



## Planning and Development Services

2001 S. State Street N3-600 • Salt Lake City, UT 84190-4050

Phone: (385) 468-6700 • Fax: (385) 468-6674

<https://msd.utah.gov/agendas/>



GREATER SALT LAKE  
**Municipal Services  
District**

# Salt Lake County Planning Commission

## Public Meeting Agenda

### Wednesday, February 14, 2024 8:30 A.M.

#### LOCATION:

Join meeting in WebEx

Meeting number (access code): 961 841 420

<https://slco.webex.com/meet/wgurr>

Join meeting in WebEx (download available at <https://www.webex.com/downloads.html> for Windows, Android, and Apple devices)

**Tap to join from a mobile device (attendees only)**

[+1-213-306-3065](tel:+12133063065) United States Toll (Los Angeles)

[+1-602-666-0783](tel:+16026660783) United States Toll (Phoenix)

**Join by phone**

+1-213-306-3065 United States Toll (Los Angeles)

+1-602-666-0783 United States Toll (Phoenix)

Access code: 961 841 420

[Global call-in numbers](#)

**Join from a video conferencing system or application**

Dial [wgurr@slco.webex.com](mailto:wgurr@slco.webex.com)

You can also dial 173.243.2.68 and enter your meeting number.

Need help? Go to <http://help.webex.com>

**Anchor Location:**

**2001 South State Street**

**North Building, Room N1-110**

*UPON REQUEST, WITH 5 WORKING DAYS NOTICE, REASONABLE ACCOMMODATIONS FOR QUALIFIED INDIVIDUALS MAY BE PROVIDED. PLEASE CONTACT WENDY GURR AT 385-468-6707.  
TTY USERS SHOULD CALL 711.*

The Planning Commission Public Meeting is a public forum where, depending on the agenda item, the Planning Commission may receive comment and recommendations from applicants, the public, applicable agencies and MSD staff regarding land use applications and other items on the Commission's agenda. In addition, it is where the Planning Commission takes action on these items, which may include: approval, approval with conditions, denial, continuance or recommendation to other bodies as applicable.

## **BUSINESS MEETING**

- 1) Election of Chair and Vice Chair 2024. (Motion/Voting)
- 2) Approval of the December 13, 2023 and January 10, 2024 Planning Commission Meeting Minutes. (Motion/Voting)
- 3) Other Business Items. (As Needed)

## **ADMINISTRATIVE LAND USE APPLICATION(S)**

**CUP2023-001060** - Kasey Plourde is requesting conditional use approval for a bed & breakfast homestead. **Acres:** 6.90 acres. **Location:** 2945 East Robidoux Road. **Zone:** A-1. **Planner:** Justin Smith (Motion/Voting)

**CUP2023-000947** – Ana Paz (South Jordan City) is requesting conditional use approval for an 8.4 MG Water Tank, and an exception from curb, gutter & sidewalk requirements. **Acreage:** 4.71 acres. **Location:** 12124 South Bacchus Highway. **Zone:** M-2 (Heavy Manufacturing). **Planner:** Jeff Miller (Motion/Voting)

## **ADJOURN**



## **Rules of Conduct for the Planning Commission Meeting**

1. Applications will be introduced by a Staff Member.
2. The applicant will be allowed up to 15 minutes to make their presentation.
3. The Community Council representative can present their comments.
4. Persons in favor of, or not opposed to, the application will be invited to speak.
  - a. Speakers will be called to the podium by the Chairman.
  - b. Because the meeting minutes are recorded it is important for each speaker to state their name and address prior to making any comments.
  - c. All comments should be directed to the Planning Commissioners, not to the Staff or to members of the audience.
  - d. For items where there are several people wishing to speak, the Chairman may impose a time limit, usually 3 minutes per person, or 5 minutes for a group spokesperson.
5. Persons opposed to the application will be invited to speak.
6. The applicant will be allowed 5 minutes to provide concluding statements.
  - a. After the hearing is closed, the discussion will be limited to the Planning Commission and the Staff.

**MEETING MINUTE SUMMARY****SALT LAKE COUNTY PLANNING COMMISSION MEETING****Wednesday, January 10, 2024 8:30 a.m.****Approximate meeting length:** 1 hour 28 minutes**Number of public in attendance:** 0**Summary Prepared by:** Wendy Gurr**Meeting Conducted by:** Commissioner Watkins

**\*NOTE:** Staff Reports referenced in this document can be found on the State website, or from Planning & Development Services.

**ATTENDANCE**

| Commissioners             | Public Mtg | Business Mtg | Absent |
|---------------------------|------------|--------------|--------|
| Neil Cohen                |            | x            |        |
| Ronald Vance              |            | x            |        |
| Christopher Collard       |            | x            |        |
| Sara Hiatt (Chair)        |            |              | x      |
| Jeff Watkins (Vice Chair) |            | x            |        |

| Planning Staff / DA | Public Mtg | Business Mtg |
|---------------------|------------|--------------|
| Wendy Gurr          |            | x            |
| Ryan Anderson       |            |              |
| Zach Shaw (DA)      |            | x            |

**BUSINESS MEETING****Meeting began at – 8:40 a.m.****1) OPMA/LUDMA Training. Counsel:** Zach Shaw

*Mr. Shaw provided OPMA/ LUDMA Training, considered one and a half hours of completed training for commissioners in attendance. Commissioners and staff had brief discussion regarding legislative matters with citizens, conflicts of interest disclosure form. Impact on property values regarding conditional uses, public clamor and evidence, Short-term rentals and weighing the evidence.*

**2) Election of Chair and Vice Chair 2024. (Motion/Voting)****Election of Chair for 2024****Motion:** To continue the election of Chair for 2024 to the next planning commission meeting.**Motion by:** Commissioner Collard**2<sup>nd</sup> by:** Commissioner Cohen**Vote:** Commissioners voted unanimous in favor (of commissioners present)**Election of Vice Chair for 2024****Motion:** To continue the election of Vice Chair for 2024 to the next planning commission meeting.**Motion by:** Commissioner Collard**2<sup>nd</sup> by:** Commissioner Cohen**Vote:** Commissioners voted unanimous in favor (of commissioners present)

3) 2024 Planning Commission Meeting Schedule. (Review)

*Commissioners agreed with the 2024 Planning Commissioner Meeting Schedule as presented. No motion necessary.*

4) Other Business Items. (As Needed)

*No other business items to discuss.*

*Commissioner Watkins adjourned.*

**MEETING ADJOURNED**

**Time Adjourned – 10:08 a.m.**

DRAFT

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Files # CUP2023-001060

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## Conditional Use Summary

**Public Body:** Salt Lake County Planning Commission

**Meeting Date:** February 14, 2024

**Parcel ID:** 22-35-328-004-0000

**Current Zone:** A-1

**Property Address:** 2945 E Robidoux

**Request:** Bed & Breakfast Homestay with special exception (sidewalk)

**Applicant Name:** Kasey Plourde

**MSD Planner:** Justin Smith

**MSD Planning Staff Recommendation:** Planning Commission Approval

### PROJECT SUMMARY

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The applicant, Kasey Plourde, is applying for a bed and breakfast homestay. The location has been previously approved for a group home (residential facility for persons with disabilities).

### SITE & ZONE DESCRIPTION

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The property is located on a flag lot along Robidoux Road. The property is located in Unincorporated Salt Lake County just west of the Willow Creek Country Club. To the northeast of the property is a residential neighborhood located within Cottonwood Heights and to the south is a section of Willow Creek Country Club that is located within Sandy City limits.



## **ISSUES OF CONCERN/PROPOSED MITIGATION**

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The Greater Salt Lake Municipal Services District and reviewing agencies have reviewed the application and have not spotted any issues with the conditional use. Salt Lake County Engineering has found issues with the lack of sidewalk along the right-of-way along Robidoux Road and is requesting that a geotechnical report be completed as part of the approval process. No other departments or reviewing agencies have pointed out any issues of concern and have given an “ok” to the conceptual review, including Unified Fire and the Salt Lake County Health Department who have additional standards for bed and breakfast homestays.

## **PLANNING STAFF ANALYSIS**

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### **General Plan Considerations**

This property is outside of the range of any of unincorporated Salt Lake County’s General Plans.

### **Review Criteria**

Bed and breakfast homestays are allowed in the A-1 zone as a conditional use. Bed and breakfast homestays are defined in Chapter 19.04.077 as a dwelling that has a frontage on a street with a minimum right-of-way of sixty feet, contains a maximum of five guestrooms, is occupied by the owner or individual responsible for operating



the facility, and used for accommodations or lodging of guests paying compensation. The applicant is intending to live on-site with their family, and they will be maintaining the bed and breakfast. Robidoux Road in front of this property has a ROW of 60 feet. The submitted floor plan shows a living area for the caretaker in addition to 5 bedrooms that would be available for guests. The applicant is proposing to make minor changes to separate the guestrooms from the living space with walls and a door.

### **Landscaping**

According to Chapter 19.77.020(C)1., any existing development that a gross floor area of improvements that are being changed, modified, or expanded by more than 20% are required to meet the landscaping standards that are set in Chapter 19.77. This conditional use does not currently propose any changes to the existing improvements and is not required to meet Chapters 19.77's landscaping requirements. The applicant desires to maintain the landscaping as it currently is.

### **Signs**

The applicant included photographs of the type of sign that she is considering installing on site for the proposed bed and breakfast homestay. The type of sign that is shown in the photograph is typically used as a property sign. Property signs are defined in Chapter 19.82.020 of the County code as, "a sign related to the property upon which it is located and offering such information as address, name of the occupant for residential uses, sale or lease of the property, warning against trespassing, any hazard, or other danger on the property." Depending on the intended final sign display the sign may fall under the definition of a monument sign which is defined as being a sign that is incorporated into the landscape or architectural design scheme and displays the name of uses or buildings. Both types of signs are allowed with a conditional use permit for a bed and breakfast homestay under Chapter 19.82.190 of the code. Staff will review the final design of the sign to make sure that it complies with the applicable sections of the County sign code, including regulations regarding the lighting and illumination of the sign.

### **Right-of-Way And Access**

2945 E Robidoux Road is a flag lot that has curb and gutter installed and in good condition. Engineering noted that there is a lack of sidewalk at 2945 E Robidoux Road, but the entire neighborhood lacks sidewalk. The applicant has requested an exception to the requirement to install sidewalk. Chapter 19.76.210 allows for the planning commission to grant exceptions to the installation of curb, gutter, and sidewalk in rural and estate areas where topographic or other exceptional conditions exist so long as the public health, safety, and welfare is preserved. Granting an exception for the sidewalk would not have a detrimental effect on the health, safety, and welfare of the area as the closest sidewalk to this property is located on Creek Road, which is in Sandy City's jurisdiction and located over 2,000 feet away. The A-1 zone meets the estate and rural requirement as it is an agricultural zone that is intended low-density residential development along with limited agricultural uses.

### **Parking**

Bed and breakfast homestays are required to have two spaces for each dwelling unit in addition to one parking space for each guestroom. The off-street parking requirement is met. There is a small parking area next to the building that is roughly 2000 square feet and should accommodate three or four vehicles without double parking. There is also a parking lot located on the property that contains 14 parking spaces.

The Salt Lake County Planning Commission is the decision-making body for conditional uses. Based on the above analysis, MSD staff has found that the proposal is consistent with the surrounding land uses as well as the general plan. Full compliance with required ordinances and policies will be verified through the subsequent technical review process before the issuance of the Land Use permit, and license inspection process.

## **PLANNING STAFF RECOMMENDATION**

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**Based on the findings stated above, the MSD Planning Staff recommends that the Salt Lake County Planning Commission approve the conditional use and the exception to the requirement to install sidewalk on Robidoux Road subject to the following conditions:**

- 1. The applicant to be required to acquire a business license.**
- 2. The applicant to be required to comply with the sign ordinance.**
- 3. The applicant to be required to comply with the County Noise ordinance.**
- 4. The applicant to be required to comply with all other applicable regulations, which shall be verified through the technical review process.**

### **ATTACHMENTS:**

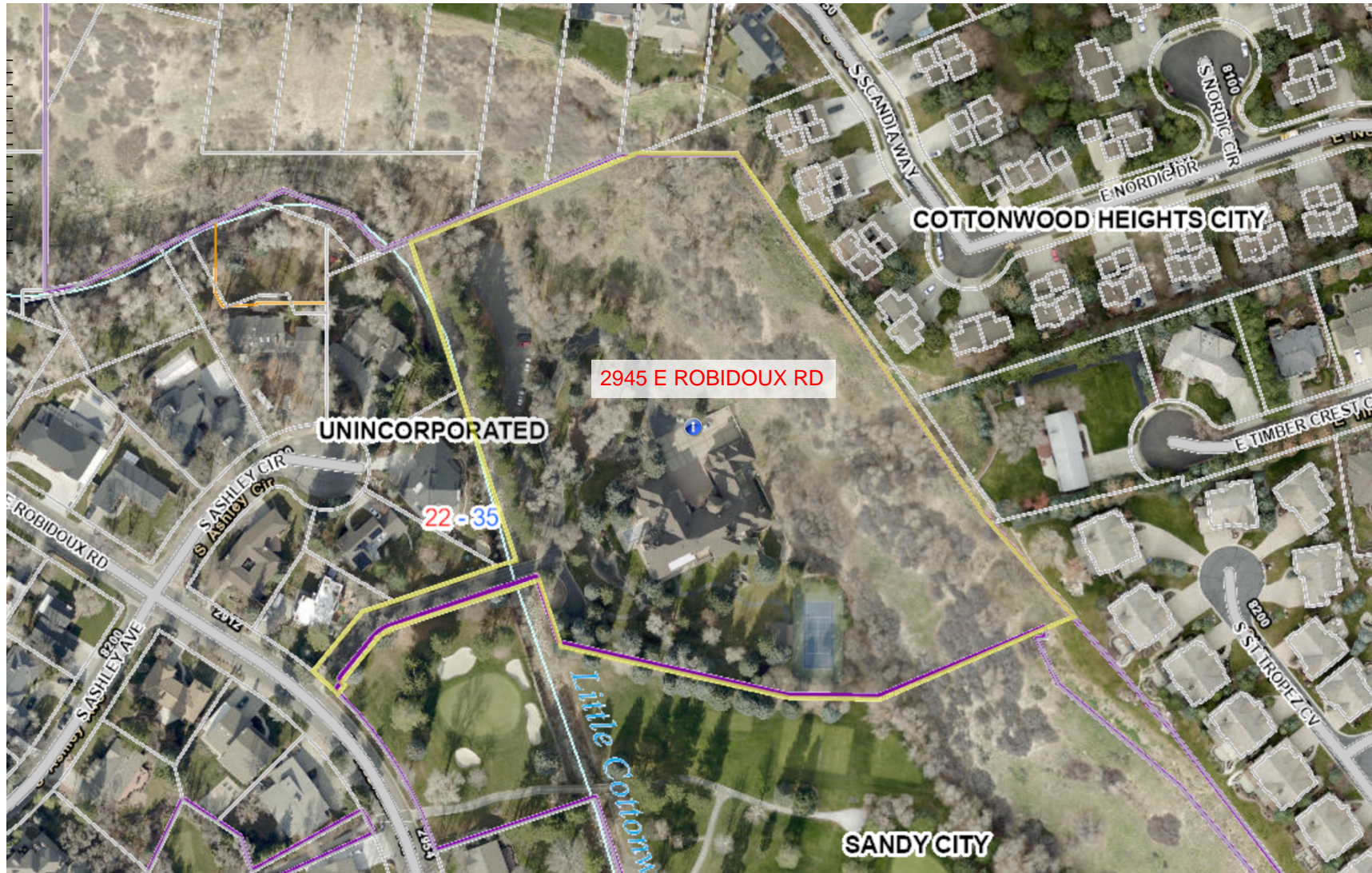
- A. Site Plan**
- B. Floor Plan**
- C. Sign Plan**



## Legal Description:

BEG S'LY MOST COR LOT 14, WILLOW CREEK SUB #3; N 39°30'27" E 90 FT; N 71°32' E 188.45 FT; N 18°28' W 387.12 FT; N 68° 07'E 280.16 FT; S 89°59'24" E 115.23 FT; S 34°38' E 504 FT S 41°16' E 161.82 FT; S 67°30' W 242.9 FT; N 89°13'42" W 105.99 FT; N 77°10'17" W 271.77 FT; N 19°03'01" W 80.44 FT; S 71°16'07" W 43.51 FT; N 18°43'53" W 0.92 FT; S 71° 16'07" W 135.97 FT; SW;LY ALG CURVE TO L 24.03 FT; S 39°15' W 62.02FT; S 49°46'25" E 5 FT; S 39°12'01" W 13.07 FT; NW'LY ALG CURVE TO L 38.88 FT TO BEG. 6.901 AC 6410-750, 752 6410-07546666-1377 7104-2707 7357-662 8655-2425 9159-2349 9627-5980 10252-7642

## Parcel View:



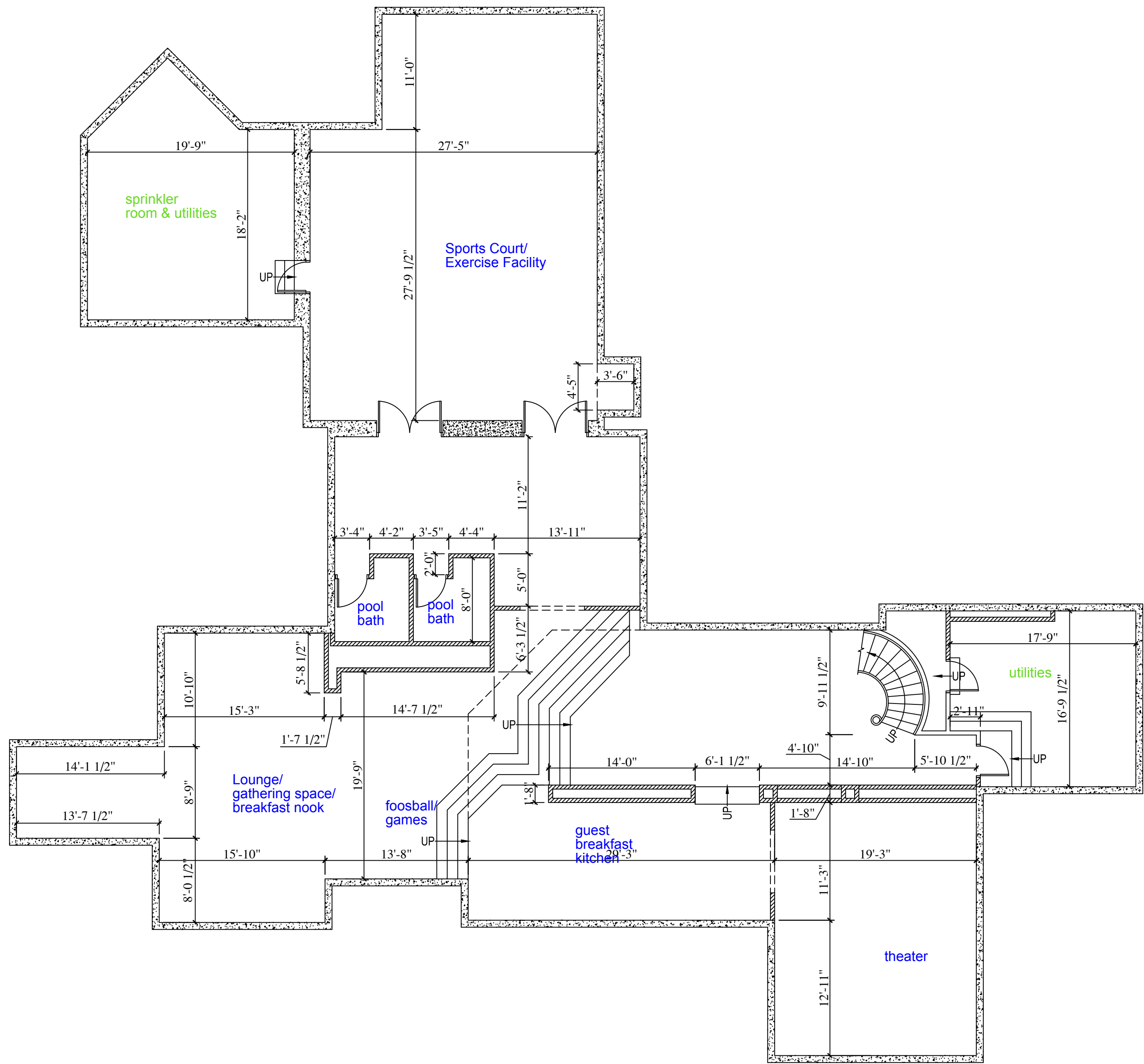
| Municipal Services District<br>Conceptual Site Plan Review |   |
|--|---|
| Planning   | Concept O.K. - Technical Review Required    |
| Grading  | Revised: SITE PLAN REVIEW See Plan 20170304 |
| Geology  | Revisions Required - See Comments Sheet     |
| Hydrology  | Waived                                      |
| Boundary   | Revisions Required - See Comments Sheet     |
| Traffic  | Revisions Required - See Comments Sheet     |
| UFA  | Concept Okay - Technical review required    |
| Health   | Revised: SITE PLAN REVIEW See Plan 20170304 |
| Building   | Concept O.K. - Technical Review Required    |
| Operations   | Revised: SITE PLAN REVIEW See Plan 20170304 |
| Addressing   | Approved - See Comments Sheet               |



**Site Plan:** we have no plans to change the site. We plan to use the building, grounds, landscaping, and features as-is.







### LOWER FLOOR PLAN

SCALE: 1/8" = 1'-0" (24x36 sheet)



Business Square Footage Use  
Lower Level: 4620 sf (100% used for business)

#### LOWER FLOOR PLAN INFO

GROSS / USABLE SQUARE FOOTAGE: 4,620 SQ. FT.

#### TOTAL BUILDING INFO

TOTAL GROSS / USABLE SQUARE FOOTAGE: 19,501 SQ.FT.

**Total Building Business Use: 14,869 SQ FT**

**Total Building Caretaker Use: 4,632 SQ FT**

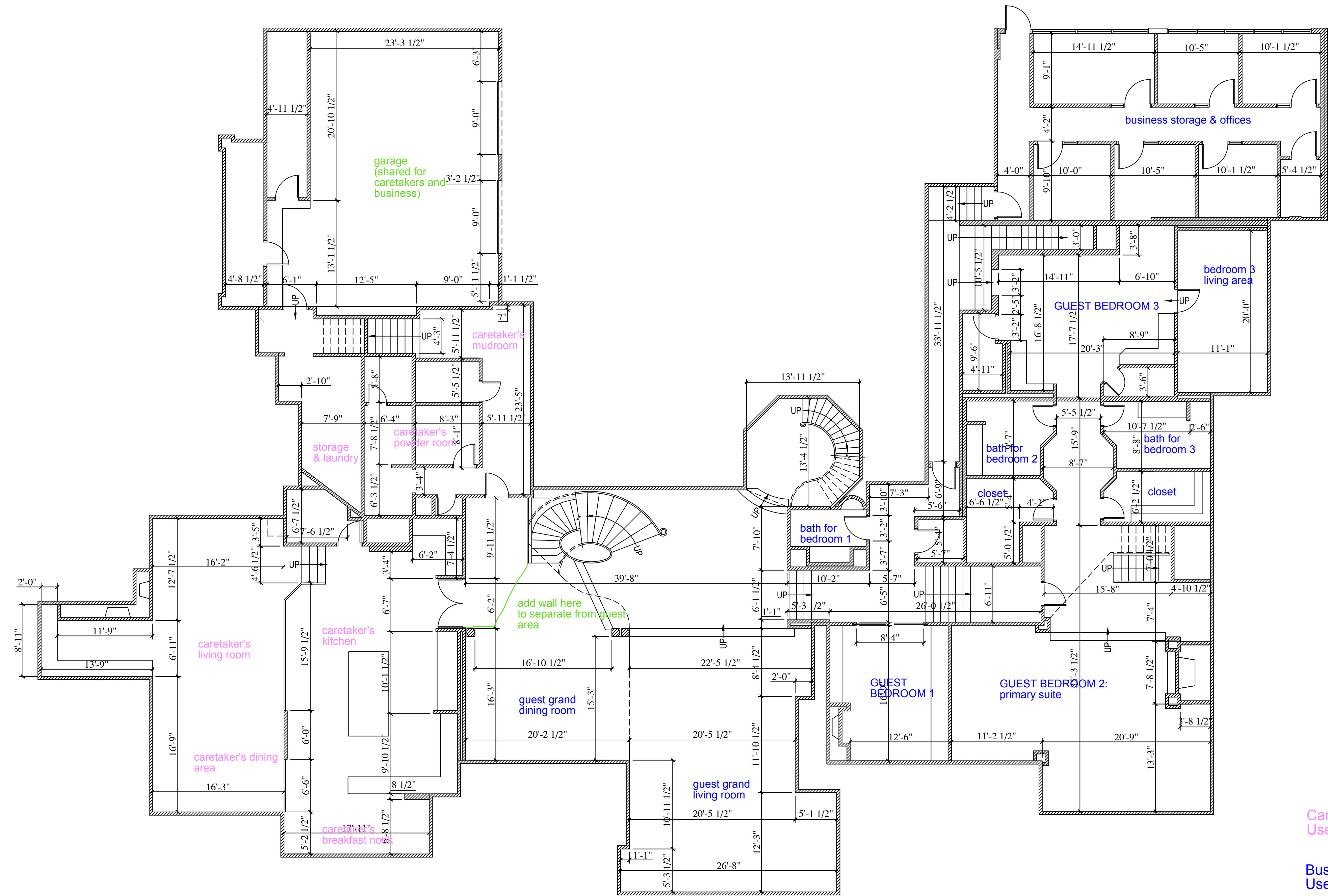
2945 E Robidoux Rd  
Salt Lake City, UT 84093

ROBIDOUX RD. MANSION  
ROBIDOUX RD.  
Sandy, Utah

10.25.16

LOWER  
FLOOR  
PLAN

A100



Caretaker Square Footage  
Use Main Level: 2,145

Business Square Footage  
Use Main Level: 5,921

### MAIN FLOOR PLAN

SCALE: 1/8" = 1'-0" (24x36 sheet)



### MAIN FLOOR PLAN INFO

GROSS / USABLE SQUARE FOOTAGE: 8,086 SQ. FT.  
GARAGE GROSS / USABLE SQUARE FOOTAGE: 1,090 SQ. FT.

