatwork and pavement be supported on an appropriate thickness of non-expansive, low permeable fill. The thickness of low permeable fill should be based on the acceptable magnitude of potential differential vertical movement.

The low permeable fill layer is intended to reduce the risk of wetting the expansive soil/bedrock. Strict site drainage is critical to the satisfactory performance of flatwork, pavement and other movement sensitive surface supported features. The estimated potential surface heave associated with corresponding overexcavation depths are provided in the following table.

Thickness of Non-Expansive Low Permeable Fill (feet)	Estimated Potential Differential Vertical Slab Movement (inches)
0	3½ to 5
2	2½ to 3¾
4	2 to 3
6	1½ to 2½
8	1¼ to 2
10	1 to 1½
12	¾ to 1¼
14	¾ to 1
16	½ to ¾

As a minimum, we recommend at least 5 feet of non-expansive, low permeable fill be placed above the mudstone bedrock in areas which will support flatwork or pavement. The risk of heave potential may also be reduced by increasing the overexcavation depth and providing strict drainage.

Buildings: Buildings will be supported on deep foundation elements with raised structural floors. Therefore, removal of fill or mudstone is not critical under building areas unless slab-on-grade floors will be considered.

Lateral Extent: All overexcavation and subgrade preparation procedures should extend at least 5 feet beyond the perimeter of the proposed construction. Excavations should be located by survey.

2. Excavation/Earthwork

Excavation of the on-site soil and soft bedrock at the site may be accomplished with typical excavation equipment. The drilling of the soil and bedrock encountered to the depths investigated may be performed with typical rotary drilling equipment. Difficulty may be encountered when drilling through cobbles and boulders which are present in the fill and talus. Loss of drilling fluid may also occur due to the presence of voids in the fill.

3. Grading Slopes and Trenches

Permanent cut slopes excavated into the overburden soils should be cut no steeper than 2:1 (Horizontal:Vertical). Permanent cut slopes into the soft mudstone bedrock should be cut no steeper than 1:1 (Horizontal:Vertical).

It has been our experience that the mudstone surface will dry to a “pop corn” texture and ravel resulting in deposition of material at the toe until an approximate 2½:1 slope is achieved over time. To improve performance of steeper cut slopes in the mudstone, slope facing should be considered along

with strict site drainage away from the slope and implementation of desert landscaping.

Facing could consist of large stacked boulders, precast concrete blocks or reinforced gunnite facing attached with soil nails. A drain should also be constructed behind the facing to reduce the potential for water accumulation and buildup of hydro-static pressure. If these options will be considered, AGEC should be contacted to provide further consultation.

Unretained fill slopes constructed with properly compacted on-site soil should be graded no steeper than 2:1 (horizontal to vertical). Slopes should include benches in accordance with the 2018 IBC. The cut and fill slopes will be highly susceptible to erosion, particularly resulting from run off from the adjacent slopes. Water should be directed around slopes using drainage swales to reduce potential erosion.

Fill slopes should be graded by overbuilding and then cutting them back to the desired grade to provide a compacted slope face. Fill placed on existing slopes steeper than 4:1 (horizontal to vertical) should be placed using a benching procedure. Benches should be of sufficient width to allow adequate area for the 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 Horizontal:Vertical) for overburden soils and soft mudstone. 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.

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	95	90
Site grading	95	90
Slabs (base course)	Does not apply	95
Utility trench backfill	95	90
Wall Backfill	95	90

* Fine-grained low permeable fill/processed mudstone.
** Granular site grading fill/granular low permeable fill/structural fill.

Prior to placing approved fill, the exposed subgrade should be moisture conditioned and compacted as recommended above. 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 materials should be properly moisture conditioned prior to placement. Fine-grained soil, low permeable fill and processed mudstone or mudstone/sand mixture should be moisture conditioned to 2 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. Each lift of fill placed should be tested to verify moisture content and compaction are appropriate.

5. Materials

Recommendations for imported fill types follow. If structural floors are used, the type of fill placed under the buildings is not critical. Imported fill should be non-expansive and meet the following recommendations.

Area	Fill Type	Recommendations
Footings/pads/site	Structural and site grading fill	-200 <35%, **LL** <30% Maximum size: 4 inches Solubility < 1%
Under slabs/flatwork	Base course	-200 <12% Maximum size: 1 inch
Drains	Gravel	1 inch max size -200 <5%

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

The existing site grading fill is variable in plasticity and portions are expansive. The on site fill is suitable for use as site grading fill, wall backfill and utility trench backfill in areas which will support hard surfaces and pavement at depths greater than 5 feet below the finished grade.

If portions of the onsite fill appear low plastic, it may also be suitable for use as fill extending to the surface, but observation and additional testing would be necessary. Alternatively, the fill may be mixed with imported, non-expansive fill or imported soil would be placed to support in the upper 5 feet of the profile.

The on-site mudstone is not suitable for use wall backfill or as fill in structural areas or areas which will support hard surfaces and pavement. It may be used as fill in landscape areas or it should be disposed of offsite.

The potential impact of the expansive characteristics of the underlying clay and mudstone can be reduced by protecting the soil and bedrock from becoming wet. Placement of relatively low permeable fill above the expansive materials can help reduce the possibility of water coming in contact with the expansive materials. The low permeable fill supporting these areas is intended to provide a low permeable zone to reduce the potential for water to infiltrate and wet the underlying subgrade. If the expansive subgrade below the low permeable fill is wetted, surface heave will occur. This will result in reduced flatwork and pavement life.

Low permeable fill used to replace removed mudstone should meet one of the following set of criteria.

Liquid Limit (%)	Percent Passing the No. 200 Sieve
45 +	15-20
30-45	20-40
0-30	30-100

The onsite fill soil mixed with some imported, non-expansive, granular fill will likely meet the low permeable fill requirements at a ratio of 1 part granular soil to one part of the onsite fill. The mixture should be tested by AGEC to verify its engineering characteristics prior to use as fill.

6. Drainage

The following drainage recommendations should be implemented to reduce the potential for wetting of the underlying expansive soil and bedrock.

a. Positive site drainage away from foundations should be maintained during the course of construction.

b. After construction has been completed, positive drainage of surface water away from the buildings should be maintained throughout the life of the structure. We recommend a minimum slope of 6 inches in the first 10 feet from the perimeter of the structure. In no case should water be allowed to pond adjacent to foundations.

c. Desert landscaping, which requires no water, should be implemented. Grass should not be used. Rock mulch and turf are recommended.

d. Rain gutters should be utilized and roof down spouts should be piped to discharge to the storm drain system. This will require design of buried discharge pipes with flexible watertight connections.

e. If planters are used, they should be underlined by a impermeable membrane which is sloped to a discharge pipe which discharges water to storm drain.

f. We also recommend that desert landscaping, which requires no water, be used adjacent to concrete walls and masonry walls or other cement containing elements which will be backfilled. Further, 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 on concrete/masonry.

7. Subsurface Drainage Protection

As a precautionary measure, the crawl space and below grade portions of the hotel and parking structure should be protected from potential infiltration of surface water by constructing a perimeter subsurface drain around the crawl space of the building.

The drain system should consist of a 1 foot wide trench excavated around the outside perimeter of the grade beam/walls supporting the buildings. The trench should be excavated to a depth of at least 2 feet below the crawl space depth. A 4-inch perforated PVC pipe should be placed in the bottom of the trench and covered with free-draining gravel to within 2 feet of the ground surface. Prior to backfilling, Mirafi 140N filter fabric should be placed over the gravel. The perimeter drain trench and the grade beams should be backfilled with properly compacted, low permeable fill above the gravel to reduce the potential for surface water infiltration directly to the crawl space between the beams and the trench.

The drain pipe should be placed in the bottom of the drain trench and sloped at a 2 percent grade (minimum) to drain by gravity or to a sump and discharge to the storm drain system.

B. Foundations

We recommend the proposed hotel, parking structure, pool and pool decking be supported on deep foundation elements which will extend support of the structures through any existing fill and the active zone of the expansive materials down to the underlying "non-active" mudstone. The deep foundation elements should extend at least 30 feet into the underlying expansive mudstone and be designed by a structural engineer according to the parameters provided in Table 2 of this report. Grade beams should be utilized to span the distance between piers and support a structural floor with a crawl space below. The following recommendations should be followed for the design and construction of the deep foundation system.

1. <u>Micropile Design</u>
   a. Minimum length = 30 feet.

   b. End bearing should not be considered for micropile capacity. Capacity of micropiles will be developed through skin friction.

c. The micropiles should be structurally reinforced to resist tensile forces on the pile due to upward skin friction (uplift) which could result if the mudstone is wetted and swells. The tensile force may be calculated utilizing at least 10 feet of pile length with an ultimate skin friction of 1,000 psf. A "greased PVC bond breaker" may also be considered to reduce uplift forces on the micropiles.

d. The micropile should be designed for a minimum dead load of 3,000 pounds. If the minimum dead load cannot be met and piles are spaced as far apart as practical, the length should extend beyond the minimum penetration to make up the dead load deficit. This can be accomplished by using the appropriate resisting ultimate skin friction as given in Table 2.

e. Care should be taken to assure the micropiles are not over-sized (mushroomed) at the ground surface, which could provide an area where swelling soil/rock could exert uplift forces on the piles.

f. The water cement ratio of the grout should be on the order of 0.45 to 0.50. This should be verified during construction using a grout scale to verify the grout has a specific gravity on the order of 1.8 to 1.9. The grout volume should be recorded for each micropile constructed to ensure the appropriate volume is placed.

g. Grout should be placed in the micropiles the same day they are drilled using a tremmie pipe which extends to the bottom of the drill hole. The tremmie pipe should be raised as the grout is placed to ensure the element is free of voids. If water enters the drill holes, it would be necessary to place grout immediately after the drill hole is completed using a tremmie. The tremmie will also displace water out of the hole

as grout is placed. Failure to place grout the day of drilling may require re-drilling for additional bedrock penetration.

h. Micropile holes should be observed during drilling to verify depth. If air rotary methods are used, they can also be inspected to verify caving does not occur below the ground surface which could also result in additional uplift forces.

j. "Centralizers" should be used on the micropile steel reinforcing bar at approximately a 5 to 7 foot spacing to ensure the appropriate grout cover on the reinforcing.

2. Drill Pier Design

a. Minimum length = 30 feet.

b. Capacity of drilled piers may consider end bearing and skin friction to determine capacity. The end bearing capacities provided in Table 2 are allowable and include a factor of safety of 2.0.

c. The drilled piers should be structurally reinforced to resist tensile forces on the pier due to upward skin friction (uplift) which could result if the mudstone is wetted and swells. The tensile force may be calculated utilizing at least 20 feet of pier length with an ultimate skin friction of 1,000 psf.

d. The foundation elements should be designed for a minimum dead load of 10,000 psf. If the minimum dead load cannot be met and piers are spaced as far apart as practical, the length should extend beyond the minimum penetration to make up the dead load deficit. This can be accomplished by assuming an appropriate resisting ultimate skin friction as given in Table 2.

e. Care should be taken to assure the drilled piers are not over-sized (mushroomed) at the ground surface, which could provide an area where swelling soil/rock could exert uplift forces on the piers.

f. The concrete volume should be recorded for each pier constructed to ensure the appropriate volume is placed.

g. Concrete should be placed in the piers the same day they are drilled using a tremmie pipe which extends to the bottom of the drill hole. The tremmie pipe should be raised as the concrete is placed to ensure the element is free of voids. If water enters the drill holes, it would be necessary to place concrete immediately after the drill hole is completed using a tremmie. The tremmie will also displace water out of the hole as concrete is placed. Failure to place concrete the day of drilling may require re-drilling for additional bedrock penetration.

h. Drilled pier holes should also be inspected to verify caving does not occur below the ground surface which could also result in additional uplift forces. Casing the drill hole may be necessary if the caving occurs to ensure a straight shaft with a consistent diameter. Pier holes must also be inspected to ensure they are cleaned and free of loose or disturbed soil.

i. Concrete coverage should be verified on reinforcing cages by placing spacers on the outside of the reinforcing cage to ensure it is not touching the drill hole side wall.

C. Floor System and Construction Details

1. Structural Floor/Beams/Crawl Space

Structural floors (including entries, porches and patios), supported on grade beams should be supported on deep foundation systems.

We recommend that a minimum 24-inch crawl space be provided below structural floors. Proper ventilation of the crawl space is critical and the ventilation system should be designed by the appropriate design professional.

A minimum 12-inch void space should be provided below the grade beams to allow the expansive mudstone to swell without exerting uplift forces on the grade beams. The void space should be protected prior to backfilling the exterior grade beams to ensure the void space is not compromised. We also recommend low permeable fill be used as backfill adjacent to the beams to reduce the potential for infiltration and migration of water to the crawl space. Proper compaction and moisture conditioning of the backfill is critical.

2. Vapor Barrier

A vapor barrier should be placed on the bottom of the crawl space, attached to the exterior grade beams using a water resistant attachment system to reduce moisture in the crawl space.

3. Plumbing and Utility Lines

Plumbing lines and utility lines should be hung from the floor when a pier/pile foundation system is utilized. Plumbing lines should have flexible joints where connections are made. A 12-inch void space should also be provided below plumbing where it crosses below grade beams.

4. Exterior Flatwork

The owners should be aware that exterior flatwork may move where expansive materials are present. To reduce concerns for flatwork movement causing distress to the structures, the flatwork should be separated from the main structure and allow for unrestrained vertical movement. This generally is accomplished by providing a construction joint between the concrete flatwork and the wall/slab with a heavy felt board.

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

Use of pavers or compacted decorative gravel in lieu of concrete flatwork may also be considered. Pavers or gravel will allow for some movement if the supporting subgrade heaves.

5. Exterior Porches

Exterior porches, patios and overhangs that are structurally tied to the remainder of the building should be supported by the same foundation system as the building.

D. Pool Construction Details

1. Pool Structural Floor

The shell of the pool should be structurally reinforced to span the distance between the piers. We recommend a minimum 2- inch void be provided below the pool to prevent expansive materials from exerting uplift forces on the pool. A void box should be placed in the bottom of the pool excavation prior to placing plumbing and rebar, or spraying gunnite to allow for construction above the void below the pool.

As an alternative, the bottom of the pool may be constructed as a structural floor supported on the piers using V-decking with a crawl space (This is the preferred method). The raised structural floor should be supported on grade beams. We recommend that a minimum 24-inch crawl space and access be provided below the structural floor. A 12-inch void space should be provided below the grade beams to allow the expansive materials to swell without exerting uplift forces on the grade beams. Subsequent to removing concrete forms from grade beams, the void should be inspected by AGEC to ensure the proper void space is provided.

2. Pool Plumbing and Utility Lines

Plumbing lines and utility lines should be hung from the floor when a pier foundation and structural floor system is utilized or placed above the void box (if used) to prevent crushing of the piping or connections.

Plumbing lines should have flexible joints where connections are made. A 12-inch void space should also be provided below plumbing where it crosses below grade beams. Exterior plumbing lines may be run inside a larger pipe conduit to allow for some movement without negatively affecting the plumbing lines. Plumbing lines should be tested prior to operation.

3. Pool Decking

Due to the presence of the underlying fill and expansive materials, we recommend the pool decking consist of a raised structural slab supported on deep foundation elements.

If slab-on-grade pool decking will be considered, the subgrade supporting the decking should be prepared as recommended in the Subgrade Preparation section of this report for "Flatwork". The owner should be aware that exterior

flatwork will likely heave (as stated in the Subgrade Preparation section of this report).

Slab-on- grade pool decking should be separated (free vertical movement) from the main structure of the pool and should not be tied directly to the pool shell or to adjacent buildings. This is recommended to allow for unrestrained uplift of the pool decking so as not to affect the main structure of the pool. This generally is accomplished by providing a construction joint between the concrete flatwork and pool or building with a heavy felt board.

The pool decking should be sloped away from the pool to provide adequate drainage. We also recommend constructing a water-tight concrete gutter system (depression) or drain around the pool decking to catch runoff water, divert it around the pool, and discharge off site. Joints or seams in the pool decking should be sealed to reduce infiltration of surface water.

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

E. Lateral Earth Pressures

1. 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 basement walls or below grade beams be designed in an at-rest condition. Walls where lateral movement is not tolerable should also be designed in the at-rest condition.

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

	Active Condition		At-Rest Condition		Passive Condition
Soil Type	Equivalent Fluid Weight	Earth Pressure Coefficient	Equivalent Fluid Weight	Earth Pressure Coefficient	Equivalent Fluid Weight
Imported Granular Backfill	35 pcf	0.28	55 pcf	0.44	325 pcf
On-site Clayey Fill Soil	45 pcf	0.38	65pcf	0.54	225 pcf

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.

2. 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)
Active	9 pcf increase
At-rest	no increase
Passive	18 pcf decrease

The seismic increases and decrease assume a peak ground acceleration (PGA) of 0.23g and a 1 second period ground acceleration (S_1) of 0.17g using the Mononobe-Okabe pressure distribution.

3. Safety Factors

The values recommended 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.

F. Seismicity, Liquefaction and Faulting

1. Seismicity

Listed below is a summary of the seismic site parameters.

Description	Value - Seismic Event (2% PE in 50 yrs)
2018 IBC Seismic Site Class	C
PGA	0.23g
S_s	0.51g
S_1	0.17g
F_a	1.38
F_v	2.27
F_{PGA}	1.37

2. Seismic Design Considerations

Based on the subsurface conditions anticipated, a ground motion hazard analysis 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

3. Liquefaction

Based on subsurface conditions encountered in the boring, the subsurface soils observed are non-liquefiable during a severe seismic event.

4. Faults

Based on review of available geologic literature, there are no mapped faults extending through the site.

G. Soil Corrosion

Our experience in the area and laboratory test results indicates the on-site soil and bedrock contain sulfate concentration corresponding to a "moderate" to "severe" potential sulfate attack on concrete exposed to these materials. 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) 318-11. Tables 4.2.1 and 4.3.1 of ACI 318-11 should be referenced for design of concrete elements utilizing a Sulfate Exposure Class of S2, and a sulfate exposure severity of "severe".

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

H. Pavement

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

1. Analysis

The flexible pavement analysis is based on AASHTO design methods and a 20-year design life. The rigid pavement is based on AASHTO and PCCA design methods and a 20-year design life.

2. Subgrade Support

Our design assumes a properly prepared subgrade as recommended in the Subgrade Preparation section of this report. The subgrade preparation varies depending on the location on the site. Prior to base course or pavement or 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, the following pavement sections are recommended.

	Rigid Pavement		Flexible Pavement	
Area	Portland Cement (inches)	Base Course (inches)	Asphaltic concrete (inches)	Base Course (inches)
Light Duty Parking	--	--	2½	8
Entrances and dumpster pad	4	4	3	12

4. Pavement Materials

a. *Flexible Pavement (Asphaltic Concrete)*

The pavement materials should meet AASHTO, St. George City specifications for gradation and quality. The pavement thicknesses indicated above assume that the base course is a high quality material with a CBR value of at least 80 percent. Asphalt material should have a Marshal stability of at least 1,800 pounds.

b. *Rigid Pavement (Portland Cement Concrete)*

The pavement thicknesses indicated assumes that the concrete will have a 28-day compressive strength of at least 4,500 psi.

5. Jointing

Joints for concrete (rigid) pavement should be laid out in a square or rectangular pattern. Joint spacings should not exceed 30 times the thickness of the slab. The depth of joints should be at least one-quarter of the slab thickness.

6. 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 proper pavement maintenance to extend the pavement life.

I. Design Review/Construction Observation

Design review and construction observations are recommended to verify the recommendations in this report are properly implemented and followed. In order to provide a foundation compliance report as required by the St. George City, we recommend the following be done as a minimum:

1. Review the foundation plan and design to verify the geotechnical aspects of the design were correctly and properly included.

2. Observe on a full time basis the drilling and construction of the micropiles and piers including reinforcement and concrete placement.

3. Observe the reinforcing steel in the grade beams.

4. Verify the proper void space is provided below the grade beams.

5. Conduct special inspections as required by the St. George City, the 2018 International Building Code and the Structural engineer.

The above observations will be conducted by qualified individuals and according to standard test methods (ASTM, ICBO, ICC, etc.).

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 borings drilled, geologic literature, laboratory test results, engineering analysis and our experience in the area. Variations in the subsurface conditions may not become evident until additional exploration or excavation is conducted. If the subsurface soil or groundwater conditions are found to be different from what is described in this report, we should be notified to reevaluate the recommendations given.

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

APPLIED GEOTECHNICAL ENGINEERING CONSULTANTS, INC.



G. Wayne Rogers, P.E.

Reviewed by: Arnold DeCastro, P.E.

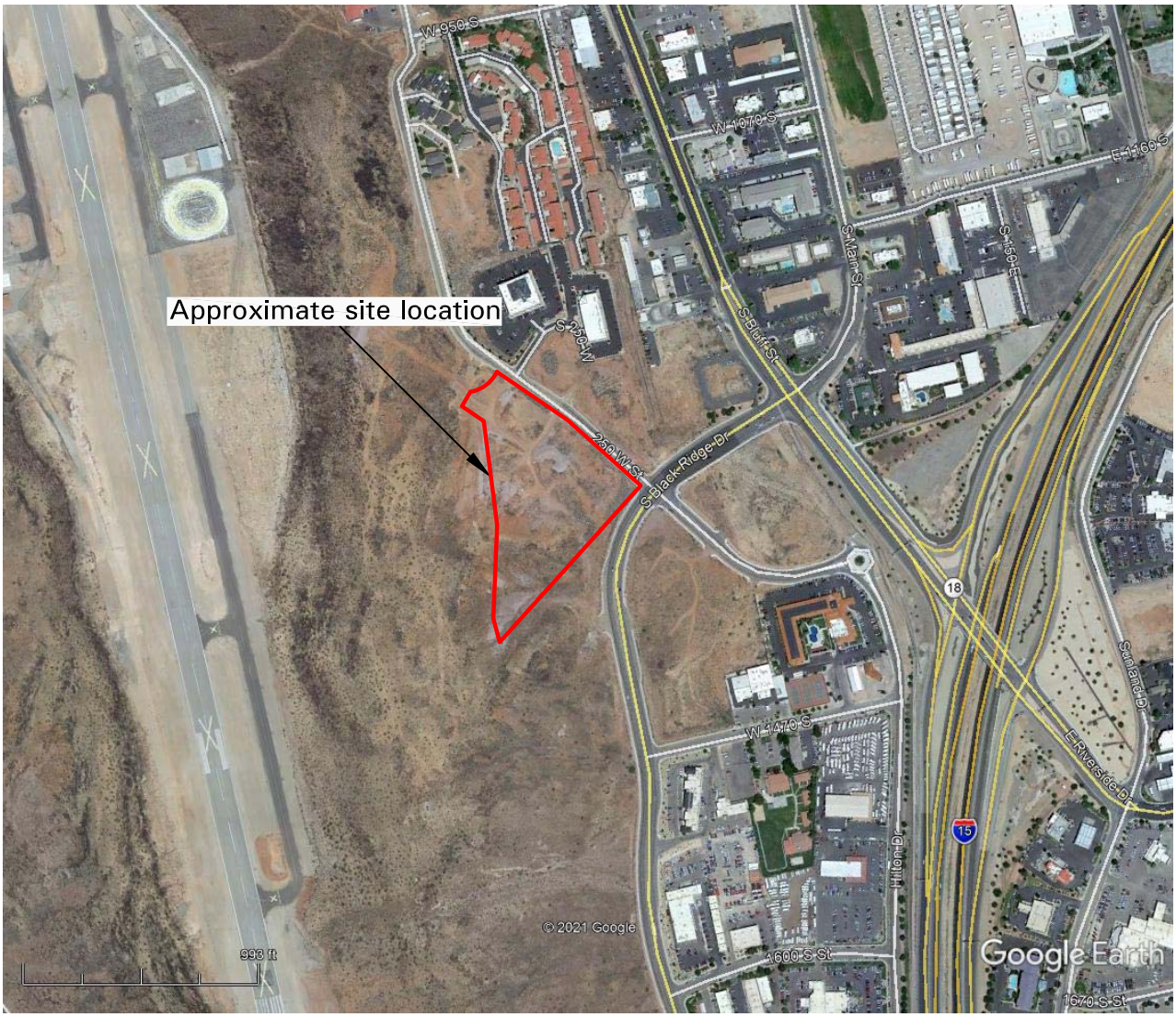
Reviewed By: James E Nordquist, P.E., D.G.E.

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GEOLOGIC LITERATURE REFERENCES

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



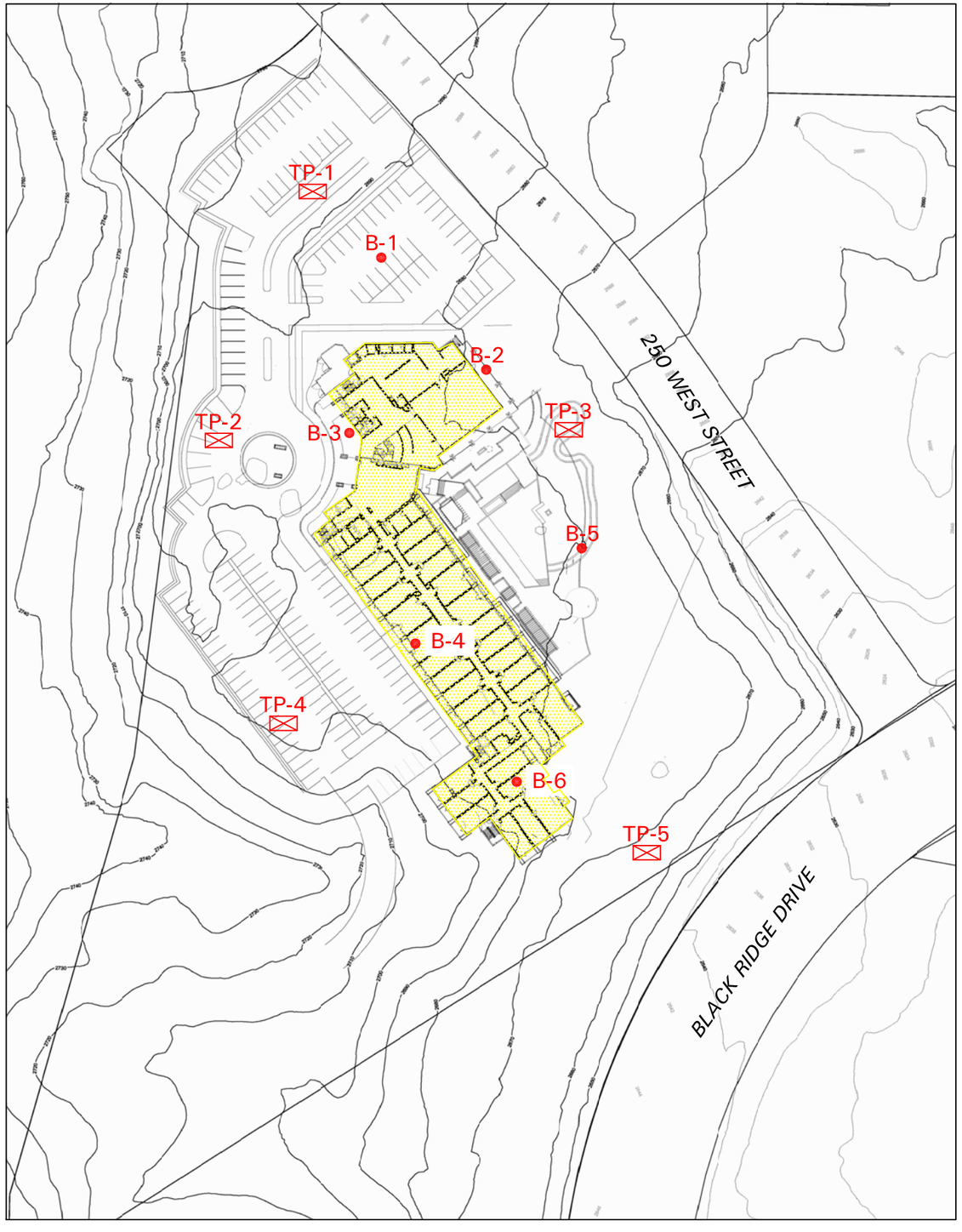
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Not to Scale

BLACKSTONE HOTEL
WEST PARCEL
ST. GEORGE, UTAH

2211175	AGEC	Vicinity Map	Figure 1

BLACKSTONE HOTEL WEST PARCEL
ST. GEORGE, UTAH



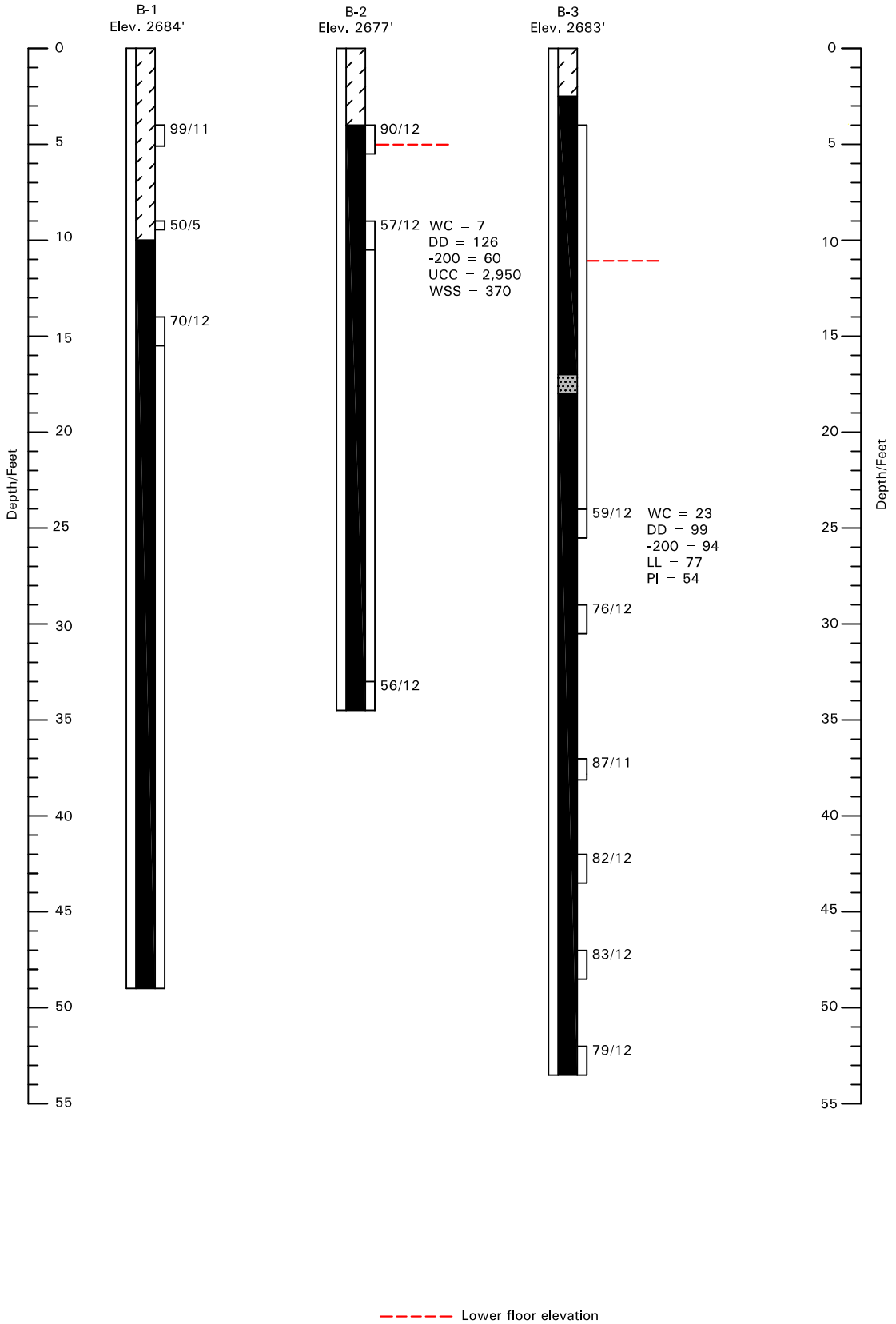
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- Approximate test pit location
- Proposed Hotel

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0 80 160 feet

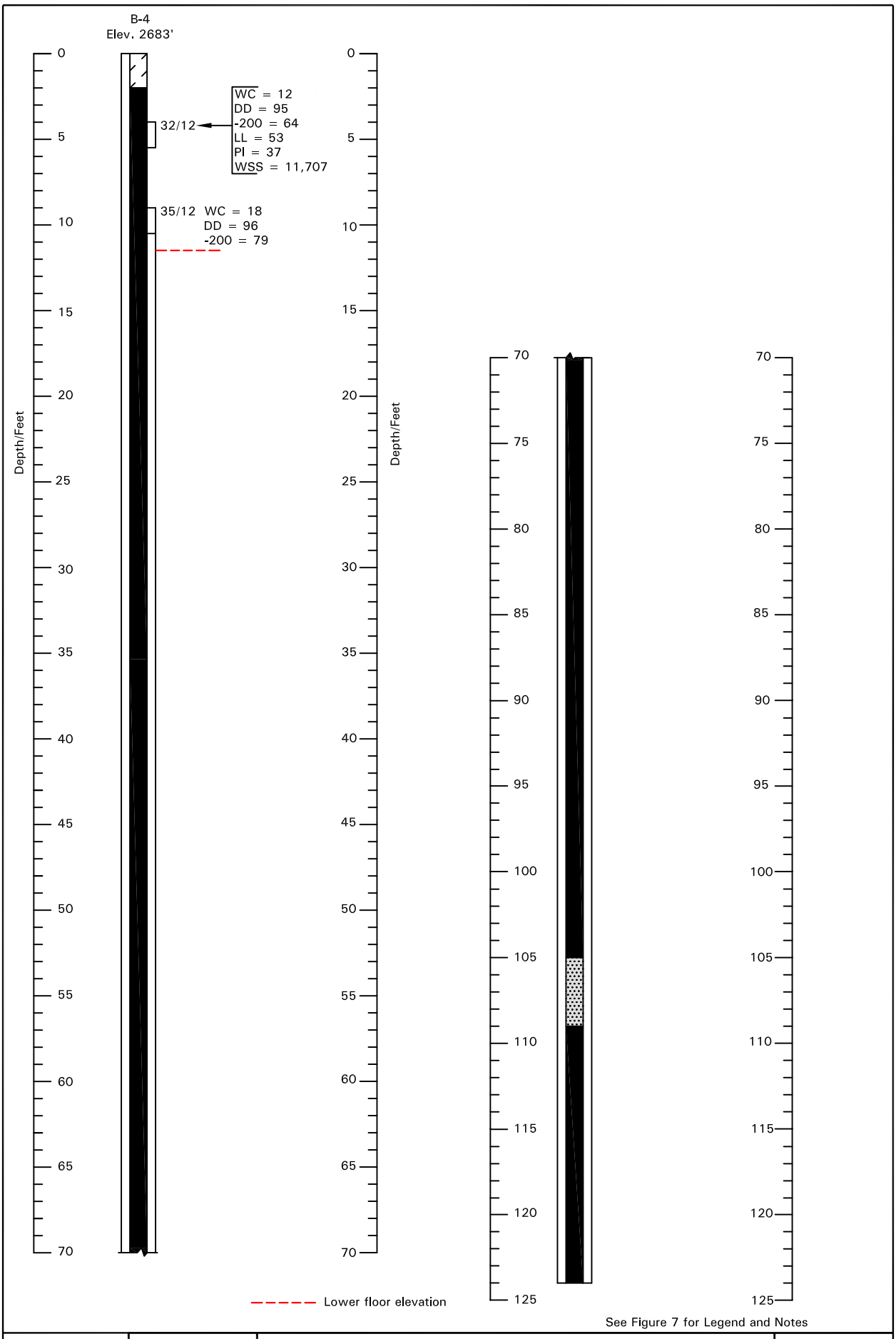
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2211175	AGEC	Site Plan	Figure 2

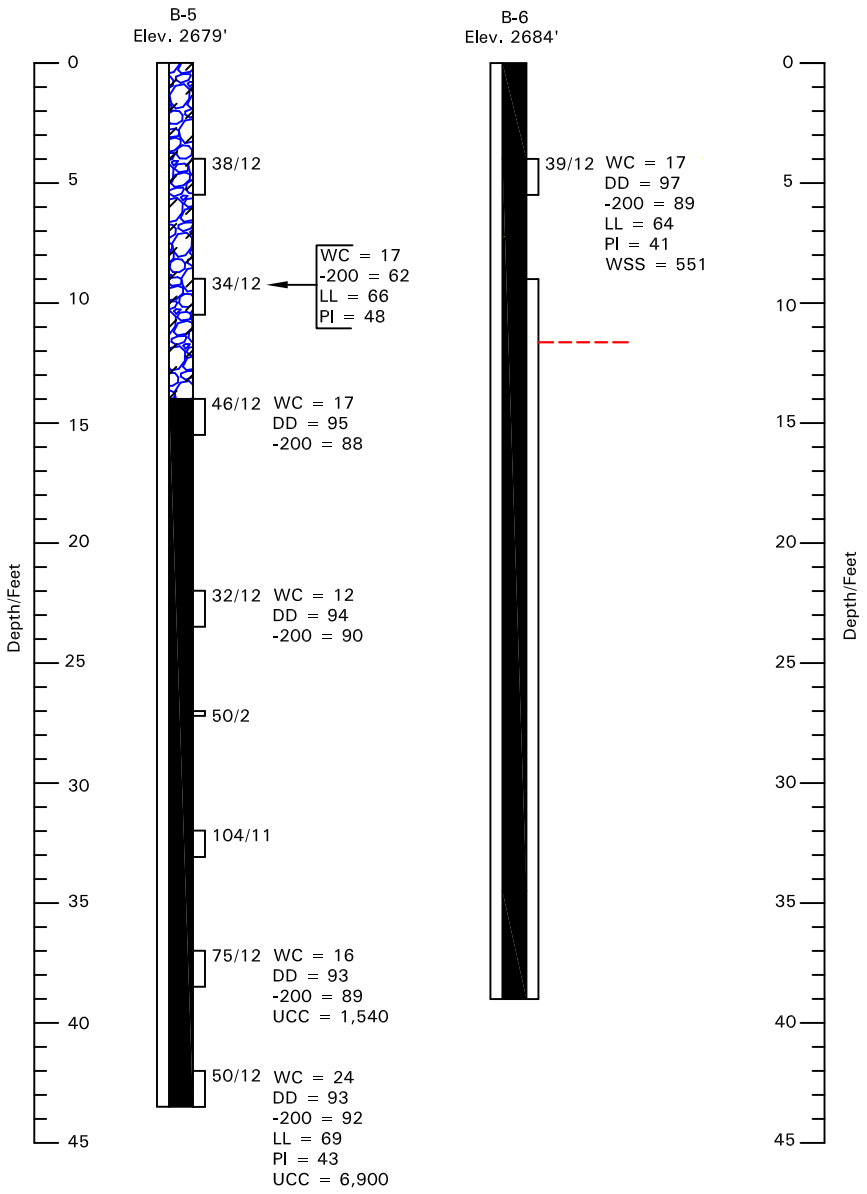


See Figure 7 for Legend and Notes

2211175	AGES	Logs of Exploratory Borings	Figure 3



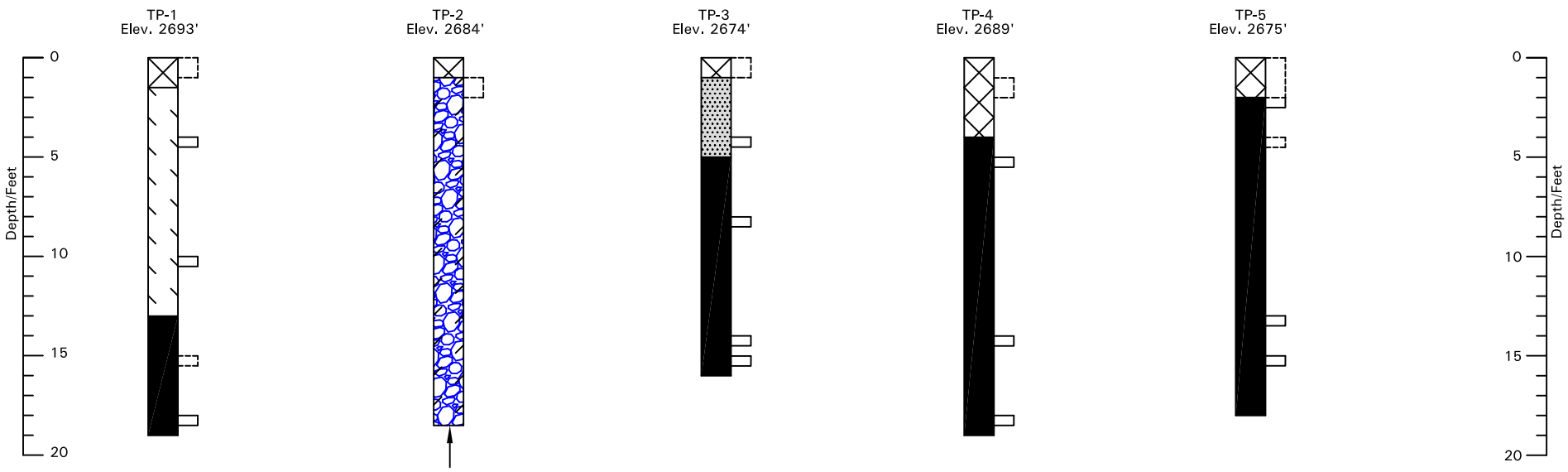
2211175	AGES	Logs of Exploratory Borings	Figure 4



Lower Floor Elevation.

