Texas Commission on Environmental Quality

Edwards Aquifer Application Cover Page

Our Review of Your Application

The Edwards Aquifer Program staff conducts an administrative and technical review of all applications. The turnaround time for administrative review can be up to 30 days as outlined in 30 TAC 213.4(e). Generally administrative completeness is determined during the intake meeting or within a few days of receipt. The turnaround time for technical review of an administratively complete Edwards Aquifer application is 90 days as outlined in 30 TAC 213.4(e). Please know that the review and approval time is directly impacted by the quality and completeness of the initial application that is received. In order to conduct a timely review, it is imperative that the information provided in an Edwards Aquifer application include final plans, be accurate, complete, and in compliance with 30 TAC 213.

Administrative Review

1. Edwards Aquifer applications must be deemed administratively complete before a technical review can begin. To be considered administratively complete, the application must contain completed forms and attachments, provide the requested information, and meet all the site plan requirements. The submitted application and plan sheets should be final plans. Please submit one full-size set of plan sheets with the original application, and half-size sets with the additional copies.

   To ensure that all applicable documents are included in the application, the program has developed tools to guide you and web pages to provide all forms, checklists, and guidance. Please visit the below website for assistance: http://www.tceq.texas.gov/field/eapp.

2. This Edwards Aquifer Application Cover Page form (certified by the applicant or agent) must be included in the application and brought to the administrative review meeting.

3. Administrative reviews are scheduled with program staff who will conduct the review. Applicants or their authorized agent should call the appropriate regional office, according to the county in which the project is located, to schedule a review. The average meeting time is one hour.

4. In the meeting, the application is examined for administrative completeness. Deficiencies will be noted by staff and emailed or faxed to the applicant and authorized agent at the end of the meeting, or shortly after. Administrative deficiencies will cause the application to be deemed incomplete and returned.

   An appointment should be made to resubmit the application. The application is re-examined to ensure all deficiencies are resolved. The application will only be deemed administratively complete when all administrative deficiencies are addressed.

5. If an application is received by mail, courier service, or otherwise submitted without a review meeting, the administrative review will be conducted within 30 days. The applicant and agent will be contacted with the results of the administrative review. If the application is found to be administratively incomplete, it can be retrieved from the regional office or returned by regular mail. If returned by mail, the regional office may require arrangements for return shipping.

6. If the geologic assessment was completed before October 1, 2004 and the site contains "possibly sensitive" features, the assessment must be updated in accordance with the *Instructions to Geologists* (TCEQ-0585 Instructions).

Technical Review

1. When an application is deemed administratively complete, the technical review period begins. The regional office will distribute copies of the application to the identified affected city, county, and groundwater conservation district whose jurisdiction includes the subject site. These entities and the public have 30 days to provide comments on the application to the regional office. All comments received are reviewed by TCEQ.

2. A site assessment is usually conducted as part of the technical review, to evaluate the geologic assessment and observe existing site conditions. The site must be accessible to our staff. The site boundaries should be

clearly marked, features identified in the geologic assessment should be flagged, roadways marked and the alignment of the Sewage Collection System and manholes should be staked at the time the application is submitted. If the site is not marked the application may be returned.

3. We evaluate the application for technical completeness and contact the applicant and agent via Notice of Deficiency (NOD) to request additional information and identify technical deficiencies. There are two deficiency response periods available to the applicant. There are 14 days to resolve deficiencies noted in the first NOD. If a second NOD is issued, there is an additional 14 days to resolve deficiencies. If the response to the second notice is not received, is incomplete or inadequate, or provides new information that is incomplete or inadequate, the application must be withdrawn or will be denied. Please note that because the technical review is underway, whether the application is withdrawn or denied **the application fee will be forfeited**.
4. The program has 90 calendar days to complete the technical review of the application. If the application is technically adequate, such that it complies with the Edwards Aquifer rules, and is protective of the Edwards Aquifer during and after construction, an approval letter will be issued. Construction or other regulated activity may not begin until an approval is issued.

Mid-Review Modifications

It is important to have final site plans prior to beginning the permitting process with TCEQ to avoid delays.

Occasionally, circumstances arise where you may have significant design and/or site plan changes after your Edwards Aquifer application has been deemed administratively complete by TCEQ. This is considered a "Mid-Review Modification". Mid-Review Modifications may require redistribution of an application that includes the proposed modifications for public comment.

If you are proposing a Mid-Review Modification, two options are available:

- If the technical review has begun your application can be denied/withdrawn, your fees will be forfeited, and the plan will have to be resubmitted.
- TCEQ can continue the technical review of the application as it was submitted, and a modification application can be submitted at a later time.

If the application is denied/withdrawn, the resubmitted application will be subject to the administrative and technical review processes and will be treated as a new application. The application will be redistributed to the affected jurisdictions.

Please contact the regional office if you have questions. If your project is located in Williamson, Travis, or Hays County, contact TCEQ's Austin Regional Office at 512-339-2929. If your project is in Comal, Bexar, Medina, Uvalde, or Kinney County, contact TCEQ's San Antonio Regional Office at 210-490-3096

Please fill out all required fields below and submit with your application.

1. Regulated Entity Name: Gateway 29 Real Estate, LLC						**2. Regulated Entity No.: RN111807152**			
3. Customer Name: Samir Maredia						**4. Customer No.: CN606180297**			
5. Project Type: **(Please circle/check one)**	New		Modification			Extension		Exception	
6. Plan Type: **(Please circle/check one)**	WPAP	CZP	SCS	UST	AST	EXP	EXT	Technical Clarification	Optional Enhanced Measures
7. Land Use: **(Please circle/check one)**	Residential		Non-residential			**8. Site (acres):**			32.26
9. Application Fee:			**10. Permanent BMP(s):**					2 ~ Batch Detention Water Quality / Detention Ponds	
11. SCS (Linear Ft.):	4,386		**12. AST/UST (No. Tanks):**						
13. County:	Williamson		**14. Watershed:**					North Fork San Gabriel River	

Application Distribution

Instructions: Use the table below to determine the number of applications required. One original and one copy of the application, plus additional copies (as needed) for each affected incorporated city, county, and groundwater conservation district are required. Linear projects or large projects, which cross into multiple jurisdictions, can require additional copies. Refer to the "Texas Groundwater Conservation Districts within the EAPP Boundaries" map found at:

http://www.tceq.texas.gov/assets/public/compliance/field_ops/eapp/EAPP%20GWCD%20map.pdf

For more detailed boundaries, please contact the conservation district directly.

Austin Region			
County:	**Hays**	**Travis**	**Williamson**
Original (1 req.)	___	___	___
Region (1 req.)	___	___	___
County(ies)	___	___	___
Groundwater Conservation District(s)	___Edwards Aquifer Authority ___Barton Springs/ Edwards Aquifer ___Hays Trinity ___Plum Creek	___Barton Springs/ Edwards Aquifer	NA
City(ies) Jurisdiction	___Austin ___Buda ___Dripping Springs ___Kyle ___Mountain City ___San Marcos ___Wimberley ___Woodcreek	___Austin ___Bee Cave ___Pflugerville ___Rollingwood ___Round Rock ___Sunset Valley ___West Lake Hills	___Austin ___Cedar Park ___Florence ___Georgetown ___Jerrell _X_Leander ___Liberty Hill ___Pflugerville ___Round Rock

San Antonio Region					
County:	**Bexar**	**Comal**	**Kinney**	**Medina**	**Uvalde**
Original (1 req.)	___	___	___	___	___
Region (1 req.)	___	___	___	___	___
County(ies)	___	___	___	___	___
Groundwater Conservation District(s)	___ Edwards Aquifer Authority ___Trinity-Glen Rose	___Edwards Aquifer Authority	___Kinney	___EAA ___Medina	___EAA ___Uvalde
City(ies) Jurisdiction	___Castle Hills ___Fair Oaks Ranch ___Helotes ___Hill Country Village ___Hollywood Park ___San Antonio (SAWS) ___Shavano Park	___Bulverde ___Fair Oaks Ranch ___Garden Ridge ___New Braunfels ___Schertz	NA	___San Antonio ETJ (SAWS)	NA

I certify that to the best of my knowledge, that the application is complete and accurate. This application is hereby submitted to TCEQ for administrative review and technical review. Charles Hager, V
Print Name of Customer/Authorized Agent CR Hager 03/13/2024
Signature of Customer/Authorized Agent Date

FOR TCEQ INTERNAL USE ONLY				
Date(s)Reviewed:		Date Administratively Complete:		
Received From:		Correct Number of Copies:		
Received By:		Distribution Date:		
EAPP File Number:		Complex:		
Admin. Review(s) (No.):		No. AR Rounds:		
Delinquent Fees (Y/N):		Review Time Spent:		
Lat./Long. Verified:		SOS Customer Verification:		
Agent Authorization Complete/Notarized (Y/N):		Fee Check:	Payable to TCEQ (Y/N):	
Core Data Form Complete (Y/N):			Signed (Y/N):	
Core Data Form Incomplete Nos.:			Less than 90 days old (Y/N):	

General Information Form

Texas Commission on Environmental Quality

For Regulated Activities on the Edwards Aquifer Recharge and Transition Zones and Relating to 30 TAC §213.4(b) & §213.5(b)(2)(A), (B) Effective June 1, 1999

To ensure that the application is administratively complete, confirm that all fields in the form are complete, verify that all requested information is provided, consistently reference the same site and contact person in all forms in the application, and ensure forms are signed by the appropriate party.

Note: Including all the information requested in the form and attachments contributes to more streamlined technical reviews.

Signature

To the best of my knowledge, the responses to this form accurately reflect all information requested concerning the proposed regulated activities and methods to protect the Edwards Aquifer. This **General Information Form** is hereby submitted for TCEQ review. The application was prepared by:

Print Name of Customer/Agent: Charles Hager, V

Date: 3/13/2024

Signature of Customer/Agent:



Project Information

1. Regulated Entity Name: Gateway 29
2. County: Williamson
3. Stream Basin: North Fork San Gabriel River
4. Groundwater Conservation District (If applicable): N/A
5. Edwards Aquifer Zone:

   ☒ Recharge Zone
   ☐ Transition Zone

6. Plan Type:

   ☒ WPAP
   ☐ SCS
   ☒ Modification
   ☐ AST
   ☐ UST
   ☐ Exception Request

7. Customer (Applicant):

   Contact Person: Samir Maredia
   Entity: Gateway 29 Real Estate, LLC
   Mailing Address: 5522 Jenolan Ridge Lane
   City, State: Sugarland, TX Zip: 77479
   Telephone: 832-713-4985 FAX: _____
   Email Address: samirsmaredia@gmail.com

8. Agent/Representative (If any):

   Contact Person: Charles R. Hager, V P.E.
   Entity: LJA Engineering, Inc.
   Mailing Address: 7500 Rialto Boulevard, Building II, Suite 100
   City, State: Austin, TX Zip: 78735
   Telephone: 512-439-4700 FAX: _____
   Email Address: chager@lja.com

9. Project Location:

   ☒ The project site is located inside the city limits of Leander.
   ☐ The project site is located outside the city limits but inside the ETJ (extra-territorial jurisdiction) of _____.
   ☐ The project site is not located within any city's limits or ETJ.

10. ☒ The location of the project site is described below. The description provides sufficient detail and clarity so that the TCEQ's Regional staff can easily locate the project and site boundaries for a field investigation.

    The property is located at the southwest corner of SH-29 and Ronald Reagan Boulevard, and is east of Kauffman Loop.

11. ☒ **Attachment A – Road Map**. A road map showing directions to and the location of the project site is attached. The project location and site boundaries are clearly shown on the map.

12. ☒ **Attachment B - USGS / Edwards Recharge Zone Map**. A copy of the official 7 ½ minute USGS Quadrangle Map (Scale: 1" = 2000') of the Edwards Recharge Zone is attached. The map(s) clearly show:

    ☒ Project site boundaries.
    ☒ USGS Quadrangle Name(s).
    ☒ Boundaries of the Recharge Zone (and Transition Zone, if applicable).
    ☒ Drainage path from the project site to the boundary of the Recharge Zone.

13. ☒ **The TCEQ must be able to inspect the project site or the application will be returned**. Sufficient survey staking is provided on the project to allow TCEQ regional staff to locate the boundaries and alignment of the regulated activities and the geologic or manmade features noted in the Geologic Assessment.

☒ Survey staking will be completed by this date: TBD

14. ☒ **Attachment C – Project Description**. Attached at the end of this form is a detailed narrative description of the proposed project. The project description is consistent throughout the application and contains, at a minimum, the following details:

    ☒ Area of the site
    ☒ Offsite areas
    ☒ Impervious cover
    ☒ Permanent BMP(s)
    ☒ Proposed site use
    ☒ Site history
    ☒ Previous development
    ☒ Area(s) to be demolished

15. Existing project site conditions are noted below:

    ☐ Existing commercial site
    ☐ Existing industrial site
    ☐ Existing residential site
    ☐ Existing paved and/or unpaved roads
    ☐ Undeveloped (Cleared)
    ☒ Undeveloped (Undisturbed/Uncleared)
    ☐ Other: _____

Prohibited Activities

16. ☒ I am aware that the following activities are prohibited on the Recharge Zone and are not proposed for this project:

    (1) Waste disposal wells regulated under 30 TAC Chapter 331 of this title (relating to Underground Injection Control);

    (2) New feedlot/concentrated animal feeding operations, as defined in 30 TAC §213.3;

    (3) Land disposal of Class I wastes, as defined in 30 TAC §335.1;

    (4) The use of sewage holding tanks as parts of organized collection systems; and

    (5) New municipal solid waste landfill facilities required to meet and comply with Type I standards which are defined in §330.41(b), (c), and (d) of this title (relating to Types of Municipal Solid Waste Facilities).

    (6) New municipal and industrial wastewater discharges into or adjacent to water in the state that would create additional pollutant loading.

17. ☒ I am aware that the following activities are prohibited on the Transition Zone and are not proposed for this project:

    (1) Waste disposal wells regulated under 30 TAC Chapter 331 (relating to Underground Injection Control);

(2) Land disposal of Class I wastes, as defined in 30 TAC §335.1; and

(3) New municipal solid waste landfill facilities required to meet and comply with Type I standards which are defined in §330.41 (b), (c), and (d) of this title.

Administrative Information

18. The fee for the plan(s) is based on:

☒ For a Water Pollution Abatement Plan or Modification, the total acreage of the site where regulated activities will occur.
☐ For an Organized Sewage Collection System Plan or Modification, the total linear footage of all collection system lines.
☐ For a UST Facility Plan or Modification or an AST Facility Plan or Modification, the total number of tanks or piping systems.
☐ A request for an exception to any substantive portion of the regulations related to the protection of water quality.
☐ A request for an extension to a previously approved plan.

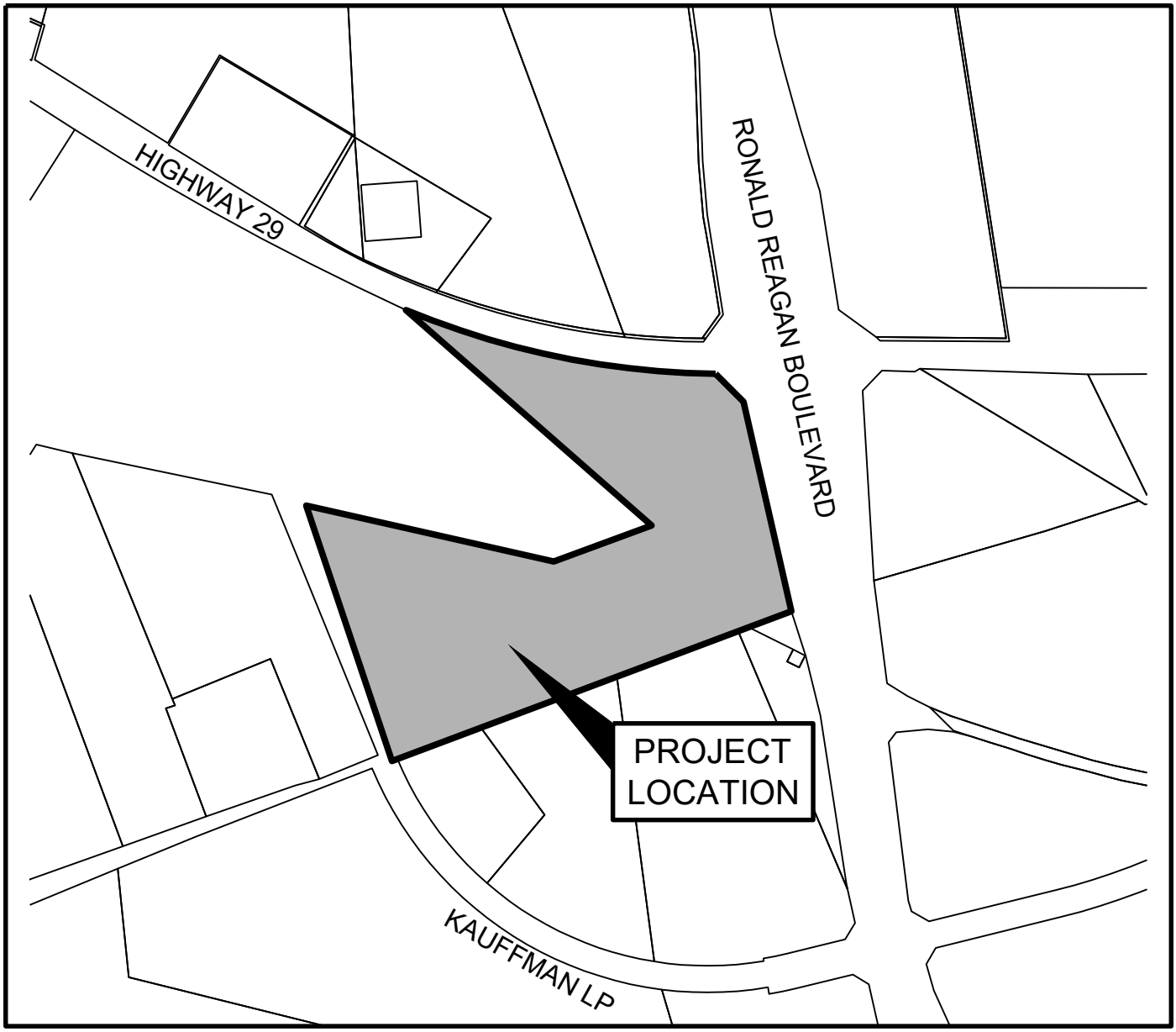
19. ☒ Application fees are due and payable at the time the application is filed. If the correct fee is not submitted, the TCEQ is not required to consider the application until the correct fee is submitted. Both the fee and the Edwards Aquifer Fee Form have been sent to the Commission's:

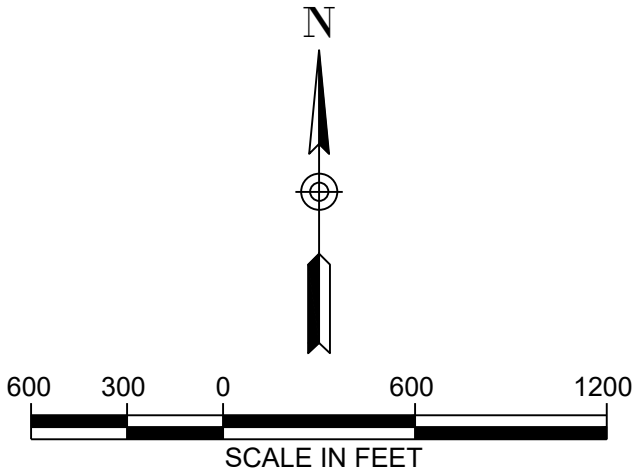
☒ TCEQ cashier
☐ Austin Regional Office (for projects in Hays, Travis, and Williamson Counties)
☐ San Antonio Regional Office (for projects in Bexar, Comal, Kinney, Medina, and Uvalde Counties)

20. ☒ Submit one (1) original and one (1) copy of the application, plus additional copies as needed for each affected incorporated city, groundwater conservation district, and county in which the project will be located. The TCEQ will distribute the additional copies to these jurisdictions. The copies must be submitted to the appropriate regional office.

21. ☒ No person shall commence any regulated activity until the Edwards Aquifer Protection Plan(s) for the activity has been filed with and approved by the Executive Director.

ATTACHMENT A – Road Map





LJA Engineering, Inc.
7500 Rialto Boulevard
Building II, Suite 100
Austin, Texas 78735
Phone 512.439.4700
Fax 512.439.4716
FRN - F-1386

Gateway 29 Subdivision

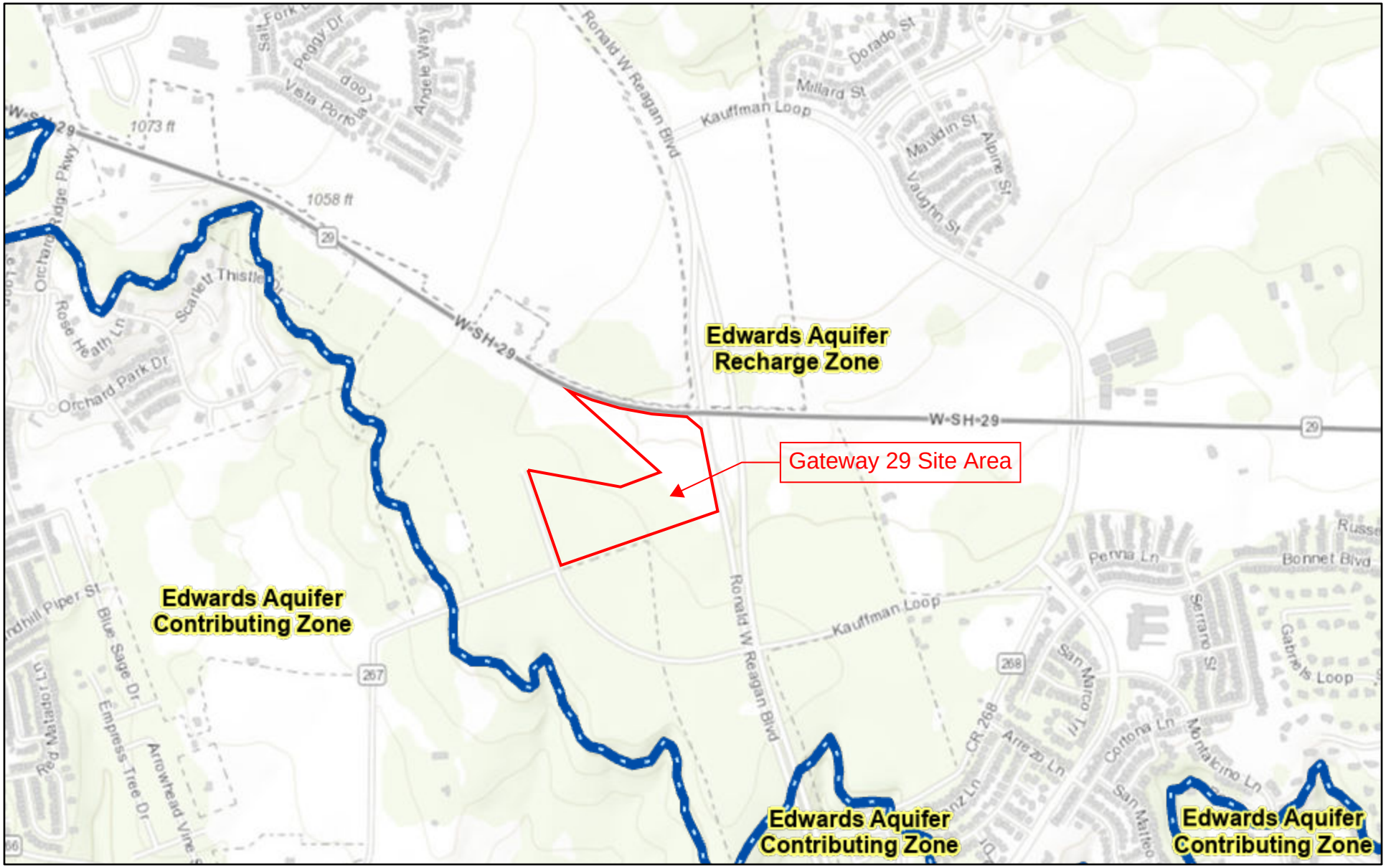
Location Map

1 OF 1

I:\a633-Gateway\0401\Exhibits\Location Map\A633-0401 Location Map.dwg
Plot Date/Time: Jul. 28, 23 - 13:24:18

ATTACHMENT B – USGS / Edwards Recharge Zone Map

Edwards Aquifer Viewer Custom Print



7/28/2023, 12:54:57 PM

1:18,056

0 0.13 0.25 0.5 mi

0 0.2 0.4 0.8 km

Edwards Aquifer Label

Edwards Aquifer Boundary

Edwards Aquifer Boundary central line

TX Counties

7.5 Minute Quad Grid

TCEQ_EDWARDS_OFFICIAL_MAPS

County of Williamson, Texas Parks & Wildlife, Esri, HERE, Garmin, INCREMENT P, USGS, METI/NASA, EPA, USDA, TCEQ

Web AppBuilder for ArcGIS

County of Williamson, Texas Parks & Wildlife, Esri, HERE, Garmin, INCREMENT P, USGS, METI/NASA, EPA, USDA | TCEQ |

ATTACHMENT C – Project Description

Modification Description:

The modification of the original WPAP application is necessary in order to provide approval for the additional proposed development beyond the overall subdivision improvements previously approved. The WPAP Modification includes the proposed Site Development of Lots 2, 3, and 5 of the Gateway 29 Subdivision / Project. The proposed development of Lot 2 includes a drive through restaurant as well as dedicated retail areas and the associated parking. This increased the amount of impervious cover on the 2.680-acre Lot 2 to 74.9%, or 87,448-sf of impervious cover. The proposed development of Lot 3 includes a gas station with a convenience store, restaurant, and associated parking. This increased the amount of impervious cover on the 2.453-acre Lot 3 to 67.4%, or 71,963-sf of impervious cover. The proposed development on Lot 5 includes a retail and restaurant land use and associated parking. This increased the amount of impervious cover on the 21.840-acre Lot 5 to 86.3%, or 69,094-sf of impervious cover. This increase in impervious cover increases the required TSS removal from 3,342 lbs to 7,143 lbs. Because our Batch detention Water Quality / Detention ponds A and B were sized to treat the fully developed commercial lots within the Gateway 29 Subdivision / Project, the provided water quality volume as previously approved exceeds the required volume that is proposed under this WPAP Modification.

No other changes are proposed to the original WPAP other than the addition of the proposed development shown on Lots 2, 3, and 5 within the enclosed WPAP Modification Plan Set.

Original Project Description:

The proposed Gateway 29 Subdivision is a 32.257-acre development consisting of 10 lots and 0.667 acres of proposed Right of Way (R.O.W.) along State Highway 29 (SH 29). This application is for 15.10-acres of the subdivision that is proposed to drain to the two (2) proposed water quality BMPs (batch detention water quality ponds). The project is located at the southwest corner of SH 29 and Ronald Reagan Boulevard and is east of Kauffman Loop. The project lies within the full-purpose jurisdiction of the City of Leander, Williamson County, and the South Fork San Gabriel River watershed. The site is currently undeveloped and consists of natural grasses, trees, brush, and underbrush.

The site consists of WCAD parcels R319215, R418530, R464196, R534764, R534765, R534766, and R620027. Gateway 29 Real Estate, LLC owns all listed parcels except R620027, which is owned by Zekelman Property Leander 53, LLC.

The site is located in the Edwards Aquifer Recharge Zone and is therefore required to meet TCEQ requirements for water quality treatment. Runoff resulting from the development of the proposed subdivision will be treated onsite with two batch detention water quality ponds with stacked detention. The ponds are designed to provide adequate water quality to meet TCEQ requirements for the maximum allowable impervious cover for the site.

Future Development Note:
This WPAP is for overall subdivision improvements only and all future development on Lots within the Gateway Subdivision will require additional WPAP approvals. This application has two (2) proposed water quality / detention ponds (Pond A & Pond B).

There are two (2) future ponds that will be permitted under separate WPAP applications that will serve Lot 8 (future Pond C) and Lots 9 & 10 (future Pond D). These ponds will be built as part of the respective Lot 8 and Lot 9 & 10 site development projects to meet TCEQ requirements for water quality for the final and respective site design on those Lots only. There is no proposed impervious cover on those lots under this WPAP application that necessitate the future ponds to be constructed under this application. Note that there is impervious cover that is proposed within an access easement that crosses the southern portion of Lots 8 – 10 that is being collected and directed to proposed Water Quality / Detention Pond A, which is included in this project's WPAP. However, no other drainage is proposed to be collected and/or treated by Pond A or Pond B.

See Sheets 20 – 22 in the enclosed WPAP Plan Set for reference on all proposed impervious cover within this application.

Note that Storm Line OS-2 is provided to Lot 8 for future Pond C to drain to, but at this time, it will only collect existing condition run-off (with no proposed impervious cover).

Geologic Assessment

Texas Commission on Environmental Quality

For Regulated Activities on The Edwards Aquifer Recharge/transition Zones and Relating to 30 TAC §213.5(b)(3), Effective June 1, 1999

To ensure that the application is administratively complete, confirm that all fields in the form are complete, verify that all requested information is provided, consistently reference the same site and contact person in all forms in the application, and ensure forms are signed by the appropriate party.

Note: Including all the information requested in the form and attachments contributes to more streamlined technical reviews.

Signature

To the best of my knowledge, the responses to this form accurately reflect all information requested concerning the proposed regulated activities and methods to protect the Edwards Aquifer. My signature certifies that I am qualified as a geologist as defined by 30 TAC Chapter 213.

Print Name of Geologist: Roman C. Pineda, P.G.

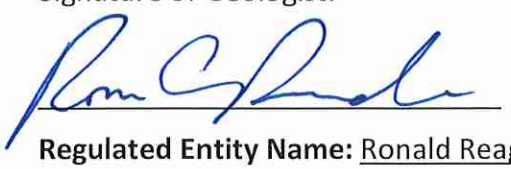
Telephone: (210) 979-8444

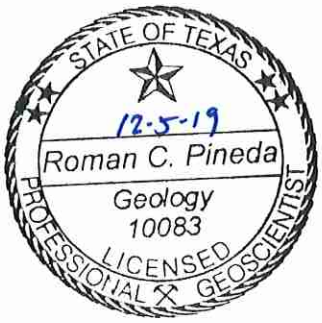
Fax: (210) 979-8441

Date: December 5, 2019

Representing: KFW Engineers, TBPE Firm #9513 (Name of Company and TBPG or TBPE registration number)

Signature of Geologist:





Regulated Entity Name: Ronald Reagan Hwy 29 SW 33 Acres

Project Information

1. Date(s) Geologic Assessment was performed: December 2, 2019
2. Type of Project:
   - ☒ WPAP
   - ☐ SCS
   - ☐ AST
   - ☐ UST
3. Location of Project:
   - ☒ Recharge Zone
   - ☐ Transition Zone
   - ☐ Contributing Zone within the Transition Zone

4. ☒ **Attachment A - Geologic Assessment Table**. Completed Geologic Assessment Table (Form TCEQ-0585-Table) is attached.

5. ☒ Soil cover on the project site is summarized in the table below and uses the SCS Hydrologic Soil Groups* (Urban Hydrology for Small Watersheds, Technical Release No. 55, Appendix A, Soil Conservation Service, 1986). If there is more than one soil type on the project site, show each soil type on the site Geologic Map or a separate soils map.

Table 1 - Soil Units, Infiltration Characteristics and Thickness

Soil Name	Group*	Thickness(feet)
Fairlie clay, 1 to 2 percent slopes (FaB)	D	0-4
Georgetown clay loam, 0 to 2 percent slopes (GeB)	C	0-4
Georgetown stony clay loam, 1 to 3 percent slopes (GsB)	C	0-4

Soil Name	Group*	Thickness(feet)

** Soil Group Definitions (Abbreviated)*

A. Soils having a high infiltration rate when thoroughly wetted.

B. Soils having a moderate infiltration rate when thoroughly wetted.

C. Soils having a slow infiltration rate when thoroughly wetted.

D. Soils having a very slow infiltration rate when thoroughly wetted.

6. ☒ **Attachment B – Stratigraphic Column**. A stratigraphic column showing formations, members, and thicknesses is attached. The outcropping unit, if present, should be at the top of the stratigraphic column. Otherwise, the uppermost unit should be at the top of the stratigraphic column.

7. ☒ **Attachment C – Site Geology**. A narrative description of the site specific geology including any features identified in the Geologic Assessment Table, a discussion of the potential for fluid movement to the Edwards Aquifer, stratigraphy, structure(s), and karst characteristics is attached.

8. ☒ **Attachment D – Site Geologic Map(s)**. The Site Geologic Map must be the same scale as the applicant's Site Plan. The minimum scale is 1": 400'

   Applicant's Site Plan Scale: 1" = 60'
   Site Geologic Map Scale: 1" = 60'
   Site Soils Map Scale (if more than 1 soil type): 1" = 500'

9. Method of collecting positional data:

☒ Global Positioning System (GPS) technology.
☐ Other method(s). Please describe method of data collection: _____

10. ☒ The project site and boundaries are clearly shown and labeled on the Site Geologic Map.
11. ☒ Surface geologic units are shown and labeled on the Site Geologic Map.
12. ☒ Geologic or manmade features were discovered on the project site during the field investigation. They are shown and labeled on the Site Geologic Map and are described in the attached Geologic Assessment Table.

    ☐ Geologic or manmade features were not discovered on the project site during the field investigation.
13. ☒ The Recharge Zone boundary is shown and labeled, if appropriate.
14. All known wells (test holes, water, oil, unplugged, capped and/or abandoned, etc.): If applicable, the information must agree with Item No. 20 of the WPAP Application Section.

    ☐ There are _____ (#) wells present on the project site and the locations are shown and labeled. (Check all of the following that apply.)
    ☐ The wells are not in use and have been properly abandoned.
    ☐ The wells are not in use and will be properly abandoned.
    ☐ The wells are in use and comply with 16 TAC Chapter 76.

    ☒ There are no wells or test holes of any kind known to exist on the project site.

Administrative Information

15. ☒ Submit one (1) original and one (1) copy of the application, plus additional copies as needed for each affected incorporated city, groundwater conservation district, and county in which the project will be located. The TCEQ will distribute the additional copies to these jurisdictions. The copies must be submitted to the appropriate regional office.

GEOLOGIC ASSESSMENT TABLE			PROJECT NAME: RONALD REAGAN HWY 29 SW 33 ACRES																
LOCATION			FEATURE CHARACTERISTICS											EVALUATION			PHYSICAL SETTING		
1A	1B *	1C*	2A	2B	3	4			5	5A	6	7	8A	8B	9	10		11		12
FEATURE ID	LATITUDE	LONGITUDE	FEATURE TYPE	POINTS	FORMATION	DIMENSIONS (FEET)			TREND (DEGREES)	DOM	DENSITY (NO/FT)	APERTURE (FEET)	INFILL	RELATIVE INFILTRATION RATE	TOTAL	SENSITIVITY		CATCHMENT AREA (ACRES)		TOPOGRAPHY
						X	Y	Z		10						<40	>40	<1.6	>1.6	
S-1	30°38'14.7"	97°49'45.4"	CD	5	Ked	16	30	1.5	N45°W	0			O,F	5	10	10		X		Hillside

* DATUM: NAD 83

2A TYPE	TYPE	2B POINTS
C	Cave	30
SC	Solution cavity	20
SF	Solution-enlarged fracture(s)	20
F	Fault	20
O	Other natural bedrock features	5
MB	Manmade feature in bedrock	30
SW	Swallow hole	30
SH	Sinkhole	20
CD	Non-karst closed depression	5
Z	Zone, clustered or aligned features	30

8A INFILLING	
N	None, exposed bedrock
C	Coarse - cobbles, breakdown, sand, gravel
O	Loose or soft mud or soil, organics, leaves, sticks, dark colors
F	Fines, compacted clay-rich sediment, soil profile, gray or red colors
V	Vegetation. Give details in narrative description
FS	Flowstone, cements, cave deposits
X	Other materials

12 TOPOGRAPHY

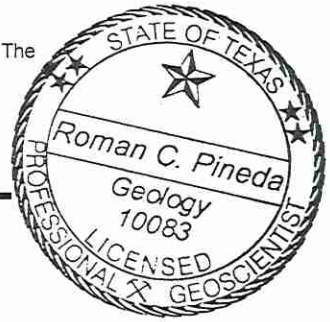
Cliff, Hilltop, Hillside, Drainage, Floodplain, Streambed

I have read, I understood, and I have followed the Texas Commission on Environmental Quality's Instructions to Geologists. The information presented here complies with that document and is a true representation of the conditions observed in the field. My signature certifies that I am qualified as a geologist as defined by 30 TAC Chapter 213.