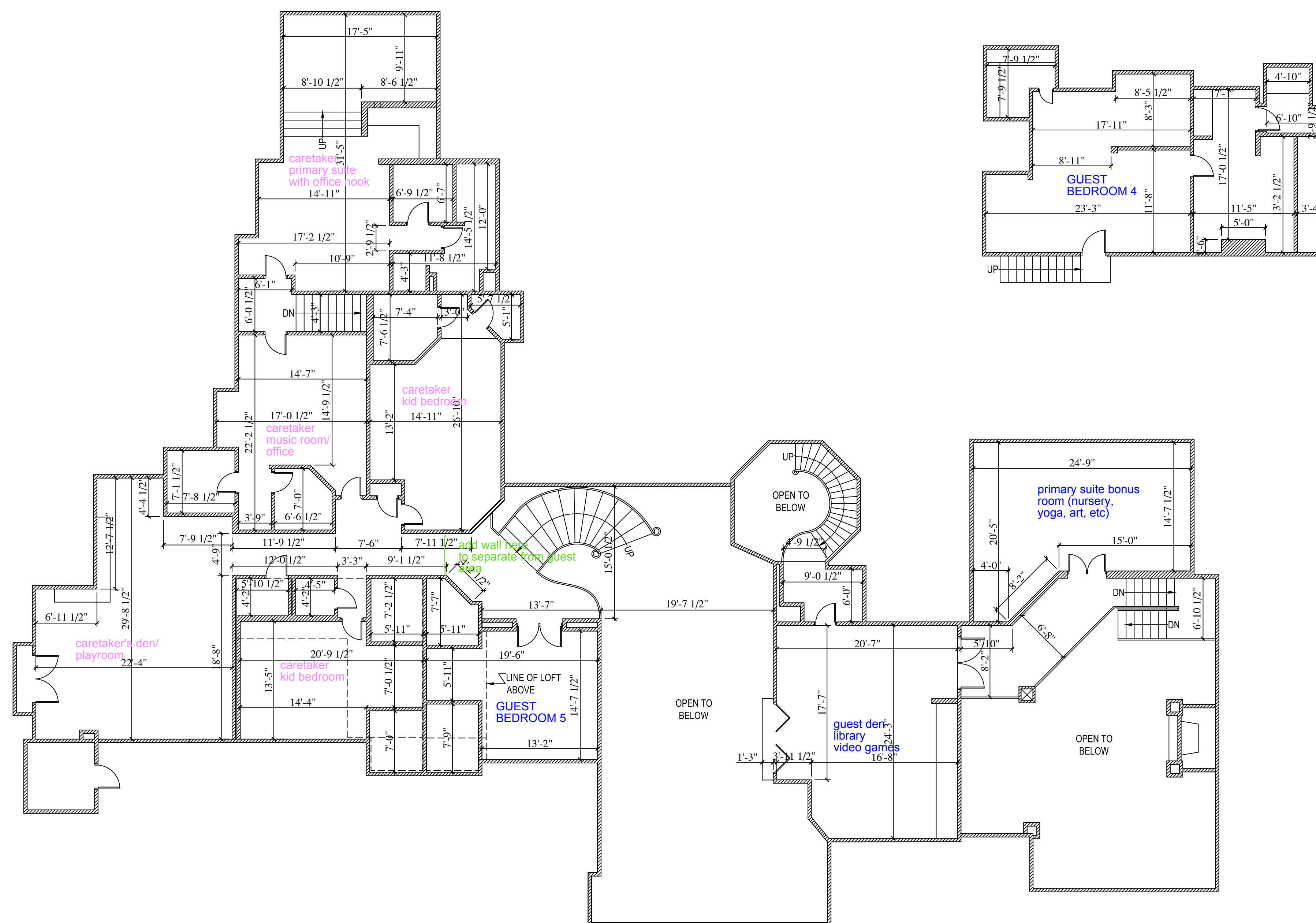
2945 E Robidoux Rd  
Salt Lake City, UT 84093

ROBIDOUX RD. MANSION  
ROBIDOUX RD.  
Sandy, Utah

10.25.16

MAIN  
FLOOR  
PLAN

A101



Caretaker Square Footage  
Use Upper Level: 2,487

Business Square Footage  
Use Upper Level: 3,218

### UPPER FLOOR PLAN INFO

GROSS / USABLE SQUARE FOOTAGE: 5,705 SQ. FT.  
(INCLUDING LOFT AREAS)

2945 E Robidoux Rd  
Salt Lake City, UT 84093



## SIGN PLAN: PLOURDE B&B rev 1/5/24

We'd like to install one sign at the entrance to the property on Robidoux Rd. We envision a post with hanging sign, similar to the photos below.

Our sign will hang from a 6' tall post. The sign itself will be 2'x3' (6 square feet). We'd like to illuminate it with a small light shining directly onto the sign similar to this image here (we are open to the style and placement of the small light per County requirements; and are open to lamppost style light or other lights as well).



### Design Elements:

Post will be black, as pictured above.

Sign will be simple rectangle (2'x3') with simple logo (B&B name pending).

Color scheme will be neutrals and earth tones.

Other sign inspiration photos:



Location on property for placement:

Will be placed in similar location as the real estate sign pictured here, 6' back from the property line.



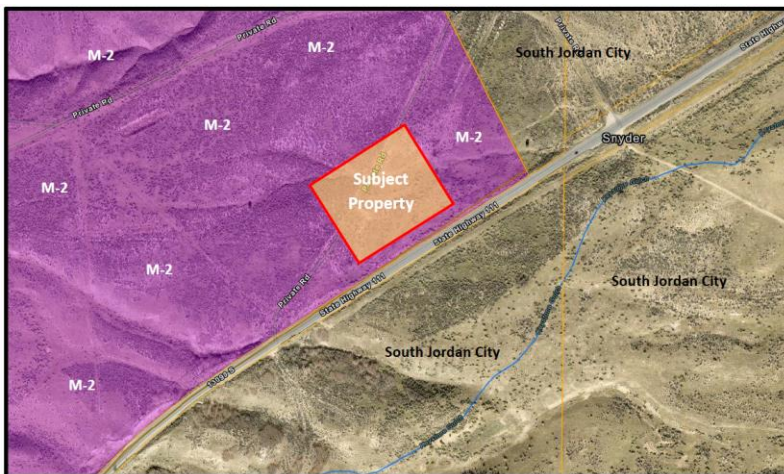


File # CUP2023-000947

## CONDITIONAL USE PERMIT FOR NEW WATER TANK AND EXCEPTION FROM ROADWAY STANDARDS SUMMARY AND RECOMMENDATION

**Public Body:** Salt Lake County Planning Commission**Meeting Date:** February 14, 2024**Parcel ID:** 26-29-276-001-0000**Acreage:** 4.71 Acres**Current Zone:** M-2 (Heavy Manufacturing) Zone**Property Address:** 12124 South Bacchus Highway**Request:** Conditional Use Approval for New Water Tank and Exception to Roadway Standards**Planner:** Jeff Miller**Planning Staff Recommendation:** Approval**Applicant Name:** Ana Paz (South Jordan City)

### PROJECT DESCRIPTION



Ana Paz (South Jordan City) is requesting conditional use approval for an 8.4-million-gallon (MG) water tank and an exception from curb, gutter and sidewalk requirements.

In the M-2 (Heavy Manufacturing) Zone, the proposed water tank would be classified as a Public Utility Production Facility (including Water Treatment Plants & Storage) and is listed as a Conditional Use Permit.

The proposed water tank is located in an undeveloped area of the County. As such, the applicant is requesting an exception from curb, gutter and sidewalk requirements per **19.76.210**. The proposed exception is also being recommended by Salt Lake County Public Works Engineering (see attached letter).



## **SITE & VICINITY DESCRIPTION** (see attached map)

The subject property is located immediately northeast of Bacchus Highway within a large geographical area of Unincorporated Salt Lake County, which is currently zoned M-2. South Jordan City is located to the northeast and southeast across Bacchus Highway. Adjoining properties in the City are currently undeveloped.

## **ZONE CONSIDERATIONS (M-2 ZONE)**

| Requirement        | Standard  | Compliance Verified |
|--------------------|---|---------------------|
| Front Yard Setback | No commercial or industrial building or structure shall be located closer than twenty feet to any street.                               | Yes                 |
| Side Yard Setback  | None  | N/A                 |
| Rear Yard Setback  | None  | N/A                 |
| Lot Width          | None  | N/A                 |
| Lot Coverage       | No building, structure or group of buildings with their accessory buildings, shall cover more than eighty percent of the area of a lot. | Yes                 |

|   |     |
|---|-----|
| Compatibility with existing buildings in terms of size, scale and height. | Yes |
| Compliance with the General Plan.   | Yes |

## **ISSUES OF CONCERN/PROPOSED MITIGATION**

The proposed water tank is located in an area of Unincorporated Salt Lake County and South Jordan City that is primarily undeveloped at this point. As such, there is not immediate access to culinary water connections for landscaping purposes. The applicant is currently proposing to install native vegetation on the site for landscaping, and then commit to installing improved landscaping improvements (consisting of some shrubs and trees) at a later date, once development is in the area. This request will be approved by the Mayor's Office during final technical approval.

## **REVIEWING AGENCIES RESPONSE**

AGENCY: Planning

DATE: 12/05/2023

RECOMMENDATION: Approval. The Letter of Guarantee for the Bonding will be approved by the Mayor's Office, along with the delay for landscaping improvements.

AGENCY: Geology

DATE: 12/05/2023

RECOMMENDATION: Approval. Follow the requirements and recommendations of the final Soil Management Plan, and any additional requirements from the EPA and Utah DEQ.

AGENCY: Grading

DATE: 12/13/2023

RECOMMENDATION: Approval. Follow the recommendation in the geotechnical report.

## **Request:** Conditional Use Approval for New Water Tank and Exception to Roadway Standards

AGENCY: Urban Hydrology

DATE: 12/05/2023

RECOMMENDATION: Conditional Approval. Final Approval will be granted, once the GIS data has been accepted.

AGENCY: Traffic

DATE: 12/05/2023

RECOMMENDATION: Conditional Approval. Final Approval will be granted, once the exception for the curb, gutter and sidewalk improvements have been approved by the Salt Lake County Planning Commission.

AGENCY: Surveyor

DATE: 09/11/2023

RECOMMENDATION: Approval. No boundary to review.

AGENCY: Unified Fire Authority

DATE: 08/28/2023

RECOMMENDATION: Approval.

AGENCY: Health Department

DATE: 08/30/2023

RECOMMENDATION: Approval. Drinking water projects need to be reviewed and approved by the Utah Division of Drinking Water. Please reach out to them for plan review if you have not already.

AGENCY: Building

DATE: 09/11/2023

RECOMMENDATION: Approval. Plan review for code compliance will be completed during the permit application process. At the time of building permit application, please provide the following: Complete set of plans showing compliance with the 2021 IBC, structural calculations, geotechnical report.

Compliance with all current building, construction, engineering, fire, health, landscape and safety standards will be verified prior to final approval.

## **STAFF ANALYSIS**

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The proposed water tank will be operated by the Jordan Valley Conservancy District in tandem with South Jordan City and will be using water allocations that they own and maintain. Prior to installation, the applicant will receive approval from the Utah Division of Drinking Water.

Planning Staff has found that the proposed use is compatible with existing uses in the general vicinity, and the land use ordinance.

## **NEIGHBORHOOD RESPONSE**

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Planning Staff has not received any public comments from the general public or the surrounding neighbors as of the completion of this report. Any comments that are received will be forwarded to the planning commission for review and will be summarized on Wednesday, February 14, 2024.

## **CONCLUSION AND RECOMMENDATION**

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Planning Staff recommends the Salt Lake County Planning Commission approves the requested conditional use approval for an 8.4-million-gallon (MG) water tank and an exception from curb, gutter and sidewalk requirements, subject to the following conditions of approval:

**Request:** Conditional Use Approval for New Water Tank and Exception to Roadway Standards

1. The applicant will work with planning staff to complete any technical requirements prior to final approval, which includes approval for bonding with a municipal letter of guarantee & any additional approvals needed by the Salt Lake County Mayor for the delay of installing final landscaping improvements.
2. The applicant will receive approval from the Utah Division of Drinking Water.

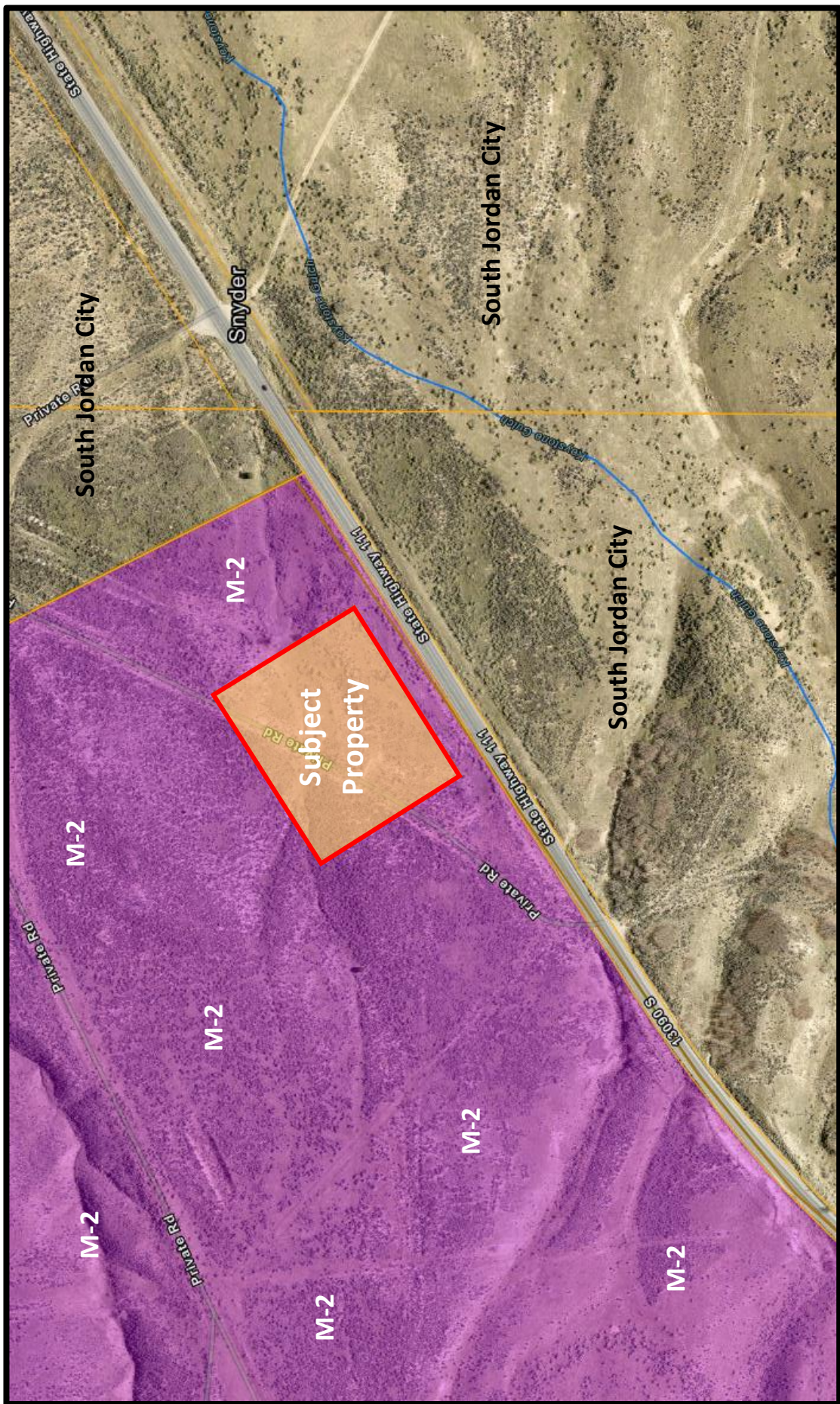
## **EXHIBITS**

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- A. Aerial Map.
- B. Water Letter.
- C. Landscaping Letter.
- D. Letter of Guarantee for Bonding.
- E. Public Works Engineering Letter of Recommendation for Exception to Roadway Standards.
- F. H&H Model & Sizing Memo.
- G. Geotechnical Report.
- H. Plan Set.

**CUP2023-000947: Conditional Use Approval for New Water Tank & Exception to Roadway Standards.**

Parcel: 12124 South Bacchus Highway (26-29-276-001-0000).





Dawn R. Ramsey, *Mayor*  
Patrick Harris, *Council Member*  
Bradley G. Marlor, *Council Member*  
Donald J. Shelton, *Council Member*  
Tamara Zander, *Council Member*  
Jason T. McGuire, *Council Member*

Exhibit B



PH: 801.446-HELP @SouthJordanUT

August 8, 2023

Greater Salt Lake Municipal Services District  
Attention: Jeff Miller  
2001 State St  
Salt Lake City, UT 84190

Re: Water Availability for the Daybreak Water Tank 7/8B

This letter is to inform you that the Daybreak Water Tank 7/8B plat recorded with Salt Lake County Recorder's Office was reviewed for water service availability. Based upon the review, water service will be available for the above mentioned project, located at approximately 12124 Bacchus Hwy, South Jordan, UT, consisting of 1 parcel within 4.71 acres.

If you have any questions, please feel free to contact me at your convenience.

Sincerely,

Brad Klavano, P.E.  
South Jordan City Engineer

cc: File

## Exhibit C

Dawn R. Ramsey, *Mayor*  
Patrick Harris, *Council Member*  
Bradley G. Marlor, *Council Member*  
Donald J. Shelton, *Council Member*  
Tamara Zander, *Council Member*  
Jason T. McGuire, *Council Member*



PH: 801.446-HELP @SouthJordanUT

November 29, 2023

Greater Salt Lake Municipal Services District  
Attention: Jeff Miller  
2001 State St  
Salt Lake City, UT 84190

Re: South Jordan City Water Tank 7/8B Landscape.

South Jordan City is requesting a waiver from the Salt Lake County to delay the installation of landscaping improvements at the City's Tank 7/8B site as allowed by Salt Lake County Code 19.02.110.D.

The City guarantees that the Tank 7/8B site will be landscaped as shown on the attached plan once the adjacent property develops. The future improvements will consist of installation of shrubs and trees. The improvements will also include installation of a drip system to irrigate the landscaped area.

If you have any questions, please feel free to contact me at your convenience.

Sincerely,

Brad Klavano

Brad Klavano (Nov 29, 2023 13:22 MST)

Brad Klavano, P.E.  
South Jordan City Engineer

Enclosed:

- South Jordan City Tank 7/8B Future Landscape Plan

## Exhibit D

Dawn R. Ramsey, *Mayor*  
Patrick Harris, *Council Member*  
Kathie L. Johnson, *Council Member*  
Donald J. Shelton, *Council Member*  
Tamara Zander, *Council Member*  
Jason T. McGuire, *Council Member*



PH: 801.446-HELP @SouthJordanUT

January 10, 2024

Greater Salt Lake Municipal Services District  
Attention: Jeff Miller  
2001 State Street  
Salt Lake City, UT 84190

RE: South Jordan City Water Tank 7/8B - Application: #000947

Mr. Miller,

South Jordan City, a political subdivision of the State of Utah, hereby guarantees to pay the required bond amount of \$371,420.00 in the event that the improvements required by Salt Lake County are not installed in accordance with the plans and specifications as per the approved design plans for the South Jordan City Water Tank 7/8B. South Jordan City also guarantees to pay 10% of the required bond amount, or \$37,142.00, in the event the improvements that are installed become defective within one year after their installation. I hereby sign I am authorized to uphold this obligations.

Sincerely,

Brad Klavano

Brad Klavano (Jan 10, 2024 13:39 MST)

Brad Klavano, P.E.  
City Engineer  
South Jordan City



October 2, 2023

**Jenny Wilson**  
Mayor

**Catherine Kanter**  
Deputy Mayor of Regional  
Operations

**Scott R. Baird, P.E.**  
Director, Public Works  
and Municipal Services

**Kade D. Moncur, P.E., CFM**  
Director, Public Works  
Engineering Division

**PUBLIC WORKS  
ENGINEERING DIVISION**

Government Center  
2001 South State Street  
Suite N3-120  
Salt Lake City, Utah 84190  
T 385-468-6600  
F 385-468-6603

To Whom It May Concern,

This recommendation letter is in consideration of the following proposed development:

Application: 000947 – Paz, South Jordan Water Tank  
Location: 12124 S Baccus Hwy. Unincorporated, Utah 84096

Given that the property fronts along an existing section of Baccus Hwy. which has no existing curb, gutter or sidewalk improvements for many miles, is not adjacent to any known safe routes to school under the Utah Safe Routes to School Program, and currently appears to meet all other applicable roadway standards, it is the recommendation of Salt Lake County Public Works Engineering that an exception be granted for the installation of curb, gutter and sidewalk along the Baccus Hwy. frontage of this property.

Regards,

Jefferson Thomson, PE  
Salt Lake County  
Public Works Engineering





# MEMORANDUM

DATE: November 29, 2023  
TO: Ana Paz  
Project Engineer for South Jordan City  
1600 W Towne Center Drive  
South Jordan, UT 84095

FROM: Dan Jones, P.E.  
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SUBJECT: Hydrologic and Hydraulic Design for Zone 7S/8S Drinking Water Tank Site

PROJECT NO.: 176.41.110 – Tank Design



## PURPOSE

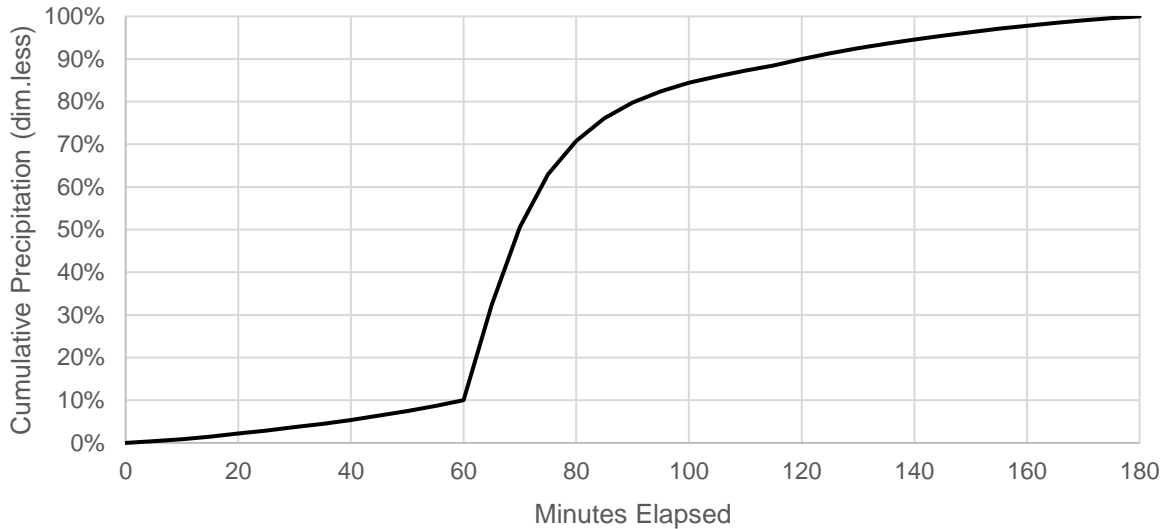
HAL is in the process of designing a drinking water tank for South Jordan (City) which will be used to serve the southern portions of Pressure Zones 7 and 8. The proposed tank is to be located immediately adjacent to Highway 111, approximately 4,100 feet southwest from the intersection of Highway 111 and 118<sup>th</sup> South. As part of the tank design, HAL has evaluated the hydrology for the site. This memorandum summarizes the methodology used and work completed to assist in design of the drainage features for the site.

## EXISTING CONDITIONS

LiDAR was obtained by HAL for the general area and the site design surface (in DEM format) for use in model development. Subbasin boundaries were delineated from the surface using the U.S. Army Corps of Engineers software HEC-HMS version 4.9. Approximately 30 acres drain to or through the tank site. A more pronounced (deeper) ephemeral stream with a similar amount of drainage area crosses U-111 approximately 950 feet uphill (to the southwest) along U-111. However, this channel is entirely disconnected hydraulically from the project site. All onsite and upstream drainage will be accounted for in this project.

## DESIGN HYDROLOGY

The tank will be situated within the limits of unincorporated Salt Lake County (SLCo). The design storm preferred by SLCo for minor conveyance infrastructure is the 10-year 3-hour modified Farmer Fletcher, commonly known as the Salt Lake County distribution. This distribution is shown below in **Figure 1**. A point precipitation estimate (attached to the end of this memo) of 1.07 inches for the 10-year 3-hour storm and 1.89 inches for the 100-year 3-hour storm was obtained from NOAA Atlas 14.



**FIGURE 1: SALT LAKE COUNTY 10-YEAR 3-HOUR DISTRIBUTION**

## MODEL DEVELOPMENT

Per the Soil Survey Geographic Database (SSURGO), the hydrologic soil group for the Area is type D, indicating a low propensity to infiltrate stormwater. The natural land cover was assumed to be 'Sagebrush, with grass understory, 30 to 70% cover'. This results in a natural cover Curve Number (CN) of 70. The concrete was assumed to have a CN of 98 and the crushed asphalt surfaces were assumed to have a CN of 94. The tank will be buried with native fill to a depth of 12 inches and so CN of 70 was assumed for that area. CN assumptions can be seen in **Figure 2**.

Transform parameters were calculated with the Clark method using the formulas shown below.

$$T_c = 2.2 \left( \frac{L * L_c}{S_{10-85}} \right)^{0.3}$$

$$\frac{R}{T_c + R} = 0.55$$

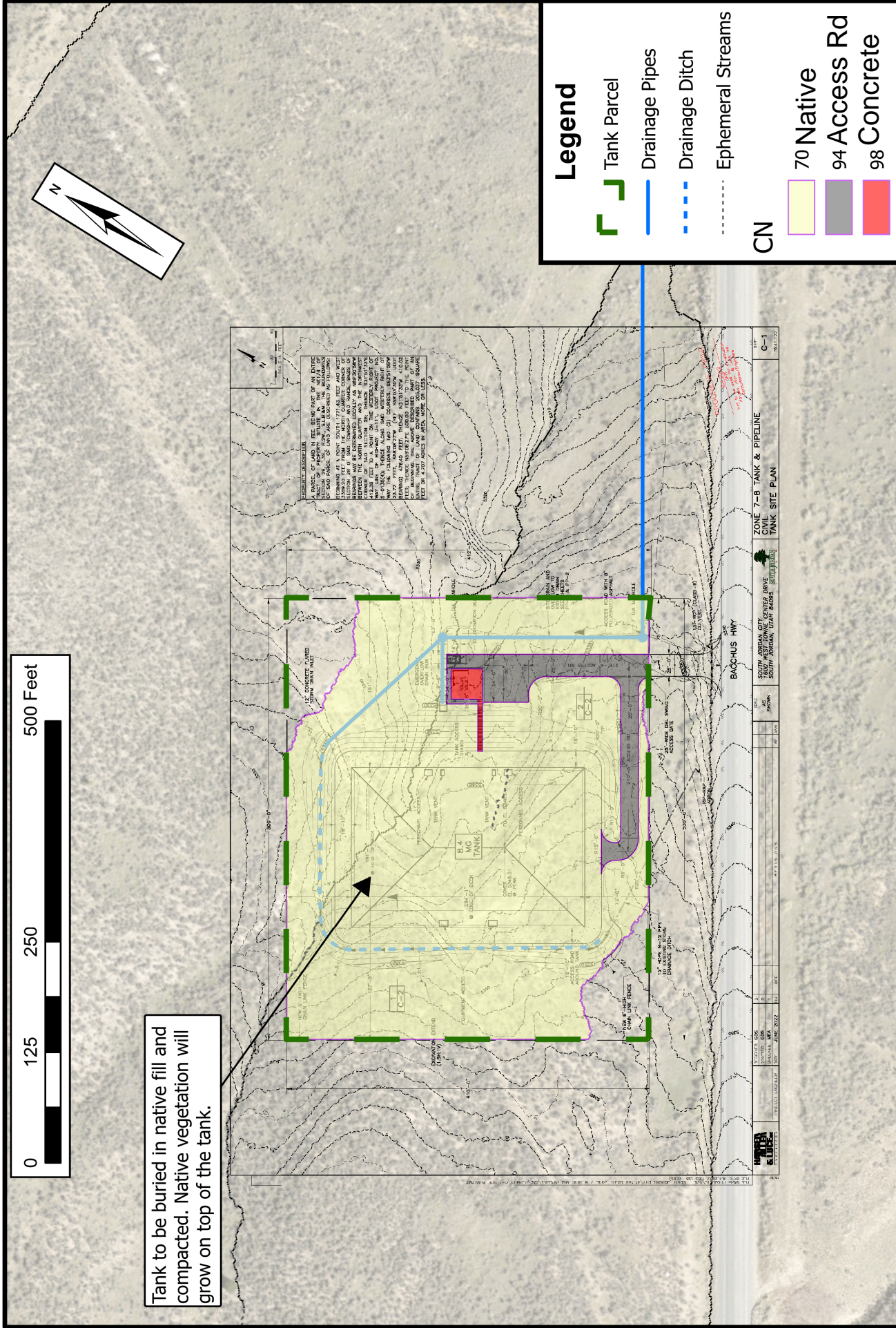
Where  $T_c$  is time of concentration (in hrs),  $L$  is longest flowpath (in miles),  $L_c$  is centroidal flowpath (in miles),  $S_{10-85}$  is slope between the 10<sup>th</sup> to the 85<sup>th</sup> percentile of the longest flowpath (in feet per mile), and  $R$  is the storage coefficient (in hours). These input and output properties were calculated by HMS as a result of the surface. The time of concentration for the crushed rock access road and concrete vault and stairs basins were set to commonly recommended minimum value of five minutes.