See Figure 7 for Legend and Notes

2211175	AGES	Logs of Exploratory Borings	Figure 5



See Figure 7 for Legend and Notes

2211175	AGEC	Logs of Test Pits	Figure 6

LEGEND:



Fill; varies from clayey gravel to lean/fat clay, poorly compacted, dry, and red-brown to purple in color.



Landslide deposit - Lean/Fat Clay (CL/CH); medium stiff to very stiff, weathered mudstone, slightly moist, medium to highly plastic, and brown, red to slightly purple in color.



Landslide deposit - Clayey Gravel (GC); dense, dry, contains angular gravel up to boulder size, and and brown to red in color. The gravel is slightly gray to black basalt.



Landslide deposit - Mudstone Bedrock; consists of lean to fat clay with varied amounts of sand. It is soft to moderately hard, slightly moist to wet, and purple, grey, red-brown in color.



Landslide deposit - Sandstone Bedrock; moderately hard, contains layers of clay, dry to wet and grey to brown to red in color.



10/12 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 slotted 1 inch PVC pipe installed in the boring to the depth shown.



Indicates core sample taken.

Indicates practical excavator refusal.

Lower floor elevation (Elevation 2671 feet)

NOTES:

1. The borings were drilled on June 14, 15, and 16, 2021 with a truck mounted drill rig equipped with 8-inch hollow-stem augers. The test pits were excavated on July 6, 2021with a track excavator (CAT 336).
2. The locations of the borings and test pits were located by a hand held GPS.
3. The elevations of the borings and test pits were determined by interpolations of the contours on the site plan provided.
4. The boring locations and elevations should be considered accurate only to the degree implied by the method used.
5. The lines between the materials shown on the logs represent the approximate boundaries between material types and the transitions may be gradual.
6. Free water was not encountered in the borings or test pits at the time of drilling/ excavation.
7. WC = water content (%);
   DD = dry density (pcf);
   +4 = percent retained on the No. 4 sieve;
   -200 = percent passing No. 200 sieve;
   LL = liquid limit (%);
   PI = plasticity index (%).

Applied Geotechnical Engineering Consultants, Inc.

Table 1 - Summary of Laboratory Test Results

Blackstone Hotel

Project No. 2211175

Sample Location				Gradation			Atterberg Limits		Moisture-Density Relationship				
Boring No.	Depth (ft)	Natural Moisture Content (%)	Natural Dry Density (pcf)	Gravel (%)	Sand (%)	Silt/Clay (%)	Liquid Limit (%)	Plastic Index (%)	Maximum Dry Density (pcf)	Optimum Moisture Content (%)	Unconfined Compressive Strength (psf)	Water Soluble Sulfate (ppm)	Soil Type
B-2	9	7	126			60					2,950	370	Landslide Deposit - Mudstone Bedrock, Sandy Fat Clay (CH)
B-3	24	23	99			94	77	54					Landslide Deposit - Mudstone Bedrock, Fat Clay (CH)
B-4	4	12	95			64	53	37				11,707	Landslide Deposit - Mudstone Bedrock, Sandy Fat Clay (CH)
B-4	9	18	96			79							Landslide Deposit - Mudstone Bedrock, Fat Clay with Sand (CH)
B-5	9	17				62	66	48					Landslide Deposit - Mudstone Bedrock, Sandy Fat Clay (CH)
B-5	14	17	95			88							Landslide Deposit - Mudstone Bedrock, Fat Clay (CH)
B-5	22	12	94			90							Landslide Deposit - Mudstone Bedrock, Fat Clay (CH)
B-5	37	16	93			89					1,540		Landslide Deposit - Mudstone Bedrock, Fat Clay (CH)
B-5	42	24	93			92	69	43			6,900		Landslide Deposit - Mudstone Bedrock, Fat Clay (CH)
B-6	4	17	97			89	64	41				551	Landslide Deposit - Mudstone Bedrock, Fat Clay (CH)

Applied Geotechnical Engineering Consultants, Inc.

Table 2

Deep Foundation Element Design Parameters

Blackstone Hotel Project No. 2211175

Soil Type	Soil Properties			Lateral Design Parameters			Axial Design Parameters		
	Total Unit Weight (pcf)	Cohesion (psf)	Friction Angle (Degrees)	Horizontal Modulus (pci)	Ultimate Passive Resistance (psf)	Strain @ 50% Yield (k_{rm})	Ultimate Skin Friction (psf)	Ultimate Uplift Skin Friction (psf)	Net Allowable** Bearing Capacity (ksf)
Mudstone (upper 10 feet)	100	2,000	0	500	18,000	0.006	1,000	750	--
Mudstone (10 to 20 feet)	110	4,000	0	1,400	36,000	0.006	2,000	1,333	--
Mudstone (>20 feet)	120	6,000	0	2,000	54,000	0.005	3,000	2,000	35

* Ignore the upper 2 feet

** Minimum embedment of 20 feet into the mudstone.

APPENDIX

SITE PHOTOS, CORE LOGS
AND ASBESTOS LOCATION MAP



Photo No. 1, View of property to right or west of 250 West, looking south.



Photo No. 2, View of property from west of SWC property looking north



Photo No. 3, View of property from Near SWC, looking NE.



Photo No. 4, View of property from near SEC corner at top of slope, looking NW



Photo No. 5, View of property from above and west of property, looking west



Photo No. 6, View of property from above and west of property, looking south to southeast.

PROJECT NO. 2211175

AGEC FIELD CORE LOG

PROJECT Blackstone Hotel West Parcel

CORE SIZE 2½"

DATE June 14, 2021

LOCATION

ELEVATION 2684'

PAGE Page 1 of 3

FIELD ENG. T.R.A.

DRILLER B.L.

BORING NO. B-1

DEPTH (ft)	ALTERATION	HARDNESS	CORE DESCRIPTION	WATER	PACKER TESTS	GRAPHIC LOG	DISCONTINUITY LOG: ORIENT.	DISCONTINUITY LOG: TYPE	DISCONTINUITY LOG: ROUGH.	DISCONTINUITY LOG: PLAN.	DISCONTINUITY LOG: FILLING	CORE RUN (FT)	RECOVERY (FT)	RQD (%)	FRAC./FT.	PROGRESS	DRILLING COMMENTS
0			Landslide deposit - Lean Clay with sand and gravel, hard, slightly moist, red/mottled.														Boring cased with 8" diameter HSA to 14'.
1																	
2			Boulder														
3																	
4																	
5																	
6																	
7																	
8			Boulder														
9																	
10			Boulder														
11																	
12																	
13																	
14			Landslide deposit - Mudstone Bedrock, moderately hard slightly moist to moist, purple.									5	2½	40		0.8	Boring advanced with 2½" HQ Core and carbide bit using air.
15																	
16																	
17																	
18																	
19												5	3½	30		1.8	

PROJECT NO. 2211175

AGEC FIELD CORE LOG

PROJECT Blackstone Hotel West Parcel

CORE SIZE 2½"

DATE June 14, 2021

LOCATION

ELEVATION 2684'

PAGE Page 2 of 3

FIELD ENG. T.R.A.

DRILLER B.L.

BORING NO. B-1

DEPTH (ft)	ALTERATION	HARDNESS	CORE DESCRIPTION	WATER	PACKER TESTS	GRAPHIC LOG	DISCONTINUITY LOG: ORIENT.	TYPE	ROUGH.	PLAN.	FILLING	CORE RUN (FT)	RECOVERY (FT)	RQD (%)	FRAC./FT.	PROGRESS	DRILLING COMMENTS
20–21			Landslide deposit - Mudstone Bedrock, moderately hard slightly moist to moist, purple.														
21–22																1.8	
22–23												5	3½	30			
23–24																	
24–25																	
25–26																	
26–27												5	3½	30		2.6	
27–28																	
28–29																	
29–30																	
30–31																	
31–32												5	3½	30		3.2	
32–33																	
33–34																	
34–35																	Switch to carbide bit
35–36																	
36–37												5	3½	30		0.4	
37–38																	
38–39																	
39–												5				1.2	

PROJECT NO. 2211175

AGEC FIELD CORE LOG

PROJECT Blackstone Hotel West Parcel

CORE SIZE 2½"

DATE June 14, 2021

LOCATION

ELEVATION 2684'

PAGE 3 of 3

FIELD ENG. T.R.A.

DRILLER B.L.

BORING NO. B-1

DEPTH (ft)	ALTERATION	HARDNESS	CORE DESCRIPTION	WATER	PACKER TESTS	GRAPHIC LOG	DISCONTINUITY LOG: ORIENT.	TYPE	ROUGH.	PLAN.	FILLING	CORE RUN (FT)	RECOVERY (FT)	RQD (%)	FRAC./FT.	PROGRESS	DRILLING COMMENTS
40			Landslide deposit - Mudstone Bedrock, moderately hard slightly moist to moist, purple.														
41																	
42												5	5	70		1.2	
43																	
44																	
45																	
46												5	5	40		0.8	
47																	
48																	
49																	End of boring at 49'.
50																	
51																	
52																	
53																	
54																	
55																	
56																	
57																	
58																	
59																	

PROJECT NO. 2211175

AGEC FIELD CORE LOG

PROJECT Blackstone Hotel West Parcel

CORE SIZE 2½"

DATE June 14, 2021

LOCATION

ELEVATION 2677'

PAGE Page 1 of 2

FIELD ENG. T.R.A.

DRILLER B.L.

BORING NO. B-2

DEPTH (ft)	ALTERATION	HARDNESS	CORE DESCRIPTION	WATER	PACKER TESTS	GRAPHIC LOG	DISCONTINUITY LOG: ORIENT.	TYPE	ROUGH.	PLAN.	FILLING	CORE RUN (FT)	RECOVERY (FT)	RQD (%)	FRAC./FT.	PROGRESS	DRILLING COMMENTS
0			Landslide deposit - Lean Clay with sand and gravel, hard, slightly moist, red/mottled.														Boring cased with 8" diameter HSA to 14'.
4			Landslide deposit - Mudstone Bedrock, soft to moderately hard, grey to purple to red.														
9																	Boring advanced with 2½" HQ Core and carbide bit using air.
10												5	2	25		0.4	
14												5	5			1.0	
17			Landslide deposit - Sandstone Bedrock, soft, grey to brown.														
18			Landslide deposit - Mudstone Bedrock, red to grey.														
19												5	3				

PROJECT NO. 2211175

AGEC FIELD CORE LOG

PROJECT Blackstone Hotel West Parcel

CORE SIZE 2½"

DATE June 14, 2021

LOCATION

ELEVATION 2677'

PAGE Page 2 of 2

FIELD ENG. T.R.A.

DRILLER B.L.

BORING NO. B-2

DEPTH (ft)	ALTERATION	HARDNESS	CORE DESCRIPTION	WATER	PACKER TESTS	GRAPHIC LOG	DISCONTINUITY LOG: ORIENT.	DISCONTINUITY LOG: TYPE	DISCONTINUITY LOG: ROUGH.	DISCONTINUITY LOG: PLAN.	DISCONTINUITY LOG: FILLING	CORE RUN (FT)	RECOVERY (FT)	RQD (%)	FRAC./FT.	PROGRESS	DRILLING COMMENTS
21			Landslide deposit - Mudstone Bedrock, soft to moderately hard, grey to purple to red.													1.8	
22												5	3				
23																	
24																	
25												5					
26																	
27																	
28																	
29			Landslide deposit - Shale/Sandstone, hard, moist to wet, red to grey.														
30																	
31												4	4			2.5	
32																	
33																	
34																	
35																	End of boring at 34½'.
36																	
37																	
38																	
39																	

PROJECT NO. 2211175

AGEC FIELD CORE LOG

PROJECT Blackstone Hotel West Parcel

CORE SIZE 2½"

DATE June 15, 2021

LOCATION

ELEVATION 2683'

PAGE Page 1 of 2

FIELD ENG. T.R.A.

DRILLER B.L.

BORING NO. B-3

DEPTH (ft)	ALTERATION	HARDNESS	CORE DESCRIPTION	WATER	PACKER TESTS	GRAPHIC LOG	DISCONTINUITY LOG: ORIENT.	DISCONTINUITY LOG: TYPE	DISCONTINUITY LOG: ROUGH.	DISCONTINUITY LOG: PLAN.	DISCONTINUITY LOG: FILLING	CORE RUN (FT)	RECOVERY (FT)	RQD (%)	FRAC./FT.	PROGRESS	DRILLING COMMENTS
0			Landslide deposit - Lean Clay with sand and gravel, hard, slightly moist, red/mottled.														Boring cased with 8" diameter HSA to 4'.
4			Landslide deposit - Mudstone Bedrock, soft to moderately hard, grey to purple to red.									5	1½	60		1.2	Boring advanced with 2½" HQ Core and carbide bit using air.
9												5	3	20		3.8	
14												5	1½	20		1.2	
17			Landslide deposit - Sandstone Bedrock, soft, grey to brown.														
18			Landslide deposit - Mudstone Bedrock, red to grey.									5	1½	0		0.8	

PROJECT NO. 2211175

AGEC FIELD CORE LOG

PROJECT Blackstone Hotel West Parcel

CORE SIZE 2½"

DATE June 15, 2021

LOCATION

ELEVATION

PAGE Page 2 of 2

FIELD ENG. T.R.A.

DRILLER B.L.

BORING NO. B-3

DEPTH (ft)	ALTERATION	HARDNESS	CORE DESCRIPTION	WATER	PACKER TESTS	GRAPHIC LOG	DISCONTINUITY LOG: ORIENT.	DISCONTINUITY LOG: TYPE	DISCONTINUITY LOG: ROUGH.	DISCONTINUITY LOG: PLAN.	DISCONTINUITY LOG: FILLING	CORE RUN (FT)	RECOVERY (FT)	RQD (%)	FRAC./FT.	PROGRESS	DRILLING COMMENTS
21–24			Landslide deposit - Mudstone Bedrock, soft, moist, grey to purple to red.									5	1½	0		0.8	
24																	End of coring at 24'.

PROJECT NO. 2211175

AGEC FIELD CORE LOG

PROJECT Blackstone Hotel West Parcel

CORE SIZE 2½"

DATE June 16, 2021

LOCATION

ELEVATION 2683'

PAGE Page 1 of 7

FIELD ENG. T.R.A.

DRILLER B.L.

BORING NO. B-4

DEPTH (ft)	ALTERATION	HARDNESS	CORE DESCRIPTION	WATER	PACKER TESTS	GRAPHIC LOG	DISCONTINUITY LOG: ORIENT.	DISCONTINUITY LOG: TYPE	DISCONTINUITY LOG: ROUGH.	DISCONTINUITY LOG: PLAN.	DISCONTINUITY LOG: FILLING	CORE RUN (FT)	RECOVERY (FT)	RQD (%)	FRAC./FT.	PROGRESS	DRILLING COMMENTS
0			Landslide deposit - Lean Clay with sand and gravel, hard, slightly moist, red/mottled.														Boring cased with 8" diameter HSA to 9'.
2			Landslide deposit - Mudstone Bedrock, moderately hard slightly moist to moist, purple.														
9																	Boring advanced with 2½" HQ Core and carbide bit using air.
11												5	3½	70		0.6	
14																	
15												2				2.0	
17												3	2½	80			
19												5	5	80		4.8	

PROJECT NO. 2211175

AGEC FIELD CORE LOG

PROJECT Blackstone Hotel West Parcel

CORE SIZE 2½"

DATE June 16, 2021

LOCATION

ELEVATION 2683'

PAGE Page 2 of 7

FIELD ENG. T.R.A.

DRILLER B.L.

BORING NO. B-4

DEPTH (ft)	ALTERATION	HARDNESS	CORE DESCRIPTION	WATER	PACKER TESTS	GRAPHIC LOG	DISCONTINUITY LOG: ORIENT.	TYPE	ROUGH.	PLAN.	FILLING	CORE RUN (FT)	RECOVERY (FT)	RQD (%)	FRAC./FT.	PROGRESS	DRILLING COMMENTS
20–21			Landslide deposit - Mudstone Bedrock, moderately hard slightly moist to moist, purple.		0–1												
21–22					1–2							5	5	80		4.8	
22–23					2–3												
23–24					3–4												
24–25					4–5							5	5	90		5.6	
25–26					5–6												
26–27					6–7												
27–28					7–8												
28–29					8–9												
29–30					9–10							5	5	90		5.6	
30–31					10–11												
31–32					11–12												
32–33					12–13												
33–34					13–14												
34–35					14–15							5	5	90		7.6	Switch to carbide bit
35–36					15–16												
36–37					16–17												
37–38					17–18												
38–39					18–19												
39–					19–							5	5	90		5.6	

PROJECT NO. 2211175 **AGEC FIELD CORE LOG**

PROJECT Blackstone Hotel West Parcel | CORE SIZE 2½" | DATE June 16/17, 2021

LOCATION | ELEVATION 2683' | PAGE 3 of 7

FIELD ENG. T.R.A. | DRILLER B.L. | BORING NO. B-4

DEPTH (ft)	ALTERATION	HARDNESS	CORE DESCRIPTION	WATER	PACKER TESTS	GRAPHIC LOG	DISCONTINUITY LOG: ORIENT.	TYPE	ROUGH.	PLAN.	FILLING	CORE RUN (FT)	RECOVERY (FT)	RQD (%)	FRAC./FT.	PROGRESS	DRILLING COMMENTS
40			Landslide deposit - Mudstone Bedrock, moderately hard slightly moist to moist, purple.														
41																	
42												5	5	90		5.6	
43																	
44																	
45																	
46												5	5	80		7.8	
47																	
48																	
49																	
50																	
51												5	5	50		10.6	
52																	
53																	
54																	
55																	
56												5	5	70		5.8	
57																	
58																	
59												5	5	60			

PROJECT NO. 2211175

AGEC FIELD CORE LOG

PROJECT Blackstone Hotel West Parcel

CORE SIZE 2½"

DATE June 17, 2021

LOCATION

ELEVATION 2683'

PAGE 4 of 7

FIELD ENG. T.R.A.

DRILLER B.L.

BORING NO. B-4

DEPTH (ft)	ALTERATION	HARDNESS	CORE DESCRIPTION	WATER	PACKER TESTS	GRAPHIC LOG	DISCONTINUITY LOG: ORIENT.	TYPE	ROUGH.	PLAN.	FILLING	CORE RUN (FT)	RECOVERY (FT)	RQD (%)	FRAC./FT.	PROGRESS	DRILLING COMMENTS
60			Landslide deposit - Mudstone Bedrock, moderately hard slightly moist to moist, purple.														Boring advanced with 2½" HQ Core and carbide bit using air.
61																	
62												5	5	60		7.4	
63																	
64																	
65												5	5	80			
66																6.4	
67																	
68																	
69																	
70												5	5	95			
71																7.0	
72																	
73																	
74																	
75												5	4½	70			
76																	
77																9.6	
78																	
79																	
												5	5	40		6.6	

PROJECT NO. 2211175

AGEC FIELD CORE LOG

PROJECT Blackstone Hotel West Parcel

CORE SIZE 2½"

DATE June 17/18, 2021

LOCATION

ELEVATION 2683'

PAGE 5 of 7

FIELD ENG. T.R.A.

DRILLER B.L.

BORING NO. B-4

DEPTH (ft)	ALTERATION	HARDNESS	CORE DESCRIPTION	WATER	PACKER TESTS	GRAPHIC LOG	DISCONTINUITY LOG: ORIENT.	TYPE	ROUGH.	PLAN.	FILLING	CORE RUN (FT)	RECOVERY (FT)	RQD (%)	FRAC./FT.	PROGRESS	DRILLING COMMENTS
80			Landslide deposit - Mudstone Bedrock, moderately hard slightly moist to moist, purple.														Boring advanced with 2½" HQ Core and carbide bit using air.
81																	
82												5	5	90		6.6	
83																	
84																	
85																	
86																6.0	
87												5	5	90			
88																	
89																	
90																	
91																7.2	
92												5	5	90			
93																	
94																	
95																	
96																6.4	
97												5	5	90			
98																	
99																	
												5	5	95		7.0	

PROJECT NO. 2211175

AGEC FIELD CORE LOG

PROJECT Blackstone Hotel West Parcel

CORE SIZE 2½"

DATE June 18, 2021

LOCATION

ELEVATION 2683'

PAGE 6 of 7

FIELD ENG. T.R.A.

DRILLER B.L.

BORING NO. B-4

DEPTH (ft)	ALTERATION	HARDNESS	CORE DESCRIPTION	WATER	PACKER TESTS	GRAPHIC LOG	DISCONTINUITY LOG: ORIENT.	DISCONTINUITY LOG: TYPE	DISCONTINUITY LOG: ROUGH.	DISCONTINUITY LOG: PLAN.	DISCONTINUITY LOG: FILLING	CORE RUN (FT)	RECOVERY (FT)	RQD (%)	FRAC./FT.	PROGRESS	DRILLING COMMENTS
100–101			Landslide deposit - Mudstone Bedrock, moderately hard slightly moist to moist, purple.														Boring advanced with 2½" HQ Core and carbide bit using air.
101–102																	
102–103												5	5	95		7.0	
103–104																	
104–105																	
105–106			Landslide deposit - Sandstone Bedrock; moderately hard, grey to purple.														
106–107												5	5	95		6.2	
107–108																	
108–109																	
109–110			Landslide deposit - Mudstone Bedrock, moderately hard slightly moist to moist, purple.														
110–111																	
111–112												5	5	90		8.0	
112–113																	
113–114																	
114–115																	
115–116																	
116–117												5	5	95		10	
117–118																	
118–119																	
119–												5	5	95		2.8	

PROJECT NO. 2211175

AGEC FIELD CORE LOG

PROJECT Blackstone Hotel West Parcel

CORE SIZE 2½"

DATE June 18, 2021

LOCATION

ELEVATION 2683'

PAGE 7 of 7

FIELD ENG. T.R.A.

DRILLER B.L.

BORING NO. B-4

DEPTH (ft)	ALTERATION	HARDNESS	CORE DESCRIPTION	WATER	PACKER TESTS	GRAPHIC LOG	DISCONTINUITY LOG: ORIENT.	DISCONTINUITY LOG: TYPE	DISCONTINUITY LOG: ROUGH.	DISCONTINUITY LOG: PLAN.	DISCONTINUITY LOG: FILLING	CORE RUN (FT)	RECOVERY (FT)	RQD (%)	FRAC./FT.	PROGRESS	DRILLING COMMENTS
120					120							120				120		
121			Landslide deposit - Mudstone Bedrock, moderately hard slightly moist to moist, purple.		121		121					121				121		Boring advanced with 2½" HQ Core and carbide bit using air.
122					122		122					122	5	5	95	122	7.8	
123					123		123					123				123		
124					124		124					124				124		End of boring at 124'.

PROJECT NO. 2211175

AGEC FIELD CORE LOG

PROJECT Blackstone Hotel West Parcel

CORE SIZE 2½"

DATE June 15, 2021

LOCATION

ELEVATION 2784'

PAGE Page 1 of 2

FIELD ENG. T.R.A.

DRILLER B.L.

BORING NO. B-6

DEPTH (ft)	ALTERATION	HARDNESS	CORE DESCRIPTION	WATER	PACKER TESTS	GRAPHIC LOG	DISCONTINUITY LOG: ORIENT.	TYPE	ROUGH.	PLAN.	FILLING	CORE RUN (FT)	RECOVERY (FT)	RQD (%)	FRAC./FT.	PROGRESS	DRILLING COMMENTS
0			Landslide deposit - Mudstone Bedrock, soft to moderately hard, grey to purple to red.														Boring cased with 8" diameter HSA to 9'.
9																	
9												5	2	0		0.4	Boring advanced with 2½" HQ Core and carbide bit using air.
14																	
14												5	2	20		0.6	
19																	
19												5	4½	40		0.6	

PROJECT NO. 2211175

AGEC FIELD CORE LOG

PROJECT Blackstone Hotel West Parcel

CORE SIZE 2½"

DATE June 15, 2021

LOCATION

ELEVATION 2784'

PAGE Page 2 of 2

FIELD ENG. T.R.A.

DRILLER B.L.

BORING NO. B-6

DEPTH (ft)	ALTERATION	HARDNESS	CORE DESCRIPTION	WATER	PACKER TESTS	GRAPHIC LOG	DISCONTINUITY LOG: ORIENT.	DISCONTINUITY LOG: TYPE	DISCONTINUITY LOG: ROUGH.	DISCONTINUITY LOG: PLAN.	DISCONTINUITY LOG: FILLING	CORE RUN (FT)	RECOVERY (FT)	RQD (%)	FRAC./FT.	PROGRESS	DRILLING COMMENTS
20			Landslide deposit - Mudstone Bedrock, soft to moderately hard, grey to purple to red.														
21																	
22												5	4½	40		0.6	
23																	
24																	
25																	
26												5	3½	0			
27																0.8	
28																	
29																	
30																	
31																	
32												5	2½	0		2.5	
33																	
34																	
35																	
36												5	3	60			
37																2.0	
38																	
39																	End of boring at 39'.

BCE
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MAY 3, 2004

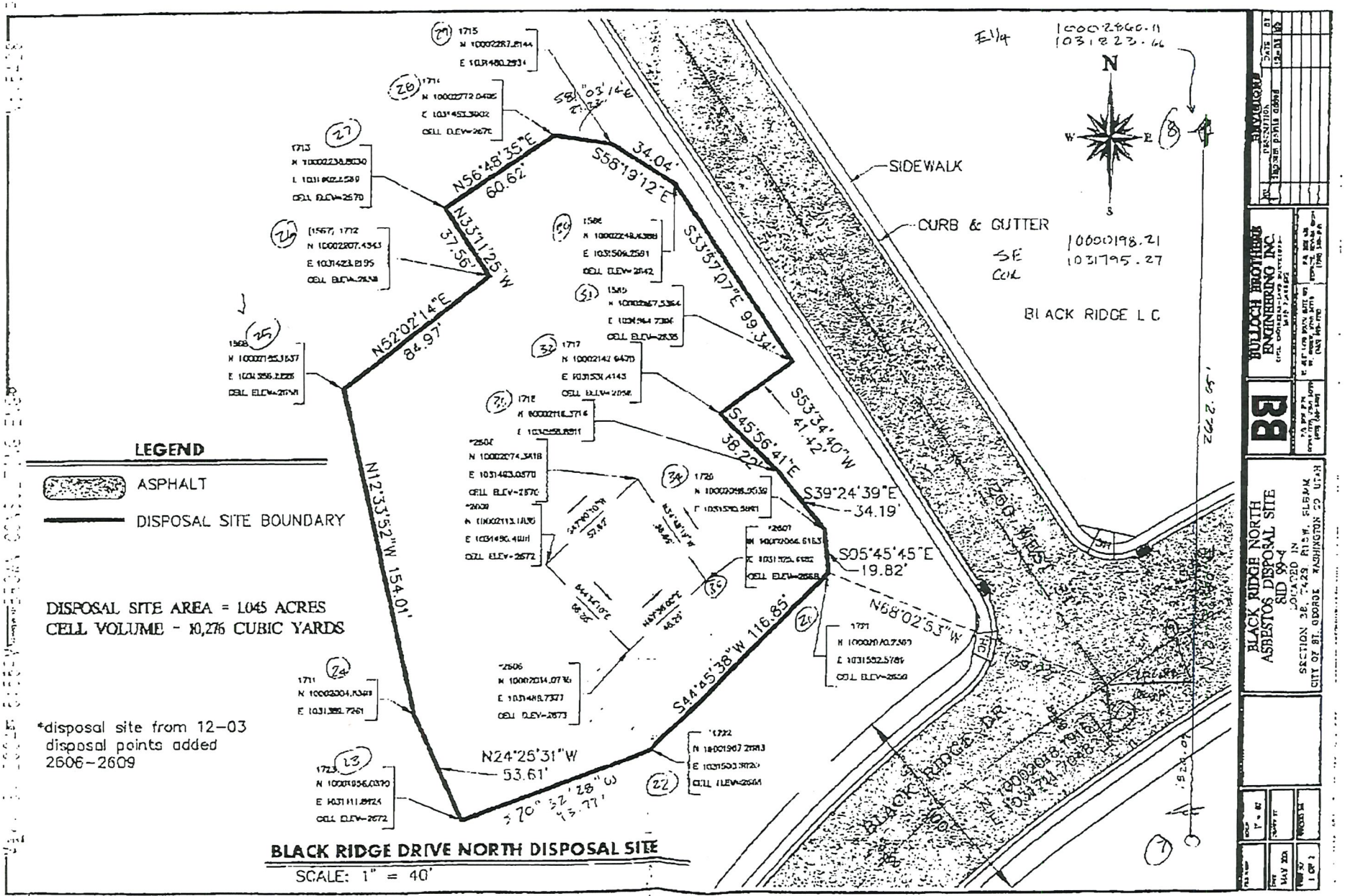
BLACK RIDGE NORTH ASBESTOS DISPOSAL SITE

BEGINNING AT THE SOUTHEAST CORNER OF SECTION 36, T42S, R16W, SLB&M THENCE N0°36'40"E, 1820.09 FEET ALONG THE SECTION LINE AND WEST 102.98 FEET TO THE CENTERLINE OF 250 WEST STREET AND BLACKRIDGE DRIVE; THENCE N68°02'53"W, 139.22 FEET TO THE TRUE POINT OF BEGINNING; THENCE S44°45'38"W, 116.85 FEET; THENCE S70°32'28"W, 93.77 FEET; THENCE N24°25'31"W, 53.61 FEET; THENCE N12°33'52"W, 154.01 FEET; THENCE N52°02'14"E, 84.97 FEET; THENCE N33°11'25"W, 37.56 FEET; THENCE N56°48'35"E, 60.62 FEET; THENCE S81°03'14"E, 27.23 FEET; THENCE S58°19'12"E, 34.04 FEET; THENCE S33°57'07"E, 99.34; THENCE S53°34'40"W, 41.42 FEET; THENCE S45°56'41"E, 38.22 FEET; THENCE S39°24'39"E, 34.19 FEET; THENCE S5°45'45"E, 19.82 FEET TO THE TRUE POINT OF BEGINNING.