Date 12-5-19

Sheet 1 of 1

Attachment A



TCEQ-0585-Table (Rev. 10-01-04)

RONALD REAGAN HWY 29 SW 33 ACRES

Stratigraphic Column

System		Stratigraphic Unit	Hydrologic Unit	Approximate Maximum Thickness (ft)	Character of Rocks
Lower Cretaceous	Edwards Aquifer	Edwards Limestone (Ked)	Edwards and associated limestones	360	Massive, brittle, vulgar limestone and dolomite with nodular chert, gypsum, anhydrite, and solution-collapse features.
		Comanche Peak Limestone (Kc)		60	Fine-grained, fairly hard, nodular, fossiliferous, marly, extensively burrowed limestone.
		Walnut Formation (Kwa)		120	Hard and soft limestones, marls, clays, and shelf beds.
		Upper Member of Glen Rose Limestone (Kgru)		350	Yellowish tan, finely bedded limestone and marl

For Travis County, adjacent to county to the southwest
Modified from Brune and Duffin, 1983

ATTACHMENT B

RONALD REAGAN HWY 29 SW 33 ACRES

Narrative Description of Site Geology

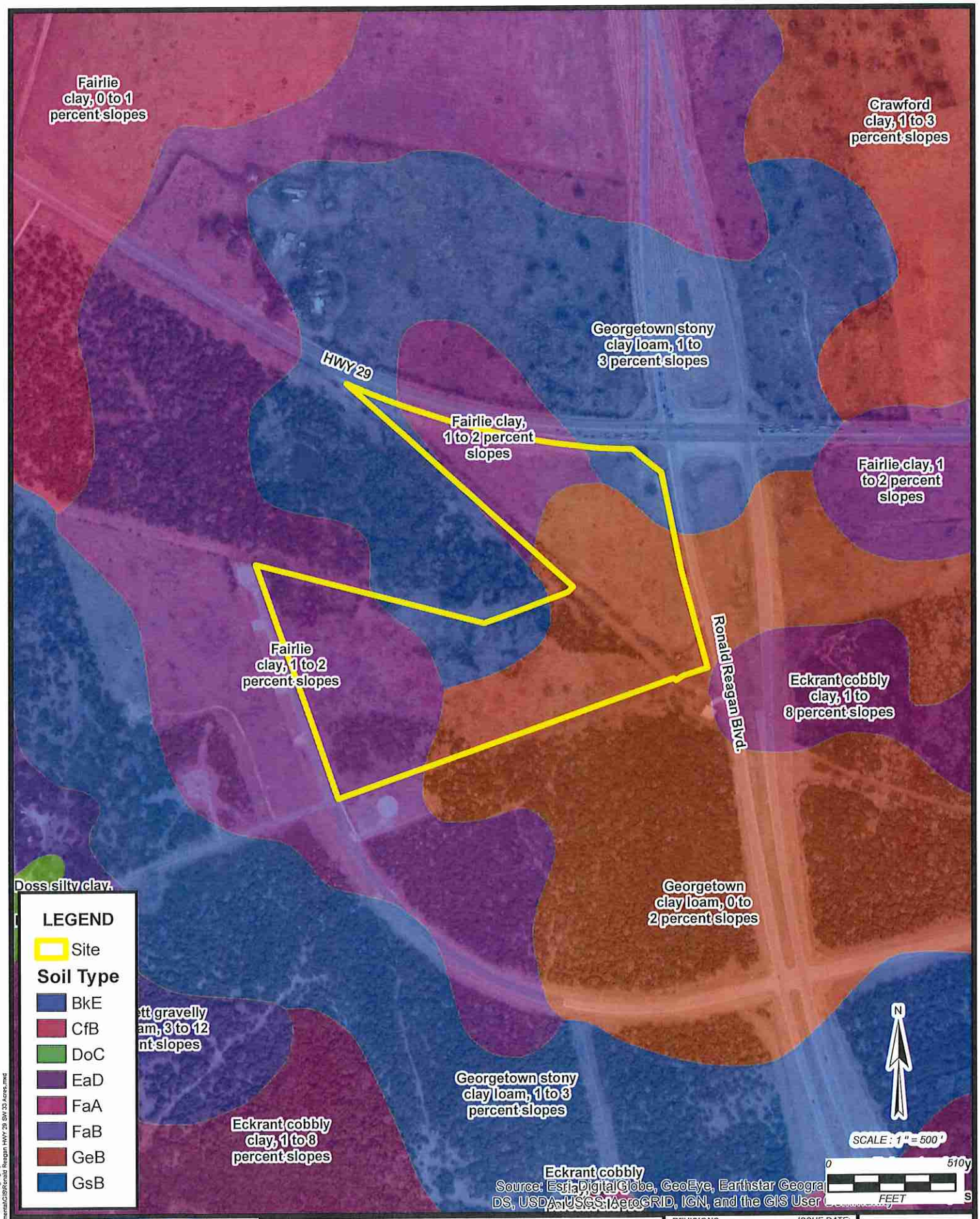
The overall potential for fluid migration to the Edwards Aquifer on the site is intermediate. The dominant trend for the site is N57°E, based on an average of the trends of faults within the surrounding area and from published maps (V.E. Barnes, 1981). The site is located in the Edwards Limestone (Ked).

The Ked is characterized by massive, brittle, vugular limestone and dolomite with nodular chert. Karst development in the Ked is characterized by solution-collapse features. No caves or sinkholes were identified onsite.

Feature S-1

Feature is a non-karst closed depression in a drainage low created as a result of construction of Highway 29. Due to lack of evidence of karst development and standing water observed at the time of the site visit, the probability for rapid infiltration is low.

ATTACHMENT C



KFW ENGINEERS + SURVEYING
FIRM# 9513 FIRM# 10122300
3421 PAESANOS PKWY STE. 200 PHONE (210) 979-8444
SAN ANTONIO, TEXAS 78231 FAX (210) 979-8441

RONALD REAGAN HWY 29 SW 33-ACRES
GEOLOGICAL ASSESSMENT
WILLIAMSON COUNTY SOILS

REVISIONS:	ISSUE DATE:
JOB NO. 806-01-01	
DATE: December 2019	DESIGNER:
DRAWN: C.G.	CHECKED: R.P.

Attachment E

Date: Dec 05, 2019, 3:49:40 PM User ID: Cgregory
File: L:\806\01\01\Design\Environmental\GIS\Ronald Reagan HWY 29 SW 33 Acres.mxd

THIS DOCUMENT HAS BEEN PRODUCED FROM MATERIAL THAT WAS STORED AND/OR TRANSMITTED ELECTRONICALLY AND MAY HAVE BEEN INADVERTENTLY ALTERED. RELY ONLY ON FINAL HARDCOPY MATERIALS BEARING THE CONSULTANT'S ORIGINAL SIGNATURE AND SEAL.

RONALD REAGAN HWY 29 SW 33 ACRES

References

Ashworth, J.B., Jan 1983, Ground-Water Availability of the Lower Cretaceous Formations in the Hill Country of South-Central Texas, Texas Department of Water Resources, rept., 273, 12pp.

Barnes, V.L., 1981, Geologic Atlas of Texas, Austin Sheet, Bureau of Economic Geology, The University of Texas at Austin, Texas.

Collins, E.W., Woodruff, C.M., Jr., and Tremblay, Thomas A., 2002, Geologic Framework of the Northern Edwards Aquifer, Central Texas: Bur. Econ. Geol., Abstract, Figure 1.

Collins, E.W., 1993, Geologic Map of the Bulverde Quadrangle, Texas: University of Texas at Austin, Bureau of Economic Geology, Open-File Map STATEMAP Study Area 5, scale 1:24,000.

Federal Emergency Management Agency (FEMA), September 25, 2008, Williamson County, Texas and Incorporated areas, Flood Insurance Rate Map (FIRM), Panel 48491C0275 E, FEMA, Washington, D.C.

Jones, Ian C., 2006, Defining Groundwater Flow Characteristics in the northern Segment of the Edwards Aquifer Based on Groundwater Chemistry: Texas Water Development Board, Technical Paper

Land, L.F. and Dorsey, M.E., 1988, Reassessment of the Georgetown Limestone as a Hydrogeologic Unit of the Edwards Aquifer, Georgetown Area, Texas: U.S. Geol. Survey, Water – Resources Investigations 88-4190, 2 pp., 3 figs.

Rose, P.R., 1972, Edwards Group, Surface and Subsurface, Central Texas: Bur. Econ. Geol., Rep of Invest. 74, 198 pp..

Texas Natural Resource Conservation Commission, 1999, Edwards Aquifer Recharge Zone Map, Leander Quadrangle, TNRCC, Leander, Texas.

United States Department of Agriculture, 1983, Soil Survey – Williamson County, Texas, USDA.

United States Geologic Survey, 2988, (USGS), Leander Quadrangle, USGS, Denver, Colorado.

Modification of a Previously Approved Plan

Texas Commission on Environmental Quality

for Regulated Activities on the Edwards Aquifer Recharge Zone and Transition Zone and Relating to 30 TAC 213.4(j), Effective June 1, 1999

To ensure that the application is administratively complete, confirm that all fields in the form are complete, verify that all requested information is provided, consistently reference the same site and contact person in all forms in the application, and ensure forms are signed by the appropriate party.

Note: Including all the information requested in the form and attachments contributes to more streamlined technical reviews.

Signature

To the best of my knowledge, the responses to this form accurately reflect all information requested concerning the proposed regulated activities and methods to protect the Edwards Aquifer. This request for a **Modification of a Previously Approved Plan** is hereby submitted for TCEQ review and executive director approval. The request was prepared by:

Print Name of Customer/Agent: Charles Hager, V P.E.

Date: 03/13/2024

Signature of Customer/Agent:



Project Information

1. Current Regulated Entity Name: Gateway 29
   Original Regulated Entity Name: Gateway 29
   Regulated Entity Number(s) (RN): RN111807152
   Edwards Aquifer Protection Program ID Number(s): 11003712(WPAP), 11003713 (SCS)
   ☒ The applicant has not changed and the Customer Number (CN) is: CN606180297
   ☐ The applicant or Regulated Entity has changed. A new Core Data Form has been provided.

2. ☒ **Attachment A: Original Approval Letter and Approved Modification Letters**. A copy of the original approval letter and copies of any modification approval letters are attached.

3. A modification of a previously approved plan is requested for (check all that apply):
   - ☐ Physical or operational modification of any water pollution abatement structure(s) including but not limited to ponds, dams, berms, sewage treatment plants, and diversionary structures;
   - ☐ Change in the nature or character of the regulated activity from that which was originally approved or a change which would significantly impact the ability of the plan to prevent pollution of the Edwards Aquifer;
   - ☒ Development of land previously identified as undeveloped in the original water pollution abatement plan;
   - ☐ Physical modification of the approved organized sewage collection system;
   - ☐ Physical modification of the approved underground storage tank system;
   - ☐ Physical modification of the approved aboveground storage tank system.

4. ☒ Summary of Proposed Modifications (select plan type being modified). If the approved plan has been modified more than once, copy the appropriate table below, as necessary, and complete the information for each additional modification.

WPAP Modification Summary	***Approved Project***	***Proposed Modification***
Acres	32.26	32.26
Type of Development	Commercial	Commercial
Number of Residential Lots	_____	_____
Impervious Cover (acres)	3.84	8.21
Impervious Cover (%	11.90%	25.45%
Permanent BMPs	2 ~ Batch Detention WQ / Detention Ponds	2 ~ Batch Detention WQ / Detention Pond
Other	_____	_____

SCS Modification Summary	***Approved Project***	***Proposed Modification***
Linear Feet	4386	_____
Pipe Diameter	8"	_____
Other	_____	_____

AST Modification Summary	***Approved Project***	***Proposed Modification***
Number of ASTs	0	_____
Volume of ASTs	0	_____
Other	_____	_____

UST Modification Summary	***Approved Project***	***Proposed Modification***
Number of USTs	0	_____
Volume of USTs	0	_____
Other	_____	_____

5. ☒ **Attachment B: Narrative of Proposed Modification**. A detailed narrative description of the nature of the proposed modification is attached. It discusses what was approved, including any previous modifications, and how this proposed modification will change the approved plan.

6. ☒ **Attachment C: Current Site Plan of the Approved Project**. A current site plan showing the existing site development (i.e., current site layout) at the time this application for modification is attached. A site plan detailing the changes proposed in the submitted modification is required elsewhere.
   - ☒ The approved construction has not commenced. The original approval letter and any subsequent modification approval letters are included as Attachment A to document that the approval has not expired.
   - ☐ The approved construction has commenced and has been completed. Attachment C illustrates that the site was constructed as approved.
   - ☐ The approved construction has commenced and has been completed. Attachment C illustrates that the site was **not** constructed as approved.
   - ☐ The approved construction has commenced and has **not** been completed. Attachment C illustrates that, thus far, the site was constructed as approved.
   - ☐ The approved construction has commenced and has **not** been completed. Attachment C illustrates that, thus far, the site was **not** constructed as approved.

7. ☐ The acreage of the approved plan has increased. A Geologic Assessment has been provided for the new acreage.
   ☒ Acreage has not been added to or removed from the approved plan.

8. ☒ Submit one (1) original and one (1) copy of the application, plus additional copies as needed for each affected incorporated city, groundwater conservation district, and county in which the project will be located. The TCEQ will distribute the additional

copies to these jurisdictions. The copies must be submitted to the appropriate regional office.

Attachment A
WPAP / SCS Approval Letter

Jon Niermann, *Chairman*
Emily Lindley, *Commissioner*
Bobby Janecka, *Commissioner*
Kelly Keel, *Executive Director*

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

December 22, 2023

Mr. Samir Maredia
Gateway 29 Real Estate, LLC
5522 Jenolan Ridge Ln.
Sugarland, Texas 77479

Re: Approval of a Water Pollution Abatement Plan (WPAP) and Approval of an Organized Sewage Collection System (SCS) Plan
Gateway 29; Located Southwest of SH 29 and Ronald Reagan Blvd., Leander, Williamson County, Texas
Edwards Aquifer Protection Program ID: 11003712 (WPAP) and 11003713 (SCS), Regulated Entity No. RN111807152

Dear Mr. Maredia:

The Texas Commission on Environmental Quality (TCEQ) has completed its review on the applications for the above-referenced project submitted to the Edwards Aquifer Protection Program (EAPP) by LJA Engineering, Inc. on behalf of the applicant, Gateway 29 Real Estate, LLC, on September 8, 2023. Final review of the applications was completed after additional material was received on December 11 and December 19, 2023.

As presented to the TCEQ, the application was prepared in general compliance with the requirements of 30 Texas Administrative Codes (TAC) Chapter §213 and Chapter §217. The permanent best management practices (BMPs), engineering design report, technical specifications and final design plans were prepared by a Texas licensed professional engineer (PE). All construction plans and design information were sealed, signed, and dated by a Texas licensed PE. Therefore, the application for the construction of the proposed project and methods to protect the Edwards Aquifer are hereby **approved,** subject to applicable state rules and the conditions in this letter.

This approval expires two years from the date of this letter, unless, prior to the expiration date, more than 10 percent of the construction has commenced on the project or an extension of time has been officially requested. This approval or extension will expire, and no extension will be granted if more than 50 percent of the project has not been completed within ten years from the date of this letter.

The applicant or a person affected may file with the chief clerk a motion for reconsideration of the executive director's final action on this Edwards Aquifer protection plan. A motion for reconsideration must be filed in accordance with 30 TAC §50.139.

PROJECT DESCRIPTION

WPAP DESCRIPTION

The proposed mixed-use project will have an area of approximately 32.26 acres and will include ten lots. The project will only include construction of roadways, utilities, two water quality basin, and associated drainage infrastructure on seven lots (15.10 acres), with the remaining

three lots to be developed in the future under separate approvals. The impervious cover will be 3.84 acres (11.9 percent).

SCS DESCRIPTION

The proposed sewage collection system will provide disposal service for the mixed-use development on the seven lots. The system includes the construction of a lift station, 4,404 linear feet of gravitational and force main lines, and other appurtenance necessary for conveying wastewater to the existing Liberty Hill Wastewater Treatment Plant.

The proposed gravity line will consist of approximately 189 linear feet of 6-inch, 1,715 linear feet of 8-inch, and 320 linear feet of 12-inch SDR 26 PVC ASTM D3034 pipes, and 260 linear feet of 8-inch diameter SDR 26 PVC ASTM D2241 pipe with associated manholes and stub-outs. The force main consists of 1,920 linear feet of 6-inch Yelomine SDR 26 ASTM 2241 pipe.

LIFT STATION DETAILS

The proposed lift station will consist of an 8-foot diameter wet well with an approximate depth of 26.5 feet, two submersible wastewater pumps, and emergency power generator. Each pump will have a pumping capacity of 485 gallons per minute (gpm) at a total dynamic head (TDH) of 110 feet. **The lift station is designed and will be constructed to ensure that bypassing of sewage does not occur.**

Additional equipment will include a control panel, an audio-visual alarm, hoisting equipment, level pump controllers, pump supports and discharge piping with valves, and a security fence with controlled access.

TREATMENT FACILITY

The system will be connected to an existing City of Leander wastewater line for conveyance to the existing Liberty Hill Wastewater Treatment Plant for treatment and disposal. **The proposed system shall be connected for conveyance prior to use of the development.** The project will conform to all applicable codes, ordinances, and requirements of the City of Leander.

PERMANENT POLLUTION ABATEMENT MEASURES

To prevent the pollution of stormwater runoff originating on-site or upgradient of the site and potentially flowing across and off the site after construction, two batch detention basins (Pond A and Pond B), designed using the TCEQ technical guidance, *RG-348, Complying with the Edwards Aquifer Rules: Technical Guidance on Best Management Practices,* will be constructed to treat stormwater runoff. The required total suspended solids (TSS) treatment for this project is 3,341 pounds of TSS generated from the 3.84 acres of impervious cover. The approved water quality basins are sized for future development with a provided capacity of 26,203 cubic feet and 47,178 cubic feet, respectively. The approved permanent BMPs and measures meet the required 80 percent removal of the increased load in TSS caused by the project.

The permanent BMPS shall be operational prior to occupancy or use of the proposed project. Inspection, maintenance, repair, and retrofit of the permanent BMPs shall be in accordance with the approved application.

GEOLOGY

According to the Geologic Assessment (GA) included with the application, the surficial unit of the site is the Edwards Limestone Formation (Ked) in the Edwards Aquifer Recharge Zone. No sensitive geologic features were identified in the GA. The site assessment conducted on November 29, 2023 by TCEQ staff determined the site to be generally as described by the GA.

STANDARD CONDITIONS

1. The plan holder (applicant) must comply with all provisions of 30 TAC Chapter §213 and technical specifications contained in the approved plan. The plan holder should also acquire and comply with additional and separate approvals, permits, registrations or authorizations from other TCEQ Programs (i.e., Stormwater, Water Rights, Dam Safety, Underground Injection Control, Water Quality) as required based on the specifics of the plan.
2. In addition to the rules of the Commission, the plan holder must also comply with state and local ordinances and regulations providing for the protection of water quality as applicable.

Prior to Commencement of Construction:

3. Within 60 days of receiving written approval of an Edwards Aquifer protection plan, the plan holder must submit to the EAPP proof of recordation of notice in the county deed records, with the volume and page number(s) of the county record. A description of the property boundaries shall be included in the deed recordation in the county deed records. TCEQ form, Deed Recordation Affidavit (TCEQ-0625), may be used.
4. The plan holder of any approved Edwards Aquifer protection plan must notify the EAPP and obtain approval from the executive director prior to initiating any modification to the activities described in the referenced application following the date of the approval.
5. The plan holder must provide written notification of intent to commence construction, replacement, or rehabilitation of the referenced project. Notification must be submitted to the EAPP no later than 48 hours prior to commencement of the regulated activity. Notification must include the date on which the regulated activity will commence, the name of the approved plan and program ID number for the regulated activity, and the name of the prime contractor with the name and telephone number of the contact person.
6. Temporary erosion and sedimentation (E&S) controls as described in the referenced application, must be installed prior to construction, and maintained during construction. Temporary E&S controls may be removed when vegetation is established, and the construction area is stabilized. The TCEQ may monitor stormwater discharges from the site to evaluate the adequacy of temporary E&S control measures. Additional controls may be necessary if excessive solids are being discharged from the site.
7. All borings with depths greater than or equal to 20 feet must be plugged with non-shrink grout from the bottom of the hole to within three (3) feet of the surface. The remainder of the hole must be backfilled with cuttings from the boring or gravel. All borings less than 20 feet must be backfilled with cuttings from the boring. All borings must be backfilled or plugged within four (4) days of completion of the drilling operation.

During Construction:

8. This approval does not authorize the installation of temporary or permanent aboveground storage tanks on this project that will have a total storage capacity of 500 gallons or more of static hydrocarbons or hazardous substances without prior approval of an Aboveground Storage Tank facility application.
9. If any sensitive feature is encountered during construction, replacement, or rehabilitation on this project, all regulated activities must be **immediately** suspended near it and notification must be made to TCEQ EAPP staff. Temporary BMPs must be installed and maintained to protect the feature from pollution and contamination. Regulated activities near the feature may not proceed until the executive director has reviewed and approved the methods proposed to protect the feature and the aquifer from potentially adverse impacts to water quality.
10. All water wells, including injection, dewatering, and monitoring wells shall be identified in the geologic assessment and must be in compliance with the requirements of the Texas

Department of Licensing and Regulation 16 TAC Chapter §76 and all other locally applicable rules, as appropriate.

11. If sediment escapes the construction site, the sediment must be removed at a frequency sufficient to minimize offsite impacts to water quality (e.g., fugitive sediment in street being washed into surface streams or sensitive features by the next rain). Sediment must be removed from sediment traps or sedimentation ponds not later than when design capacity has been reduced by 50 percent. Litter, construction debris, and construction chemicals shall be prevented from becoming stormwater discharge pollutants.
12. Intentional discharges of sediment laden water are not allowed. If dewatering becomes necessary, the discharge must be filtered through appropriately selected BMPs.
13. The following records shall be maintained and made available to the executive director upon request: the dates when major grading activities occur, the dates when construction activities temporarily or permanently cease on a portion of the site, and the dates when stabilization measures are initiated.
14. Stabilization measures shall be initiated as soon as practicable in portions of the site where construction activities have temporarily or permanently ceased, and construction activities will not resume within 21 days. When the initiation of stabilization measures by the 14th day is precluded by weather conditions, stabilization measures shall be initiated as soon as practicable.

<u>After Completion of Construction:</u>

15. Owners of permanent BMPs and temporary measures must ensure that the BMPs and measures are constructed and function as designed. A Texas licensed PE **must certify** in writing that the permanent BMPs or measures were constructed as designed. The certification letter must be submitted to the EAPP within 30 days of site completion.
16. The applicant shall be responsible for maintaining the permanent BMPs after construction until such time as the maintenance obligation is either assumed in writing by another entity having ownership or control of the property or the ownership of the property is transferred to the entity. A copy of the transfer of responsibility must be filed with the executive director through the EAPP within 30 days of the transfer. TCEQ form, Change in Responsibility for Maintenance on Permanent BMPs and Measures (TCEQ-10263), may be used.
17. No part of the organized sewage collection system may be used as a sewage holding tank, as defined in 30 TAC §213.3 (excluding lift stations), over the Edwards Aquifer recharge zone.
18. A Texas licensed PE **must certify** in writing that the new sewage collection system (including force mains) has passed all required testing. The certification shall be submitted to the EAPP within 30 days of test completion and prior to the new sewage collection system being put into service.
19. A Texas licensed PE **must certify** subsequent testing required every five years of the existing sewage collection system after being put into use to determine types and locations of structural damage and defects such as offsets, open joints, or cracked or crushed lines that would allow exfiltration to occur. The test results must be retained by the plan holder for five years and made available to the executive director upon request.

The holder of the approved Edwards Aquifer protection plan is responsible for compliance with Chapter §213 and any condition of the approved plan through all phases of plan implementation. Failure to comply with any condition within this approval letter is a violation of Chapter §213 and is subject to administrative rule or orders and penalties as provided under §213.10 of this title (relating to Enforcement). Such violations may also be subject to civil penalties and injunction. Upon legal transfer of this property, the new owner is required to comply with all terms of the approved Edwards Aquifer protection plan.

This action is taken as delegated by the executive director of the Texas Commission on Environmental Quality. If you have any questions or require additional information, please contact Ms. Miki Chilarescu of the Edwards Aquifer Protection Program at 512-239-6175 or the regional office at 512-339-2929.

Sincerely,

Lillian Butler

Lillian Butler, Section Manager
Edwards Aquifer Protection Program
Texas Commission on Environmental Quality

LIB/mec

cc: Mr. Charles R. Hager, P.E. - LJA Engineering, Inc.

ATTACHMENT B

MODIFICATION NARRATIVE

Modification Description:

The modification of the original WPAP application is necessary in order to provide approval for the additional proposed development beyond the overall subdivision improvements previously approved. The WPAP Modification includes the proposed Site Development of Lots 2, 3, and 5 of the Gateway 29 Subdivision / Project. The proposed development of Lot 2 includes a drive through restaurant as well as dedicated retail areas and the associated parking. This increased the amount of impervious cover on the 2.680-acre Lot 2 to 74.9%, or 87,448-sf of impervious cover. The proposed development of Lot 3 includes a gas station with a convenience store, restaurant, and associated parking. This increased the amount of impervious cover on the 2.453-acre Lot 3 to 67.4%, or 71,963-sf of impervious cover. The proposed development on Lot 5 includes a retail and restaurant land use and associated parking. This increased the amount of impervious cover on the 21.840-acre Lot 5 to 86.3%, or 69,094-sf of impervious cover. This increase in impervious cover increases the required TSS removal from 3,342 lbs to 7,143 lbs. Because our Batch detention Water Quality / Detention ponds A and B were sized to treat the fully developed commercial lots within the Gateway 29 Subdivision / Project, the provided water quality volume as previously approved exceeds the required volume that is proposed under this WPAP Modification.

No other changes are proposed to the original WPAP other than the addition of the proposed development shown on Lots 2, 3, and 5 within the enclosed WPAP Modification Plan Set.

Attachment C
Site Plan

GATEWAY 29

TCEQ WPAP / SCS PLANS FOR SUBDIVISION IMPROVEMENTS

MODIFICATIONS FOR LOTS 2, 3, & 5

LEANDER, WILLIAMSON COUNTY, TEXAS

Edwards Aquifer Regulated Entity ID No.: RN111804993

Additional ID No's.: 11003712 (WPAP) & 11003713 (SCS)

GATEWAY 29 TCEQ WPAP/SCS PLANS FOR SUBDIVISION IMPROVEMENTS
A53-0461

SUBMITTED FOR APPROVAL BY:
LJA ENGINEERING, INC.

STATE OF TEXAS
CHARLES R. HAGER V
127034
LICENSED PROFESSIONAL ENGINEER

03-13-2024

CHARLES R. HAGER, P.E. #127034 — DATE
LICENSED PROFESSIONAL ENGINEER

THE ENGINEER OF RECORD IS SOLELY RESPONSIBLE FOR THE COMPLETENESS, ACCURACY, REGULATORY COMPLIANCE, AND ADEQUACY OF THESE PLANS AND/OR SPECIFICATIONS WHETHER OR NOT THE PLANS AND/OR SPECIFICATIONS WERE REVIEWED BY THE CITY ENGINEER(S).

FLOODPLAIN INFORMATION:

NO PORTION OF THE SUBJECT TRACT IS WITHIN THE 100-YEAR FLOODPLAIN, AS SHOWN ON THE FEMA FLOOD INSURANCE RATE MAP FOR WILLIAMSON COUNTY, TEXAS, MAP NO. 48491C0275E, WITH AN EFFECTIVE DATE OF SEPTEMBER 26, 2008.

LEGAL DESCRIPTION:

BEING 32.257 ACRES OF LAND, MORE OR LESS, BEING OUT OF THE GREENLIEF FISK SURVEY, ABSTRACT NO. 5 AND THE WILLIAM H. MONROE SURVEY, ABSTRACT NO. 453 IN WILLIAMSON COUNTY, TEXAS, AND BEING ALL OF A 10.10 ACRE TRACT OF LAND CONVEYED TO DONALD W. STARKS, RECORDED IN DOCUMENT NO. 2003040899, AND THE REMAINING PORTION OF A 30.30 ACRE TRACT OF LAND CONVEYED TO DONALD W. STARKS, RECORDED IN DOCUMENT NO. 2003040898, OFFICIAL PUBLIC RECORDS OF WILLIAMSON COUNTY, TEXAS, BEING THAT SAME PROPERTY DESCRIBED IN A SPECIAL WARRANTY DEED WITH VENDOR'S LIEN RECORDED IN DOCUMENT NO. 2021019843, OFFICIAL PUBLIC RECORDS OF WILLIAMSON COUNTY, TEXAS.

AQUIFER NOTE:

THE PROJECT LIES WITHIN THE BOUNDARY OF THE EDWARDS AQUIFER RECHARGE ZONE.

RELATED PROJECT INFORMATION:

SH 29 & RONALD REAGAN BLVD. PLANNED UNIT DEVELOPMENT AGREEMENT - 20-Z-021
GATEWAY 29 PRELIMINARY PLAT - CITY OF LEANDER PROJECT NO. PP-22-0014
GATEWAY 29 FINAL PLAT - CITY OF LEANDER PROJECT NO. FP-23-0072
GATEWAY 29 PICP - CITY OF LEANDER PROJECT NO. PICP-23-0072

FIRE DEPARTMENT DATA

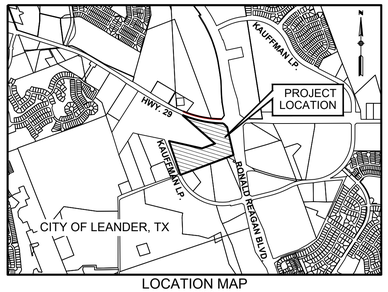
FIRE FLOW TEST INFORMATION (5/12/2022)

FLOW HYDRANT (KAUFFMAN LOOP / CR 267 - S OF TEST HYDRANT)

STATIC PRESSURE	= 68 PSI
VELOCITY PRESSURE	= 66 PSI
FLOW RATE	= 1,300 GPM
FLOW RATE @ 20 PSI	= 7,230 GPM

TEST HYDRANT (KAUFFMAN LOOP / CR 267 - WATER TOWER)

STATIC PRESSURE	= 68 PSI
RESIDUAL PRESSURE	= 66 PSI
FLOW RATE @ 20 PSI	= 7,230 GPM



LOCATION MAP
1"=2000'

ADDRESS
W. STATE HWY. 29 & RONALD REAGAN BLVD.
LEANDER, TEXAS 78628
ZONING : PER PUD 20-Z-021:
GC-2-A (LOTS 1, 2, 4, 5, 6, 7, 8, 9)
GC-3-A (LOT 3)
MF-2-A (LOTS 10 & 11)
EXISTING SITE AREA : 32.257 ACRES
FUTURE LAND USE: ACTIVITY CENTER

INITIAL SUBMITTAL DATE: 08/08/2023

PICP IMPROVEMENTS OWNERSHIP & MAINTENANCE SUMMARY:

1) IMPROVEMENTS TO BE OWNED & MAINTAINED BY THE CITY OF LEANDER (PUBLIC) ARE AS FOLLOWS:

- ALL PROPOSED WATER IMPROVEMENTS SHOWN HEREIN.
- RONALD REAGAN BLVD TURN LANES AND SIDEWALK
- STORM IMPROVEMENTS WITHIN RONALD REAGAN BLVD ROW.
- OFFSITE WASTEWATER FORCEMAIN AND GRAVITY SEWER LINES WITHIN RONALD REAGAN BLVD AND KAUFFMAN LOOP ROW.
- KAUFFMAN LOOP SIDEWALK IMPROVEMENTS.

2) IMPROVEMENTS TO BE OWNED & MAINTAINED BY TXDOT (PUBLIC) ARE AS FOLLOWS:

- HWY 29 TURN LANES.
- STORM IMPROVEMENTS WITHIN HWY 29 ROW.

PRIVATE SUBDIVISION IMPROVEMENTS OWNERSHIP & MAINTENANCE SUMMARY:

1) PORTIONS OF THIS PROJECT INCLUDE SUBDIVISION IMPROVEMENTS THAT WILL BE OWNED AND MAINTAINED BY THE GATEWAY 29 POA. THESE ARE INCLUDED IN THIS PLAN SET FOR REVIEW AS THEY ARE REQUIRED TO MEET SUBDIVISION REQUIREMENTS, DESPITE BEING SHARED FACILITIES NOT INTENDED FOR CITY OF LEANDER OWNERSHIP AND MAINTENANCE. THESE IMPROVEMENTS ARE LISTED BELOW (EXCEPT WITHIN LOT 9 & 10, WHICH SHALL BE OWNED AND MAINTAINED BY LOT OWNER AND HIS/HER ASSIGNS):

- ALL PROPOSED SHARED ACCESS DRIVES & SIDEWALKS WITHIN ACCESS EASEMENTS WITHIN THE SUBDIVISION BOUNDARY.
- ALL PROPOSED STORM, WATER QUALITY, & DETENTION IMPROVEMENTS WITHIN THE SUBDIVISION BOUNDARY.
- ALL PROPOSED WASTEWATER, FORCEMAIN, & LIFT STATION IMPROVEMENTS WITHIN THE SUBDIVISION BOUNDARY.

Sheet List Table

SHEET NUMBER	SHEET TITLE	SHEET NUMBER	SHEET TITLE
01	COVER SHEET	46	GRADING PLAN SHEET 2
02	GENERAL NOTES	47	GRADING PLAN - LOT 2
03	FINAL PLAT SHEET 1	48	GRADING PLAN - LOT 3
04	FINAL PLAT SHEET 2	49	GRADING PLAN - LOT 5
05	FINAL PLAT SHEET 3	50	SIDEWALK PLAN LAYOUT
06	FINAL PLAT SHEET 4	51	TURN LANE PLAN SHEET 1
07	FINAL PLAT SHEET 5	52	TURN LANE PLAN SHEET 2
08	FINAL PLAT SHEET 6	53	TURN LANE PLAN SHEET 3
09	FINAL PLAT SHEET 7	54	TURN LANE PLAN SHEET 4
10	FINAL PLAT SHEET 8	55	STANDARD DETAILS SHEET 1
11	FINAL PLAT SHEET 9	56	STANDARD DETAILS SHEET 2
12	FINAL PLAT SHEET 10	57	STANDARD DETAILS SHEET 3
13	EXISTING CONDITIONS AND DEMOLITION PLAN	58	STANDARD DETAILS SHEET 4
14	EROSION AND SEDIMENTATION CONTROL PLAN SHEET 1	59	STANDARD DETAILS SHEET 5
15	EROSION AND SEDIMENTATION CONTROL PLAN SHEET 2	60	STANDARD DETAILS SHEET 6
16	EROSION AND SEDIMENT CONTROL NOTES & DTLS	61	STANDARD DETAILS SHEET 7
17	OVERALL SITE PLAN LAYOUT	62	STANDARD DETAILS SHEET 8
18	EXISTING CONDITIONS DRAINAGE AREA MAP	63	ELECTRICAL SYMBOLS AND NOTES
19	DEVELOPED CONDITIONS DRAINAGE AREA MAP	64	ELECTRICAL L.S. GENERATOR SPECS
20	ONSITE DRAINAGE AREA MAP	65	ELECTRICAL L.S. GENERATOR-ATS SPECS
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22	ONSITE DRAINAGE AREA MAP LOT 2	67	ELECTRICAL L.S. SITE PLAN
23	WATER QUALITY PLAN AND PROFILE SHEET 1	68	ELECTRICAL L.S. ONE-LINE DIAGRAM
24	WATER QUALITY PLAN AND PROFILE SHEET 2	69	ELECTRICAL L.S. PUMP CONTROL PLAN
25	WATER QUALITY PLAN AND PROFILE SHEET 3	70	ELECTRICAL L.S. PUMP PANEL
26	WATER QUALITY PLAN AND PROFILE SHEET 4	71	ELECTRICAL WQ SITE PLAN AND DIAGRAM
27	WATER QUALITY DETAILS SHEET 1	72	ELECTRICAL WQ CONTROL PANEL
28	WATER QUALITY DETAILS SHEET 2	73	ELECTRICAL GENERAL DETAILS
29	OVERALL STORM PLAN SHEET	74	ELECTRICAL UTILITY DETAILS SHEET 1
30	STORM PLAN AND PROFILE SHEET 1	75	ELECTRICAL UTILITY DETAILS SHEET 2
31	STORM PLAN AND PROFILE SHEET 2	76	STRUCTURAL GENERAL NOTES AND SPECIFICATIONS
32	STORM PLAN AND PROFILE SHEET 3	77	TYPICAL STRUCTURAL DETAILS
33	STORM PLAN AND PROFILE SHEET 4	78	OVERALL POND A & B PLAN REFERENCE SHEET
34	STORM PLAN AND PROFILE SHEET 5	79	POND A PARTIAL PLAN SHEET 1
35	RONALD REAGAN BLVD STORM PLAN	80	POND A PARTIAL PLAN SHEET 2
36	HIGHWAY 29 STORM PLAN	81	POND A OUTLET STRUCTURE PLAN & SECTIONS
37	STORM PLAN AND PROFILE - LOT 2	82	POND A OUTLET STRUCTURE DETAILS
38	STORM PLAN AND PROFILE - LOT 3	83	POND A STRUCTURAL DETAILS
39	STORM PLAN AND PROFILE - LOT 5	84	POND B PARTIAL PLAN SHEET 1
40	DIMENSIONAL CONTROL PLAN SHEET 1	85	POND B PARTIAL PLAN SHEET 2
41	DIMENSIONAL CONTROL PLAN SHEET 2	86	POND B PARTIAL PLAN SHEET 3
42	SITE PLAN - LOT 2	87	POND B OUTLET STRUCTURE PLAN AND SECTIONS
43	SITE PLAN - LOT 3	88	POND B OULET STRUCTURE DETAILS
44	SITE PLAN - LOT 5	89	POND B STRUCTURAL DETAILS
45	GRADING PLAN SHEET 1	90	POND A & B RETAINING WALL SCHEDULE

SUBDIVISION ACREAGE SUMMARY	
Total Existing Site Area	32.256 AC
TxDOT ROW (Dedicated by Final Plat)	0.667 AC
Total Net Site Area	**31.589 AC**
ZONING SUMMARY	
Per PUD 20-Z-021	
GC-2-A (Lots 1, 2, 4-8)	15.148 AC
GC-3-A (Lot 3)	2.452 AC
MF-2-A (Lots 9-10)	13.989 AC
Total	31.589 AC
LAND USE SUMMARY	
Net Site Area	31.589 AC
Commercial	17.600 AC
Multi-Family	7.816 AC
Parkland/Open Space	6.173 AC
LOT ACREAGE SUMMARY	
Lot 1	1.033 AC
Lot 2	2.680 AC
Lot 3	2.452 AC
Lot 4	0.978 AC
Lot 5	1.839 AC
Lot 6	1.333 AC
Lot 7	2.18 AC
Lot 8	5.105 AC
Lot 9	6.173 AC
Lot 10	7.816 AC

PROJECT SUMMARY											
	LOT 1	LOT 2	LOT 3	LOT 4	LOT 5	LOT 6	LOT 7	LOT 8	LOT 9	LOT 10	TOTAL
SITE AREA (AC)	1.03	2.68	2.45	0.98	1.84	1.33	2.18	5.11	6.17	7.81	31.58
ZONING	GC-2-A	GC-2-A	GC-3-A	GC-2-A	GC-2-A	GC-2-A	GC-2-A	GC-2-A	GC-2-A	MF-2-A	
EX. LAND USE	VACANT										
PROP. LAND USE (See Note Below)	RS	RS / R	RS / G	RS	RS / R	RS / R	O / R	O / H	P	MF	
FUTURE LAND USE	ACTIVITY CENTER										
EX. IMPERVIOUS COVER (SF)	0	0	0	0	0	0	0	0	0	0	
PROP. PICP IMPERVIOUS COVER (AC)	0.16	0.27	0.21	0.27	0.31	0.34	0.46	0.46	0.54	0.60	3.62
PROP. PICP IMPERVIOUS COVER (%)	15%	10%	9%	28%	17%	26%	21%	9%	9%	8%	11%

NOTE: Land Uses summarized above are abbreviated as follows: **C: Commercial, R: Retail, RS: Restaurant, G: Gas Station/C-Store (Retail), MF: Multi-Family, P: Park/Open Space, O: Office, H: Hotel, and TBD: Future Commercial Use Allowed By PUD which is still to be determined.**

ALL PROPOSED LAND USES SUBJECT TO CHANGE WITH INDIVIDUAL LOT SITE PLAN APPROVAL.
ALL LAND USES ARE REQUIRED TO FOLLOW PUD REQUIREMENTS.