The simulation was set to a duration of 3-hours and the computational time step was set to 1 minute.

## MODEL RESULTS

The HMS model generated the design flows which can be seen in the first model snip found at the end of this memo. As can be seen the flows are not very large. However, pipe sizing is planned to be 15" with smooth interior walls. This will be easier to maintain as it will pass debris better than





a pipe sized solely upon the magnitude of incoming flow.

A rock-lined ditch with a slope of approximately one percent borders the west side of the tank to carry flows around the buried tank. Maximum design velocities for this ditch are expected to be approximately 2.1 fps, maximum shear stress is projected to be approximately 0.6 psf, and depths are projected to not exceed twelve inches. Part 654 of the National Engineering Handbook (NEH) states that for these design conditions, riprap is not required (Figure 8-25, NEH Part 654) and likely bare soil would suffice.

Portions of the ditch along the northern side of the tank and tie-ins to existing ephemeral streams have steeper slopes. On these steeper slopes and for the 10-year design event, the maximum velocities are expected to be near 3.0 fps with max shear stress of 1.1 psf. While a SF of 1.5 would result in a  $d_{50}$  of 4 inches, rock with  $d_{50}$  of 6 inches was selected for construction to provide an added measure of protection. The rock will also avoid the irrigation that vegetation would require and reduce maintenance that would be required with a vegetated design. As the voids between the rocks will not be filled with fines, infiltration will still occur through these spaces.

The ditches along the western and northern sides of the tank convey stormwater to a proposed 15" diameter drainage pipe that will then convey the stormwater into the 36" diameter emergency overflow pipe for the tank. These pipes convey the drainage to the natural existing discharge point for all existing site drainage near the existing 24" culvert under U-111.

An 18" RCP is proposed to carry flows under the access road which will adequately carry the design flows shown in Figure 2 at a slope of 5.0%.

The bypass channel and piping adequately convey the 10-year and 100-year design flows through the site to the natural discharge point near the existing 24" culvert under U-111.

## **DISCHARGE PER ACRE**

Salt Lake County has a drainage criterion that site discharge be detained to 0.2 cfs/acre. The disturbed area was modeled separately in HMS and its flow was calculated to be 0.33 cfs for 0.31 acres. As this combines with the runoff from the onsite native vegetation area (0.03 cfs for 4.01 acres), the design event produces 0.08 cfs/acre (0.33 cfs for 4.32 acres) which is less than Salt Lake County drainage criterion that discharge be detained to 0.2 cfs/acre. Therefore, detention is not necessary for this development.

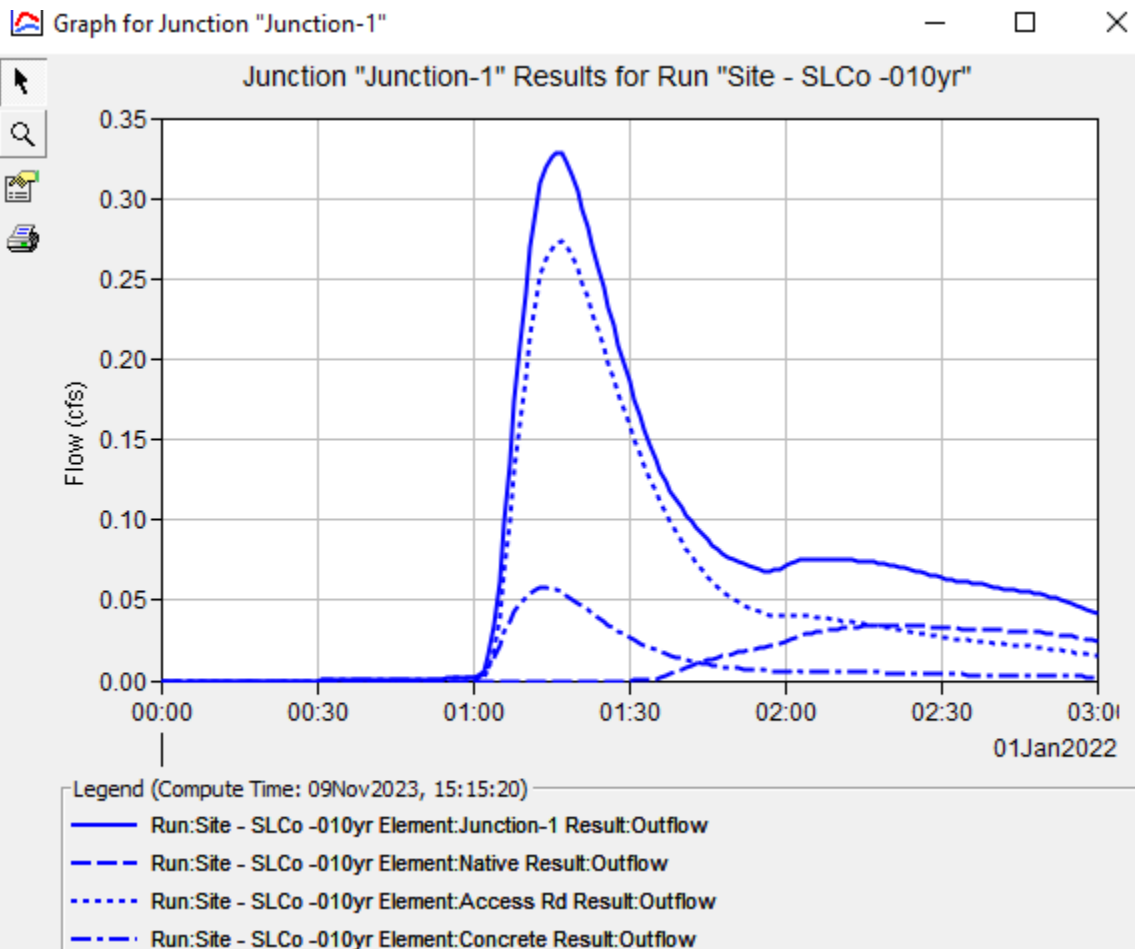
## **STORM WATER QUALITY**

During construction, BMPs will be followed that are outlined in the SWPPP. Following construction of the concrete tank, the tank will be buried with native fill and then all disturbed areas will be revegetated with native grasses, including the top of the tank, exterior 3:1 tank slopes, and all other disturbed area. An erosion control mat will be placed on all steeper slopes to promote the establishment of the vegetative cover and prevent erosion. A vegetated swale was considered in place of the rock-lined ditch along the western side of the tank as it would promote additional infiltration; however, a riprap lined channel will also promote infiltration and will be less maintenance for the City.

To mitigate the risk of flows concentrating on the access road and/or valve vault, a ditch which carries this runoff back to the ephemeral channel has been added to the plans. This also ensures that the flows leaving the property will not be greater in some areas than they were previously as all flow will be conveyed to its historic discharge location prior to leaving the property.

## MODEL SNIPS

| Project: BasinDelineation |                     | Simulation Run: Site - SLCo -010yr |   |                     |
|---------------------------|---------------------|------------------------------------|---|---------------------|
| Start of Run:             | 01Jan2022, 00:00    | Basin Model:                       | November2023_updated  |                     |
| End of Run:               | 01Jan2022, 03:00    | Meteorologic Model:                | SLCo 3hr - 010yr  |                     |
| Compute Time:             | 09Nov2023, 15:15:20 | Control Specifications:            | 3hr   |                     |
| Show Elements:            | All Elements        | Volume Units:                      | <input checked="" type="radio"/> IN <input type="radio"/> ACRE-FT | Sorting: Hydrologic |
| Hydrologic Element        | Drainage Area (MI2) | Peak Discharge (CFS)               | Time of Peak  | Volume (IN)         |
| Native                    | 0.0063              | 0.03                               | 01Jan2022, 02:21  | 0.01                |
| Access Rd                 | 0.0004              | 0.27                               | 01Jan2022, 01:17  | 0.55                |
| Concrete                  | 0.0001              | 0.06                               | 01Jan2022, 01:13  | 0.85                |
| Junction-1                | 0.0067              | 0.33                               | 01Jan2022, 01:16  | 0.05                |







**GEOTECHNICAL INVESTIGATION**  
**SOUTH JORDAN ZONE 7/8 WATER TANK**  
**APPROXIMATELY 12000 SOUTH HIGHWAY 111**  
**SALT LAKE COUNTY, UTAH**

**PREPARED FOR:**

**HANSEN ALLEN & LUCE**  
**859 WEST SOUTH JORDAN PARKWAY, #200**  
**SOUTH JORDAN, UT 84095**

**ATTENTION: MARV ALLEN**

**PROJECT NO. 1210477**

**APRIL 28, 2022**

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## EXECUTIVE SUMMARY

1. Approximately ½ to 1 foot of topsoil was encountered in the borings overlying sand and gravel. Sandy lean clay was encountered between depths of approximately 12 and 18 feet in Boring B-1 and between depths of approximately 10 and 20½ feet in Boring B-2. Clayey sand with occasional lean clay layers was encountered below the clay extending to depths of approximately 23 and 29 feet in Borings B-1 and B-2, respectively. Clayey gravel with some clay layers was encountered below the clayey sand and extends to the full depth investigated, approximately 51 feet.
2. No subsurface water was encountered in the borings at the time of drilling to the maximum depth investigated.
3. The proposed water tank may be supported on spread footings bearing on the undisturbed natural soil or on compacted structural fill extending down to the undisturbed natural soil. Spread footings bearing on the undisturbed natural soil or on compacted structural fill may be designed using an allowable net bearing pressure of 2,500 psf. Spread footings bearing on at least 2 feet of compacted structural fill or on at least 2 feet of the undisturbed natural gravel may be designed for an allowable net bearing pressure of 3,500 psf.
4. Excavation into the clayey gravel at depth may encounter cemented zones and/or cobbles and boulders based on the high N values measured in the borings. Excavation into the clayey gravel will likely require the use of heavy-duty equipment or possibly heavy-duty ripping equipment. Excavation in this material may be particularly difficult for confined excavations such as for utility trenches.
5. Temporary unretained excavation slopes may be constructed at 1 ½ horizontal to 1 vertical or flatter. Permanent unretained cut and fill slopes may be constructed at 2 horizontal to 1 vertical or flatter.
6. Geotechnical information related to foundations, subgrade preparation and materials is included in the report.



## SCOPE

This report presents the results of a geotechnical investigation for the proposed South Jordan Zone 7/8 water tank to be located at approximately 12000 South Highway 111 in Salt Lake County, Utah. The approximate site location is shown on Figure 1. The report presents the subsurface conditions encountered, laboratory test results and recommendations for foundations. The study was conducted in general accordance with our proposal dated June 3, 2021.

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 the conditions at the site for our engineering analysis. Results of the field exploration and laboratory tests were analyzed to develop recommendations for the proposed foundations.

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

At the time of our field study, the site consists of undeveloped property with no permanent structures or pavement. Based on a review of the 1965 aerial photograph, there was an unpaved road that extended south-southwest to north-northeast through the west portion of the tank area. There was a railroad that extended in a similar direction near the east corner of the proposed tank. The 1965 aerial photograph shows grading activities across the southern portion of the proposed tank site.

The site has a gentle slope down to the northeast. Based on the topography shown on the site plan provided (Figure 2), there is approximately 12 feet in elevation difference across the proposed tank site. A dry drainage extends through the north corner of the proposed tank area.

Vegetation consists of brush, grass and weeds.

There is similar undeveloped land extending beyond the site in all directions. Highway 111 is southeast of the site.

## **FIELD STUDY**

The borings were drilled on March 28, 2022 at the approximate locations indicated on Figure 2. The borings were drilled using ODEX. The borings were logged and samples obtained by an engineer from AGECE. Logs of the subsurface conditions encountered in the borings are graphically shown on Figure 3 with legend and notes on Figure 4.

## **SUBSURFACE CONDITIONS**

Approximately ½ to 1 foot of topsoil was encountered in the borings overlying sand and gravel. Sandy lean clay was encountered between depths of approximately 12 and 18 feet in Boring B-1 and between depths of approximately 10 and 20½ feet in Boring B-2. Clayey sand with occasional lean clay layers was encountered below the clay extending to depths of approximately 23 and 29 feet in Borings B-1 and B-2, respectively. Clayey gravel with some clay layers was encountered below the clayey sand and extends to the full depth investigated.

A description of the various materials encountered in the borings follows:

Topsoil - The topsoil consists of sandy lean clay. It is moist to very moist, dark brown and contains roots.

Sandy Lean Clay - The clay contains small to moderate amounts of gravel. It is stiff, moist to very moist and brown.

Laboratory tests conducted on samples of the clay indicate it has natural moisture contents of 17 to 24 percent and natural dry densities of 99 to 109 pounds per cubic foot (pcf).

A sample of the clay tested in the laboratory was found to have an unconfined compressive strength of 2,420 pounds per square foot (psf).

Silty Sand - The sand contains a small amount of gravel. It is medium dense, moist and yellowish brown.

Laboratory tests conducted on a sample of the sand indicate it has a natural moisture content of 8 percent and a natural dry density of 113 pcf.

Clayey Sand - The sand contains small to moderate amounts of gravel and occasional lean clay layers. It is medium dense, moist to very moist and brown.

Laboratory tests conducted on a sample of the sand indicate it has a natural moisture content of 11 percent and a natural dry density of 112 pcf.

The results of a gradation test conducted on a sample of the sand are presented on Figure 7.

Clayey Gravel with Sand - The gravel contains clay and clayey sand layers. It contains cobbles and possible boulders. The gravel is dense to very dense, moist to very moist and light brown to yellowish brown to light gray to purple.

Laboratory tests conducted on samples of the gravel indicate it has natural moisture contents of 8 to 23 percent and natural dry densities of 97 to 118 pcf.

The results of a consolidation test conducted on a sample of clayey sand indicate that it will compress a small amount with the addition of light to moderate loads. A sample that was air dried prior to testing expanded less than 1 percent when wetted under a constant pressure of 1,000 psf. Results of the consolidation tests are presented on Figures 5 and 6.

The results of a gradation test conducted on the gravel are presented on Figure 7.

Silty Gravel with Sand - The gravel contains possible cobbles. It is dense to very dense, moist and yellowish brown to brown.

Laboratory tests conducted on samples of the gravel indicate it has natural moisture contents of 5 to 8 percent and natural dry densities of 113 to 118 pcf.

Results of the laboratory tests are summarized on Tables I and II and are included on logs of the borings.

## **SUBSURFACE WATER**

No subsurface water was encountered in the borings at the time of drilling to the maximum depth investigated, approximately 51 feet below the ground surface.

## PROPOSED CONSTRUCTION

We understand that the proposed water tank will be a rectangular reinforced concrete structure with dimensions of approximately 260 by 180 feet. We understand that the tank will extend to depths on the order of 20 to 35 feet below the ground surface and will be backfilled around its perimeter and have approximately 2 feet of soil cover over the top. We have assumed loads for the proposed water tank consisting of wall loads up to 5 kips per lineal foot and column loads up to 200 kips.

If the proposed construction or tank loads are significantly different from those described above, we should be notified so that we can reevaluate the recommendations given.

## GEOLOGY

### A. Regional Geology

The site is located near the base of the Oquirrh Mountains in the southwest part of the Salt Lake Valley. The Oquirrh Mountains are in the Basin and Range physiographic province. The province is made up of north/south elongated mountain blocks and valleys.

The Salt Lake Valley was once occupied by a large lake known as Lake Bonneville during the Wisconsin Glacial Period of the Pleistocene Age. The present day Great Salt Lake is a remnant of ancient Lake Bonneville. Stillstands of Lake Bonneville formed benches along the Wasatch Front. The highest level of Lake Bonneville is marked by a bench, the Bonneville Shoreline, at approximate elevation 5,160 feet. The lake remained at this high level from approximately 17 to 15 thousand years before present, until it dropped approximately 350 feet during a catastrophic flood known as the Bonneville Flood (Currey and Oviatt, 1985; Jarrett and Malde, 1987).

Two lower stillstands of Lake Bonneville are the Provo and Gilbert, which formed at approximate elevations 4,800 feet and 4,250 feet, respectively (Personius and Scott, 1992).

The elevation of the site ranges from about 5,345 to 5,330 feet placing it well above the highest shoreline of Lake Bonneville.

## **B. Site Geology**

The surficial geology of the area is mapped by Biek and others (2007). Surface deposits are mapped to consist of alluvial-fan deposits of upper to middle Pleistocene age. The sediments encountered at depth in the borings transitions to potentially Quaternary to Tertiary alluvial-fan deposits and possibly into the Tertiary Salt Lake Formation.

## **C. Geologic Hazards**

Geologic maps, aerial photographs and lidar data were reviewed to determine if there are geologic hazards that may affect the proposed development. Aerial photographs and lidar data used during the investigation were downloaded from the Utah Geological Survey and AGRC websites. The aerial photographs have numbers of 10-AAL3-53 and 54 with a date of October 9, 1937. The lidar has a date of 2013 and 2014.

### **1. Landslide Hazard**

The landslide inventory map by Elliott and Harty (2010) and the geology map by Biek and others (2007) show no landslide deposits on or near the site. This is consistent with the type of soil encountered at the site.



Review of aerial photographs and lidar data finds no evidence of landslide geomorphology at the site. Based on the topography of the site and surrounding area, and the soil and bedrock encountered, landslide is not considered a hazard at this site.

2. Fault and Tectonic Subsidence Hazards

There is no evidence of lineations or scarps consistent with active fault traces based on review of aerial photographs and lidar data. Biek and others (2007) show no surface traces of potentially active faults in the area. No tectonic subsidence would be expected since there are no nearby active faults. Fault rupture and tectonic subsidence are not considered hazards at this site.

3. Rockfall Hazard

There is no source for rockfall at the site. Thus, rockfall is not considered to be a hazard.

4. Debris Flow Hazard

There is no source for debris flow up gradient of the site that could present a hazard for the water tank.

5. Liquefaction Potential

The liquefaction potential map by Salt Lake County (2002) rates the liquefaction potential at the site to be very low. Liquefaction was evaluated as part of the geotechnical study. Liquefaction is not considered a hazard at this site.

6. Seismic Ground Shaking

The site is located in the Intermountain Seismic Belt, which is an area of pronounced earthquake activity extending from northwestern Montana to northern Arizona. The seismicity of the site is discussed and design

parameters are provided in the geotechnical report. Seismic ground shaking is a potential hazard at the site.

#### **D. Conclusions**

Seismic ground shaking is considered the only significant geologic hazard at the site. This hazard will be mitigated through structural design. It is our professional opinion that landslide, surface fault rupture, tectonic subsidence, debris flow, rockfall and liquefaction are not potential hazards at the site.

### **RECOMMENDATIONS**

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

#### **A. Site Grading**

We understand that excavation for the proposed tank will extend to depths on the order of 20 to 35 feet below the existing ground surface. We anticipate that the tank will be backfilled around its perimeter and approximately 1 to 2 feet of soil cover placed over the tank.

##### **1. Excavation**

Excavation into the clayey gravel at depth may encounter cemented zones and/or cobbles and boulders based on the high N values measured in the borings. Excavation into the clayey gravel will likely require the use of heavy-duty equipment or possibly heavy-duty ripping equipment. Excavation in this material may be particularly difficult for confined excavations such as for utility trenches.

Temporary unretained excavation slopes in the natural soil may be constructed at 1 ½ horizontal to 1 vertical or flatter.

Care should be taken to maintain the stability of the excavation during construction. Proper side slopes or shoring and methods to prevent surface raveling should be provided for safety of workers and to support adjacent improvements.

2. Cut and Fill Slopes

Permanent unretained cut and fill slopes may be constructed at 2 horizontal to 1 vertical or flatter.

Surface runoff should be directed away from the cut and fill slope faces. Cut and fill slopes should be protected from erosion by revegetation or other methods.

3. Subgrade Preparation

Prior to placing structural fill or site grading fill, the topsoil, organics, unsuitable fill and other deleterious materials should be removed. Loose or disturbed soil should be removed and replaced with compacted structural fill or should be properly compacted.

4. Compaction

Compaction of fill placed at the site should equal or exceed the minimum densities as indicated below when compared to the maximum dry density as determined by ASTM D 1557.

| Fill To Support            | Compaction  |
|----------------------------|-------------|
| Foundations and Floor Slab | $\geq 95\%$ |
| Exterior Concrete Flatwork | $\geq 90\%$ |
| Fill Slopes                | $\geq 90\%$ |
| Wall Backfill              | 85 - 90%    |

The fill should be compacted at a moisture content within 2 percent of the optimum moisture content to facilitate the compaction process.

Fill placed for the project should be frequently tested for compaction.

#### 5. Materials

The following recommendations are given for imported structural fill:

| Fill to Support                | Recommendations   |
|--------------------------------|---|
| Footings and Slabs             | Non-expansive granular soil<br>Passing No. 200 Sieve < 35%<br>Liquid Limit < 30%<br>Maximum size 4 inches |
| Floor Slab<br>(Upper 4 inches) | Sand and/or Gravel<br>Passing No. 200 Sieve < 5%<br>Maximum size 2 inches                                 |

The natural sand and gravel may be considered for use as structural fill if they meet the recommendations given above for imported structural fill if the topsoil, clay layers, organics, over-sized particles and other deleterious materials are removed.

The clay is not recommended for use at structural fill below the tank. The on-site soils may be considered for use as tank backfill and grading fill outside of the area of the structure if topsoil, organics, over-sized particles and other deleterious materials are removed.

Use of the on-site material may require moisture conditioning (wetting or drying) to facilitate compaction. Drying of the material may not be practical in cold or wet times of the year.

6. Drainage

The ground surface surrounding the proposed water tank should be planned to direct the surface run off away from the structure.

**B. Foundations**

1. Bearing Material

With the proposed construction and the subsurface conditions encountered, the proposed water tank may be supported on spread footings bearing on the undisturbed natural soil or on compacted structural fill extending down to the undisturbed natural soil. Structural fill should extend out away from the footings at least a distance equal to the depth of structural fill below the footings.

Topsoil, unsuitable fill and other deleterious materials should be removed from below footing areas.

2. Bearing Pressure

Spread footings bearing on the undisturbed natural soil or on compacted structural fill may be designed using an allowable net bearing pressure of 2,500 psf. Spread footings bearing on at least 2 feet of compacted structural

fill or on at least 2 feet of the undisturbed natural gravel may be designed for an allowable net bearing pressure of 3,500 psf.

Footings should have a minimum width of 3 feet and a minimum depth of embedment of 1 foot.

3. Temporary Loading Conditions

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

4. Settlement

We estimate total and differential settlement less than 1 inch and  $\frac{3}{4}$  inch, respectively.

5. Frost Depth

Footings below unheated areas should extend at least 30 inches below grade for frost protection

6. Foundation Base

The base of foundation excavations should be cleared of loose or deleterious material or the loose material should be compacted.

7. Construction Observation

A representative of the geotechnical engineer should observe footing excavations prior to structural fill and concrete placement.



### C. Concrete Slab-on-Grade

#### 1. Slab Support

Floor slabs may be supported on the undisturbed natural soil or on compacted structural fill extending down to the undisturbed natural soil.

#### 2. Underslab Sand and/or Gravel

A minimum thickness of 4 inches of free draining sand and/or gravel should be placed beneath floor slabs. If columns are supported by thickened and reinforced sections of the floor slab, the sand and/or gravel need not be placed below the thickened portion of the slab.

### D. Lateral Earth Pressures

#### 1. Lateral Resistance for Footings

Lateral resistance for footings placed on the natural sand and gravel or compacted structural fill is controlled by sliding resistance between the footing and the foundation material. A friction value of 0.4 may be used in design for ultimate lateral resistance.

#### 2. Subgrade Walls and 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.

| Soil Type     | Active | At-Rest | Passive |
|---------------|--------|---------|---------|
| Clay & Silt   | 50 pcf | 65 pcf  | 250 pcf |
| Sand & Gravel | 40 pcf | 55 pcf  | 300 pcf |

3. Seismic Conditions

Under seismic conditions, the equivalent fluid weight should be increased by 27 pcf for active condition, increased by 12 pcf for the at-rest condition and decreased by 27 pcf for the passive condition. This assumes a peak horizontal ground acceleration of 0.45g for a 2 percent probability of exceedance in a 50-year period.

4. Safety Factors

The values recommended above 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. Subsurface Drains**

Consideration should be given to providing a means to collect and remove water that may accumulate around the walls of the water tank. This drain would consist of a perforated pipe installed in the gravel filled trench around the perimeter of the subgrade floor of the tank.

**F. Pipe Support**

The soils encountered are suitable for support of piping at the reservoir site.

1. Settlement

The materials at the pipe bearing elevation will experience little, if any, increase in stress due to the proposed construction. Thus, settlement of the proposed pipeline will be a function of disturbance of the soil beneath the pipe. Disturbance may result from excavation or construction activities. Care

should be taken to minimize disturbance of the materials below the pipeline so that settlement can be maintained within tolerable limits.