CONTAINS 1.0455 ACRES

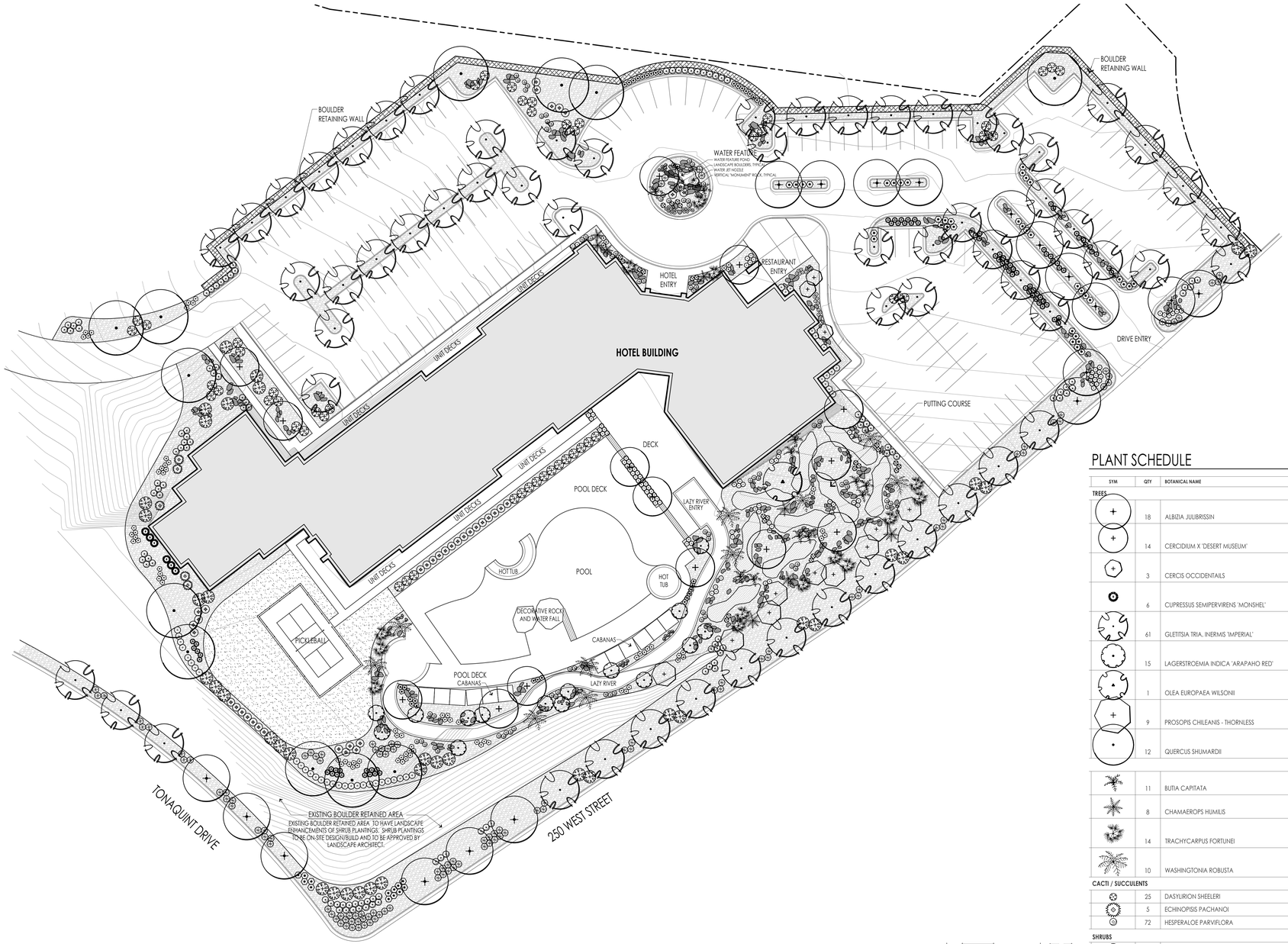
REGISTERED LAND SURVEYOR
MARC. L. BROWN
170223
5-3-04
STATE OF UTAH

163 WEST 1600 SOUTH #5 * ST. GEORGE UT 84770
PHONE 435.628.4700 * FAX 435.628.4725 * WWW.BROWNCE.COM


LEGEND
ASPHALT
DISPOSAL SITE BOUNDARY
DISPOSAL SITE AREA = 1.045 ACRES
CELL VOLUME - 10,276 CUBIC YARDS
*disposal site from 12-03 disposal points added 2606-2609
BLACK RIDGE DRIVE NORTH DISPOSAL SITE
SCALE: 1" = 40'
N
S
E
W
SIDEWALK
CURB & GUTTER
BLACK RIDGE L C
BLACK RIDGE NORTH
ASBESTOS DISPOSAL SITE
BID 99-4
SECTION 36, T.7S., R.3W.
CITY OF ST. GEORGE, WASHINGTON CO., UTAH
BUTLER HOLLOWAY
ENGINEERING INC

BLACK RIDGE DRIVE NORTH DISPOSAL SITE
SCALE: 1" = 40'
WEST ST
2650
2660
2670
2680
2690
N56°49'15"E
60.62'
N52°02'14"E
84.97'
N24°25'31"W
53.61'
S46°15'38"W
S39°44'08"E
S53°37'07"E
S38°01'38"W

Exhibit E
Landscape Plan



PLANTING PLAN

PLANT SCHEDULE

SYM	QTY	BOTANICAL NAME	COMMON NAME	SIZE	COND.	REMARKS
TREES						
	18	ALBIZIA JULIBRISSIN	MIMOSA SILK TREE	2" CAL.	B&B	
	14	CERCIDIUM X 'DESERT MUSEUM'	DESERT MUSEUM PALO VERDE	24" BOX	CONT.	
	3	CERCIS OCCIDENTAILS	WESTERN RED BUD	2 " CAL.	B&B	
	6	CUPRESSUS SEMIPERVIRENS 'MONSHEL'	ITALIAN CYPRESS	10' HT.	B&B	
	61	GLETITSIA TRIA. INERMIS 'IMPERIAL'	IMPERIAL HONEYLOCUST	3" CAL.	B&B	
	15	LAGERSTROEMIA INDICA 'ARAPAHO RED'	ARAPAHO RED CREPE MYRTLE	24" BOX	CONT.	
	1	OLEA EUROPAEA WILSONII	WILSON OLIVE	24" BOX	CONT.	
	9	PROSOPIS CHILEANIS - THORNLESS	CHILEAN MESQUITE	2" CAL.	B&B	
	12	QUERCUS SHUMARDII	SHUMARD OAK	3" CAL.	B&B	
	11	BUTIA CAPITATA	PINDO PALM	24" BOX	CONT.	
	8	CHAMAEROPS HUMILIS	MEDITERRANEAN FAN PALM	24" BOX	CONT.	
	14	TRACHYCARPUS FORTUNEI	WINDMILL PALM	24" BOX	CONT.	
	10	WASHINGTONIA ROBUSTA	MEXIAN FAN PALM	24' HT.	B&B	
CACTI / SUCCULENTS						
	25	DASYLIRION SHEELERI	DESERT SPOON	7 GAL.	CONT.	
	5	ECHINOPSIS PACHANOI	SAN PEDRO CACTUS	15 GAL.	CONT.	
	72	HESPERALOE PARVIFLORA	RED YUCCA	5 GAL.	CONT.	
SHRUBS						
	42	BUXUS MICROPHYLLA JAPONICA	WINTER GEM BOXWOOD	5 GAL.	CONT.	
	106	CARYOPTERIS X CLANDONENSIS 'BLUE MIST'	BLUE MIST SPIREA	5 GAL.	CONT.	
	15	ERYSIMUM LINARIFOLIUM 'BOWLES MAUVE'	DESERT LILAC	3 GAL	CONT	
	78	EURYOPS PECTINATUS 'VIRIDIS'	GREEN BUSH DAISY	5 GAL.	CONT.	
	67	LEUCOPHYLLUM FRUTESCENS 'COMPACTA'	COMPACT TEXAS SAGE	5 GAL.	CONT.	
	19	NANDINA DOMESTICA 'GULF STREAM'	GULF STREAM HEAVENLY BAMBOO	5 GAL.	CONT.	
	40	NERIUM OLEANDER 'DWARF RED'	DWARF RED OLEANDER	5 GAL.	CONT.	
	51	ROSMARINUS OFFICINALIS 'PROSTRATUS'	PROSTRATE ROSEMARY	3 GAL.	CONT.	
	38	TECOMA 'ORANGE JUBILEE'	ORANGE JUBILEE	7 GAL	CONT	
	113	TRACHELOSPERMUM ASIATICUM	ASIAN JASMINE	3 GAL.	CONT.	
ORNAMENTAL GRASSES						
	95	MUHLENDERGIA CAPILLARIS 'REGAL MIST'	REGAL MIST PINK MUHLY GRASS	3 GAL.	CONT.	
	12	NASSELLA TENUISSIMA	MEXICAN FEATHER GRASS	1 GAL.	CONT.	
	14	OPHIOPOGON JAPONICUS	MONDO GRASS	1 GAL.	CONT.	
	78	PHORMIUM 'GOLDEN RAY'	NEW ZEALAND FLAX	3 GAL.	CONT.	

IRRIGATION NOTES

1. IRRIGATION CONTRACTOR TO INSTALL A COMPLETE NEW AND OPERATIONAL IRRIGATION SYSTEM WITHIN THE LIMIT OF WORK. INSTALL ALL DRIP IRRIGATION COMPONENTS APPROPRIATE FOR THE AREA AND PLANTS TO BE IRRIGATED.
2. THE NEW IRRIGATION SYSTEM MAY INCLUDE BUT IS NOT LIMITED TO IRRIGATION MAIN LINE (PRESSURE PIPE), LATERAL LINES (CIRCUIT PIPE), IRRIGATION VALVES, CONTROL WIRING, CONTROLLER. CONTROLLER ELECTRICAL SUPPLY, BACKFLOW PREVENTER, GATE VALVE(S), SLEEVING, ISOLATION VALVES, QUICK COUPLER VALVES, VALVE BOXES, DRIP TUBING AND DRIP COMPONENTS.
3. WORK SHALL CONFORM WITH ALL APPLICABLE STANDARDS AND CODES.
4. IRRIGATION CONTRACTOR TO INSTALL CIRCUITS SO AS TO MAINTAIN APPROPRIATE OPERATING PRESSURE FOR EACH CIRCUIT AND SHALL BE RESPONSIBLE FOR ENSURING ADEQUATE COVERAGE OF ALL IRRIGATED AREAS.
5. IT IS THE RESPONSIBILITY OF THE IRRIGATION CONTRACTOR TO BECOME FAMILIAR WITH CONDITIONS OF THE SITE INCLUDING GRADES, LOCATIONS OF WALKS, STRUCTURES AND UTILITIES.
6. THE IRRIGATION CONTRACTOR SHALL SUBMIT SHOP DRAWINGS TO LANDSCAPE ARCHITECT FOR APPROVAL OF PROPOSED IRRIGATION SYSTEM PRIOR INSTALLATION OF IRRIGATION SYSTEM.
7. THE IRRIGATION CONTRACTOR SHALL REPAIR OR REPLACE ALL ITEMS DAMAGED BY HIS WORK. HE SHALL COORDINATE HIS WORK WITH OTHER CONTRACTORS FOR THE LOCATION AND INSTALLATION OF PIPE SLEEVES AND LATERAL LINES THROUGH WALLS, AND UNDER HARD SURFACES. SLEEVES INSTALLED AT IMPROPER DEPTHS WILL BE RE-INSTALLED BY BORING METHODS.
8. CONTROLLER LOCATION TO BE COORDINATED AND APPROVED BY LANDSCAPE ARCHITECT. INSTALL CONTROLLER AS PER MANUFACTURER'S WRITTEN INSTRUCTIONS.
9. IRRIGATION CONTRACTOR TO COORDINATE WITH GENERAL CONTRACTOR 120V AC ELECTRICAL POWER SOURCE AT HE CONTROLLER LOCATION. POWER SOURCE SHALL BE INSTALLED PER CODE. THE IRRIGATION CONTRACTOR SHALL MAKE THE FINAL CONNECTION FROM THE ELECTRICAL SOURCE TO THE CONTROLLER. REFER TO THE CONTROLLER MANUFACTURER'S PRODUCT SPECIFICATIONS FOR ELECTRICAL REQUIREMENTS.
10. IRRIGATION CONTRACTOR IS RESPONSIBLE FOR INSTALLING CONDUITS AND WIRING FROM VALVES TO CONTROLLERS.
11. INSTALL CHECK VALVES AS NEEDED TO PREVENT EXCESSIVE DRAINAGE AT LOW POINT OF EACH CIRCUIT.
12. IRRIGATION CONTRACTOR SHALL ADJUST VALVES, FLUSH AND ADJUST IRRIGATION CIRCUITS FOR OPTIMUM COVERAGE.
13. ALL IRRIGATION SYSTEM COMPONENTS TO BE INSTALLED AS PER MANUFACTURER'S WRITTEN INSTRUCTIONS.
14. IT IS THE INTENT TO HAVE ALL PIPING, VALVES, AND WIRING TO BE LOCATED IN PLANTING AREAS. WITH THE EXCEPTION OF LOCATIONS REQUIRED FOR HARD SURFACE CROSSINGS. ADDITIONAL SLEEVES WILL BE REQUIRED. NOT ALL SLEEVES ARE SHOWN.
15. ESTIMATED STATIC WATER PRESSURE AT POINT OF CONNECTION: **75 PSI.** IRRIGATION CONTRACTOR IS TO NOTIFY LANDSCAPE ARCHITECT IN WRITING IF STATIC PRESSURE IS LESS.
16. ALL VALVE BOXES TO BE SUPPORTED WITH BRICK AS INDICATED.
17. LOCATE IRRIGATION CONTROL VALVES IN LANDSCAPE AREAS, ADJACENT TO WALKS AND CURBS TO GREATEST EXTENT POSSIBLE.
18. THE LANDSCAPE ARCHITECT HAS THE RIGHT TO REFUSE MATERIAL OR WORK WHICH DOES NOT CONFORM TO THE CONSTRUCTION DOCUMENTS. REJECTED WORK SHALL BE BE REMOVED OR CORRECTED AS SOON AS POSSIBLE AT THE EXPENSE OF THE IRRIGATION CONTRACTOR.
19. IRRIGATION CONTRACTOR TO PROVIDE AS-BUILT DRAWINGS AS INDICATED IN SPECIFICATIONS.
20. PRIOR TO ACCEPTANCE OF WORK AND AS PART OF THE IRRIGATION PUNCH LIST THE IRRIGATION CONTRACTOR SHALL CONDUCT A MEETING WITH THE OWNER TO DEMONSTRATE THE OPERATION OF THE ENTIRE IRRIGATION SYSTEM INCLUDING WINTERIZATION AND START-UP PROCEDURES AND PROVIDE A RECOMMENDED IRRIGATION SCHEDULE. REMOTE OPERATING EQUIPMENT, IF ANY, SHALL BE GIVEN TO OWNER AT THIS TIME.
21. GUARANTEE: ALL WORK SHALL BE GUARANTEED FOR ONE YEAR FROM DATE OF ACCEPTANCE AGAINST ALL DEFECTS IN MATERIAL, EQUIPMENT, AND WORKMANSHIP. GUARANTEE SHALL ALSO COVER REPAIR FOR DAMAGE TO ANY PART OF THE PROJECT PROPERTY RESULTING FROM LEAKS OR OTHER DEFECTS IN MATERIAL, EQUIPMENT OR WORKMANSHIP, TO THE SATISFACTION OF THE OWNER. REPAIRS, IF REQUIRED, SHALL BE COMPLETED PROMPTLY AND AT NO COST TO THE OWNER.
22. EACH TREE TO BE IRRIGATED WITH CONCENTRIC RINGS OF INLINE EMITTER TUBING AS INDICATED IN THE DETAIL.
23. ALL WIRING LAID APART FROM THE IRRIGATION MAIN LINE TO BE IN GRAY SLEEVE(S) OF ADEQUATE SIZE BURIED 18" DEEP.
24. CONTRACTOR TO CONDUCT A SYSTEM PRESSURE TEST IN THE PRESENCE OF THE LANDSCAPE ARCHITECT PRIOR TO BACKFILLING MAIN LINE TRENCHES. CONTRACTOR TO NOTIFY THE LANDSCAPE ARCHITECT **TWO WORKING DAYS** MINIMUM PRIOR TO CONDUCTING THE SYSTEM PRESSURE TEST. PRESSURE TEST MAIN LINE AND ALL VALVES INSTALLED AT 100 PSI FOR 2 HOURS MINIMUM.

PLANTING NOTES

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING ALL UTILITY COMPANIES FOR FIELD LOCATION OF ALL UNDERGROUND UTILITIES, INCLUDING UTILITY DEPTHS, PRIOR TO ANY EXCAVATION. CONTRACTOR SHALL TAKE SOLE RESPONSIBILITY FOR ANY AND ALL COST OR OTHER LIABILITY INCURRED DUE TO DAMAGE OF UTILITIES, STRUCTURES, ETC.
2. CONTRACTOR SHALL BE RESPONSIBLE FOR BECOMING AWARE OF ALL RELATED EXISTING CONDITIONS, UTILITIES, PIPES, AND STRUCTURES, ETC. PRIOR TO BIDDING AND CONSTRUCTION.
3. IF CONFLICTS ARISE BETWEEN SITE CONDITIONS AND CONSTRUCTION DOCUMENTS, CONTRACTOR IS REQUIRED TO CONTACT OWNER'S REPRESENTATIVE FOR RESOLUTION. FAILURE TO MAKE SUCH CONFLICTS KNOWN TO THE OWNER'S REPRESENTATIVE WILL RESULT IN THE CONTRACTOR BEING LIABLE TO RECONCILE CONFLICTS TO OWNER'S SATISFACTION.
4. THE CONTRACTOR IS RESPONSIBLE TO FURNISH ALL PLANT MATERIAL FREE OF PESTS AND/OR PLANT DISEASES AND WITH FULL AND NATURAL SHAPE. ALL PLANT MATERIAL IS SUBJECT TO OWNER'S APPROVAL PRIOR TO INSTALLATION.
5. PRE-SELECTED OR "TAGGED" MATERIAL MUST BE INSPECTED BY THE CONTRACTOR AND CERTIFIED PEST AND DISEASE FREE.
6. THE CONTRACTOR IS OBLIGATED TO MAINTAIN AND WARRANT ALL PLANT MATERIALS AS SPECIFIED.
7. PROVIDE MATCHING SIZES AND FORMS FOR EACH SPECIES OF TREES AND/OR PLANTS TO BE INSTALLED ON GRID OR SPACED IN ROWS AS INDICATED ON DRAWINGS. ALL PLANT MATERIAL TO BE PLANTED IN SUCH MANNER AS TO BE EQUALLY SPACED. PLANT LOCATIONS SUBJECT TO ACCEPTANCE BY THE OWNERS REPRESENTATIVE.
8. THE LANDSCAPE CONTRACTOR SHALL SCHEDULE PLANTING OPERATIONS AND TAKE ALL NECESSARY PRECAUTIONS TO AVOID WINTER, CLIMATIC, WILDLIFE, OR OTHER DAMAGE TO PLANT MATERIAL.
9. CONTRACTOR SHALL PLACE A 12" DEEP LAYER MINIMUM OF TOPSOIL TO ALL SHRUB/PERENNIAL PLANTING AREAS. IMPORT TOPSOIL AS REQUIRED.
10. PITS FOR ALL PLANT MATERIAL SHALL BE DUG WITH THE DEPTH AND WIDTH AS INDICATED IN PLANTING DETAILS.
11. TREES LESS THAN TWO-INCH CALIPER MUST BE DOUBLE-STAKED UNTIL THE TREES MATURE TO A TWO-INCH CALIPER.
12. CONTRACTOR TO PRUNE TREES AS DIRECTED BY LANDSCAPE ARCHITECT FOR PROPER TREE SHAPING.
13. CONTRACTOR TO REMOVE ALL TAGS, TIES AND FLAGGING FROM ALL PLANT MATERIAL PRIOR TO SUBSTANTIAL COMPLETION.
14. WITH THE EXCEPTION OF PALMS, CACTI AND SUCCULENTS, PLANT BACKFILL MIXTURE SHALL BE COMPOSED OF 3 PARTS TOPSOIL TO 1 PART HUMUS, ROTARY MIXED ON-SITE PRIOR TO INSTALLATION.

LANDSCAPE LEGEND

- ROCK MULCH — ROCK MULCH TO BE NATIVE, LOCAL STONE - 2-3", 4" LAYER PLACED OVER WEED BARRIER FABRIC. PROVIDE SAMPLE TO LANDSCAPE ARCHITECT FOR APPROVAL PRIOR TO INSTALLATION.
- TURF (SOD) — LAWN SOD TO BE DROUGHT TOLERANT TURF AS APPROVED BY LANDSCAPE ARCHITECT. CONTRACTOR TO SUBMIT SOD SEED MIX FOR APPROVAL PRIOR TO INSTALLATION.
- SYNTHETIC TURF — SYNTHETIC TURF AT PUTTING COURSE TO BE "READY PUTT" BY XGRASS, DALTON, GA. PHONE: 877.881.8477. www.xgrass.COM, OR AS IDENTIFIED BY OWNER.
- LANDSCAPE BOULDERS — LANDSCAPE BOULDERS, LOCAL, NATURAL ROCK. ROCK TO BE APPROVED BY LANDSCAPE ARCHITECT.
- "MONUMENT ROCKS" — "MONUMENT" TYPE ROCK, LOCAL, NATURAL ROCK PLACED VERTICALLY WITH HEIGHTS ABOVE GRADE BETWEEN 5' - 8'. PROVIDE CONCRETE BASE AS REQUIRED.

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LICENSED LANDSCAPE ARCHITECT
CURTIS R TANNER
NO. 169179
STATE OF UTAH

28 JULY 2021

HOTEL ST GEORGE

ST GEORGE UTAH

PROJECT NO. 18074
DATE: 28 JULY 2021
REVISIONS:

SHEET TITLE:
PLANTING PLAN
SHEET NUMBER:
LP101
LANDSCAPE

St.George
Community Development

ITEM 3
Hillside Permit

HILLSIDE REVIEW BOARD AGENDA REPORT: **09/29/2021**

Temple Springs Park Hillside Development Permit (Case No. 2021-HS-009)		
Request:	A Hillside Development Permit to allow disturbance of areas in the 20-30%, 30-40% and 40% and above slope areas. This application is in anticipation of the construction of a city park and trail.	
Applicant:	City of St. George	
Representative:	Joseph Nielson	
Location:	700 E Street, north of St. George Boulevard	
General Plan:	COM (Commercial)	
Existing Zoning:	OS (Open Space), C-2 (Highway Commercial	
Surrounding Zoning:	North	OS (Open Space)
	South	C-2 (Highway Commercial), C-3 (General Commercial)
	East	OS (Open Space), C-2 (Highway Commercial)
	West	OS (Open Space), C-3 (General Commercial), MH-6 (Mobile Home)
Land Area:	Approximately 10 acres	



BACKGROUND

This is a request to obtain a hillside permit for the property located at the terminus of University Avenue (700 E), north of St. George Boulevard. The city would like to clean up this area and add a park that will include a trail that connects up to the Red Hills Drive trail. The park is to be called Temple Springs Park. The slope table below is taken from the slope analysis map. It shows the 20%, 30%, and 40% slopes and the percentage of the project that will disturb the slopes.

SLOPE TABLE

COLOR	MINIMUM SLOPE	MAXIMUM SLOPE	AREA (AC)	DISTURBED AREA (AC)	%
	0.00%	19.00%	4.47	1.30	29%
	20.00%	29.00%	1.63	0.32	19%
	30.00%	39.00%	1.47	0.17	12%
	40.00%	100.00%	3.23	0.18	6%
		TOTAL :	10.80	1.96	

CENTERLINE OF TRAIL ALIGNMENT

TRAIL DISTURBANCE AREA LIMITS

APPLICABLE ORDINANCE(S) *(Selected portions)*

10-13A-1: Density and Disturbance Standards

J. Disturbance standards do not apply to the city for limited city facilities: trails, parks, and utilities.

EXHIBITS PROVIDED

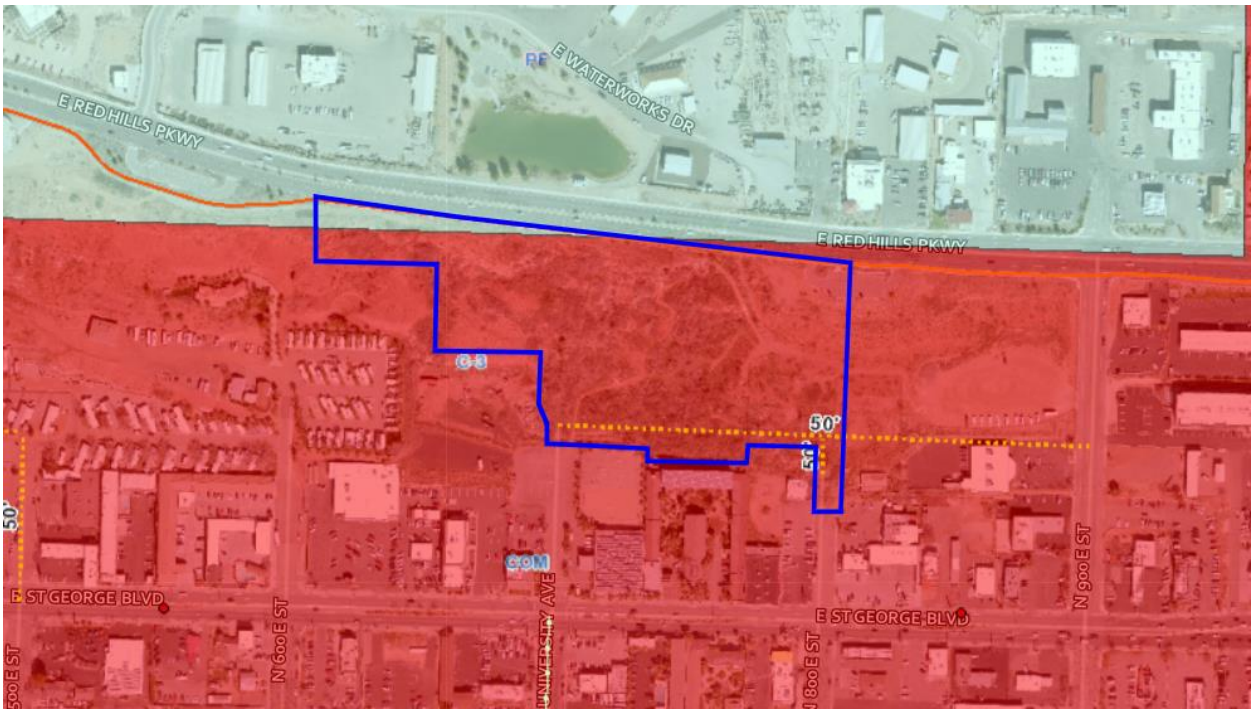
1. Exhibit A – Site Plan/ Grading and Drainage Plan
   "Exhibit A" in the packet shows the overall site plan for the project

2. Exhibit B – Slope Analysis Map
   "Exhibit B" in the packet shows the overall slope analysis for the area to be disturbed.

RECOMMENDATION

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).

General Plan – COM & PF



Zoning – OS & C-2

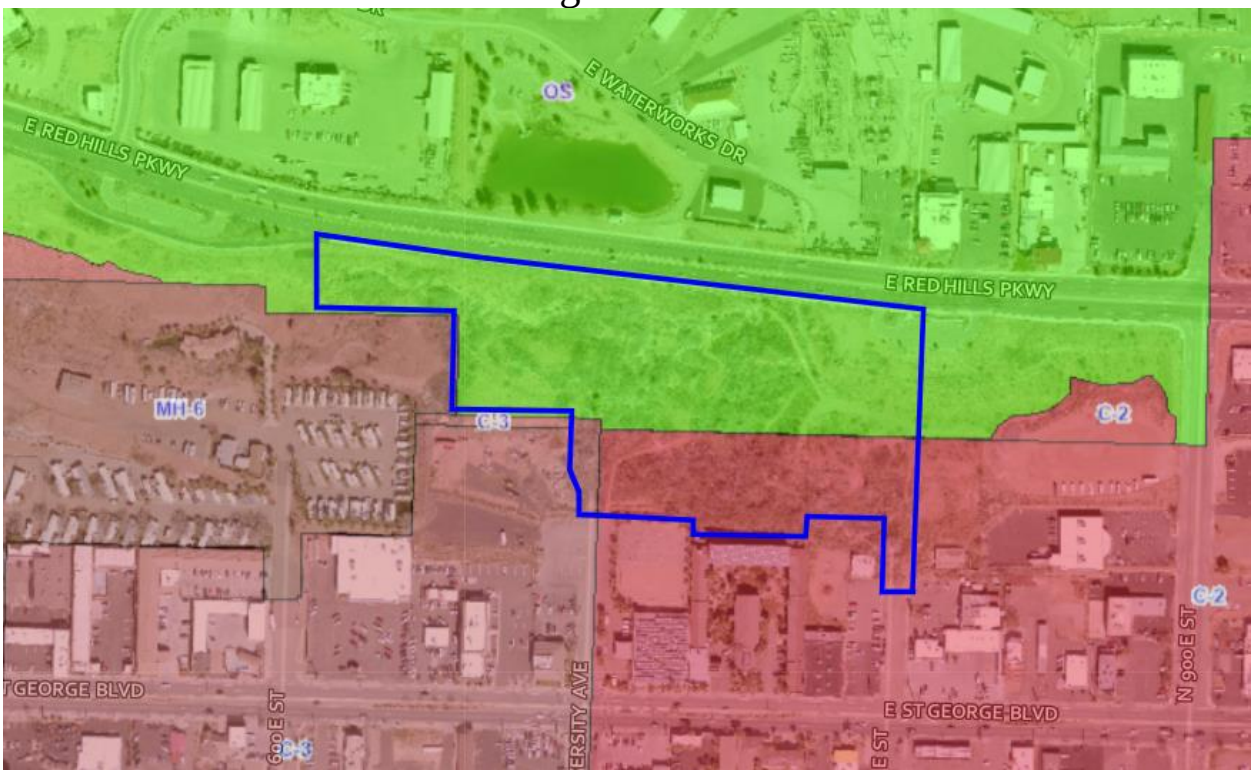
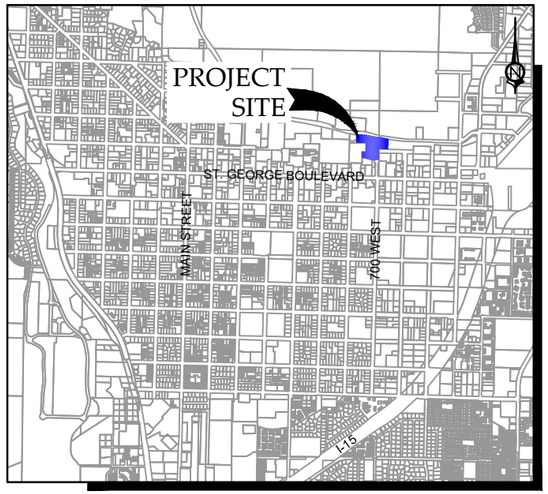


Exhibit A
SITE PLAN

TEMPLE SPRINGS PARK
PHASE I

90% CONSTRUCTION DRAWINGS
ST. GEORGE, UTAH
SEPTEMBER, 2021
INQUIRY #: 21-097



VICINITY MAP
(N.T.S.)



SHEET INDEX		
SHEET	#	TITLE
G1	1	COVER SHEET
G2	2	LEGEND & ABBREVIATIONS
G3-G4	3-4	PROJECT NOTES
SC1	5	SURVEY CONTROL
CR1	6	CROSS REFERENCE
TS1	7	TYPICAL SECTIONS
PP1-PP11	8-18	PLAN & PROFILE
BR1-BR3	19-21	BRIDGE PLAN & PROFILE
BR4-BR5	22-23	BRIDGE DETAILS
GP1-GP2	24-25	GRADING PLAN
DT1-DT3	26-28	DETAILS

UTILITY DESIGN APPROVED

	APPROVED	DATE
WATER		
FIRE		
WASTEWATER		
POWER		
TELEPHONE		
GAS		
CABLE		
FIBER		

OWNER

St.George
THE BRIGHTER SIDE

175 EAST 200 NORTH
ST GEORGE, UT 84770
435.627.4000

PREPARED BY

CivilScience
Engineers | Surveyors | Solutions
1453 S Dixie Drive, Ste 150
St. George, UT 84770
435 986 0100

Know what's below. Call before you dig.

PROJECT MANAGER
CODY HOWICK, P.E.

THIS SEAL APPLIES TO ALL SHEETS CONTAINING THE INSCRIBED SIGNATURE

PROJECT ENGINEER
TREVOR GARDNER, P.E.

CivilScience
Engineers · Surveyors · Solutions
1453 S Dixie Drive, Ste 150
St. George, UT 84770
435 986 0100

PRELIMINARY
NOT FOR
CONSTRUCTION

COVER SHEET

TEMPLE SPRINGS PARK
PHASE I
ST. GEORGE, UTAH

PROJ #: Ex. 20208
DRAWN BY: ABJ
DESIGN BY: TGG
CHECKED BY:CCH

SHEET
G1

PLOT: 2021-09-03 07:03 PM
PATH: L:\UTAH\PROJECTS\ACTIVE 2020\PX20208.00 - ST GEORGE CITY TEMPLE SPRINGS PARK\800 - CAD\840 - SHEETS\20208_G.DWG

ABBREVIATIONS

AC	ACRE	GR	GRATE	UEC	UNDERGROUND ELECTRIC
AGGR	AGGREGATE	GV	GATE VALVE	UTBC	UNTREATED BASE COURSE
ALT.	ALTERNATE	HDPE	HIGH-DENSITY POLYETHYLENE	VAR.	VARIES
APPR.	APPRO□IMATELY	HOR.	HORI□ONTAL	VERT.	VERTICAL
AR MH	AIR RELEASE MANHOLE	HP	HIGH POINT	W	WEST
ARV	AIR RELEASE VALVE	HYD.	HYDRANT	WL	WATER LINE
AS	AS SHOWN	IN.	INCH		
ASSY.	ASSEMBLY	I.D.	INSIDE DIAMETER		
ASTM	AMERICAN SOCIETY FOR TESTING MATERIALS	INS.	INSULATION		
		INV.	INVERT		
AVE	AVENUE	LB.	POUND		
BFV	BUTTERFLY VALVE	LEN.	LENGTH		
BFO	BURIED FIBER OPTIC	LF	LINEAR FEET		
BH	BORE HOLE	LP	LOW POINT		
BITUM.	BITUMINOUS	LT	LEFT		
BK	BACK	MA□	MA□IMUM		
BLV	BALL VAVLE	MFG.	MANUFACTURER		
B.O.	BY OTHERS	MH	MANHOLE		
BOA	BEGINNING OF ALIGNMENT	MIN.	MINIMUM		
BOP	BEGINNING OF PROJECT	MJ	MECHANICAL JOINT		
BTEL	BURIED TELEPHONE	MON.	MONUMENT		
BVC	BEGIN VERTICAL CURVE	N.	NORTH		
C&G	CURB AND GUTTER	NO.	NUMBER		
CB	CATCH BASIN	NTS	NOT TO SCALE		
C-C	CENTER TO CENTER	O.C.	ON CENTER		
CF	CUBIC FEET	O.D.	OUTSIDE DIAMETER		
CFS	CUBIC FEET PER SECOND	OH	OVERHEAD		
CI	CAST IRON	PC	POINT OF CURVATURE		
CIP	CAST IRON PIPE	PCC	POINT OF COMPOUND CURVATURE		
CL	CENTERLINE	PI	POINT OF INTERSECTION		
CMP	CORRUGATED METAL PIPE	PL	PROPERTY LINE		
CO	CLEANOUT	POLY	POLYETHYLENE		
CONC.	CONCRETE	POT.	POTABLE		
CONSTR.	CONSTRUCTION	PP	POWER POLE		
CSV	CURB STOP VALVE	PRC	POINT OF REVERSE CURVATURE		
CU	COPPER	PRV	PRESSURE REDUCING VALVE		
CY□CU YD	CUBIC YARD	PSI	POUNDS PER S□UARE INCH		
DBL	DOUBLE	PT	POINT OF TANGENCY		
DI	DUCTILE IRON	PVC	POLYVINYL CHLORIDE		
DIA□D	DIAMETER	PVI	POINT OF VERTICAL INTERSECTION		
DIP	DUCTILE IRON PIPE	PUE	PUBLIC UTILITY EASEMENT		
DR	DRIVE	RAD	RADIUS		
DWG	DRAWING	RCP	REINFORCED CONCRETE PIPE		
E.	EAST	RE□□D	RE□UIRED		
EA.	EACH	ROW	RIGHT-OF-WAY		
EF	EACH FACE	RR	RAILROAD		
EG	E□ISTING GRADE	RT	RIGHT		
EP	EDGE OF PAVEMENT	S.	SOUTH		
ELEC.	ELECTRICAL	SAN	SANITARY		
ELEV.	ELEVATION	SCH.	SCHEDULE		
ELOH	OVERHEAD ELECTRICAL	SD	STORM DRAIN		
EOA	END OF ALIGNMENT	SDR	STANDARD DIMENSION RATIO		
EOP	END OF PROJECT	SF□S□ FT	S□UARE FEET		
E□	E□UAL	SHT	SHEET		
ESMT	EASEMENT	SIM.	SIMILAR		
EVC	END VERTICAL CURVE	SPA	SPACES		
EW	EACH WAY	SS	SANITARY SEWER		
E□.	E□ISTING	ST	STREET		
E□T.	E□TENSION	ST. STL	STAINLESS STEEL		
FES	FLARED END SECTION	STA	STATION		
FH	FIRE HYDRANT	STD	STANDARD		
FL	FLOWLINE	SY□S□ YD	S□UARE YARD		
FM	FORCE MAIN	TEL	TELEPHONE		
FO	FIBER OPTIC	TBC	TOP BACK OF CURB		
FT.	FOOT□FEET	TBR	TO BE REMOVED		
GALV.	GALVANI□ED	TW	TOP OF WALL		
GB	GRADE BREAK	TYP.	TYPICAL		

LEGEND

E□ISTING	PROPOSED	
1850 / 1852	1850 / 1852	MAJOR CONTOUR / MINOR CONTOUR
		GRADING CUT LINE
	FILL	GRADING FILL LINE
		CURB AND GUTTER
		EDGE OF PAVEMENT
		EDGE OF GRAVEL
		STREET CENTERLINE
r/w	R/W	RIGHT-OF-WAY LINE
		PROPERTY LINE
		SECTION LINE
		SECTION CORNER
PUE	PUE	PUBLIC UTILITY EASEMENT
TCE	TCE	TEMPORARY CONSTRUCTION EASEMENT
X — X	x — x — x	FIELD FENCE
		MASONRY WALL
SS	8"SS	SANITARY SEWER MAIN □SI□E AS NOTED□
Ⓢ	Ⓢ	SANITARY SEWER MANHOLE
W	8"W	WATER MAIN □SI□E AS NOTED□
		TEE
		CROSS
		GATE VALVE
		PRV
		AIR VAC
		FITTING
		STUB □CAP
		HYDRANT
		WATER METER
IRR	IRR	PRESSURI□ED IRRIGATION
R	R	PRESSURE IRRIGATION SERVICE□VALVE
SD	18"SD	STORM DRAIN PIPE □SI□E AS NOTED
		CULVERT WITH FLARED END SECTION
Ⓓ	Ⓓ	STORM DRAIN MANHOLE
		STORM DRAIN CURB INLET

E□ISTING	PROPOSED	
		STREET LIGHT
		SIGN □SINGLE POLE, 2 OR MORE POLES□
	00.00	IMPROVEMENT ELEVATIONS
		RIP-RAP
		PAVEMENT
		BASE COURSE
		CONCRETE
		NATURAL GROUND
SECTION □ DETAIL NUMBER 4 D1 SHEET WHERE DRAWN		SECTION CALL-OUT SYMBOL
UEC	UEC	UNDERGROUND ELECTRIC LINE
ELOH	ELOH	OVERHEAD ELECTRIC LINE
BFO	1D	BURIED FIBER OPTIC LINE
BCTV	BCTV	BURIED CABLE TV
G	G	GAS LINE
BTEL	BTEL	BURIED TELEPHONE
TELOH	TELOH	OVERHEAD TELEPHONE
		POWER POLE
		GUY WIRE ANCHOR
EL.	E	ELECTRICAL BO□ OR LOCKER
F.O.	F.O.	FIBER OPTIC PEDESTAL
	T	TELEPHONE PEDESTAL
T		TELEPHONE BO□
		GRADE TO DRAIN
		ROCK RETAINING WALL

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LEGEND AND ABBREVIATIONS

TEMPLE SPRINGS PARK
PHASE I
ST. GEORGE, UTAH

PROJ. #: Fx. 20208
DRAWN BY: ABJ
DESIGN BY: TGG
CHECKED BY: CCH

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GENERAL

1. STANDARD DRAWINGS & SPECIFICATIONS□ALL CONSTRUCTION SHALL CONFORM TO ST. GEORGE CITY STANDARD SPECIFICATIONS, LATEST EDITION UNLESS SPECIFIED OTHERWISE.