PHASING NOTE:

ALL PUBLIC IMPROVEMENTS BEING INSTALLED UNDER PICP-23-0072 AND ALL OVERALL SHARED PRIVATE SUBDIVISION IMPROVEMENTS (BEING INSTALLED UNDER THIS PERMIT) ARE REQUIRED TO BE COMPLETED AND ACCEPTED AND/OR CLOSED OUT BY THE CITY OF LEANDER PRIOR TO ISSUANCE OF ANY CERTIFICATE OF OCCUPANCY FOR WORK PROPOSED UNDER INDIVIDUAL SITE DEVELOPMENT PERMITS / PLAN SETS.

OWNER/DEVELOPER:
GATEWAY 29 REAL ESTATE, LLC
5522 JENOLAN RIDGE LANE
SUGAR LAND, TEXAS 77479
CONTACT PERSON: SAMIR MAREDIA
PHONE: (832) 713-4985

ENGINEER :
LJA ENGINEERING, INC.
7500 RIALTO BOULEVARD, BUILDING II, SUITE 100
AUSTIN TEXAS 78735
CONTACT PERSON : CHARLES R. HAGER V, P. E.
PHONE: (512) 439-4700
FAX: (512) 439-4716

CONTOUR DATA :
ON-SITE CONTOURS: GROUND SURVEY BY WESTAR ALAMO LAND SURVEYORS, LLC (1 FT INTERVAL)
OFFSITE CONTOURS: CITY OF LEANDER GIS (2-FT INTERVAL)
BASIS OF BEARING WAS ESTABLISHED FROM THE TEXAS STATE PLANE COORDINATE SYSTEM, GRID NORTH, CENTRAL ZONE (4203), NAD 83

SURVEYOR:
LJA SURVEYING
7500 RIALTO BOULEVARD, BUILDING II, SUITE 100
AUSTIN, TX 78735
CONTACT PERSON: JEREMY KOWIS, R.P.L.S.
PHONE: (512) 493-4700
FAX: (512) 493-4716

WESTAR ALAMO LAND SURVEYORS, LLC
P.O. BOX 1645
BOERNE, TX 78006
PHONE: (210) 372-9500

DIAMOND SURVEYING, LLC
116 SKYLINE ROAD
GEORGETOWN, TX 78628
PHONE: (512) 931-3100

GENERAL NOTES:

1. THIS DEVELOPMENT IS WHOLLY CONTAINED WITHIN THE CURRENT CORPORATE LIMITS OF THE CITY OF LEANDER, TEXAS.
2. BUILDING PERMITS ARE REQUIRED FROM THE CITY OF LEANDER PRIOR TO CONSTRUCTION OF ANY BUILDING OR SITE IMPROVEMENTS.
3. PROPERTY OWNER SHALL PROVIDE FOR ACCESS TO DRAINAGE EASEMENTS AS MAY BE NECESSARY AND SHALL NOT PROHIBIT ACCESS BY THE CITY OF LEANDER.
4. ALL EASEMENTS ON PRIVATE PROPERTY SHALL BE MAINTAINED BY THE PROPERTY OWNER OR HIS OR HER ASSIGNS.
5. ALL UTILITY LINES MUST BE LOCATED UNDERGROUND.
6. THIS DEVELOPMENT IS SUBJECT TO PUD 20-Z-021 (ORDINANCE 05-018-00) AND PRELIMINARY PLAT No. 22-PP-0014.
7. THESE PLANS HAVE BEEN PREPARED IN ACCORDANCE WITH THE CITY OF LEANDER REQUIREMENTS APPLICABLE TO THIS DEVELOPMENT.
8. ANY RELOCATION OF EXISTING ELECTRIC FACILITIES SHALL BE AT THE OWNERS EXPENSE. DAMAGE BY ANY UTILITY COMPANY TO ANY STRUCTURES, FENCES, WALLS, OR LANDSCAPING OF ANY KIND PLACED WITHIN THE LIMITS OF THE EASEMENTS SHOWN ON THIS PLAT WILL BE THE RESPONSIBILITY OF THE PROPERTY OWNER. NO LANDSCAPING OR OTHER MODIFICATIONS ALTERING THE CROSS-SECTIONS OF DRAINAGE EASEMENTS ARE ALLOWED WITHOUT APPROVAL BY THE CITY OF LEANDER.
9. THE OWNER OF THE PROPERTY IS RESPONSIBLE FOR MAINTAINING CLEARANCES REQUIRED BY THE NATIONAL ELECTRIC SAFETY CODE, OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OHSA) REGULATIONS, CITY OF LEANDER RULES AND REGULATIONS AND TEXAS STATE LAWS PERTAINING TO CLEARANCES WHEN WORKING IN CLOSE PROXIMITY TO OVERHEAD POWER LINES AND EQUIPMENT. ALL COSTS INCURRED BECAUSE OF FAILURE TO COMPLY WITH THE REQUIRED CLEARANCES WILL BE CHARGED TO THE OWNER.
10. THIS PROJECT LIES WITHIN THE BOUNDARY OF THE EDWARDS AQUIFER RECHARGE ZONE & REQUIRES TCEQ APPROVAL BEFORE ANY DEVELOPMENT MAY BEGIN.
11. THIS PROJECT IS LOCATED WITHIN THE CITY OF LEANDER EMERGENCY SERVICES / FIRE DEPARTMENT JURISDICTION.
12. THESE PLANS AND SUBSEQUENT DEVELOPMENT PLANS SHALL COMPLY WITH THE MOST CURRENT INTERNATIONAL FIRE CODE AS ADOPTED AND AMENDED BY THE CITY OF LEANDER FIRE DEPARTMENT, OR ITS SUCCESSORS.
13. THERE ARE NO NATURAL SLOPES GREATER THAN 15% WITHIN THE PROJECT BOUNDARY.
14. WATER AND WASTEWATER SERVICE SHALL BE PROVIDED BY THE CITY OF LEANDER.
15. ELECTRIC SERVICE SHALL BE SUPPLIED BY PEDERNALES ELECTRIC COOPERATIVE.
16. TELECOMMUNICATION SERVICE SHALL BE PROVIDED BY SPECTRUM.
17. GAS SERVICE SHALL BE SUPPLIED BY ATMOS ENERGY (IF NEEDED).
18. POST DEVELOPED RUN-OFF RATE SHALL BE LESS THAN OR EQUAL TO THE PRE-DEVELOPED CONDITION RUNOFF RATES PER CITY OF LEANDER REGULATIONS.
19. SITE DEVELOPMENT PERMIT MUST BE ISSUED BY THE CITY OF LEANDER AND TCEQ RECHARGE ZONE WPAP & SCS PLAN APPROVAL REQUIRED PRIOR TO CONSTRUCTION OF THIS PROJECT.
20. ANY DEVIATION FROM THE APPROVED PLAN SET REQUIRES A REVISION OR CORRECTION/RE-SUBMITTAL FOR REVIEW AND APPROVAL.
21. IRRIGATION SHALL BE PERMITTED SEPARATELY.
22. MAINTENANCE OF DRAINAGE IMPROVEMENTS WITHIN DRAINAGE EASEMENTS ARE THE RESPONSIBILITY OF THE PROPERTY OWNER AND HIS OR HER ASSIGNS.
23. ALL DRIVE LANES, FIRE LANES, AND DRIVEWAYS WITHIN THIS DEVELOPMENT SHALL PROVIDE FOR RECIPROCAL ACCESS FOR INGRESS AND EGRESS TO ALL OTHER LOTS WITHIN THE SUBDIVISION AND TO ADJACENT PROPERTIES.
24. ALL NECESSARY OFFSITE EASEMENTS SHOWN HEREIN ARE REQUIRED TO BE RECORDED PRIOR TO THE APPROVAL OF THE CONSTRUCTION PLANS.

LOCATION OF EXISTING UNDERGROUND AND OVERHEAD UTILITIES ARE APPROXIMATE LOCATIONS ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES PRIOR TO BEGINNING WORK AND SHALL BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT OCCUR.

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

LJA Engineering, Inc.
7500 Rialto Boulevard
Building II, Suite 100
Austin, Texas 78735
Phone 512.439.4700
Fax 512.439.4716
FRN - F-1386

GENERAL NOTES

REVISED MARCH 27, 2023

CITY CONTACTS:
ENGINEERING MAIN LINE: 512-528-2721
PLANNING DEPARTMENT: 512-528-2750
PUBLIC WORKS MAIN LINE: 512-259-2640
STORMWATER INSPECTIONS: 512-285-0055
UTILITIES MAIN LINE: 512-259-1142
UTILITIES ON-CALL: 512-690-4760

1. CONTRACTORS SHALL HAVE AN APPROVED SET OF PLANS WITH APPROVED REVISIONS ON SITE AT ALL TIMES. FAILURE TO HAVE APPROVED PLANS ON SITE MAY RESULT IN ISSUANCE OF WORK STOPPAGE.
2. CONTACT 811 SYSTEM FOR EXISTING WATER AND WASTEWATER LOCATIONS 48 HOURS PRIOR TO CONSTRUCTION.
   a. **REFRESH ALL LOCATES *BEFORE* 14 DAYS** – LOCATE REFRESH REQUESTS MUST INCLUDE A COPY OF YOUR 811 TICKET. TEXAS PIPELINE DAMAGE PREVENTION LAWS REQUIRE THAT A LOCATE REFRESH REQUEST BE SUBMITTED BEFORE 14 DAYS, OR IF LOCATION MARKERS ARE NO LY\NGER VISIBLE.
   b. **REPORT PIPELINE DAMAGE IMMEDIATELY** – IF YOU WITNESS OR EXPERIENCE PIPELINE EXCAVATION DAMAGE, PLEASE CONTACT THE CITY OF LEANDER BY PHONE AT 512-259-2640.
3. THE CONTRACTOR SHALL CONTACT THE CITY INSPECTOR 48 HOURS BEFORE:
   a. BEGINNING EACH PHASE OF CONSTRUCTION. CONTACT ASSIGNED CITY INSPECTOR
   b. ANY TESTING. CONTRACTOR SHALL PROVIDE QUALITY TESTING FOR ALL INFRASTRUCTURES TO BE ACCEPTED AND MAINTAINED BY THE CITY OF LEANDER AFTER COMPLETION.
   c. PROOF ROLLING SUB-GRADE AND EVERY LIFT OF ROADWAY EMBANKMENT, IN-PLACE DENSITY TESTING OF EVERY BASE COURSE, AND ASPHALT CORES. ALL OF THIS TESTING MUST BE WITNESSED BY A CITY OF LEANDER REPRESENTATIVE.
   d. CONNECTING TO THE EXISTING WATER LINES.
   e. THE INSTALLATION OF ANY DRAINAGE FACILITY WITHIN A DRAINAGE EASEMENT OR STREET ROW. THE METHOD OF PLACEMENT AND COMPACTION OF BACKFILL IN THE CITY'S ROW MUST BE APPROVED PRIOR TO THE START OF BACKFILL OPERATIONS.
4. ALL RESPONSIBILITY FOR THE ACCURACY OF THESE PLANS REMAINS WITH THE ENGINEER OF RECORD WHO PREPARED THEM. IN REVIEWING THESE PLANS, THE CITY MUST RELY ON THE ADEQUACY OF THE WORK OF THE ENGINEER OF RECORD.
5. **EXCESS SOIL SHALL BE REMOVED AT THE CONTRACTOR'S EXPENSE. NOTIFY THE CITY OF LEANDER IF THE DISPOSAL SITE IS INSIDE THE CITY'S JURISDICTIONAL BOUNDARIES.**
6. BURNING IS PROHIBITED.
7. NO WORK IS TO BE PERFORMED BETWEEN THE HOURS OF 9:00 P.M. AND 7:00 A.M. OR WEEKENDS. THE CITY INSPECTOR RESERVES THE RIGHT TO REQUIRE THE CONTRACTOR TO UNCOVER ALL WORK PERFORMED WITHOUT INSPECTION.
8. CONTACT THE CITY INSPECTOR 4 DAYS PRIOR TO WORK FOR APPROVAL TO SCHEDULE ANY INSPECTIONS ON WEEKENDS OR CITY HOLIDAYS.
9. NO BLASTING IS ALLOWED.
10. ANY CHANGES OR REVISIONS TO THESE PLANS MUST FIRST BE SUBMITTED TO THE CITY BY THE DESIGN ENGINEER FOR REVIEW AND WRITTEN APPROVAL PRIOR TO CONSTRUCTION OF THE REVISION. ALL CHANGES AND REVISIONS SHALL USE REVISION CLOUDS TO HIGHLIGHT ALL REVISIONS AND CHANGES WITH EACH SUBMITTAL. REVISION TRIANGLE MARKERS AND NUMBERS SHALL BE USED TO MARK REVISIONS. ALL CLOUDS AND TRIANGLE MARKERS FROM PREVIOUS REVISIONS MUST BE REMOVED. REVISION INFORMATION SHALL BE UPDATED ON COVER SHEET AND AFFECTED PLAN SHEET TITLE BLOCK.
11. THE CONTRACTOR AND ENGINEER SHALL KEEP ACCURATE RECORDS OF ALL CONSTRUCTION THAT DEVIATES FROM THE PLANS. THE ENGINEER SHALL FURNISH THE CITY OF LEANDER ACCURATE "RECORD DRAWINGS" FOLLOWING THE COMPLETION OF ALL CONSTRUCTION. THESE "RECORD DRAWINGS" SHALL MEET THE SATISFACTION OF THE ENGINEERING DEPARTMENTS PRIOR TO FINAL ACCEPTANCE.
12. THE CONTRACTOR WILL REIMBURSE THE CITY FOR ALL REPAIR AND/OR COST INCURRED AS A RESULT OF ANY DAMAGE TO ANY PUBLIC INFRASTRUCTURE WITHIN CITY EASEMENT OR PUBLIC RIGHT-OF-WAY, REGARDLESS OF THESE PLANS.
13. WHEN CONSTRUCTION IS BEING CARRIED OUT WITHIN EASEMENTS, THE CONTRACTOR SHALL CONFINE HIS WORK TO WITHIN THE PERMANENT AND TEMPORARY EASEMENTS. PRIOR TO ACCEPTANCE, THE CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVING ALL TRASH AND DEBRIS WITHIN THE PERMANENT EASEMENTS. CLEANUP SHALL BE TO THE SATISFACTION OF THE ENGINEER OF RECORD AND CITY.
14. CONTRACTOR TO LOCATE, PROTECT, AND MAINTAIN BENCHMARKS, MONUMENTS, CONTROL POINTS AND PROJECT ENGINEERING REFERENCE POINTS. RE-ESTABLISH DISTURBED OR DESTROYED ITEMS BY REGISTERED PROFESSIONAL LAND SURVEYOR IN THE STATE OF TEXAS, AT NO ADDITIONAL COST TO THE PROPERTY OWNER.
15. ALL CONSTRUCTION OPERATIONS SHALL BE ACCOMPLISHED IN ACCORDANCE WITH APPLICABLE REGULATIONS OF THE U.S. OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA). OSHA STANDARDS MAY BE PURCHASED FROM THE GOVERNMENT PRINTING OFFICE; INFORMATION AND RELATED REFERENCE MATERIALS MAY BE PURCHASED FROM OSHA, 1033 LA POSADA DR. SUITE 375, AUSTIN, TEXAS 78752-3832.
16. ALL MANHOLE FRAMES/COVERS AND WATER VALVE/METER BOXES MUST BE ADJUSTED TO FINISHED GRADE AT THE OWNER'S EXPENSE BY THE CONTRACTOR FOR CITY CONSTRUCTION INSPECTOR INSPECTION. ALL UTILITY ADJUSTMENTS SHALL BE COMPLETED PRIOR TO FINAL PAVING. CONTRACTOR SHALL BACKFILL AROUND MANHOLES AND VALVE BOXES WITH CLASS A CONCRETE.
17. ALL MATERIALS AND CONSTRUCTION PROCEDURES WITHIN THE SCOPE OF THIS CONTRACT WHERE NOT SPECIFICALLY COVERED IN THE PROJECT SPECIFICATIONS SHALL CONFORM TO ALL CITY OF LEANDER DETAILS AND CITY OF AUSTIN STANDARD SPECIFICATIONS.
18. PROJECT SPECIFICATIONS TAKE PRECEDENCE OVER PLANS AND SPECIAL CONDITIONS GOVERN OVER TECHNICAL SPECIFICATIONS.
19. CONTRACTOR SHALL BE RESPONSIBLE FOR ACQUIRING ALL PERMITS, TESTS, APPROVALS AND ACCEPTANCES REQUIRED TO COMPLETE CONSTRUCTION OF THIS PROJECT.
20. THE CONTRACTOR MUST OBTAIN A CONSTRUCTION WATER METER FOR ALL WATER USED DURING CONSTRUCTION. A COPY OF THIS PERMIT MUST BE CARRIED AT ALL TIMES BY ALL WHO USE WATER.
21. CONTRACTOR SHALL BE RESPONSIBLE FOR KEEPING ROADS AND DRIVES ADJACENT TO AND NEAR THE SITE FREE FROM SOIL, SEDIMENT AND DEBRIS. CONTRACTOR WILL NOT REMOVE SOIL, SEDIMENT OR DEBRIS FROM ANY AREA OR VEHICLE BY MEANS OF WATER, ONLY SHOVELING AND SWEEPING WILL BE ALLOWED. CONTRACTOR WILL BE RESPONSIBLE FOR DUST CONTROL FROM THE SITE. THE CONTRACTOR SHALL KEEP THE SITE AREA CLEAN AND MAINTAINED AT ALL TIMES, TO THE SATISFACTION OF THE CITY. THE SUBDIVISION (OR SITE) WILL NOT BE ACCEPTED (OR CERTIFICATE OF OCCUPANCY ISSUED) UNTIL THE SITE HAS BEEN CLEANED TO THE SATISFACTION OF THE CITY.
22. TREES IN EXISTING ROW SHOULD BE PROTECTED OR NOTED IN THE PLANS TO BE REMOVED.

CONSTRUCTION SEQUENCE NOTES

NOTE: BELOW IS GENERAL SEQUENCE OF CONSTRUCTION. THE ENGINEER OF RECORD SHALL UPDATE BELOW WITH NOTES SPECIFIC TO THE PROJECT.

1. REACH OUT TO THE CITY FOR PRE-CONSTRUCTION MEETING AND CONSTRUCTION PERMIT.
2. SET UP E/S CONTROLS AND TREE PROTECTION AND REACH OUT TO CITY FOR INSPECTION.
3. SET UP TEMPORARY TRAFFIC CONTROLS.
4. CONSTRUCT THE DRAINAGE PONDS AND STORM WATER FEATURES.
5. START UTILITY, ROAD, GRADING, FRANCHISE UTILITY AND ALL NECESSARY INFRASTRUCTURE CONSTRUCTION. [NOTE: PLEASE UPDATE AS PER THE PROJECT]
6. REQUEST FINAL WALKTHROUGH AND CONDUCT WALKTHROUGH WITH ENGINEER OF RECORD AND CITY DEPARTMENT.
7. ENGINEER OF RECORD IS RESPONSIBLE TO PREPARE AND SUBMIT CLOSEOUT DOCUMENTS FOR PROJECT CLOSEOUT.

EROSION CONTROL NOTES

1. THE CITY OF LEANDER ENVIRONMENT INSPECTOR HAS THE AUTHORITY TO ADD OR MODIFY EROSION/SEDIMENTATION CONTROLS ON SITE THROUGHOUT THE DURATION OF THE PROJECT.
2. ALL AREAS DISTURBED OR EXPOSED DURING CONSTRUCTION SHALL BE RESTORED WITH A MINIMUM OF 6" TOPSOIL, THE 6" MINIMUM SOIL DEPTH SHALL CONSISTS OF 75% SOIL BLENDED WITH 25% COMPOST.
3. ALL DISTURBED AREAS SHALL BE RE-VEGETATED USING ONLY APPROVED GRASSES FROM THE GROW GREEN GUIDE.
4. THE CONTRACTOR IS REQUIRED TO INSPECT THE CONTROLS AND FENCES AT WEEKLY INTERVALS AND AFTER SIGNIFICANT RAINFALL EVENTS TO ENSURE THAT THEY ARE FUNCTIONING PROPERLY. THE CONTRACTOR IS RESPONSIBLE FOR MAINTENANCE OF CONTROLS AND FENCES AND SHALL IMMEDIATELY MAKE ANY NECESSARY REPAIRS TO DAMAGED AREAS. SILT ACCUMULATION AT CONTROLS MUST BE REMOVED WHEN THE DEPTH REACHES SIX (6) INCHES.
5. THE TEMPORARY SPOILS DISPOSAL SITE IS TO BE SHOWN IN THE EROSION CONTROL MAP.
6. ANY ON-SITE SPOILS DISPOSAL SHALL BE REMOVED PRIOR TO ACCEPTANCE UNLESS SPECIFICALLY SHOWN ON THE PLANS. THE DEPTH OF SPOIL SHALL NOT EXCEED 10 FEET IN ANY AREA.
7. ALL AREAS DISTURBED OR EXPOSED DURING CONSTRUCTION SHALL BE RESTORED WITH A MINIMUM OF 6 INCHES OF TOPSOIL AND COMPOST BLEND. TOPSOIL ON SINGLE FAMILY LOTS MAY BE INSTALLED WITH HOME CONSTRUCTION. THE TOPSOIL AND COMPOST BLEND SHALL CONSIST OF 75% TOPSOIL AND 25% COMPOST.
8. SEEDING FOR REESTABLISHING VEGETATION SHALL COMPLY WITH THE AUSTIN GROW GREEN GUIDE OR WILLIAMSON COUNTY'S PROTOCOL FOR SUSTAINABLE ROADSIDES (SPEC 164-WC001 SEEDING FOR EROSION CONTROL). RESEEDING VARITIES OF BERMUDA SHALL NOT BE USED.
9. STABILIZED CONSTRUCTION ENTRANCE IS REQUIRED AT ALL POINTS WHERE CONSTRUCTION TRAFFIC IS EXITING THE PROJECT ONTO EXISTING PAVEMENT. LINEAR CONSTRUCTION PROJECTS MAY REQUIRE SPECIAL CONSIDERATION. ROADWAYS SHALL REMAIN CLEAR OF SILT AND MUD.
10. TEMPORARY STOP SIGNS SHOULD BE INSTALLED AT ALL CONSTRUCTION ENTRANCES WHERE A STOP CONDITION DOES NOT ALREADY EXIST.
11. IN THE EVENT OF INCLEMENT WEATHER THAT MAY RESULT IN A FLOODING SITUATION, THE CONTRACTOR SHALL REMOVE INLET PROTECTION MEASURES UNTIL SUCH TIME AS THE WEATHER EVENT HAS PASSED.

WATER AND WASTEWATER GENERAL NOTES

1. ALL NEWLY INSTALLED PIPES AND RELATED PRODUCTS MUST CONFORM TO AMERICAN NATIONAL STANDARDS INSTITUTE/NATIONAL SANITATION FOUNDATION (ANSI/NSF) STANDARD 61 AND MUST BE CERTIFIED BY AN ORGANIZATION ACCREDITED BY ANSI.
2. ALL WATER SERVICE, WASTEWATER SERVICE AND VALVE LOCATIONS SHALL BE APPROPRIATELY STAMPED AS FOLLOWS:

WATER SERVICE	"W" ON TOP OF CURB
WASTEWATER SERVICE	"S" ON TOP OF CURB
VALVE	"V" ON TOP OF CURB

3. OPEN UTILITIES SHALL NOT BE PERMITTED ACROSS THE EXISTING PAVED SURFACES. WATER AND WASTEWATER LINES ACROSS THE EXISTING PAVED SURFACES SHALL BE BORED AND INSTALLED IN STEEL ENCASEMENT PIPES. BELL RESTRAINTS SHALL BE PROVIDED AT JOINTS.
4. INTERIOR SURFACES OF ALL DUCTILE IRON POTABLE OR RECLAIMED WATER PIPE SHALL BE CEMENT-MORTAR LINED AND SEAL COATED AS REQUIRED BY AWWA C104.
5. SAND, AS DESCRIBED IN AUSTIN SPECIFICATION ITEM 510 PIPE, SHALL NOT BE USED AS BEDDING FOR WATER AND WASTEWATER LINES. ACCEPTABLE BEDDING MATERIALS ARE PIPE BEDDING STONE, PEA GRAVEL AND IN LIEU OF SAND, A NATURALLY OCCURRING OR MANUFACTURED STONE MATERIAL CONFORMING TO ASTM C33 FOR STONE QUALITY AND MEETING THE FOLLOWING GRADATION SPECIFICATION:

SIEVE SIZE	PERCENT RETAINED BY WEIGHT
1/2"	0
3/8"	0-2
#4	40-85
#10	95-100

6. DENSITY TESTING FOR TRENCH BACKFILL SHALL BE DONE IN MAXIMUM 12" LIFTS.

WATER NOTES

1. SAMPLING TAPS SHALL BE BROUGHT UP TO 3 FEET ABOVE GRADE AND SHALL BE EASILY ACCESSIBLE FOR CITY PERSONNEL. AT THE CONTRACTORS' REQUEST, AND IN HIS PRESENCE, SAMPLES FOR BACTERIOLOGICAL TESTING WILL BE COLLECTED BY THE CITY OF LEANDER NOT LESS THAN 24 HOURS AFTER THE TREATED LINE HAS BEEN FLUSHED OF THE CONCENTRATED CHLORINE SOLUTION AND CHARGED WITH WATER APPROVED BY THE CITY.
2. CITY PERSONNEL WILL OPERATE OR AUTHORIZE THE CONTRACTOR TO OPERATE ALL WATER VALVES THAT WILL PASS THROUGH THE CITY'S POTABLE WATER. THE CONTRACTOR MAY BE FINED $500 OR MORE, INCLUDING ADDITIONAL THEFT OF WATER FINES, IF A WATER VALVE IS OPERATED IN AN UNAUTHORIZED MANNER, REGARDLESS OF WHO OPERATED THE VALVE.
3. THE CONTRACTOR IS HEREBY NOTIFIED THAT CONNECTING TO, SHUTTING DOWN, OR TERMINATING EXISTING UTILITY LINES MAY HAVE TO OCCUR AT OFF-PEAK HOURS. SUCH HOURS ARE USUALLY DURING NORMAL WORKING HOURS AND POSSIBLY BETWEEN 12 AM AND 6 AM AFTER COORDINATING WITH CITY CONSTRUCTION INSPECTORS AND INFORMING AFFECTED PROPERTIES.
4. PRESSURE TAPS OR HOT TAPS SHALL BE IN ACCORDANCE WITH CITY OF LEANDER STANDARD SPECIFICATIONS. THE CONTRACTOR SHALL PERFORM ALL EXCAVATION AND SHALL FURNISH, INSTALL AND AIR TEST THE SLEEVE AND VALVE. A CITY OF LEANDER INSPECTOR MUST BE PRESENT WHEN THE CONTRACTOR MAKES A TAP, AND/OR ASSOCIATED TESTS. A MINIMUM OF TWO (2) WORKING DAYS NOTICE IS REQUIRED. "SIZE ON SIZE" TAPS WILL NOT BE PERMITTED UNLESS MADE BY THE USE OF AN APPROVED FULL-CIRCLE GASKETED TAPPING SLEEVE. CONCRETE THRUST BLOCKS SHALL BE PLACED BEHIND AND UNDER ALL TAP SLEEVES A MINIMUM OF 24 HOURS PRIOR TO THE BRANCH BEING PLACED INTO SERVICE. THRUST BLOCKS SHALL BE INSPECTED PRIOR TO BACKFILL.
5. FIRE HYDRANTS ON MAINS UNDER CONSTRUCTION SHALL BE SECURELY WRAPPED WITH A BLACK POLY WRAP BAG AND TAPED INTO PLACE. THE POLY WRAP SHALL BE REMOVED WHEN THE MAINS ARE ACCEPTED AND PLACED INTO SERVICE.
6. THRUST BLOCKS OR RESTRAINTS SHALL BE IN ACCORDANCE WITH THE CITY OF LEANDER STANDARD SPECIFICATIONS AND REQUIRED AT ALL FITTINGS PER DETAIL OR MANUFACTURER'S RECOMMENDATION. ALL FITTINGS SHALL HAVE BOTH THRUST BLOCKS AND RESTRAINTS.
7. ALL DEAD-END WATER MAINS SHALL HAVE "FIRE HYDRANT ASSEMBLY" OR "BLOW-OFF VALVE AND THRUST BLOCK" OR "BLOW-OFF VALVE AND THRUST RESTRAINTS". THRUST RESTRAINTS SHALL BE INSTALLED ON THE MINIMUM LAST THREE PIPE LENGTHS (STANDARD 20' LAYING LENGTH). ADDITIONAL THRUST RESTRAINTS MAY BE REQUIRED BASED UPON THE MANUFACTURER'S RECOMMENDATION AND/OR ENGINEER'S DESIGN.
8. PIPE MATERIAL FOR WATER MAINS SHALL BE PVC (AWWA C900-DR14 MIN. 305 PSI PRESSURE RATING). WATER SERVICES (2" OR LESS) SHALL BE POLYETHYLENE TUBING (BLACK, 200PSI, SDR-(9)). COPPER PIPES AND FITTINGS ARE NOT ALLOWED IN THE PUBLIC RIGHT-OF-WAY. ALL PLASTIC PIPES FOR USE IN PUBLIC WATER SYSTEMS MUST BEAR THE NATIONAL SANITATION FOUNDATION SEAL OF APPROVAL (NSF-P-W).
9. ALL FIRE HYDRANT LEADS SHALL BE DUCTILE IRON PIPE (AWWA C115/C151 PRESSURE CLASS 350).
10. ALL IRON PIPE AND FITTINGS SHALL BE WRAPPED WITH MINIMUM 8-MIL POLYETHYLENE.
11. LINE FLUSHING OR ANY ACTIVITY USING A LARGE QUANTITY OF WATER MUST BE COORDINATED WITH THE PUBLIC WORKS DEPARTMENT.
12. ALL WATER METER BOXES SHALL BE:

a. SINGLE, 1" METER AND BELOW	DFW37F-12-1CA, OR EQUAL
b. DUAL, 1" METERS AND BELOW	DFW39F-12-1CA, OR EQUAL
c. 1.5" SINGLE METER	DFW65C-14-1CA, OR EQUAL
d. 2" SINGLE METER	DFW1730F-12-1CA, OR EQUAL

13. ALL WATER VALVE COVERS ARE TO BE PAINTED BLUE.

WASTEWATER NOTES

1. CURVILINEAR WASTEWATER DESIGN LAYOUT IS NOT PERMITTED.
2. MANDREL TESTING SHALL BE CONDUCTED AFTER THE FINAL BACKFILL HAS BEEN IN PLACE AT LEAST 30 DAYS.
3. MANHOLES SHALL BE COATED PER CITY OF AUSTIN SPL WW-511 (RAVEN 405 OR SPRAYWALL). PENETRATIONS TO EXISTING WASTEWATER MANHOLES REQUIRE THE CONTRACTOR TO RECOAT THE ENTIRE MANHOLE IN ACCORDANCE WITH CITY OF AUSTIN STANDARD SPECIFICATIONS SECTION NO. 506.5.
4. RECLAIMED AND RECYCLED WATER LINE SHALL BE CONSTRUCTED OF "PURPLE PIPE". ALL RECLAIMED AND RECYCLED WATER VALVE COVERS SHALL BE SQUARE AND PAINTED PURPLE.
5. FORCE MAIN PIPES NEED TO HAVE SWEEPING WYES FOR JOINTS.