2. Pipe Bedding

Pipe bedding requirements will depend on the type of pipe selected and design criteria based on the manufacturer's recommendations. Pipe bedding material should be placed on undisturbed natural soil. If bearing materials are disturbed, they should be removed and replaced with compacted bedding material. Pipe bedding should meet the criteria given by the pipe manufacturer.

**G. Thrust Blocks**

Thrust block resistance may be calculated using the passive earth pressure condition with an equivalent fluid weight of 300 pcf for sand/gravel or 250 pcf for clay/silt. This assumes a ratio of horizontal displacement to height of thrust block of 0.01. A lower equivalent fluid weight should be used if less displacement is needed. An equivalent fluid weight of 200 pcf may be used for sand/gravel or 150 pcf for clay/silt if negligible horizontal displacement is desired. Thrust blocks should bear on the undisturbed natural soil or on compacted granular fill. A coefficient of friction of 0.45 or 0.35 may be used between the concrete and the soil where the thrust block bears on sand/gravel or clay/silt, respectively. The values given above are ultimate values and a suitable factor of safety should be applied.

## H. Seismicity, Liquefaction and Faulting

### 1. Seismicity

Listed below is a summary of the site parameters that may be used with the 2018 International Building Code.

| Description   | Value <sup>1</sup> |
|---|--------------------|
| Site Class  | C <sup>2</sup>     |
| S <sub>s</sub> - MCE <sub>R</sub> ground motion (period = 0.2s) | 0.86g              |
| S <sub>1</sub> - MCE <sub>R</sub> ground motion (period = 1.0s) | 0.31g              |
| F <sub>a</sub> - Site amplification factor at 0.2s              | 1.2                |
| F <sub>v</sub> - Site amplification factor at 1.0s              | 1.5                |
| PGA - MCE <sub>G</sub> peak ground acceleration                 | 0.38g              |
| PGA <sub>M</sub> - Site modified peak ground acceleration       | 0.45g              |

<sup>1</sup>Values obtained from information provided by the Applied Technology Council at <https://hazards.atcouncil.org>

<sup>2</sup>Site Class C was selected based on the subsurface conditions encountered at the site to the depth investigated and our understanding of geologic conditions.

### 2. Liquefaction

The site is located in an area mapped with a "very low" potential for liquefaction (Salt Lake County, 2002). Based on the subsurface conditions encountered in the borings and our understanding of the geologic conditions of the area, liquefaction is not considered a hazard at the site.

### 3. Faulting

No active fault traces are mapped to extend through the water tank site. A surface trace of the Oquirrh fault is mapped approximately 6.2 miles west of the site (Utah Geological Survey, 2022).

**I. Corrosion and Water Soluble Sulfates**

The following parameters relative to water soluble sulfates and corrosivity of the materials at the site were measured for a sample of soil from Boring B-1 at a depth of 14½ feet.

| Parameter                       | Value    |
|---------------------------------|----------|
| Water Soluble Sulfate (percent) | 0.04     |
| pH                              | 7.8      |
| Resistivity (ohm - cm)          | 1,100    |
| Redox Potential (mV)            | 494      |
| Sulfide content                 | negative |

Based on the results of the water soluble sulfate test and our experience in the area, the natural soils do not contain significant water soluble sulfates. No special cement type is needed for concrete placed in contact with the natural soil.

Based on the resistivity value measured for the natural clay, the soil may be aggressive toward buried metals.

The information presented above should be reviewed by a corrosion engineer.

**J. Lead and Arsenic**

Samples of the natural soil were submitted to Chemtech-Ford Laboratories for lead and arsenic testing. The following are the results of the tests:

| Sample     | Total Lead<br>Content<br>(mg/kg dry) | Total Arsenic<br>Content<br>(mg/kg dry) |
|------------|--------------------------------------|---|
| B-1 @ 0'   | 32.5                                 | 1.81                                    |
| B-1 @ 4 ½' | 23.2                                 | 2.87                                    |
| B-1 @ 9 ½' | 15.5                                 | 3.24                                    |
| B-2 @ 0'   | 24.3                                 | 1.56                                    |
| B-2 @ 4 ½' | 43.4                                 | 2.28                                    |

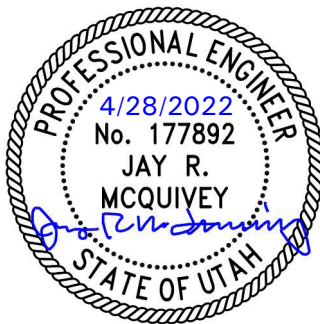
#### K. Preconstruction Meeting

A preconstruction meeting should be held with representatives of the owner, project architect, geotechnical engineer, general contractor, earthwork contractor and other members of the design team to review construction plans, specifications, methods and schedule.

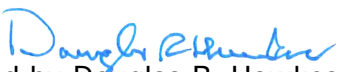
## LIMITATIONS

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 at the approximate locations indicated on Figure 2 and data obtained from laboratory testing. 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 those described in this report, we should be notified to reevaluate the recommendations.

APPLIED GEOTECHNICAL ENGINEERING CONSULTANTS, INC.



Jay R. McQuivey, P.E.

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

JRM/rs



## REFERENCES

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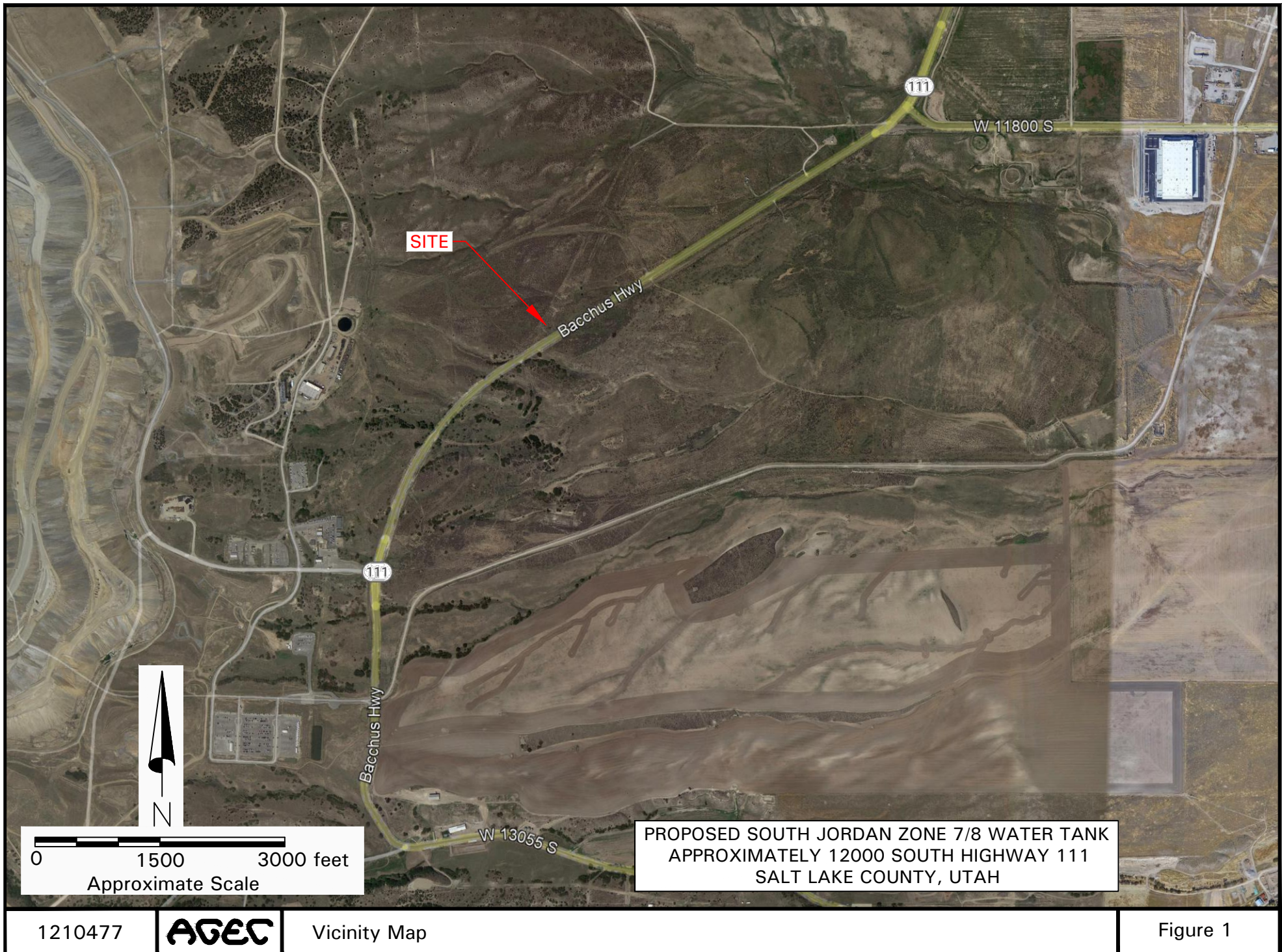
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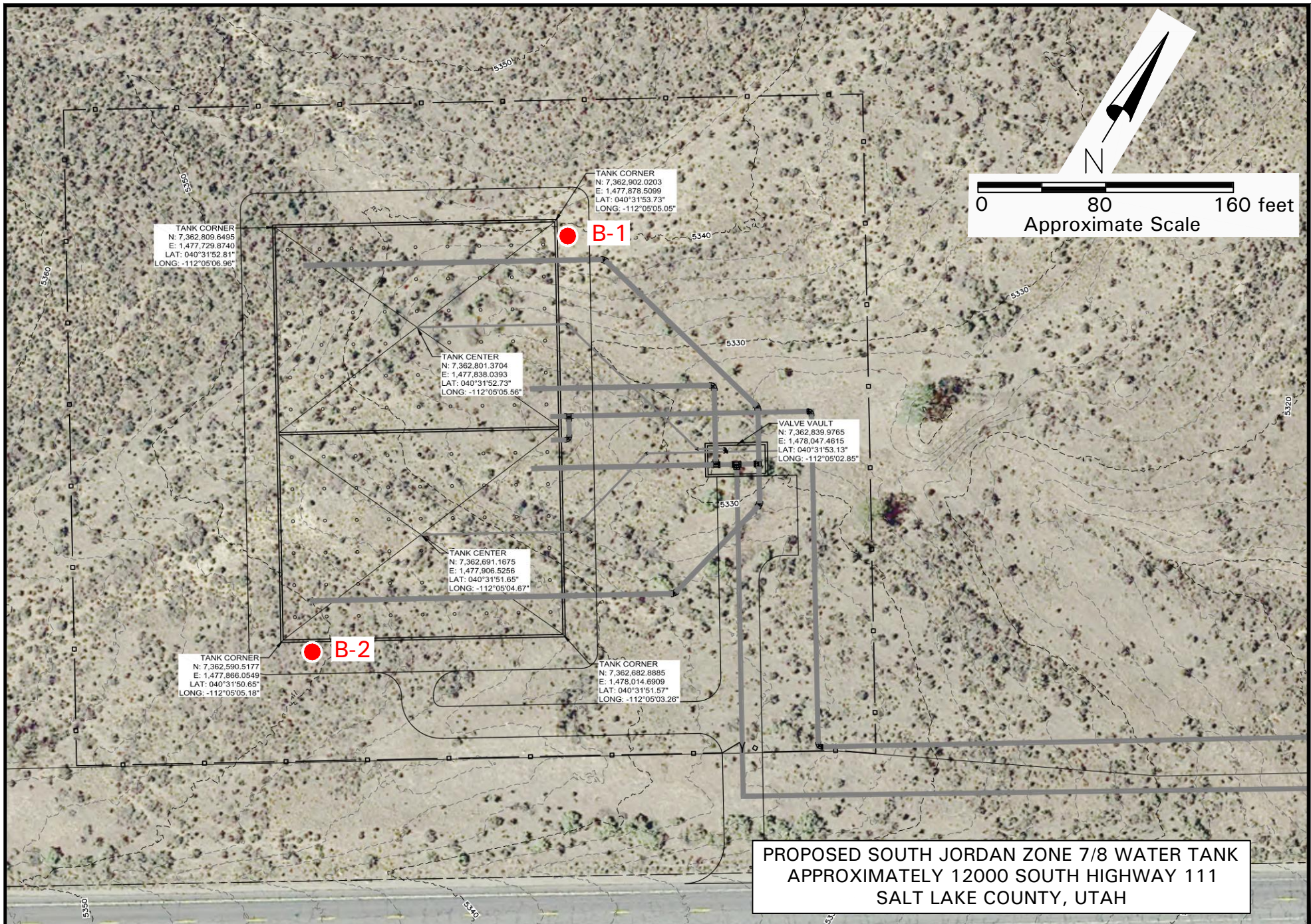
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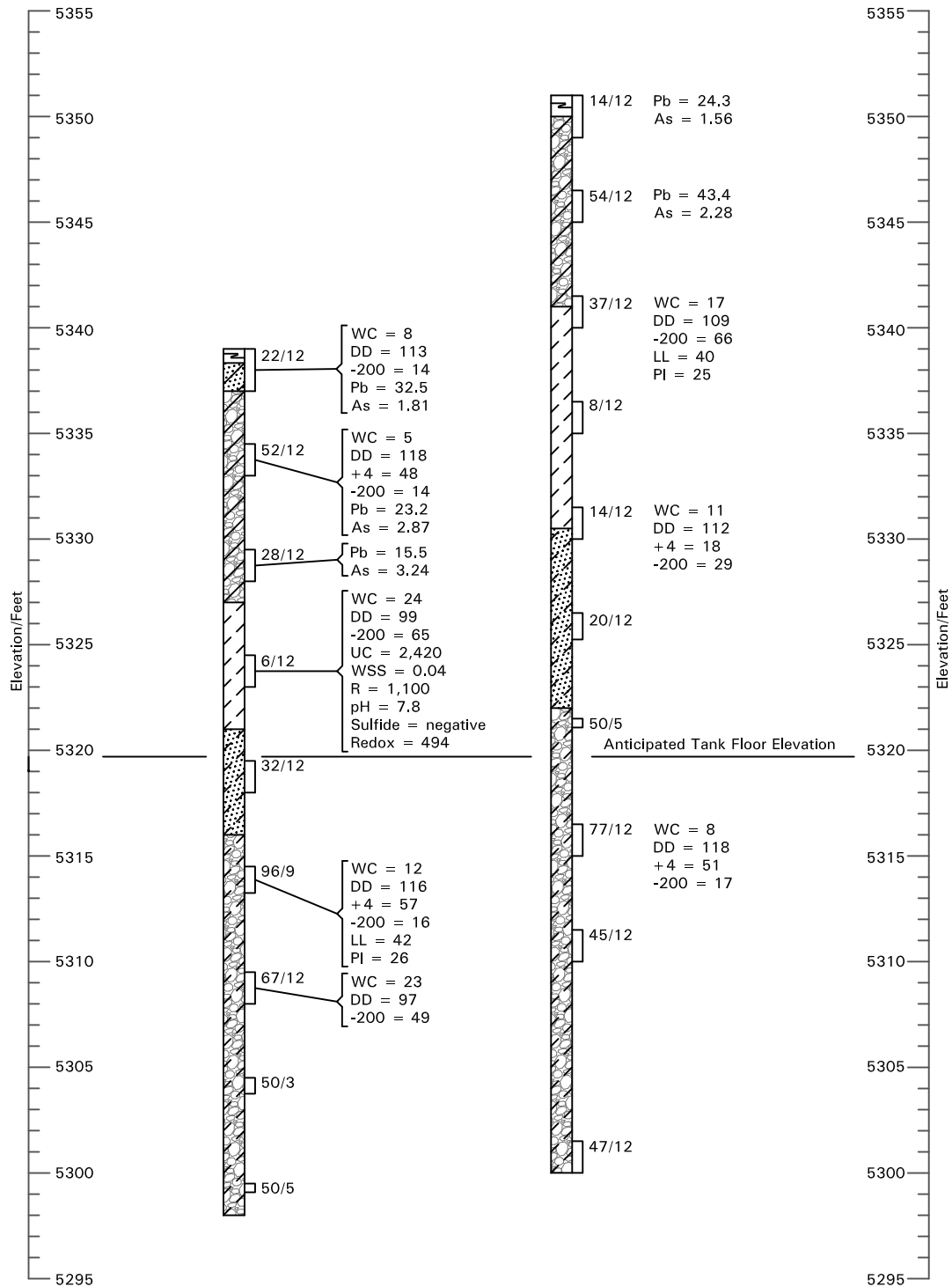















B-2  
Elev. 5351'

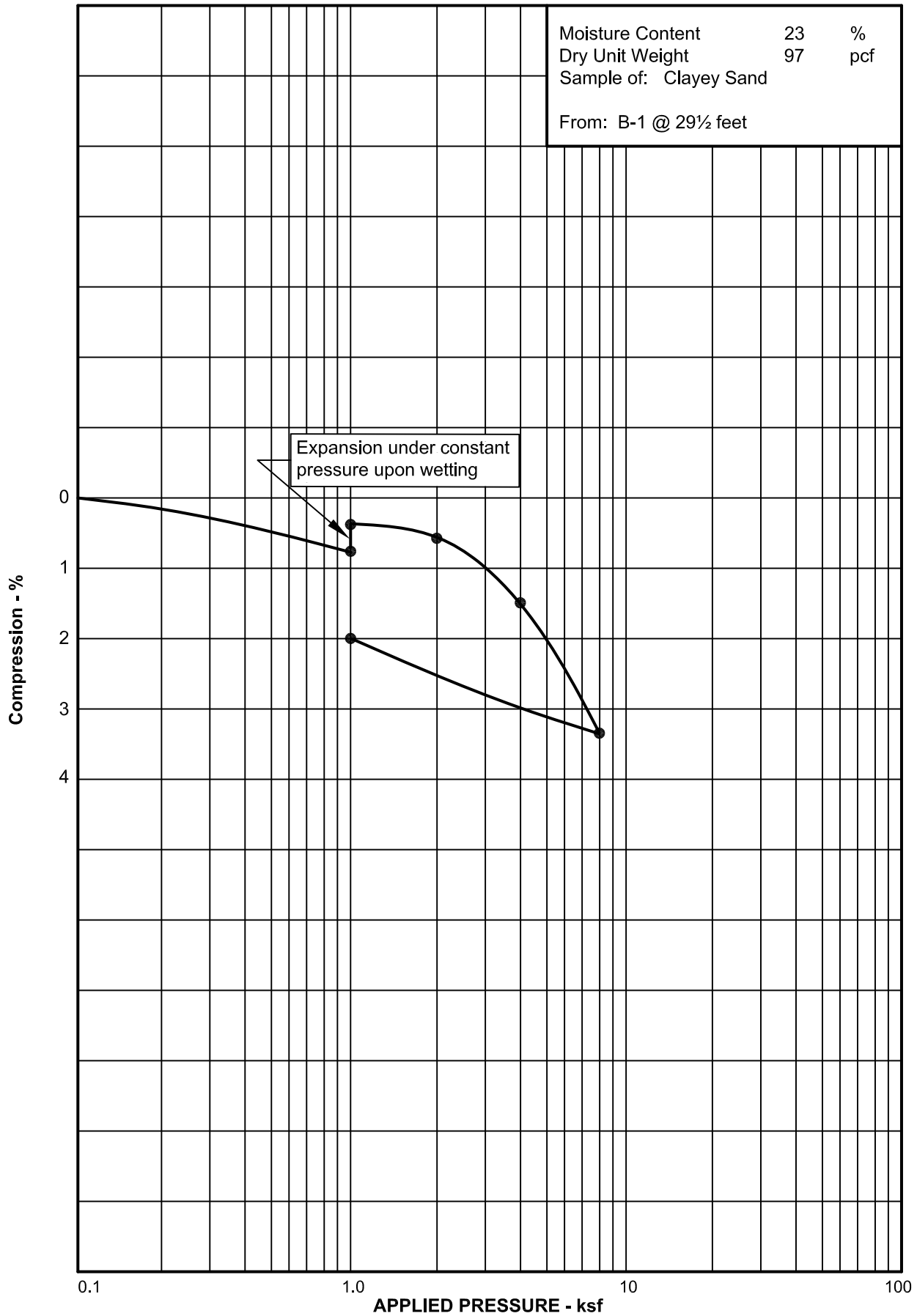


Approximate Vertical Scale 1" = 8'

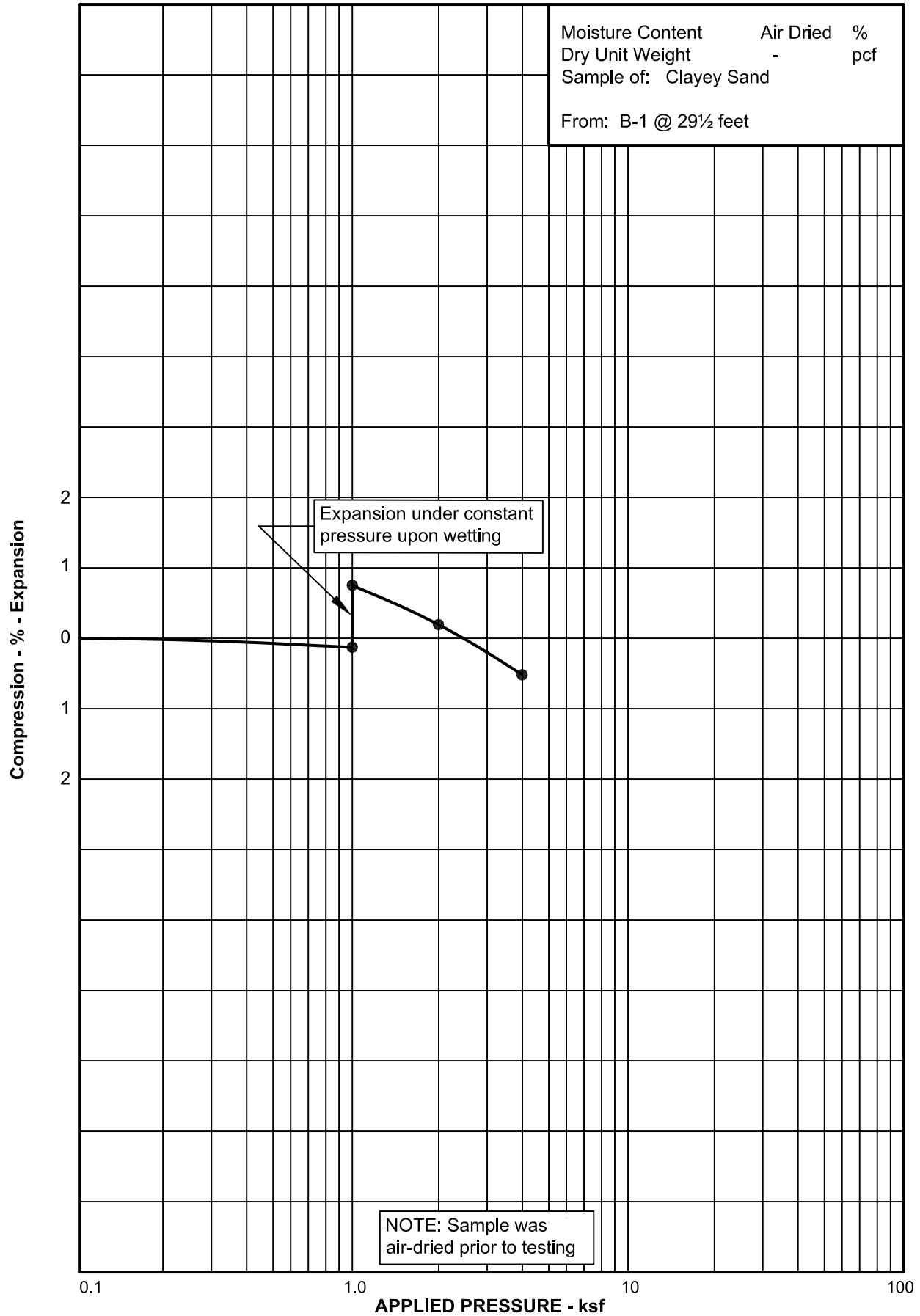
See Figure 4 for Legend and Notes

|  |   |
|--|---|
| <div data-bbox="597 1774 617 1848" data-label="Section-Header"> <p>LEGEND:</p> </div> <div data-bbox="646 1102 1140 1843" data-label="List-Group"> <ul style="list-style-type: none"> <li> Topsoil; sandy lean clay, moist to very moist, dark brown, roots.</li> <li> Sandy Lean Clay (CL); small to moderate amounts of gravel, stiff, moist to very moist, brown.</li> <li> Silty Sand (SM); small amount of gravel, medium dense, moist, yellowish brown.</li> <li> Clayey Sand (SC); small to moderate amounts of gravel, occasional lean clay layers, medium dense, moist to very moist, brown.</li> <li> Clayey Gravel with Sand (GC); clay and clayey sand layers, cobbles and possible boulders, dense to very dense, slightly moist to very moist, light brown to yellowish brown to light gray to purple.</li> <li> Silty Gravel with Sand (GM); possible cobbles, dense to very dense, moist, yellowish brown to brown.</li> <li> 10/12 California Drive sample taken. The symbol 10/12 indicates that 10 blows from a 140-pound automatic hammer falling 30 inches were required to drive the sampler 12 inches.</li> </ul> </div> <div data-bbox="592 924 612 987" data-label="Section-Header"> <p>NOTES:</p> </div> <div data-bbox="633 231 1239 976" data-label="List-Group"> <ol style="list-style-type: none"> <li>The borings were drilled on March 28, 2022 with ODEX.</li> <li>Locations of the borings were measured approximately by pacing from features shown on the site plan provided.</li> <li>Elevations of the borings were determined by interpolating between contours shown on the site plan provided.</li> <li>The boring locations and elevations should be considered accurate only to the degree implied by the method used.</li> <li>The lines between materials shown on the boring logs represent the approximate boundaries between material types and the transitions may be gradual.</li> <li>No free water was encountered in the borings at the time of drilling.</li> <li> <p>WC = Water Content (%);</p> <p>DD = Dry Density (pcf);</p> <p>+ 4 = Percent Retained on the No. 4 Sieve;</p> <p>-200 = Percent Passing the No. 200 Sieve;</p> <p>LL = Liquid Limit (%);</p> <p>PI = Plasticity Index (%);</p> <p>UC = Unconfined Compressive Strength (psf);</p> <p>WSS = Water Soluble Sulfates (%);</p> <p>R = Resistivity (ohm-cm);</p> <p>pH = pH;</p> <p>Sulfide = Sulfide Content (negative, trace, positive);</p> <p>Redox = Redox Potential (mV);</p> <p>Pb = Lead Content (mg/kg dry);</p> <p>As = Arsenic Content (mg/kg dry).</p> </li> </ol> </div> | <div data-bbox="1502 1833 1537 1980" data-label="Page-Footer"> <p>1210477</p> </div> <div data-bbox="1502 1656 1549 1833" data-label="Page-Footer"> <p><b>AGEC</b></p> </div> <div data-bbox="1502 1173 1537 1623" data-label="Page-Footer"> <p>Exploratory Boring Legend and Notes</p> </div> <div data-bbox="1502 69 1537 207" data-label="Page-Footer"> <p>Figure 4</p> </div> |
|--|---|