2. TRAFFIC CONTROL PLAN□CONTRACTOR SHALL SUBMIT TRAFFIC CONTROL PLAN AND ALL SIGNING BARRICADES AND TRAFFIC DELINEATION SHALL CONFORM TO THE PROJECT SPECIFICATIONS AND THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES - CURRENT EDITION.

3. PROPERTY & CONSTRUCTION LIMITS□ALL CONSTRUCTION WORK INCLUDING VEHICLES, E□UIPMENT, MATERIALS, ETC. SHALL BE KEPT WITHIN E□ISTING RIGHT-OF-WAY AND EASEMENTS OF THE PROJECT BOUNDARIES. CONSTRUCTION IS INTENDED TO BE WITHIN ROADWAY RIGHT-OF-WAY, DESIGNATED PROPERTY BOUNDARIES, OR EASEMENTS. ANY WORK BEYOND CONSTRUCTION LIMITS IS TO BE APPROVED BY OWNER OR ENGINEER□S REPRESENTATIVE. THE CONTRACTOR SHALL BE RESPONSIBLE TO OBTAIN WRITTEN RIGHT OF INGRESS AND EGRESS SHOULD HE VENTURE ONTO PRIVATE PROPERTY WHICH IS NOT INCLUDED IN AC□UIRED RIGHTS-OF-WAY, PROPERTY, AND EASEMENTS.

4. E□ISTING IMPROVEMENTS□CONTRACTOR SHALL TAKE NECESSARY MEASURES TO PRESERVE AND PROTECT E□ISTING STRUCTURES, WALLS, DRIVEWAYS, TRAFFIC SIGNS, WATERWAYS, FENCES, LANDSCAPING, TREES, RIPRAP, DITCHES, ASPHALT AND CONCRETE TRAILS, CURB AND GUTTER, MAILBO□ES, SIDEWALK, AND OTHER IMPROVEMENTS. ANY SUCH IMPROVEMENTS REMOVED OR DAMAGED BY CONTRACTOR□S ACTIVITY SHALL BE REPLACED OR REPAIRED TO ORIGINAL OR BETTER CONDITION ACCORDING TO THE SPECIFICATIONS OF THE GOVERNMENTAL ENTITY HAVING JURISDICTION, AT THE SOLE E□PENSE OF THE CONTRACTOR.

5. TESTING□THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION FOR ALL RE□UIRED INSPECTION AND TESTING PROVIDED BY OWNER. WORK CONCEALED WITHOUT THE RE□UIRED INSPECTION OR TESTING SHALL BE SUBJECT TO E□POSURE AT THE CONTRACTOR□S SOLE E□PENSE.

6. NON-CONFORMING WORK□WORK PERFORMED WHICH IS NOT IN CONFORMANCE WITH THE DRAWINGS AND□OR SPECIFICATIONS OR WITHOUT OWNER OR ENGINEER REPRESENTATIVE□S APPROVAL SHALL BE SUBJECT TO REMOVAL AND REPLACEMENT AT THE CONTRACTOR□S SOLE E□PENSE.

7. WORK HOURS & CONSTRUCTION NOISE□THE CONTRACTOR SHALL LIMIT CONSTRUCTION ACTIVITIES TO DAYLIGHT HOURS ONLY AND NO CONSTRUCTION WORK WILL BE ALLOWED ON SATURDAYS, SUNDAYS, OR HOLIDAYS OBSERVED BY THE OWNER UNLESS OTHERWISE APPROVED BY THE OWNER OR ENGINEER□S REPRESENTATIVE.

8. OSHA COMPLIANCE□IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO ENSURE THAT ALL OSHA REGULATIONS AND STANDARDS ARE COMPLIED WITH ON THE PROJECT SITE DURING THE CONSTRUCTION PERIOD.

9. EPA COMPLIANCE□THE CONTRACTOR SHALL MEET ALL DEPARTMENT OF ENVIRONMENTAL □UALITY AND U.S. EPA RE□UIREMENTS.

10. CONSTRUCTION ACTIVITIES□IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO PERFORM CONSTRUCTION ACTIVITIES PER THE CONTRACT DOCUMENTS. ANY ADDITIONS, DELETIONS, OR MODIFICATIONS SHALL FIRST MEET WITH THE WRITTEN APPROVAL OF THE OWNER OR ENGINEER□S REPRESENTATIVE.

11. SETTLEMENT□CONTRACTOR SHALL BE RESPONSIBLE FOR CORRECTING ANY SETTLEMENT OF E□CAVATIONS, AND ANY DAMAGE OF UTILITIES RESULTING FROM SETTLEMENT.

12. SURVEY MONUMENTS□CONTRACTOR SHALL NOT DESTROY, REMOVE, OR DISTURB ANY E□ISTING SURVEY MONUMENTS WITHOUT AUTHORI□ATION OF CONTROLLING AGENCY. NO PAVEMENT CUTTING OR REMOVAL SHALL BEGIN UNTIL ALL SURVEY MARKERS OR MONUMENT POINTS THAT HAVE THE POTENTIAL OF BEING DISTURBED BY THE CONSTRUCTION OPERATIONS HAVE BEEN PROPERLY REFERENCED BY A REGISTERED LAND SURVEYOR. ALL SURVEY MONUMENTS OR POINTS DISTURBED BY THE CONTRACTOR SHALL BE ACCURATELY RESET BY A REGISTERED LAND SURVEYOR AFTER ALL RESTORATION AND RESURFACING HAS BEEN COMPLETED.

13. LANDSCAPE RESTORATION□CONTRACTOR SHALL STRIP, STOCKPILE, AND REPLACE E□ISTING TOP SOIL □MINIMUM TOP 12 INCHES OF MATERIAL□WITHIN THE TRENCH CUT. CONTRACTOR SHALL GRADE AND RESTORE GROUND MATCHING OR E□CEEDING ORIGINAL LANDSCAPING CONDITIONS. THIS INCLUDES, BUT NOT LIMITED TO□TOPSOIL, GRASS, TREES, CONCRETE TRAIL, BOLLARDS, SPRINKLERS AND LANDSCAPE ROCKS, BARK AND VEGETATION. COORDINATE WITH OWNER ON LANDSCAPING PRIOR TO RESTORATION.

14. DISCREPANCIES, OMISSIONS AND CONFLICTS□THE CONTRACTOR SHALL NOTIFY THE OWNER OR ENGINEER□S REPRESENTATIVE OF ANY DISCREPANCIES, OMISSIONS OR CONFLICTS BETWEEN THE VARIOUS ELEMENTS OF THE DRAWINGS AND□OR SPECIFICATIONS BEFORE PROCEEDING WITH RELATED WORK.

15. CONSTRUCTION TIMELINE□THE CONTRACTOR RECOGNI□ES THAT TIME IS OF THE ESSENCE WITH THIS PROJECT AND SHALL SELECT AND UTILI□E LABOR, E□UIPMENT, AND MATERIALS THAT MINIMI□E THE CONSTRUCTION TIMELINE. THE CONTRACTOR SHALL ALSO REGULARLY APPRISE THE OWNER OR ENGINEER□S REPRESENTATIVE OF THE ELEMENTS RE□UIRING LONG LEAD, INSTALLATION OR CURE TIMES

16. PRE-CONSTRUCTION DOCUMENTATION□PRIOR TO CONSTRUCTION, THE CONTRACTOR IS RE□UIRED TO DOCUMENT WITH DIGITAL PHOTOGRAPH OR VIDEO THE E□ISTING DRIVEWAYS, WALL, FENCES, SIDEWALKS, LANDSCAPING AND ALL OTHER ELEMENTS THAT WILL BE DISTURBED BY CONSTRUCTION. THE DOCUMENTATION MUST BE PROVIDED UPON THE RE□UEST OF THE OWNER OR ENGINEER□S REPRESENTATIVE.

17. INCIDENTAL WORK□WORK INTENDED BY THE DRAWINGS AND SPECIFICATIONS, BUT NOT SPECIFICALLY IDENTIFIED IN A PARTICULAR BID ITEM SHALL BE CONSIDERED INCIDENTAL TO THE OTHER BID ITEMS.

18. LEGAL DISPOSAL□ANY DEBRIS RESULTING FROM THE PROJECT IS TO BE DISPOSED OF BY THE CONTRACTOR. THE CONTRACTOR SHALL MAKE ARRANGEMENTS FOR DISPOSAL SITES AT WHICH DEBRIS MAY BE LAWFULLY WASTED.

UTILITIES

1. E□ISTING UTILITIES□UTILITIES SHOWN ON THE DRAWINGS ARE BASED ON THE BEST AVAILABLE INFORMATION PROVIDED BY OTHERS, AND SHOULD BE CONSIDERED APPRO□IMATE AND FOR GENERAL INFORMATION ONLY. CONTRACTOR IS RESPONSIBLE TO LOCATE AND PROTECT ALL UTILITIES IN THE PROJECT AREA, INCLUDING THOSE THAT MAY NOT BE SHOWN OR THAT MAY BE SHOWN INCORRECTLY. CONTRACTOR IS SOLELY RESPONSIBLE FOR THE REPAIR OF ANY UTILITY DAMAGED AS A RESULT OF THE CONTRACTOR□S OPERATIONS. RELOCATIONS AND□OR REPLACEMENTS OF E□ISTING UTILITIES SHALL BE COORDINATED BY THE CONTRACTOR WITH THE UTILITY OWNER. CONTRACTOR SHALL CONTACT, SCHEDULE, AND ESTABLISH UTILITY SHUT DOWN TIMES AND DETERMINE THE RELOCATION AND□OR REPLACEMENT RE□UIREMENTS OF E□ISTING UTILITIES PRIOR TO THE START OF ANY WORK.

UTILITY CONTACT INFORMATION			
UTILITY COMPANY	CONTACT NAME	UTILITY	TELEPHONE
CENTURYLINK	MIKE CHASTON	FIBER & PHONE	435□773-1571
DOMINION ENERGY	MARK HANSEN	GAS	435□674-6105
ST GEORGE CITY POWER	BARBARA BERRETT	POWER	435□627-4896
ST GEORGE SEWER & WATER	CADE BRINGHURST	IRRIGATION, SWR & CULINARY WTR	435□632-4001

2. UTILITY FIELD VERIFICATION□CONTRACTOR SHALL FIELD VERIFY LOCATIONS AND INVERT ELEVATIONS OF E□ISTING MANHOLES, PIPE SI□ES AND OTHER UTILITIES BEFORE CONSTRUCTING ANY NEW SEWER, WATER, STORM DRAIN OR OTHER UTILITY LINES. REPORT ANY DISCREPANCIES BETWEEN E□PECTED LOCATION AND ACTUAL LOCATION TO THE OWNER OR ENGINEER□S REPRESENTATIVE IMMEDIATELY.

3. ALIGNMENT & DEPTH□LAY PIPE TO DEPTH OR SPECIFIC SLOPE AND ALONG HORI□ONTAL ALIGNMENT AS DEFINED IN THESE DRAWINGS. CONTRACTOR SHALL NOT DEVIATE FROM PROPOSED ALIGNMENT OR DEPTH. GRAVITY PIPE INSTALLATION SHALL RE□UIRE LASER GRADE LINE BE USED AND WILL BE CHECKED PRIOR OF ANY PIPE ACCEPTANCE.

4. OVERHEAD POWER LINES□CONTRACTOR SHALL COMPLY WITH SAFETY RE□UIREMENTS FOR OPERATING CONSTRUCTION E□UIPMENT AND CONSTRUCTION ACTIVITIES BENEATH HIGH VOLTAGE POWER LINES.

5. WATER VALVES□ALL E□ISTING PUBLIC VALVES ARE TO BE OPERATED BY AUTHORI□ED EMPLOYEES. GIVE PRIOR NOTICE TO OWNER OR ENGINEER□S REPRESENTATIVE BEFORE ANY WATERLINES RE□UIRE SHUTOFF TO AVOID ANY AMBIGUITIES.

6. UTILITY IMPACTS□AVOID E□ISTING UTILITIES WHERE POSSIBLE. WHERE IMPACTS TO UTILITIES ARE E□PECTED OR ENCOUNTERED, COORDINATE RELATED CONSTRUCTION ACTIVES AND RE□UIRED UTILITY MODIFICATION WITH UTILITY OWNERS AND OWNER OR ENGINEER□S REPRESENTATIVE. THE CONTRACTOR SHALL INFORM AND COORDINATE PLANNED PROJECT CONSTRUCTION WITH ALL UTILITY OWNERS WITHIN PROJECT AREA PRIOR TO CONSTRUCTION.

7. FLOW DIVERSION□CONTRACTOR WILL BE RE□UIRED TO DIVERT WATER OR WASTEWATER OF E□ISTING FLOWS FOR FULL DURATION OF PROJECT.

8. UTILITY SHUTDOWN□ALL UTILITY SHUTDOWNS RE□UIRE AT LEAST 72 HOURS IN ADVANCE OR AS RE□UIRED BY UTILITY COMPANY.

9. TRENCH OPERATIONS□CONTRACTOR IS SOLELY RESPONSIBLE FOR CONFORMANCE WITH LOCAL AND FEDERAL CODES GOVERNING SHORING AND BRACING OF E□CAVATIONS AND TRENCHES. CONTRACTOR IS RESPONSIBLE FOR THE SAFETY OF THE PUBLIC AND PROTECTION OF PERSONNEL AND WORKERS. TRENCH SUPPORTS AND DEWATERING SHALL BE RESPONSIBILITY OF THE CONTRACTOR. MA□IMUM OPEN TRENCH DURING WORK HOURS SHALL BE 200 FEET AND ALL TRENCHES SHALL BE BACKFILLED AND□OR PLATED DURING NON-WORKING HOURS.

10. POT HOLING□CONTRACTOR SHALL VERIFY THE E□ACT LOCATION, SI□E, TYPE, AND ELEVATION OF ALL UTILITIES PRIOR TO CONSTRUCTION BY POT HOLING A MINIMUM OF 400 FEET IN ADVANCE OF TRENCHING OPERATIONS TO CONFIRM CLEARANCE FROM THE PROPOSED PIPELINES.

11. NEW PIPE PROTECTION□CONTRACTOR SHALL IMPLEMENT MEASURES DURING CONSTRUCTION THAT WILL PREVENT RUNOFF, DEBRIS AND SEDIMENT FROM ENTERING UNFINISHED PORTIONS OF THE NEW PIPE DURING CONSTRUCTION.

12. DEWATERING□GROUND WATER AND SURFACE WATER CONTROL SHALL BE PERFORMED AND RESPONSIBLY HANDLED BY THE CONTRACTOR ACCORDING TO, AND IN COMPLIANCE WITH, ALL LOCAL GOVERNING AUTHORITIES. HEAVY GROUND WATER AND□OR SURFACE WATER PUMPING MAY BE RE□UIRED. IT IS THE CONTRACTOR□S SOLE RESPONSIBILITY TO DETERMINE POTENTIAL PUMPING NEEDS. THE CONTRACTOR SHALL NOT RELY ON OWNER SUPPLIED PROCTOR, GROUND WATER AND□OR SURFACE WATER DATA. CONTRACTOR SHALL OBTAIN DEWATERING PERMIT AS NECESSARY.

13. MATERIAL CONDITION□INSTALL ALL MATERIALS ACCORDING TO MANUFACTURER RECOMMENDATIONS AND STATE AND LOCAL RE□UIREMENTS. USE ONLY NEW AND UNUSED MATERIALS. ALL MATERIALS SHALL BE PROVIDED BY MANUFACTURERS REGULARLY ENGAGED IN PRODUCING SAID ITEMS, AND WHICH SHALL BE FIRST □UALITY, HEAVY DUTY, COMMERCIAL□INDUSTRIAL GRADE, SUITABLE FOR THE INTENDED USE.

14. WATER□CONTRACTOR SHALL PROVIDE ANY ADDITIONAL TEMPORARY BLOW OFF VALVES & FITTINGS AS NEEDS TO FLUSH AND DISINFECT NEW WATERLINES. THE CONTRACTOR SHALL PROVIDE DISINFECTION PLAN TO THE OWNER OR ENGINEER□S REPRESENTATIVE FOR APPROVAL BEFORE BEGINNING CONSTRUCTION. TEMPORARY BLOWOFF & FITTINGS SHALL BE REMOVED PRIOR TO PUTTING NEW LINE INTO SERVICE.

15. WATER□WATERLINE SHALL BE MINIMUM SLOPE OF 0.3□ , UNLESS INDICATED OTHERWISE, WITH NO LOCAL HIGH POINTS E□CEPT AS INDICATED ON THE DRAWINGS.

16. WATER□DEFLECTIONS IN PIPE JOINTS SHALL NOT E□CEED 5 DEGREES FOR DI PIPE, OR MANUFACTURER□S PUBLISHED DEFLECTIONS, WHICHEVER IS SMALLER.

17. WATER□USE JOINT RESTRAINT AT ALL BENDS, FITTINGS, VALVES, ETC. THRUST RESTRAINTS ARE RE□UIRED FOR ALL BURIED FITTINGS.

18. WATER□ALL DUCTILE IRON PIPE AND ALL COMPRESSION COUPLINGS, MECHANICAL JOINTS, FLANGED JOINTS, VALVES, HYDRANTS AND FITTINGS INCLUDING TEES, WYES, ELBOWS, PLUGS, ETC. E□POSED TO SOIL SHALL BE WRAPPED WITH 8 MIL THICK POLYETHYLENE FILM TUBE. ALL FITTINGS, VALVES AND E□POSED NUTS & BOLTS SHALL BE LIBERALLY COATED WITH FM GREASE PRIOR TO WRAPPING. THE FILM SHALL BE HELD IN PLACE BY 2-INCH WIDE PLASTIC BACKED ADHESIVE TAPE E□UAL TO POLYKEN NO. 900 OR SCOTCHRAP NO. 50. THE TAPE SHALL BE INSTALLED TO TIGHTLY SECURE THE FILM TO THE PIPE. ENOUGH FILM SHALL BE USED TO OVERLAP ADJOINING SECTIONS OF FILM A MINIMUM OF ONE □□FOOT.

19. WATER□VALVES SHALL BE WRAPPED BY BRINGING THE WRAP ON THE ADJACENT PIPE OVER THE BELLS OR FLANGES OF THE VALVE AND SEALING WITH THE ADHESIVE TAPE. THE VALVE BODIES ARE THEN WRAPPED WITH A FLAT SHEET OF THE FILM PASSED UNDER THE VALVE BOTTOM AND BROUGHT UP AROUND THE BODY TO THE STEM AND FASTENED IN PLACE WITH THE ADHESIVE TAPE.

20. WATER□POLYETHYLENE WRAP SHALL BE PROTECTED FROM THE SUN AND WEATHERING PRIOR TO USE. CARE SHALL BE E□ERCISED DURING BACK FILLING OF THE PROTECTED AREAS TO PREVENT PUNCTURING OF THE FILM.

21. WATER□ALL PVC WATER PIPE SHALL BE AWWA C-900 SDR-18 PC 235. ALL DUCTILE IRON PIPE SHALL BE CL350 MIN. ALL OTHER PIPE AND FITTINGS SHALL BE RATED TO 200 PSI MIN.

22. WATER□MINIMUM PIPE SEPARATION□MAINTAIN A MINIMUM 18" VERTICAL SEPARATION BETWEEN WATER LINES AND SEWER OR STORM DRAIN LINES. WHERE OWNER OR ENGINEER□S REPRESENTATIVE DETERMINES MECHANICAL COMPACTION CANNOT BE ADE□UATELY PERFORMED, CONTRACTOR SHALL BACKFILL TRENCH AREAS WHERE NEW WATER LINES CROSS OVER E□ISTING BURIED UTILITIES WITH CEMENT TREATED FLOWABLE FILL. FOR E□ISTING SEWER LINE CROSSINGS, CONTRACTOR SHALL COORDINATE WITH OWNER OR ENGINEER□S REPRESENTATIVE TO EITHER BACKFILL WITH CEMENT TREATED FLOWABLE FILL OR LOOP WATERLINE.

23. WATER□ABANDONED WATER PIPES SHALL HAVE INLETS AND OUTLETS SEALED WITH PIPE PLUGS AND GROUT.

24. WATER□CONTRACTOR SHALL PROTECT ADJACENT PRESSURE PIPELINES AND PROVIDE TEMPORARY THRUST RESTRAINT AS NECESSARY DURING CONSTRUCTION INCLUDING E□ISTING VALVES, TEES, BENDS, ETC.

25. SEWER□SEWER MAINS ONLY TO BE LAID IN SEWER TRENCHES, ALL HOUSE LATERALS TO BE LAID AT NOT LESS THAN MINIMUM SLOPES SHOWN IN STANDARDS AND A MINIMUM OF 4" DIAMETER UNLESS OTHERWISE NOTED.

26. SEWER□ALL NEW SEWER LINE CONSTRUCTION WILL BE PLUGGED AT THE MAIN LINE TIE-IN AND THERE WILL BE NO SEWER LINE USAGE UNTIL ALL SEWER LINES WITHIN THE PROJECT ARE ACCEPTED BY THE OWNER.

27. SEWER□SOIL TESTING, E□FILTRATION, INFILTRATION AND AIR TESTING OF LINES SHALL BE IN ACCORDANCE WITH THE STANDARDS.

28. SEWER□CONSTRUCTION AND TIE-IN OF SEWER LINES MAY RE□UIRE BYPASS PUMPING OR TEMPORARY SEWAGE HOLDING TANKS. IN SUCH CASE, THE CONTRACT SHALL BE RE□UIRED TO PROVIDE ALL E□UIPMENT, LABOR, MATERIALS, ETC. NECESSARY TO COMPLETE THE WORK. ANY DAMAGE RESULTING FROM FAILURE TO COMPLY SHALL BE REMEDIED AT THE SOLE E□PENSE OF THE CONTRACTOR.

29. SEWER□E□ISTING SEWER SERVICE SHALL BE LEFT IN OPERATION DURING CONSTRUCTION. NO SERVICE SHALL BE OUT OF OPERATION FOR MORE THAN FOUR HOURS. THE CONTRACTOR SHALL PROVIDE A MINIMUM OF 24 HOURS NOTICE IN WRITING TO ALL COMMERCIAL OR RESIDENTIAL PROPERTIES WHOSE SERVICES MAY BE INTERRUPTED AS A RESULT OF CONSTRUCTION. THE CONTRACTOR SHALL PROVIDE A TEMPORARY SEWER SYSTEM IF THESE CRITERIA CANNOT BE MET.

30. STORM DRAIN□CONTRACTOR WILL BE RE□UIRED TO DIVERT WATER OF E□ISTING STORM DRAIN FLOWS FOR FULL DURATION OF PROJECT.

31. FIRE□ON ANY BUILDING CONSTRUCTION SITE, ACCESSIBLE FIRE HYDRANTS SHALL BE INSTALLED BEFORE COMBUSTIBLE MATERIALS ARE DELIVERED TO THE SITE AND CONSTRUCTION COMMENCES. SAID FIRE HYDRANTS SHALL BE IN GOOD WORKING ORDER WITH RE□UIRED WATER SUPPLY.

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32. FIRE□IF DURING CONSTRUCTION IT BECOMES NECESSARY TO CLOSE ANY CONTROL VALVE OR PLACE A HYDRANT OUT OF SERVICE, THE OWNER OR ENGINEER'S REPRESENTATIVE SHALL BE NOTIFIED.

33. FIRE□UNOBSTRUCTED ACCESS TO FIRE HYDRANTS SHALL BE MAINTAINED AT ALL TIMES. THE FIRE DEPARTMENT SHALL NOT BE DETERRED OR HINDERED FROM GAIN IMMEDIATE ACCESS TO FIRE PROTECTION E□UIPMENT OR FIRE HYDRANT.

ROADWAY, TRAIL & TRAFFIC CONTROL

1. TRAFFIC CONTROL PLAN□CONTRACTOR SHALL SUBMIT TRAFFIC CONTROL PLAN AND ALL SIGNING BARRICADES AND TRAFFIC DELINEATION SHALL CONFORM TO THE PROJECT SPECIFICATIONS AND THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES - CURRENT EDITION. ALL TRAFFIC CONTROL PLANS ARE TO BE APPROVED BY OWNER OR ENGINEER'S REPRESENTATIVE PRIOR TO TRAFFIC CONTROL IMPLEMENTATION. PROVIDE A MINIMUM OF ONE WEEK FOR TRAFFIC CONTROL REVIEW AND APPROVAL.

2. TRAFFIC MAINTENANCE & SERVICE□CONTRACTOR SHALL MAINTAIN TWO-WAY TRAFFIC AT ALL TIMES WHILE CONSTRUCTION OCCURS AND ACCOMMODATE LOCAL AND THROUGH TRAFFIC. CONTRACTOR MAY NOT DISRUPT MAIL SERVICE TO RESIDENTS.

3. ROAD CLOSURES□ALL LOCAL CITIES, COUNTIES, EMERGENCY SERVICES □I.E. HOSPITALS□ SCHOOL DISTRICTS, AND PROPERTY OWNERS SHALL BE NOTIFIED OF LANE LIMITATION AND□OR ROAD CLOSURES 14 DAYS PRIOR TO COMMENCEMENT OF LIMITATION OR CLOSURE. CENTRAL DISPATCH OF EACH IMPACTED AGENCY AND ADJOINING ENTITIES SHALL RECEIVE NOTIFICATION.

4. BASE COURSE PLACEMENT□BASE COURSE MATERIAL SHALL NOT BE PLACED ON THE SUBGRADE UNTIL SUBGRADE RE□UIREMENTS HAVE BEEN COMPLETED AND ACCEPTED BY THE OWNER OR ENGINEER'S REPRESENTATIVE.

5. E□ACT LOCATIONS□E□ACT POINTS OF MATCHING, TERMINATION, OVERLAY AND PAVEMENT CUTTING MAY, WHERE APPLICABLE, BE DETERMINED IN THE FIELD BY THE OWNER OR ENGINEER'S REPRESENTATIVE.

6. UTILITY ACCEPTANCE□NO PAVING CONSTRUCTION SHALL BE STARTED UNTIL ALL UNDERGROUND UTILITIES WITHIN THE ROADWAY□TRAIL ARE COMPLETED AND HAVE PASSED TESTING RE□UIREMENTS.

7. PATCHING□ALL GRINDING AND□OR EPO□Y PATCHING OF DAMAGED OR INCORRECTLY INSTALLED ELEMENTS SHALL NOT BE PERMITTED. ALL REPAIRS SHALL BE MADE BY REPLACING WHOLE UNITS.

8. STORAGE & STOCKPILE□NO MATERIALS OR E□UIPMENT OF ANY KIND SHALL BE STORED OR STOCKPILED ON NEWLY PAVED ASPHALT OR CONCRETE SURFACES.

9. NEW PAVEMENT□ALL NEW PAVEMENTS AND CONCRETE SURFACE SHALL BE SWEPT CLEAN AND DEBRIS PROPERLY DISPOSED OF AND ALL SURVEY MONUMENTS SHALL BE FULLY INSTALLED AS WELL AS ALL UTILITY ADJUSTMENTS MADE PRIOR TO THE OWNER OR ENGINEER'S REPRESENTATIVE RECOMMENDING FINAL ACCEPTANCE.

10. PAVEMENT MARKINGS□ALL PAVEMENTS MARKINGS SHALL COMPLY WITH THE RE□UIREMENTS OF THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES - CURRENT EDITION AND INSTALLED WITHIN FIVE DAYS OF COMPLETION OF THE FINAL LIFT OF ASPHALT. CONTRACTOR SHALL SPOT MARK THE ENTIRE PROJECT BEFORE APPLYING ANY PAVEMENT MARKINGS AND NOTIFY THE OWNER OR ENGINEER'S REPRESENTATIVE FOR ACCEPTANCE BEFORE APPLYING ANY PERMANENT MARKINGS.

11. STRIPING OBLITERATION□WHEN STRIPING OBLITERATION IS RE□UIRED, IT SHALL BE ACCOMPLISHED BY WATER BLASTING UNLESS OTHERWISE APPROVED BY OWNER OR ENGINEER'S REPRESENTATIVE AND MAY BE RE□UIRED BEYOND THE PROJECT LIMITS SO THAT THE NEW STRIPING WIL MATICH PERMANENT E□ISTING PAVEMENT MARKINGS. IF OBLITERATION CAUSES SHADOWING, OR IN THE OPINION OF THE OWNER OR ENGINEER'S REPRESENTATIVE WILL CAUSE CONFUSION ON THE PART OF THE DRIVER, THE CONTRACTOR SHALL SEAL THE AREA WITH SLURRY. APPLYING PAINT OVER STRIPING SHALL NOT CONSTITUTE STRIPE OBLITERATION.

PROJECT DESIGN CRITERIA - TRAIL DESIGN		
10' TRAIL		
CROSS SLOPE	2%	ST GEORGE CITY STD
SHOULDER WIDTH	2'-6"	ST GEORGE CITY STD
SHOULDER CROSS SLOPE	17%	ST GEORGE CITY STD
CUT/FILL SLOPE	VARIES	SEE TS1
MAX RUNNING SLOPE	23%	
8' TRAIL		
CROSS SLOPE	2%	ST GEORGE CITY STD
SHOULDER WIDTH	2'-0"	ST GEORGE CITY STD
SHOULDER CROSS SLOPE	17%	ST GEORGE CITY STD
CUT/FILL SLOPE	VARIES	SEE TS1
MAX RUNNING SLOPE	18%	

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SHEET
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SURVEY CONTROL POINTS				
POINT NO.	NORTHING	EASTING	POINT ELEV.	DESCRIPTION
1	10012036.692'	1037448.988'	2830.22'	FND REBAR CAP
2	10012203.967'	1037838.611'	2895.50'	R-C
3	10012483.814'	1037417.274'	2956.12'	R-C
4	10012547.609'	1036743.792'	2978.88'	R-C
5	10012009.874'	1037318.701'	2822.98'	AT - MAG
6	10012603.667'	1036774.836'	2985.24'	AT - MAG
7	10012407.369'	1038121.931'	2930.88'	AT - MAG

COORDINATE SYSTEM AND PROJECT INFORMATION

DATE OF FINAL ADJUSTMENT□MAY 2020
HORI□ONTAL DATUM□NORTH AMERICAN DATUM OF 1983 □NAD83□
VERTICAL DATUM□NORTH AMERICAN VERTICAL DATUM 1988 □NAVD88□
COORDINATE SYSTEM□US STATE PLANE 1983, □2011□UTAH SOUTH □ONE 4303
PROJECT UNITS□US SURVEY FOOT
COMBINED SCALE FACTOR□1.0001106900
SCALE LOCATION: LAT: N10°28'48.68912" LON: W115°36'46.30451"
PROJECT HEIGHT□2760.68
GEOID MODEL□GEOID12A

COORDINATE SYSTEM AND PROJECT INFORMATION

STATE PLANE NORTHING □ □PROJECT NORTHING □1.0001106900
STATE PLANE EASTING □ □PROJECT EASTING □1.0001106900

NOTE□

THE CONTROL SURVEY WAS PERFORMED IN MARCH 2021. ALL SURVEY CONTROL COORDINATES AND ELEVATIONS WERE ESTABLISHED USING THE UTAH REFERENCE NETWORK GLOBAL POSITIONING SYSTEM □TURN GPS□

LEGEND

◉ SURVEY CONTROL MONUMENT

RED HILLS PARKWAY

ST. GEORGE BOULEVARD

500 EAST

600 EAST

700 EAST

800 EAST

0 150

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SURVEY CONTROL

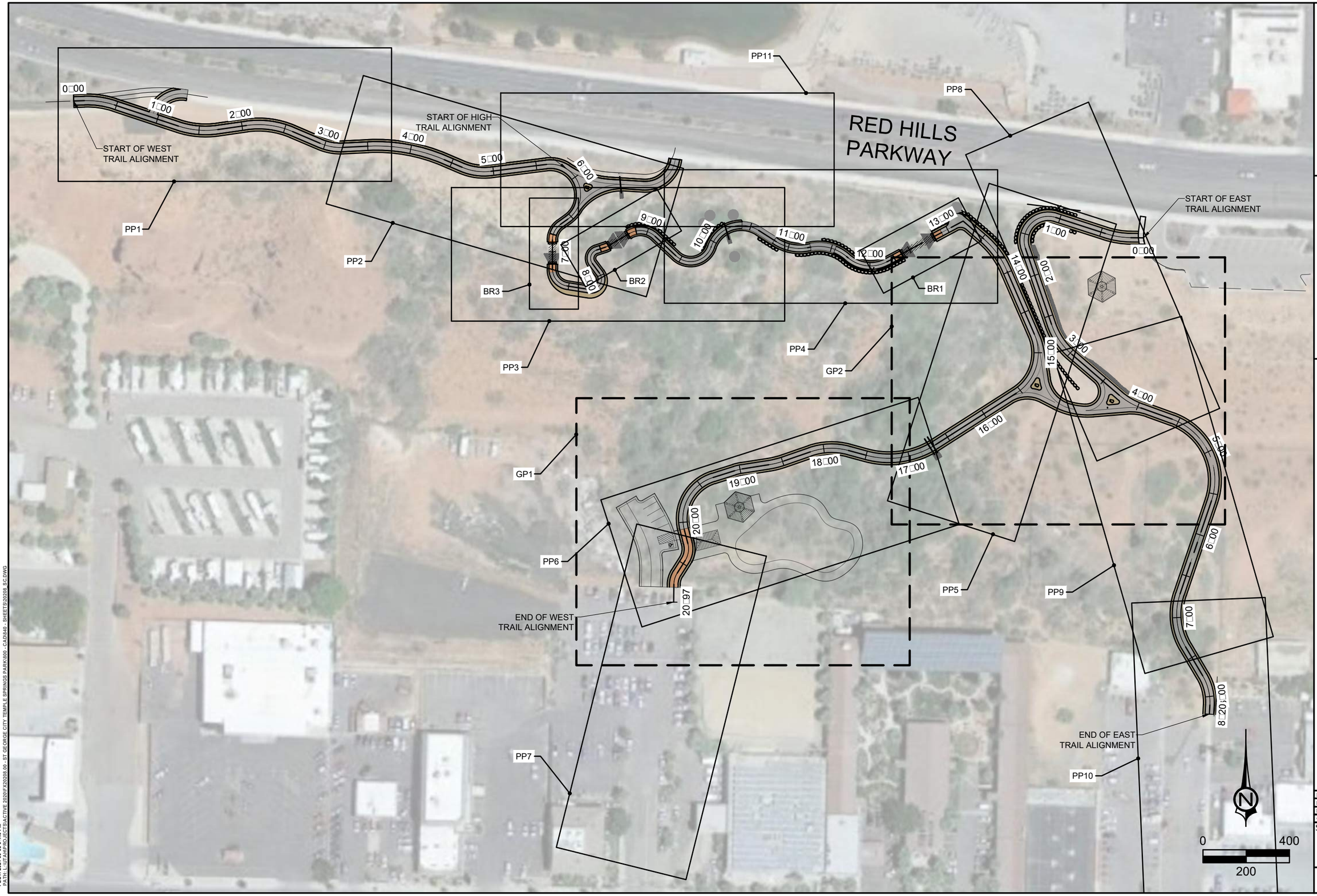
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5 OF 28

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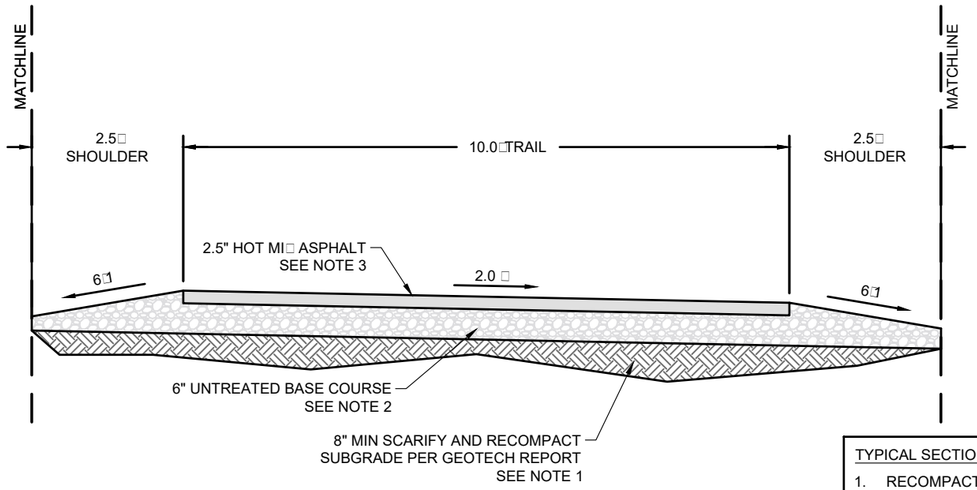
CROSS REFERENCE

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TYPICAL SECTION - 10□TRAIL

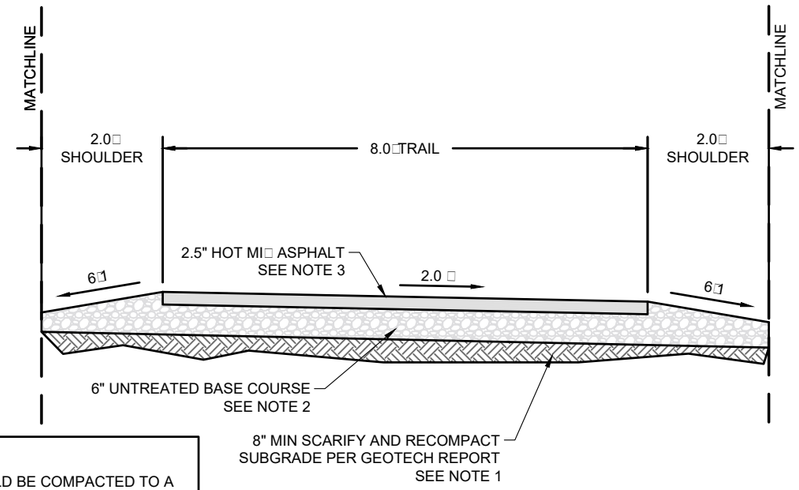
WEST TRAIL ALIGNMENT□
STA□ 0□00.00 - 6□34.00
STA□13□29.67 - 20□79.98

EAST TRAIL ALIGNMENT□
STA□ 0□00.00 - 8□20.98

HIGH TRAIL ALIGNMENT
STA□ 0□00.00 - 1□44.46

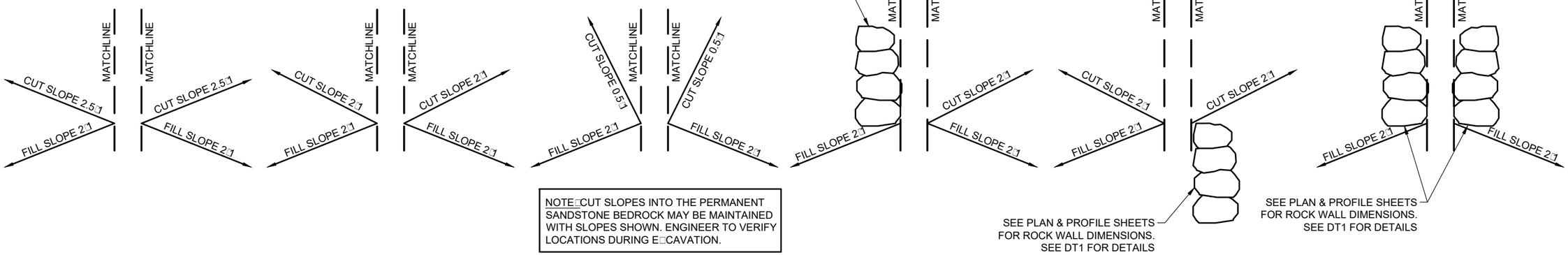
TYPICAL SECTION NOTES□

1. RECOMPACTED ON-SITE SOILS SHOULD BE COMPACTED TO A MINIMUM OF 95□ OF THE MA□IMUM DRY DENSITY □ASTM D-1557□
2. BASE COURSE SOILS SHOULD BE COMPACED TO A MINIMUM OF 95□ OF THE MA□IMUM DRY DENSITY □ASTM D-1557□
3. ASPHALT SHOULD BE COMPACTED TO AT LEAST 96□ OF THE MARSHALL MA□IMUM DENSITY.
4. FOR MORE INFORMATION SEE GEOTECHNICAL REPORT PROVIDED BY LANDMARK ENGINEERING PROJECT NO□21172, DATED MARCH 31, 2021.