STREET AND DRAINAGE NOTES

1. THE CITY OF LEANDER HAS NOT REVIEWED THESE PLANS FOR COMPLIANCE WITH THE AMERICANS WITH DISABILITIES ACT (ADA). IT IS THE RESPONSIBILITY OF THE OWNER TO PROVIDE COMPLIANCE WITH ALL LEGISLATION RELATED TO ACCESSIBILITY WITHIN THE LIMITS OF CONSTRUCTION SHOWN IN THESE PLANS. ALL SIDEWALKS SHALL COMPLY WITH THE AMERICANS WITH DISABILITIES ACT AND TEXAS ACCESSIBILITY STANDARDS (TAS).
2. BACKFILL BEHIND THE CURB SHALL BE COMPACTED TO OBTAIN A MINIMUM OF 95% MAXIMUM DENSITY TO WITHIN 6" OF TOP OF CURB. MATERIAL USED SHALL BE PRIMARILY GRANULAR WITH NO ROCKS LARGER THAN 6" IN THE GREATEST DIMENSION. THE REMAINING 6" SHALL BE CLEAN TOPSOIL FREE FROM ALL CLODS AND SUITABLE FOR SUSTAINING PLANT LIFE.
3. A MINIMUM OF 6" OF TOPSOIL SHALL BE PLACED BETWEEN THE CURB AND RIGHT-OF-WAY AND IN ALL DRAINAGE CHANNELS EXCEPT CHANNELS CUT IN STABLE ROCK.
4. DEPTH OF COVER FOR ALL CROSSINGS UNDER PAVEMENT, INCLUDING GAS, ELECTRIC TELEPHONE, CABLE TV, ETC., SHALL BE A MINIMUM OF 36" BELOW SUBGRADE.
5. STREET RIGHT-OF-WAY SHALL BE GRADED AT A SLOPE OF ¼" PER FOOT TOWARD THE CURB UNLESS OTHERWISE INDICATED.
6. ALL DRAINAGE PIPE IN PUBLIC RIGHT-OF-WAY OR EASEMENTS SHALL BE REINFORCED CONCRETE PIPE MINIMUM CLASS III OF TONGUE AND GROOVE OR O-RING JOINT DESIGN. CORRUGATED METAL PIPE IS NOT ALLOWED IN PUBLIC RIGHT-OF-WAY OR EASEMENTS.
7. THE CONTRACTOR MUST PROVIDE A PNEUMATIC TRUCK PER TXDOT SPEC FOR PROOF ROLLING.
8. ALL STRIPING, WITH THE EXCEPTION OF STOP BARS, CROSS WALKS, WORDS AND ARROWS, IS TO BE TYPE II (WATER BASED). STOP BARS, CROSS WALKS, WORDS AND ARROWS REQUIRE TYPE I THERMOPLASTIC.
9. MANHOLE FRAMES, COVERS, VALVES, CLEAN-OUTS, ETC. SHALL BE RAISED TO GRADE PRIOR TO FINAL PAVEMENT CONSTRUCTION.
10. A STOP BAR SHALL BE PLACED AT ALL STOP SIGN LOCATIONS.
11. THE GEOTECHNICAL ENGINEER SHALL INSPECT THE SUBGRADE FOR COMPLIANCE WITH THE DESIGN ASSUMPTIONS MADE DURING PREPARATION OF THE SOILS REPORT. ANY ADJUSTMENTS THAT ARE REQUIRED SHALL BE MADE THROUGH REVISIONS OF THE APPROVED CONSTRUCTION PLANS.
12. GEOTECHNICAL INVESTIGATION INFORMATION AND PAVEMENT RECOMMENDATIONS WERE PROVIDED BY GEOSCIENCE ENGINEERS, LLC DATED APRIL 5, 2023. PAVEMENT RECOMMENDATIONS ARE AS FOLLOWS: (SEE TABLE BELOW)

	Minimum Thickness (inches)
Light Traffic	
Portland Cement Concrete	5
Minimum Lime Stabilized Subgrade	6
Compacted subgrade	6
Heavy Traffic	
Portland Cement Concrete	6
Minimum Lime Stabilized Subgrade	6
Compacted subgrade	6

13. A TRAFFIC CONTROL PLAN, IN ACCORDANCE WITH THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, CITY OF AUSTIN TRANSPORTATION CRITERIA MANUAL, CITY OF LEANDER STANDARD DETAILS AND TEXAS DEPARTMENT OF TRANSPORTATION CRITERIA, SHALL BE SUBMITTED TO THE CITY OF LEANDER FOR REVIEW AND APPROVAL PRIOR TO ANY PARTIAL OR COMPLETE ROADWAY CLOSURES. TRAFFIC CONTROL PLANS MUST BE SITE SPECIFIC AND SIGNED AND SEALED BY A REGISTERED PROFESSIONAL ENGINEER.
14. ALL LANE CLOSURES SHALL OCCUR ONLY BETWEEN THE HOURS OF 9 AM AND 4 PM UNLESS OTHERWISE NOTED ON THE PLANS. ANY NIGHT TIME LANE CLOSURES REQUIRE APPROVAL OF THE CITY ENGINEER AND SHALL OCCUR BETWEEN THE HOURS OF 8 PM AND 6 AM. LANE CLOSURES OBSERVED BY THE CITY DURING PEAK HOURS OF 6 AM TO 9 AM OR 4 PM TO 8 PM WILL BE SUBJECT TO A FINE AND/OR SUBSEQUENT ISSUANCE OF WORK STOPPAGE.
15. TEMPORARY ASPHALT CONCRETE PAVEMENTS IS NOT ALLOWED. ALL SOURCES OF FLEXIBLE BASE MATERIAL ARE REQUIRED TO BE APPROVED BY THE CITY. PRIOR TO BASE PLACEMENT ALL CURRENT TRIAXIAL TEST REPORTS FOR PROPOSED STOCKPILES ARE TO BE SUBMITTED TO THE CITY CONSTRUCTION INSPECTOR FOR REVIEW AND APPROVAL.
16. AT ROAD INTERSECTIONS THAT HAVE A VALLEY GUTTER, THE CROWN TO THE INTERSECTING ROAD WILL BE CULMINATED AT A DISTANCE OF 40 FEET FROM INTERSECTING CURB LINE UNLESS OTHERWISE NOTED.
17. NO PONDING OF WATER SHALL BE ALLOWED TO COLLECT ON OR NEAR THE INTERSECTION OF PRIVATE DRIVEWAYS AND PUBLIC STREETS. RECONSTRUCTION OF THE DRIVEWAY APPROACH SHALL BE AT THE CONTRACTOR'S EXPENSE.
18. ALL DRIVEWAY APPROACHES SHALL HAVE A UNIFORM TWO PERCENT SLOPE WITHIN THE PUBLIC RIGHT-OF-WAY UNLESS APPROVED IN WRITING BY THE ENGINEERING DEPARTMENT.
19. IMPROVEMENTS THAT INCLUDE RECONSTRUCTION OF AN EXISTING TYPE II DRIVEWAY SHALL BE DONE IN A MANNER WHICH RETAINS OPERATIONS OF NOT LESS THAN HALF OF THE DRIVEWAY TO REMAIN OPEN AT ALL TIMES. FULL CLOSURE OF SUCH DRIVEWAY CAN BE CONSIDERED WITH WRITTEN AUTHORITY BY THE CONTRACTOR FROM ALL PROPERTY OWNERS AND ACCESS EASEMENT RIGHT HOLDERS ALLOWING THE FULL CLOSURE OF THE DRIVEWAY.
20. CONTRACTOR MUST CLEAR FIVE (5) FEET BEYOND ALL PUBLIC RIGHT-OF-WAY TO PREVENT FUTURE VEGETATIVE GROWTH INTO THE SIDEWALK AREAS.
21. SLOPE OF NATURAL GROUND ADJACENT TO THE PUBLIC RIGHT-OF-WAY SHALL NOT EXCEED 3:1 SLOPE. IF A 3:1 SLOPE IS NOT POSSIBLE, SLOPE PROTECTION OR RETAINING WALL MUST BE SUBMITTED TO THE CITY FOR REVIEW AND APPROVAL PRIOR TO FINAL ACCEPTANCE.
22. THERE SHALL BE NO WATER, WASTEWATER OR DRAINAGE APPURTENANCES, INCLUDING BUT NOT LIMITED TO VALVES, FITTINGS, METERS, CLEAN-OUTS, MANHOLES, OR VAULTS IN ANY DRIVEWAY, SIDEWALK, TRAFFIC OR PEDESTRIAN AREA.
23. PUBLIC SIDEWALKS SHALL NOT USE CURB INLETS AS PARTIAL WALKING SURFACE. SIDEWALKS SHALL NOT USE TRAFFIC CONTROL BOXES, METERS, CHECK VALVE VAULTS, COMMUNICATION VAULTS, OR OTHER BURIED OR PARTIALLY BURIED INFRASTRUCTURE AS A VEHICULAR OR PEDESTRIAN SURFACE.
24. ALL WET UTILITIES SHALL BE INSTALLED AND ALL DENSITIES MUST HAVE PASSED INSPECTION(S) PRIOR TO THE INSTALLATION OF DRY UTILITIES.
25. DRY UTILITIES SHALL BE INSTALLED AFTER SUBGRADE IS CUT AND BEFORE THE FIRST COURSE OF BASE. NO TRENCHING COMPACTED BASE. IF NECESSARY DRY UTILITIES INSTALLED AFTER FIRST COURSE BASE SHALL BE BORED ACROSS THE FULL WIDTH OF THE PUBLIC RIGHT-OF-WAY.
26. A MINIMUM OF SEVEN (7) DAYS OF CURE TIME IS REQUIRED FOR HMAC PRIOR TO THE INTRODUCTION OF VEHICULAR TRAFFIC TO ALL STREETS.

DRY UTILITY NOTES

1. CONTACTOR SHALL MAINTAIN MINIMUM 24" CLEARANCE FROM ALL EXISTING UTILITIES.
2. FOR PUBLIC WATER & WASTEWATER LINE EMERGENCIES, CONTACT THE CITY OF LEANDER PUBLIC WORKS EMERGENCY 24-HOUR ON-CALL LINE AT 512-690-4760.
3. THE CONTRACTOR SHALL CONTACT THE TEXAS EXCAVATION SAFETY SYSTEM AT 1-800-344-8377 FOR EXISTING UTILITY LOCATIONS 48 HOURS PRIOR TO THE START OF CONSTRUCTION. THE CONTRACTOR SHALL VERIFY THE LOCATIONS OF ALL UTILITIES THAT ARE TO BE EXTENDED, TIED TO, CROSSED, OR ALTERED; OR SUBJECT TO DAMAGE/INCONVENIENCE BY THE CONSTRUCTION OPERATIONS.
4. CONTACT THE CITY OF LEANDER PUBLIC WORKS DEPARTMENT FOR EXISTING WATER, WASTEWATER, STREET LIGHT ELECTRICAL WIRING, AND TRAFFIC SIGNAL WIRING LOCATIONS A MINIMUM OF 48 HOURS PRIOR TO START OF CONSTRUCTION.
   a. LOCATE REQUESTS MUST INCLUDE A COPY OF YOUR 811 TICKET.
   b. REFRESH ALL LOCATES BEFORE 14 DAYS – LOCATE REFRESH REQUESTS MUST INCLUDE A COPY OF YOUR 811 TICKET. TEXAS PIPELINE DAMAGE PREVENTION LAWS REQUIRE THAT A LOCATE REFRESH REQUEST BE SUBMITTED BEFORE 14 DAYS, OR IF LOCATION MARKERS ARE NO LONGER VISIBLE.
   c. REPORT ALL DAMAGE TO CITY INFRASTRUCTURE IMMEDIATELY – IF YOU WITNESS OR EXPERIENCE EXCAVATION DAMAGE, PLEASE CONTACT THE CITY OF LEANDER PUBLIC WORKS DEPARTMENT BY PHONE. IF DAMAGE IS WITNESSED OR EXPERIENCED AFTER HOURS, CALL THE CITY OF LEANDER UTILITIES ON-CALL LINE AT THE NUMBER LISTED ABOVE.
5. A PRECONSTRUCTION CONFERENCE SHALL BE HELD WITH THE CONTRACTOR, DESIGN ENGINEER/PERMIT APPLICANT & CITY OF LEANDER REPRESENTATIVES PRIOR TO INSTALLATION OF EROSION/SEDIMENTATION CONTROLS & TREE PROTECTION MEASURES AS WELL AS PRIOR TO BEGINNING CONSTRUCTION. CONTRACTOR SHALL NOTIFY THE CITY OF LEANDER PLANNING DEPARTMENT AT 512-528-2750 AT LEAST THREE (3) DAYS PRIOR TO MEETING DATE.
6. CITY OF LEANDER NOISE ORDINANCE PROHIBITS CONSTRUCTION ACTIVITY BETWEEN THE HOURS OF 9 PM AND 7 AM. REQUESTS FOR EXCEPTIONS TO THE ORDINANCE MUST BE MADE TO LEANDER CITY COUNCIL.
7. CONTRACTOR SHALL BORE UNDER ALL DRIVEWAYS, STREET CROSSINGS AND OTHER PAVED AREAS OPEN CUT CROSSING SHALL NOT BE ALLOWED.
8. CONTRACTOR SHALL REPLACE ALL DAMAGED PAVEMENT, CURB & GUTTER, SIDEWALK, CURB INLETS AND ALL OTHER INFRASTRUCTURE DAMAGED BY CONSTRUCTION PER CITY OF LEANDER STANDARDS & SPECIFICATIONS.
9. AL CLAWSON DISPOSAL, INC. SHALL BE THE SOLE PROVIDER OF WASTE HAULING AFTER CONSTRUCTION.
10. ALL UNDERGROUND UTILITY LINES SHALL CROSS UNDERNEATH WATERLINES.
11. THE MINIMUM DEPTH OF COVER FOR UTILITY LINES INSTALLED UNDER CITY OF LEANDER ROADWAYS SHALL BE 36" BENEATH FINISHED GRADE.

TRENCH SAFETY NOTES

1. TRENCH SAFETY SYSTEMS TO BE UTILIZED FOR THIS PROJECT ARE DESCRIBED IN ITEM 509S "TRENCH SAFETY SYSTEMS" OF THE CITY OF AUSTIN STANDARD SPECIFICATIONS AND SHALL BE IN ACCORDANCE WITH THE LAWS OF THE STATE OF TEXAS AND THE U.S. OCCUPATION SAFETY AND HEALTH ADMINISTRATION REGULATIONS.

GRADING NOTES

1. POSITIVE DRAINAGE SHALL BE MAINTAINED ON ALL SURFACE AREAS WITHIN THE SCOPE OF THIS PROJECT. CONTRACTOR SHOULD TAKE PRECAUTIONS NOT TO ALLOW ANY PONDING OF WATER.
2. THE CONTRACTOR SHALL CONSTRUCT EARTHEN EMBAN

GATEWAY 29
FINAL PLAT

VICINITY MAP



PROJECT SUMMARY:

	LOT 1	LOT 2	LOT 3	LOT 4	LOT 5	LOT 6	LOT 7	LOT 8	LOT 9	LOT 10	TOTAL
SITE AREA AC.	1.033	2.680	2.452	0.978	1.839	1.333	2.180	5.106	6.174	7.816	31.591
ZONING	GC-2-A	GC-2-A	GC-3-A	GC-2-A	GC-2-A	GC-2-A	GC-2-A	GC-2-A	MF-2-A	MF-2-A	
EX. LAND USE	VACANT	VACANT	VACANT	VACANT	VACANT	VACANT	VACANT	VACANT	VACANT	VACANT	
PROP. LAND USE	COMM.	COMM.	COMM.	COMM.	COMM.	COMM.	COMM.	COMM.	PARK	MF	

TOTAL SITE AREA TABLE:

TOTAL EXISTING SITE AREA	32.257–AC
R.O.W. TO BE DEDICATED BY PLAT	0.666–AC
TOTAL NET SITE AREA:	31.591–AC

LAND USE AREA TABLE:

COMMERCIAL AREA:	17.601–AC
PARK AREA:	6.174–AC
MULTI–FAMILY:	7.816–AC
TOTAL NET SITE AREA:	31.591–AC

OWNER/DEVELOPER: GATEWAY 29 REAL ESTATE LLC
5522 JENOLAN RIDGE LN
SUGAR LAND, TEXAS 77479
CONTACT PERSON: SAMIR MAREDIA
PHONE: (832) 713–4985

OWNER/DEVELOPER: ZEKELMAN PROPERTY LEANDER 53, LLC
227 W MONROE ST
CHICAGO, IL 60606
CONTACT PERSON: ANGELA MIU
PHONE: (312) 275–1672

ENGINEER: LJA ENGINEERING, INC.
7500 RIALTO BOULEVARD, BUILDING II, SUITE 100
AUSTIN, TEXAS 78735
CONTACT PERSON: CHARLES HAGER, P.E.
PHONE: (512) 439–4700
FAX: (512) 493–4716

SURVEYOR: LJA SURVEYING, INC.
9830 COLONADE BOULEVARD, SUITE 300
SAN ANTONIO, TEXAS 78230
T.B.P.L.S. FIRM NO. 10194382
CONTACT PERSON: GORDON N. ANDERSON
R.P.L.S. No. 6617
PHONE: (512) 767–7398

AGENT: LJA ENGINEERING, INC.
7500 RIALTO BOULEVARD, BUILDING II, SUITE 100
AUSTIN, TEXAS 78735
CONTACT PERSON: CHARLES HAGER, P.E.
PHONE: (512) 439–4700
FAX: (512) 493–4716

FILING DATE: 04/18/2023

BEARING BASIS:
ALL BEARINGS BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, GRID NORTH, CENTRAL ZONE (4203), NAD83, ALL DISTANCES AND COORDINATES ARE GRID. TO ADJUST TO SURFACE, MULTIPLY GRID VALUES BY A COMBINED SCALE FACTOR OF 1.00013.

OBSERVATIONS WERE COLLECTED USING A COMBINATION OF RTK AND THE VRS NETWORK.

BENCHMARK LIST:

1
5/8" IRON ROD WITH ALUMINUM CAP
STAMPED "CP #1" SET IN CONCRETE
GRID NORTHING: 10,203,880.30
GRID EASTING: 3,082,438.58
ELEVATION: 1,031.56'

2
5/8" IRON ROD WITH RED CAP STAMPED
"LJA CONTROL"
GRID NORTHING: 10,202,184.88
GRID EASTING: 3,083,846.59
ELEVATION: 1,025.62'

SHEET INDEX:

SHEET NO.	DESCRIPTION
1	COVER SHEET
2	OVERVIEW
3–5	PLAT MAP
6–9	EASEMENTS
10	NOTES & SIGNATURES

PROJECT ADDRESS:
_____
LEANDER, TEXAS _____

ENGINEER/SURVEYOR:
LJA Surveying, Inc.
9830 Colonnade Boulevard Phone 210.503.2700
Suite 300
San Antonio, Texas 78230 T.B.P.L.S. Firm No. 10194382

CITY OF LEANDER PROJECT No. PP-22-014

THIS PLAT FILED IN 04/18/2023 1 OF 10

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User: dgallagher Plot Date/Time: Mar. 13, 24 – 08:56:46

CITY OF LEANDER APPROVAL

LOCATION OF EXISTING UNDERGROUND AND OVERHEAD UTILITIES ARE APPROXIMATE LOCATIONS ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES PRIOR TO BEGINNING WORK AND SHALL BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT OCCUR.

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

GATEWAY 29 WPAP / SCS
OVERALL SUBDIVISION IMPROVEMENTS
FINAL PLAT SHEET 1
LEANDER, WILLIAMSON COUNTY, TEXAS

REVISIONS			
NO.	DESCRIPTION	BY	DATE

DATE: 03/13/2024
DESIGNED BY: CRH
DRAWN BY: DLB
CHECKED BY: CRH
DRAWING NAME: A633-0401-FP01_WPAP.dwg

LJA Engineering, Inc.
7500 Rialto Boulevard
Building II, Suite 100
Austin, Texas 78735
Phone 512.439.4700
Fax 512.439.4716
FRN-F-1386

JOB NUMBER: A633-0401

FP01

SHEET NO. 03 OF 90 SHEETS

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User: dgallagher
Last Modified: Mar. 13, 24 – 09:11
Plot Date/Time: Mar. 13, 24 – 14:56:08

GATEWAY 29
FINAL PLAT

BEARING BASIS:
ALL BEARINGS BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, GRID NORTH, CENTRAL ZONE (4203), NAD83, ALL DISTANCES AND COORDINATES ARE GRID. TO ADJUST TO SURFACE, MULTIPLY GRID VALUES BY A COMBINED SCALE FACTOR OF 1.00013.

OBSERVATIONS WERE COLLECTED USING A COMBINATION OF RTK AND THE VRS NETWORK.

SUBMITTAL DATE: _____ __, 2023

PROJECT ADDRESS:
_____
LEANDER, TEXAS _____
ZONING: GC-2-A, GC-3-A, MF-2-A
SITE AREA: 33.257 ACRES

SHEET INDEX:

SHEET NO.	DESCRIPTION
1	COVER SHEET
2	OVERVIEW
3-5	PLAT MAP
6-9	EASEMENTS
10	NOTES & SIGNATURES

FIELD NOTE DESCRIPTION

FIELD NOTE DESCRIPTION

BEING A 32.257 ACRE TRACT (1,405,119 SQUARE FEET) OF LAND, LOCATED IN THE WILLIAM H. MONROE SURVEY, ABSTRACT NO. 453 AND THE GREENLEAF FISK SURVEY, ABSTRACT NO. 5, SITUATED IN WILLIAMSON COUNTY, TEXAS, OUT OF A CALLED 14.00 ACRE TRACT OF LAND DESCRIBED IN A SPECIAL WARRANTY DEED WITH VENDOR'S LIEN TO ZEKELMAN PROPERTY LEANDER 53, LLC DESCRIBED AND RECORDED IN DOCUMENT NUMBER 2021159540 IN THE OFFICIAL PUBLIC RECORDS OF WILLIAMSON COUNTY, TEXAS (O.P.R.W.C.TX.), AND REMAINDER OF A CALLED 32.266 ACRE TRACT OF LAND DESCRIBED IN A SPECIAL WARRANTY DEED WITH VENDOR'S LIEN TO GATEWAY 29 REAL ESTATE, LLC RECORDED IN DOCUMENT NUMBER 2021019843 O.P.R.W.C.TX., SAID 32.257 ACRE TRACT BEING MORE PARTICULARLY DESCRIBED BY METES AND BOUNDS AS FOLLOWS:

BEGINNING AT A 1/2" IRON ROD FOUND FOR THE WEST CORNER OF THE HEREIN DESCRIBED TRACT, A SOUTH ANGLE POINT OF A CALLED 52.35 ACRE TRACT OF LAND CONVEYED TO ZEKELMAN PROPERTY LEANDER 53, LLC DESCRIBED AND RECORDED IN DOCUMENT NUMBER 2021128467 O.P.R.W.C.TX., ON THE EXISTING EAST RIGHT-OF-WAY LINE OF KAUFFMAN LOOP, A 100' WIDE RIGHT-OF-WAY, HAVING A GRID COORDINATE VALUE OF NORTHING: 10,203,988.76 AND EASTING: 3,082,483.29';

THENCE, S 76°09'50" E, ALONG THE SHARED BOUNDARY LINE OF SAID 14.00 ACRE TRACT AND THE SAID 52.35 ACRE TRACT, PASSING A 1.5' IRON PIPE FOUND AT A DISTANCE OF 455.62 FEET, PASSING A 1/2" IRON ROD FOUND AT DISTANCE OF 483.58 FEET, FOR A TOTAL A DISTANCE OF 946.64 FEET TO AN INTERIOR ANGLE CORNER OF THE HEREIN DESCRIBED TRACT, FROM WHICH A 1.5' IRON PIPE FOUND BEARS N 69°59'04" W A DISTANCE OF 1.54 FEET;

THENCE, N 69°53'16" E A DISTANCE OF 363.52 FEET ALONG THE COMMON BOUNDARY LINE OF SAID 14.00 ACRE TRACT, THE SAID 52.35 ACRE TRACT, AND THE CALLED 32.266 ACRE TRACT, TO THE SHARED EAST CORNER OF SAID 52.35 ACRE TRACT, AND SOUTHWEST CORNER OF A CALLED 0.881 ACRE TRACT CONVEYED TO ZEKELMAN PROPERTY LEANDER 53, LLC DESCRIBED AND RECORDED IN DOCUMENT NUMBER 2021128467, O.P.R.W.C.TX., FOR AN INTERIOR ANGLE CORNER OF THE HEREIN DESCRIBED TRACT FROM WHICH A 1/2" IRON ROD WITH CAP STAMPED "DIAMOND SURVEYING" FOUND BEARS N 06°42'11" W A DISTANCE OF 0.26 FEET;

THENCE, N 40°58'11" E A DISTANCE OF 29.59 FEET ALONG THE COMMON BOUNDARY LINE OF SAID 0.881 ACRE TRACT, AND THE SAID 32.266 ACRE TRACT TO A 1/2" IRON ROD WITH CAP STAMPED "DIAMOND SURVEYING" FOUND FOR AN INTERIOR ANGLE CORNER OF THE HEREIN DESCRIBED TRACT;

THENCE, N 48°48'47" W A DISTANCE OF 1,226.42 FEET ALONG THE COMMON BOUNDARY LINE OF SAID 0.881 ACRE TRACT, THE SAID 32.266 ACRE TRACT, AND A CALLED 2.457 ACRE TRACT CONVEYED TO GATEWAY 29 REAL ESTATE LLC, DESCRIBED AND RECORDED IN DOCUMENT NUMBER 2023061605 O.P.R.W.C.TX., TO A 1/2" IRON ROD FOUND IN ASPHALT FOR THE NORTHWEST CORNER OF THE HEREIN DESCRIBED TRACT, SAME BEING THE NORTHWEST CORNER OF SAID 32.266 ACRE TRACT, AN EXTERIOR ANGLE POINT OF SAID 0.881 ACRE TRACT, ON THE SOUTH RIGHT-OF-WAY LINE OF WEST STATE HIGHWAY 29, A VARIABLE WIDTH RIGHT-OF-WAY;

THENCE, WITH A CURVE TO THE LEFT HAVING A RADIUS OF 2,914.93 FEET, AN ARC LENGTH OF 99.50, A DELTA ANGLE OF 1°57'21", AND A CHORD BEARING S 68°11'25" E A DISTANCE OF 99.49 FEET, ALONG THE SHARED BOUNDARY LINE OF SAID 32.266 ACRE TRACT AND SAID WEST STATE HIGHWAY 29, VARIABLE WIDTH RIGHT-F-WAY, TO A 1/2" IRON ROD FOUND WITH AN ILLEGIBLE CAP STAMPED FOR A POINT OF CURVATURE TO THE LEFT OF THE HEREIN DESCRIBED TRACT;

THENCE, WITH A CURVE TO THE LEFT HAVING A RADIUS OF 2,914.79 FEET, AN ARC LENGTH OF 1,052.94, A DELTA ANGLE OF 20°41'51", AND A CHORD BEARING S 79°31'45" E A DISTANCE OF 1,047.22 FEET, ALONG THE SHARED BOUNDARY LINE OF SAID 32.266 ACRE TRACT AND SAID WEST STATE HIGHWAY 29, VARIABLE WIDTH RIGHT-F-WAY, TO A 1/2" IRON ROD FOUND WITH CAP STAMPED "DIAMOND SURVEYING" FOR A POINT OF TANGENCY OF THE HEREIN DESCRIBED TRACT;

THENCE, S 89°44'36" E A DISTANCE OF 33.93 FEET, ALONG SAID SHARED BOUNDARY LINE OF SAID 32.266 ACRE TRACT AND SAID WEST STATE HIGHWAY 29, VARIABLE WIDTH RIGHT-OF-WAY, TO A 1/2" IRON ROD FOUND FOR A NORTH CORNER OF THE HEREIN DESCRIBED TRACT;

THENCE, S 51°01'22" E A DISTANCE OF 160.23 FEET, ALONG SAID SHARED BOUNDARY LINE OF SAID 32.266 ACRE TRACT AND SAID WEST STATE HIGHWAY 29, VARIABLE WIDTH RIGHT-OF-WAY, AND RONALD REAGAN BOULEVARD, A VARIABLE WIDTH RIGHT-OF-WAY, TO A 1/2" IRON ROD FOUND FOR THE NORTHEAST CORNER OF THE HEREIN DESCRIBED TRACT, SAME BEING THE NORTHEAST CORNER OF SAID 32.266 ACRE TRACT;

THENCE, S 12°01'04" E A DISTANCE OF 415.65 FEET, ALONG SAID SHARED BOUNDARY LINE OF SAID 32.266 ACRE TRACT AND SAID RONALD REAGAN BOULEVARD, VARIABLE WIDTH RIGHT-OF-WAY, TO A 1/2" IRON ROD WITH CAP STAMPED "DIAMOND SURVEYING" FOR AN ANGLE POINT OF THE HEREIN DESCRIBED TRACT;

THENCE, S 15°42'56" E A DISTANCE OF 407.95 FEET, ALONG SAID SHARED BOUNDARY LINE OF SAID 32.266 ACRE TRACT AND SAID RONALD REAGAN BOULEVARD, VARIABLE WIDTH RIGHT-OF-WAY, TO A 1/2" IRON ROD WITH CAP STAMPED "DIAMOND SURVEYING" FOR THE SOUTHEAST CORNER OF THE HEREIN DESCRIBED TRACT, SAME BEING THE SOUTHEAST CORNER OF SAID 32.266 ACRE TRACT AT A CUTBACK OF SAID RONALD REAGAN BOULEVARD, VARIABLE WIDTH RIGHT-OF-WAY;

THENCE, S 72°24'20" W A DISTANCE OF 113.00 FEET, ALONG SAID SHARED BOUNDARY LINE OF SAID 32.266 ACRE TRACT AND SAID RONALD REAGAN BOULEVARD, VARIABLE WIDTH RIGHT-OF-WAY, TO A 1/2" IRON ROD WITH CAP STAMPED "DIAMOND SURVEYING" FOR AN ANGLE POINT OF THE HEREIN DESCRIBED TRACT;

THENCE, S 57°36'45" W A DISTANCE OF 34.51 FEET, ALONG SAID SHARED BOUNDARY LINE OF SAID 32.266 ACRE TRACT AND SAID RONALD REAGAN BOULEVARD, VARIABLE WIDTH RIGHT-OF-WAY, TO A 1/2" IRON ROD WITH CAP STAMPED "DIAMOND SURVEYING" FOR AN ANGLE POINT OF THE HEREIN DESCRIBED TRACT, AN ANGLE POINT OF SAID 32.266 ACRE TRACT, AND AN ANGLE POINT OF A CALLED 0.013 ACRE TRACT OF LAND CONVEYED TO WEDEMEYER, HOWARD BARKLEY DESCRIBED AND RECORDED IN DOCUMENT NUMBER 2008071853 O.P.R.W.C.TX.;

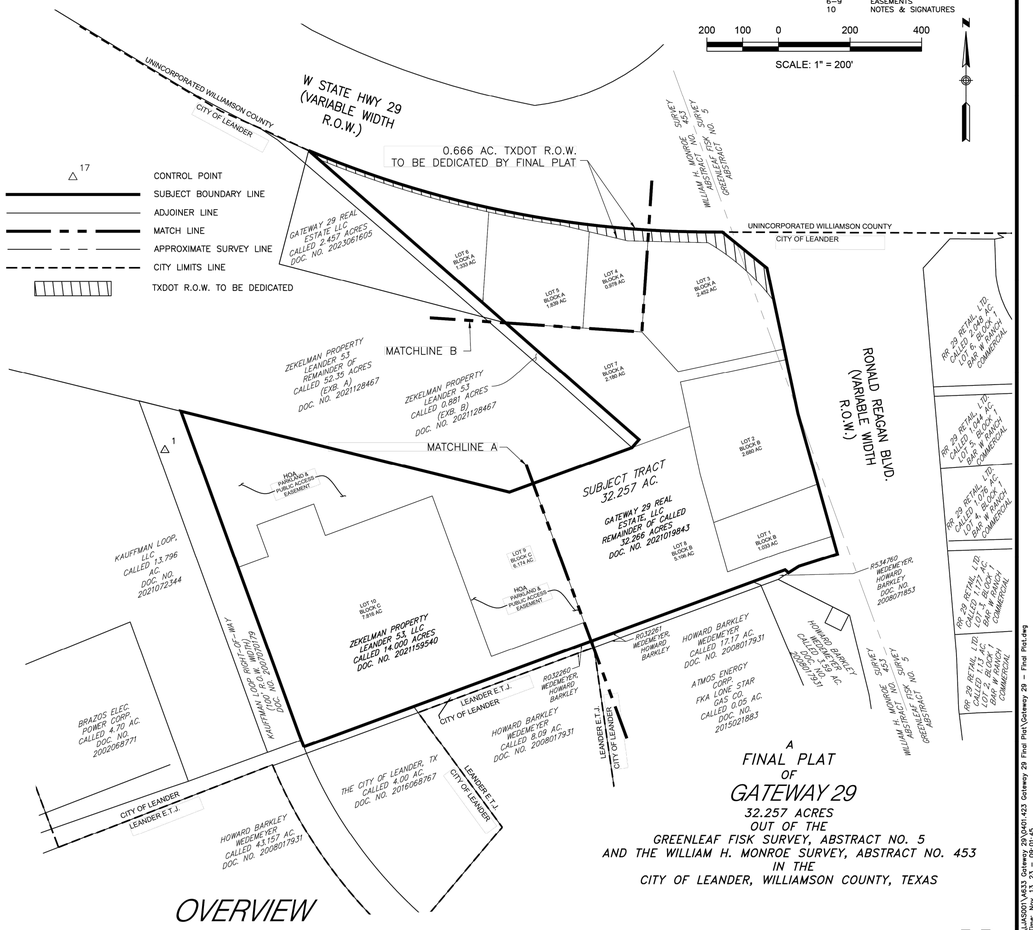
THENCE, N 48°08'52" W A DISTANCE OF 12.51 FEET, ALONG SAID SHARED BOUNDARY LINE OF SAID 32.266 ACRE TRACT AND SAID 0.013 ACRE TRACT, TO A 1/2" IRON ROD WITH ILLEGIBLE CAP FOUND FOR AN ANGLE POINT OF THE HEREIN DESCRIBED TRACT;

THENCE, S 69°47'28" W PASSING A 1/2" IRON ROD WITH ILLEGIBLE CAP FOUND AT A DISTANCE OF 37.36 FEET, FOR A TOTAL DISTANCE OF 1,032.81 FEET, ALONG SHARED BOUNDARY LINE OF SAID 32.266 ACRE TRACT, SAID 14.00 ACRE TRACT, SAID 0.013 ACRE TRACT, A CALLED 0.436 ACRE TRACT OF LAND AND A CALLED 0.184 ACRE TRACT OF LAND CONVEYED TO WEDEMEYER, HOWARD BARKLEY DESCRIBED AND RECORDED IN DOCUMENT NUMBER 2008071853 O.P.R.W.C.TX.;

THENCE, S 69°50'51" W PASSING A 1/2" IRON ROD WITH CAP STAMPED "CBD SETSTONE" FOUND AT 73.05 FEET ON THE COMMON BOUNDARY CORNER OF SAID 0.184 ACRE TRACT AND A CALLED PORTION OF 0.624 ACRE TRACT OF LAND CONVEYED TO THE CITY OF LEANDER TEXAS, DESCRIBED AND RECORDED IN DOCUMENT NUMBER 2016068767 O.P.R.W.C.TX., ON THE COMMON SOUTH LINE OF SAID 14.00 ACRE TRACT FOR A TOTAL DISTANCE OF 400.28 FEET, TO A 1/2" IRON ROD WITH CAP STAMPED "DIAMOND SURVEYING" FOR THE SOUTH CORNER OF THE HEREIN DESCRIBED TRACT, SAME BEING THE SOUTH CORNER OF SAID 14.00 ACRE TRACT, ON THE EAST RIGHT-OF-WAY LINE OF SAID KAUFFMAN LOOP, A 100 FOOT RIGHT-OF-WAY;

THENCE, WITH A CURVE TO THE RIGHT, HAVING A RADIUS OF 1,250.00 FEET, PASSING A 1/2" IRON ROD WITH CAP STAMPED "DIAMOND SURVEYING" AT AN ARC LENGTH OF 20.08 FEET, FOR A TOTAL ARC LENGTH OF 37.49 FEET, A DELTA ANGLE OF 01°43'07", AND A CHORD BEARING N 20°56'02" W A DISTANCE OF 37.49 FEET TO A 1/2" IRON ROD FOUND WITH CAP STAMPED "DIAMOND SURVEYING" FOR A POINT OF TANGENCY OF THE HEREIN DESCRIBED TRACT, ON THE EAST RIGHT-OF-WAY OF SAID KAUFFMAN LOOP AND SAID 14.00 ACRE TRACT;

THENCE, N 20°04'59" W A DISTANCE OF 961.39 FEET, ALONG SAID SHARED BOUNDARY LINE OF SAID KAUFFMAN LOP AND SAID 14.00 ACRE TRACT TO THE POINT OF BEGINNING AND CONTAINING 32.257 ACRES (1,405,119 SQUARE FEET) OF LAND MORE OR LESS.



OVERVIEW MAP

A
FINAL PLAT
OF
GATEWAY 29
32.257 ACRES
OUT OF THE
GREENLEAF FISK SURVEY, ABSTRACT NO. 5
AND THE WILLIAM H. MONROE SURVEY, ABSTRACT NO. 453
IN THE
CITY OF LEANDER, WILLIAMSON COUNTY, TEXAS

ENGINEER/SURVEYOR:
LJA Surveying, Inc.
9830 Colonnade Boulevard Phone 210.503.2700
Suite 300
San Antonio, Texas 78230 T.B.P.L.S. Firm No. 10194382

CITY OF LEANDER PROJECT No. PP-22-014

THIS PLAT FILED IN 04/18/2023

S:\Sectors\Survey\Projects\LAS001\A633 Gateway 29\0401 423 Gateway 29 Final Plat\Gateway 29 - Final Plat.dwg
User: bdayton Plot Date/Time: Nov. 13, 23 - 09:01:45

GATEWAY 29 WPAP / SCS
OVERALL SUBDIVISION IMPROVEMENTS
FINAL PLAT SHEET 2
LEANDER, WILLIAMSON COUNTY, TEXAS

NO.	DESCRIPTION	BY	DATE
	REVISIONS		

DATE: 03/13/2024
DESIGNED BY: CRH
DRAWN BY: DLB
CHECKED BY: CRH
DRAWING NAME: A633-0401-FP02_WPAP.dwg

LJA Engineering, Inc.
7500 Rialto Boulevard
Building II, Suite 100
Austin, Texas 78735
Phone 512.439.4700
Fax 512.439.4716
FRN-F-1386

JOB NUMBER:
A633-0401

FP02

SHEET NO.
04
OF 90 SHEETS

CITY OF LEANDER APPROVAL

LOCATION OF EXISTING UNDERGROUND AND OVERHEAD UTILITIES ARE APPROXIMATE LOCATIONS ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES PRIOR TO BEGINNING WORK AND SHALL BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT OCCUR.

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

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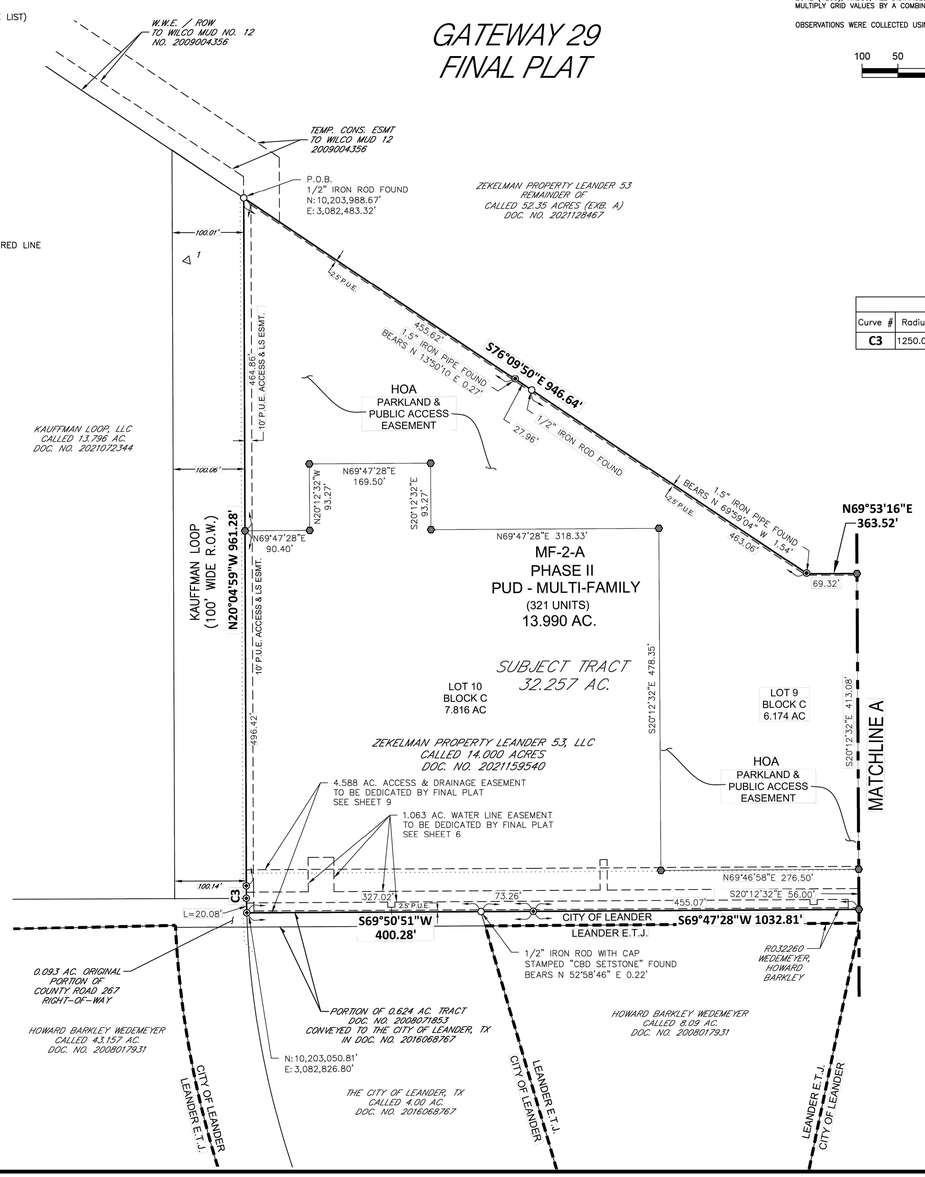
User: cgehringer
Last Modified: Nov. 13, 24 - 09:11
Plot Date/Time: Nov. 13, 24 - 14:36:16

GATEWAY 29
FINAL PLAT

LEGEND

△ 1	CONTROL (AS NOTED IN BENCHMARK LIST)
●	5/8" IRON ROD SET WITH CAP STAMPED "LJA SURVEY"
○	IRON ROD FOUND (AS NOTED)
◉	1/2" IRON ROD FOUND WITH CAP STAMPED "DIAMOND SURVEYING"
◉	IRON PIPE FOUND (AS NOTED)
P.O.B.	POINT OF BEGINNING
P.U.E.	PUBLIC UTILITY EASEMENT
R.O.W.	RIGHT-OF-WAY
O.P.R.W.C.TX.	OFFICIAL PUBLIC RECORDS WILLIAMSON COUNTY, TEXAS
———	SUBJECT BOUNDARY LINE
- - - - -	EASEMENT LINE
———	ADJOINER / LOT LINE
·····	CENTERLINE OF 10' SIDEWALK REQUIRED LINE
———	MATCH LINE
———	APPROXIMATE SURVEY LINE
———	CITY LIMITS LINE
▥	TXDOT R.O.W. TO BE DEDICATED



BEARING BASIS:
ALL BEARINGS BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, GRID NORTH, CENTRAL ZONE (4203), NAD83, ALL DISTANCES AND COORDINATES ARE GRID. TO ADJUST TO SURFACE, MULTIPLY GRID VALUES BY A COMBINED SCALE FACTOR OF 1.00013.