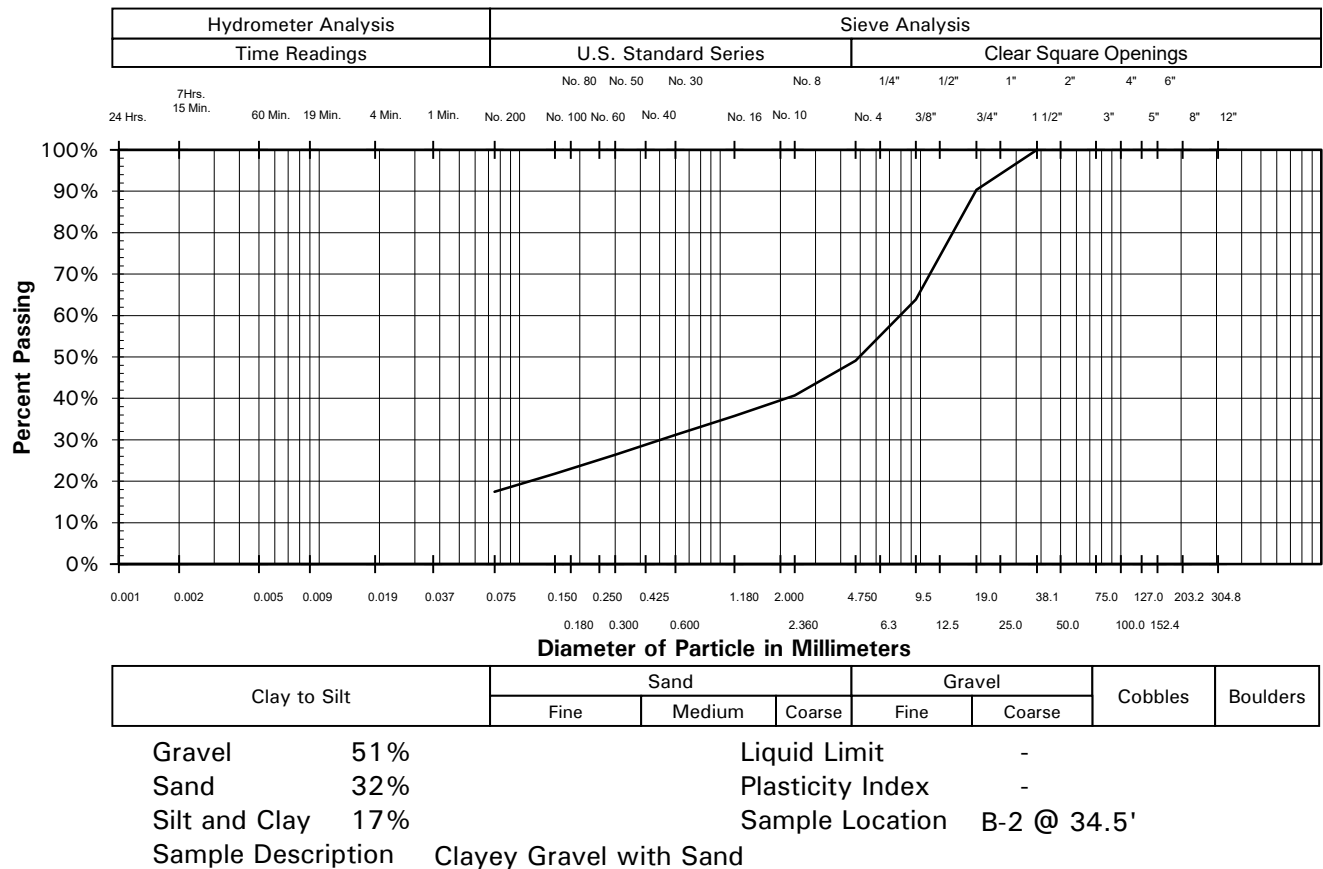
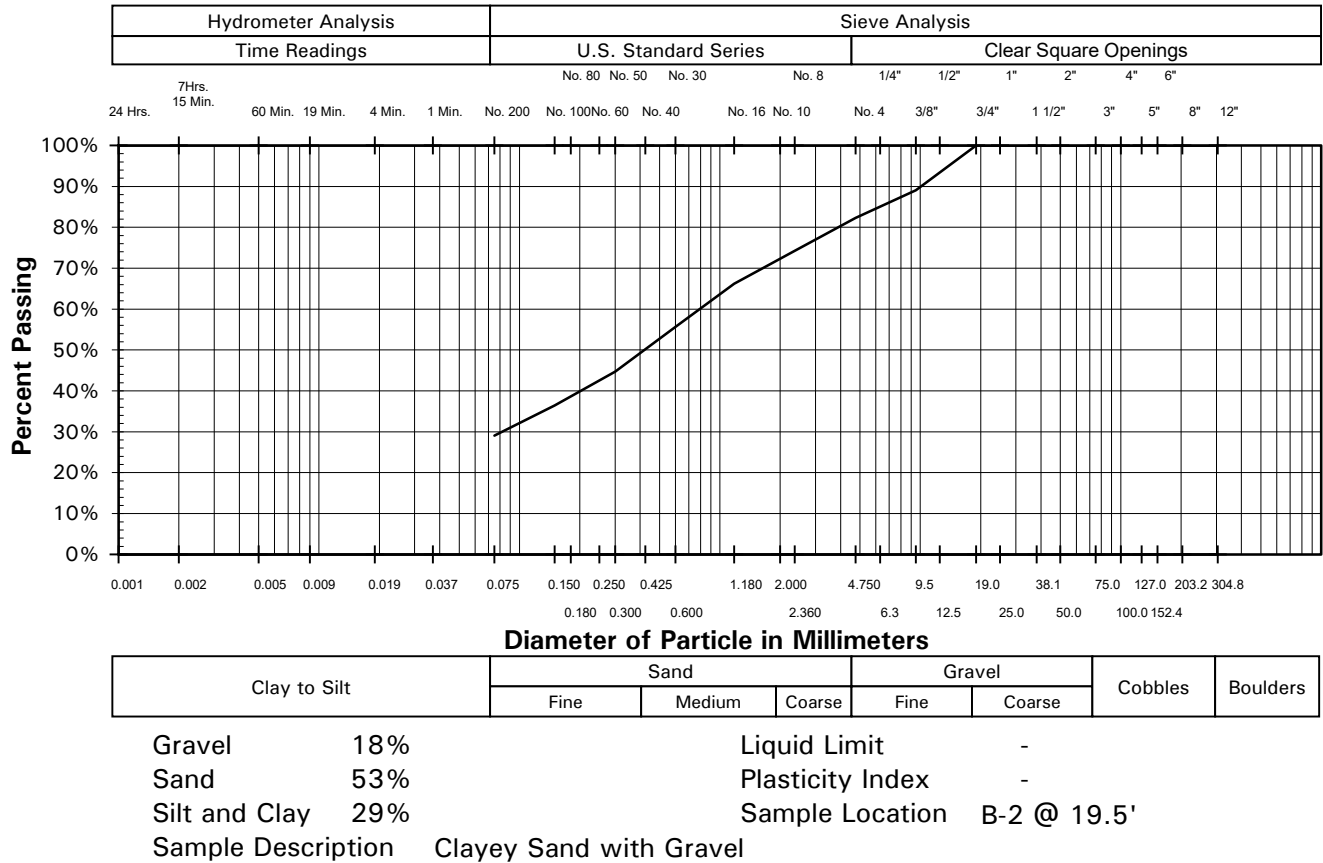
# Applied Geotechnical Engineering Consultants, Inc.



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# APPLIED GEOTECHNICAL ENGINEERING CONSULTANTS, INC.





**APPLIED GEOTECHNICAL ENGINEERING CONSULTANTS, INC.**

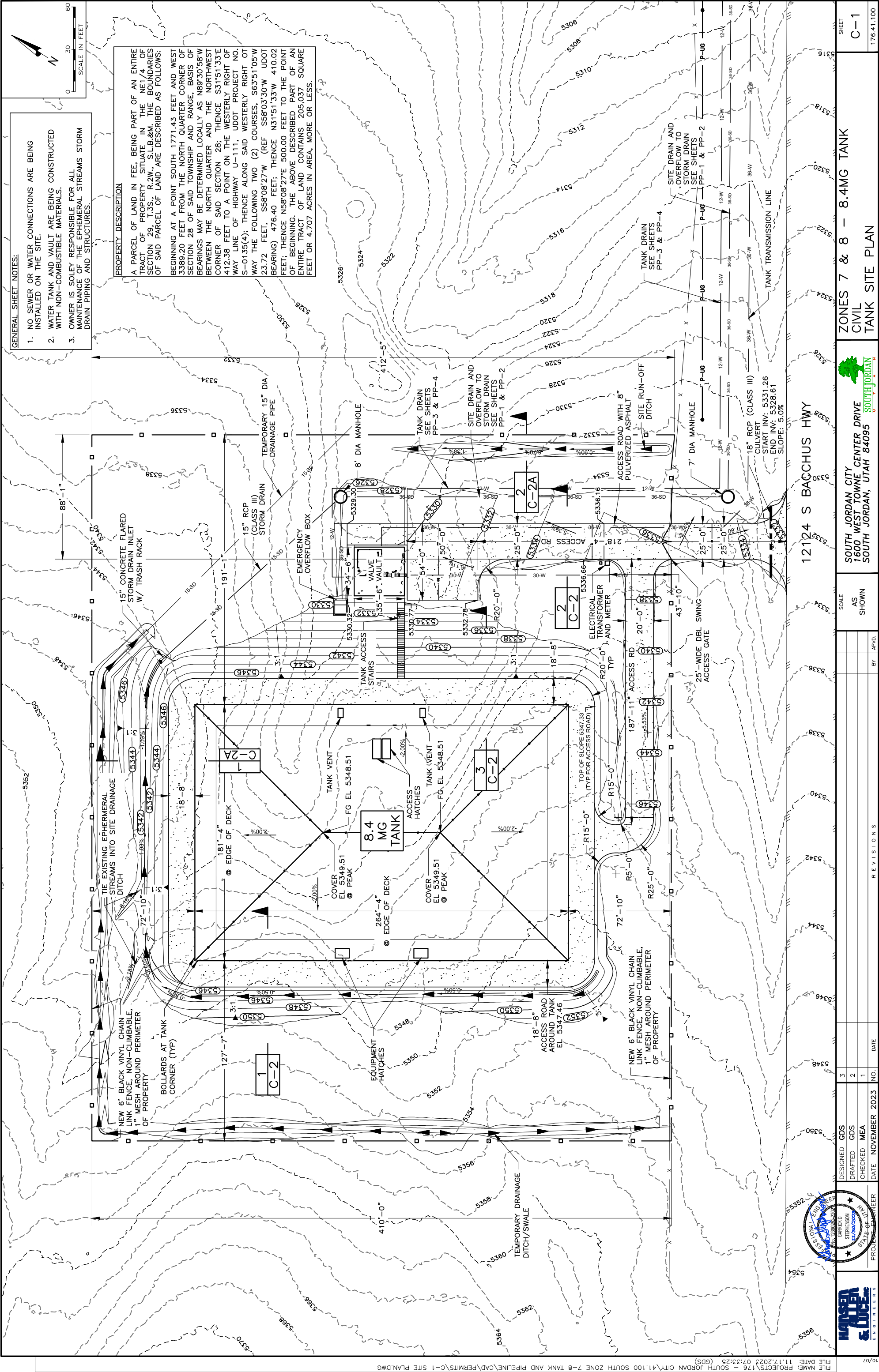
TABLE I  
SUMMARY OF LABORATORY TEST RESULTS

PROJECT NUMBER: 1210477

[illegible]

TABLE II  
SUMMARY OF LABORATORY TEST RESULTS

[illegible]






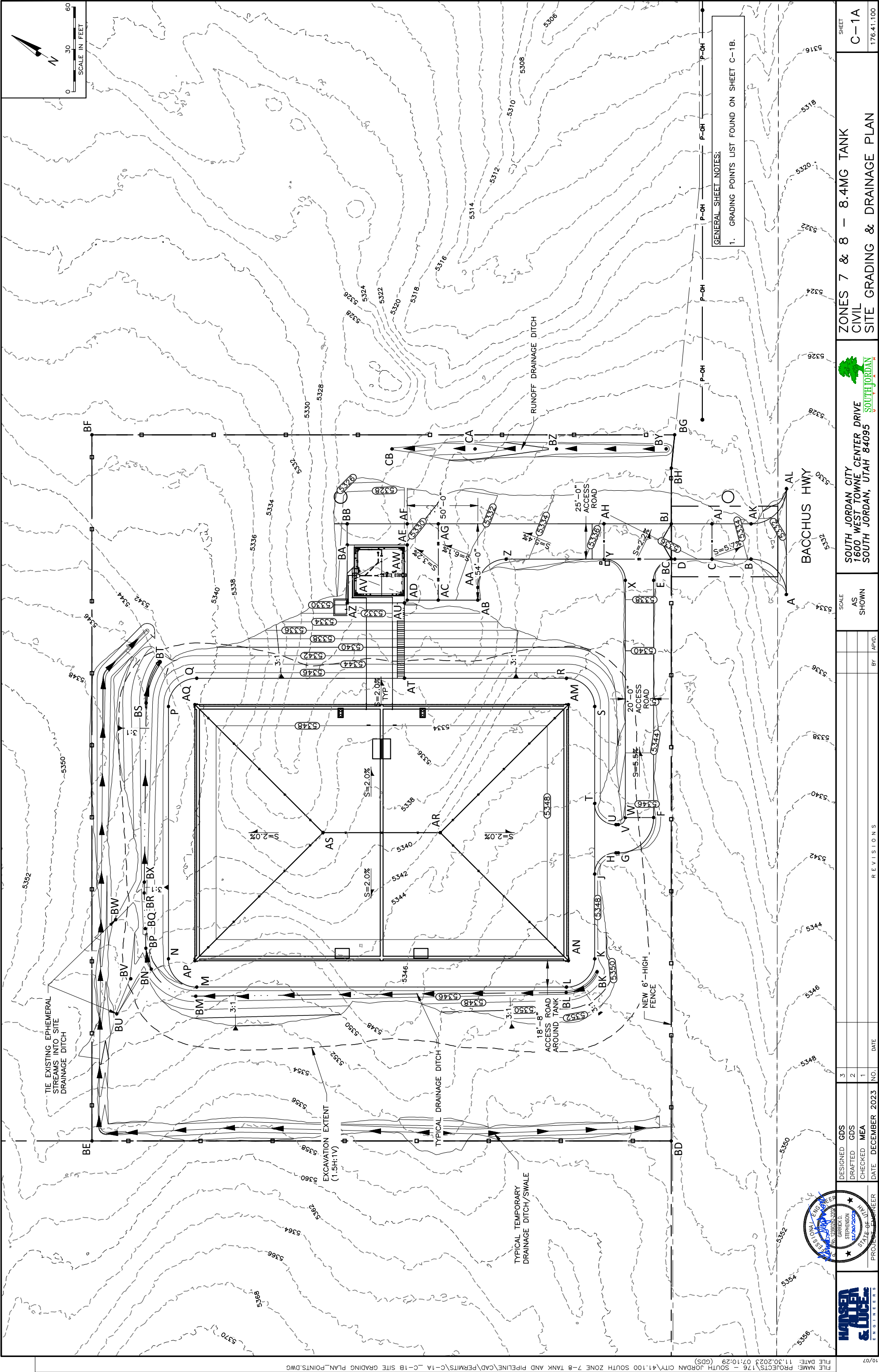
- GENERAL SHEET NOTES:
1. NO SEWER OR WATER CONNECTIONS ARE BEING INSTALLED ON THE SITE.
  2. WATER TANK AND VAULT ARE BEING CONSTRUCTED WITH NON-COMBUSTIBLE MATERIALS.
  3. OWNER IS SOLEY RESPONSIBLE FOR ALL MAINTENANCE OF THE EPHEMERAL STREAMS STORM DRAIN PIPING AND STRUCTURES.

PROPERTY DESCRIPTION




A PARCEL OF LAND IN FEE, BEING PART OF AN ENTIRE TRACT OF PROPERTY SITUATE IN THE NE1/4 OF SECTION 29, T.3S., R.2W., S.L.B.&M. THE BOUNDARIES OF SAID PARCEL OF LAND ARE DESCRIBED AS FOLLOWS:

BEGINNING AT A POINT SOUTH 1771.43 FEET AND WEST 3389.20 FEET FROM THE NORTH QUARTER CORNER OF SECTION 28 OF SAID TOWNSHIP AND RANGE, BASIS OF BEARINGS MAY BE DETERMINED LOCALLY AS N89°30'58"W BETWEEN THE NORTH QUARTER AND THE NORTHWEST CORNER OF SAID SECTION 28; THENCE S31°51'33"E 412.38 FEET TO A POINT ON THE WESTERLY RIGHT OF WAY LINE OF HIGHWAY U-111, UDOT PROJECT NO. S-0135(4); THENCE ALONG SAID WESTERLY RIGHT OF WAY THE FOLLOWING TWO (2) COURSES, S63°51'05"W 23.72 FEET, S58°08'27"W (REF. S58°03'30"W UDOT BEARING) 476.40 FEET; THENCE N31°51'33"W 410.02 FEET; THENCE N58°08'27"E 500.00 FEET TO THE POINT OF BEGINNING. THE ABOVE DESCRIBED PART OF AN ENTIRE TRACT OF LAND CONTAINS 205.037 SQUARE FEET OR 4.707 ACRES IN AREA, MORE OR LESS.

|   |   |          |               |     |                   |   |   |   |              |
|---|---|----------|---------------|-----|-------------------|---|---|---|--------------|
|  |  | DESIGNED | GDS           | 3   | SCALE<br>AS SHOWN | SOUTH JORDAN CITY<br>1600 WEST TOWNE CENTER DRIVE<br>SOUTH JORDAN, UTAH 84095 |  | ZONES 7 & 8 - 8.4MG TANK<br>CIVIL<br>TANK SITE PLAN | SHEET<br>C-1 |
|   |   | DRAFTED  | GDS           | 2   |                   |   |   |   |              |
|   |   | CHECKED  | MEA           | 1   |                   |   |   |   |              |
|   |   | DATE     | NOVEMBER 2023 | NO. | DATE              |   |   |   | 176.41.100   |



GENERAL SHEET NOTES:  
1. GRADING POINTS LIST FOUND ON SHEET C-1B.

|   |                    |  |   |   |                  |          |
|---|--------------------|--|---|---|------------------|----------|
|  | DESIGNED GDS       |  | 3 |  | PROJECT ENGINEER |          |
|   | DRAFTED GDS        |  | 2 |   | NO.              |          |
|   | CHECKED MEA        |  | 1 |   | DATE             |          |
|   | DATE DECEMBER 2023 |  |   |   | REVISIONS        |          |
|   |                    |  |   | BY  | APVD.            | SCALE    |
|   |                    |  |   |   |                  | AS SHOWN |
|  |                    |  |   |   |                  |          |
| SOUTH JORDAN CITY<br>1600 WEST TOWNE CENTER DRIVE<br>SOUTH JORDAN, UTAH 84095       |                    |  |   |   |                  |          |
| ZONES 7 & 8 — 8.4MG TANK<br>CIVIL   |                    |  |   |   |                  |          |
| SITE GRADING & DRAINAGE PLAN  |                    |  |   |   |                  |          |
| SHEET C-1A  |                    |  |   |   |                  |          |
| 176.41.100  |                    |  |   |   |                  |          |



| POINT ID | NORTHING     | EASTING      | ELEVATION | DESCRIPTION         |
|----------|--------------|--------------|-----------|---------------------|
| A        | 7,362,592.00 | 1,478,166.71 | 5333.21   | ACCESS PC, R=25'    |
| B        | 7,362,626.44 | 1,478,174.76 | 5333.81   | ACCESS PT           |
| C        | 7,362,649.90 | 1,478,160.18 | 5335.90   | ACCESS GB           |
| D        | 7,362,672.24 | 1,478,146.30 | 5336.16   | ACCESS GB/PC, R=15' |
| E        | 7,362,677.06 | 1,478,125.64 | 5337.24   | ACCESS PT           |
| F        | 7,362,588.42 | 1,477,983.00 | 5346.53   | ACCESS PC, R=25'    |
| G        | 7,362,596.46 | 1,477,948.57 | 5347.00   | ACCESS PT           |
| H        | 7,362,597.88 | 1,477,947.68 | 5347.03   | ACCESS PC, R=15'    |
| J        | 7,362,602.70 | 1,477,927.03 | 5347.33   | ACCESS, PT          |
| K        | 7,362,571.01 | 1,477,876.02 | 5347.33   | ACCESS PC, R=20'    |
| L        | 7,362,577.44 | 1,477,848.48 | 5347.33   | ACCESS PT           |
| M        | 7,362,799.68 | 1,477,710.36 | 5347.33   | ACCESS PC, R=20'    |
| N        | 7,362,827.23 | 1,477,716.79 | 5347.33   | ACCESS PT           |
| P        | 7,362,921.53 | 1,477,868.54 | 5347.33   | ACCESS PC, R=20'    |
| Q        | 7,362,915.10 | 1,477,896.09 | 5347.33   | ACCESS PT           |
| R        | 7,362,692.86 | 1,478,034.20 | 5347.33   | ACCESS PC, R=20'    |
| S        | 7,362,665.31 | 1,478,027.77 | 5347.33   | ACCESS PT           |
| T        | 7,362,629.09 | 1,477,969.49 | 5347.33   | ACCESS PC, R=15'    |
| U        | 7,362,608.44 | 1,477,964.67 | 5347.03   | ACCESS PT           |
| V        | 7,362,607.01 | 1,477,965.56 | 5347.00   | ACCESS PC, R=5'     |
| W        | 7,362,605.41 | 1,477,972.44 | 5346.53   | ACCESS GB/PT        |
| X        | 7,362,694.05 | 1,478,115.08 | 5337.24   | ACCESS PC, R=15'    |
| Y        | 7,362,714.71 | 1,478,119.91 | 5336.66   | ACCESS GB/PT        |
| Z        | 7,362,773.68 | 1,478,083.26 | 5333.20   | ACCESS PC, R=20'    |
| AA       | 7,362,780.11 | 1,478,055.72 | 5332.60   | ACCESS PT           |
| AB       | 7,362,775.37 | 1,478,048.06 | 5332.78   | ACCESS PI           |
| AC       | 7,362,799.13 | 1,478,033.29 | 5331.38   | ACCESS GB           |
| AD       | 7,362,817.82 | 1,478,021.68 | 5330.83   | ACCESS PI           |
| AE       | 7,362,838.44 | 1,478,054.86 | 5330.05   | ACCESS PI           |
| AF       | 7,362,846.33 | 1,478,067.55 | 5329.75   | ACCESS PI           |
| AG       | 7,362,827.64 | 1,478,079.16 | 5330.30   | ACCESS GB           |
| AH       | 7,362,728.04 | 1,478,141.05 | 5336.16   | ACCESS GB           |
| AJ       | 7,362,663.09 | 1,478,181.42 | 5335.40   | ACCESS GB           |
| AK       | 7,362,639.60 | 1,478,196.02 | 5333.31   | ACCESS PC, R=25'    |
| AL       | 7,362,631.55 | 1,478,230.43 | 5329.83   | ACCESS PT           |
| AM       | 7,362,681.87 | 1,478,019.05 | 5346.71   | EDGE OF TANK TOC    |
| AN       | 7,362,586.16 | 1,477,865.04 | 5346.71   | EDGE OF TANK TOC    |
| AP       | 7,362,810.67 | 1,477,725.51 | 5346.71   | EDGE OF TANK TOC    |
| AQ       | 7,362,906.38 | 1,477,879.53 | 5346.71   | EDGE OF TANK TOC    |
| AR       | 7,362,711.02 | 1,477,894.19 | 5348.52   | RIDGE TOC           |
| AS       | 7,362,781.52 | 1,477,850.38 | 5348.52   | RIDGE TOC           |
| AT       | 7,362,790.26 | 1,477,973.69 | 5347.33   | STAIRS TOP          |
| AU       | 7,362,818.42 | 1,478,019.01 | 5330.77   | STAIRS BOT          |
| AV       | 7,362,850.73 | 1,478,006.58 | N/A       | INSIDE NW CNR VAULT |
| AW       | 7,362,839.75 | 1,478,050.49 | N/A       | INSIDE SE CNR VAULT |
| AX       | NOT USED     | NOT USED     | NOT USED  | NOT USED            |
| AY       | NOT USED     | NOT USED     | NOT USED  | NOT USED            |
| AZ       | 7,362,852.82 | 1,477,997.63 | 5330.32   | GB                  |
| BA       | 7,362,874.47 | 1,478,032.47 | 5329.60   | GB                  |
| BB       | 7,362,882.35 | 1,478,045.15 | 5329.30   | GB                  |

| POINT ID | NORTHING     | EASTING      | ELEVATION | DESCRIPTION     |
|----------|--------------|--------------|-----------|-----------------|
| BC       | 7,362,674.36 | 1,478,144.98 | 5336.19   | FENCE GATE      |
| BD       | 7,362,456.93 | 1,477,795.10 | 5354.28   | FENCE CNR       |
| BE       | 7,362,805.18 | 1,477,578.67 | 5354.58   | FENCE CNR       |
| BF       | 7,363,069.09 | 1,478,003.35 | 5336.86   | FENCE CNR       |
| BG       | 7,362,718.84 | 1,478,221.01 | 5332.70   | FENCE CNR       |
| BH       | 7,362,708.39 | 1,478,199.72 | 5333.99   | FENCE PI        |
| BJ       | 7,362,687.56 | 1,478,166.21 | 5335.69   | FENCE GATE      |
| BK       | 7,362,564.77 | 1,477,869.06 | 5345.77   | FL PC, R=24'    |
| BL       | 7,362,575.61 | 1,477,845.11 | 5345.63   | FL PT           |
| BM       | 7,362,796.86 | 1,477,704.52 | 5344.32   | FL PC, R=35'    |
| BN       | 7,362,833.79 | 1,477,704.14 | 5344.12   | FL GB           |
| BP       | 7,362,844.79 | 1,477,714.71 | 5342.80   | FL PT           |
| BQ       | 7,362,852.49 | 1,477,726.30 | 5341.60   | FL GB           |
| BR       | 7,362,866.44 | 1,477,747.31 | 5341.34   | FL PI           |
| BS       | 7,362,936.29 | 1,477,862.32 | 5339.96   | FL PC, R=50'    |
| BT       | 7,362,943.44 | 1,477,891.65 | 5339.65   | FL PT           |
| BU       | 7,362,837.76 | 1,477,664.43 | 5346.00   | TIE-IN DRAINAGE |
| BV       | 7,362,842.44 | 1,477,690.69 | 5345.00   | TIE-IN DRAINAGE |
| BW       | 7,362,873.60 | 1,477,720.63 | 5344.00   | TIE-IN DRAINAGE |
| BX       | 7,362,870.43 | 1,477,753.89 | 5341.28   | TIE-IN DRAINAGE |
| BY       | 7,362,718.66 | 1,478,209.35 | 5331.09   | FL              |
| BZ       | 7,362,784.53 | 1,478,168.42 | 5330.39   | FL/GB           |
| CA       | 7,362,833.54 | 1,478,137.96 | 5326.52   | FL/GB           |
| CB       | 7,362,883.43 | 1,478,106.95 | 5324.70   | FL              |



|          |               |     |      |
|----------|---------------|-----|------|
| DESIGNED | GDS           | 3   |      |
| DRAFTED  | GDS           | 2   |      |
| CHECKED  | MEA           | 1   |      |
| DATE     | DECEMBER 2023 | NO. | DATE |

|    |           |
|----|-----------|
|    | REVISIONS |
| BY | APVD.     |

SCALE  
AS SHOWN

SOUTH JORDAN CITY  
1600 WEST TOWNE CENTER DRIVE  
SOUTH JORDAN, UTAH 84095



ZONES 7 & 8 – 8.4MG TANK  
CIVIL  
GRADING & DRAINAGE POINT TABLE

SHEET  
C–1B  
176.41.100



|          |               |     |   |      |  |
|----------|---------------|-----|---|------|--|
| DESIGNED | GDS           | 3   |   |      |  |
| DRAFTED  | GDS           | 2   |   |      |  |
| CHECKED  | MEA           | 1   |   |      |  |
| DATE     | NOVEMBER 2023 | NO. | 1 | DATE |  |

|           |  |  |  |    |       |
|-----------|--|--|--|----|-------|
| REVISIONS |  |  |  |    |       |
|           |  |  |  | BY | APVD. |