TYPICAL SECTION - 8□TRAIL

WEST TRAIL ALIGNMENT□
STA□ 6□34.00 - 13□00.00



NOTE□CUT SLOPES INTO THE PERMANENT SANDSTONE BEDROCK MAY BE MAINTAINED WITH SLOPES SHOWN. ENGINEER TO VERIFY LOCATIONS DURING E□CAVATION.

SIDE TREATMENT 1

WEST TRAIL ALIGNMENT□
STA□ 0□00.00 - 6□34.00

EAST TRAIL ALIGNMENT□
STA□ 0□00.00 - 0□70.00

HIGH TRAIL ALIGNMENT
STA□ 0□00.00 - 1□49.00

SIDE TREATMENT 2

WEST TRAIL ALIGNMENT□
STA□ 7□13.50 - 8□50.57
STA□ 9□33.00 - 9□80.00
STA□10□20.00 - 10□65.00
STA□10□88.00 - 11□08.00
STA□12□82.08 - 13□00.00
STA□14□92.87 - 20□79.98

EAST TRAIL ALIGNMENT□
STA□ 4□00.00 - 8□20.43

SIDE TREATMENT 3
SANDSTONE BEDROCK E□CAVATION

WEST TRAIL ALIGNMENT□
STA□ 6□34.00 - 6□88.50

EAST TRAIL ALIGNMENT□
STA□ 1□66.00 - 4□00.00

SIDE TREATMENT 4
CUT ROCK WALL

WEST TRAIL ALIGNMENT□
STA□ 8□76.57 - 9□33.00
STA□ 9□80.00 - 10□20.00
STA□11□08.00 - 12□40.00
STA□13□29.67 - 14□92.87

SIDE TREATMENT 5
FILL ROCK WALL

WEST TRAIL ALIGNMENT□
STA□10□65.00 - 10□88.00
STA□11□08.00 - 12□40.00

NOTE□STA□11□08.00 - 12□40.00 WILL RE□UIRE BOTH A CUT AND FILL ROCK WALL

SIDE TREATMENT 6
CUT ROCK WALL - BOTH SIDES

EAST TRAIL ALIGNMENT□
STA□0□70.00 - 1□66.00

SIDE TREATMENTS

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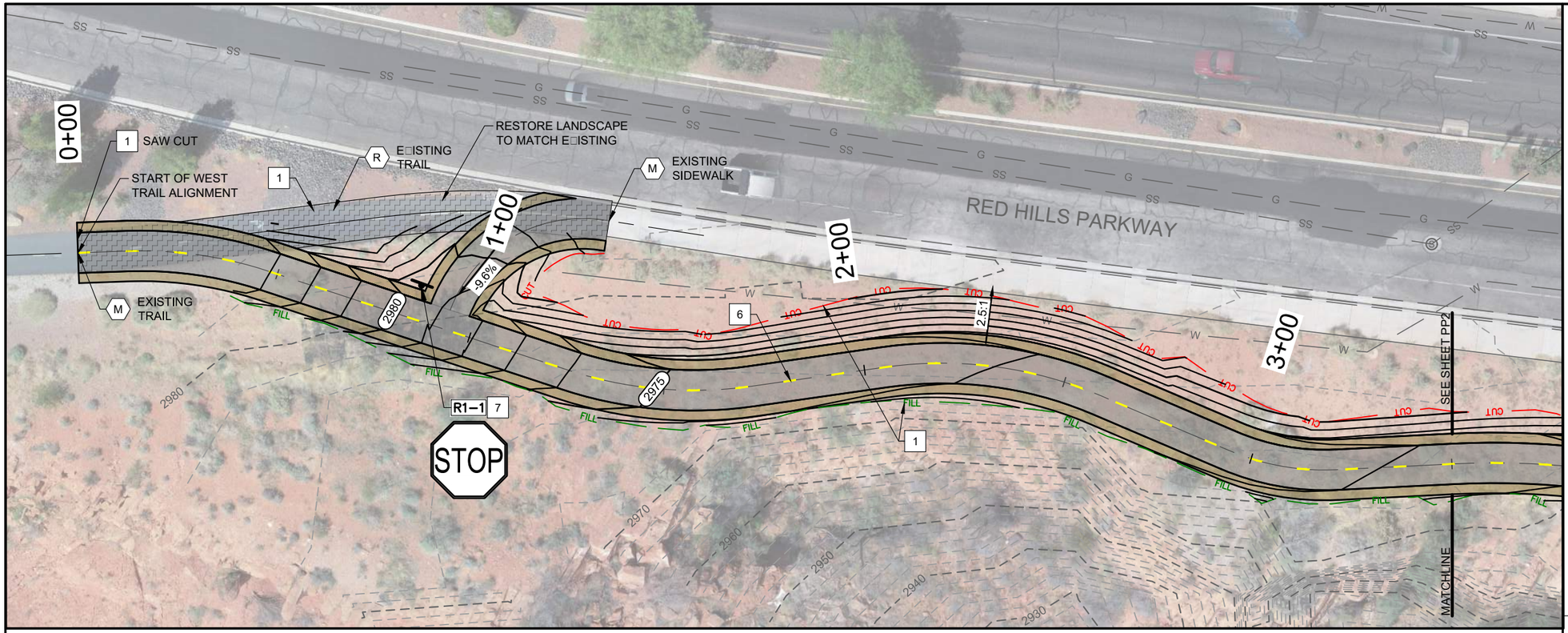
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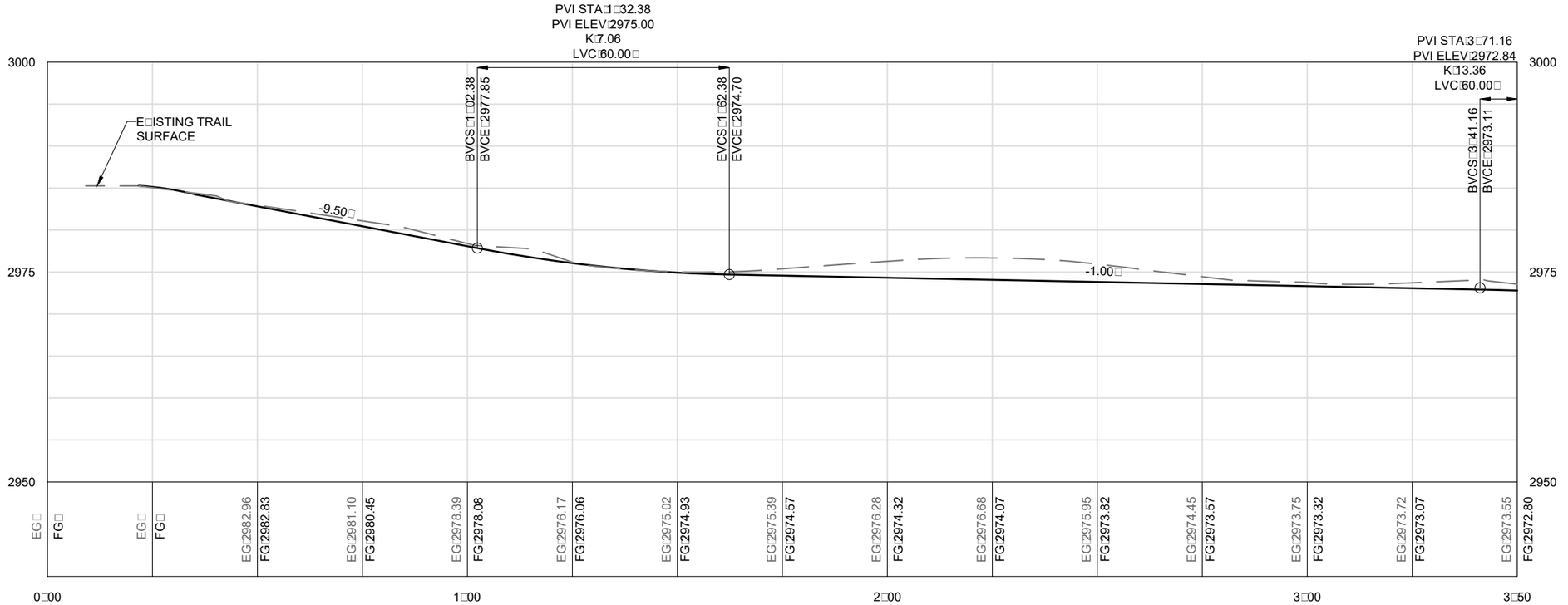
TYPICAL SECTIONS

TEMPLE SPRINGS PARK
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PLAN & PROFILE KEYNOTES:

KEY	DET	DESCRIPTION
	CITY STD	2.5" THICK ASHPALT TRAIL MIX W/ BASE
	CITY STD	UNTREATED BASE COURSE
	CITY STD	4" THICK CONCRETE FLATWORK
1	CITY STD	SITE CLEARING AND DEMOLITION
2	1,2 DT1	ROCK RETAINING WALL
3	CITY STD	12" CPP STORM DRAIN PIPE
4	1 DT2	WATER MITIGATION UNDER TRAIL
5	CITY STD	RIPRAP (6"-8" DIA)
6	2 DT2	STRIPING
7	3 DT2	TRAIL SIGN (18"x18")
8	4 DT2	BOLLARD
9	5 DT2	42" TRAIL RAILING
BR		SEE BR SHEETS FOR BRIDGE INFORMATION
R		REMOVE EXISTING FEATURE
M		MATCH EXISTING GROUND

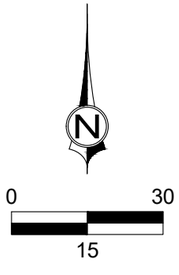
WEST TRAIL
ESTIMATED SITE EXCAVATION (CY)

CUT	938
FILL	1039

NOTE: EXCAVATION QUANTITIES DO NOT INCLUDE SHRINKAGE FACTOR AND ARE FROM EX GROUND TO FINISHED GRADE.

NOTES:

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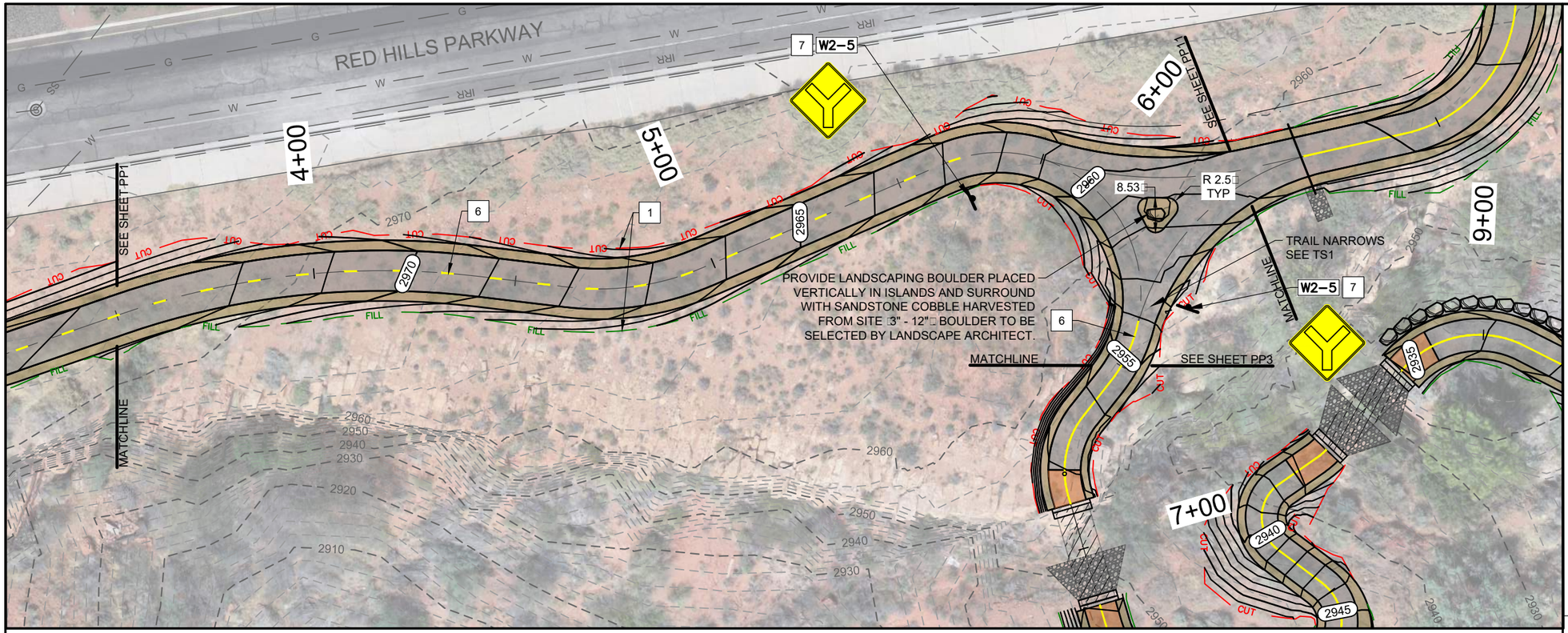
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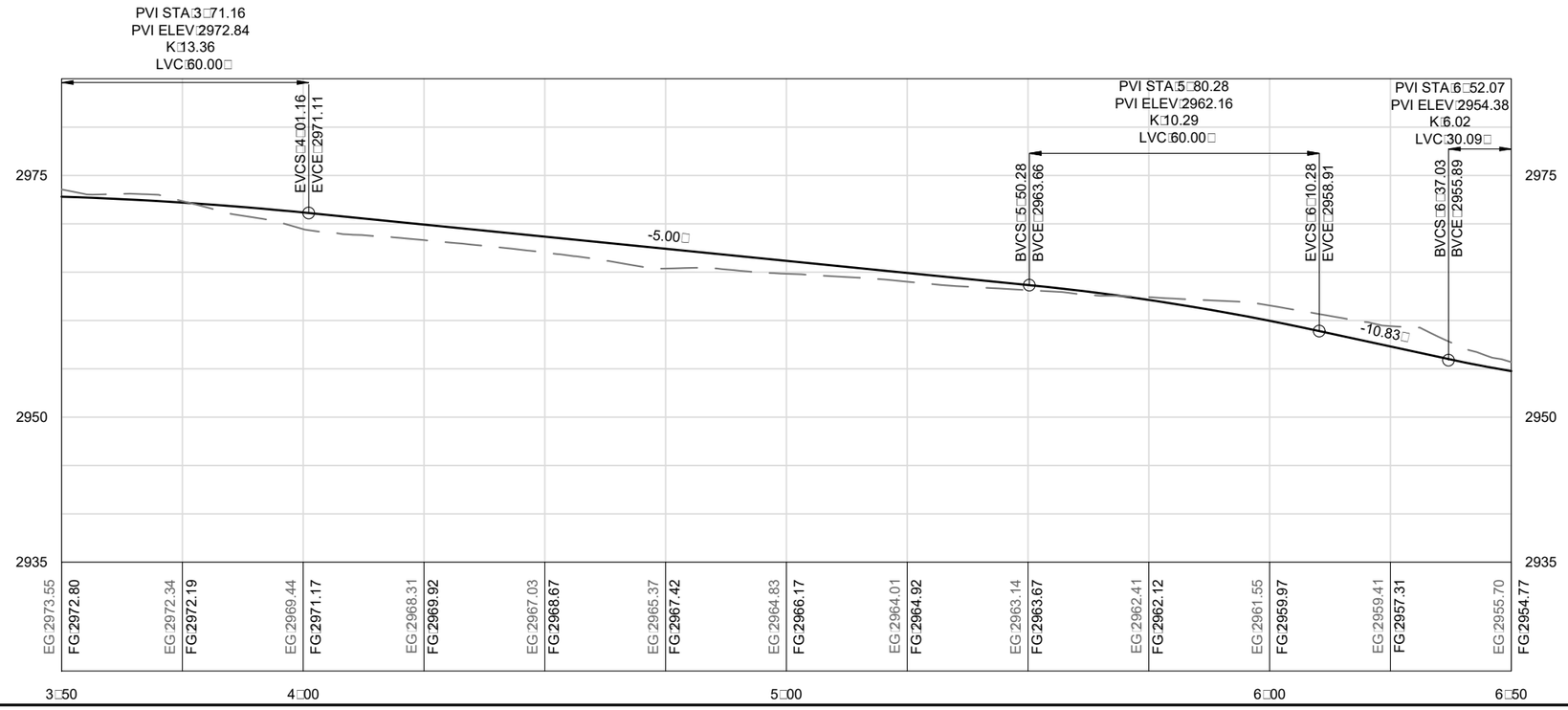
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PLAN & PROFILE KEYNOTES:

KEY	DET	DESCRIPTION
	CTY STD	2.5" THICK ASHPALT TRAIL MIX W/ BASE
	CTY STD	UNTREATED BASE COURSE
	CTY STD	4" THICK CONCRETE FLATWORK
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7	3 DT2	TRAIL SIGN (18"x18")
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9	5 DT2	42" TRAIL RAILING
BR		SEE BR SHEETS FOR BRIDGE INFORMATION
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M		MATCH EXISTING GROUND

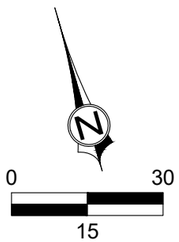
WEST TRAIL
ESTIMATED SITE EXCAVATION (CY)

CUT	938
FILL	1039

NOTE: EXCAVATION QUANTITIES DO NOT INCLUDE SHRINKAGE FACTOR AND ARE FROM EX GROUND TO FINISHED GRADE.

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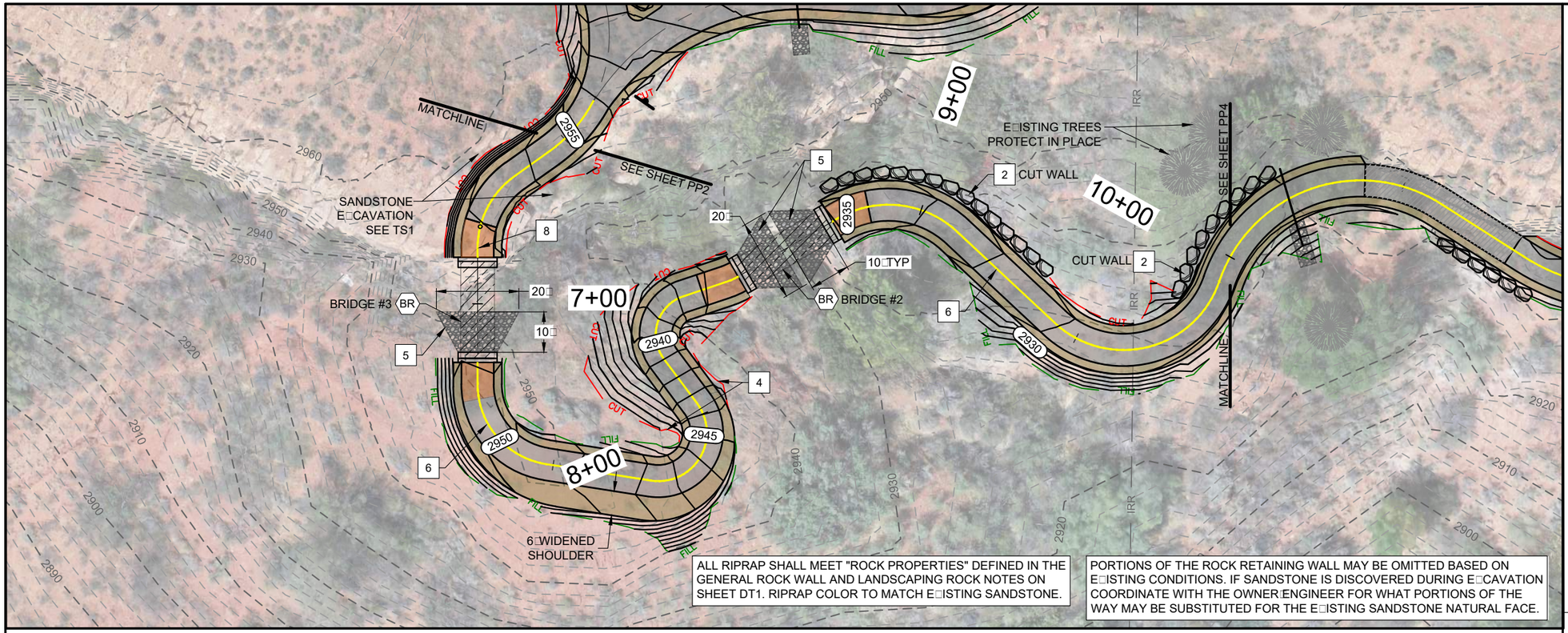
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TEMPLE SPRINGS PARK
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PLAN & PROFILE KEYNOTES:

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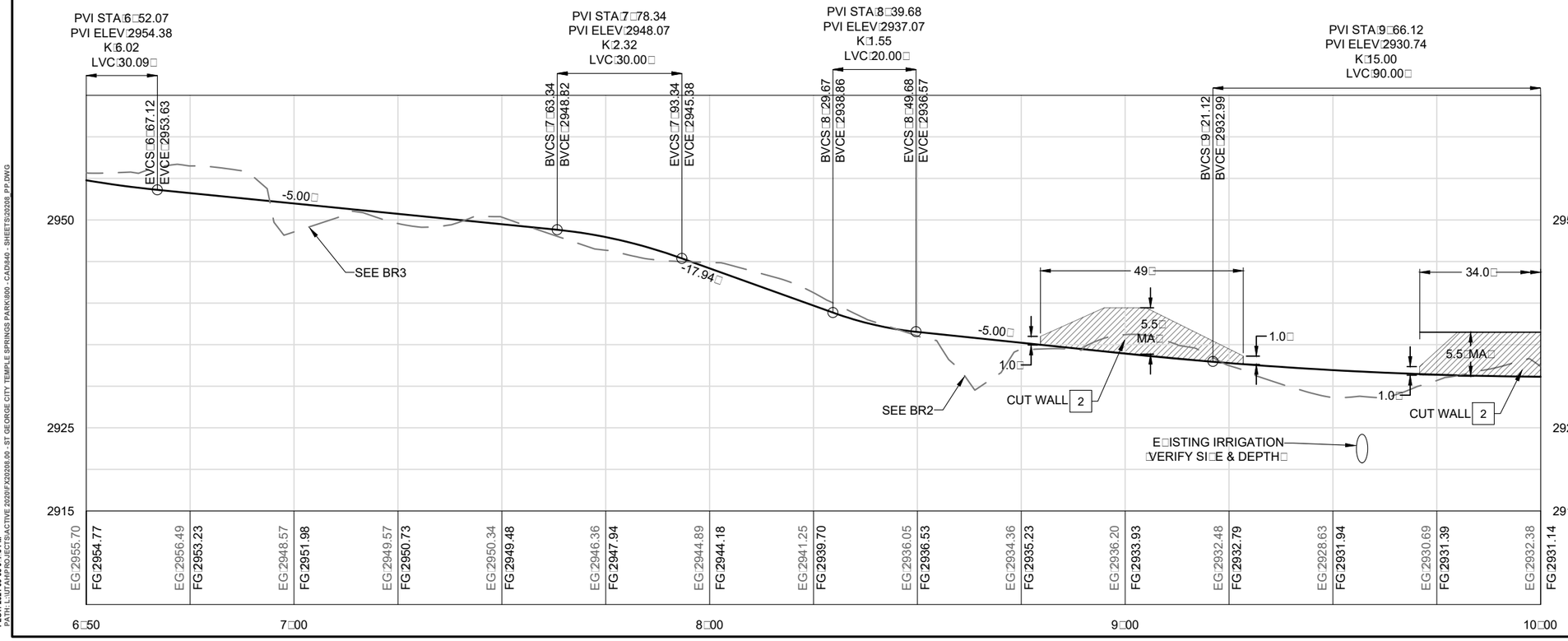
WEST TRAIL
ESTIMATED SITE EXCAVATION (CY)

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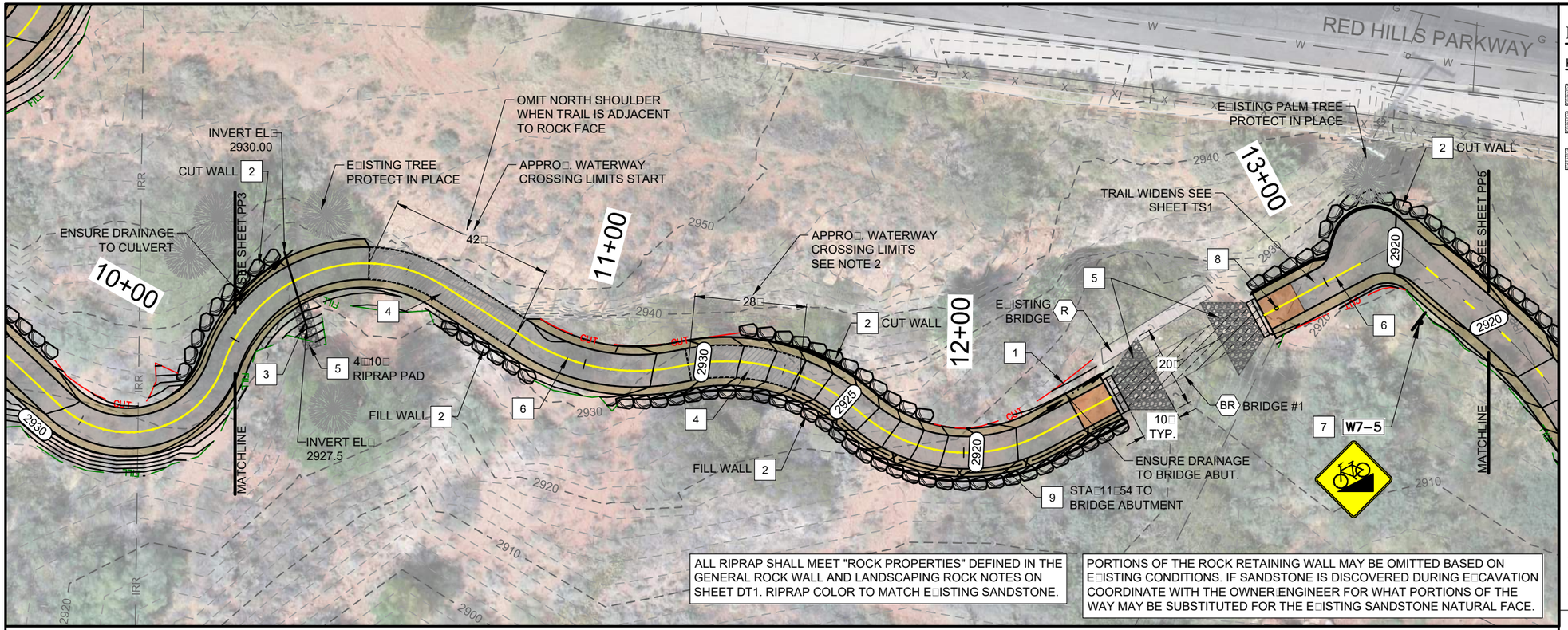
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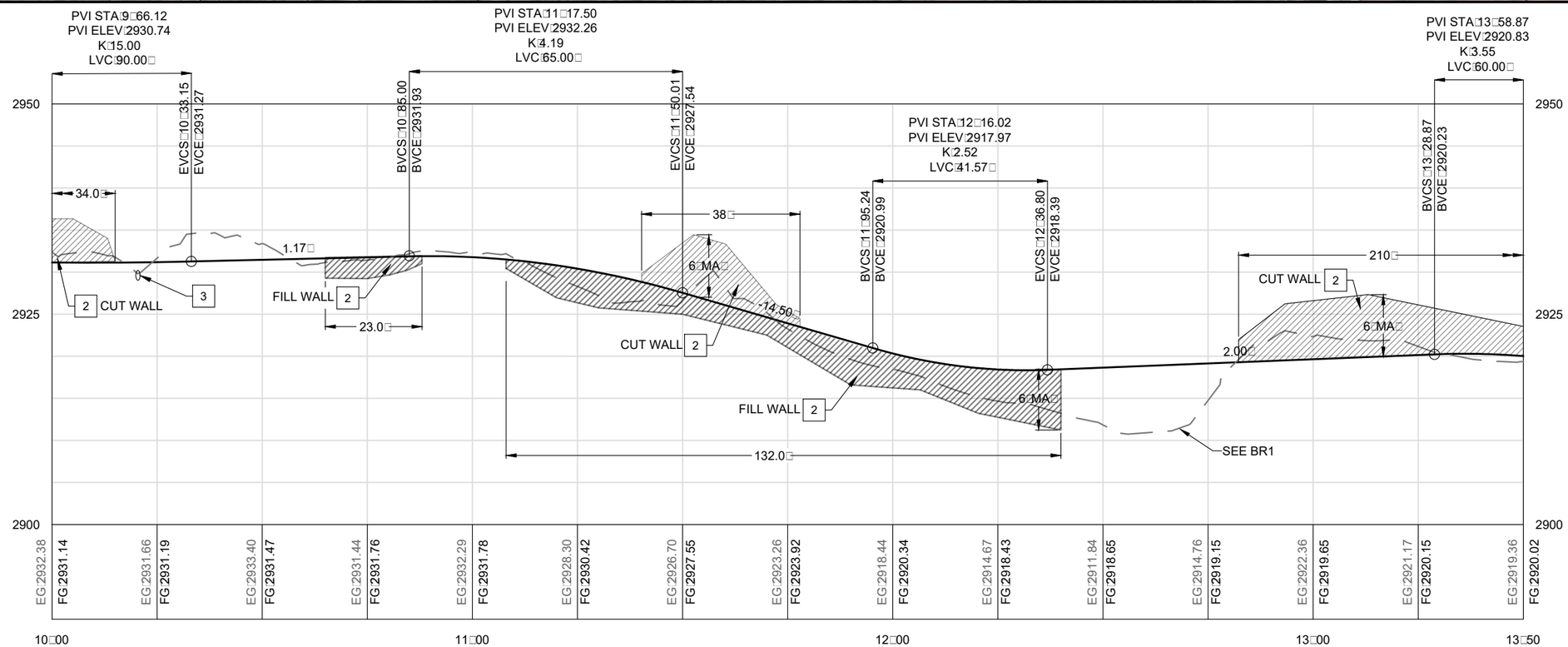
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ALL RIPRAP SHALL MEET "ROCK PROPERTIES" DEFINED IN THE GENERAL ROCK WALL AND LANDSCAPING ROCK NOTES ON SHEET DT1. RIPRAP COLOR TO MATCH EXISTING SANDSTONE.

PORTIONS OF THE ROCK RETAINING WALL MAY BE OMITTED BASED ON EXISTING CONDITIONS. IF SANDSTONE IS DISCOVERED DURING EXCAVATION COORDINATE WITH THE OWNER'S ENGINEER FOR WHAT PORTIONS OF THE WAY MAY BE SUBSTITUTED FOR THE EXISTING SANDSTONE NATURAL FACE.