OBSERVATIONS WERE COLLECTED USING A COMBINATION OF RTK AND THE VRS NETWORK.

100 50 0 100 200
SCALE: 1" = 100'

Curve Table					
Curve #	Radius	Length	Delta	Chord Bearing	Chord Length
C3	1250.00'	37.49'	1°43'07"	N 20°56'02" W	37.49'

SUBMITTAL DATE: _____ __, 2023

PROJECT ADDRESS:
_____
LEANDER, TEXAS _____
ZONING: GC-2-A, GC-3-A, MF-2-A
SITE AREA: 33.257 ACRES

SHEET INDEX:

SHEET NO.	DESCRIPTION
1	COVER SHEET
2	OVERVIEW
3-5	PLAT MAP
6-9	EASEMENTS
10	NOTES & SIGNATURES

BENCHMARK LIST:

1
5/8" IRON ROD WITH ALUMINUM CAP STAMPED "CP #1" SET IN CONCRETE
GRID NORTHING: 10,203,880.30
GRID EASTING: 3,082,438.58
ELEVATION: 1,031.56'

2
5/8" IRON ROD WITH RED CAP STAMPED "LJA CONTROL"
GRID NORTHING: 10,202,184.88
GRID EASTING: 3,083,846.59
ELEVATION: 1,025.62'

A
FINAL PLAT
OF
GATEWAY 29
32.257 ACRES
OUT OF THE
GREENLEAF FISK SURVEY, ABSTRACT NO. 5
AND THE WILLIAM H. MONROE SURVEY, ABSTRACT NO. 453
IN THE
CITY OF LEANDER, WILLIAMSON COUNTY, TEXAS

ENGINEER/SURVEYOR:
LJA Surveying, Inc.
9830 Colonnade Boulevard Phone 210.503.2700
Suite 300
San Antonio, Texas 78230 T.B.P.L.S. Firm No. 10194382

CITY OF LEANDER PROJECT No. PP-22-014

THIS PLAT FILED IN 04/18/2023

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GATEWAY 29 WPAP / SCS
OVERALL SUBDIVISION IMPROVEMENTS
FINAL PLAT SHEET 3
LEANDER, WILLIAMSON COUNTY, TEXAS

REVISIONS			
NO.	DESCRIPTION	BY	DATE

DATE: 03/13/2024
DESIGNED BY: CRH
DRAWN BY: DLB
CHECKED BY: CRH
DRAWING NAME: A633-0401-FP03_WPAP.dwg

CITY OF LEANDER APPROVAL

LOCATION OF EXISTING UNDERGROUND AND OVERHEAD UTILITIES ARE APPROXIMATE LOCATIONS ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES PRIOR TO BEGINNING WORK AND SHALL BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT OCCUR.

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

LJA Engineering, Inc.
7500 Rialto Boulevard
Building II, Suite 100
Austin, Texas 78735
Phone 512.439.4700
Fax 512.439.4716
FRN-F-1386

JOB NUMBER: A633-0401
FP03
SHEET NO. 05
OF 90 SHEETS

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User: cgeisinger
Last Modified: Mar. 13, 24 - 09:11
Plot Date/Time: Mar. 13, 24 - 14:36:21

GATEWAY 29
FINAL PLAT

LEGEND

△ 1	CONTROL (AS NOTED IN BENCHMARK LIST)
◉	5/8" IRON ROD SET WITH CAP STAMPED "LJA SURVEY"
○	IRON ROD FOUND (AS NOTED)
◉	1/2" IRON ROD FOUND WITH CAP STAMPED "DIAMOND SURVEYING"
◉	IRON PIPE FOUND (AS NOTED)
P.O.B.	POINT OF BEGINNING
P.U.E.	PUBLIC UTILITY EASEMENT
R.O.W.	RIGHT-OF-WAY
O.P.R.W.C.TX.	OFFICIAL PUBLIC RECORDS WILLIAMSON COUNTY, TEXAS
———	SUBJECT BOUNDARY LINE
- - - - -	EASEMENT LINE
———	ADJOINER / LOT LINE
·····	CENTERLINE OF 10' SIDEWALK REQUIRED LINE
———	MATCH LINE
———	APPROXIMATE SURVEY LINE
———	CITY LIMITS LINE
▨	TXDOT R.O.W. TO BE DEDICATED

BEARING BASIS:
ALL BEARINGS BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, GRID NORTH, CENTRAL ZONE (4203), NAD83, ALL DISTANCES AND COORDINATES ARE GRID. TO ADJUST TO SURFACE, MULTIPLY GRID VALUES BY A COMBINED SCALE FACTOR OF 1.00013.

OBSERVATIONS WERE COLLECTED USING A COMBINATION OF RTK AND THE VRS NETWORK.

SUBMITTAL DATE: _____ __, 2023

PROJECT ADDRESS:
_____
LEANDER, TEXAS ____
ZONING: GC-2-A, GC-3-A, MF-2-A
SITE AREA: 33.257 ACRES

SHEET INDEX:

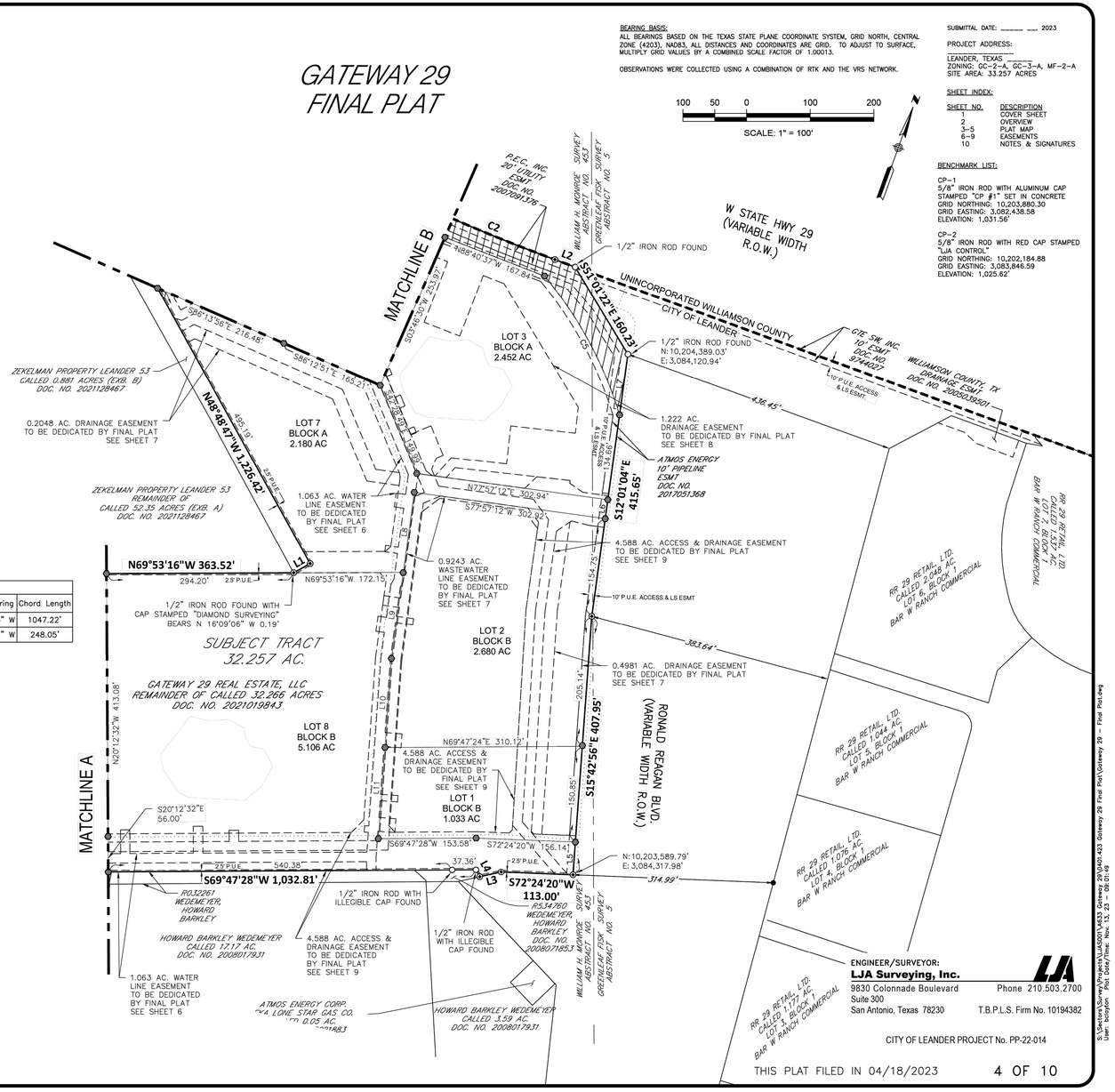
SHEET NO.	DESCRIPTION
1	COVER SHEET
2	OVERVIEW
3–5	PLAT MAP
6–9	EASEMENTS
10	NOTES & SIGNATURES

BENCHMARK LIST:

CP-1
5/8" IRON ROD WITH ALUMINUM CAP STAMPED "CP #1" SET IN CONCRETE
GRID NORTHING: 10,203,880.30
GRID EASTING: 3,082,438.58
ELEVATION: 1,031.56'

CP-2
5/8" IRON ROD WITH RED CAP STAMPED "LJA CONTROL"
GRID NORTHING: 10,202,184.88
GRID EASTING: 3,083,846.59
ELEVATION: 1,025.62'

100 50 0 100 200
SCALE: 1" = 100'



Line Table		
Line #	Direction	Length
L1	S 40°58'11" W	29.59'
L2	S 89°44'36" E	33.93'
L3	S 57°36'45" W	34.51'
L4	N 48°08'52" W	12.51'
L5	N 15°42'56" W	51.96'
L6	S 12°01'04" E	30.00'
L7	N 12°01'04" W	96.24'
L8	S 12°02'48" E	126.94'
L9	S 12°02'48" E	136.50'
L10	S 15°43'12" E	140.35'
L11	S 15°43'12" E	143.69'

Curve Table					
Curve #	Radius	Length	Delta	Chord Bearing	Chord Length
C2	2914.79'	1052.94'	20°41'51"	N 79°31'45" W	1047.22'
C5	620.00'	249.73'	23°04'43"	N 48°13'52" W	248.05'

A
FINAL PLAT
OF
GATEWAY 29
32.257 ACRES
OUT OF THE
GREENLEAF FISK SURVEY, ABSTRACT NO. 5
AND THE WILLIAM H. MONROE SURVEY, ABSTRACT NO. 453
IN THE
CITY OF LEANDER, WILLIAMSON COUNTY, TEXAS

ENGINEER/SURVEYOR:
LJA Surveying, Inc.
9830 Colonnade Boulevard Phone 210.503.2700
Suite 300
San Antonio, Texas 78230 T.B.P.L.S. Firm No. 10194382

CITY OF LEANDER PROJECT No. PP-22-014

THIS PLAT FILED IN 04/18/2023

CITY OF LEANDER APPROVAL

LOCATION OF EXISTING UNDERGROUND AND OVERHEAD UTILITIES ARE APPROXIMATE LOCATIONS ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES PRIOR TO BEGINNING WORK AND SHALL BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT OCCUR.

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

GATEWAY 29 WPAP / SCS
OVERALL SUBDIVISION IMPROVEMENTS
FINAL PLAT SHEET 4
LEANDER, WILLIAMSON COUNTY, TEXAS

REVISIONS

NO.	DESCRIPTION	BY	DATE

DATE: 03/13/2024
DESIGNED BY: CRH
DRAWN BY: DLB
CHECKED BY: CRH
DRAWING NAME: A633-0401-FP01_WPAP

LJA Engineering, Inc.
7500 Rialto Boulevard
Building II, Suite 100
Austin, Texas 78735
Phone 512.439.4700
Fax 512.439.4716
FRN-F-1386

JOB NUMBER: A633-0401

FP04

SHEET NO. 06
OF 90 SHEETS

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User: kbaldyga Plot Date/Time: Mar. 13, 24 - 08:01:19

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User: cgrissinger
Last Modified: Mar. 13, 24 - 09:11
Plot Date/Time: Mar. 13, 24 - 14:36:26

GATEWAY 29 FINAL PLAT

LEGEND

△ 1	CONTROL (AS NOTED IN BENCHMARK LIST)
◎	5/8" IRON ROD SET WITH CAP STAMPED "LJA SURVEY"
○	IRON ROD FOUND (AS NOTED)
◉	1/2" IRON ROD FOUND WITH CAP STAMPED "DIAMOND SURVEYING"
◉	IRON PIPE FOUND (AS NOTED)
P.O.B.	POINT OF BEGINNING
P.U.E.	PUBLIC UTILITY EASEMENT
R.O.W.	RIGHT-OF-WAY
O.P.R.W.C.TX.	OFFICIAL PUBLIC RECORDS WILLIAMSON COUNTY, TEXAS
———	SUBJECT BOUNDARY LINE
- - - - - -	EASEMENT LINE
———	ADJOINER / LOT LINE
·····	10' SIDEWALK REQUIRED LINE
——— — ———	MATCH LINE
——— — — ———	APPROXIMATE SURVEY LINE
——— — ———	CITY LIMITS LINE
▯▯▯▯▯▯	TXDOT R.O.W. TO BE DEDICATED

BEARING BASIS:
ALL BEARINGS BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, GRID NORTH, CENTRAL ZONE (4203), NAD83, ALL DISTANCES AND COORDINATES ARE GRID. TO ADJUST TO SURFACE, MULTIPLY GRID VALUES BY A COMBINED SCALE FACTOR OF 1.00013.

OBSERVATIONS WERE COLLECTED USING A COMBINATION OF RTK AND THE VRS NETWORK.

100 50 0 100 200
SCALE: 1" = 100'

SUBMITTAL DATE: _____ ___, 2023

PROJECT ADDRESS:
_____
LEANDER, TEXAS _____
ZONING: GC-2-A, GC-3-A, MF-2-A
SITE AREA: 33.257 ACRES

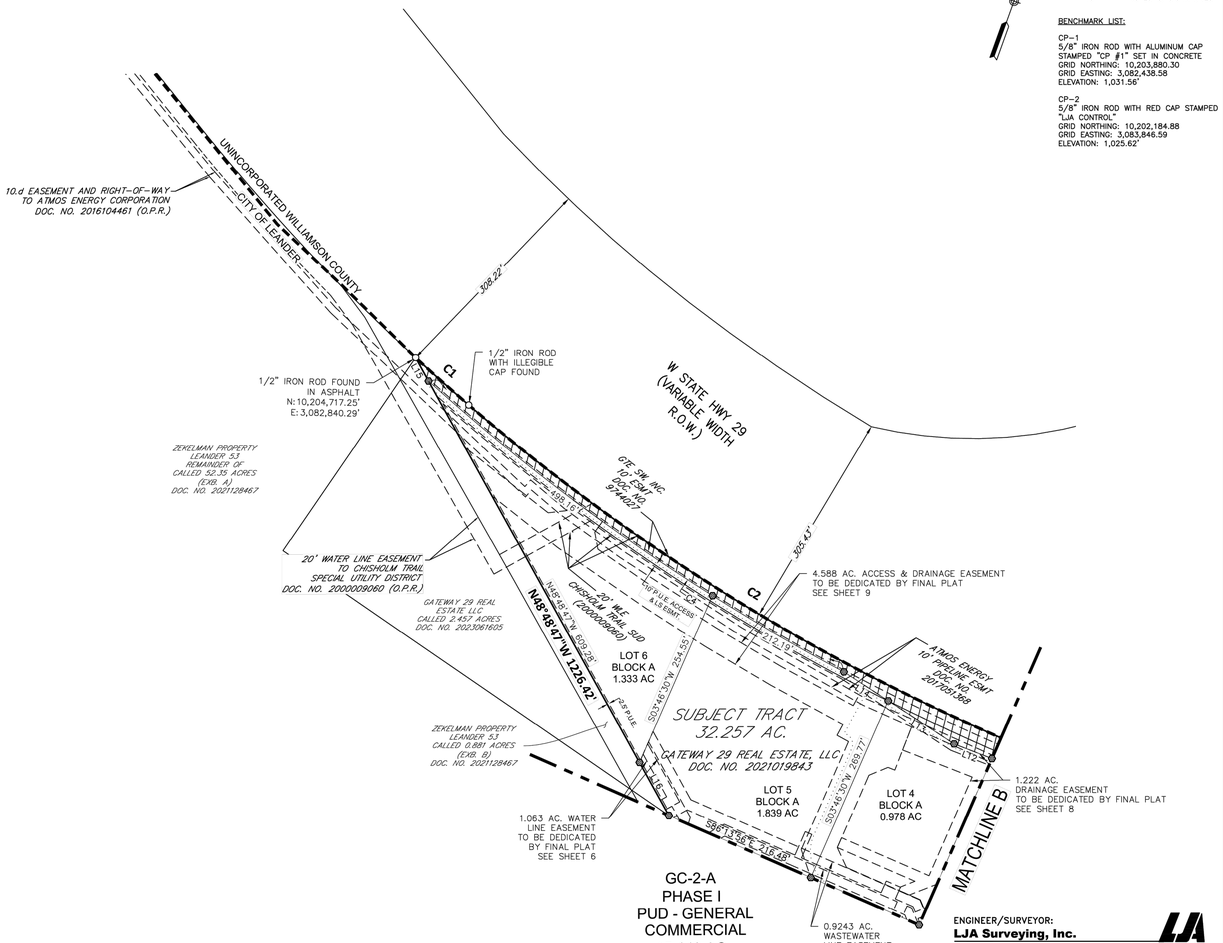
SHEET INDEX:

SHEET NO.	DESCRIPTION
1	COVER SHEET
2	OVERVIEW
3-5	PLAT MAP
6-9	EASEMENTS
10	NOTES & SIGNATURES

BENCHMARK LIST:

CP-1
5/8" IRON ROD WITH ALUMINUM CAP STAMPED "CP #1" SET IN CONCRETE
GRID NORTHING: 10,203,880.30
GRID EASTING: 3,082,438.58
ELEVATION: 1,031.56'

CP-2
5/8" IRON ROD WITH RED CAP STAMPED "LJA CONTROL"
GRID NORTHING: 10,202,184.88
GRID EASTING: 3,083,846.59
ELEVATION: 1,025.62'



GC-2-A
PHASE I
PUD - GENERAL
COMMERCIAL
15.149 AC.

Curve Table					
Curve #	Radius	Length	Delta	Chord Bearing	Chord Length
C1	2914.93'	99.50'	01°57'21"	S 68°11'25" E	99.49'
C2	2914.79'	1,052.94'	20°41'51"	S 79°31'45" E	1,047.22'
C4	2926.79'	498.16'	9°45'08"	S 72°47'22" E	497.56'

Line Table		
Line #	Direction	Length
L12	N 88°40'37" W	56.84'
L13	S 76°40'05" E	109.95'
L14	N 76°40'05" W	74.03'
L15	S 48°48'47" E	37.22'
L16	N 48°48'47" W	84.74'
L17	N 86°12'51" W	165.21'

A
FINAL PLAT
OF
GATEWAY 29
32.257 ACRES
OUT OF THE
GREENLEAF FISK SURVEY, ABSTRACT NO. 5
AND THE WILLIAM H. MONROE SURVEY, ABSTRACT NO. 453
IN THE
CITY OF LEANDER, WILLIAMSON COUNTY, TEXAS

ENGINEER/SURVEYOR:
LJA Surveying, Inc.
9830 Colonnade Boulevard Phone 210.503.2700
Suite 300
San Antonio, Texas 78230 T.B.P.L.S. Firm No. 10194382

CITY OF LEANDER PROJECT No. PP-22-014

THIS PLAT FILED IN 04/18/2023 5 OF 10

CITY OF LEANDER APPROVAL

LOCATION OF EXISTING UNDERGROUND AND OVERHEAD UTILITIES ARE APPROXIMATE LOCATIONS ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES PRIOR TO BEGINNING WORK AND SHALL BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT OCCUR.

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

GATEWAY 29 WPAP / SCS
OVERALL SUBDIVISION IMPROVEMENTS
FINAL PLAT SHEET 5
LEANDER, WILLIAMSON COUNTY, TEXAS

REVISIONS

NO.	DESCRIPTION	BY	DATE

DATE: 03/13/2024
DESIGNED BY: CRH
DRAWN BY: DLB
CHECKED BY: CRH
DRAWING NAME: A633-0401-FP05_WPAP

LJA Engineering, Inc.
7500 Rialto Boulevard
Building II, Suite 100
Austin, Texas 78735
Phone 512.439.4700
Fax 512.439.4716
FRN-F-1386

JOB NUMBER: A633-0401

FP05

SHEET NO. 07 OF 90 SHEETS

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User: cgehringer
Last Modified: Nov 13, 24 - 09:11
Plot Date/Time: Nov 13, 24 - 14:56:31

GATEWAY 29 FINAL PLAT

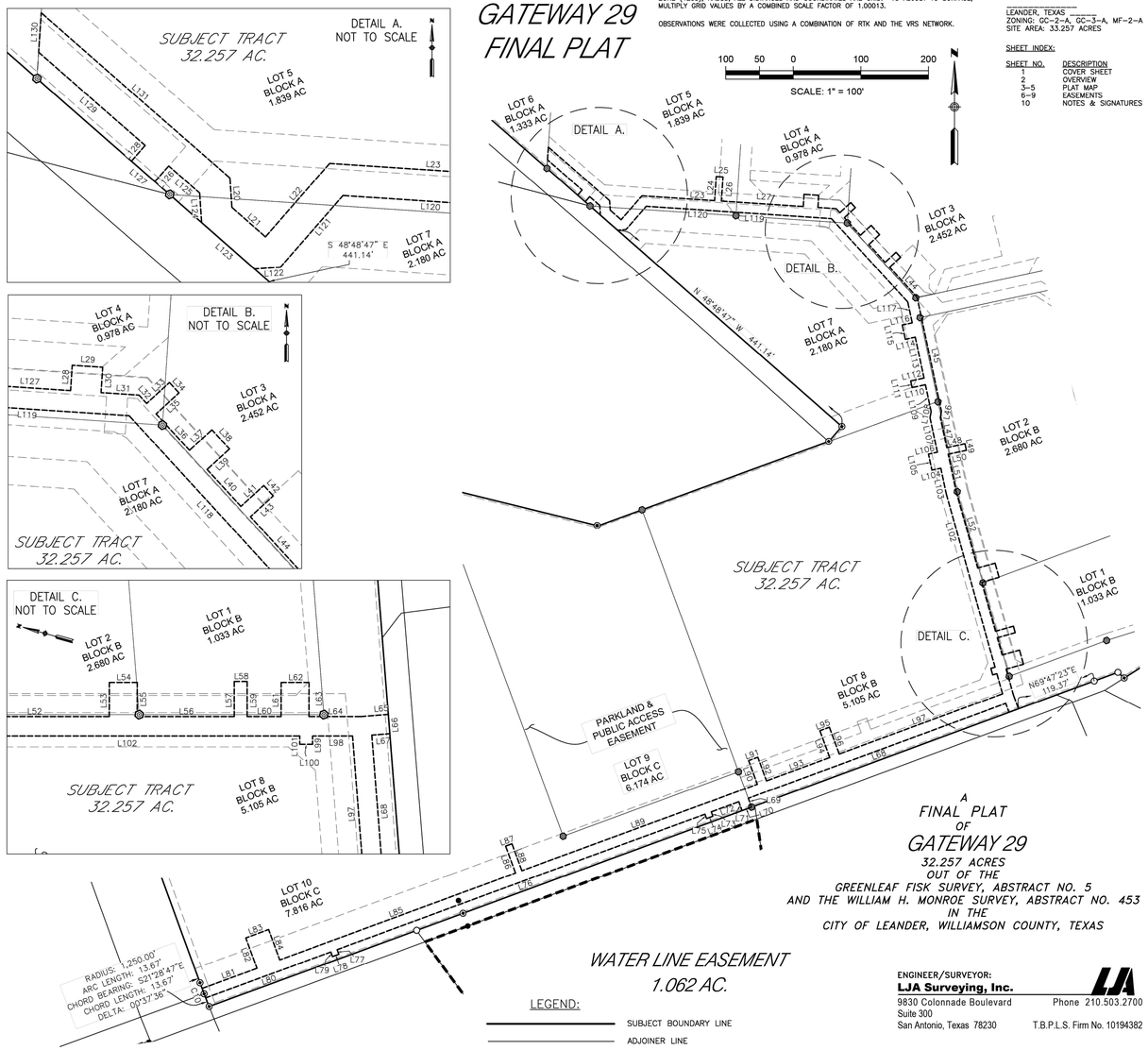
BEARING BASIS:
ALL BEARINGS BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, GRID NORTH, CENTRAL ZONE (4203), NAD83, ALL DISTANCES AND COORDINATES ARE GRID. TO ADJUST TO SURFACE, MULTIPLY GRID VALUES BY A COMBINED SCALE FACTOR OF 1.00013.

OBSERVATIONS WERE COLLECTED USING A COMBINATION OF RTK AND THE VRS NETWORK.

PROJECT ADDRESS:
LEANDER, TEXAS
ZONING: GC-2-A, GC-3-A, MF-2-A
SITE AREA: 33.257 ACRES

SHEET INDEX:

SHEET NO.	DESCRIPTION
1	COVER SHEET
2	OVERVIEW
3–5	PLAT MAP
6–9	EASEMENTS
10	NOTES & SIGNATURES



Curve Table					
Curve #	Radius	Length	Delta	Chord Bearing	Chord Length
C10	1250.00'	15.00'	0°41'15"	S 20°49'21" E	15.00'

Line Table		
Line #	Direction	Length
L20	S 03°48'50" E	14.14'
L21	S 48°48'50" E	21.40'
L22	N 41°11'10" E	46.82'
L23	S 86°12'51" E	107.87'
L24	N 03°47'09" E	35.96'
L25	S 86°12'51" E	10.00'
L26	S 03°47'09" W	35.96'
L27	S 86°12'51" E	121.43'
L28	N 03°47'14" E	17.97'
L29	S 86°13'34" E	21.69'
L30	S 03°47'09" W	17.97'
L31	S 86°12'51" E	27.08'
L32	S 42°28'49" E	7.99'
L33	N 47°31'11" E	22.00'
L34	S 42°28'49" E	10.00'
L35	S 47°31'11" W	22.00'
L36	S 42°28'49" E	35.10'
L37	N 47°31'11" E	21.61'
L38	S 42°24'18" E	18.51'
L39	S 47°31'11" W	21.59'
L40	S 42°28'49" E	35.62'
L41	N 47°31'11" E	22.00'
L42	S 42°28'49" E	10.00'
L43	S 47°31'11" W	22.00'
L44	S 42°28'49" E	60.15'
L45	S 12°02'48" E	172.81'
L46	S 10°27'12" W	9.15'
L47	S 12°02'49" E	45.81'
L48	N 77°58'49" E	27.53'
L49	S 12°01'11" E	10.00'
L50	S 77°58'49" W	27.52'
L51	S 12°02'48" E	56.96'
L52	S 15°43'12" E	117.14'
L53	N 74°26'11" E	26.71'
L54	S 15°43'12" E	21.69'
L55	S 74°26'11" W	26.71'
L56	S 15°43'12" E	75.56'
L57	N 74°16'48" E	27.50'
L58	S 15°43'12" E	10.00'
L59	S 74°16'48" W	27.50'
L60	S 15°43'12" E	26.41'
L61	N 74°26'11" E	26.71'
L62	S 15°43'12" E	21.69'
L63	S 74°26'11" W	26.71'
L64	S 15°43'12" E	40.53'
L65	S 20°18'45" E	21.28'
L66	S 69°47'28" W	15.00'
L67	N 20°18'45" W	14.06'
L68	S 69°47'28" W	405.99'
L69	S 20°12'32" E	14.06'
L70	S 69°47'28" W	15.00'
L71	N 20°12'32" W	14.06'
L72	S 69°47'28" W	43.35'
L73	S 20°12'32" E	6.94'
L74	S 69°47'28" W	10.00'
L75	N 20°12'32" W	6.94'

Line Table		
Line #	Direction	Length
L76	S 69°47'28" W	580.00'
L77	S 20°12'32" E	7.22'
L78	S 69°47'28" W	10.00'
L79	N 20°12'32" W	7.22'
L80	S 69°47'28" W	197.29'
L81	N 69°47'28" E	86.53'
L82	N 20°14'41" W	47.93'
L83	N 69°45'19" E	36.00'
L84	S 20°12'32" E	47.95'
L85	N 69°47'28" E	371.79'
L86	N 20°12'32" W	42.54'
L87	N 69°47'28" E	10.00'
L88	S 20°12'32" E	42.54'
L89	N 69°47'28" E	371.28'
L90	N 20°12'32" W	37.20'
L91	N 69°47'44" E	14.50'
L92	S 20°12'32" E	37.20'
L93	N 69°47'28" E	99.68'
L94	N 20°12'32" W	42.11'
L95	N 69°47'28" E	15.00'
L96	S 20°12'32" E	42.11'
L97	N 69°47'28" E	257.59'
L98	N 15°43'12" W	31.06'
L99	S 74°16'48" W	6.47'
L100	N 15°43'12" W	10.00'
L101	N 74°16'48" E	6.47'
L102	N 15°43'12" W	265.82'
L103	N 12°02'48" W	39.46'
L104	S 77°59'46" W	13.47'
L105	N 12°02'48" W	24.24'
L106	N 77°59'46" E	13.47'
L107	N 12°02'48" W	52.54'
L108	N 10°27'12" E	9.15'
L109	N 12°02'48" W	40.37'
L110	S 77°57'12" W	20.13'
L111	N 12°02'48" W	10.00'
L112	N 77°57'12" E	20.13'
L113	N 12°02'48" W	62.13'
L114	S 77°57'12" W	15.00'
L115	N 12°02'48" W	21.69'
L116	N 77°57'12" E	15.00'
L117	N 12°02'48" W	31.55'
L118	N 42°28'49" W	167.27'
L119	N 86°12'51" W	169.17'
L120	N 86°12'51" W	105.46'
L121	S 41°11'10" W	45.62'
L122	S 86°11'10" W	12.50'
L123	N 48°48'47" W	33.72'
L124	N 03°48'50" W	14.21'
L125	N 48°48'50" W	19.74'
L126	S 41°11'13" W	10.05'
L127	N 48°48'47" W	15.00'
L128	N 41°11'13" E	10.05'
L129	N 48°48'50" W	67.96'
L130	N 03°46'30" E	18.88'
L131	S 48°48'50" E	120.39'

A
FINAL PLAT
OF
GATEWAY 29
32.257 ACRES
OUT OF THE
GREENLEAF FISK SURVEY, ABSTRACT NO. 5
AND THE WILLIAM H. MONROE SURVEY, ABSTRACT NO. 453
IN THE
CITY OF LEANDER, WILLIAMSON COUNTY, TEXAS

WATER LINE EASEMENT
1.062 AC.

LEGEND:
- SUBJECT BOUNDARY LINE
- ADJOINER LINE
- EASEMENT LINE
- 1.063 AC. WATER LINE ASEMENT TO BE DEDICATED BY FINAL PLAT

THIS PLAT FILED IN 04/18/2023

6 OF 10

ENGINEER/SURVEYOR:
LJA Surveying, Inc.
9830 Colonnade Boulevard Suite 300
San Antonio, Texas 78230
Phone 210.503.2700
T.B.P.L.S. Firm No. 10194382

CITY OF LEANDER PROJECT No. PP-22-014

CITY OF LEANDER APPROVAL

LOCATION OF EXISTING UNDERGROUND AND OVERHEAD UTILITIES ARE APPROXIMATE LOCATIONS ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES PRIOR TO BEGINNING WORK AND SHALL BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT OCCUR.

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

GATEWAY 29 WPAP / SCS
OVERALL SUBDIVISION IMPROVEMENTS
FINAL PLAT SHEET 6
LEANDER, WILLIAMSON COUNTY, TEXAS

NO.	REVISIONS DESCRIPTION	BY	DATE

DATE: 03/13/2024
DESIGNED BY: CRH
DRAWN BY: DLB
CHECKED BY: CRH
DRAWING NAME: A633-0401-P-FP01_WPAP.dwg

LJA Engineering, Inc.
7500 Rialto Boulevard
Building II, Suite 100
Austin, Texas 78735
Phone 512.439.4700
Fax 512.439.4716
FRN-F-1386

JOB NUMBER: A633-0401

FP06

SHEET NO. 08 OF 90 SHEETS

S:\Projects\Survey\Projects\LJA633\A633 Gateway 29\Vol01\A633 Gateway 29 Final Plat\Gateway 29 – Final Plat.dwg
User: bcboyton Plot Date/Time: Nov. 13, 23 – 09:01:52

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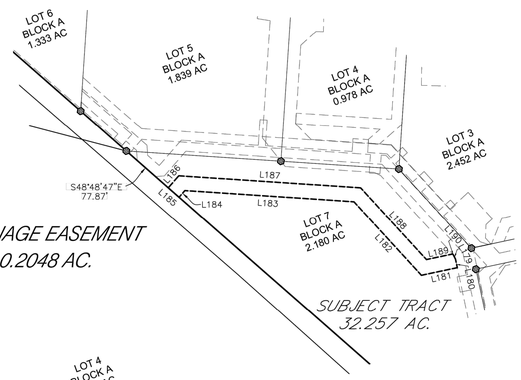
User: rightinger
Last Modified: Mar. 13, 24 – 09:16
Plot Date/Time: Mar. 13, 24 – 14:56:37

BEARING BASIS:
ALL BEARINGS BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, GRID NORTH, CENTRAL ZONE (4203), NAD83, ALL DISTANCES AND COORDINATES ARE GRID. TO ADJUST TO SURFACE, MULTIPLY GRID VALUES BY A COMBINED SCALE FACTOR OF 1.00013.

OBSERVATIONS WERE COLLECTED USING A COMBINATION OF RTK AND THE VRS NETWORK.