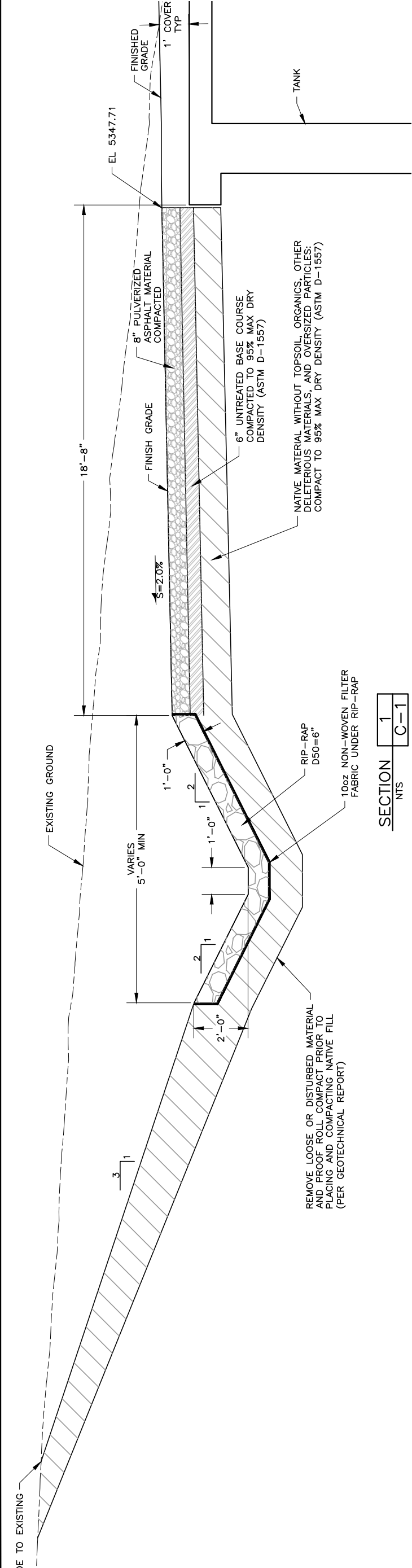
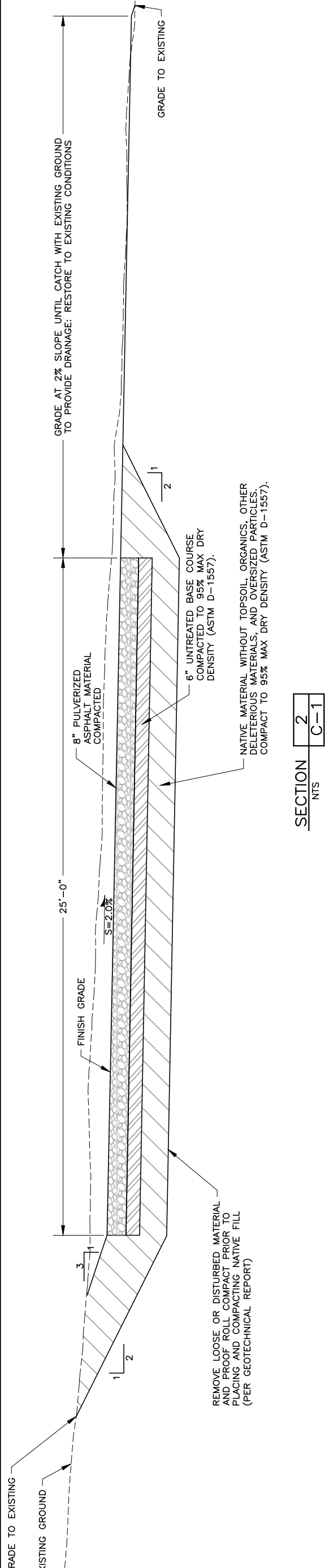
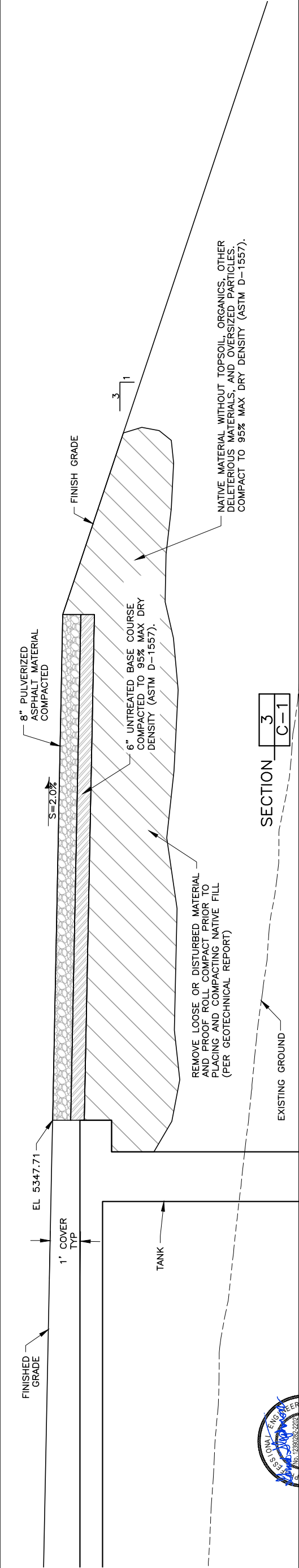
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|-------|----------|
| SCALE | AS SHOWN |
|-------|----------|

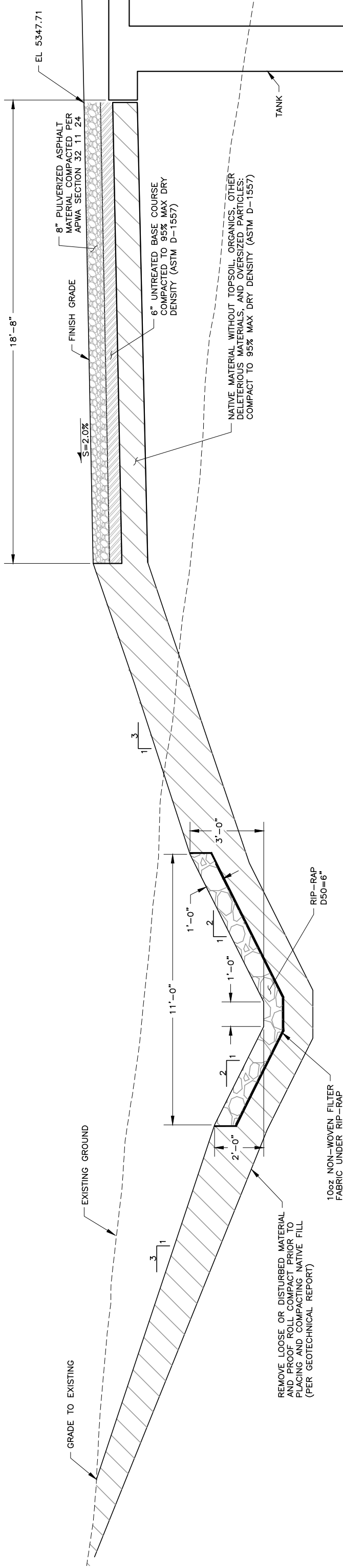
SOUTH JORDAN CITY  
1600 WEST TOWNE CENTER DRIVE  
SOUTH JORDAN, UTAH 84095



ZONES 7 & 8 – 8.4MG TANK  
CIVIL  
ACCESS ROAD DETAILS

|       |            |
|-------|------------|
| SHEET | C-2        |
|       | 176.41.100 |





EL 5347.71

8" PULVERIZED ASPHALT  
MATERIAL COMPACTED PER  
APWA SECTION 32 11 24

FINISH GRADE

6" UNTREATED BASE COURSE  
COMPACTED TO 95% MAX DRY  
DENSITY (ASTM D-1557)

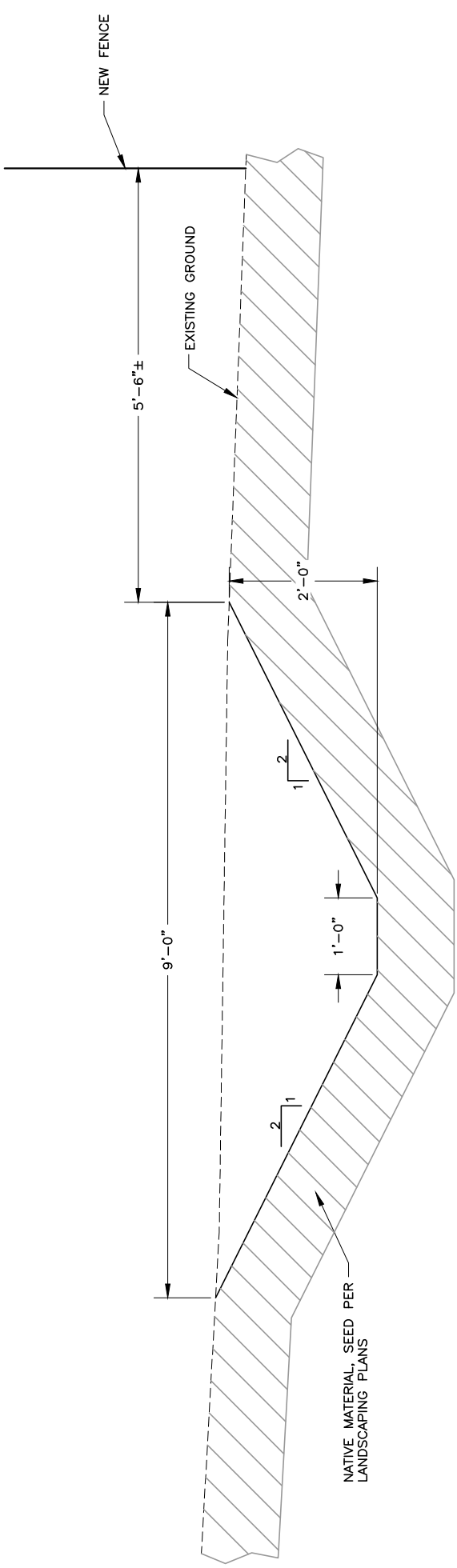
---  
NATIVE MATERIAL WITHOUT TOPSOIL, ORGANICS, OTHER  
DELETERIOUS MATERIALS, AND OVERSIZED PARTICLES:  
COMPACT TO 95% MAX DRY DENSITY (ASTM D-1557)

REMOVE LOOSE OR DISTURBED MATERIAL  
AND PROOF ROLL COMPACT PRIOR TO  
PLACING AND COMPACTING NATIVE FILL  
(PER GEOTECHNICAL REPORT)

10oz NON-WOVEN FILTER  
FABRIC UNDER RIP-RAP

RIP-RAP  
D50=6"

|         |     |
|---------|-----|
| SECTION | 1   |
| NTS     | C-1 |



5'-6"±

EXISTING GROUND

NATIVE MATERIAL, SEED PER  
LANDSCAPING PLANS

|         |     |
|---------|-----|
| SECTION | 2   |
| NTS     | C-1 |



**HANSEN  
ALLEN  
& LUCIANI**  
ENGINEERS

GARRICK D.  
STEPHENSON  
11/30/2023  
STATE OF UTAH  
PROJECT ENGINEER

|          |               |     |
|----------|---------------|-----|
| DESIGNED | GDS           | 3   |
| DRAFTED  | GDS           | 2   |
| CHECKED  | MEA           | 1   |
| DATE     | NOVEMBER 2023 | NO. |

REVISIONS

SCALE  
AS  
SHOWN

SOUTH JORDAN CITY  
1600 WEST TOWNE CENTER DRIVE  
SOUTH JORDAN, UTAH 84095

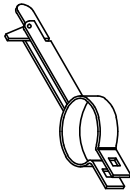


ZONES 7 & 8 - 8.4MG TANK  
CIVIL  
ACCESS ROAD DETAILS II

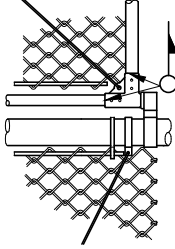
SHEET  
C-2A  
176.41.100

NOTES:

1. MATERIALS, CONSTRUCTION, AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH PROJECT STANDARD SPECIFICATIONS.
2. USE TYPE II TOP SUPPORT.
3. BARB SIRE SHALL BE USED ONLY WHEN DESIGNATED ON THE PLANS OR IN THE SPECIFICATIONS.
4. TWISTED AND BARBED SELVAGE TOP AND BOTTOM SHALL BE USED ON FENCES 5--FEET HIGH OR GREATER.
5. KNUCKLED SELVAGE ON TOP AND TWISTED AND BARBED ON BOTTOM SHALL BE USED ON FENCES LESS THAN 5--FEET.
6. ALL STEEL PIPE MEMBERS SHALL CONFORM TO THE REQUIREMENTS OF ASTM DESIGNATION F 1083 SCHEDULE 40 HOT DIPPED ZINC COATED HIGH TENSILE STEEL PIPE OR TRIPLE COATED PIPE MADE FROM STEEL CONFORMING TO ASTM F 1043.
7. POSTS SHALL BE STEEL SCHEDULE 40 PIPE OR TRIPLE COATED HIGH TENSILE STEEL PIPE OF THE SIZE SHOWN IN THE CHART. WEIGHT IN POUNDS PER FOOT WITH A TOLERANCE OF 5%.
8. LINE POSTS SHALL BE LOCATED AT EQUAL SPACING FOR EACH SEGMENT WITH A MAXIMUM SPACING AS FOLLOWS:
  - A. TANGENT SECTIONS TO 500--FOOT RADIUS NOT MORE THAN 10--FEET.
  - B. UNDER 500--FOOT RADIUS TO 200--FOOT RADIUS NOT MORE THAN 8--FEET.
  - C. UNDER 200--FOOT RADIUS TO 100--FOOT RADIUS NOT MORE THAN 6--FEET.
  - D. UNDER 100--FOOT RADIUS NOT MORE THAN 5--FEET.
9. TRUSS RODS AND BRACES SHALL NOT BE REQUIRED FOR FABRIC HEIGHT LESS THAN 5--FEET.
10. TENSION WIRE SHALL BE 7 GAUGE ZINC-- OR ALUMINUM--COATED COIL SPRING STEEL TENSION WIRE.
11. ALL PIPES, WIRES AND FABRICS TO BE BLACK VINYL COATED PVC.

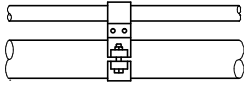


GATE KEEPER



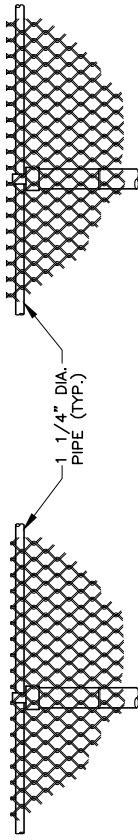
OPTIONAL WELDED OR RIVETED CONSTRUCTION

BOTTOM GATE HINGE AND GATE DETAIL



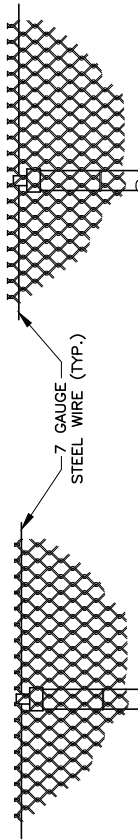
DROP ROD ASSEMBLY

TOP GATE HINGE



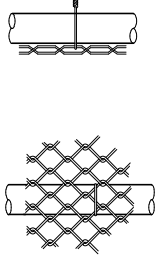
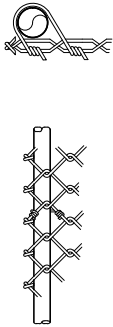
KNUCKLED SELVAGE WITH TENSION WIRE TYPE I

TWISTED & BARBED SELVAGE TYPE II



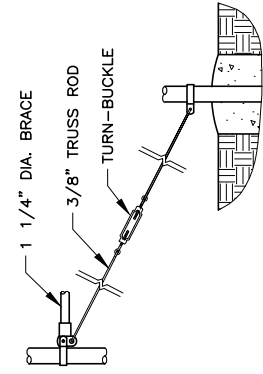
KNUCKLED SELVAGE WITH TENSION WIRE TYPE III

TWISTED & BARBED SELVAGE WITH TENSION WIRE TYPE IV



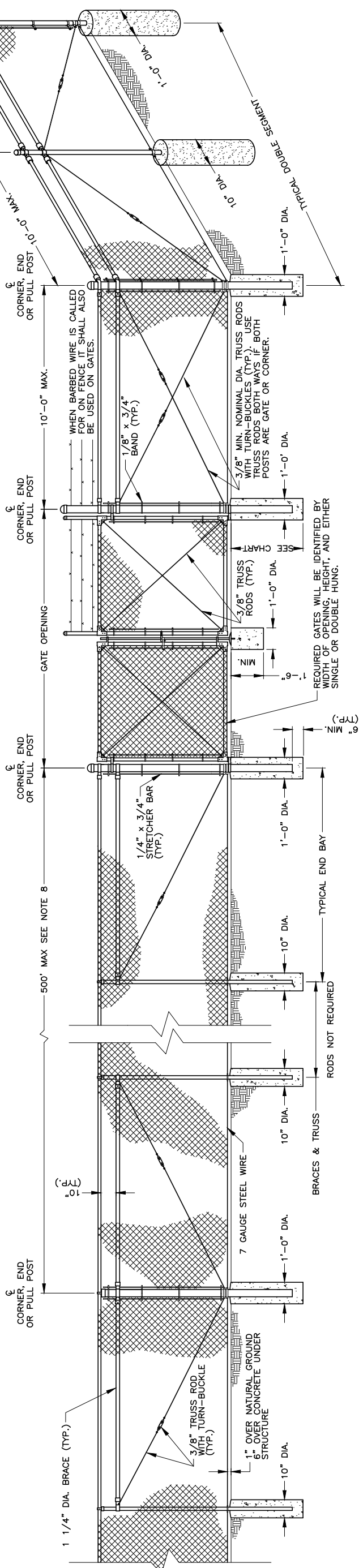
PIPE POST TIE

COMBINATION CAP AND BARBED WIRE SUPPORTING ARM



BRACE AND TRUSS CONNECTIONS

CENTER GATE STOP AND GATE DETAIL



| HEIGHT          | GATE OPENING                                     | GATE POST | GATE FRAME |
|-----------------|--|-----------|------------|
| UNDER 6 FEET    | SINGLE TO 6' OR DOUBLE TO 12'                    | 2"        | 1"         |
|                 | SINGLE OVER 6' TO 8' OR DOUBLE OVER 12' TO 16'   | 2 1/2"    | 1 1/2"     |
|                 | SINGLE OVER 8' TO 12' OR DOUBLE 16' TO 24'       | 3 1/2"    | 1 1/2"     |
|                 | SINGLE OVER 6' OR DOUBLE TO 12'                  | 2 1/2"    |            |
| 6 FEET AND OVER | SINGLE OVER 6' TO 12' OR DOUBLE OVER 12' TO 24'  | 3 1/2"    | 1 1/2"     |
|                 | SINGLE OVER 12' TO 18' OR DOUBLE OVER 24' TO 36' | 6"        |            |
|                 | SINGLE OVER 18' OR DOUBLE OVER 36'               | 8"        |            |

CHAIN LINK FENCE A C-1

| HEIGHT OF FABRIC | DEPTH OF POSTS | LENGTH OF LINE END, CORNER OR PULL POST | SIZE OF POSTS          |                                 |                            |                                   |
|------------------|----------------|---|------------------------|---------------------------------|----------------------------|-----------------------------------|
|                  |                |   | END, CORNER, NOM. SIZE | & PULL POSTS, ASTM A-120 COATED | PIPE WEIGHT, TRIPLE COATED | LINE POST MIN. SIZE, OUTSIDE DIA. |
| 7'               | 3'             | 10'                                     | 2 1/2"                 | 2 1/2"                          | 5.79                       | 2.375"                            |
| 6'               | 3'             | 9'                                      | 2 1/2"                 | 2 1/2"                          | 5.79                       | 2.375"                            |
| 5'               | 3'             | 8'                                      | 2 1/2"                 | 2 1/2"                          | 5.79                       | 2.375"                            |
| 4'               | 3'             | 6'                                      | 2 1/2"                 | 2 1/2"                          | 5.79                       | 2.375"                            |
| 3'               | 3'             | 5'                                      | 2 1/2"                 | 2 1/2"                          | 5.79                       | 2.375"                            |





|          |               |     |
|----------|---------------|-----|
| DESIGNED | GDS           | 3   |
| DRAFTED  | BKC           | 2   |
| CHECKED  | MEA           | 1   |
| DATE     | NOVEMBER 2023 | NO. |

|                  |      |     |
|------------------|------|-----|
| PROJECT ENGINEER | DATE | NO. |
| REVISIONS        | DATE | NO. |

|    |       |
|----|-------|
| BY | APVD. |
|    |       |

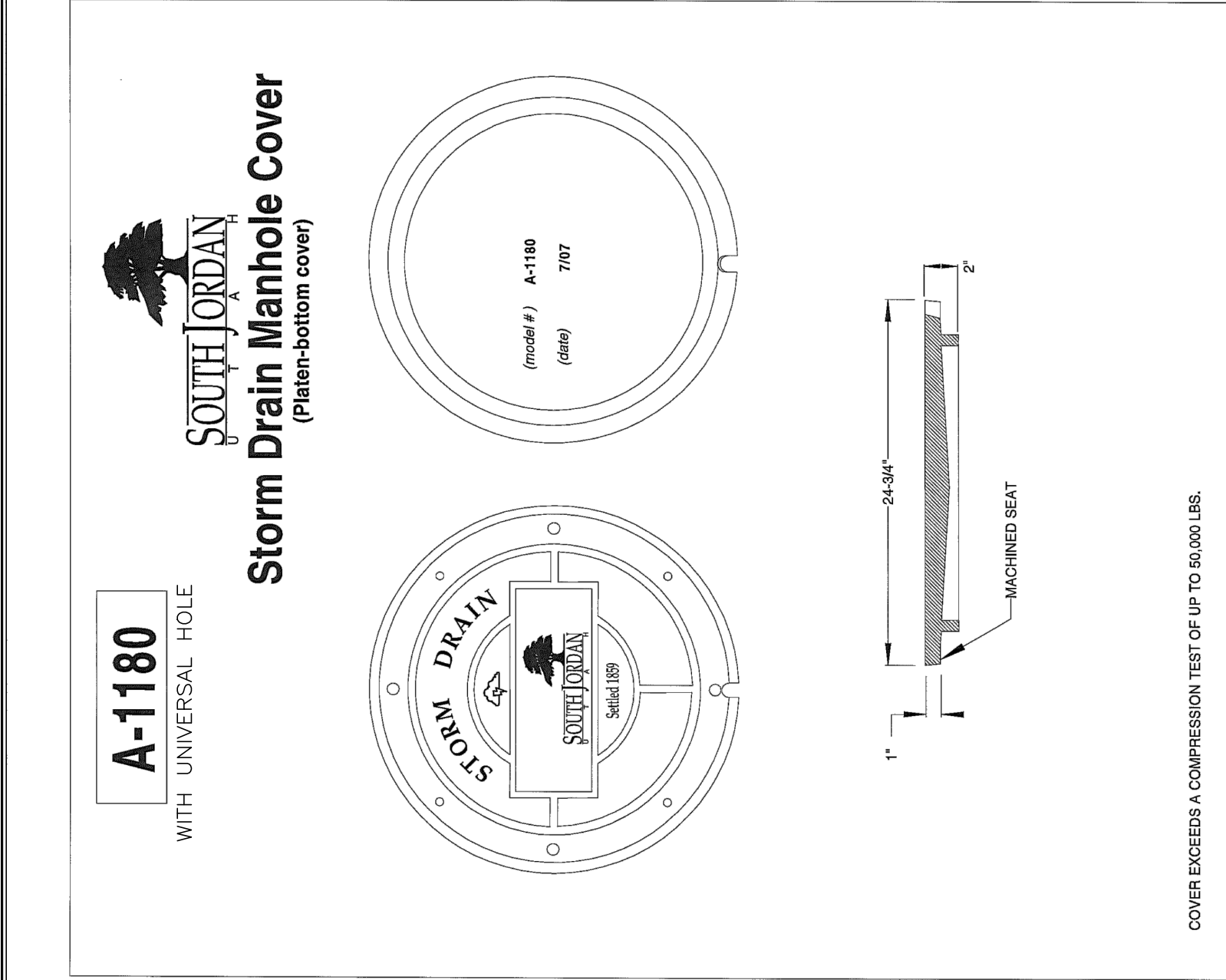
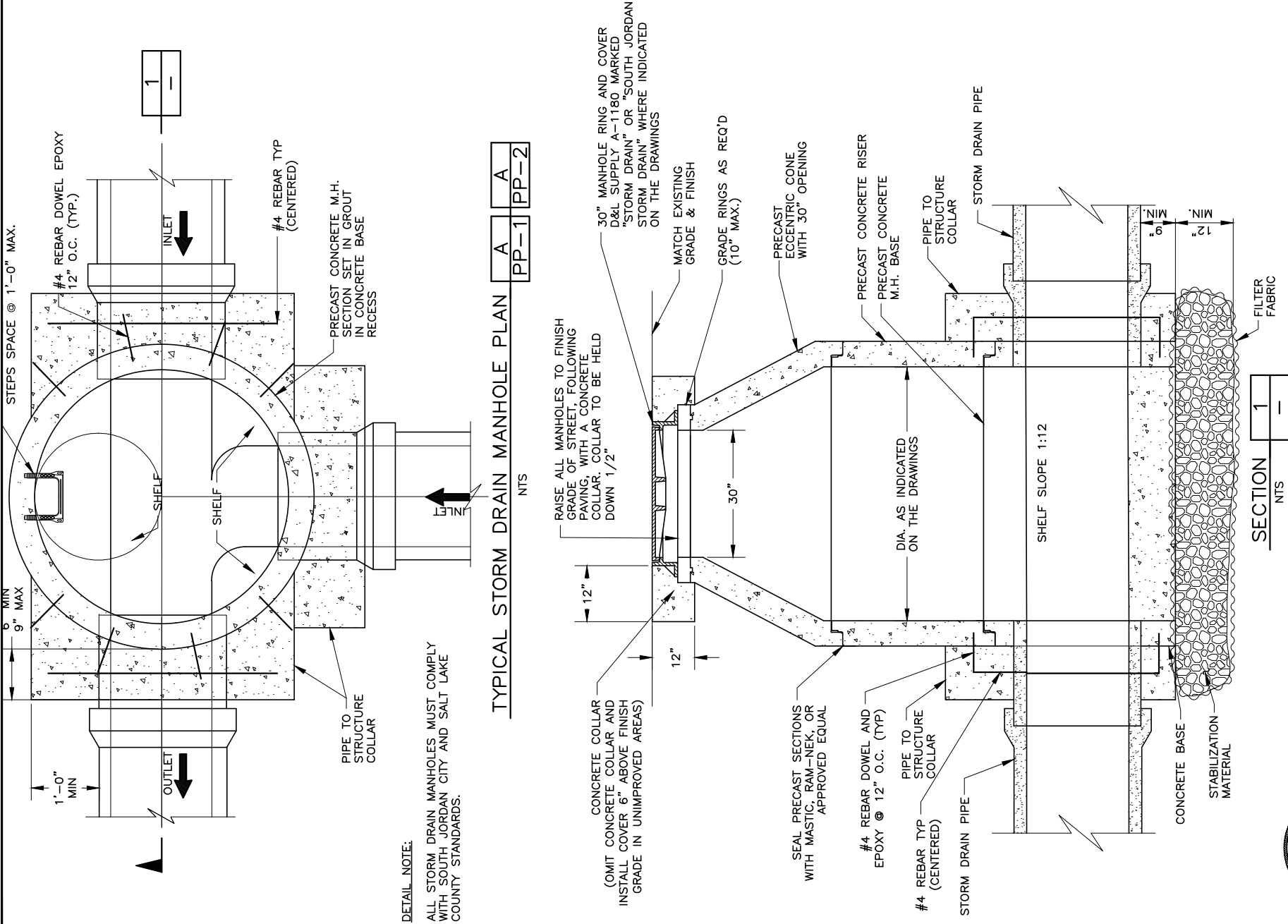
|       |              |
|-------|--------------|
| SCALE | NOT TO SCALE |
|-------|--------------|