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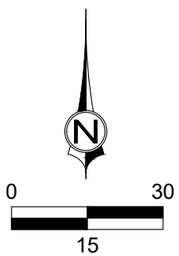
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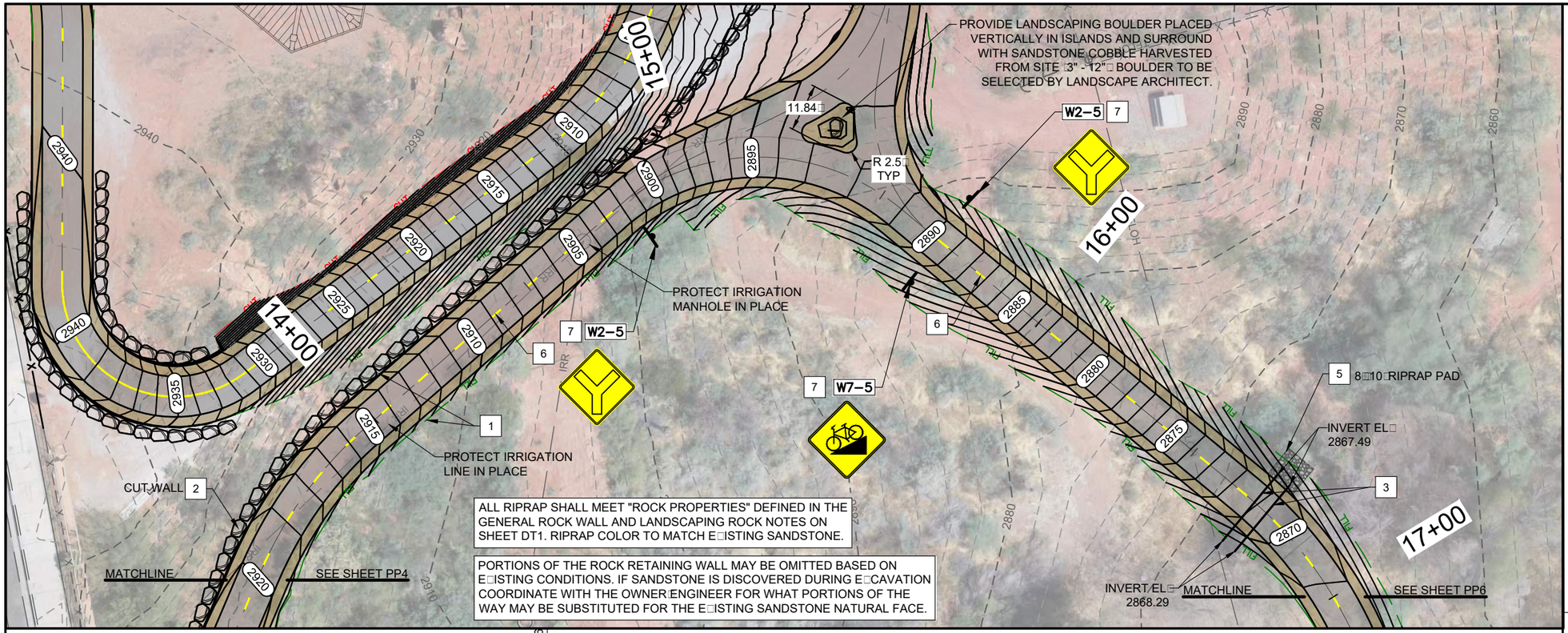
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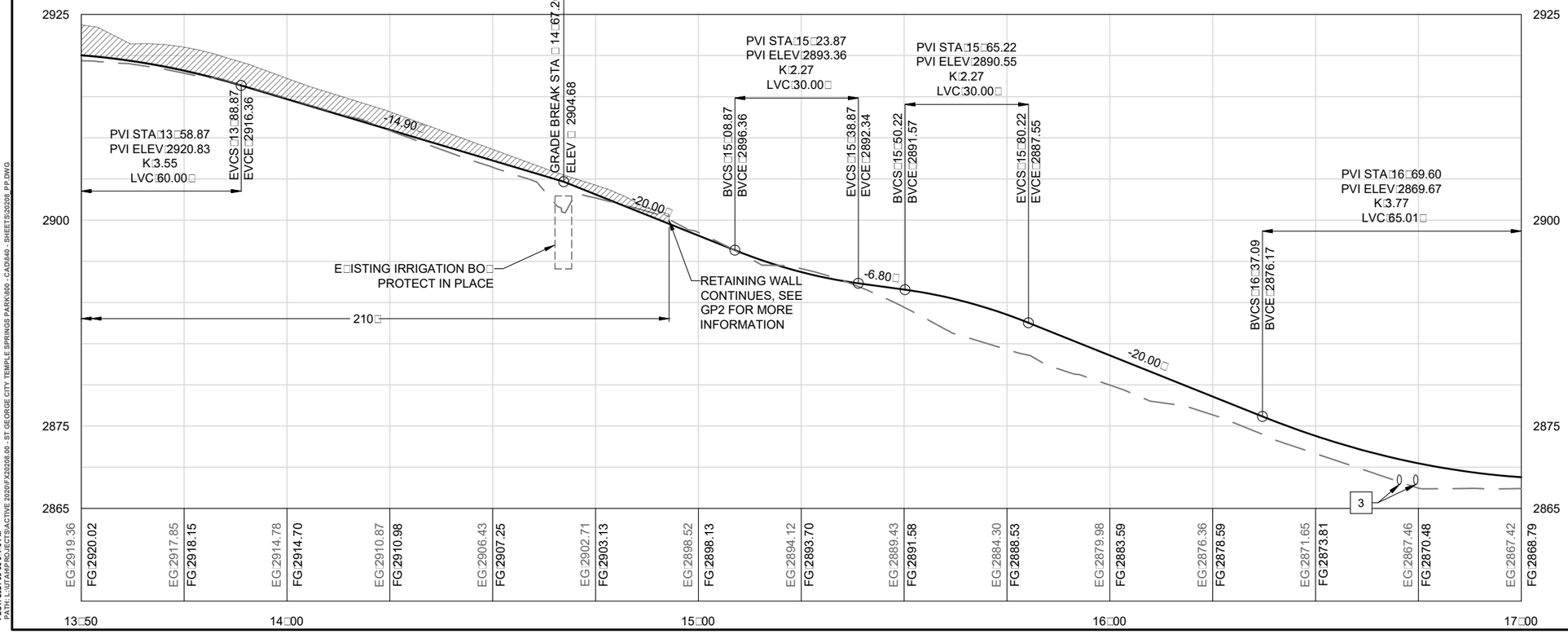
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TEMPLE SPRINGS PARK
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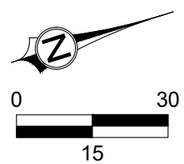
WEST TRAIL
ESTIMATED SITE EXCAVATION (CY)

CUT	938
FILL	1039

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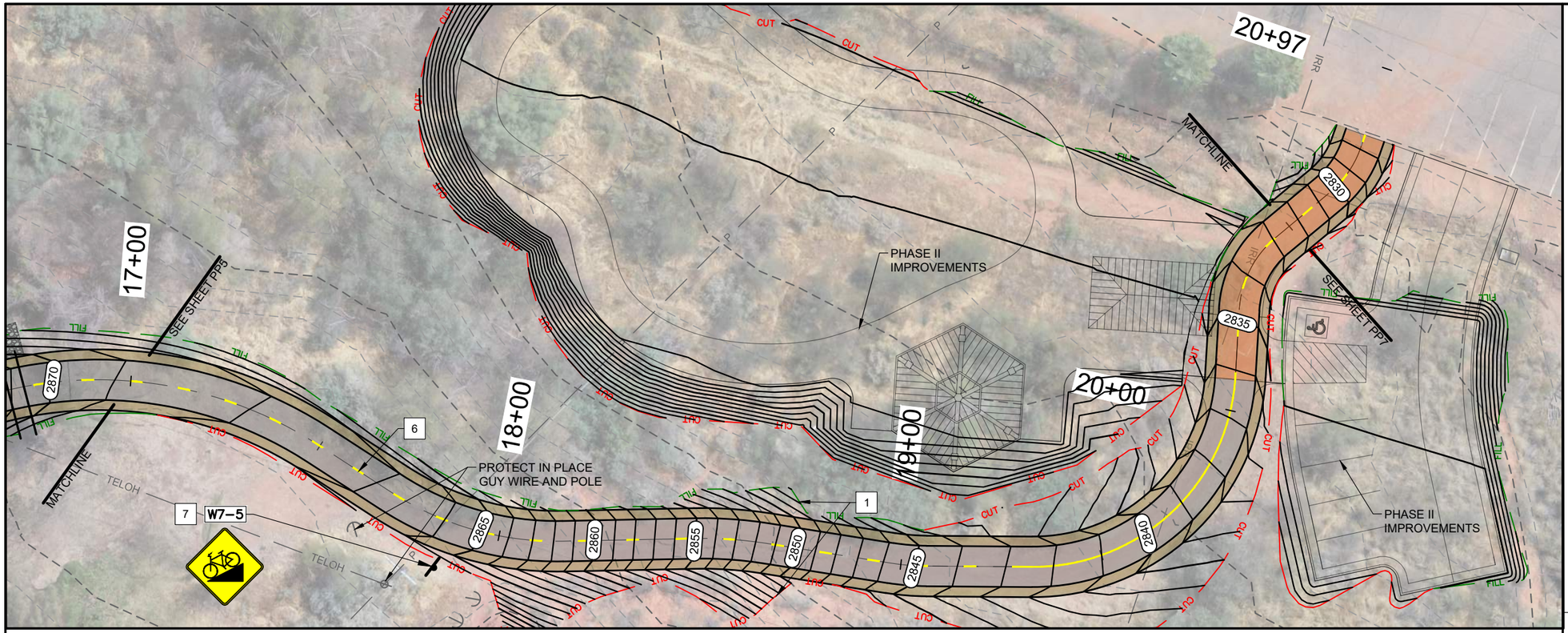
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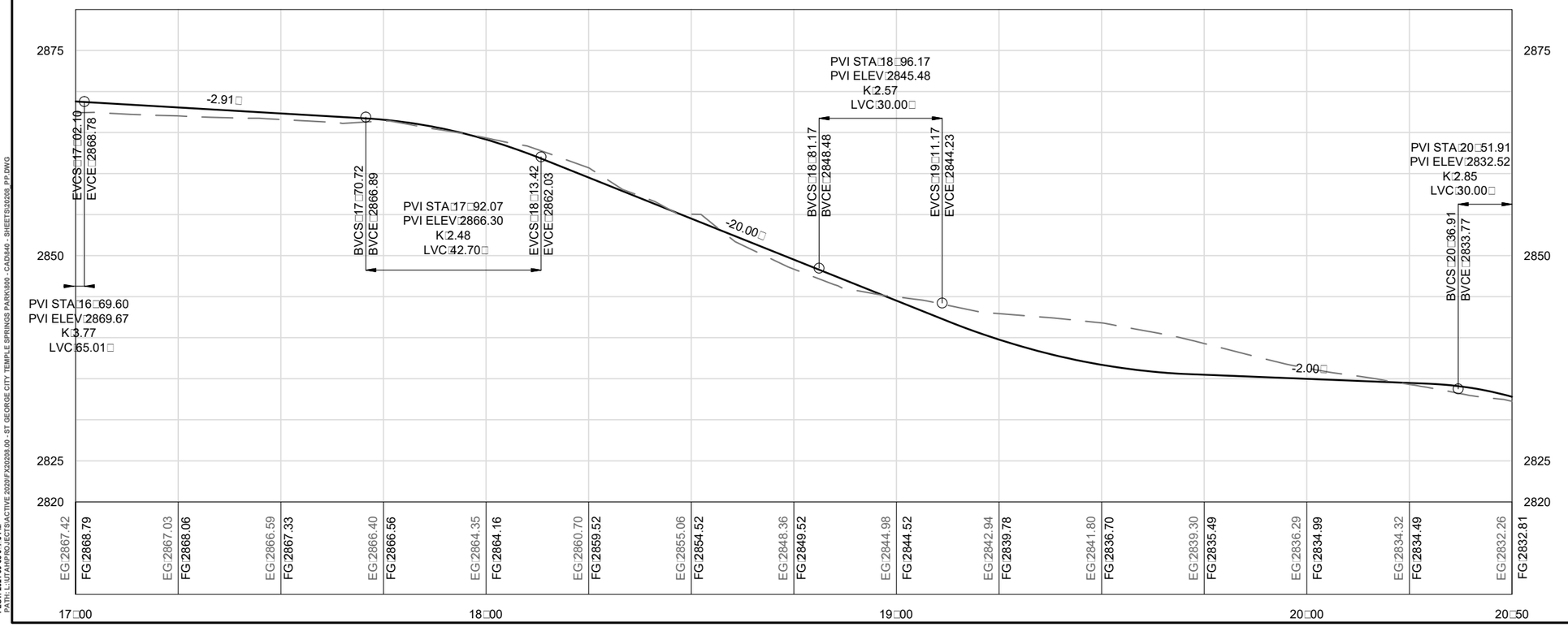
PLAN & PROFILE

TEMPLE SPRINGS PARK
PHASE I
ST. GEORGE, UTAH

PROJ. #: Ex. 20208
DRAWN BY: ABJ
DESIGN BY: TGG
CHECKED BY: CCH
SHEET
PP5

PLOT: 2021-09-03 0 :: 0 PM
PATH: L:\UTAH\PROJECTS\ACTIVE 2020\P20208.00 - ST GEORGE CITY TEMPLE SPRINGS PARK\800 - CAD\840 - SHEETS\20208 PP.DWG





PLAN & PROFILE KEYNOTES:

KEY	DET	DESCRIPTION
	CTY STD	2.5" THICK ASHPALT TRAIL MIX W/ BASE
	CTY STD	UNTREATED BASE COURSE
	CTY STD	4" THICK CONCRETE FLATWORK
1	CTY STD	SITE CLEARING AND DEMOLITION
2	1,2 DT1	ROCK RETAINING WALL
3	CTY STD	12" CPP STORM DRAIN PIPE
4	1 DT2	WATER MITIGATION UNDER TRAIL
5	CTY STD	RIPRAP (6"-8" DIA)
6	2 DT2	STRIPING
7	3 DT2	TRAIL SIGN (18"x18")
8	4 DT2	BOLLARD
9	5 DT2	42" TRAIL RAILING
BR		SEE BR SHEETS FOR BRIDGE INFORMATION
R		REMOVE EXISTING FEATURE
M		MATCH EXISTING GROUND

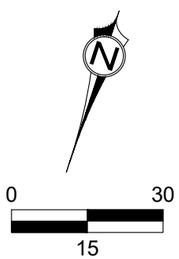
WEST TRAIL
ESTIMATED SITE EXCAVATION (CY)

CUT	938
FILL	1039

NOTE: EXCAVATION QUANTITIES DO NOT INCLUDE SHRINKAGE FACTOR AND ARE FROM EX GROUND TO FINISHED GRADE.

NOTES:

1. ALL CONSTRUCTION WORK SHALL CONFORM TO THE ST. GEORGE CITY STANDARD SPECIFICATIONS FOR DESIGN AND CONSTRUCTION, LATEST EDITION.
2. CONTRACTOR SHALL COORDINATE ANY FIELD MODIFICATIONS WITH THE ST. GEORGE CITY PROJECT MANAGER PRIOR TO MAKING ADJUSTMENTS IN THE FIELD.



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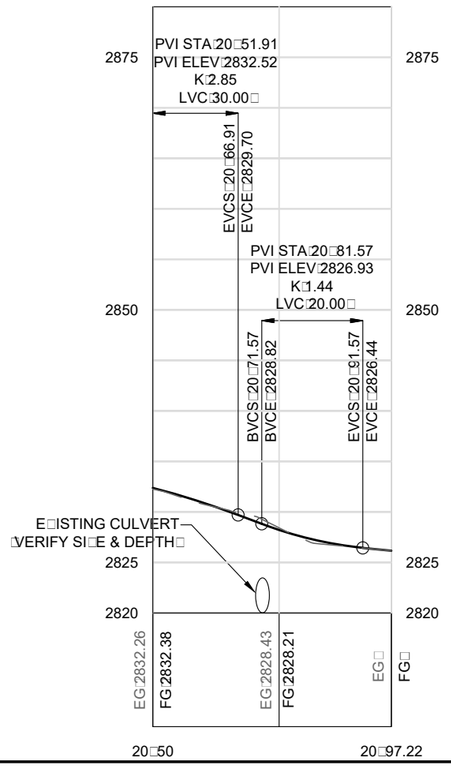
PLAN & PROFILE

TEMPLE SPRINGS PARK
PHASE I
ST. GEORGE, UTAH

PROJ. #: Ex. 20208
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PLAN & PROFILE KEYNOTES:

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	CTY STD	2.5" THICK ASHPALT TRAIL MIX W/ BASE
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3	CTY STD	12" CPP STORM DRAIN PIPE
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5	CTY STD	RIPRAP (6"-8" DIA)
6	2 DT2	STRIPING
7	3 DT2	TRAIL SIGN (18"x18")
8	4 DT2	BOLLARD
9	5 DT2	42" TRAIL RAILING
BR		SEE BR SHEETS FOR BRIDGE INFORMATION
R		REMOVE EXISTING FEATURE
M		MATCH EXISTING GROUND

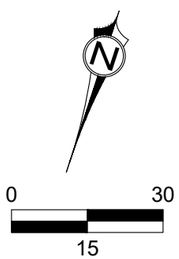
WEST TRAIL
ESTIMATED SITE EXCAVATION (CY)

CUT	938
FILL	1039

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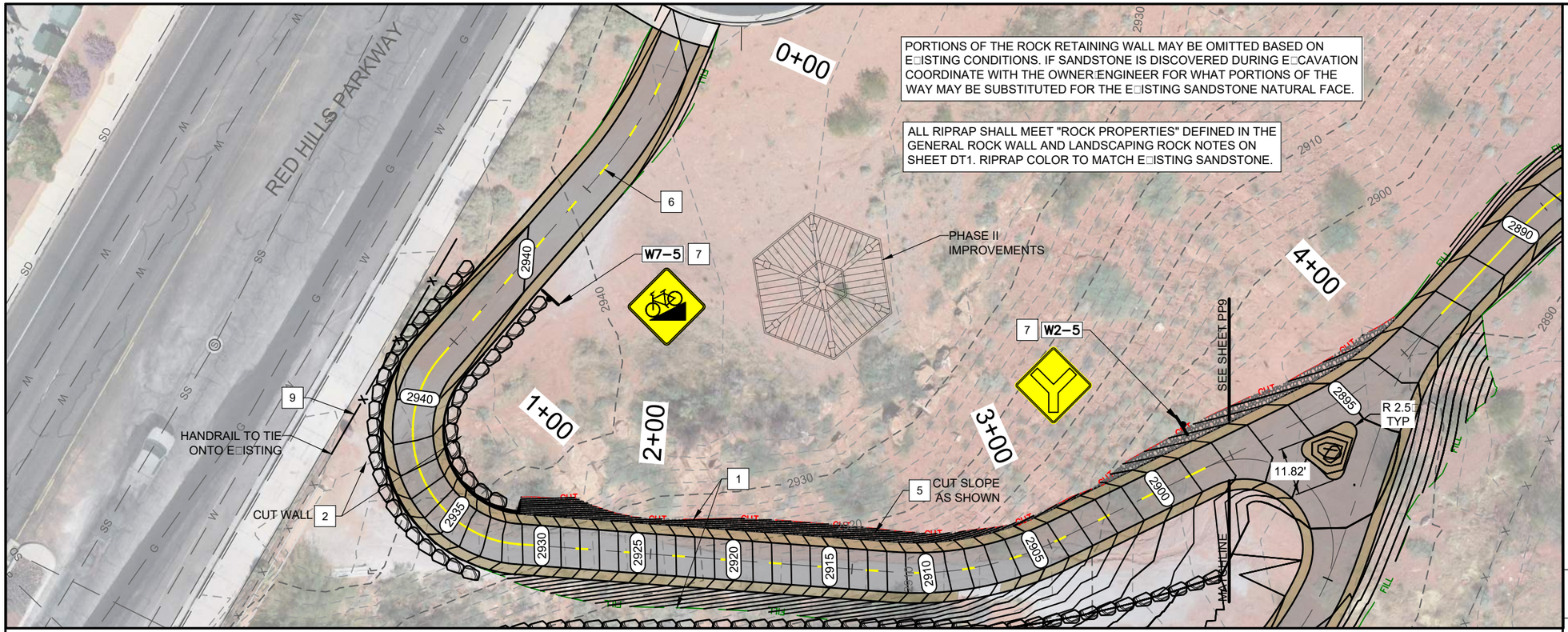
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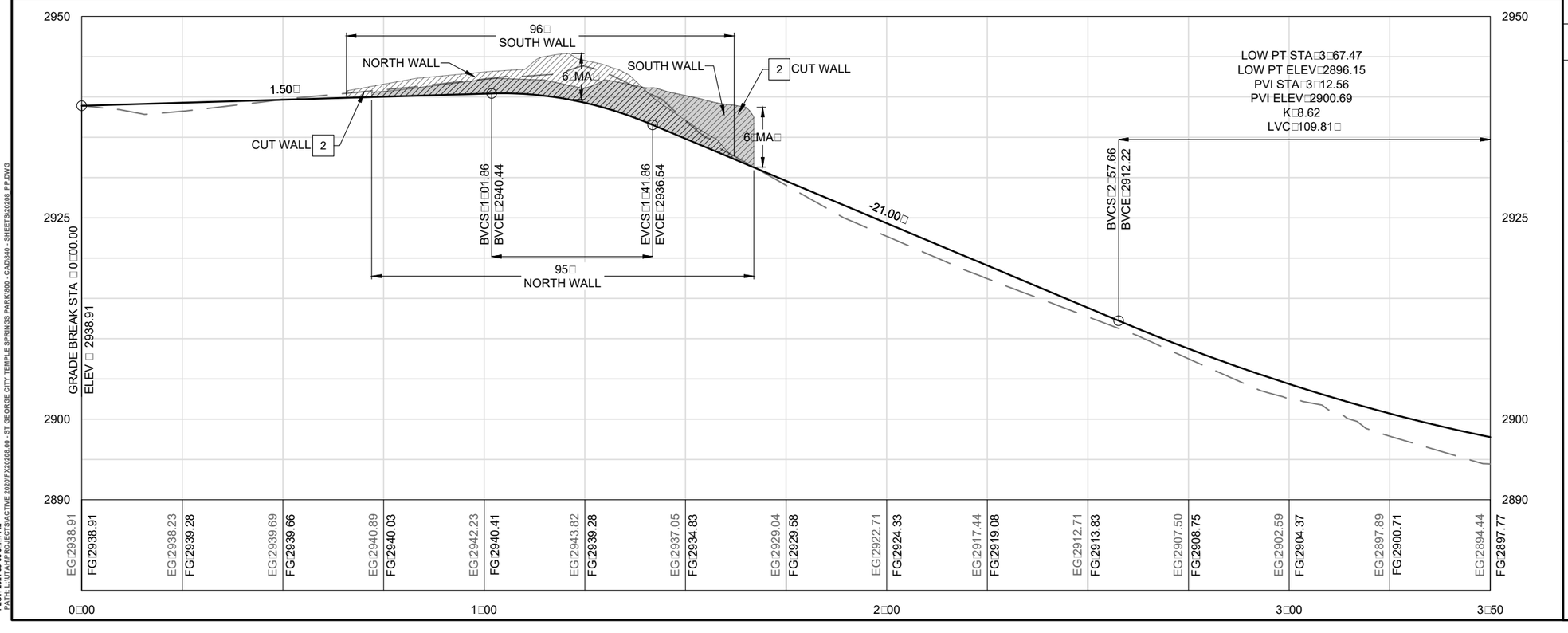
TEMPLE SPRINGS PARK
PHASE I
ST. GEORGE, UTAH

PROJ. #: Ex. 20208
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DESIGN BY: TGG
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PLAN & PROFILE KEYNOTES:

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7	3 DT2	TRAIL SIGN (18"x18")
8	4 DT2	BOLLARD
9	5 DT2	42" TRAIL RAILING
BR		SEE BR SHEETS FOR BRIDGE INFORMATION
R		REMOVE EXISTING FEATURE
M		MATCH EXISTING GROUND

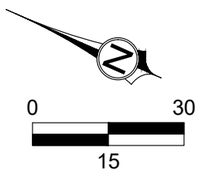
EAST TRAIL
ESTIMATED SITE EXCAVATION (CY)

CUT	236
FILL	592

NOTE: EXCAVATION QUANTITIES DO NOT INCLUDE SHRINKAGE FACTOR AND ARE FROM EX GROUND TO FINISHED GRADE.

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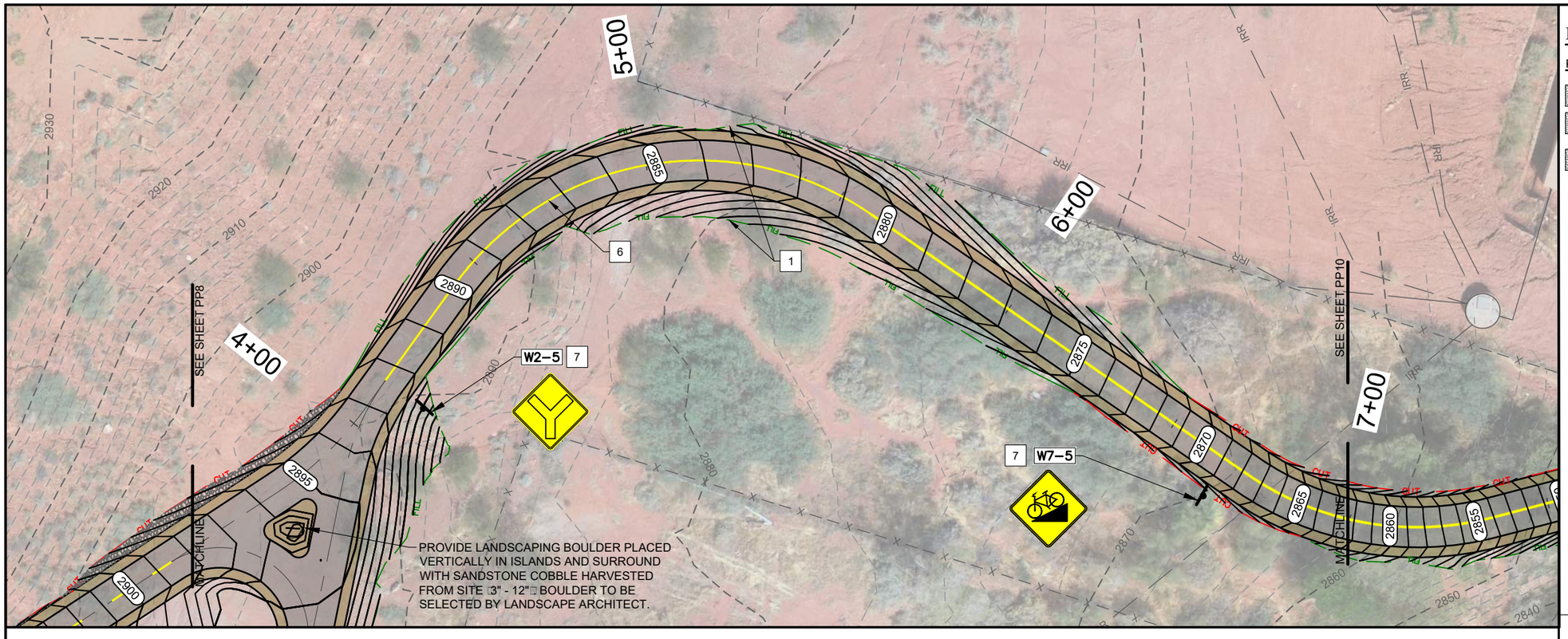
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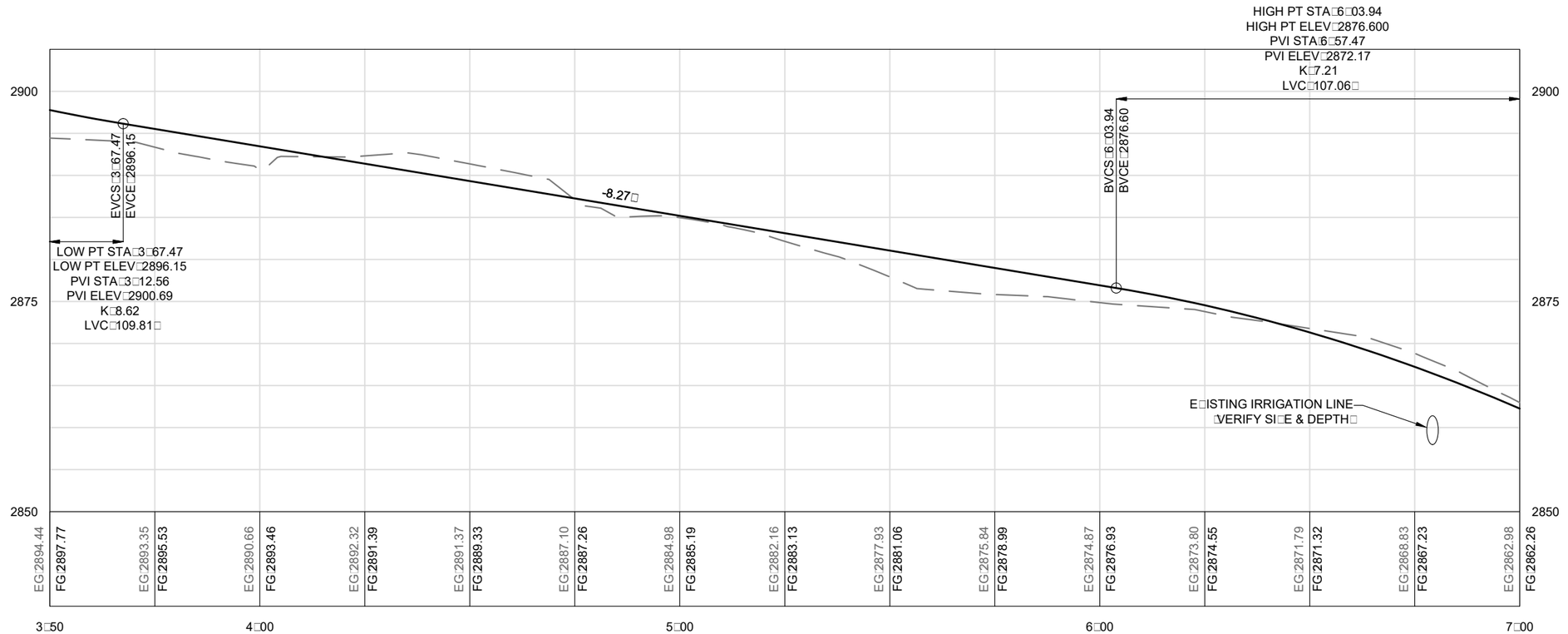
TEMPLE SPRINGS PARK
PHASE I
ST. GEORGE, UTAH

PROJ. #: Ex. 20208
DRAWN BY: ABJ
DESIGN BY: TGG
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PLOT: 2021-09-03 0 : 1 PM
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PLAN & PROFILE KEYNOTES:

KEY	DET	DESCRIPTION
	CITY STD	2.5" THICK ASHPALT TRAIL MIX W/ BASE
	CITY STD	UNTREATED BASE COURSE
	CITY STD	4" THICK CONCRETE FLATWORK
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3	CITY STD	12" CPP STORM DRAIN PIPE
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6	2 DT2	STRIPING
7	3 DT2	TRAIL SIGN (18"x18")
8	4 DT2	BOLLARD
9	5 DT2	42" TRAIL RAILING
BR		SEE BR SHEETS FOR BRIDGE INFORMATION
R		REMOVE EXISTING FEATURE
M		MATCH EXISTING GROUND

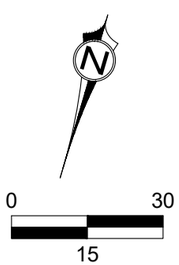
EAST TRAIL
ESTIMATED SITE EXCAVATION (CY)

CUT	236
FILL	592

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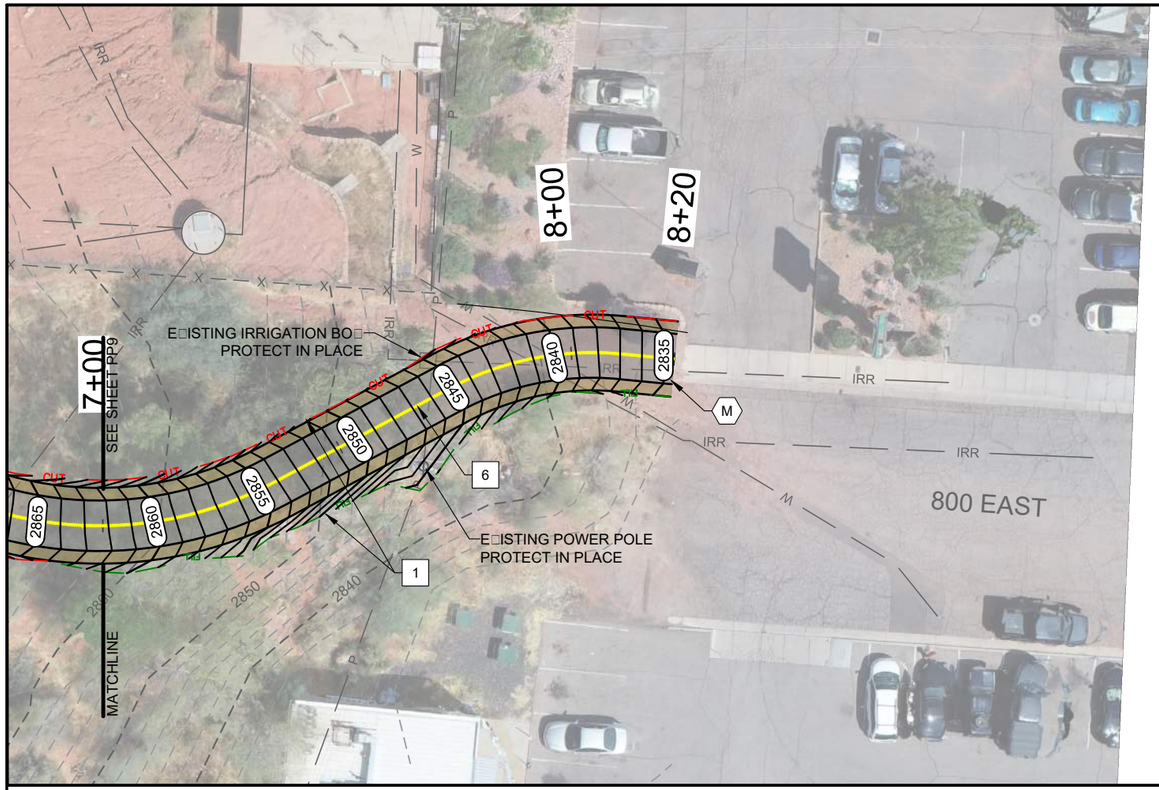
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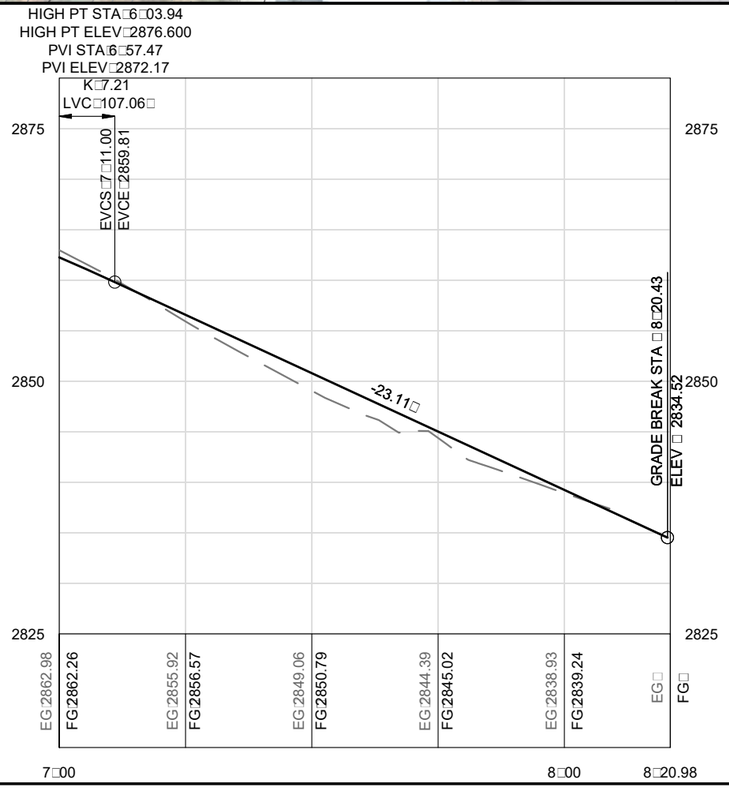
TEMPLE SPRINGS PARK
PHASE I
ST. GEORGE, UTAH

PROJ #: Fx. 20208
DRAWN BY: ABJ
DESIGN BY: TCG
CHECKED BY: CCH

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PLOT: 2021-09-03 0 1 PM
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PLAN & PROFILE KEYNOTES:

KEY	DET	DESCRIPTION
	CTY STD	2.5" THICK ASHPALT TRAIL MIX W/ BASE
	CTY STD	UNTREATED BASE COURSE
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R		REMOVE EXISTING FEATURE
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ESTIMATED SITE EXCAVATION (CY)

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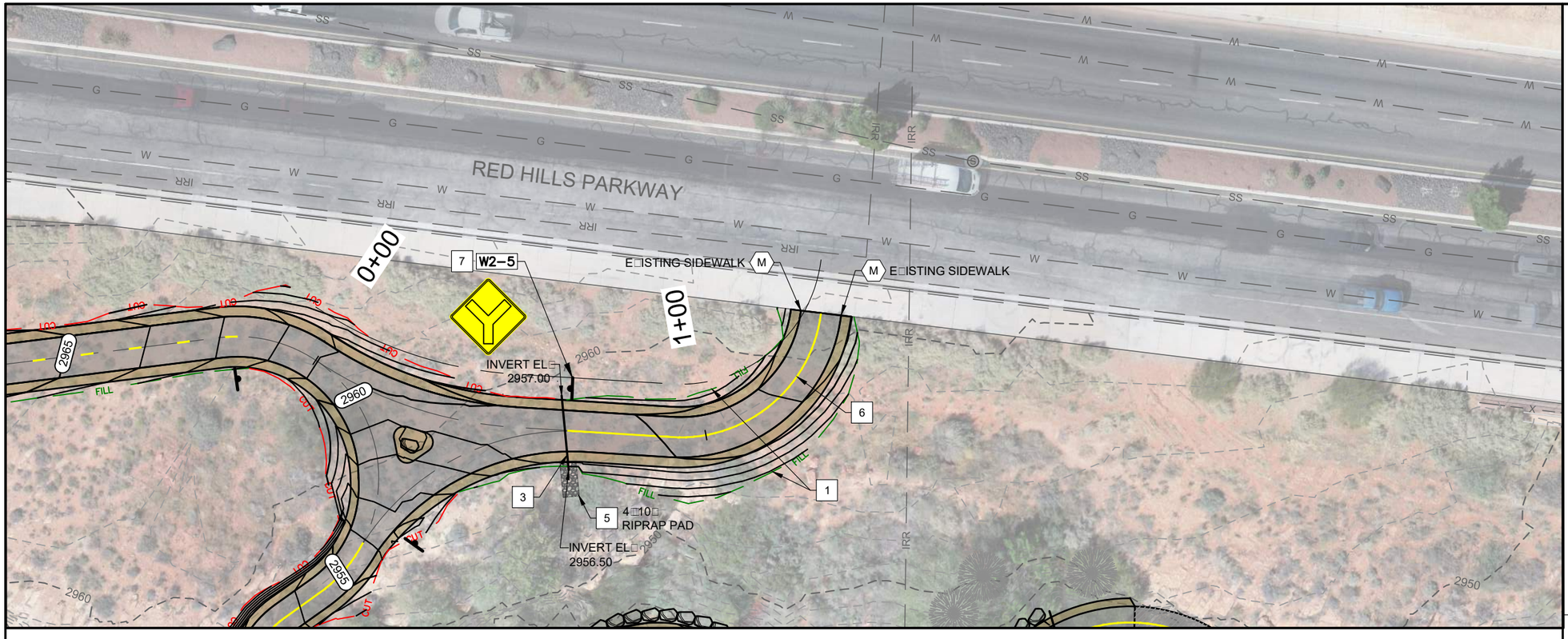
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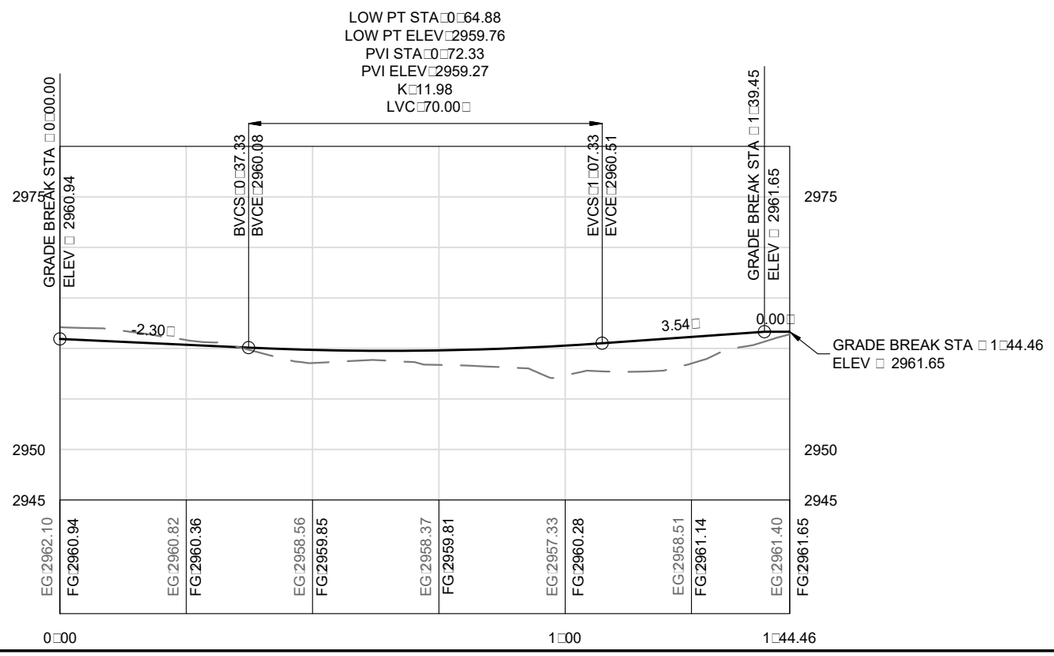
TEMPLE SPRINGS PARK
PHASE I
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PROJ. #: Ex. 20208
DRAWN BY: ABJ
DESIGN BY: TGG
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PLAN & PROFILE KEYNOTES:

KEY	DET	DESCRIPTION
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BR		SEE BR SHEETS FOR BRIDGE INFORMATION
R		REMOVE EXISTING FEATURE
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WEST TRAIL
ESTIMATED SITE EXCAVATION (CY)

CUT	236
FILL	592

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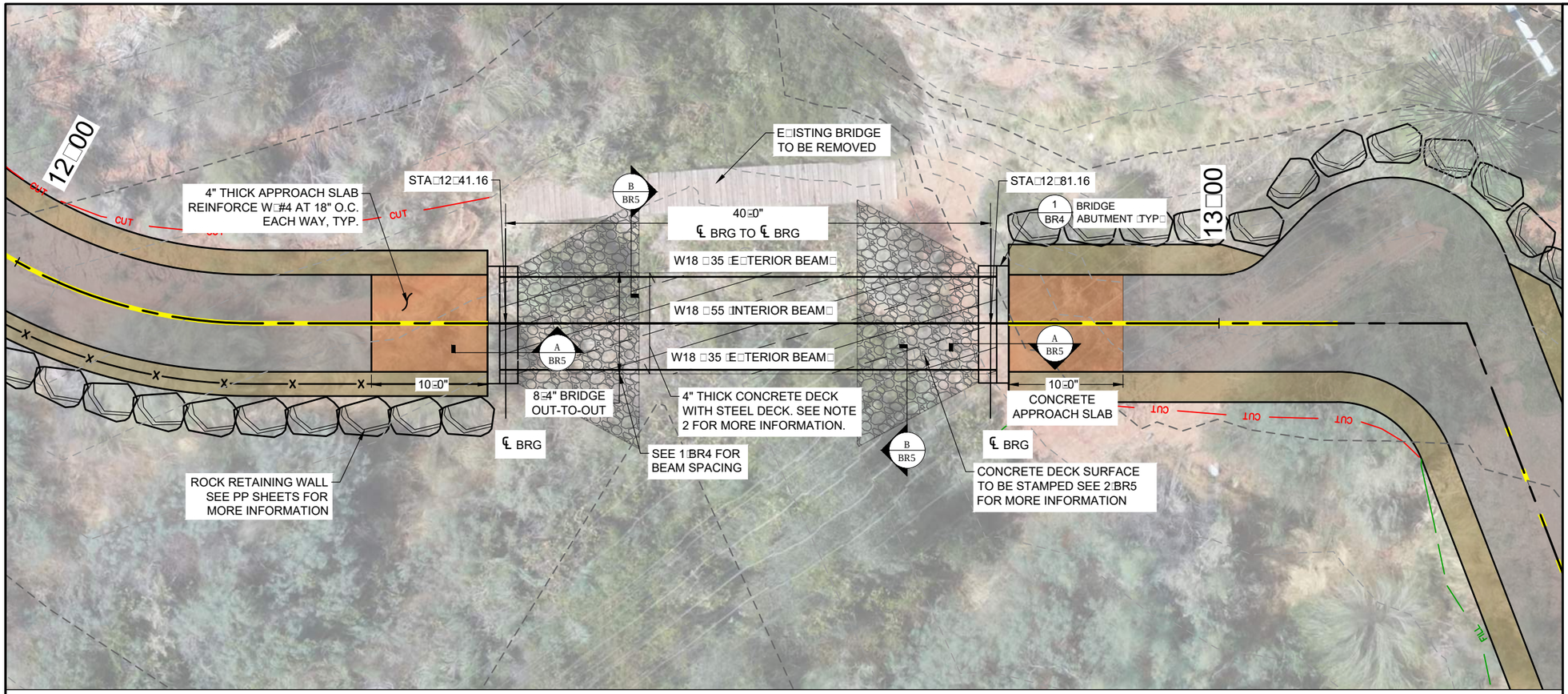
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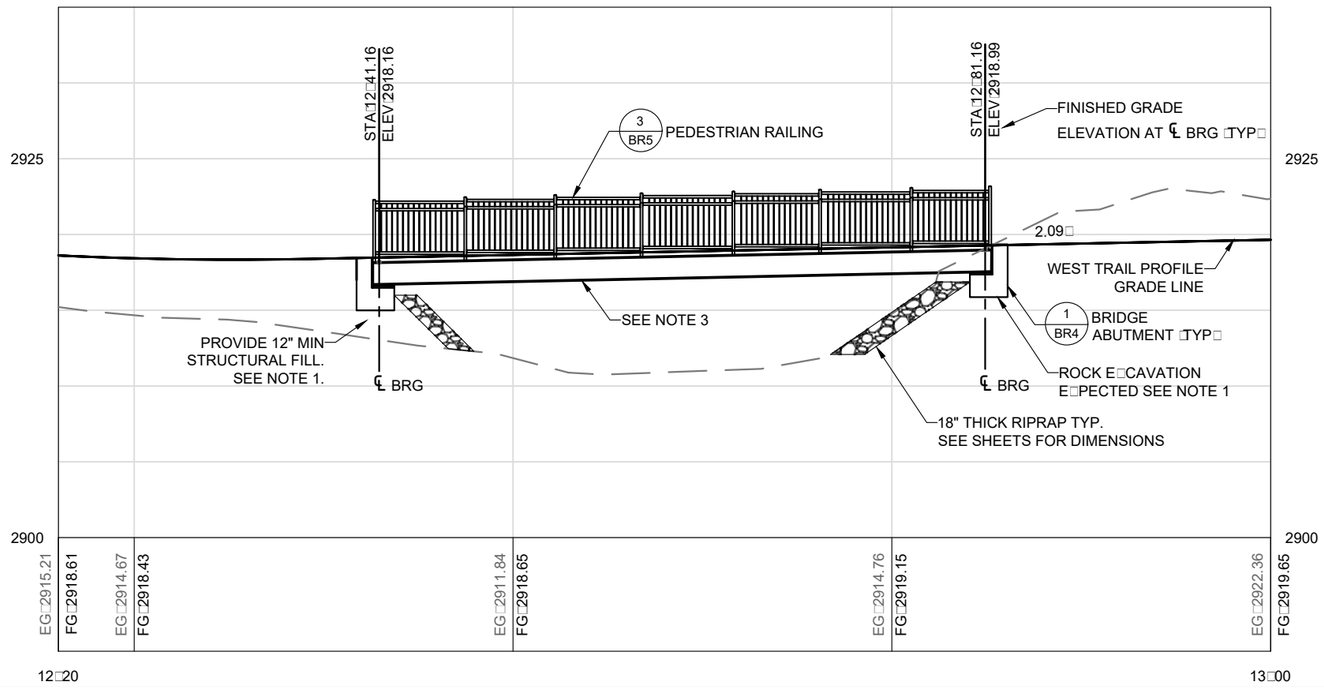
TEMPLE SPRINGS PARK
PHASE I
ST. GEORGE, UTAH

PROJ. #: Ex. 20208
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BRIDGE NOTES:

1. BRIDGE ABUTMENT FOOTINGS MAY BE SUPPORTED BY EITHER BEDROCK OR 1 FOOT MINIMUM OF STRUCTURAL FILL. IF BEDROCK IS ENCOUNTERED DURING THE FOOTING EXCAVATION THE BEDROCK MAY BE EXCAVATED TO THE REQUIRED FOOTING DEPTH AND THE FOOTING BE POURED DIRECTLY ON THE BEDROCK. IF SOILS ARE ENCOUNTERED AT THE REQUIRED FOOTING DEPTH THE ON-SITE SOILS MUST BE OVER-EXCAVATED A MINIMUM OF 1 FOOT AND REPLACED WITH PROPERLY COMPACTED STRUCTURAL FILL. SEE THE GEOTECHNICAL REPORT PROVIDED BY LANDMARK ENGINEERING DATED MARCH 31, 2021 PROJECT NUMBER 21172 FOR MORE INFORMATION. ALL EXCAVATION, OVER-EXCAVATION, STRUCTURAL FILL, COMPACTION AND PLACEMENT SHALL COMPLY WITH THE ABOVE REFERENCED REPORT.
2. BRIDGE DECK SHALL BE 1.5C-36 20 GAUGE PAINTED STEEL FLOOR DECK BY VERCO, OR APPROVED EQUAL. SEE SPECIFICATIONS FOR FASTENING INFORMATION. REINFORCE WITH 6X6 W1.4XW1.4 W.W.F.
3. ALL STEEL USED IN THE BRIDGE CONSTRUCTION SHALL BE WEATHERING STEEL. SEE GENERAL NOTES AND SPECIFICATIONS FOR MORE INFORMATION.
4. NOTE THAT THE APPROACH SLAB, ABUTMENT AND BRIDGE DECK CONCRETE WILL BE PIGMENTED. SEE 2/BR5 AND SPECIFICATIONS FOR MORE INFORMATION.

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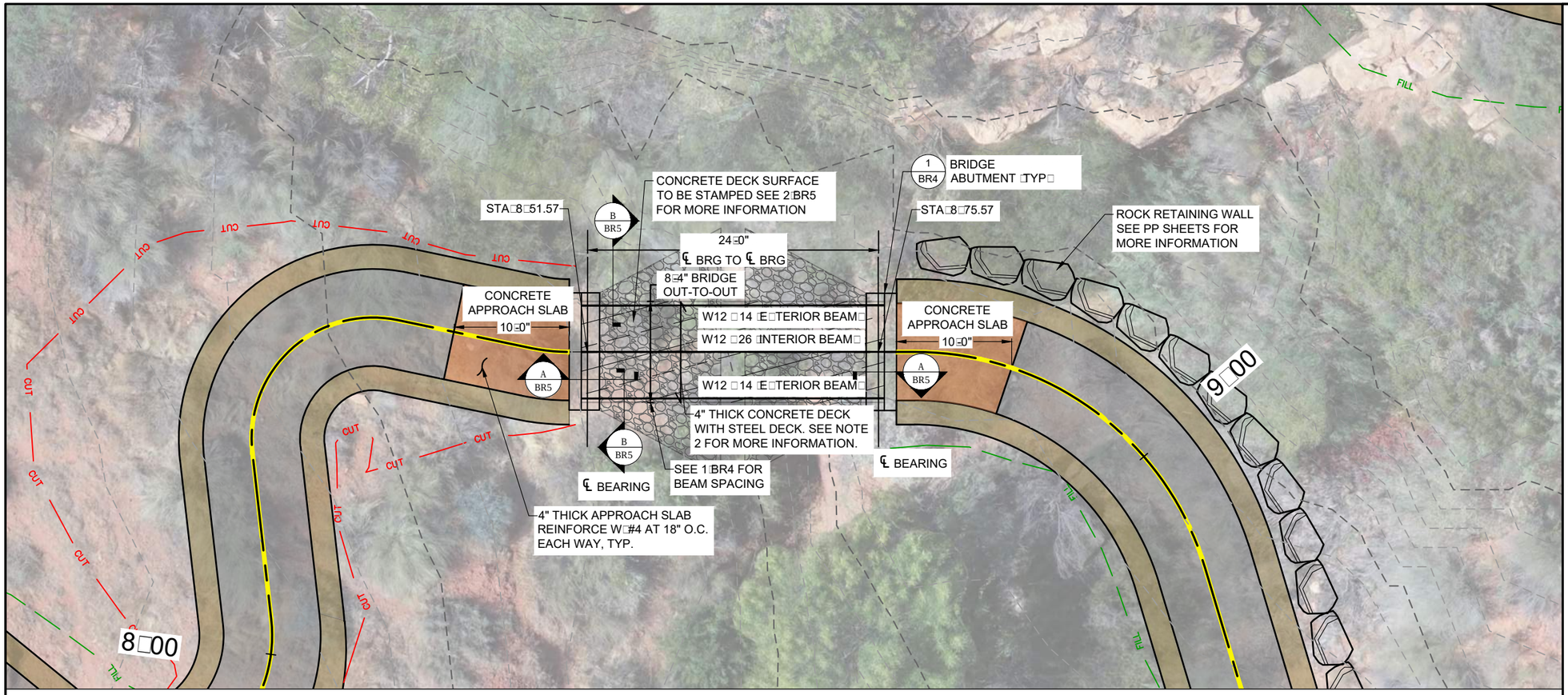
BRIDGE PLAN & PROFILE

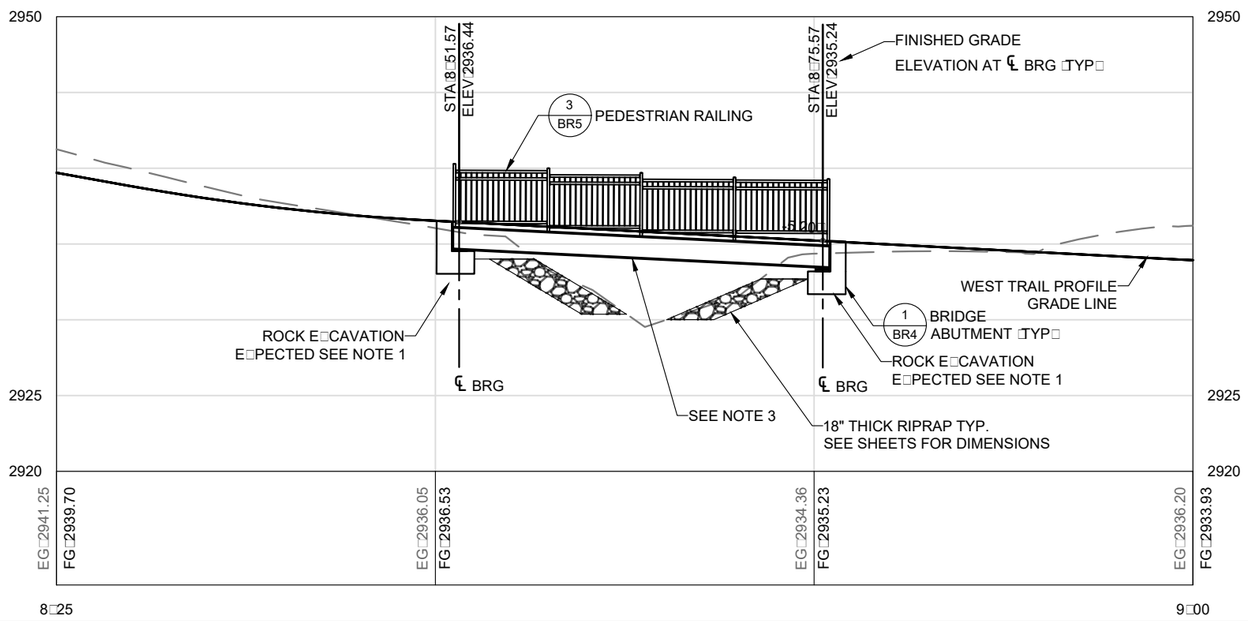
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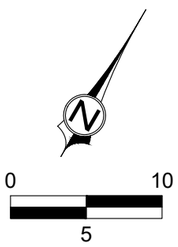
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BRIDGE NOTES:

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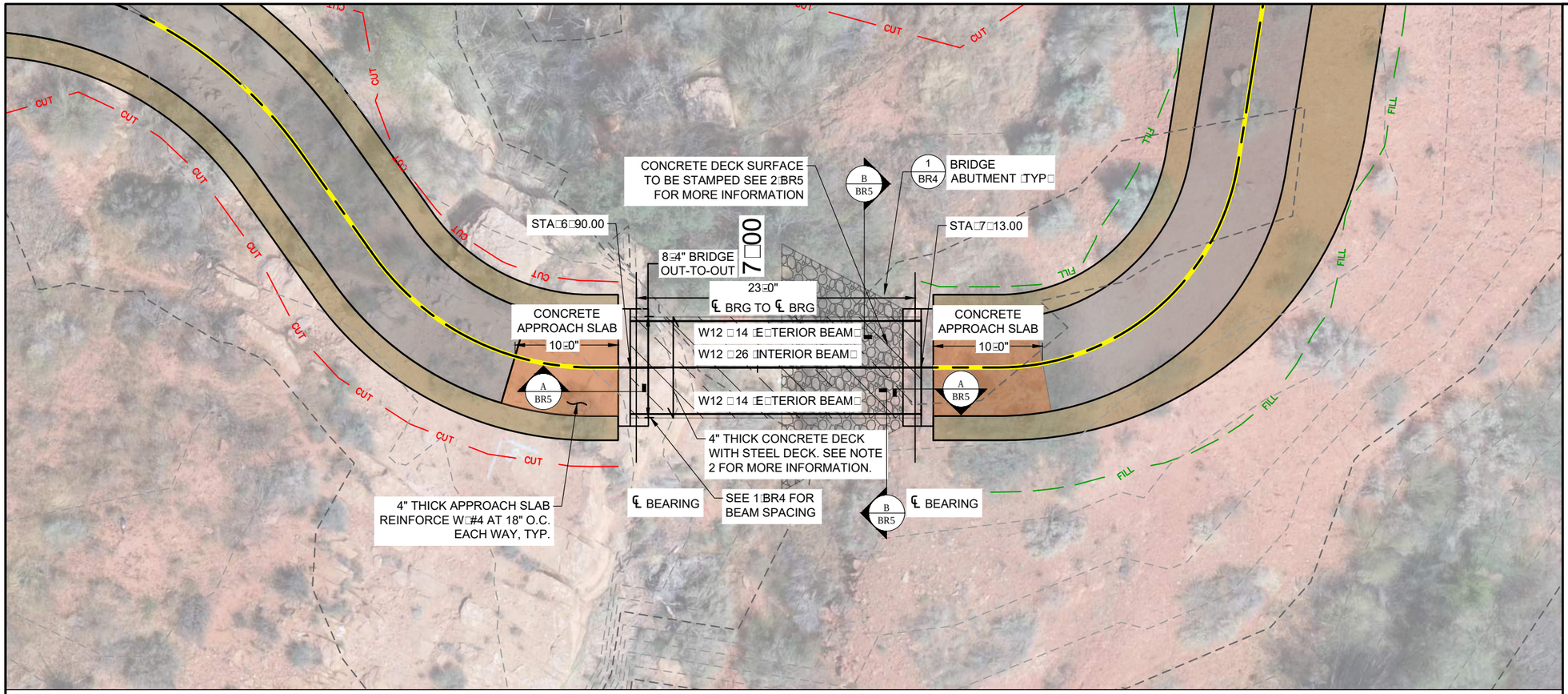
BRIDGE PLAN & PROFILE

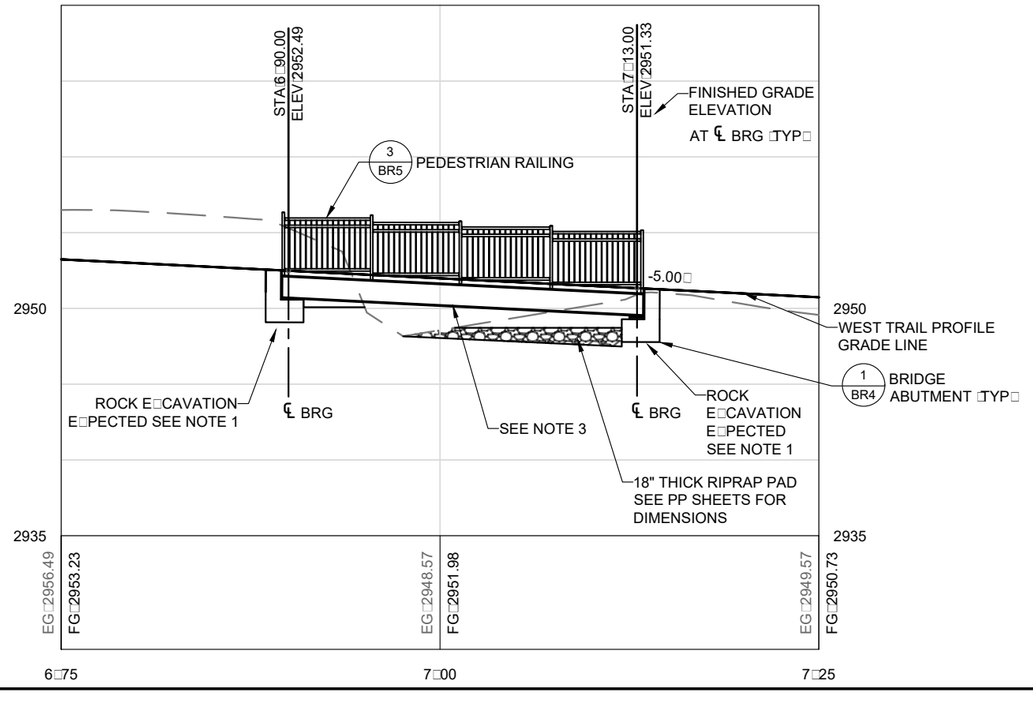
TEMPLE SPRINGS PARK
PHASE I
ST. GEORGE, UTAH

PROJ #: Ex. 20208
DRAWN BY: ABJ
DESIGN BY: TGC
CHECKED BY: CCH

SHEET
BR2

PLOT: 2021-09-03 0:: 2 PM
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BRIDGE NOTES:

1. BRIDGE ABUTMENT FOOTINGS MAY BE SUPPORTED BY EITHER BEDROCK OR 1 FOOT MINIMUM OF STRUCTURAL FILL. IF BEDROCK IS ENCOUNTERED DURING THE FOOTING EXCAVATION THE BEDROCK MAY BE EXCAVATED TO THE REQUIRED FOOTING DEPTH AND THE FOOTING BE POURED DIRECTLY ON THE BEDROCK. IF SOILS ARE ENCOUNTERED AT THE REQUIRED FOOTING DEPTH THE ON-SITE SOILS MUST BE OVER-EXCAVATED A MINIMUM OF 1 FOOT AND REPLACED WITH PROPERLY COMPACTED STRUCTURAL FILL. SEE THE GEOTECHNICAL REPORT PROVIDED BY LANDMARK ENGINEERING DATED MARCH 31, 2021 PROJECT NUMBER 21172 FOR MORE INFORMATION. ALL EXCAVATION, OVER-EXCAVATION, STRUCTURAL FILL, COMPACTION AND PLACEMENT SHALL COMPLY WITH THE ABOVE REFERENCED REPORT.
2. BRIDGE DECK SHALL BE 1.5C-36 20 GAUGE PAINTED STEEL FLOOR DECK BY VERCO, OR APPROVED EQUAL. SEE SPECIFICATIONS FOR FASTENING INFORMATION. REINFORCE WITH 6X6 W1.4XW1.4 W.W.F.
3. ALL STEEL USED IN THE BRIDGE CONSTRUCTION SHALL BE WEATHERING STEEL. SEE GENERAL NOTES AND SPECIFICATIONS FOR MORE INFORMATION.
4. NOTE THAT THE APPROACH SLAB, ABUTMENT AND BRIDGE DECK CONCRETE WILL BE PIGMENTED. SEE 2/BR5 AND SPECIFICATIONS FOR MORE INFORMATION.

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BRIDGE PLAN & PROFILE

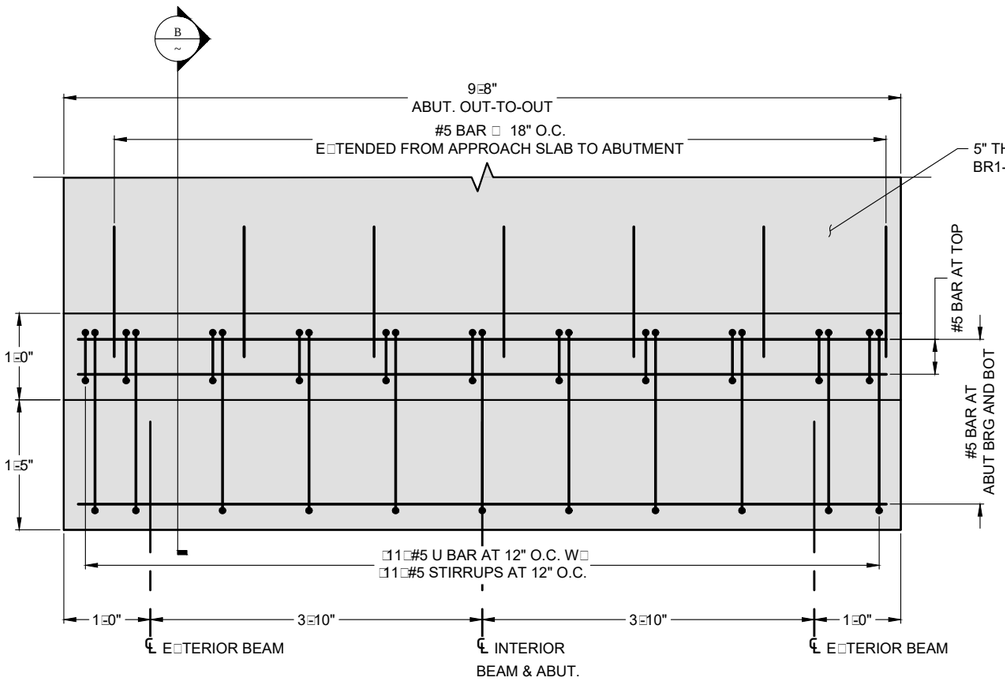
TEMPLE SPRINGS PARK
PHASE I
ST. GEORGE, UTAH

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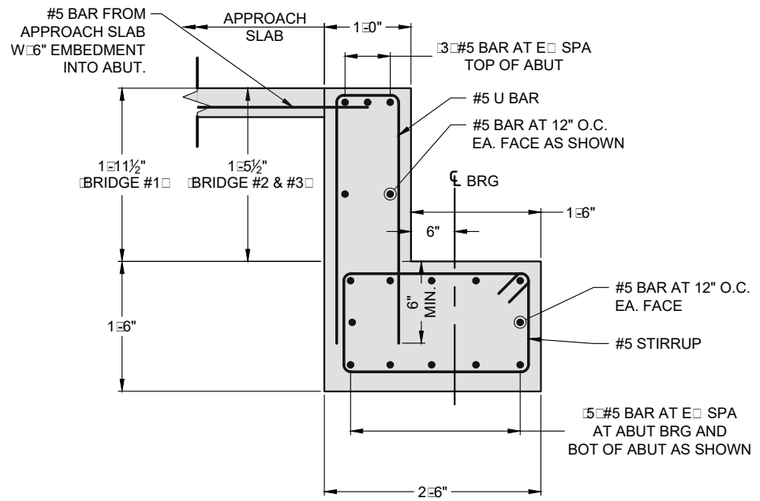
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BR3

21 OF 28

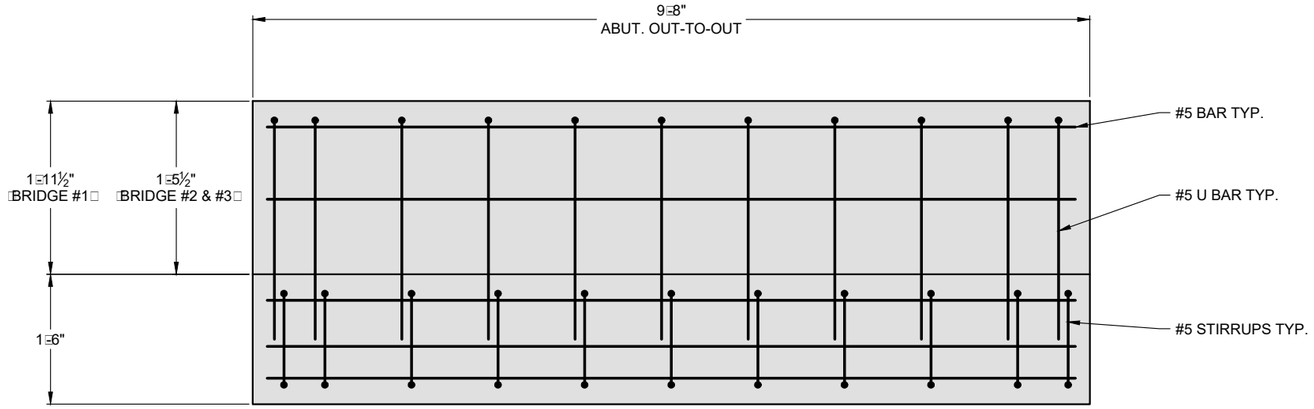
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1 DETAIL - BRIDGE ABUTMENT PLAN
N.T.S.



B SECTION - BRIDGE ABUTMENT
N.T.S.



2 DETAIL - BRIDGE ABUTMENT ELEVATION
N.T.S.

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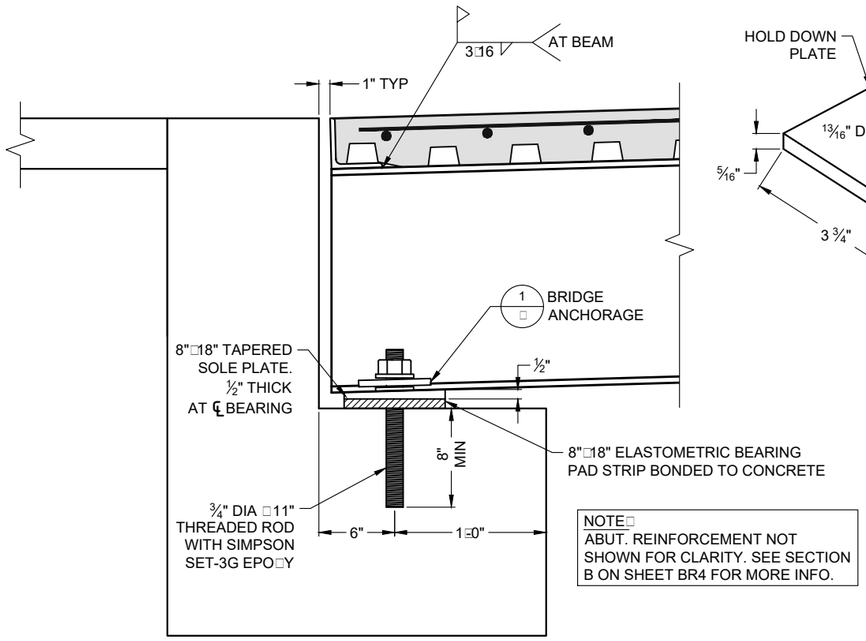
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CONSTRUCTION

BRIDGE DETAILS

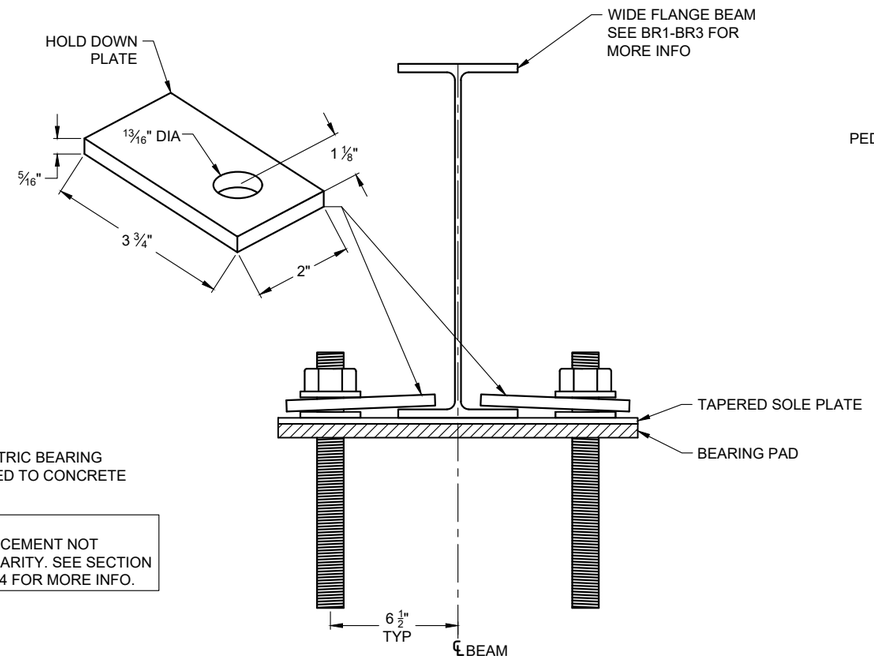
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DRAWN BY: ABJ
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BR4

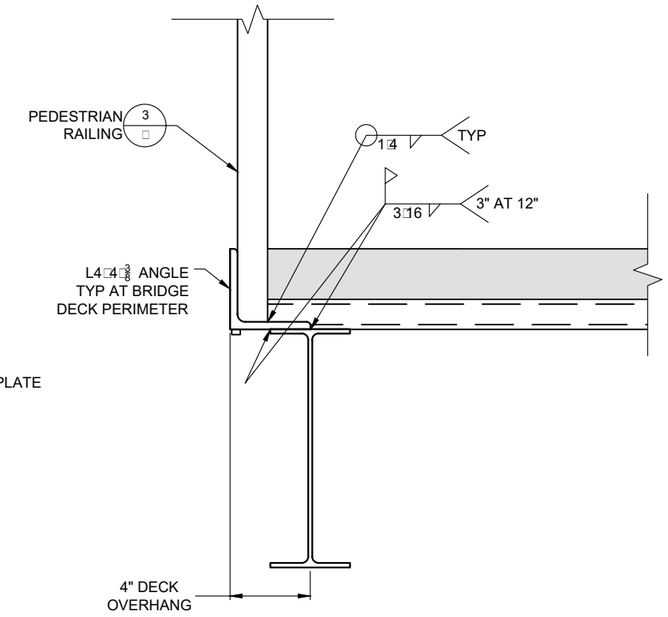
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A SECTION - BRIDGE BEAM ANCHORAGE
N.T.S.



1 DETAIL - BRIDGE ANCHORAGE
N.T.S.



B SECTION - BRIDGE DECK
N.T.S.