GATEWAY 29
FINAL PLAT



Line Table		
Line #	Direction	Length
L176	N 86°12'51" W	320.32'
L177	S 41°11'10" W	26.34'
L178	N 48°48'47" W	15.00'
L179	S 27°15'48" E	6.82'
L180	S 12°02'48" E	12.22'
L181	S 77°58'56" W	51.24'
L182	N 42°30'11" W	139.55'
L183	N 86°12'51" W	236.73'
L184	S 41°11'10" W	12.40'

100 50 0 100 200
SCALE: 1" = 100'

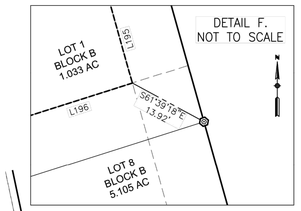
SUBMITTAL DATE: _____ ____, 2023

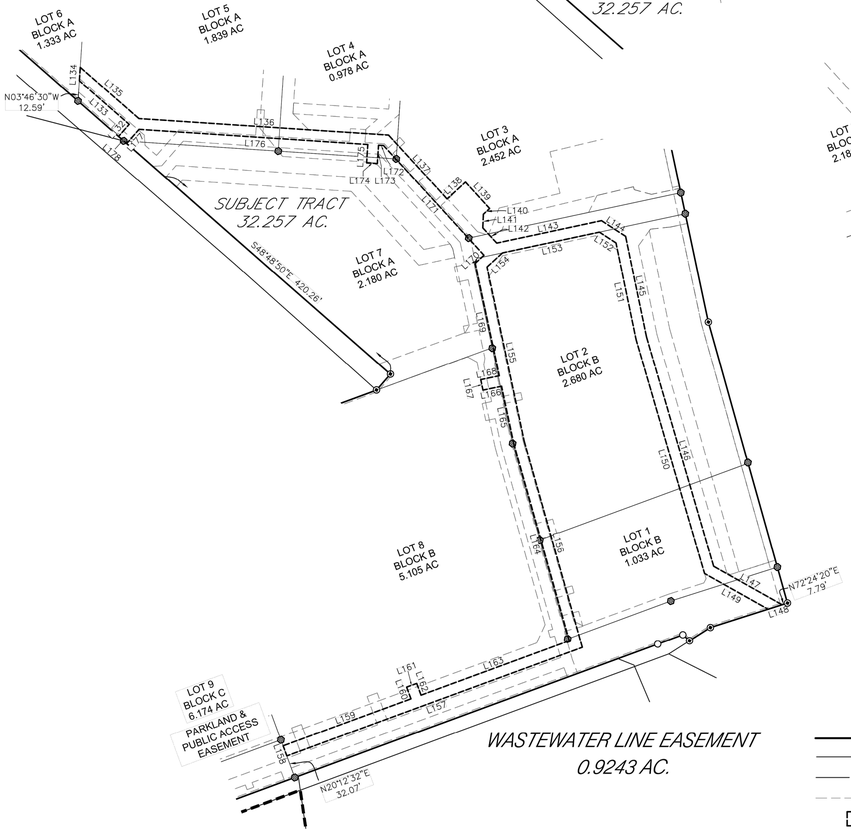
PROJECT ADDRESS:
_____

LEANDER, TEXAS
ZONING: GC-2-A, GC-3-A, MF-2-A
SITE AREA: 33.257 ACRES

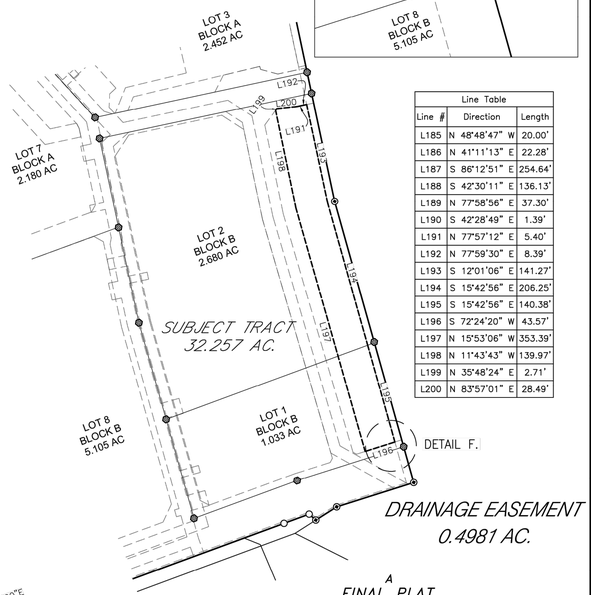
SHEET INDEX:

SHEET NO.	DESCRIPTION
1	COVER SHEET
2	OVERVIEW
3-5	PLAT MAP
6-9	EASEMENTS
10	NOTES & SIGNATURES





Line Table		
Line #	Direction	Length
L132	N 41°11'10" E	22.55'
L133	N 48°48'50" W	92.52'
L134	N 03°46'30" E	18.88'
L135	S 48°48'50" E	108.95'
L136	S 86°12'51" E	349.47'
L137	S 42°28'49" E	121.15'
L138	N 47°31'11" E	34.82'
L139	S 42°27'21" E	50.00'
L140	S 47°31'11" W	11.84'
L141	S 02°15'31" W	19.00'
L142	S 42°28'49" E	28.75'
L143	N 77°57'12" E	149.68'
L144	S 57°02'48" E	40.13'
L145	S 11°43'55" E	144.19'
L146	S 16°18'37" E	333.59'
L147	S 60°44'40" E	109.68'
L148	S 72°24'20" W	20.56'
L149	N 60°44'40" W	101.74'
L150	N 16°18'37" W	340.31'
L151	N 11°43'55" W	138.53'
L152	N 57°02'48" W	27.66'
L153	S 77°57'12" W	138.43'
L154	S 47°31'11" W	29.32'
L155	S 12°03'12" E	248.54'
L156	S 15°43'12" E	299.73'
L157	S 69°47'28" W	439.88'
L158	N 20°12'32" W	15.00'
L159	N 69°47'28" E	190.34'
L160	N 20°12'32" W	17.50'
L161	N 69°47'28" E	15.00'
L162	S 20°12'32" E	17.50'
L163	N 69°47'28" E	220.67'
L164	N 15°43'12" W	286.35'
L165	N 12°03'12" W	81.61'
L166	S 78°14'26" W	26.49'
L167	N 12°02'48" W	15.00'
L168	N 78°15'02" E	26.49'
L169	N 12°03'12" W	161.00'
L170	N 47°31'11" E	16.58'
L171	N 42°28'49" W	207.86'
L172	N 86°12'51" W	6.96'
L173	S 03°47'09" W	25.75'
L174	N 86°12'51" W	15.00'
L175	N 03°47'09" E	25.75'



Line Table		
Line #	Direction	Length
L185	N 48°48'47" W	20.00'
L186	N 41°11'13" E	22.28'
L187	S 86°12'51" E	254.64'
L188	S 42°30'11" E	136.13'
L189	N 77°58'56" E	37.30'
L190	S 42°28'49" E	1.39'
L191	N 77°57'12" E	5.40'
L192	N 77°59'30" E	8.39'
L193	S 12°01'06" E	141.27'
L194	S 15°42'56" E	206.25'
L195	S 15°42'56" E	140.38'
L196	S 72°24'20" W	43.57'
L197	N 15°53'06" W	353.39'
L198	N 11°43'43" W	139.97'
L199	N 35°48'24" E	2.71'
L200	N 83°57'01" E	28.49'

A
FINAL PLAT
OF
GATEWAY 29
32.257 ACRES
OUT OF THE
GREENLEAF FISK SURVEY, ABSTRACT NO. 5
AND THE WILLIAM H. MONROE SURVEY, ABSTRACT NO. 453
IN THE
CITY OF LEANDER, WILLIAMSON COUNTY, TEXAS

LEGEND:

- SUBJECT BOUNDARY LINE
- ADJOINER LINE
- TIE LINE
- EASEMENT LINE
- INDICATED EASEMENT TO BE DEDICATED BY FINAL PLAT

ENGINEER/SURVEYOR:
LJA Surveying, Inc.
9830 Colonnade Boulevard Phone 210.503.2700
Suite 300
San Antonio, Texas 78230 T.B.P.L.S. Firm No. 10194382

CITY OF LEANDER PROJECT No. PP-22-014

THIS PLAT FILED IN 04/18/2023 7 OF 10

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User: bobyton Plot Date/Time: Nov. 13, 23 – 09:01:54

CITY OF LEANDER APPROVAL

LOCATION OF EXISTING UNDERGROUND AND OVERHEAD UTILITIES ARE APPROXIMATE LOCATIONS ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES PRIOR TO BEGINNING WORK AND SHALL BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT OCCUR.

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

GATEWAY 29 WPAP / SCS
OVERALL SUBDIVISION IMPROVEMENTS
FINAL PLAT SHEET 7
LEANDER, WILLIAMSON COUNTY, TEXAS

NO.	DESCRIPTION	BY	DATE
	REVISIONS		

DATE: 03/13/2024
DESIGNED BY: CRH
DRAWN BY: DLB
CHECKED BY: CRH
DRAWING NAME: A633-0401-FP01_WPAP.dwg

LJA Engineering, Inc.
7500 Rialto Boulevard
Building II, Suite 100
Austin, Texas 78735
Phone 512.439.4700
Fax 512.439.4716
FRN-F-1386

JOB NUMBER:
A633-0401

FP07

SHEET NO.
09
OF 90 SHEETS

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User: cgeisinger
Last Modified: Mar. 13, 24 – 09:11
Plot Date/Time: Mar. 13, 24 – 14:36:40

LEGEND:

- SUBJECT BOUNDARY LINE
- ADJOINER LINE
- EASEMENT LINE
- 1.222 AC. DRAINAGE EASEMENT TO BE DEDICATED BY FINAL PLAT
- TXDOT R.O.W. TO BE DEDICATED

GATEWAY 29
FINAL PLAT

BEARING BASIS:
ALL BEARINGS BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, GRID NORTH, CENTRAL ZONE (4203), NAD83, ALL DISTANCES AND COORDINATES ARE GRID. TO ADJUST TO SURFACE, MULTIPLY GRID VALUES BY A COMBINED SCALE FACTOR OF 1.00013.

OBSERVATIONS WERE COLLECTED USING A COMBINATION OF RTK AND THE VRS NETWORK.

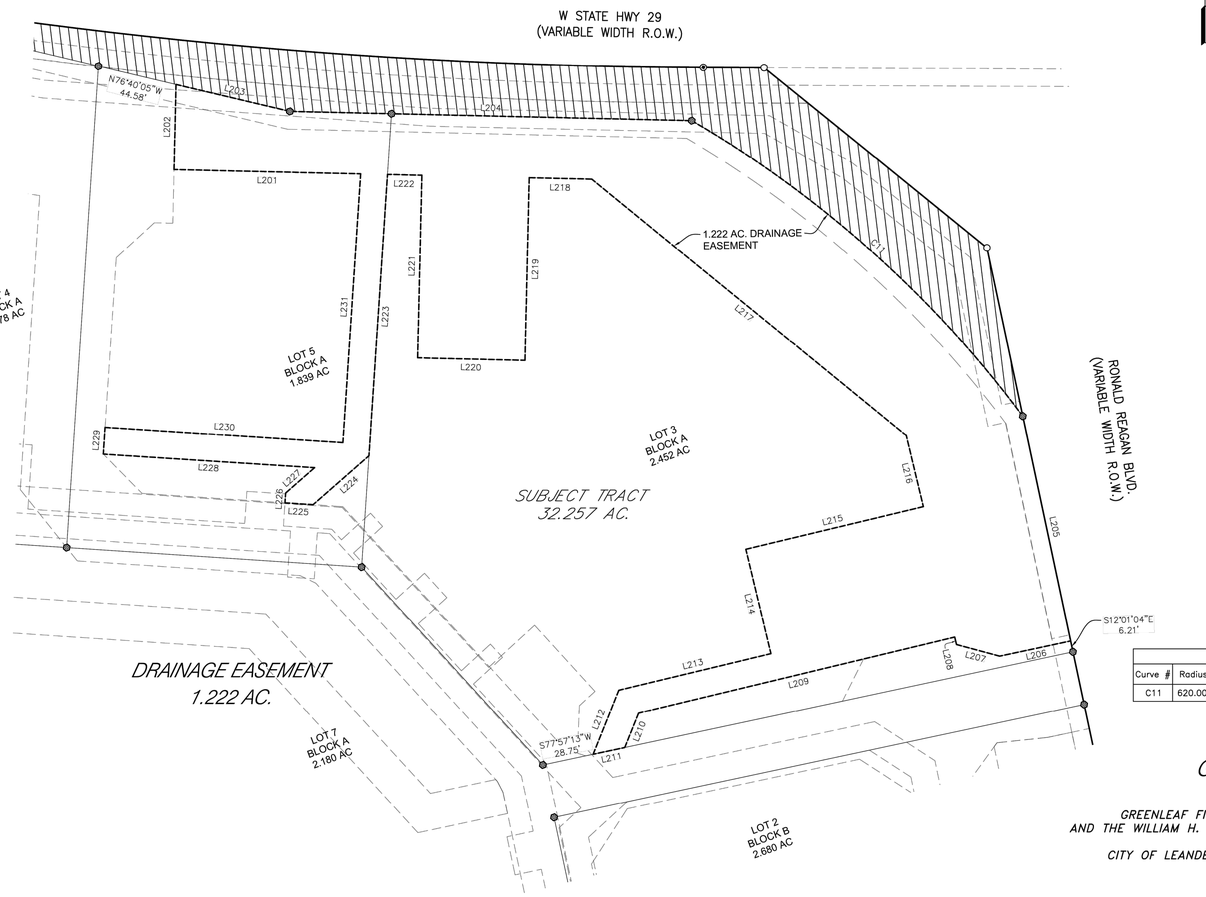
40 20 0 40 80
SCALE: 1" = 40'

SUBMITTAL DATE: _____ __, 2023

PROJECT ADDRESS:
_____
LEANDER, TEXAS
ZONING: GC-2-A, GC-3-A, MF-2-A
SITE AREA: 33.257 ACRES

SHEET INDEX:

SHEET NO.	DESCRIPTION
1	COVER SHEET
2	OVERVIEW
3-5	PLAT MAP
6-9	EASEMENTS
10	NOTES & SIGNATURES



Line Table		
Line #	Direction	Length
L201	N 88°41'00" W	104.31'
L202	N 01°19'43" E	47.64'
L203	S 76°40'05" E	65.37'
L204	S 88°40'37" E	224.68'
L205	S 12°01'04" E	128.45'
L206	S 77°57'12" W	40.61'
L207	N 74°55'58" W	24.97'
L208	N 13°30'04" W	4.27'
L209	S 76°29'57" W	181.68'
L210	S 21°49'12" W	20.76'
L211	S 77°57'12" W	18.06'
L212	N 21°49'12" E	38.58'
L213	N 76°29'57" E	87.42'
L214	N 13°30'03" W	60.00'
L215	N 76°29'57" E	102.02'
L216	N 13°29'49" W	40.93'
L217	N 50°49'11" W	226.75'
L218	N 88°41'00" W	34.97'
L219	S 01°19'43" W	102.13'
L220	N 88°40'17" W	60.00'
L221	N 01°19'43" E	102.11'
L222	N 88°41'00" W	19.20'
L223	S 03°46'30" W	157.58'
L224	S 48°46'30" W	41.49'
L225	N 86°13'38" W	15.74'
L226	N 03°46'26" E	5.47'
L227	N 48°46'30" E	21.54'
L228	N 86°19'35" W	118.34'
L229	N 03°40'25" E	15.00'
L230	S 86°19'35" E	133.22'
L231	N 03°46'30" E	150.55'

Curve Table					
Curve #	Radius	Length	Delta	Chord Bearing	Chord Length
C11	620.00'	249.73'	23°04'43"	S 48°13'52" E	248.05'

A
FINAL PLAT
OF
GATEWAY 29
32.257 ACRES
OUT OF THE
GREENLEAF FISK SURVEY, ABSTRACT NO. 5
AND THE WILLIAM H. MONROE SURVEY, ABSTRACT NO. 453
IN THE
CITY OF LEANDER, WILLIAMSON COUNTY, TEXAS

ENGINEER/SURVEYOR:
LJA Surveying, Inc.
9830 Colonnade Boulevard
Suite 300
San Antonio, Texas 78230
Phone 210.503.2700
T.B.P.L.S. Firm No. 10194382

CITY OF LEANDER PROJECT No. PP-22-014

THIS PLAT FILED IN 04/18/2023

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User: bcrayton — Plot Date/Time: Nov. 13, 23 — 09:01:55

CITY OF LEANDER APPROVAL

LOCATION OF EXISTING UNDERGROUND AND OVERHEAD UTILITIES ARE APPROXIMATE LOCATIONS ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES PRIOR TO BEGINNING WORK AND SHALL BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT OCCUR.

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

GATEWAY 29 WPAP / SCS
OVERALL SUBDIVISION IMPROVEMENTS
FINAL PLAT SHEET 8
LEANDER, WILLIAMSON COUNTY, TEXAS

REVISIONS

NO.	DESCRIPTION	BY	DATE

DATE: 03/13/2024
DESIGNED BY: CRH
DRAWN BY: DLB
CHECKED BY: CRH
DRAWING NAME: A633-0401-8-FP01.WPAP

LJA Engineering, Inc.
7500 Rialto Boulevard
Building II, Suite 100
Austin, Texas 78735
Phone 512.439.4700
Fax 512.439.4716
FRN-F-1386

JOB NUMBER:
A633-0401

FP08

SHEET NO.
10
OF 90 SHEETS

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User: cgeringer
Last Modified: Mar. 13, 24 - 09:11
Plot Date/Time: Mar. 13, 24 - 14:36:45

GATEWAY 29 FINAL PLAT

LEGEND:

- SUBJECT BOUNDARY LINE
- ADJOINER LINE
- EASEMENT LINE
- 4.588 AC. DRAINAGE EASEMENT TO BE DEDICATED BY FINAL PLAT
- TXDOT R.O.W. TO BE DEDICATED

BEARING BASIS:
ALL BEARINGS BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, GRID NORTH, CENTRAL ZONE (4203), NAD83, ALL DISTANCES AND COORDINATES ARE GRID. TO ADJUST TO SURFACE, MULTIPLY GRID VALUES BY A COMBINED SCALE FACTOR OF 1.00013.

OBSERVATIONS WERE COLLECTED USING A COMBINATION OF RTK AND THE VRS NETWORK.

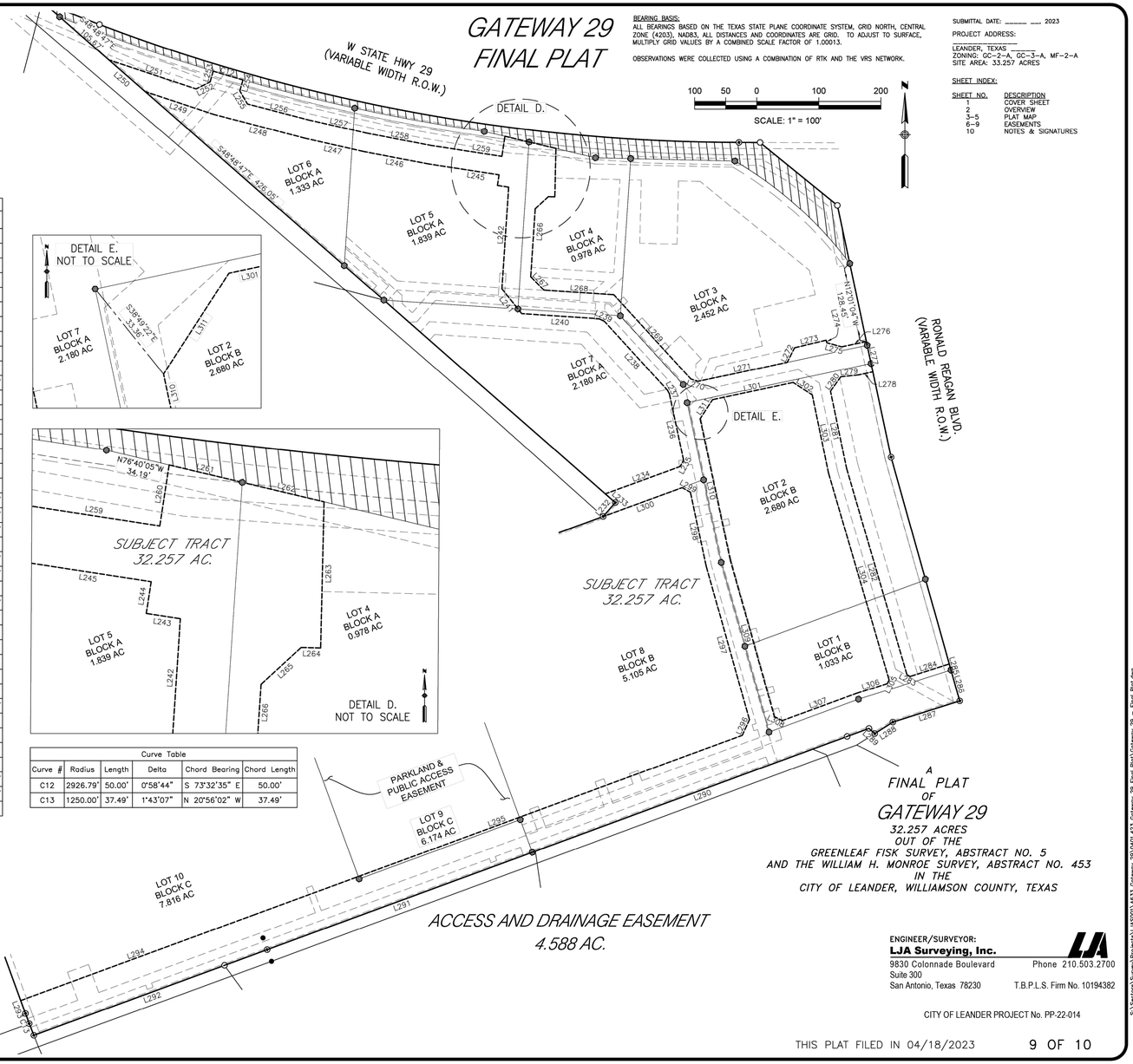
SUBMITTAL DATE: _____ ___ 2023

PROJECT ADDRESS:
_____
LEANDER, TEXAS _____
ZONING: GC-2-A, GC-3-A, MF-2-A
SITE AREA: 33.257 ACRES

SHEET INDEX:

SHEET NO.	DESCRIPTION
1	COVER SHEET
2	OVERVIEW
3-5	PLAT MAP
6-9	EASEMENTS
10	NOTES & SIGNATURES

100 50 0 100 200
SCALE: 1" = 100'



Line Table		
Line #	Direction	Length
L232	N 40°58'11" E	29.59'
L233	N 48°48'47" W	21.31'
L234	N 69°58'59" E	128.30'
L235	N 28°58'06" E	11.48'
L236	N 12°02'48" W	109.51'
L237	N 27°15'48" W	6.82'
L238	N 42°28'49" W	150.32'
L239	N 64°21'14" W	9.69'
L240	N 86°13'38" W	124.79'
L241	N 38°41'20" W	51.00'
L242	N 03°46'30" E	164.74'
L243	N 81°14'58" W	18.29'
L244	N 08°45'02" E	17.17'
L245	N 81°14'58" W	115.65'
L246	N 79°09'50" W	105.97'
L247	N 77°12'40" W	97.83'
L248	N 75°20'12" W	150.55'
L249	N 71°34'05" W	116.43'
L250	N 48°48'47" W	77.56'
L251	S 71°34'05" E	147.87'
L252	N 63°25'55" E	25.30'
L253	N 15°58'28" E	18.03'
L254	S 15°58'28" W	18.40'
L255	S 30°20'12" E	24.48'
L256	S 75°20'12" E	101.77'
L257	S 77°12'40" E	96.82'
L258	S 79°09'50" E	104.91'
L259	S 81°14'58" E	115.11'
L260	N 08°45'02" E	32.60'
L261	S 76°40'05" E	39.84'
L262	S 76°40'05" E	44.58'
L263	S 01°19'43" W	77.60'
L264	N 88°40'17" W	10.34'
L265	S 47°33'06" W	28.81'
L266	S 03°46'27" W	110.13'
L267	S 44°30'57" E	30.81'
L268	S 86°13'38" E	112.50'
L269	S 42°28'49" E	183.82'
L270	S 72°15'48" E	12.16'
L271	N 77°57'12" E	146.71'

Line Table		
Line #	Direction	Length
L272	N 26°40'11" E	26.30'
L273	N 76°29'57" E	52.38'
L274	S 13°30'04" E	4.27'
L275	S 74°55'58" E	24.97'
L276	N 77°57'12" E	40.61'
L277	S 12°01'04" E	50.00'
L278	S 77°57'12" W	23.79'
L279	S 83°57'01" W	28.49'
L280	S 35°48'24" W	28.44'
L281	S 11°43'55" E	127.14'
L282	S 16°18'37" E	346.64'
L283	S 62°35'40" E	5.75'
L284	N 72°24'20" E	66.07'
L285	S 15°42'56" E	10.03'
L286	S 15°42'56" E	51.96'
L287	S 72°24'20" W	113.00'
L288	S 57°36'45" W	34.51'
L289	N 48°08'52" W	12.51'
L290	S 69°47'28" W	577.74'
L291	S 69°47'28" W	455.07'
L292	S 69°50'51" W	400.28'
L293	N 20°04'59" W	22.51'
L294	N 69°50'51" E	400.73'
L295	N 69°47'28" E	837.41'
L296	N 24°47'28" E	27.79'
L297	N 15°43'12" W	257.13'
L298	N 12°02'48" W	121.89'
L299	N 61°01'54" W	15.16'
L300	S 69°58'59" W	135.34'
L301	N 77°57'12" E	132.75'
L302	S 57°02'35" E	36.69'
L303	S 11°43'55" E	128.34'
L304	S 16°18'37" E	347.84'
L305	S 27°22'13" W	6.70'
L306	S 72°24'20" W	51.26'
L307	S 69°47'28" W	128.02'
L308	N 62°57'52" W	14.24'
L309	N 15°43'12" W	261.93'
L310	N 12°02'48" W	233.11'
L311	N 32°57'12" E	36.76'

Curve Table					
Curve #	Radius	Length	Delta	Chord Bearing	Chord Length
C12	2926.79'	50.00'	0°58'44"	S 73°32'35" E	50.00'
C13	1250.00'	37.49'	1°43'07"	N 20°56'02" W	37.49'

A
FINAL PLAT
OF
GATEWAY 29
32.257 ACRES
OUT OF THE
GREENLEAF FISK SURVEY, ABSTRACT NO. 5
AND THE WILLIAM H. MONROE SURVEY, ABSTRACT NO. 453
IN THE
CITY OF LEANDER, WILLIAMSON COUNTY, TEXAS

ENGINEER/SURVEYOR:
LJA Surveying, Inc.
9830 Colonnade Boulevard Phone 210.503.2700
Suite 300
San Antonio, Texas 78230 T.B.P.L.S. Firm No. 10194382

CITY OF LEANDER PROJECT No. PP-22-014

THIS PLAT FILED IN 04/18/2023 9 OF 10

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User: bdayton Plot Date/Time: Nov. 13, 23 - 08:01:57

CITY OF LEANDER APPROVAL

LOCATION OF EXISTING UNDERGROUND AND OVERHEAD UTILITIES ARE APPROXIMATE LOCATIONS ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES PRIOR TO BEGINNING WORK AND SHALL BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT OCCUR.

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

GATEWAY 29 WPAP / SCS
OVERALL SUBDIVISION IMPROVEMENTS
FINAL PLAT SHEET 9
LEANDER, WILLIAMSON COUNTY, TEXAS

NO.	REVISIONS DESCRIPTION	BY	DATE

DATE: 03/13/2024
DESIGNED BY: CRH
DRAWN BY: DLB
CHECKED BY: CRH
DRAWING NAME: A633-0401-FP01_WPAP.dwg

LJA Engineering, Inc.
7500 Rialto Boulevard
Building II, Suite 100
Austin, Texas 78735
Phone 512.439.4700
Fax 512.439.4716
FRN-F-1386

JOB NUMBER: A633-0401

FP09

SHEET NO. 11 OF 90 SHEETS

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User: rgehringer
Last Modified: Mar. 13, 24 - 09:14
Plot Date/Time: Mar. 13, 24 - 14:36:52

SUBMITTAL DATE: ______ __, 2023

PROJECT ADDRESS:

____
LEANDER, TEXAS ______
ZONING: GC–2–A, GC–3–A, MF–2–A
SITE AREA: 33.257 ACRES

SHEET INDEX:

SHEET NO.	DESCRIPTION
1	COVER SHEET
2	OVERVIEW
3–5	PLAT MAP
6–9	EASEMENTS
10	NOTES & SIGNATURES

GATEWAY 29 FINAL PLAT

THE STATE OF TEXAS §
COUNTY OF WILLIAMSON §

THAT, GATEWAY 29 REAL ESTATE LLC, BEING THE OWNER OF A BEING A 32.256 ACRE TRACT (1,405,080 SQUARE FEET) OF LAND, LOCATED IN THE WILLIAM H. MONROE SURVEY, ABSTRACT NO. 453 AND THE GREENLEAF FISK SURVEY, ABSTRACT NO. 5, SITUATED IN WILLIAMSON COUNTY, TEXAS, OUT OF A CALLED 14.00 ACRE TRACT OF LAND DESCRIBED IN A SPECIAL WARRANTY DEED WITH VENDOR'S LIEN TO ZEKELMAN PROPERTY LEANDER 53, LLC DESCRIBED AND RECORDED IN DOCUMENT NUMBER 2021159540 IN THE OFFICIAL PUBLIC RECORDS OF WILLIAMSON COUNTY, TEXAS (O.P.R.W.C.TX.), AND A 32.266 ACRE TRACT OF LAND DESCRIBED IN A SPECIAL WARRANTY DEED WITH VENDOR'S LIEN TO GATEWAY 29 REAL ESTATE, LLC RECORDED IN DOCUMENT NUMBER 2021019843 O.P.R.W.C.TX., DOES HEREBY CERTIFY THAT THERE ARE NO LIEN HOLDERS AND DEDICATES TO THE PUBLIC FOREVER USE OF ALL ADDITIONAL ROW, STREETS, ALLEYS, EASEMENTS, PARKS, AND ALL OTHER LANDS INTENDED FOR PUBLIC DEDICATION, OR WHEN THE SUBDIVIDER HAS MADE PROVISION FOR PERPETUAL MAINTENANCE THEREOF, TO THE INHABITANTS OF THE SUBDIVISION AS SHOWN HEREON TO BE KNOWN AS:

"GATEWAY 29 FINAL PLAT"

___________ ___________________
GATEWAY 29 REAL ESTATE LLC
5522 JENOLAN RIDGE LN
SUGAR LAND, TEXAS 77479
CONTACT PERSON: SAMIR MAREDIA
PHONE: (832) 713–4985

THE STATE OF TEXAS §
COUNTY OF WILLIAMSON §

BEFORE ME, THE UNDERSIGNED AUTHORITY, A NOTARY PUBLIC IN AND FOR SAID COUNTY AND STATE, ON THIS THE DAY OF__, 20__, PERSONALLY APPEARED, SAMIR MAREDIA, AS CONTACT OF GATEWAY 29 REAL ESTATE LLC, A DULY AUTHORIZED AGENT WITH AUTHORITY TO SIGN SAID DOCUMENT, PERSONALLY KNOWN TO ME (AND PROVED TO ME ON THE BASIS OF SATISFACTORY EVIDENCE) TO BE THE PERSON WHOSE NAME IS SUBSCRIBED TO THE FOREGOING INSTRUMENT, AND ACKNOWLEDGED TO ME THAT (S)HE EXECUTED THE SAME FOR THE PURPOSES AND CONSIDERATION THEREIN EXPRESSED.

GIVEN UNDER MY HAND AND SEAL OF OFFICE ON THIS THE __ DAY OF ___________ 20__.

NOTARY PUBLIC–STATE OF _________________

PRINTED NAME: ___________________________
MY COMMISSION EXPIRES: ___________________

THE STATE OF TEXAS §
COUNTY OF WILLIAMSON §

THAT, ZELELMAN PROPERTY LEANDER 53, LLC, BEING THE OWNER OF A 14.000 ACRES TRACT OF LAND, MORE OR LESS, SITUATED IN THE WILLIAM H. MONROE SURVEY, ABSTRACT NO. 453 IN WILLIAMSON COUNTY, TEXAS, DESCRIBED AND RECORDED IN DOCUMENT NUMBER 2021159540, OFFICIAL PUBLIC RECORDS OF WILLIAMSON COUNTY, TEXAS (O.P.R.W.C.TX.), AND BEING OUT OF THE REMNANT PORTION OF A CALLED 32.266 ACRE TRACT DESCRIBED AND RECORDED IN DOCUMENT NO. 2021019843 O.P.R.W.C.TX., DOES HEREBY CERTIFY THAT THERE ARE NO LIEN HOLDERS AND DEDICATES TO THE PUBLIC FOREVER USE OF ALL ADDITIONAL ROW, STREETS, ALLEYS, EASEMENTS, PARKS, AND ALL OTHER LANDS INTENDED FOR PUBLIC DEDICATION, OR WHEN THE SUBDIVIDER HAS MADE PROVISION FOR PERPETUAL MAINTENANCE THEREOF, TO THE INHABITANTS OF THE SUBDIVISION AS SHOWN HEREON TO BE KNOWN AS:

"GATEWAY 29 FINAL PLAT"

____
ZEKELMAN PROPERTY LEANDER 53, LLC
227 W MONROE ST
CHICAGO, IL 60606
CONTACT PERSON: ANGELA MIU
PHONE: (312) 275–1672

THE STATE OF TEXAS §
COUNTY OF WILLIAMSON §

BEFORE ME, THE UNDERSIGNED AUTHORITY, A NOTARY PUBLIC IN AND FOR SAID COUNTY AND STATE, ON THIS THE DAY OF__, 20__, PERSONALLY APPEARED, ANGELA MIU, AS CONTACT OF ZEKELMAN PROPERTY LEANDER 53, LLC, A DULY AUTHORIZED AGENT WITH AUTHORITY TO SIGN SAID DOCUMENT, PERSONALLY KNOWN TO ME (AND PROVED TO ME ON THE BASIS OF SATISFACTORY EVIDENCE) TO BE THE PERSON WHOSE NAME IS SUBSCRIBED TO THE FOREGOING INSTRUMENT, AND ACKNOWLEDGED TO ME THAT (S)HE EXECUTED THE SAME FOR THE PURPOSES AND CONSIDERATION THEREIN EXPRESSED.

GIVEN UNDER MY HAND AND SEAL OF OFFICE ON THIS THE __ DAY OF ___________ 20__.

NOTARY PUBLIC–STATE OF _________________

PRINTED NAME: ___________________________
MY COMMISSION EXPIRES: ___________________

STATE OF TEXAS §
COUNTY OF BEXAR §

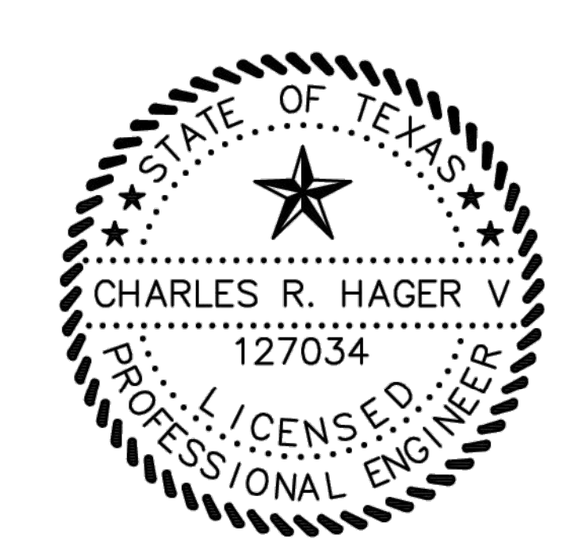
THAT I, GORDON N. ANDERSON, AM AUTHORIZED UNDER THE LAWS OF THE STATE OF TEXAS TO PRACTICE THE PROFESSION OF LAND SURVEYING AND HEREBY STATE THAT I PREPARED THIS PLAT FROM AN ACTUAL AND ACCURATE ON–THE–GROUND SURVEY OF THE LAND AND THAT THE CORNER MONUMENTS SHOWN THEREON WERE PROPERLY PLACED UNDER MY PERSONAL SUPERVISION, IN ACCORDANCE WITH ALL CITY OF LEANDER ORDINANCE AND CODES, AND THAT ALL EXISTING EASEMENTS OF RECORD AS FOUND ON THE TITLE POLICIES PROVIDED BY TITLE RESOURCES GUARANTY COMPANY, GF NO. 1936194–COM, HAVING AN EFFECTIVE DATE OF JANUARY 13, 2021, AND AN ISSUED DATE JANUARY 25, 2021, AND FIRST AMERICAN TITLE INSURANCE COMPANY, GF NO. 202102162, HAVING AN EFFECTIVE DATE OF JUNE 14, 2021, AND AN ISSUED DATE JUNE 29, 2021 HAVE BEEN SHOWN OR NOTED HEREON. NOTHING FURTHER DATED WITHIN 1 YEAR.



____
GORDON N. ANDERSON, R.P.L.S. No. 6617 DATE
LJA SURVEYING, INC.,
9830 COLONADE BOULEVARD, SUITE 300
SAN ANTONIO, TEXAS 778230
T.B.P.L.S. FIRM NO. 10194382

STATE OF TEXAS §
COUNTY OF TRAVIS §

THAT I, CHARLES R. HAGER, AM AUTHORIZED UNDER THE LAWS OF THE STATE OF TEXAS TO PRACTICE THE PROFESSION OF ENGINEERING, AND DO HEREBY STATE THAT THIS PLAT CONFORMS WITH THE APPLICABLE ORDINANCES OF THE CITY OF LEANDER, TEXAS.



____
CHARLES R. HAGER V, P.E. No. 127034 DATE
LJA ENGINEERING, INC.
7500 RIALTO BOULEVARD, BUILDING II, SUITE 100
AUSTIN, TEXAS 78735

CITY OF LEANDER §
CERTIFICATE OF APPROVAL §

APPROVED THIS THE DAY OF __, 20__ A.D. AT A PUBLIC MEETING OF THE PLANNING AND ZONING COMMISSION OF THE CITY OF LEANDER, TEXAS AND AUTHORIZED TO BE FILED FOR RECORD BY THE COUNTY CLERK OF COUNTY.

___________ ___________________ ___________________________
DONNIE MAHAN, CHAIRMAN DATE:
PLANNING & ZONING COMMISION
CITY OF LEANDER, TEXAS

__________ ___________________ ___________________________
ATTEST: DATE:
ELLEN COUFAL, RECORDING SECRETARY
PLANNING AND ZONING COMMISION
CITY OF LEANDER, TEXAS

THE STATE OF TEXAS §
§ KNOW ALL MEN BY THESE PRESENTS:
COUNTY OF WILLIAMSON §

I, NANCY RISTER, CLERK OF COUNTY COURT, OF SAID COUNTY, DO HEREBY CERTIFY THAT THE FOREGOING INSTRUMENT IN WRITING WITH ITS CERTIFICATE OF AUTHENTICATION WAS FILED FOR RECORD IN MY OFFICE ON THE ____ DAY OF ____________, ____, A.D., AND DULY RECORDED ON THE ____ DAY OF ____________, _____, A.D., AT _____ O'CLOCK ___., IN THE OFFICIAL PUBLIC RECORDS OF WILLIAMSON COUNTY, TEXAS IN INSTRUMENT NO. _______________.

TO CERTIFY WHICH, WITNESS MY HAND AND SEAL AT THE COUNTY COURT OF SAID COUNTY OF OFFICE IN GEORGETOWN, TEXAS, THE DATE LAST SHOWN ABOVE WRITTEN.