SOUTH JORDAN CITY  
1600 WEST TOWNE CENTER DRIVE  
SOUTH JORDAN, UTAH 84095



ZONES 7 & 8 – 8.4MG TANK  
CIVIL  
STORM DRAIN DETAILS

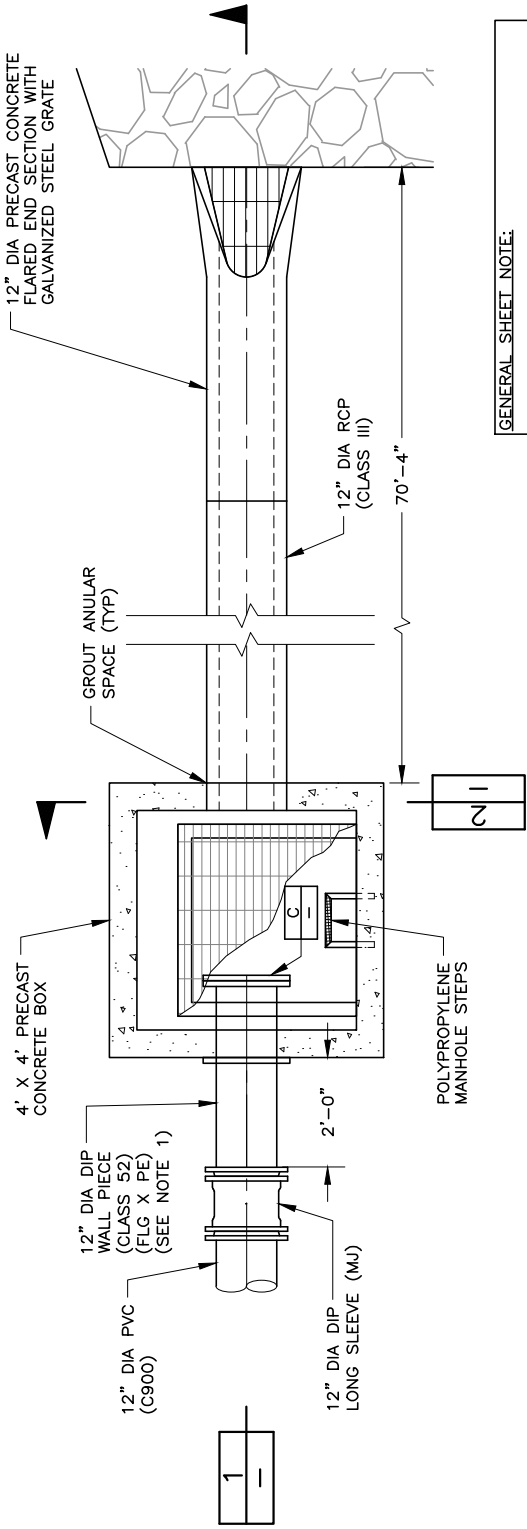
|       |            |
|-------|------------|
| SHEET | C-4        |
|       | 176.41.100 |



|  |        |                                 |           |   |
|--|--------|---------------------------------|-----------|---|
| <b>CAST IRON conforms to</b><br>ASTM A-48-93 Class 35B<br>Meets H-20 Wheel Loading |        | <b>D&amp;L model No. A-1180</b> |           | <b>D&amp;L Foundry &amp; Supply</b><br>CA Sales: (707) 557-4525 Fax: (707) 557-4655<br>UT Sales: (801) 785-5015 Fax: (801) 785-0835<br>WA Sales: (509) 765-7952 Fax: (509) 765-8124 |
| Designation:   | A-1180 | Date:                           | July 2007 | Property: Jessi Meier<br>D&L Foundry & Supply Inc. (not to scale)   |
|  |        |                                 |           | WITH<br>UNIVERSAL<br>HOLE   |

DETAIL NOTES:

1. WALL PIECE TO HAVE 3" X 1/4" THRUST RING  
INSTALLED AGAINST THE OUTSIDE WALL OF BOX.



GENERAL SHEET NOTE:  
ALL STORM DRAIN FACILITIES MUST COMPLY WITH SOUTH JORDAN CITY AND SALT LAKE COUNTY STANDARDS.

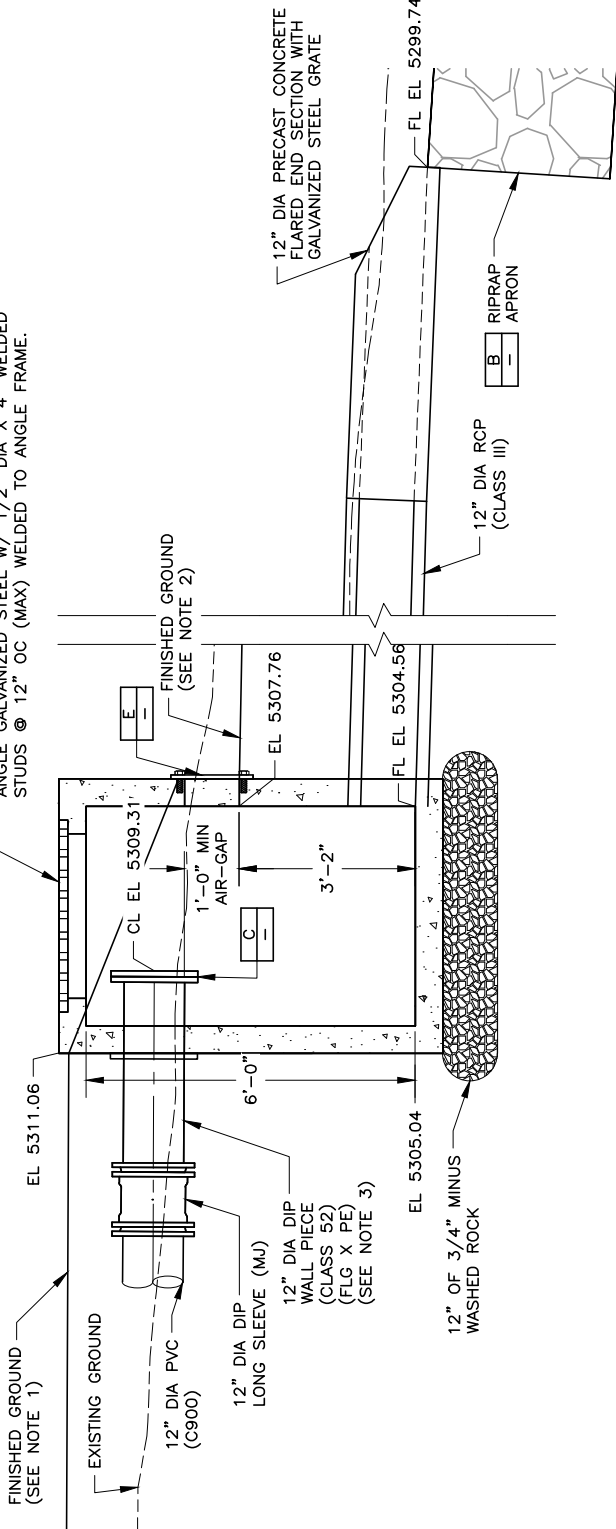
TANK DRAIN OUTLET BOX

|      |   |
|------|---|
| A    | A |
| PP-4 |   |

NTS

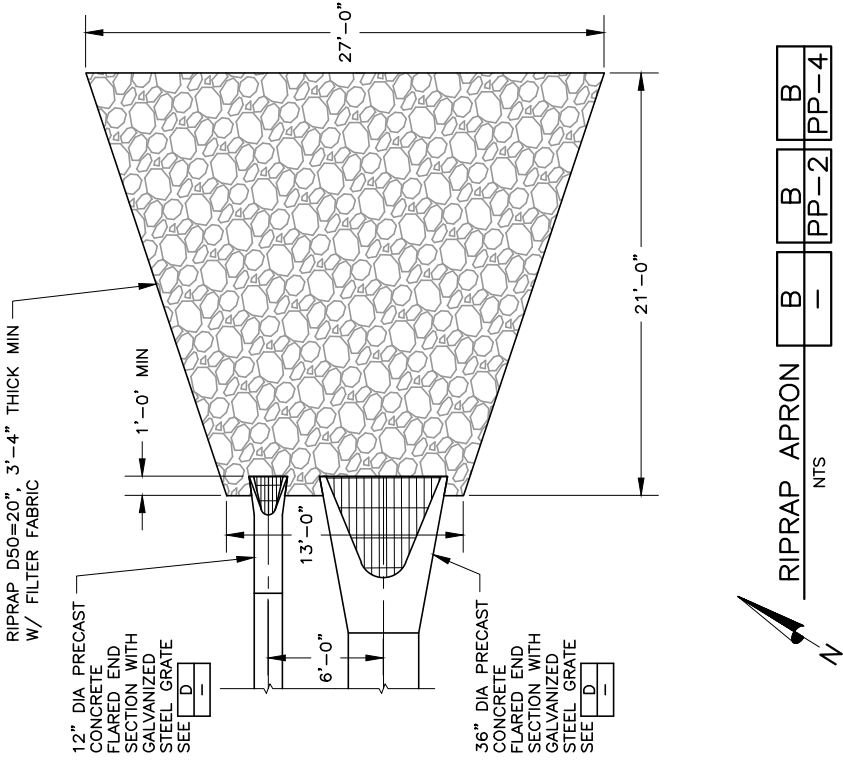
SECTION NOTES:

1. MOUND SOIL OVER EXPOSED PIPE TO PROVIDE 1' MIN COVER. USE 4" WIDE TOP WIDTH, AND 2.5H:1V SIDE SLOPES.
2. PROVIDE DRAINAGE DITCH FROM BOX SCREEN TO EXISTING GROUND. DITCH TO BE 2' WIDE WITH 2.5H:1V SIDE SLOPES. DITCH TO BE SLOPES AT 2.0% MIN.
3. WALL PIECE TO HAVE 3" X 1/4" THRUST RING INSTALLED AGAINST THE OUTSIDE WALL OF BOX.



SECTION

|     |  |
|-----|--|
| 1   |  |
| NTS |  |



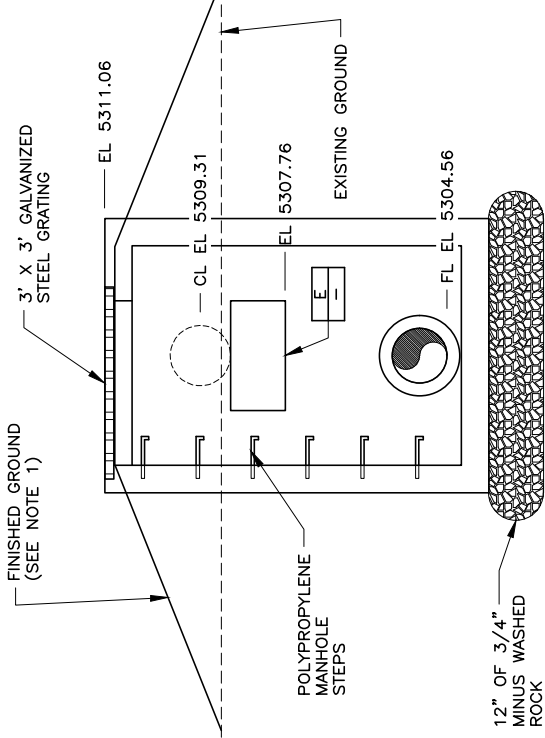
RIPRAP APRON

|      |      |
|------|------|
| B    | B    |
| PP-2 | PP-4 |

NTS

SECTION NOTES:

1. MOUND SOIL OVER EXPOSED PIPE TO PROVIDE 1' MIN COVER. USE 4" WIDE TOP WIDTH, AND 2.5H:1V SIDE SLOPES.

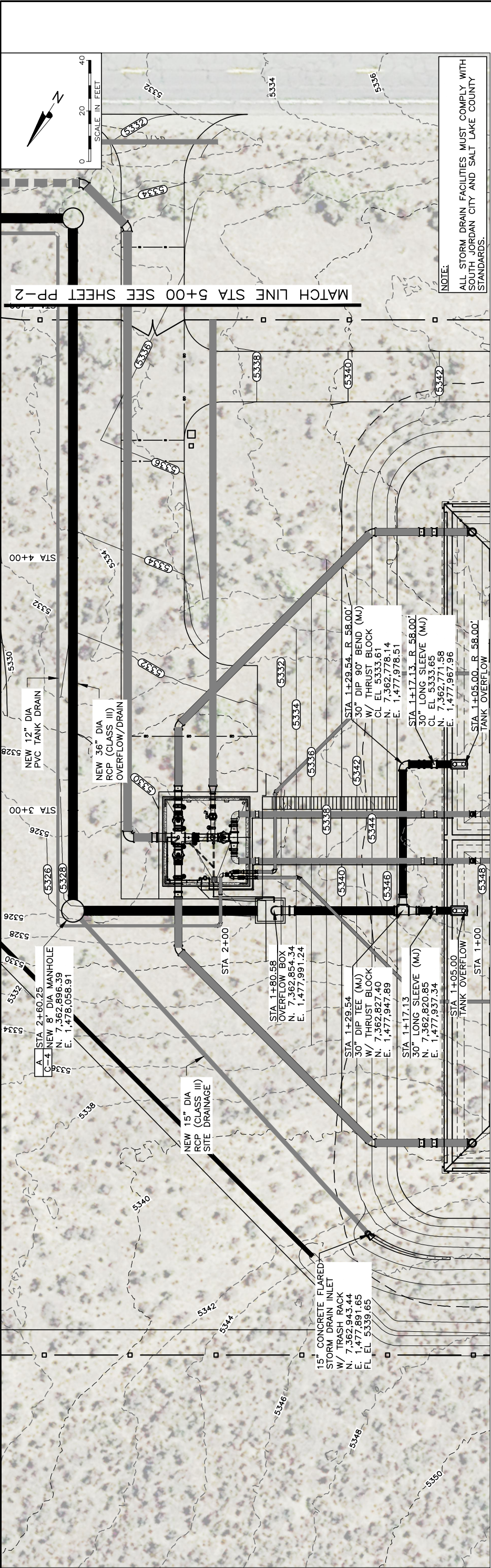


SECTION

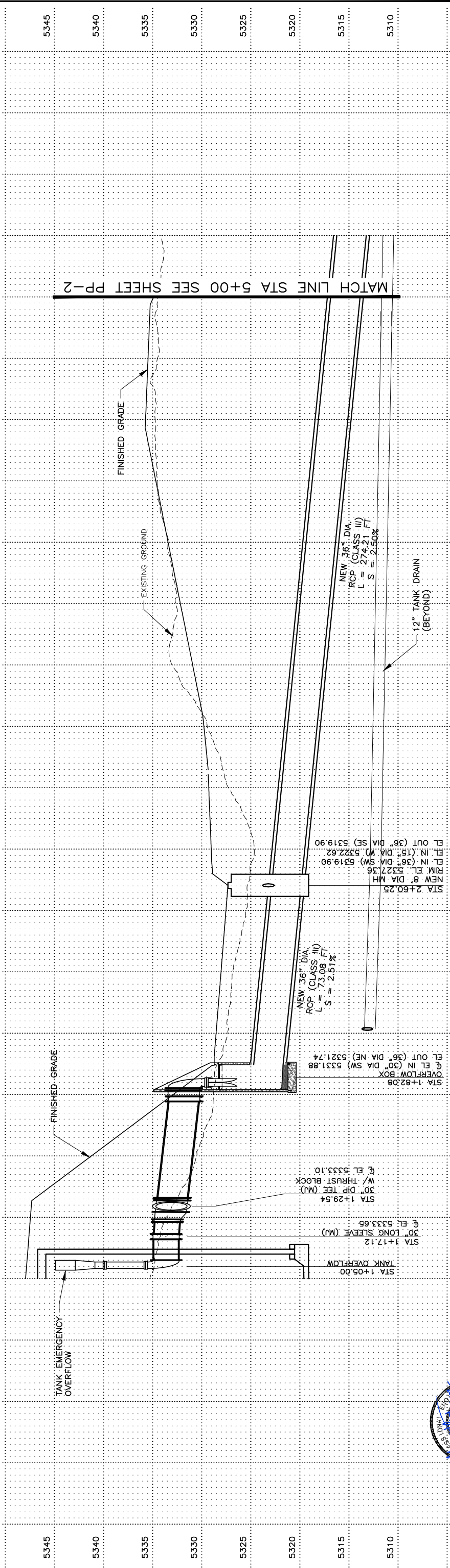
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|-----|--|
| 2   |  |
| NTS |  |





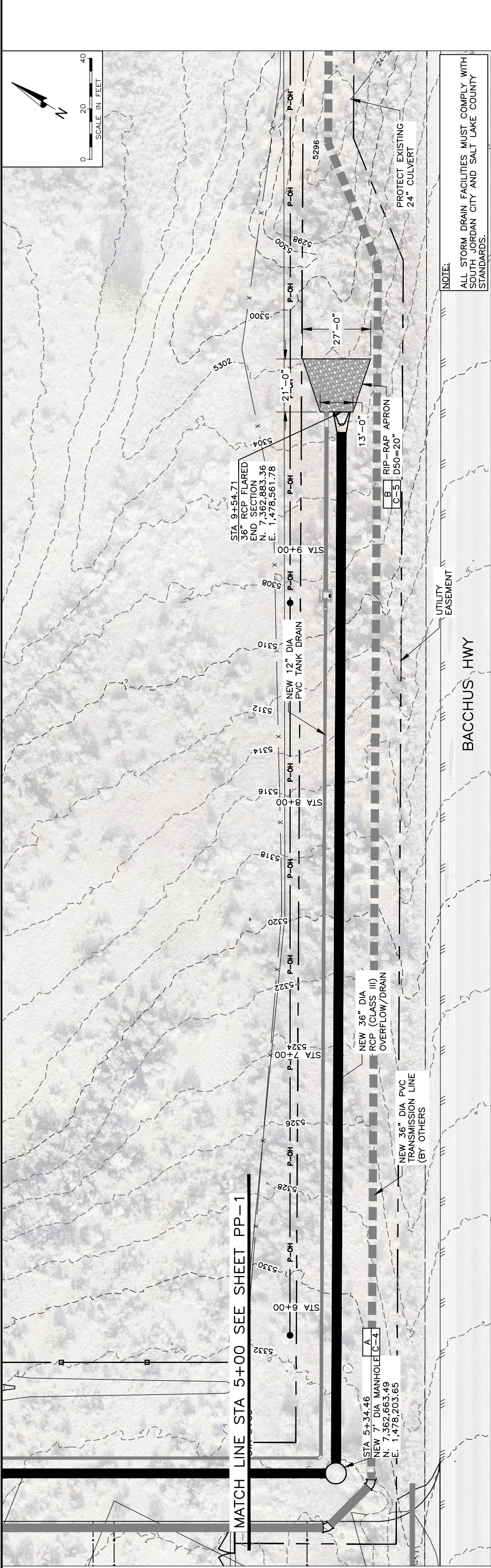


TANK EMERGENCY OVERFLOW/DRAIN

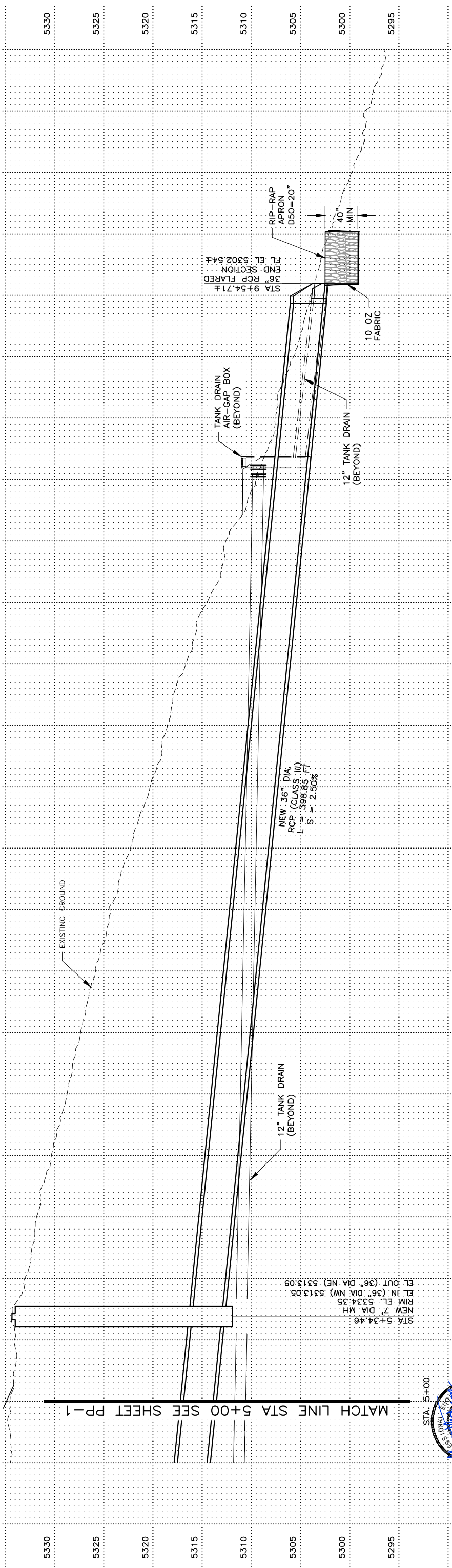


|  |  |       |                     |                 |                   |                 |   |  |                          |  |                               |
|--|--|-------|---------------------|-----------------|-------------------|-----------------|---|--|--------------------------|--|-------------------------------|
|  | DESIGNED: GDS<br>DRAFTED: GDS<br>CHECKED: MEA<br>DATE: NOVEMBER 2023 | NO. 1 | DATE: NOVEMBER 2023 | BY: [Signature] | APVD: [Signature] | SCALE: AS SHOWN | SOUTH JORDAN CITY<br>1600 WEST TOWNE CENTER DRIVE<br>SOUTH JORDAN, UTAH 84095 |  | ZONES 7 & 8 – 8.4MG TANK |  | SHEET<br>PP – 1<br>176.41.100 |
|  |  |       |                     |                 |                   |                 |   |  |                          |  |                               |
|  |  |       |                     |                 |                   |                 |   |  |                          |  |                               |