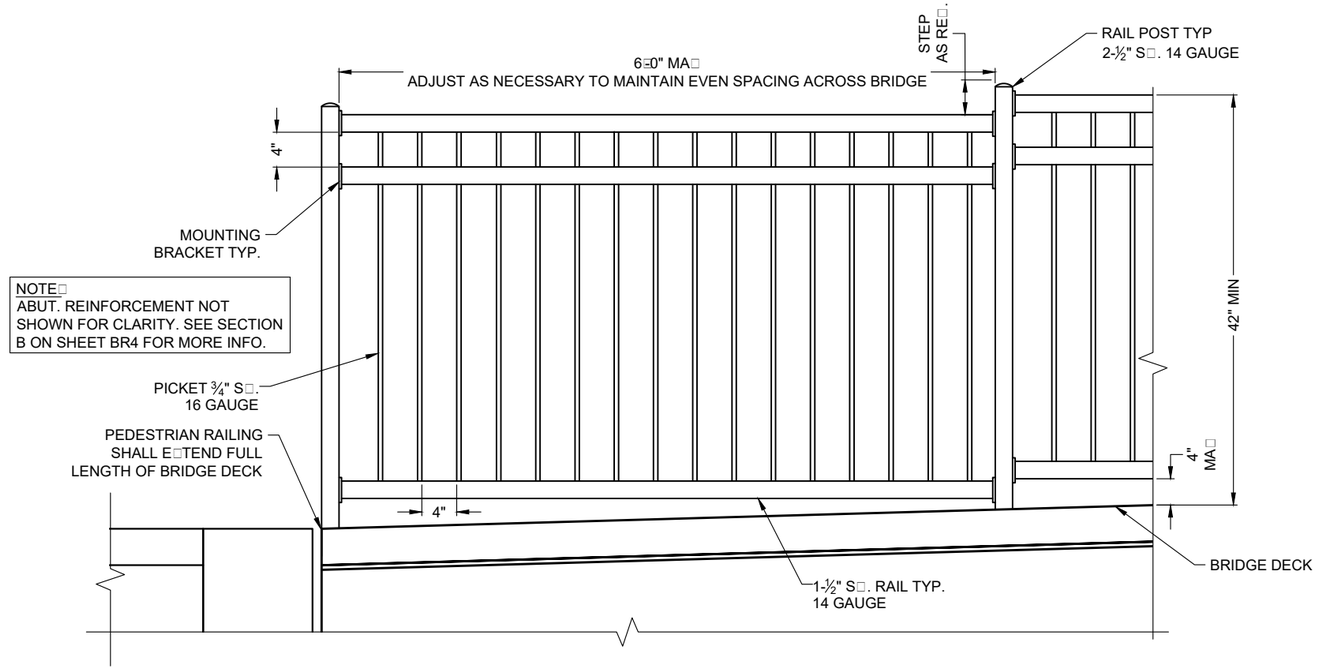


757 PECAN
CONCRETE COLOR TO BE USED IN
BRIDGE DECK AND APPROACH SLABS
□FINAL COLOR CHOSEN BY OWNER□



RECLAIMED TIMBER PLANK
CONCRETE STAMP TO BE USED ON BRIDGE DECK
□FINAL STAMP CHOSEN BY OWNER□

2 DETAIL - BRIDGE CONCRETE AESTHETICS
N.T.S.



3 DETAIL - PEDESTRIAN RAILING
N.T.S.

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BRIDGE DETAILS

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PHASE I
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PROJ. #: Fx. 20208
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DESIGN BY: TGG
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BR5

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PLAN & PROFILE KEYNOTES:

KEY	DET	DESCRIPTION
	CTY STD	2.5" THICK ASHPALT TRAIL MIX W/ BASE
	CTY STD	UNTREATED BASE COURSE
	CTY STD	4" THICK CONCRETE FLATWORK
1	CTY STD	SITE CLEARING AND DEMOLITION
2	1,2 DT1	ROCK RETAINING WALL
3	CTY STD	12" CPP STORM DRAIN PIPE
4	1 DT2	WATER MITIGATION UNDER TRAIL
5	CTY STD	RIPRAP (6"-8" DIA)
6	2 DT2	STRIPING
7	3 DT2	TRAIL SIGN (18"x18")
8	4 DT2	BOLLARD
9	5 DT2	42" TRAIL RAILING
BR		SEE BR SHEETS FOR BRIDGE INFORMATION
R		REMOVE EXISTING FEATURE
M		MATCH EXISTING GROUND

LOWER GRADING
ESTIMATED SITE EXCAVATION (CY)

CUT	2426
FILL	268

NOTE: EXCAVATION QUANTITIES DO NOT INCLUDE SHRINKAGE FACTOR AND ARE FROM EX GROUND TO FINISHED GRADE.

NOTES:

1. ALL CONSTRUCTION WORK SHALL CONFORM TO THE ST. GEORGE CITY STANDARD SPECIFICATIONS FOR DESIGN AND CONSTRUCTION, LATEST EDITION.
2. CONTRACTOR SHALL COORDINATE ANY FIELD MODIFICATIONS WITH THE ST. GEORGE CITY PROJECT MANAGER PRIOR TO MAKING ADJUSTMENTS IN THE FIELD.



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NOTE: ROUGH GRADED AREAS WILL SHEET FLOW SOUTH TOWARDS EXISTING SWALE AS SHOWN

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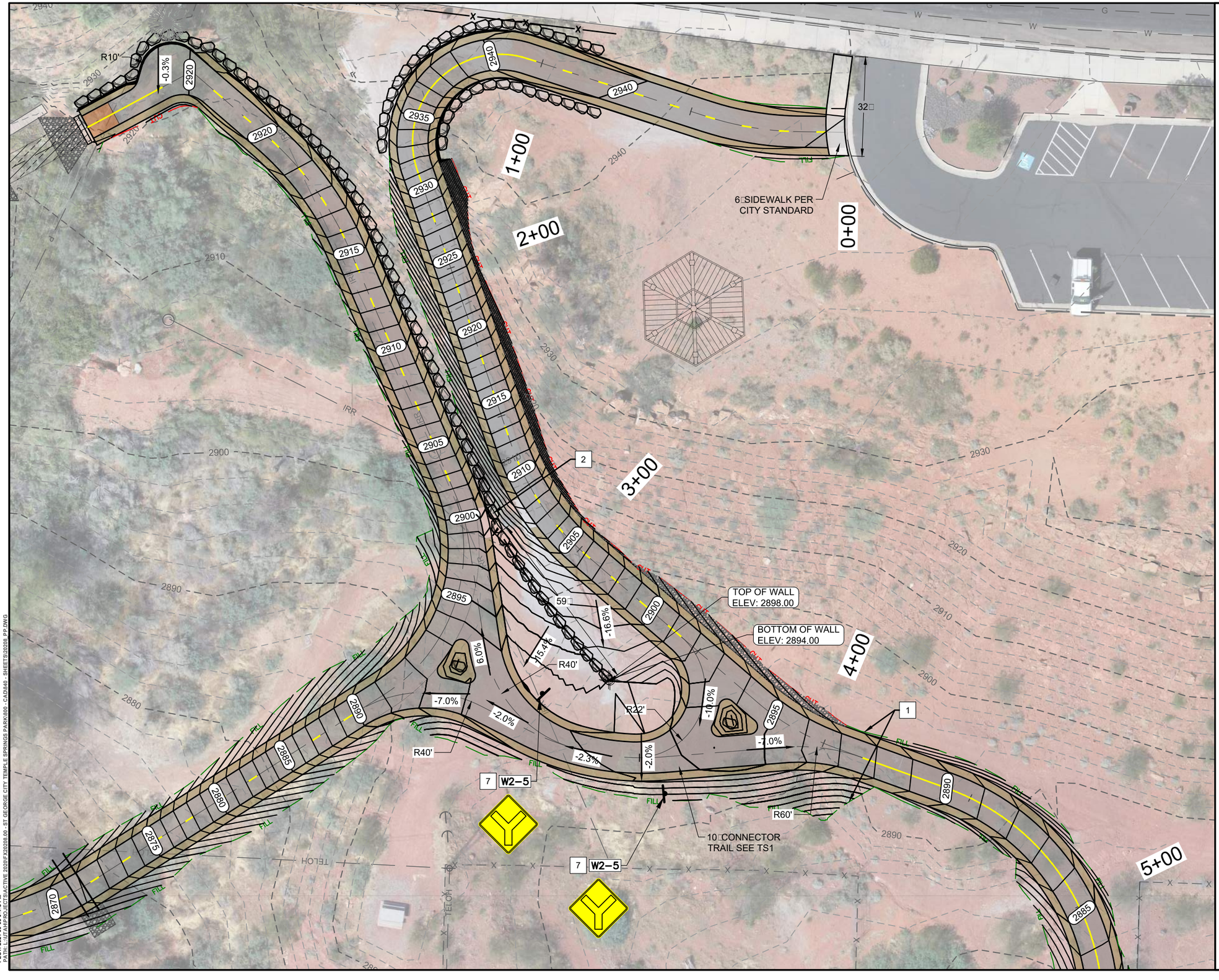
GRADING PLAN

TEMPLE SPRINGS PARK
PHASE I
ST. GEORGE, UTAH

PROJ #: Fx. 20208
DRAWN BY: ABJ
DESIGN BY: TGG
CHECKED BY: CCH

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PLAN & PROFILE KEYNOTES:

KEY	DET	DESCRIPTION
	CITY STD	2.5" THICK ASHPALT TRAIL MIX W/ BASE
	CITY STD	UNTREATED BASE COURSE
	CITY STD	4" THICK CONCRETE FLATWORK
1	CITY STD	SITE CLEARING AND DEMOLITION
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3	CITY STD	12" CPP STORM DRAIN PIPE
4	1 DT2	WATER MITIGATION UNDER TRAIL
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GRADING PLAN

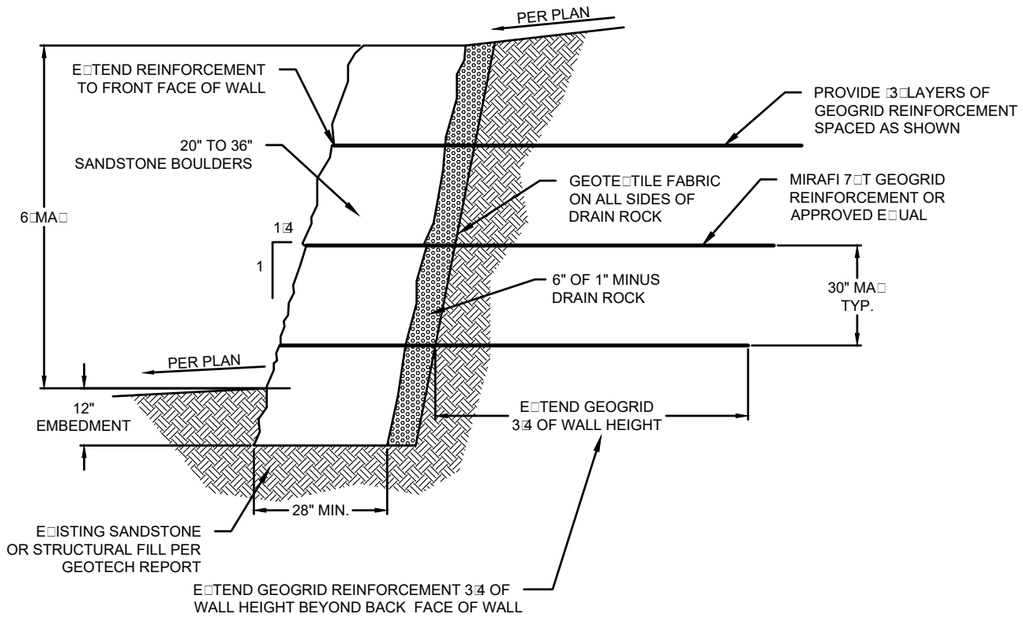
TEMPLE SPRINGS PARK
PHASE I
ST. GEORGE, UTAH

PROJ. #: Ex. 20208
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25 OF 28

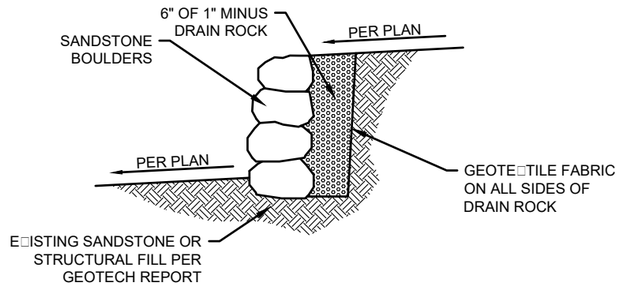
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4□- 6□SANDSTONE ROCK WALL NOTES□

1. GEOSYNTHETIC REINFORCEMENT SHALL BE PLACED CONTINUOUSLY IN THE PRIMARY STRENGTH DIRECTION.
2. BACKFILL SHALL BE PLACED OVER REINFORCEMENT TO MINIMI□E MOVEMENT AND WRINKLES. HAND COMPACT BACKFILL WITHIN 3 FEET OF THE BOULDER FACING. RUBBER-TIRED E□UIPMENT MAY BE UTILI□ED TO COMPACT THE FILL WITHOUT CAUSING DAMAGE TO THE REINFORCEMENT. AT LEAST 12" OF FILL SHOULD BE PLACED ABOVE THE REINFORCEMENT PRIOR TO OPERATING TRACK-MOUNTED E□UIPMENT.
3. ALL FILL TO BE COMPACTED TO 95□ MA□ DRY DENSITY PLACED IN 8" LIFTS.
4. DO NOT CONSTRUCT ROCK WALL OR SLOPES E□CEEDING THE HEIGHTS SHOWN HERE WITHOUT CONSULTING WITH ENGINEER.

1 DETAIL - 4□- 6□SANDSTONE ROCK WALL



2 DETAIL - 4□AND LOWER SANDSTONE ROCK WALL

GENERAL ROCK WALL AND LANDSCAPING ROCK NOTES□

1. GOVERNING CODE□IBC 2015
2. GEOTECHNICAL□
   A. NOMINAL SOIL BEARING PRESSURE....2000 PSF □FROM SOILS REPORT□
   B. FOUNDATION DESIGN WAS OBTAINED FROM THE ORIGINAL SOILS REPORT PREPARED BY LANDMARK TESTING & ENGINEERING. PROJECT NO. 21172, DATED MARCH 31, 2021.
   C. ALL SITE PREPARATION, FOOTING PREPARATION, SLAB PREPARATION, E□CAVATION, OVER-E□CAVATION, FILL, COMPACTION, AND PLACEMENT WORK, PERFORMED, SHALL COMPLY WITH RECOMMENDATIONS SPECIFICALLY OUTLINED IN THE ABOVE REFERENCED REPORT.
3. ROCK SHALL BE TAN LIMESTONE, DENSE, SOUND AND FREE FROM CRACKS, SEAMS AND OTHER DEFECTS. ROCK SHALL MEET THE FOLLOWING PROPERTIES
   A. SPECIFIC GRAVITY — 2.5 MIN □AASHTO T85□
   B. ABSORPTION — 2□ MA□ □AASHTO T 85□
   C. SOUNDNESS OF AGGREGATE USING SODIUM SULFATE OR MAGNESIUM SULFATE — 12□ MA□ OR 17□ MA□ RESPECTIVELY □AASHTO T 104□
   D. RESISTANCE TO DEGRADATION — 40□ MA□ □AASHTO T 96□
4. EACH ROCK IS TO BE PLACED INDIVIDUALLY BY E□UIPMENT SUITABLE FOR LIFTING, MANIPULATING, AND PLACING ROCKS OF THE SI□E AND SHAPE SPECIFIED. ENSURE THAT EACH ROCK IS SET AND SUPPORTED BY UNDERLYING MATERIALS AND ADJACENT ROCKS. REPOSITION AND REPLACE LOOSE ROCKS.
5. BOULDERS SHOULD BE FLAT FOR STACKING WITH THE LARGEST BOULDERS PLACED AT THE BASE OF THE WALL.
6. DIRECT RUNOFF AWAY FROM THE WALL

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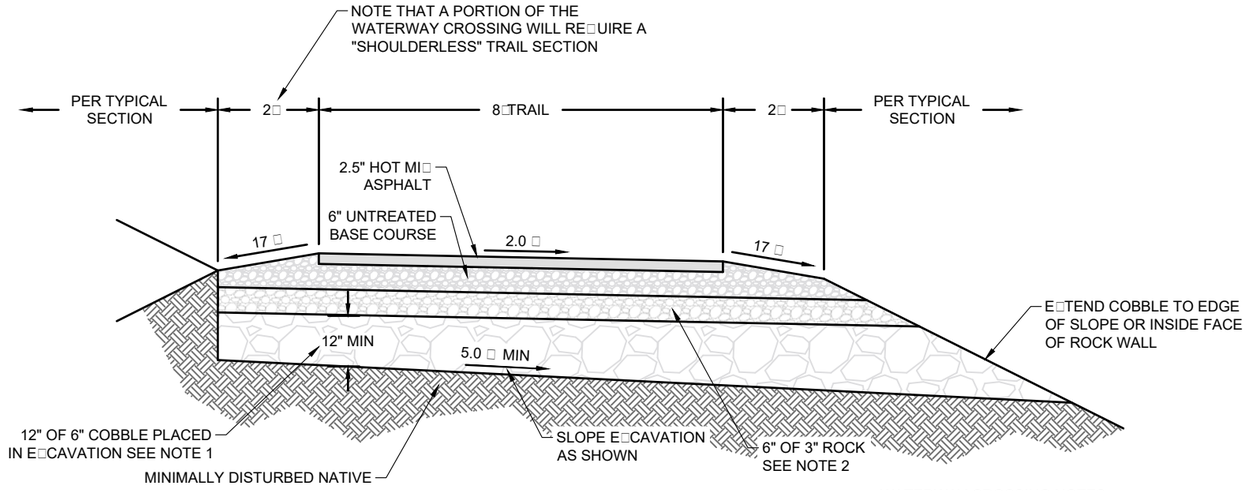
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DETAILS

TEMPLE SPRINGS PARK
PHASE I
ST. GEORGE, UTAH

PROJ. #: Fx. 20208
DRAWN BY: ABJ
DESIGN BY: TGG
CHECKED BY: CCH
SHEET
DT1

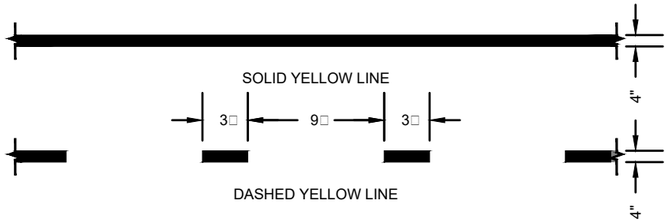
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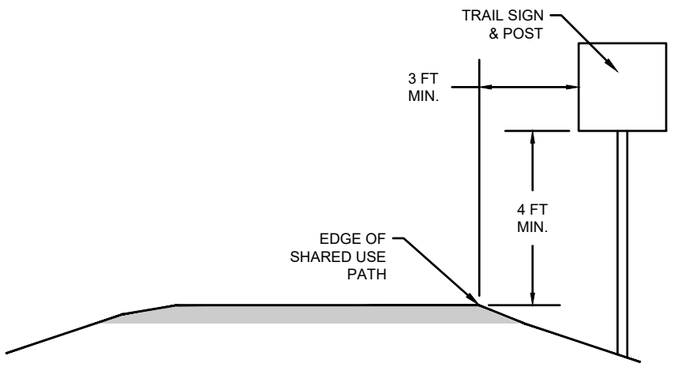
1 DETAIL - WATER MITIGATION UNDER TRAIL

WATERWAY CROSSING NOTES□

1. THE BOTTOM OF THE E□CAVATION SHOULD BE MINIMALLY DISTURBED. PLACE 6" COBBLE ON E□CAVATED SURFACE AND SEAT BY APPLYING PRESSURE WITH A TRACK-HOE BUCKET UNTIL FIRMLY IN PLACE. THE COBBLES SHOULD NOT BE TAMPED OR VIBRATED.
2. CONSOLIDATE 3" ROCK BY STATIC ROLLING, A STEEL DRUM ROLLER, OR WITH TRACK E□UIPTMENT.
3. SEE TS1 FOR TRAIL TYPICAL SECTIONS.

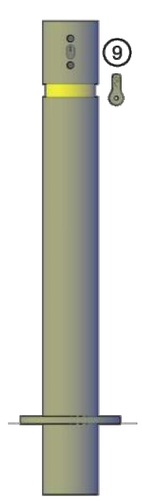


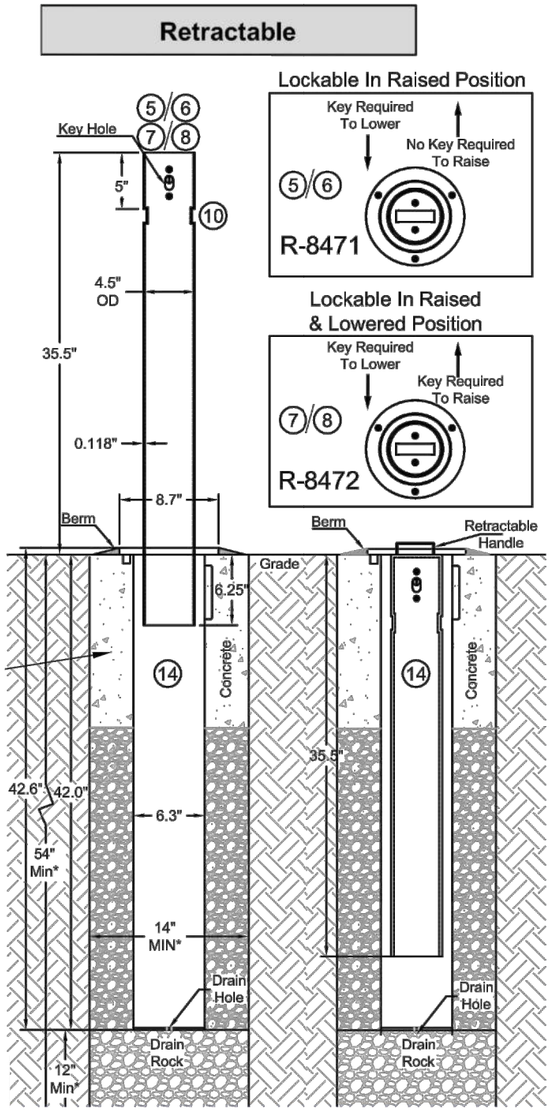
2 DETAIL - STRIPING



3 DETAIL - TRAIL SIGN PLACEMENT

5 DETAIL - 42" TRAIL RAILING





4 DETAIL - BOLLARD

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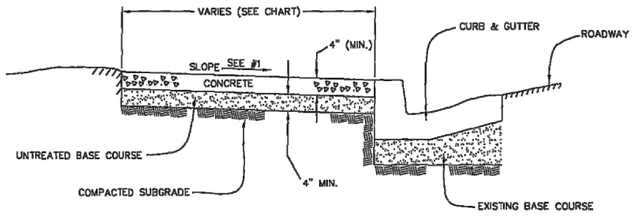
DETAILS

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GENERAL NOTES

1- CROSS SLOPE SHALL BE 1/4 INCH RISE PER FOOT FROM TOP OF CURB (SLOPE NOT TO EXCEED 1/2 INCH RISE PER FOOT).
2- UNTREATED BASE COURSE SHALL BE PLACED UNDER SIDEWALK AND COMPACTED TO A MIN. OF 95% THICKNESS OF UNTREATED BASE NOT LESS THAN 4 INCHES.
3- USE CLASS "A" CONCRETE ONLY (6 BAG, TYPE V CEMENT).
4- SIDEWALK SURFACE TO HAVE A MEDIUM BROOM FINISH.
5- SIDEWALKS IN COMMMERCIAL ZONES SHALL BE A MIN. OF 7' WIDE WHERE DESIGNATED BY THE CITY.
6- WHERE SIDEWALKS CROSS DRIVEWAYS, MINIMUM THICKNESS SHALL BE AS FOLLOWS:
RESIDENTIAL: 6" FOR SIDEWALK, 6" FOR ROADBASE
COMMERCIAL/INDUSTRIAL: 8" FOR SIDEWALK, 8" FOR ROADBASE.
7- FIBER EXPANSION JOINTS SHALL BE PLACED AT BOTH ENDS OF DRIVEWAY
8- FIBER EXPANSION JOINTS SHALL ALSO BE PLACED BETWEEN DRIVEWAY AND BACK OF SIDEWALK.

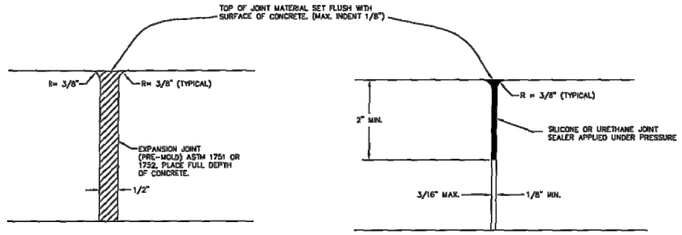
SIDEWALK	ROAD TYPE				
	LOCAL	COLLECTOR	MAJOR COLLECTOR	ARTERIAL	MAJOR ARTERIAL
WIDTH	4'	5'	5'	5'+	6'+
SCORE JOINT SPACING	4'	5'	5'	5'+	6'+
EXPANSION JOINT SPACING	20'	20'	20'	20'	24'

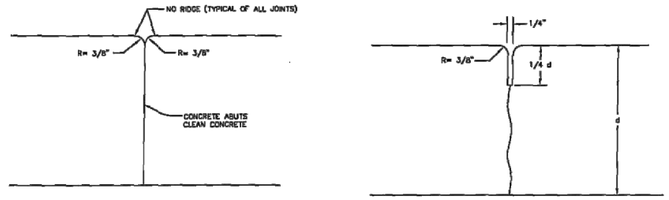
REVISIONS DATE	DESCRIPTION	BY

STANDARD SIDEWALK DETAILS

STANDARD DWG. NO. 120 | 1 OF 1
APPROVED:
DATE: | BY: LBB

1 DETAIL - STANDARD SIDEWALK





CITY OF ST. GEORGE ENGINEERING DEPARTMENT

REVISIONS DATE	DESCRIPTION	BY

STANDARD CONCRETE JOINT DETAILS

STANDARD DWG. NO. 122 | 1 OF 1
APPROVED:
DATE: | BY: LBB

2 DETAIL - STANDARD CONCRETE JOINT

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PROJ. #: Ex. 20208
DRAWN BY: ABJ
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Exhibit B
Slope Analysis

RED HILLS PARKWAY

N

0 100

50

2970
2960
2950
2940
2930
2920
2910
2900
2890
2880
2870
2860
2850
2840
2830

ROUGH GRADING AREA
FOR PHASE II

SLOPE TABLE					
COLOR	MINIMUM SLOPE	MAXIMUM SLOPE	AREA (AC)	DISTURBED AREA (AC)	%
	0.00%	19.00%	4.47	1.30	29%
	20.00%	29.00%	1.63	0.32	19%
	30.00%	39.00%	1.47	0.17	12%
	40.00%	100.00%	3.23	0.18	6%
		TOTAL :	10.80	1.96	

CENTERLINE OF TRAIL ALIGNMENT

TRAIL DISTURBANCE AREA LIMITS

ST. GEORGE BOULEVARD

SLOPE ANALYSIS

TEMPLE SPRINGS PARK PHASE I

SEPTEMBER 2021

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NOTICE OF MEETING
HILLSIDE REVIEW BOARD
CITY OF ST. GEORGE
WASHINGTON COUNTY, UTAH

PRESENT:
James Sullivan
Russ Owens
Dave Black
Jeff Mathis
James Dotson

EXCUSED:

CITY STAFF:
Assistant Public Works Director, Wes Jenkins
Planner III, Dan Boles
Development Office Supervisor, Brenda Hatch

APPLICANT:
Rob Reid
Josh Lyon
Pat Darragh
Wayne Rogers

The agenda for the meeting is as follows:

Chair James Sullivan called the meeting to order at 8:34 am.

1. **HILLSIDE DEVELOPMENT PERMIT**

   Consider a request for a Hillside Development Permit on Soleil Ridge. The property is generally located west of Bluff Street at approximately 300 West and 900 South. The property is currently zoned C-2 (Commercial) and OS (Open Space). The owner is Soleil Ridge Partners, LLC. Case No. 2021-HS-007.

   Rob Reid – There are 2 types of stakes, non-colored that is from the previous hillside review and that was the top of the retaining walls. There are orange stakes they would be the top of our retaining walls, our disturbance line. Then at the previous hillside there was a line there that was based on disturbance, those are the pink stakes, the previously disturbed line, that was established a year ago from what I understand. The developer is proposing apartments here, they will be luxury apartments and a couple parking garages. They want to get 223 units. The total property area is approximately 19.2 acres, 9.3 acres will be developed with the project which leaves about 9.9 acres that we don't plan on developing. This property was originally subdivided in 1946, amended in 1948 and 1955. It was used primarily for corrals and sheds. Rob showed pictures depicting how the area was used in the past. We got a power line that comes down and then the sewer

and there is remnants of a water line that looked like it went up the hill too. I wanted you guys to understand the history because it comes down to it being difficult to apply the hillside ordinance. Rob described how the site would be hard to analyze, based on the ordinance and what has historically been disturbed. Please see the attached document which was given to the hillside committee detailing what Rob described.

The Hillside Review Board discussed the placement of the different colored stakes.

Rob Reid – This is the site plan and working with the sewer placement has been a challenge, the whole site is developed around it.

Discussion on the walls and the steepness of the cuts.

Wayne Rogers discussed the landslide and its approximate location in relation to the property.

Rob Reid and Wayne Rogers discussed drainage and how to mitigate that, as well as the areas that will need rock fall capture. They will have a storm drain system and a catch basin.

Wayne Rogers – We want to go back in there and do some more test holes, we didn't want to do that before we knew we could get up into that area.

Dave Black – In the final Geotech report you should address the landslide actual condition versus laboratory and then have a design for your rockfall. Also see if you can steepen up the area behind building 3 to move that disturbance down to the existing disturbance.

Wayne Rogers – We'll see what that takes, it doesn't look like it's much elevation. Hopefully that will work.

Jeff Mathis – That is my biggest concern, that section. The new cut we're going to have to be seeing. It's ok where it's all disturbed, but that it's just that one spot there. If you rotate that building and then put the building over the parking lot, it's kind of crazy but you could do it.

Rob Reid – Right now we've got the parking count exactly where it needs to be for code. I know the code has provisions for lesser, but right now we are at about 2.3 stalls per unit.

Discussion on the power line and whether it is staying or coming down.

Dave Black – I need to disclose that I didn't work on the project, but this is a Rosenberg project.

MOTION: Dave Black made a motion to recommend approval of a Hillside

Development Permit for Soleil Ridge 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. 5. We recommend that they look at building 3 and try to either steepen the slope or adjust the location of the building so that the disturbance line behind building 3 matches the existing disturbance line or closely matches the disturbance line.
SECOND: James Dotson
AYES (5)
James Sullivan
Russ Owens
Dave Black
Jeff Mathis
James Dotson
NAYS (0)
Motion carries.

2. **MINUTES**

Consider approval of the meeting minutes from June 23, 2021, and July 21, 2021.

MOTION: Dave Black made a motion to approve the minutes with the redlines.
SECOND: Jeff Mathis
AYES (5)
James Sullivan
Russ Owens
Dave Black
Jeff Mathis
James Dotson
NAYS (0)
Motion carries.

3. **ADJOURN**

MOTION: James Sullivan made a motion to adjourn
SECOND: Dave Black
AYES (5)
James Sullivan
Russ Owens
Dave Black

Jeff Mathis
James Dotson
NAYS (0)
Motion carries.

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

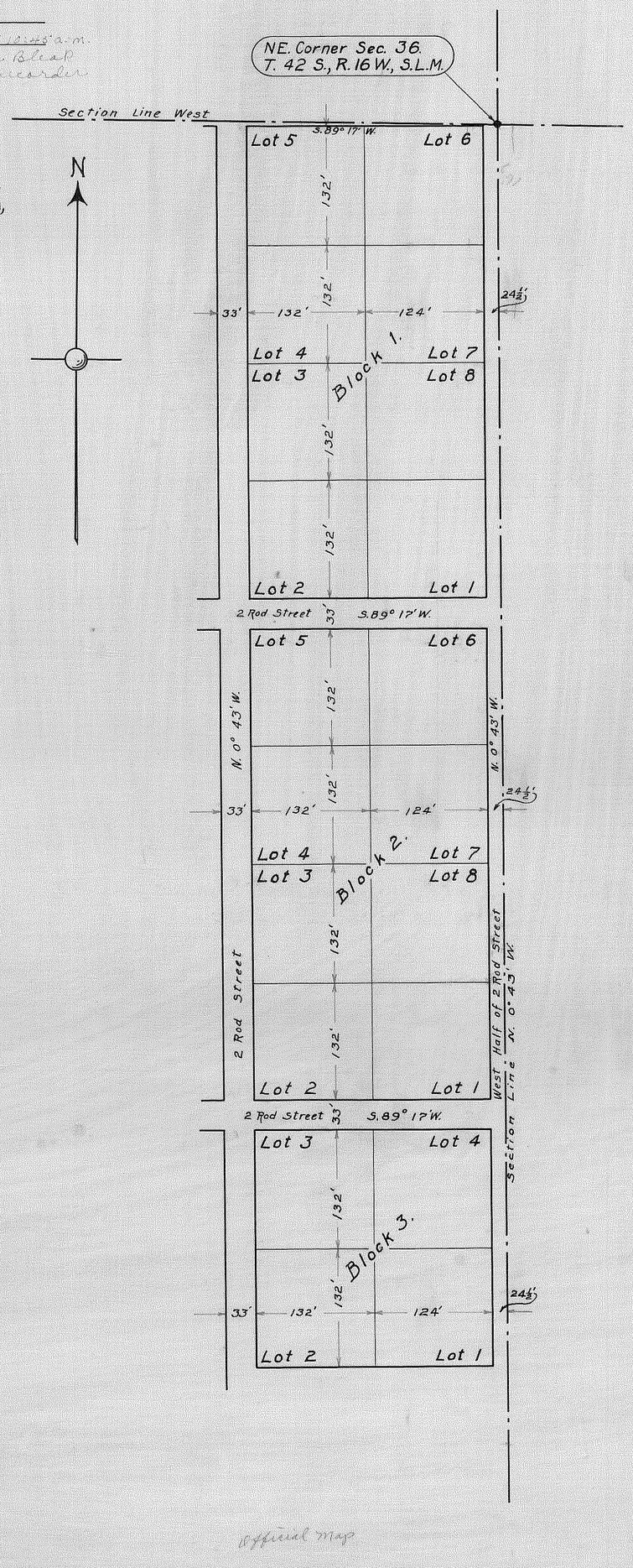
As part of the Hillside Review Application, an existing ground slope map was submitted. Refer to this map for data on proposed disturbance areas.

Entry No. 66477
Filed April 23, 1946 at 10 min. 3 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.

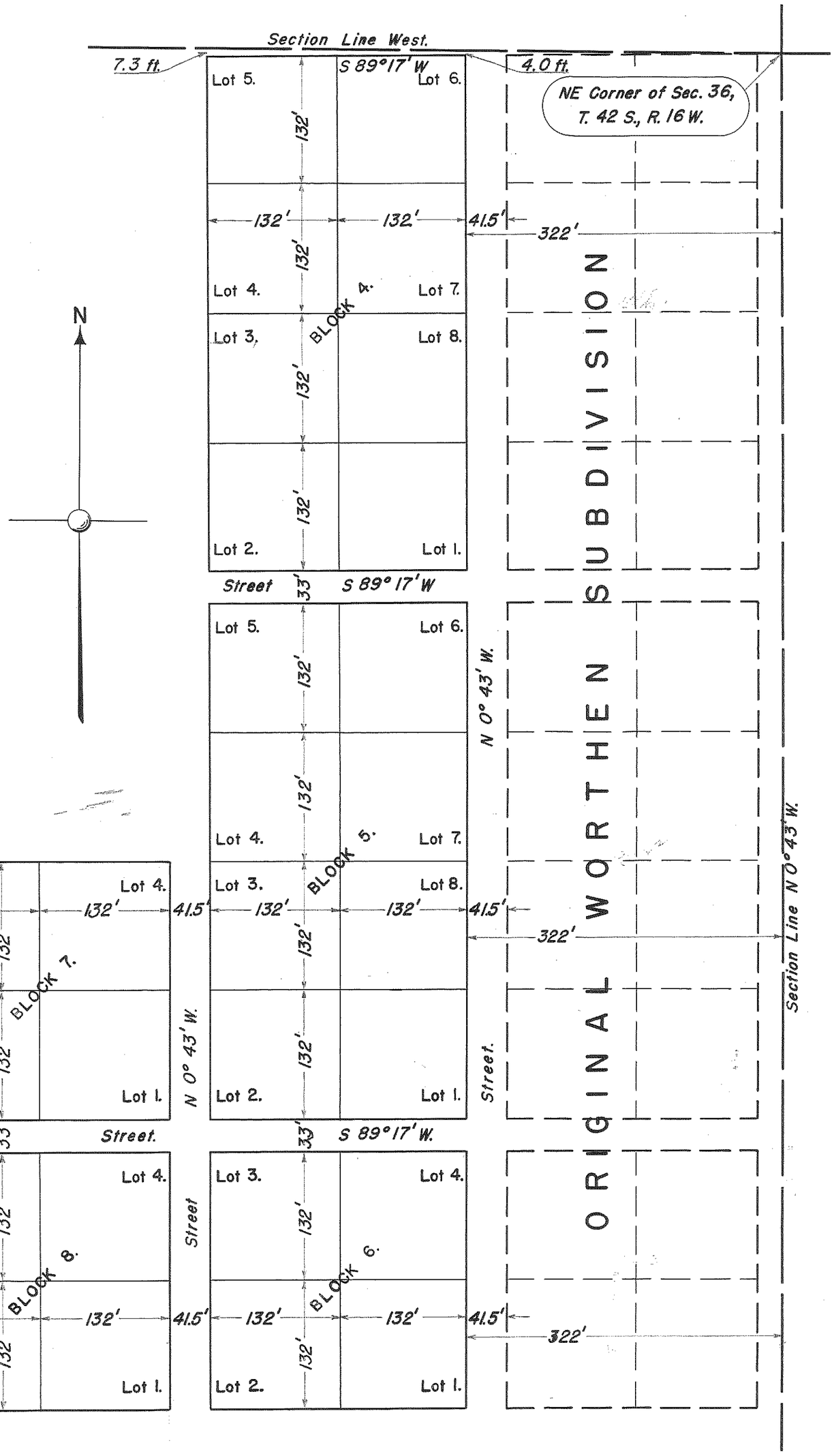
Notary Public.

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. 51166
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.

USGS
science for a changing world

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.

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%	5.77	100% (5.77 AC.)	5.77	100%	22	5.77 x 22= 125
	20.01% - 30%	1.54	30% (0.46 AC.)	0.82	53.2%	2	0.82 x 2= 2
	30.01% - 40%	1.63	5% (0.08 AC.)	0.15	9.2%	1 PER 10	X AC < 10 AC= 1
	40.01% & GREATER	7.96	0%	0	0%	0	2.80 x 0= 0
	PREVIOUSLY DISTRUBED AREA	2.22	100% (2.22 AC.)	2.22	100%	22	2.22 x 22= 49
TOTALS		19.22	25.36	8.96			177 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

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

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

SHEET
1
1 OF 1 SHEETS

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
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DWG: SLOPE MAP

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

SHEET
1
1 OF 1 SHEETS