____
NANCY RISTER, CLERK COUNTY COURT OF WILLIAMSON COUNTY, TEXAS

BY: __________________________, DEPUTY

BEARING BASIS:

ALL BEARINGS BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, GRID NORTH, CENTRAL ZONE (4203), NAD83, ALL DISTANCES AND COORDINATES ARE GRID. TO ADJUST TO SURFACE, MULTIPLY GRID VALUES BY A COMBINED SCALE FACTOR OF 1.00013.

OBSERVATIONS WERE COLLECTED USING A COMBINATION OF RTK AND THE VRS NETWORK.

LEGAL DESCRIPTION:

BEING A 32.256 ACRE TRACT (1,405,080 SQUARE FEET) OF LAND, LOCATED IN THE WILLIAM H. MONROE SURVEY, ABSTRACT NO. 453 AND THE GREENLEAF FISK SURVEY, ABSTRACT NO. 5, SITUATED IN WILLIAMSON COUNTY, TEXAS, OUT OF A CALLED 14.00 ACRE TRACT OF LAND DESCRIBED IN A SPECIAL WARRANTY DEED WITH VENDOR'S LIEN TO ZEKELMAN PROPERTY LEANDER 53, LLC DESCRIBED AND RECORDED IN DOCUMENT NUMBER 2021159540 IN THE OFFICIAL PUBLIC RECORDS OF WILLIAMSON COUNTY, TEXAS (O.P.R.W.C.TX.), AND A 32.266 ACRE TRACT OF LAND DESCRIBED IN A SPECIAL WARRANTY DEED WITH VENDOR'S LIEN TO GATEWAY 29 REAL ESTATE, LLC RECORDED IN DOCUMENT NUMBER 2021019843 O.P.R.W.C.TX.

FINAL PLAT NOTES:

1) THIS SUBDIVISION IS WHOLLY CONTAINED WITHIN THE CURRENT CORPORATE LIMITS OF THE CITY OF LEANDER, TEXAS.
2) NO LOT IN THIS SUBDIVISION SHALL BE OCCUPIED UNTIL CONNECTED TO THE CITY OF LEANDER WATER DISTRIBUTION AND WASTEWATER FACILITIES.
3) A BUILDING PERMIT IS REQUIRED FROM THE CITY OF LEANDER PRIOR TO CONSTRUCTION OF ANY BUILDING OR SITE IMPROVEMENTS ON ANY LOT IN THIS SUBDIVISION.
4) NO BUILDINGS, FENCES, LANDSCAPING OR OTHER STRUCTURES ARE PERMITTED WITHIN DRAINAGE EASEMENTS SHOWN EXCEPT AS APPROVED BY THE CITY OF LEANDER PUBLIC WORKS DEPARTMENT.
5) PROPERTY OWNER SHALL PROVIDE FOR ACCESS TO DRAINAGE EASEMENTS AS MAY BE NECESSARY AND SHALL NOT PROHIBIT ACCESS BY THE CITY OF LEANDER.
6) ALL EASEMENTS ON PRIVATE PROPERTY SHALL BE MAINTAINED BY THE PROPERTY OWNER OR HIS OR HER ASSIGNS.
7) IN ADDITION TO THE EASEMENTS SHOWN HEREIN, A TEN (10') FOOT WIDE PUBLIC UTILITY EASEMENT SHALL BE DEDICATED ALONG AND ADJACENT TO ALL RIGHT–OF–WAY AND TWO AND A HALF (2.5') FOOT WIDE PUBLIC UTILITY EASEMENT IS DEDICATED ALONG ALL SIDE LOT LINES.
8) NO PORTION OF THIS TRACT IS WITHIN A FLOOD HAZARD AREA AS SHOWN ON THE FLOOD INSURANCE RATE MAP PANEL #48491C0470F OF WILLIAMSON COUNTY, EFFECTIVE ON DECEMBER 20, 2019.
9) SIDEWALKS SHALL BE INSTALLED ON SUBDIVISION SIDE OF SH 29, RONALD REAGAN, AND KAUFFMAN LOOP. THOSE SIDEWALKS NOT ABUTTING A RESIDENTIAL, COMMERCIAL OR INDUSTRIAL LOT (INCLUDING SIDEWALKS ALONG STREET FRONTAGES OF LOTS PROPOSED FOR SCHOOLS, CHURCHES, PARK LOTS, DETENTION LOTS, DRAINAGE LOTS, LANDSCAPE LOTS, OR SIMILAR LOTS), SIDEWALKS ON ARTERIAL STREETS TO WHICH ACCESS IS PROHIBITED, SIDEWALKS ON DOUBLE FRONTAGE LOTS ON THE SIDE TO WHICH ACCESS IS PROHIBITED, AND ALL SIDEWALKS ON SAFE SCHOOL ROUTES SHALL BE INSTALLED WHEN THE ADJOINING STREET IS CONSTRUCTED.
10) ALL UTILITY LINES MUST BE LOCATED UNDERGROUND.
11) THIS PLAT CONFORMS TO THE PRELIMINARY PLAT APPROVED BY THE PLANNING & ZONING COMMISSION ON 10/27/2022.
12) APPROVAL OF THIS FINAL PLAT DOES NOT CONSTITUTE THE APPROVAL OF VARIANCES OR WAIVERS TO ORDINANCE REQUIREMENTS.
13) ALL DRIVE LANES, FIRE LANES, AND DRIVEWAYS WITHIN THIS SUBDIVISION SHALL PROVIDE FOR RECIPROCAL ACCESS FOR INGRESS AND EGRESS TO ALL OTHER LOTS WITHIN THE SUBDIVISION AND TO ADJACENT PROPERTIES.
14) ALL OWNERSHIP DOCUMENTS FOUND IN THE OFFICIAL PUBLIC RECORDS OF WILLIAMSON COUNTY, TEXAS.
15) PURSUANT TO CITY CODE OF ORDINANCES SECTION 61, LOT 9 IS HEREBY DEDICATED FOR PARK AND RECREATIONAL PURPOSES WITH A NONEXCLUSIVE PARKLAND AND PUBLIC ACCESS EASEMENT ENCOMPASSING THE ENTIRE LOT. GRANTOR SHALL BE OBLIGATED TO MAINTAIN TO A GOOD AND FUNCTIONING CONDITION THE EASEMENT AREA AND RECREATIONAL FACILITIES.
16) 15' WATER EASEMENT CONVEYED TO CHISHOLM TRAIL WATER SUPPLY CORP. RECORDED IN VOLUME 1114 PAGE 13, OFFICIAL RECORDS WILLIAMSON COUNTY, TEXAS, RELEASED AND TERMINATED ON AUGUST 17, 2023 VIA INSTRUMENT RECORDED IN DOCUMENT NUMBER 2023071082, OFFICIAL PUBLIC RECORDS OF WILLIAMSON COUNTY, TEXAS.

ENGINEER/SURVEYOR:
LJA Surveying, Inc.
9830 Colonnade Boulevard Phone 210.503.2700
Suite 300
San Antonio, Texas 78230 T.B.P.L.S. Firm No. 10194382

CITY OF LEANDER PROJECT No. PP-22-014

THIS PLAT FILED IN 04/18/2023 10 OF 10

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User: bclayton Plot Date/Time: Nov. 13, 23 – 09:01:57

GATEWAY 29 WPAP / SCS
OVERALL SUBDIVISION IMPROVEMENTS
FINAL PLAT SHEET 10
LEANDER, WILLIAMSON COUNTY, TEXAS

REVISIONS			
NO.	DESCRIPTION	BY	DATE

DATE: 03/13/2024
DESIGNED BY: CRH
DRAWN BY: DLB
CHECKED BY: CRH
DRAWING NAME: A633-0401-P-FP01_WPAP

LJA Engineering, Inc.
7500 Rialto Boulevard
Building II, Suite 100
Austin, Texas 78735
Phone 512.439.4700
Fax 512.439.4716
FRN-F-1386

CITY OF LEANDER APPROVAL

LOCATION OF EXISTING UNDERGROUND AND OVERHEAD UTILITIES ARE APPROXIMATE LOCATIONS ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES PRIOR TO BEGINNING WORK AND SHALL BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT OCCUR.

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

JOB NUMBER: A633-0401

FP10

SHEET NO. 12 OF 90 SHEETS

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User: agetsinger
Last Modified: Mar. 13, 24 – 09:11
Plot Date/Time: Mar. 13, 24 – 14:36:58

CURVE TABLE					
CURVE	RADIUS	ARC LENGTH	DELTA ANGLE	CHORD BEARING	CHORD LENGTH
C1	2914.79'	1152.53'	22°39'07"	S78°33'02"E	1144.87'
C2	1250.00'	37.42'	01°43'07"	N20°51'15"W	37.49'

LINE TABLE		
LINE	BEARING	DISTANCE
L1	N41°21'27"E	29.63'
L2	S89°44'36"E	33.93'
L3	S51°01'22"E	160.17'
L4	S57°36'45"W	34.51'
L5	N48°08'52"W	12.51'

100 50 0 100 200
SCALE IN FEET

LEGEND

- EXISTING CONTOUR MINOR
- EXISTING CONTOUR MAJOR
- PROPERTY LINE
- EASEMENT LINE
- SETBACK LINE
- DRAINAGE CENTERLINE
- ZONING BOUNDARY
- OVERHEAD UTILITY LINE
- OVERHEAD ELECTRIC LINE
- OVERHEAD UTILITY LINE
- STORM SEWER LINE
- WASTEWATER LINE
- WASTEWATER SERVICE
- WATER LINE
- WATER SERVICE
- FEMA FLOODWAY / ZONE "X" / ZONE "AE" (EXIST)
- LEANDER ULT.-DEV. 100-YR ATLAS 14 FP
- LEANDER EX. 100-YR ATLAS14 FP
- CHAIN-LINK FENCE
- TREE TO BE REMOVED DURING SDP
- TREE TO REMAIN
- TREE TO REMAIN (HERITAGE)
- STREET SIGN
- 5/8" IRON ROD WITH PLASTIC CAP STAMPED "LJA SURVEY" SET
- "X" SCRIBED IN CONCRETE
- IRON ROD FOUND (AS NOTED)
- IRON PIPE FOUND (AS NOTED)
- COTTON-GIN SPINDLE FOUND
- MAG NAIL FOUND

BEARING BASIS:
ALL BEARINGS BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, GRID NORTH, CENTRAL ZONE (4203), NAD83. SURFACE ADJUSTMENT CONVERSION FACTOR IS 1.00013.

UTILITY NOTE:
THE SURVEYOR MAKES NO GUARANTEES THAT THE UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. THE SURVEYOR FURTHER DOES NOT WARRANT THAT THE UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED (UTILITIES SHOWN HEREON MAY BE EXAGGERATED FOR GRAPHIC REPRESENTATION ONLY) ALTHOUGH HE DOES CERTIFY THAT THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM INFORMATION AVAILABLE. THE SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND UTILITIES, ONLY THE VISIBLE ABOVE GROUND UTILITY STRUCTURES.

FLOODPLAIN NOTE:
NO PORTION OF THE SUBJECT TRACT IS WITHIN THE 100-YEAR FLOODPLAIN. AS SHOWN ON THE FEMA FLOOD INSURANCE RATE MAP FOR WILLIAMSON COUNTY, TEXAS, MAP NO. 48491C0275E, WITH AN EFFECTIVE DATE OF SEPTEMBER 26,2008.

TCEQ EDWARDS AQUIFER NOTE:
THIS SITE IS WITHIN THE EDWARDS AQUIFER RECHARGE ZONE.

WATERSHED NOTE:
THIS SITE IS WITHIN THE NORTH FORK SAN GABRIEL RIVER WATERSHED.

BUFFER ZONE NOTE:
THIS SUBDIVISION IS NOT SUBJECT TO CITY OF LEANDER BUFFER ZONE (DEFINED BY FEMA 100-YR FLOODPLAIN LIMITS).

TREE PROTECTION NOTE:
SEE SHEET LS07 FOR TREE LIST AND MITIGATION SUMMARY REQUIRED FOR PROPOSED IMPROVEMENTS.

TREE SURVEY NOTE:
TREE SURVEY PERFORMED BY WESTAR ALAMO LAND SURVEYORS, LLC DATED 03/20/2020.

CITY OF LEANDER APPROVAL

LOCATION OF EXISTING UNDERGROUND AND OVERHEAD UTILITIES ARE APPROXIMATE LOCATIONS ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES PRIOR TO BEGINNING WORK AND SHALL BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT OCCUR.

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

GATEWAY 29 WPAP / SCS
OVERALL SUBDIVISION IMPROVEMENTS
EXISTING CONDITIONS AND DEMOLITION PLAN

LEANDER, WILLIAMSON COUNTY, TEXAS

REVISIONS			
NO.	DESCRIPTION	BY	DATE

DATE: 03/13/2024
DESIGNED BY: CRH
DRAWN BY: DLB
CHECKED BY: CRH
DRAWING NAME: A633-0401-P-EX01_WPAP

03/13/2024
STATE OF TEXAS
CHARLES R. HAGER
127034
LICENSED PROFESSIONAL ENGINEER

LJA Engineering, Inc.
7500 Rialto Boulevard
Building II, Suite 100
Austin, Texas 78735
Phone 512.439.4700
Fax 512.439.4716
FRN-F-1386

JOB NUMBER: A633-0401

EX01

SHEET NO. 13 OF 90 SHEETS

CITY OF LEANDER PROJECT No. SD-23-0140

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User: rgehringer
Last Modified: Mar. 13, 24 - 10:55
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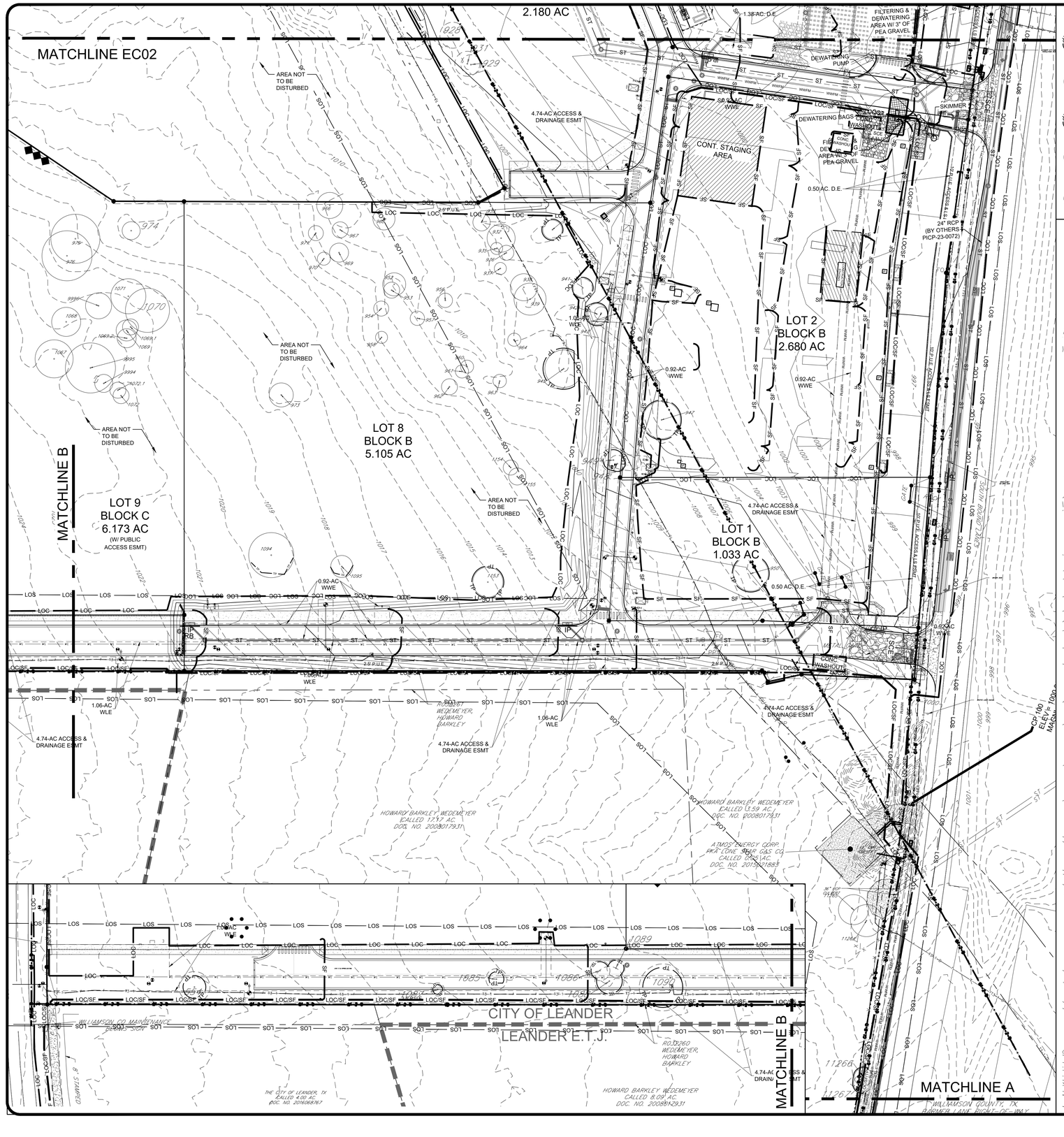

LEGEND

PROPOSED	EXISTING	
		PROPERTY BOUNDARY
LOC	LOC	LIMITS OF CONSTRUCTION
SF	SF	SILT FENCE (CoA DTL. 642S-1)
LOC/SF	LOC/SF	LIMITS OF CONST./SILT FENCE (CoA DTL. 642S-1)
TP	TP	TREE PROTECTION (Col. DTL. 303-2)
IP	IP	INLET PROTECTION (GEOCURVE, SEE EC02)
RB		ROCK BERM (CoA DTL. 639S-1)
SCE		STABILIZED CONSTRUCTION ENTRANCE (CoA DTL. 641S-1)
		CONSTRUCTION STAGING / SPOILS / VEHICLE USE LOCATION
CONC. WASHOUT		CONCRETE WASHOUT (CoL DTL. 303-1)
800	800	CONTOURS
ST	ST	STORM SEWER LINE
WW	WW	WASTEWATER LINE
WL	WL	WATER LINE

TREE TO REMAIN WITH TREE PROTECTION (CoL DTL. 303-2)

TREE TO REMAIN WITHOUT TREE PROTECTION (CoL DTL. 303-2)

HERITAGE TREE TO REMAIN WITH TREE PROTECTION (CoL DTL. 303-2)

HERITAGE TREE TO REMAIN WITHOUT TREE PROTECTION (CoL DTL. 303-2)

TREE TO BE REMOVED

50 25 0 50 100
SCALE IN FEET

NOTES:
1. IF DISTURBED AREA IS NOT WORKED ON FOR MORE THAN 14 DAYS, DISTURBED AREA NEEDS TO BE RESTABILAZED BY REVEGETATION MATTING. (ECM 1.4.4.B.3, SECTION 5,1)
2. THE CITY OF LEANDER ENVIRONMENTAL INSPECTOR HAS THE AUTHORITY TO ADD OR MODIFY EROSION/SEDIMENTATION CONTROLS ON SITE THROUGHOUT THE DURATION OF THE PROJECT.
3. CONTRACTOR SHALL UTILIZE DUST CONTROL MEASURES DURING SITE CONSTRUCTION SUCH AS IRRIGATION TRUCKS AND MULCHING AS PER ECM 1.4.5(A), OR AS DIRECTED BY THE ENVIRONMENTAL INSPECTOR.
4. THE CONTRACTOR WILL CLEAN UP SPOILS THAT HAVE MIGRATED ONTO THE ROADS A MINIMUM OF ONCE DAILY.
5. LIMITS OF CONSTRUCTION AND SILT FENCE SHOWN OFF BOUNDARY LINES FOR CLARITY ONLY. SILT FENCE SHALL BE PLACED WITHIN TRACT BOUNDARIES.
6. CONTRACTOR SHALL MAINTAIN THE DE-WATERING SYSTEM TO ENSURE PERFORMANCE. IF THE DE-WATERING SYSTEM IS NOT PERFORMING, THE CONTRACTOR MUST IMMEDIATELY MAKE THE NECESSARY MODIFICATIONS, FOLLOWING THE ENVIRONMENTAL INSPECTOR'S DIRECTION TO ENSURE ADEQUATE PERFORMANCE. CONTRACTOR SHALL PROVIDE THE DE-WATERING PLAN AT THE PRE-CONSTRUCTION MEETING.
7. ALL DISTURBED AREAS OUTSIDE OF IMPERVIOUS COVER AND RIPRAP IMPROVEMENTS ARE TO BE PERMANENTLY SEEDED AND STABILIZED ONCE CONSTRUCTION OF THE AREA IS COMPLETE.
8. ALL ROCK BERMS SHALL BE REMOVED BY THE CONTRACTOR.

SPOILS STAGING NOTES:
1. ON-SITE EROSION CONTROL MEASURES TO BE ESTABLISHED AND MAINTAINED AROUND TEMPORARY/PERMANENT SPOILS LOCATIONS, CONCRETE WASHOUT, AND CONTRACTOR STAGING AREAS.
2. MATERIALS STOCKPILE TO BE REMOVED PRIOR TO ACCEPTANCE OF THIS SUBDIVISION.

CONSTRUCTION SEQUENCE
1. CALL CITY OF LEANDER PUBLIC WORKS DEPARTMENT AT 259-2640, 48 HOURS PRIOR TO BEGINNING ANY WORK. CALL THE ONE CALL CENTER AT 472-2822 FOR UTILITY LOCATIONS AND OBTAIN PERMIT FOR ANY WORK WITHIN CITY OF LEANDER R.O.W.
2. INSTALL TEMPORARY EROSION CONTROLS AND TREE PROTECTION FENCING PRIOR TO ANY CLEARING AND GRUBBING.
3. ROUGH CUT ALL REQUIRED OR NECESSARY PONDS.
4. DELIVER APPROVED ROUGH CUT SHEETS TO THE CITY OF LEANDER PRIOR TO CLEARING AND GRUBBING.
5. ROUGH GRADE STREETS.
6. INSTALL ALL UTILITIES TO BE LOCATED UNDER THE PROPOSED PAVEMENT.
7. DELIVER STORM SEWER CUT SHEETS TO THE CITY OF LEANDER.
8. BEGIN INSTALLATION OF STORM SEWER LINES. UPON COMPLETION, RESTORE DISTURBED AREA AS MUCH AS POSSIBLE, PARTICULARLY CHANNELS AND LARGE OPEN AREAS.
9. DELIVER FINAL GRADE CUT SHEETS TO THE CITY OF LEANDER.
10. REGRADE STREETS TO SUBGRADE.
11. INSURE THAT ALL UNDERGROUND UTILITY CROSSINGS ARE COMPLETED. LAY FIRST COURSE BASE MATERIAL ON ALL STREETS.
12. INSTALL CURB AND GUTTER.
13. LAY FINAL BASE COURSE ON ALL STREETS.
14. LAY ASPHALT.
15. COMPLETE ALL UNDERGROUND INSTALLATIONS WITH THE R.O.W.
16. COMPLETE PERMANENT EROSION CONTROL AND RESTORATION OF SITE VEGETATION. REMOVE AND DISPOSE OF TEMPORARY EROSION CONTROLS.
17. COMPLETE ANY NECESSARY FINAL DRESS UP OF AREAS DISTURBED BY ITEM 16.

NOTE: ROUGH GRADING ONLY - STEPS 1 THROUGH 3 ONLY.
ROUGH GRADING AND UTILITIES ONLY - STEPS 1 THROUGH 4 ONLY.
FULL DEVELOPMENT PERMIT - ENTIRE SEQUENCING

CLEARING AND GRUBBING UNDER A DEVELOPMENT PERMIT, SOLELY FOR THE PURPOSE OF SURVEYING AND SOIL EXPLORATION, SHALL BE HANDCUTTING OR BLADE-UP OPERATION.

EROSION CONTROL SCHEDULE AND SEQUENCING

I. ROUGH GRADING

CONSTRUCTION ENTRANCE/EXIT, SILT FENCE PROTECTION, AND STONE OVERFLOW STRUCTURES SHALL BE INSTALLED PRIOR TO THE INITIATION OF ROUGH GRADING, AS NEEDED

II. UTILITY INSTALLATION

ALL PRIOR EROSION CONTROL MEASURES INSTALLED ABOVE TO BE MAINTAINED AS NECESSARY DURING UTILITY INSTALLATION. INLET PROTECTION SHALL BE INSTALLED AS STORM DRAINAGE SYSTEM IS CONSTRUCTED.

III. PAVING

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IV. FINAL GRADING/SOIL STABILIZATION/LANDSCAPING

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CITY OF LEANDER APPROVAL

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

GATEWAY 29 WPAP / SCS
OVERALL SUBDIVISION IMPROVEMENTS
EROSION AND SEDIMENTATION CONTROL PLAN
SHEET 1

LEANDER, WILLIAMSON COUNTY, TEXAS

NO.	DESCRIPTION	BY	DATE
	REVISIONS		

DATE: 03/13/2024
DESIGNED BY: CRH
DRAWN BY: RMB
CHECKED BY: CRH
DRAWING NAME: A633-0401-P-EC01_WPAP.dwg

03/13/2024
STATE OF TEXAS
CHARLES R. HAGER
127034
LICENSED PROFESSIONAL ENGINEER

LJA Engineering, Inc.
7500 Rialto Boulevard
Building II, Suite 100
Austin, Texas 78735
Phone 512.439.4700
Fax 512.439.4716
FRN-F-1386

JOB NUMBER: A633-0401

EC01

SHEET NO. 14 OF 90 SHEETS

CITY OF LEANDER PROJECT No. SD-23-0140

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User: sgehringer
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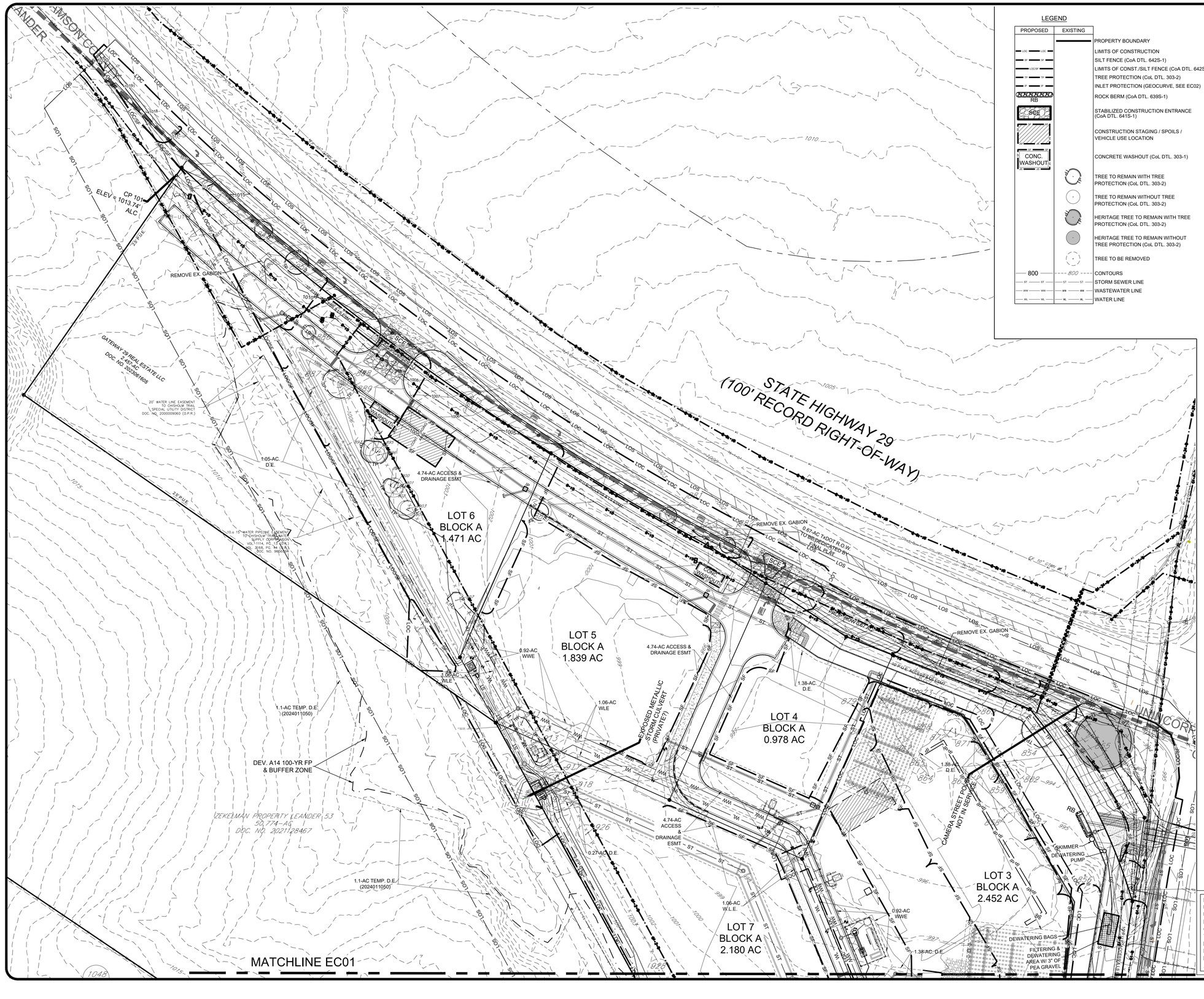
Plot Date/Time: Mar. 13, 24 - 14:17:59



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LOC/SF	LIMITS OF CONST./SILT FENCE (CoA DTL. 642S-1)
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WL	WL WATER LINE

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GATEWAY 29 WPAP / SCS
OVERALL SUBDIVISION IMPROVEMENTS
EROSION AND SEDIMENTATION CONTROL PLAN
SHEET 2

LEANDER, WILLIAMSON COUNTY, TEXAS

NO.	REVISIONS DESCRIPTION	BY	DATE

DATE: 03/13/2024
DESIGNED BY: CRH
DRAWN BY: RMB
CHECKED BY: CRH
DRAWING NAME: A633-0401-P-EC01.WPAP

03/13/2024
STATE OF TEXAS
CHARLES R. HAGER
127034
LICENSED PROFESSIONAL ENGINEER
CIVIL
CRHager

LJA Engineering, Inc.
7500 Rialto Boulevard
Building II, Suite 100
Austin, Texas 78735
Phone 512.439.4700
Fax 512.439.4716
FRN-F-1386

JOB NUMBER: A633-0401

EC02

SHEET NO. 15 OF 90 SHEETS

CITY OF LEANDER PROJECT No. SD-23-0140

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User: agehringer
Last Modified: Mon, 13, 24 - 11:51
Plot Date/Time: Mon, 13, 24 - 14:56:09

EROSION AND SEDIMENTATION CONTROL NOTES

1. THE CONTRACTOR SHALL INSTALL EROSION/SEDIMENTATION CONTROLS AND TREE PROTECTIVE FENCING PRIOR TO ANY WORK (CLEARING, GRUBBING OR EXCAVATION). CONTACT STORMWATER INSPECTOR FOR ON SITE INSPECTION PRIOR TO BEGINNING CONSTRUCTION.
2. THE CONTRACTOR IS REQUIRED TO INSPECT THE CONTROLS AND FENCES AT WEEKLY INTERVALS AND AFTER SIGNIFICANT RAINFALL EVENTS TO ENSURE THAT THEY ARE FUNCTIONING PROPERLY. THE PERSON(S) RESPONSIBLE FOR MAINTENANCE OF CONTROLS AND FENCES SHALL IMMEDIATELY MAKE ANY NECESSARY REPAIRS TO DAMAGED AREAS. SILT ACCUMULATION AT CONTROLS MUST BE REMOVED WHEN THE DEPTH REACHES SIX (6) INCHES.
3. THE TEMPORARY SPOILS DISPOSAL SITE IS TO BE SHOWN IN THE EROSION CONTROL MAP.
4. ANY ON-SITE SPOILS DISPOSAL SHALL BE REMOVED PRIOR TO ACCEPTANCE UNLESS SPECIFICALLY SHOWN ON THE PLANS. THE DEPTH OF SPOIL SHALL NOT EXCEED 10 FEET IN ANY AREA.
5. ALL AREAS DISTURBED OR EXPOSED DURING CONSTRUCTION SHALL BE RESTORED WITH A MINIMUM OF 6 INCHES OF TOPSOIL AND COMPOST BLEND. TOPSOIL ON SINGLE FAMILY LOTS MAY BE INSTALLED WITH HOME CONSTRUCTION. THE TOPSOIL AND COMPOST BLEND SHALL CONSIST OF 75% TOPSOIL AND 25% COMPOST.
6. SEEDING FOR REESTABLISHING VEGETATION SHALL COMPLY WITH THE AUSTIN GROW GREEN GUIDE OR WILLIAMSON COUNTY'S PROTOCOL FOR SUSTAINABLE ROADSIDES (SPEC 164--WC001 SEEDING FOR EROSION CONTROL). RESEEDING VARIETIES OF BERMUDA SHALL NOT BE USED. TIFWAY419 SOD OR OTHER GRASS SPECIES FOUND WITHIN COA GROW GREEN GUIDE ARE PERMITTED. NON-SEEDING VARIETIES OF BERMUDA CAN ONLY BE PLANTED BY SOD OR SPRIGS.
7. STABILIZED CONSTRUCTION ENTRANCE IS REQUIRED AT ALL POINTS WHERE CONSTRUCTION TRAFFIC IS EXITING THE PROJECT ONTO EXISTING PAVEMENT. LINEAR CONSTRUCTION PROJECTS MAY REQUIRE SPECIAL CONSIDERATION. ROADWAYS SHALL REMAIN CLEAR OF SILT AND MUD.
8. TEMPORARY STOP SIGNS SHOULD BE INSTALLED AT ALL CONSTRUCTION ENTRANCES WHERE A STOP CONDITION DOES NOT ALREADY EXIST.
9. IN THE EVENT OF INCLEMENT WEATHER THAT MAY RESULT IN A FLOODING SITUATION, THE CONTRACTOR SHALL REMOVE INLET PROTECTION MEASURES UNTIL SUCH TIME AS THE WEATHER EVENT HAS PASSED.

CITY OF AUSTIN STANDARD NOTES FOR TREE AND NATURAL AREA PROTECTION

1. ALL TREES AND NATURAL AREAS SHOWN ON PLAN TO BE PRESERVED SHALL BE PROTECTED DURING CONSTRUCTION WITH TEMPORARY FENCING.
2. PROTECTIVE FENCES SHALL BE ERECTED ACCORDING TO CITY OF AUSTIN STANDARDS FOR TREE PROTECTION.
3. PROTECTIVE FENCES SHALL BE INSTALLED PRIOR TO THE START OF ANY SITE PREPARATION WORK (CLEARING, GRUBBING OR GRADING), AND SHALL BE MAINTAINED THROUGHOUT ALL PHASES OF THE CONSTRUCTION PROJECT.
4. EROSION AND SEDIMENTATION CONTROL BARRIERS SHALL BE INSTALLED OR MAINTAINED IN A MANNER WHICH DOES NOT RESULT IN SOIL BUILD-UP WITHIN TREE DRIP LINES.
5. PROTECTIVE FENCES SHALL SURROUND THE TREES OR GROUP OF TREES, AND WILL BE LOCATED AT THE OUTERMOST LIMIT OF BRANCHES (DRIP LINE) , FOR NATURAL AREAS, PROTECTIVE FENCES SHALL FOLLOW THE LIMIT OF CONSTRUCTION LINE, IN ORDER TO PREVENT THE FOLLOWING:

A. SOIL COMPACTION IN THE ROOT ZONE AREA RESULTING FROM VEHICULAR TRAFFIC OR STORAGE OF EQUIPMENT OR MATERIALS;

B. ROOT ZONE DISTURBANCES DUE TO GRADE CHANGES (GREATER THAN 6 INCHES CUT OR FILL), OR TRENCHING NOT REVIEWED AND AUTHORIZED BY THE CITY ARORIST;

C. WOUNDS TO EXPOSED ROOTS, TRUNK OR LIMBS BY MECHANICAL EQUIPMENT;

D. OTHER ACTIVITIES DETRIMENTAL TO TREES SUCH AS CHEMICAL STORAGE, CEMENT TRUCK CLEANING, AND FIRES.

6. EXCEPTIONS TO INSTALLING FENCES AT TREE DRIP LINES MAY BE PERMITTED IN THE FOLLOWING CASES:

A. WHERE THERE IS TO BE AN APPROVED GRADE CHANGE, IMPERMEABLE PAVING SURFACE, TREE WELL, OR OTHER SUCH SITE DEVELOPMENT, ERECT THE FENCE APPROXIMATELY 2 TO 4 FEET BEYOND THE AREA DISTURBED;

B. WHERE PERMEABLE PAVING IS TO BE INSTALLED WITHIN A TREE'S DRIP LINE, ERECT THE FENCE AT THE OUTER LIMITS OF THE PERMEABLE PAVING AREA (PRIOR TO SITE GRADING SO THAT THIS AREA IS GRADED SEPARATELY PRIOR TO PAVING INSTALLATION TO MINIMIZED ROOT DAMAGE);

C. WHERE TREES ARE CLOSE TO PROPOSED BUILDINGS, ERECT THE FENCE TO ALLOW 6 TO 10 FEET OF WORK SPACE BETWEEN THE FENCE AND THE BUILDING;

D. WHERE THERE ARE SEVERE SPACE CONSTRAINTS DUE TO TRACT SIZE, OR OTHER SPECIAL REQUIREMENTS, CONTACT THE CITY ARBORIST AT 974-1876 TO DISCUSS ALTERNATIVES.

SPECIAL NOTE: FOR THE PROTECTION OF NATURAL AREAS, NO EXCEPTIONS TO INSTALLING FENCES AT THE LIMIT OF CONSTRUCTION LINE WILL BE PERMITTED.