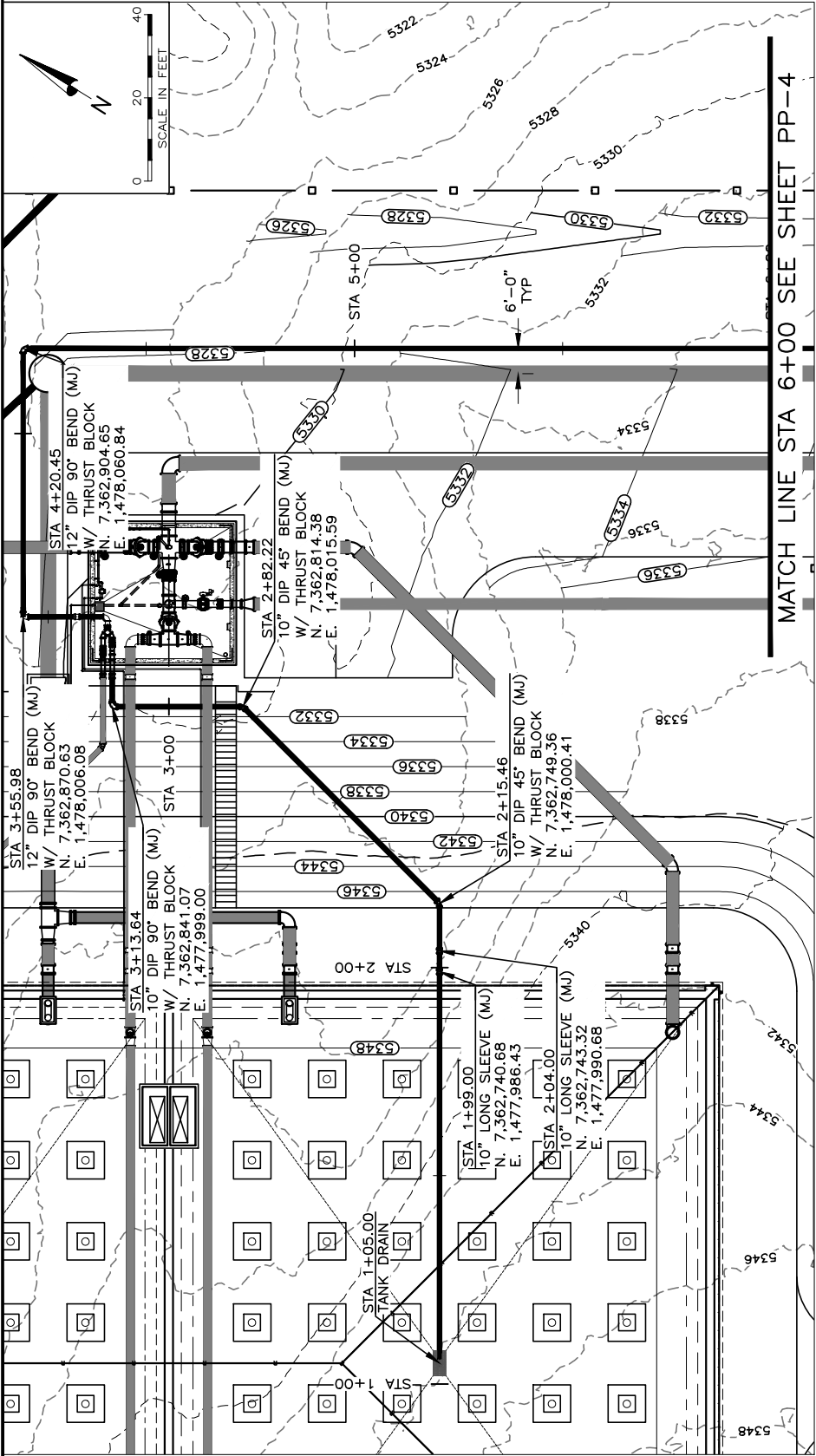


TANK EMERGENCY OVERFLOW/DRAIN

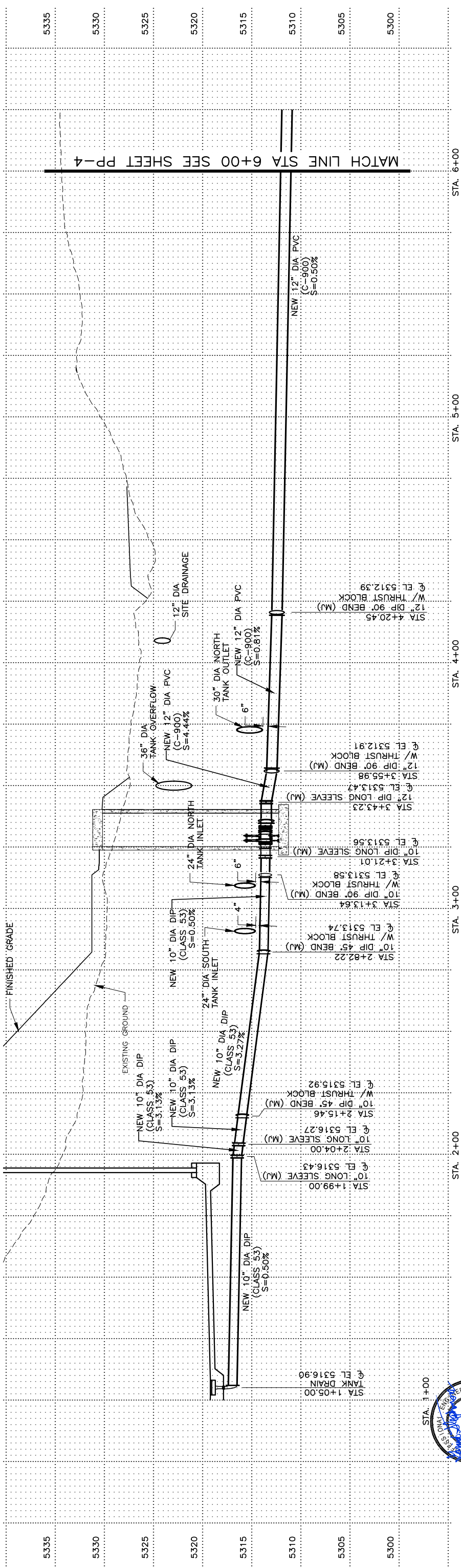





|                             |   |  |  |  |               |
|-----------------------------|---|--|--|--|---------------|
| HARPER & ALLEN<br>ENGINEERS | SOUTH JORDAN CITY<br>1600 WEST TOWNE CENTER DRIVE<br>SOUTH JORDAN, UTAH 84095 |  | ZONES 7 & 8 – 8.4MG TANK<br>PLAN & PROFILE |  | SHEET<br>PP-2 |
|                             | DATE: DECEMBER 2023   |  | NO. 1                                      |  | 176.41.100    |

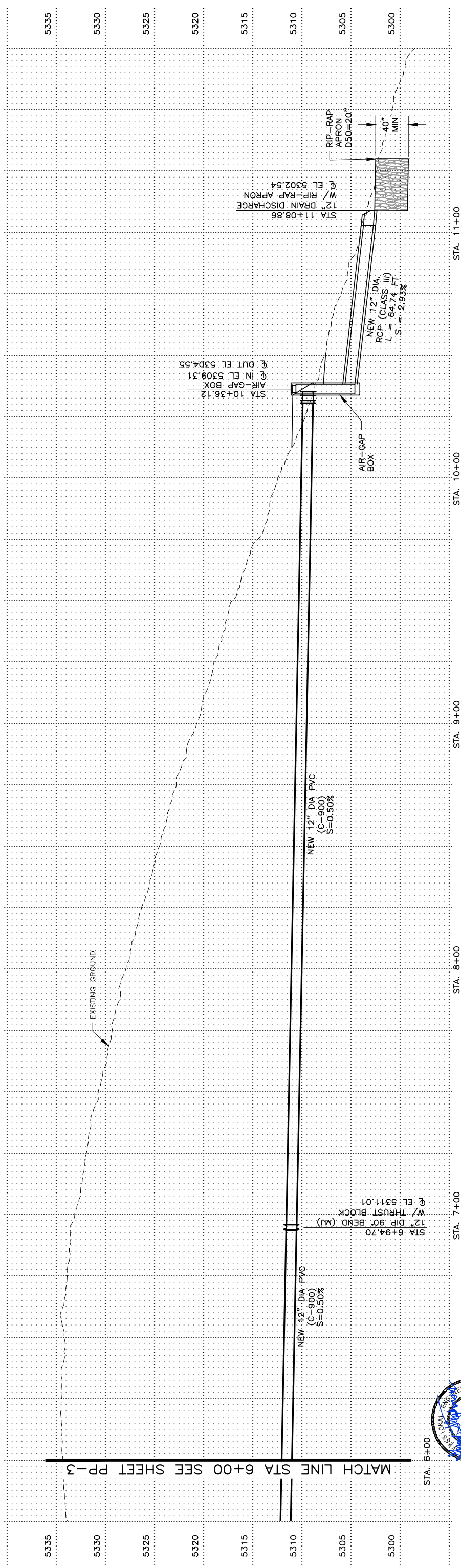
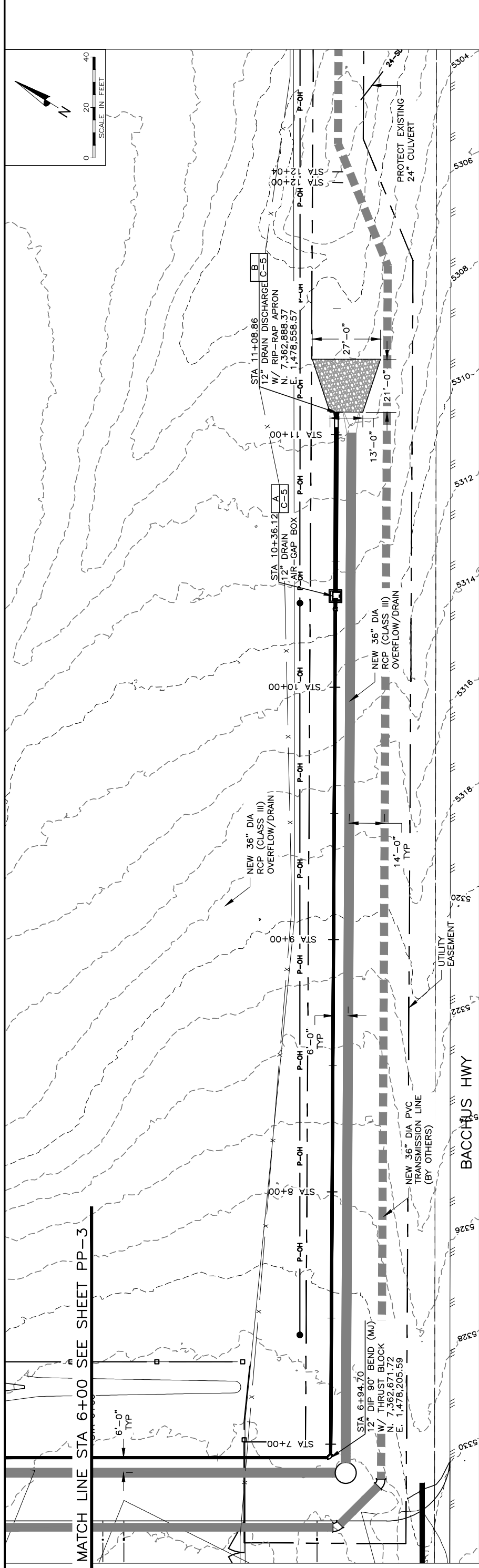







TANK DRAIN



|  |   |          |               |      |           |  |    |  |                          |  |                             |
|--|---|----------|---------------|------|-----------|--|----|--|--------------------------|--|-----------------------------|
| <br>ENGINEERS |  | DESIGNED | GDS           | 3    |           |  |    | <br>SOUTH JORDAN CITY<br>1600 WEST TOWNE CENTER DRIVE<br>SOUTH JORDAN, UTAH 84095<br>SOUTH JORDAN UTAH | ZONES 7 & 8 – 8.4MG TANK |  | SHEET<br>PP-3<br>176.41.100 |
|  |   | DRAFTED  | GDS           | 2    |           |  |    |  | PLAN & PROFILE           |  |                             |
|  |   | CHECKED  | MEA           | 1    |           |  |    |  | TANK DRAIN               |  |                             |
|  |   | DATE     | NOVEMBER 2023 | NO.  |           |  |    |  |                          |  |                             |
| PROJECT ENGINEER   |   |          |               | DATE | REVISIONS |  | BY | APVD.  |                          |  |                             |



|  |   |                  |   |     |      |  |  |  |  |                              |  |   |   |
|--|---|------------------|---|-----|------|--|--|--|--|------------------------------|--|---|---|
|  |  | DESIGNED         | GDS                                     | 3   |      |  |  |  |  | <p>SCALE</p> <p>AS SHOWN</p> | <p>SOUTH JORDAN CITY<br/>1600 WEST TOWNE CENTER DRIVE<br/>SOUTH JORDAN, UTAH 84095</p>  <p>SOUTH JORDAN</p> | <p>ZONES 7 &amp; 8 – 8.4MG TANK<br/>PLAN &amp; PROFILE<br/>TANK DRAIN</p> | <p>SHEET</p> <p>PP-4</p> <p>176.41:1.00</p> |
|  |   | DRAFTED          | GDS                                     | 2   |      |  |  |  |  |                              |  |   |   |
|  |   | CHECKED          | MEA                                     | 1   |      |  |  |  |  |                              |  |   |   |
|  |   | DATE             | DECEMBER 2023                           | NO. | DATE |  |  |  |  |                              |  |   |   |
|  |   | PROJECT ENGINEER | <p>REVISIONS</p> <p>BY</p> <p>APVD.</p> |     |      |  |  |  |  |                              |  |   |   |



|          |                 |     |      |
|----------|-----------------|-----|------|
| DESIGNED | GDS, <b>ROC</b> | 3   |      |
| DRAFTED  | BKC             | 2   |      |
| CHECKED  | MEA, <b>ROC</b> | 1   |      |
| DATE     | NOVEMBER 2023   | NO. | DATE |

REVISIONS

BY: AP'D:

|       |          |
|-------|----------|
| SCALE | AS SHOWN |
|-------|----------|

SOUTH JORDAN CITY  
1600 WEST TOWNE CENTER DRIVE  
SOUTH JORDAN, UTAH 84095



ZONES 7 & 8 - 8.4MG TANK  
STRUCTURAL  
TANK PLAN - FLOOR

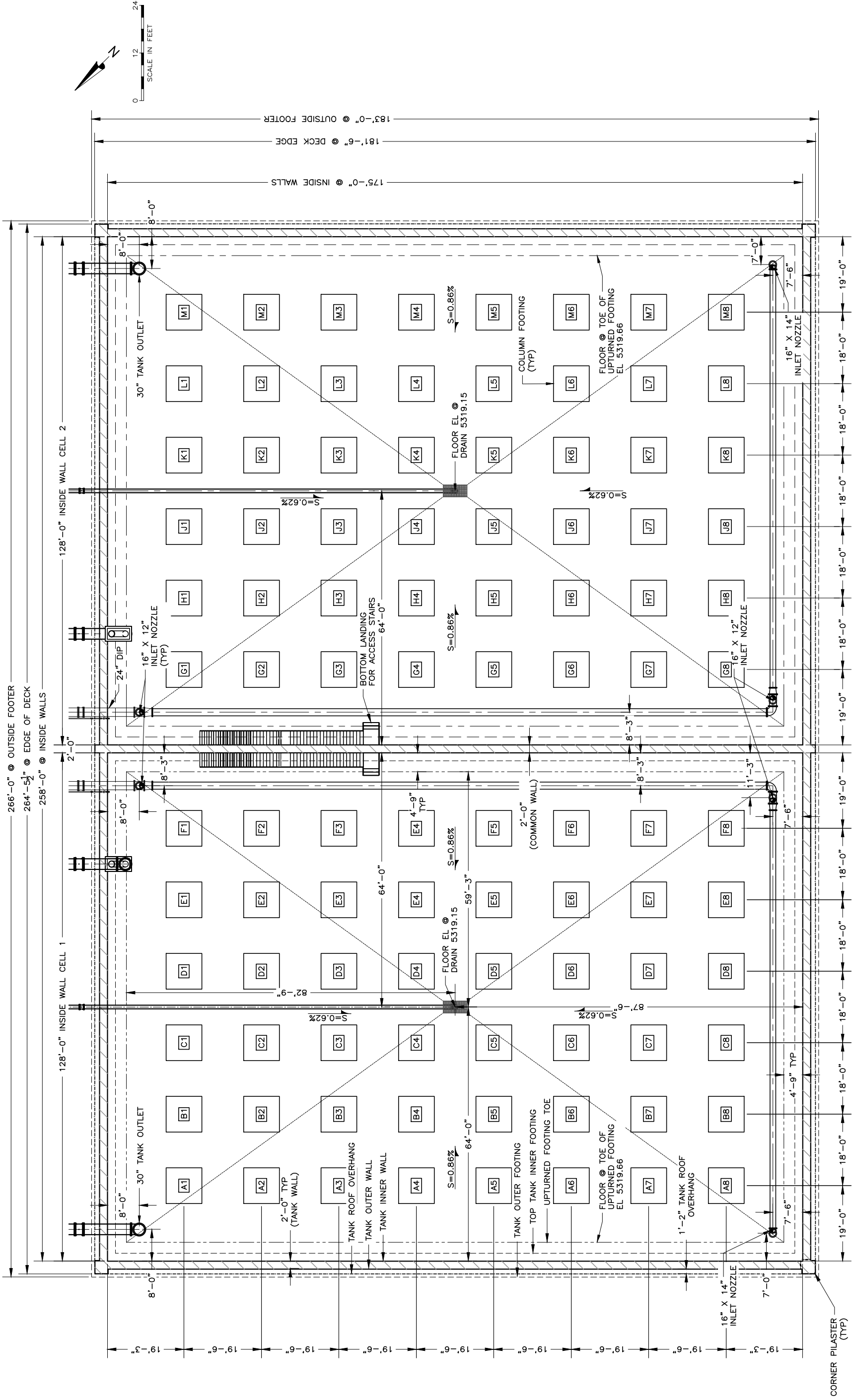
SHEET  
S-1  
176.41.100

CELL #1

CELL #2

GENERAL DETAIL NOTES:

1. ALL DIMENSIONS AND DETAILS FOR EACH TANK CELL ARE EQUAL TO THE OTHER UNLESS NOTED OTHERWISE.
2. FOOTINGS AND FOUNDATION EXCAVATIONS SHALL BE INSPECTED AND APPROVED IN WRITING BY A QUALIFIED GEOTECHNICAL ENGINEER PRIOR TO THE PLACEMENT OF THE CONCRETE FORMS OR REBAR.





PROJECT ENGINEER

DESIGNED GDS, **ROC**  
DRAFTED BKC  
CHECKED MEA, **ROC**  
DATE NOVEMBER 2023

NO. 1  
DATE

REVISIONS

BY: APVD:

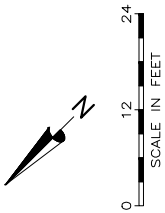
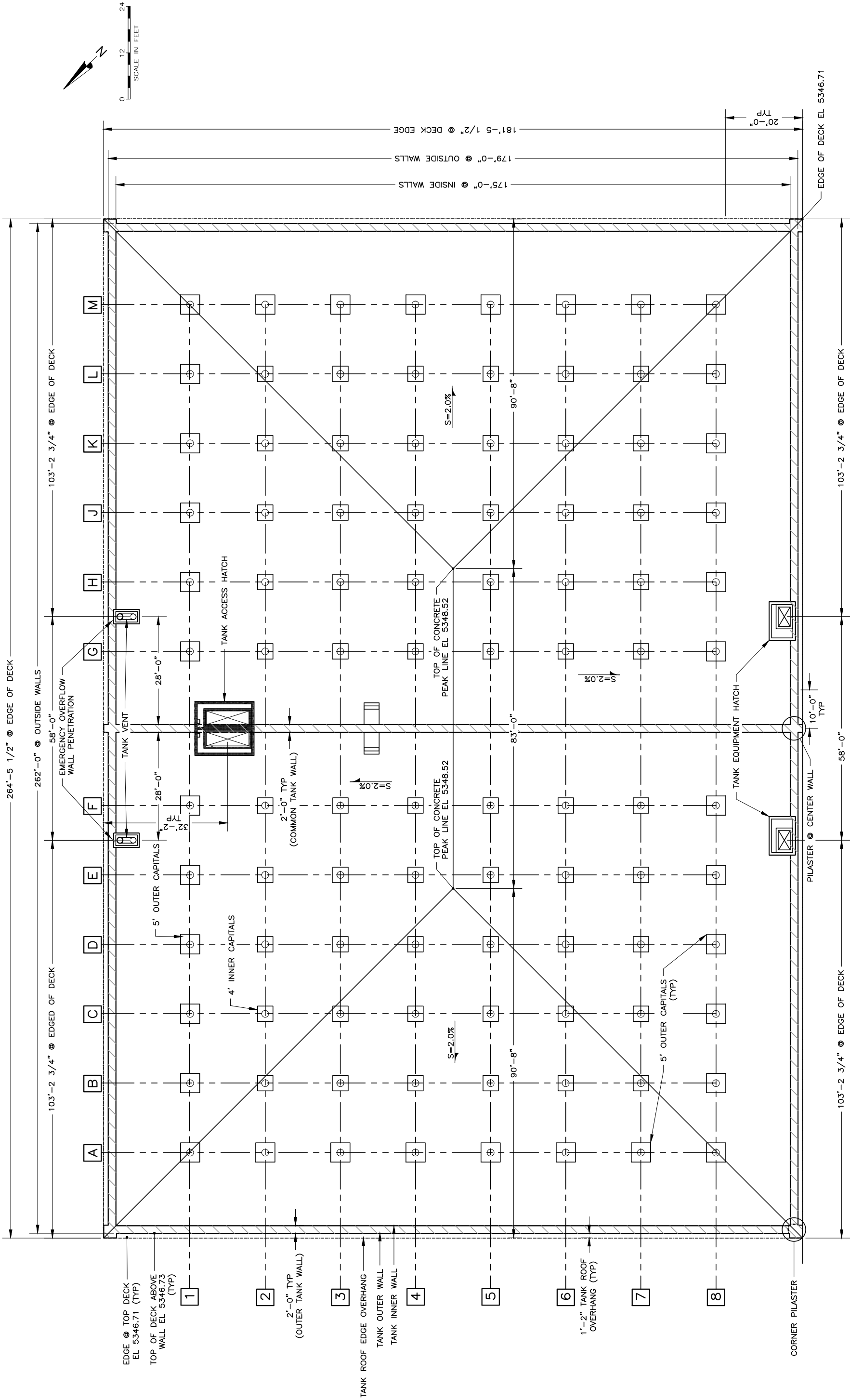
SCALE  
AS SHOWN

SOUTH JORDAN CITY  
1600 WEST TOWNE CENTER DRIVE  
SOUTH JORDAN, UTAH 84095

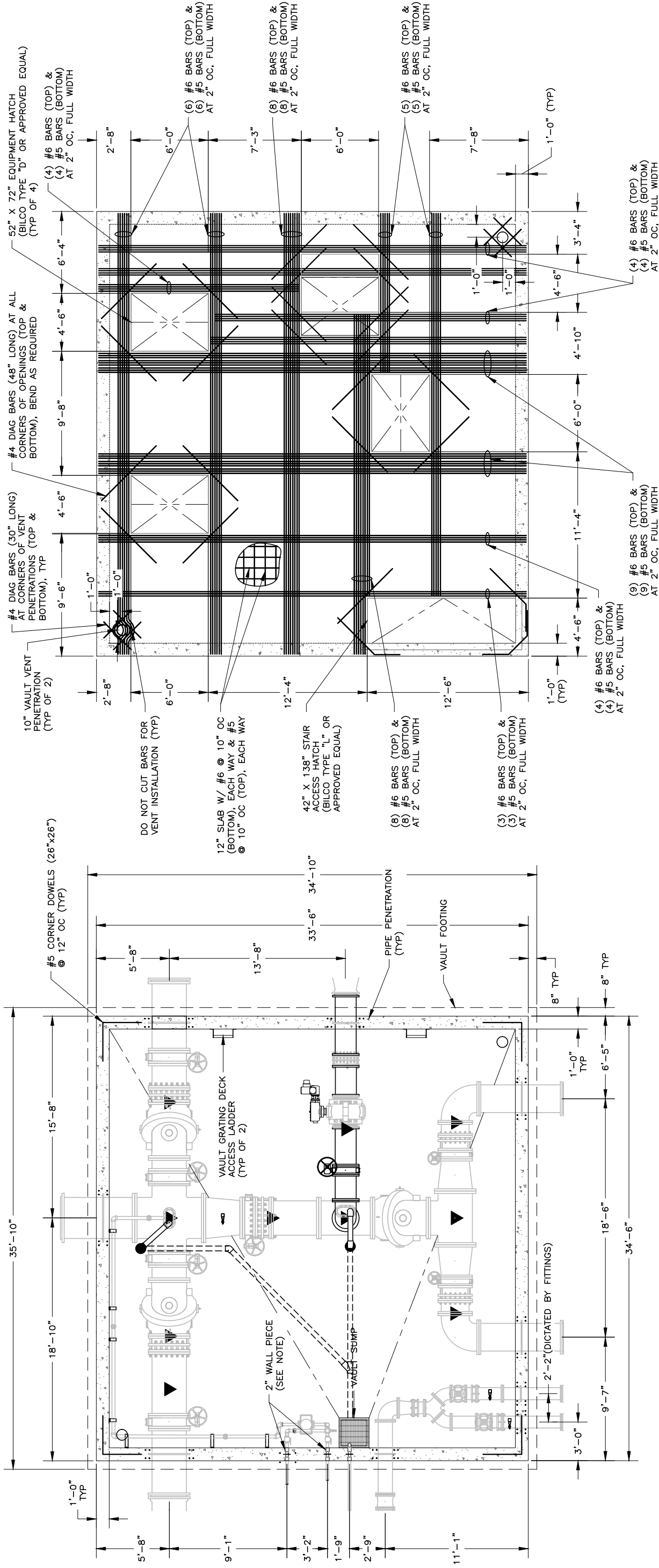


ZONES 7 & 8 - 8.4MG TANK  
STRUCTURAL  
TANK PLAN - ROOF

SHEET  
S-2  
176.41.100







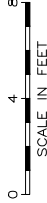
DETAIL NOTE:

TWO INCH WALL PIECE PLACEMENT SHALL BE DETERMINED BY PUMP AND FITTINGS PURCHASED AND ON HAND PRIOR TO PLACEMENT OF FORMS. ALTERNATE METHOD OF PIPE PLACEMENT MAY BE DETERMINED BY ENGINEER.

DETAIL NOTE:

TANK ROOF WAS NOT DESIGNED FOR ANY VEHICULAR TRAFFIC.

VAULT PLAN



VAULT DECK PLAN



|          |               |     |
|----------|---------------|-----|
| DESIGNED | GDS, RCC      | 3   |
| DRAFTED  | BKC           | 2   |
| CHECKED  | MEA, RCC      | 1   |
| DATE     | NOVEMBER 2023 | NO. |

|           |    |       |
|-----------|----|-------|
| REVISIONS | BY | APVD. |
|           |    |       |
|           |    |       |
|           |    |       |

|       |          |
|-------|----------|
| SCALE | AS SHOWN |
|-------|----------|

SOUTH JORDAN CITY  
1600 WEST TOWNE CENTER DRIVE  
SOUTH JORDAN, UTAH 84095



ZONES 7 & 8 – 8.4MG TANK  
STRUCTURAL  
VALVE VAULT & DECK PLAN

SHEET  
S-3  
176.41.100



|   |  |  |
|---|--|--|
| MISC  |  | Upland Grass Seed Mix - See Specifications |
|   |  | 6\"/>                                      |
|   |  | Install 6\"/>                              |
| NOTES:<br>1. See details and specifications for additional information.<br>2. All disturbed areas outside of Landscape Limit Line to be Seeded with an Upland Grass Seed Mix. Refer to Specifications for mix and application requirements. |  |  |

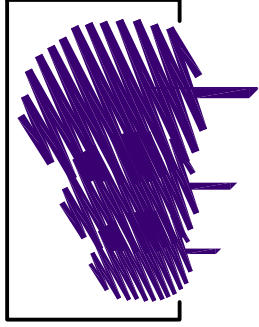
Upland Grass Seed Mix covered with  
Excelsior Curlex | Erosion Control Blanket -  
Refer to Specifications

Upland Grass Seed Mix covered with  
Excelsior Curlex | Erosion Control Blanket -  
Refer to Specifications

Upland Grass Seed Mix covered with  
Excelsior Curlex | Erosion Control Blanket -  
Refer to Specifications

Upland Grass Seed Mix covered with  
Excelsior Curlex | Erosion Control Blanket -  
Refer to Specifications

Upland Grass Seed Mix covered with  
Excelsior Curlex | Erosion Control Blanket -  
Refer to Specifications



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