7. WHERE ANY OF THE ABOVE EXCEPTIONS RESULT IN A FENCE BEING CLOSER THAN 4 FEET TO A TREE TRUNK, PROTECT THE TRUNK WITH STRAPPED-ON PLANKING TO A HEIGHT OF 8 FT (OR TO THE LIMITS OF LOWER BRANCHING) IN ADDITION TO THE REDUCED FENCING PROVIDED.
8. TREES APPROVED FOR REMOVAL SHALL BE REMOVED IN A MANNER WHICH DOES NOT IMPACT TREES TO BE PRESERVED.
9. ANY ROOTS EXPOSED BY CONSTRUCTION ACTIVITY SHALL BE PRUNED FLUSH WITH THE SOIL. BACKFILL ROOT AREAS WITH GOOD QUALITY TOP SOIL AS SOON AS POSSIBLE. IF EXPOSED ROOT AREAS ARE NOT BACKFILLED WITHIN 2 DAYS, COVER THEM WITH ORGANIC MATERIAL IN A MANNER WHICH REDUCES SOIL TEMPERATURE AND MINIMIZES WATER LOSS DUE TO EVAPORATION.
10. ANY TRENCHING REQUIRED FOR THE INSTALLATION OF LANDSCAPE IRRIGATION SHALL BE PLACED AS FAR FROM EXISTING TREE TRUNKS AS POSSIBLE.
11. NO LANDSCAPE TOPSOIL DRESSING GREATER THAN 4 INCHES SHALL BE PERMITTED WITHIN THE DRIP LINE OF TREES. NO SOIL IS PERMITTED ON THE ROOT FLARE OF ANY TREE.
12. PRUNING TO PROVIDE CLEARANCE FOR STRUCTURES, VEHICULAR TRAFFIC AND EQUIPMENT SHALL TAKE PLACE BEFORE DAMAGE OCCURS (RIPPING OF BRANCHES, ETC.).
13. ALL FINISHED PRUNING SHALL BE DONE ACCORDING TO RECOGNIZED, APPROVED STANDARDS OF THE INDUSTRY (REFERENCE THE NATIONAL ARBORIST ASSOCIATION PRUNING STANDARDS FOR SHADE TREES AVAILABLE ON REQUEST FROM THE CITY ARBORIST).
14. DEVIATIONS FROM THE ABOVE NOTES MAY BE CONSIDERED ORDINANCE VIOLATIONS IF THERE IS SUBSTANTIAL NON-COMPLIANCE OR IF A TREE SUSTAINS DAMAGE AS A RESULT.

CONSTRUCTION SEQUENCE

1. CALL CITY OF LEANDER PUBLIC WORKS DEPARTMENT AT 259-2640 48 HOURS PRIOR TO BEGINNING ANY WORK. CALL THE ONE CALL CENTER AT 472-2822 FOR UTILITY CALL CENTER AT 472-2822 FOR UTILITY LOCATIONS AND OBTAIN PERMIT FOR ANY WORK WITHIN CITY OF LEANDER R.O.W.
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SPECIAL CONSTRUCTION TECHNIQUES

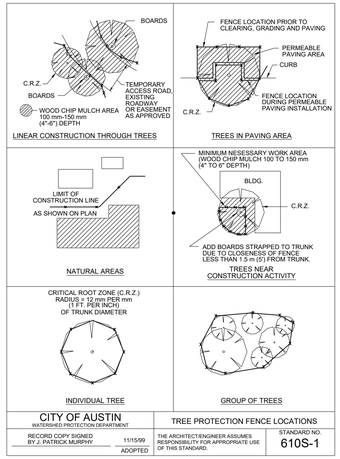
PRIOR TO EXCAVATION WITHIN TREE DRIPLINES OR THE REMOVAL OF TREES ADJACENT TO OTHER TREES THAT ARE TO REMAIN, MAKE A CLEAN CUT BETWEEN THE DISTURBED AND UNDISTURBED ROOT ZONES WITH A ROCK SAW OR SIMILAR EQUIPMENT TO MINIMIZE ROOT DAMAGE.

IN CRITICAL ROOT ZONE AREAS THAT CANNOT BE PROTECTED DURING CONSTRUCTION WITH FENCING AND WHERE HEAVY VEHICULAR TRAFFIC IS ANTICIPATED, COVER THOSE AREAS WITH A MINIMUM OF 12 INCHES OF ORGANIC MULCH TO MINIMIZE SOIL COMPACTION. IN AREAS WITH HIGH SOIL PLASTICITY GEOTEXTILE FABRIC, PER STANDARD SPECIFICATION 620S, SHOULD BE PLACED UNDER THE MULCH TO PREVENT EXCESSIVE MIXING OF THE SOIL AND MULCH. ADDITIONALLY, MATERIAL SUCH AS PLYWOOD AND METAL SHEETS, COULD BE REQUIRED BY THE CITY ARBORIST TO MINIMIZE ROOT IMPACTS FROM HEAVY EQUIPMENT. ONCE THE PROJECT IS COMPLETED, ALL MATERIALS SHOULD BE REMOVED, AND THE MULCH SHOULD BE REDUCED TO A DEPTH OF 3 INCHES.

PERFORM ALL GRADING WITHIN CRITICAL ROOT ZONE AREAS BY HAND OR WITH SMALL EQUIPMENT TO MINIMIZE ROOT DAMAGE.

WATER ALL TREES MOST HEAVILY IMPACTED BY CONSTRUCTION ACTIVITIES DEEPLY ONCE A WEEK DURING PERIODS OF HOT, DRY WEATHER. SPRAY TREE CROWNS WITH WATER PERIODICALLY TO REDUCE DUST ACCUMULATION ON THE LEAVES.

WHEN INSTALLING CONCRETE ADJACENT TO THE ROOT ZONE OF A TREE, USE A PLASTIC VAPOR BARRIER BEHIND THE CONCRETE TO PROHIBIT LEACHING OF LIME INTO THE SOIL.

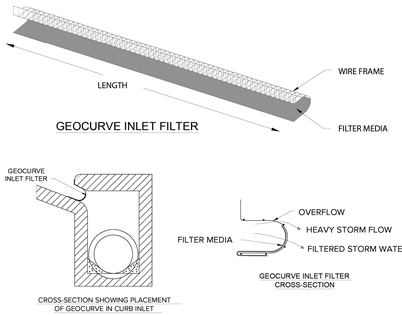


CITY OF AUSTIN WATERSHED PROTECTION DEPARTMENT		TREE PROTECTION FENCE LOCATIONS
RECORD COPY SIGNED BY J. PATRICK MURPHY	11/15/99	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.
	ADOPTED	STANDARD NO. 610S-1

GeoCurve Product Data Sheet

GEOCURVE
STORMWATER CURB INLET FILTER

The GeoCurve Stormwater Curb Inlet Filter prevents sediment and debris from entering the storm sewer system, while complying to stormwater management requirements (SWPPP). The GeoCurve's compression fit technology allows the product to fit snug within the mouth of the inlet, hidden from oncoming traffic and pedestrians.



GeoSolutions, Inc. | 13812 Aston Street, Houston, TX 77040
(713) 714-8243 | www.geocurve.net

EROSION CONTROL SCHEDULE AND SEQUENCING

I. ROUGH GRADING

CONSTRUCTION ENTRANCE/EXIT, SILT FENCE PROTECTION, AND STONE OVERFLOW STRUCTURES SHALL BE INSTALLED PRIOR TO THE INITIATION OF ROUGH GRADING, AS NEEDED

II. UTILITY INSTALLATION

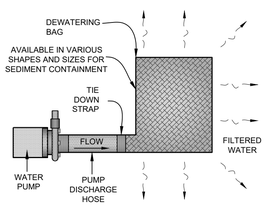
ALL PRIOR EROSION CONTROL MEASURES INSTALLED ABOVE TO BE MAINTAINED AS NECESSARY DURING UTILITY INSTALLATION. INLET PROTECTION SHALL BE INSTALLED AS STORM DRAINAGE SYSTEM IS CONSTRUCTED.

III. PAVING

ALL PRIOR EROSION CONTROL MEASURES INSTALLED ABOVE TO BE MAINTAINED AS NECESSARY DURING PAVING AND THROUGHOUT THE REMAINDER OF THE PROJECT.

IV. FINAL GRADING/SOIL STABILIZATION/LANDSCAPING

ALL TEMPORARY EROSION CONTROL MEASURES TO BE REMOVED AT THE CONCLUSION OF THE PROJECT AS DIRECTED BY THE CITY OR COUNTY.



SEDIMENT BAG (DEWATERING) DETAIL
N.T.S.

DESCRIPTION:
A GRAVITY BAG FILTER, ALSO REFERRED TO AS A DEWATERING BAG, IS A SQUARE OR RECTANGULAR BAG MADE OF NON-WOVEN GEOTEXTILE FABRIC THAT COLLECTS SAND, SILT, AND FINES.

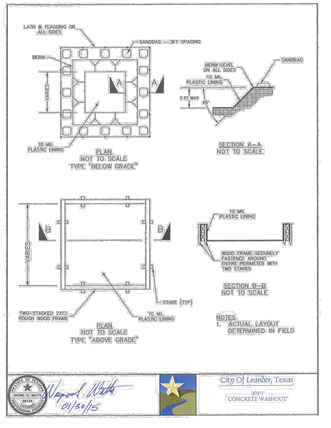
APPROPRIATE APPLICATIONS:
EFFECTIVE FOR THE REMOVAL OF SEDIMENTS (GRAVEL, SAND, AND SILT). SOME METALS ARE REMOVED WITH THE SEDIMENT.

IMPLEMENTATION:
WATER IS PUMPED INTO ONE SIDE OF THE BAG AND SEEPS THROUGH THE BOTTOM AND SIDES OF THE BAG.

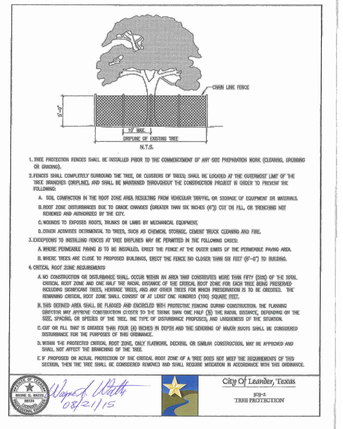
A SECONDARY BARRIER, SUCH AS A ROCK FILTER BED OR STRAW/HAY BALE BARRIER IS PLACED BENEATH AND BEYOND THE EDGES OF THE BAG TO CAPTURE SEDIMENTS THAT ESCAPE THE BAG.

MAINTENANCE:
INSPECTION OF THE FLOW CONDITIONS, BAG CONDITION, BAG CAPACITY, AND THE SECONDARY BARRIER IS REQUIRED.

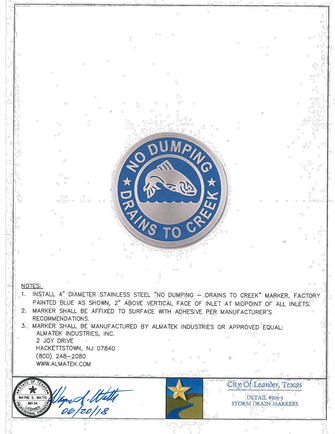
REPLACE THE BAG WHEN IT NO LONGER FILTERS SEDIMENT OR PASSES WATER AT A REASONABLE RATE. THE BAG IS DISPOSED OF OFFSITE.



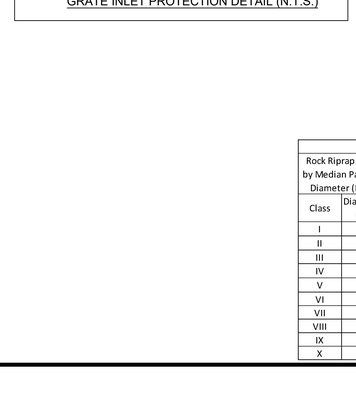
City of Leander, Texas
STD'S
CONCRETE WASHOUT



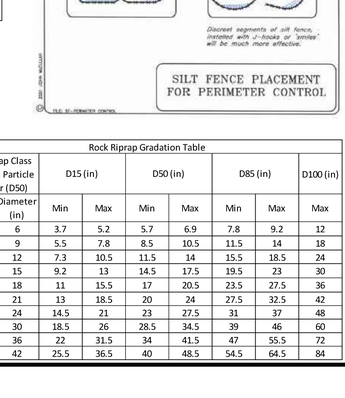
City of Leander, Texas
STD-1
TREE PROTECTION



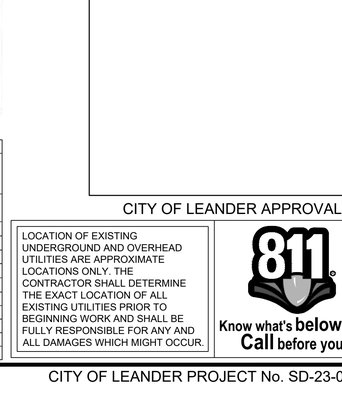
City of Leander, Texas
DETAIL #509-1
STORM DRAIN MARKERS



CITY OF AUSTIN
WATERSHED PROTECTION DEPARTMENT
ROCK BERM
8/24/2010
ADOPTED
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.
STANDARD NO. 639S-1



CITY OF AUSTIN
WATERSHED PROTECTION DEPARTMENT
STABILIZED CONSTRUCTION ENTRANCE
5/28/10
ADOPTED
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.
STANDARD NO. 641S-1



CITY OF AUSTIN
WATERSHED PROTECTION DEPARTMENT
SILT FENCE
9/11/01
ADOPTED
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.
STANDARD NO. 642S-1

GRATE INLET PROTECTION DETAIL (N.T.S.)

Rock Riprap Gradation Table								
Rock Riprap Class by Median Particle Diameter (D50)		D15 (in)		D50 (in)		D85 (in)		D100 (in)
Class	Diameter (in)	Min	Max	Min	Max	Min	Max	Max
I	6	3.7	5.2	5.7	6.9	7.8	9.2	12
II	9	5.5	7.8	8.5	10.5	11.5	14	18
III	12	7.3	10.5	11.5	14	15.5	18.5	24
IV	15	9.2	13	14.5	17.5	19.5	23	30
V	18	11	15.5	17	20.5	23.5	27.5	36
VI	21	13	18.5	20	24	27.5	32.5	42
VII	24	14.5	21	23	27.5	31	37	48
VIII	30	18.5	26	28.5	34.5	39	46	60
IX	36	22	31.5	34	41.5	47	55.5	72
X	42	25.5	36.5	40	48.5	54.5	64.5	84

TEMP. DEWATERING SKIMMER DETAIL
NOT TO SCALE

CITY OF LEANDER APPROVAL

LOCATION OF EXISTING UNDERGROUND AND OVERHEAD UTILITIES ARE APPROXIMATE LOCATIONS ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES PRIOR TO BEGINNING WORK AND SHALL BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT OCCUR.

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

CITY OF LEANDER PROJECT No. SD-23-0140

GATEWAY 29 WPAP / SCS
OVERALL SUBDIVISION IMPROVEMENTS
EROSION AND SEDIMENT CONTROL
NOTES & DTLS
LEANDER, WILLIAMSON COUNTY, TEXAS

NO.	REVISIONS DESCRIPTION	BY	DATE

DATE: 03/13/2024
DESIGNED BY: CRH
DRAWN BY: DLB
CHECKED BY: CRH
DRAWING NAME: A633-0401-PLEC03_WPAP

03/13/2024

LJA Engineering, Inc.
7500 Rialto Boulevard
Building II

LINE TABLE		
LINE	BEARING	DISTANCE
L1	S76°08'41"E	945.50'
L2	N69°58'59"E	70.44'
L3	N69°58'59"E	224.99'
L4	N69°58'59"E	69.13'
L5	N40°58'11"E	29.79'
L6	N48°48'50"W	384.45'
L7	N48°48'50"W	166.63'
L8	N48°48'50"W	638.08'
L9	N48°48'50"W	37.32'
L10	S89°44'36"E	33.93'
L11	S51°01'22"E	19.18'
L12	S51°01'22"E	141.05'
L13	S12°01'04"E	230.90'
L14	S12°01'04"E	30.00'
L15	S12°01'04"E	154.75'
L16	S15°42'56"E	139.86'

LINE TABLE		
LINE	BEARING	DISTANCE
L17	S15°42'56"E	216.12'
L18	S15°42'56"E	25.01'
L19	S15°42'56"E	26.95'
L20	S72°24'20"W	113.00'
L21	S57°36'45"W	34.51'
L22	N48°08'52"W	12.51'
L23	S69°47'28"W	577.74'
L24	S69°46'58"W	455.09'
L25	S69°51'25"W	400.25'
L26	N20°04'59"W	496.42'
L27	N20°04'59"W	464.96'
L28	S72°24'20"W	156.14'
L29	S69°47'28"W	212.85'
L30	N15°44'40"W	137.94'
L31	N14°15'20"E	57.50'
L32	N74°15'20"E	326.23'

LINE TABLE		
LINE	BEARING	DISTANCE
L33	N14°15'20"E	7.66'
L34	N12°02'48"W	136.99'
L35	N12°02'48"W	127.19'
L36	N77°57'12"E	302.92'
L37	S77°57'12"W	302.94'
L38	N12°02'48"W	65.52'
L39	N50°47'12"W	70.06'
L40	N86°13'34"W	46.41'
L41	N03°46'26"E	273.50'
L42	S89°44'36"E	48.88'
L43	N86°13'34"W	150.00'
L44	N03°46'26"E	277.32'
L45	N86°13'34"W	79.29'
L46	S41°09'27"W	84.59'
L47	N03°46'26"E	268.72'
L48	N69°55'36"E	172.20'

LINE TABLE		
LINE	BEARING	DISTANCE
L49	S72°24'20"W	154.75'
L50	S69°47'28"W	352.75'
L51	N20°12'32"W	443.68'
L52	N20°12'32"W	56.00'
L53	N20°12'32"W	413.44'
L54	S69°46'58"W	276.50'
L55	N20°12'32"W	478.35'
L56	S69°47'28"W	318.33'
L57	N20°12'32"W	93.27'
L58	S69°47'28"W	169.50'
L59	S20°12'32"E	93.27'
L60	S69°47'28"W	90.40'

CURVE TABLE					
CURVE	RADIUS	ARC LENGTH	DELTA ANGLE	CHORD BEARING	CHORD LENGTH
C1	2914.79'	1152.40'	22°39'09"	S78°32'56"E	1144.91'
C2	1250.00'	37.49'	01°43'07"	N20°56'02"W	37.49'
C3	100.00'	52.36'	30°00'00"	N00°44'40"W	51.76'
C4	100.00'	45.91'	26°18'08"	N01°06'16"E	45.50'
C5	2926.79'	186.07'	03°38'34"	S88°03'14"E	186.04'
C6	2926.79'	150.07'	02°56'16"	S84°45'49"E	150.05'
C7	2926.79'	264.31'	05°10'27"	S80°42'28"E	264.22'
C8	2926.79'	521.28'	10°12'17"	S73°01'05"E	520.59'

PHASING NOTE:
ALL PUBLIC IMPROVEMENTS BEING INSTALLED UNDER PICP-23-0072 AND ALL OVERALL SHARED PRIVATE SUBDIVISION IMPROVEMENTS (BEING INSTALLED UNDER THIS PERMIT) ARE REQUIRED TO BE COMPLETED AND ACCEPTED AND/OR CLOSED OUT BY THE CITY OF LEANDER PRIOR TO ISSUANCE OF ANY CERTIFICATE OF OCCUPANCY FOR WORK PROPOSED UNDER INDIVIDUAL SITE DEVELOPMENT PERMITS / PLAN SETS.

CITY OF LEANDER NOTES:
1. ALL SITE UTILITY LINES ARE PROPOSED TO BE LOCATED UNDERGROUND.
2. EXTERIOR LIGHTING SHALL BE SHIELDED SUCH THAT THE LIGHT SOURCE IS NOT DIRECTLY VISIBLE FROM THE PUBLIC ROW OR ADJACENT RESIDENTIAL DISTRICTS OR USES AT THE PROPERTY LINE. UNSHIELDED "WALL PACK" LIGHTING IS NOT PROPOSED.
3. AL CLAWSON DISPOSAL, INC. SHALL BE THE SOLE PROVIDER OF WASTE HAULING FOR THIS SITE AFTER CONSTRUCTION.
4. AIR CONDITIONING UNITS ARE NOT PROPOSED FORWARD THE FRONT WALL OF THE BUILDING.
5. GARBAGE DUMPSTERS ARE LOCATED NO CLOSER TO A ROADWAY THAN THE FRONT WALL OF THE PRINCIPAL STRUCTURE. LOCATEDCLOSEST TO THE ROADWAY. GARBAGE DUMPSTERS ARE SCREENED BY A WALL (COMPRISED OF MASONRY COMPATIBLE WITH THE STRUCTURE OR WOODCRETE) AT LEAST AS HIGH AS THE CONTAINER. THE OPEN SIDE TO THE DUMPSTER OR OTHER TRASH RECEPTACLE IS A GATE CONSTRUCTED OF SOLID WOOD OR METAL. THE DUMPSTER IS ORIENTED FOR PICKUP BY A FRONT LOAD GARBAGE TRUCK.
6. FOR 90 GALLON ROLL OUT CONTAINER STORED OUTSIDE, IT IS REQUIRED TO BE ENCLOSED BY PRIVACY FENCE.

PICP IMPROVEMENTS OWNERSHIP & MAINTENANCE SUMMARY:

1) PORTIONS OF THIS PROJECT INCLUDE SUBDIVISION IMPROVEMENTS THAT WILL BE OWNED AND MAINTAINED BY THE GATEWAY 29 POA. THESE ARE INCLUDED IN THIS PLAN SET FOR REVIEW AS THEY ARE REQUIRED TO MEET SUBDIVISION REQUIREMENTS, DESPITE BEING SHARED FACILITIES NOT INTENDED FOR CITY OF LEANDER OWNERSHIP AND MAINTENANCE. THESE IMPROVEMENTS ARE LISTED BELOW (EXCEPT WITHIN LOT 9 & 10, WHICH SHALL BE OWNED AND MAINTAINED BY LOT OWNER AND HIS/HER ASSIGNS):

- ALL PROPOSED SHARED ACCESS DRIVES & SIDEWALKS WITHIN ACCESS EASEMENTS WITHIN THE SUBDIVISION BOUNDARY.
- ALL PROPOSED STORM, WATER QUALITY, & DETENTION IMPROVEMENTS WITHIN THE SUBDIVISION BOUNDARY.
- ALL PROPOSED WASTEWATER, FORCEMAIN, & LIFT STATION IMPROVEMENTS WITHIN THE SUBDIVISION BOUNDARY.

SCALE IN FEET: 100 50 0 100 200

LEGEND

- EXISTING CONTOUR MINOR (667)
- EXISTING CONTOUR MAJOR (670)
- PROPERTY LINE
- PROPOSED PROPERTY LINE
- EASEMENT LINE
- SETBACK LINE
- DRAINAGE CENTERLINE
- ZONING BOUNDARY
- STORM SEWER LINE (ST)
- WASTEWATER LINE (WW)
- WASTEWATER SERVICE
- ACCESS DRIVE/PVMT
- R.O.W. DEDICATION (EXISTING / NEW)
- 5/8" IRON ROD WITH PLASTIC CAP STAMPED "LJA SURVEY" SET
- IRON ROD FOUND (AS NOTED)
- IRON PIPE FOUND (AS NOTED)
- COTTON-GIN SPINDLE FOUND
- MAG NAIL FOUND
- "X" SCRIBED IN CONCRETE
- IRON ROD SET

BEARING BASIS:
ALL BEARINGS BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, GRID NORTH, CENTRAL ZONE (4203), NAD83. SURFACE ADJUSTMENT CONVERSION FACTOR IS 1.00013.

UTILITY NOTE:
THE SURVEYOR MAKES NO GUARANTEES THAT THE UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. THE SURVEYOR FURTHER DOES NOT WARRANT THAT THE UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED (UTILITIES SHOWN HEREON MAY BE EXAGGERATED FOR GRAPHIC REPRESENTATION ONLY) ALTHOUGH HE DOES CERTIFY THAT THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM INFORMATION AVAILABLE. THE SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND UTILITIES, ONLY THE VISIBLE ABOVE GROUND UTILITY STRUCTURES.

ACCESS NOTES:
1. FOLLOW TIA RECOMMENDATIONS FOR ALL DRIVEWAYS AND TURN LANES.
2. PROPOSED DRIVEWAYS REQUIRE 200' SIGHT DISTANCE (COA TRANSPORTATION MANUAL SEC. 1.3.1 TABLE 5-2 MINIMUM FOR 2-3 LANE STREETS).

FLOODPLAIN NOTE:
NO PORTION OF THE SUBJECT TRACT IS WITHIN THE 100-YEAR FLOODPLAIN AS SHOWN ON THE FEMA FLOOD INSURANCE RATE MAP FOR WILLIAMSON COUNTY, TEXAS, MAP NO. 48491C0275E, WITH AN EFFECTIVE DATE OF SEPTEMBER 26, 2008.

LEGAL DESCRIPTION:
BEING 32.257 ACRES OF LAND, MORE OR LESS, BEING OUT OF THE GREENLIEF FISK SURVEY, ABSTRACT NO. 5 AND THE WILLIAM H. MONROE SURVEY, ABSTRACT NO. 453 IN WILLIAMSON COUNTY, TEXAS AND BEING ALL OF A 10.10 ACRE TRACT OF LAND CONVEYED TO DONALD W. STARKS, RECORDED IN DOCUMENT NO. 2003040899, AND THE REMAINING PORTION OF A 30.30 ACRE TRACT OF LAND CONVEYED TO DONALD W. STARKS, RECORDED IN DOCUMENT NO. 2003040898, OFFICIAL PUBLIC RECORDS OF WILLIAMSON COUNTY, TEXAS, BEING THAT SAME PROPERTY DESCRIBED IN A SPECIAL WARRANTY DEED WITH VENDOR'S LIEN RECORDED IN DOCUMENT NO. 2021019843, OFFICIAL PUBLIC RECORDS OF WILLIAMSON COUNTY, TEXAS.

OWNERSHIP INFORMATION:
(LOTS 1-8)
GATEWAY 29 REAL ESTATE, LLC
5522 JENOLAN RIDGE LANE
SUGARLAND, TEXAS 77479
CONTACT PERSON: SAMIR MAREDIA
PHONE: (832) 713-4985

(LOTS 9 & 10)
ZAMODULAR
227 W. MONROE ST. SUITE 2600
CHICAGO, ILLINOIS 60606
CONTACT PERSON: MICKEY McNAMARA
PHONE: (800) 733-5606

R.O.W. DEDICATION SUMMARY:

STREET NAME	R.O.W. AREA
STATE HWY 29	0.667 AC.
TOTAL PROP. ROW	0.667 AC.

CITY OF LEANDER APPROVAL

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

CITY OF LEANDER PROJECT No. SD-23-0140

GATEWAY 29 WPAP / SCS
OVERALL SUBDIVISION IMPROVEMENTS
OVERALL SITE PLAN LAYOUT
LEANDER, WILLIAMSON COUNTY, TEXAS

NO.	DESCRIPTION	BY	DATE

DATE: 03/13/2024
DESIGNED BY: CRH
DRAWN BY: RMB
CHECKED BY: CRH
DRAWING NAME: A633-0401-P-OP01_WPAP.dwg

03/13/2024
STATE OF TEXAS
CHARLES R. HAGER
127034
LICENSED PROFESSIONAL ENGINEER

LJA Engineering, Inc.
7500 Rialto Boulevard
Building II, Suite 100
Austin, Texas 78735
Phone 512.439.4700
Fax 512.439.4716
FRN-F-1386

JOB NUMBER: OP01

SHEET NO. 17 OF 90 SHEETS

I:\a633-Gateway\0401\Submittal Sheets\WPAP\A633-0401-P-OP01_WPAP.dwg
User: cgeringer
Last Modified: Mar. 13, 24 - 11:49
Plot Date/Time: Mar. 13, 24 - 14:39:14

DM01 - Time of Concentration Calculations - Existing Conditions Offsite & Onsite

Drainage Area	SHEET				Tc	SCF			Tc	STORM SEWER				Tc	Total Tc	Total Tc Lag
	L(ft)	Slope	2-Year P	n	(Min.)	L(ft)	Paved?	Slope	(Min.)	L(ft)	Q (cfs)	Pipe Dia (in)	Velocity (fps)	(Min.)	(Min.)	(Min.)
A1	100	1.00%	4.06	0.15	11.5	350	NO	1.00%	3.6	3675	641.40	Varies	6.00	10.21	25.3	15.2
A2	100	1.00%	4.06	0.15	11.5	2065	NO	2.00%	15.1	--	--	--	--	--	26.6	15.9

REACH	JUNCTION		LENGTH	ROUGHNESS		INVERT		AV. SLOPE	AV. BOTTOM	AV. SIDE SLOPE (H:V)	
	UPSTREAM	DOWNSTREAM	(FT)	n	DESCRIPTION	UPSTREAM (FT)	DOWNSTREAM (FT)	(FT/FT)	WIDTH (FT)	RIGHT	LEFT
REACH 1	J.1.	SP #1	765	0.035	GRASS, PASTURE	997.00	990.90	0.0080	10.0	10.0	10.0

HECHMS **DM01**

Drainage Area Calculations - Existing Conditions Analysis (Assumes Fully-Developed/Undetained Conditions Offsite)

Gateway 29 Subdivision, Leander, Williamson County, Texas

NOAA ATLAS 14 HECHMS Rainfall Distribution Precipitation Data for Leander, Williamson County, Texas

Existing Conditions Soils

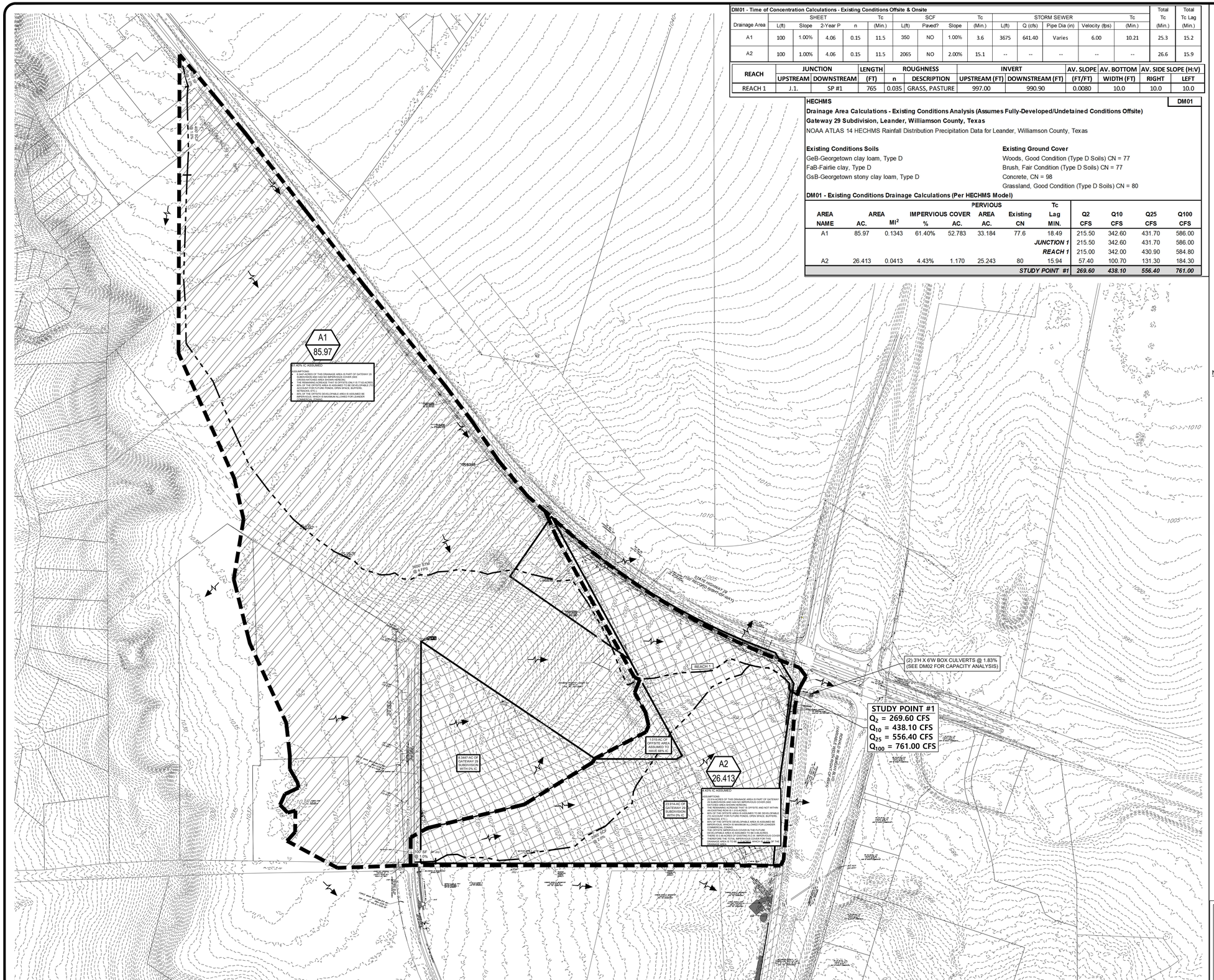
GeB-Georgetown clay loam, Type D
FaB-Fairlie clay, Type D
GsB-Georgetown stony clay loam, Type D

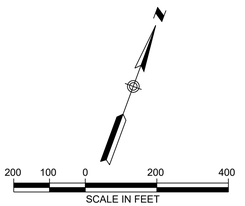
Existing Ground Cover

Woods, Good Condition (Type D Soils) CN = 77
Brush, Fair Condition (Type D Soils) CN = 77
Concrete, CN = 98
Grassland, Good Condition (Type D Soils) CN = 80

DM01 - Existing Conditions Drainage Calculations (Per HECHMS Model)

AREA NAME	AREA AC.	AREA MI²	IMPERVIOUS COVER %	IMPERVIOUS COVER AC.	PERVIOUS AREA AC.	Existing CN	Tc Lag MIN.	Q2 CFS	Q10 CFS	Q25 CFS	Q100 CFS
A1	85.97	0.1343	61.40%	52.783	33.184	77.6	18.49	215.50	342.60	431.70	586.00
							JUNCTION 1	215.50	342.60	431.70	586.00
							REACH 1	215.00	342.00	430.90	584.80
A2	26.413	0.0413	4.43%	1.170	25.243	80	15.94	57.40	100.70	131.30	184.30
							STUDY POINT #1	***269.60***	***438.10***	***556.40***	***761.00***





LEGEND

- OS-A1 / 7.082 / 2.65% IC — DRAINAGE AREA NUMBER AND ACREAGE
- DRAINAGE AREA
- PROPERTY LINE
- TC AND/OR REACH PATH
- XXX' LF SF @ X.XX% — SHEET FLOW
- XXX' LF SCF @ X.XX% — SHALLOW CONCENTRATED FLOW
- FLOW DIRECTION ARROW
- GATEWAY 29 SUBDIVISION AREA WITH 0% IMPERVIOUS COVER
- OFFSITE AREA ASSUMED TO BE 80% DEVELOPABLE WITH 85% IMPERVIOUS COVER ON DEVELOPABLE AREA

NOTES

1. PROJECT LOCATED IN THE EDWARDS AQUIFER RECHARGE ZONE PER TCEQ MAPS.
2. THERE IS NO FLOODPLAIN PRESENT ON THE SITE. THE AREA LIES IN ZONE "X" (AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN), AS IDENTIFIED BY THE FEDERAL EMERGENCY AGENCY, NATIONAL FLOOD INSURANCE PROGRAM, AS SHOWN ON MAP NO., 48491C0275E, EFFECTIVE SEPTEMBER 25, 2008.
3. THIS SUBDIVISION MUST COMPLY WITH THE STANDARDS SET FORTH IN THE SH 29 & RONALD REAGAN BLVD PUD 20-Z-021, ORD. 05-018-00.
4. EXISTING OFFSITE CONTOURS TAKEN FROM CITY OF LEANDER LIDAR.
5. EXISTING ONSITE CONTOURS TAKEN FROM DIAMOND SURVEYING & LJA SURVEY FIELD TOPOGRAPHIC SURVEYS.

NOTE:

ALL OFFSITE & UPGRADIENT CONTRIBUTING DRAINAGE AREAS ARE STUDIED AS FULLY DEVELOPED AND UNDETAINED PER CITY OF LEANDER REQUIREMENTS. SEE ASSUMPTIONS LISTED WITHIN EACH DRAINAGE AREA HEREON.

CITY OF LEANDER APPROVAL

LOCATION OF EXISTING UNDERGROUND AND OVERHEAD UTILITIES ARE APPROXIMATE LOCATIONS ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES PRIOR TO BEGINNING WORK AND SHALL BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT OCCUR.

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

GATEWAY 29 WPAP / SCS
OVERALL SUBDIVISION IMPROVEMENTS
EXISTING CONDITIONS DRAINAGE AREA MAP
LEANDER, WILLIAMSON COUNTY, TEXAS

NO.	DESCRIPTION	BY	DATE

DATE: 03/13/2024
DESIGNED BY: CRH
DRAWN BY: LJA
CHECKED BY: CRH
DRAWING NAME: A633-0401-P-DM01_FULL-DEV-OS_WPAP.DWG

03/13/2024

STATE OF TEXAS
CHARLES R. HAGER V
127034
LICENSED PROFESSIONAL ENGINEER

LJA Engineering, Inc.
7500 Rialto Boulevard
Building II, Suite 100
Austin, Texas 78735
Phone 512.439.4700
Fax 512.439.4716
FRN-F-1386

JOB NUMBER: A633-0401

DM01

SHEET NO. 18 OF 90 SHEETS

CITY OF LEANDER PROJECT No. SD-23-0140

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Plot Date/Time: Mar. 13, 24 - 14:36:35

HECHMS											DM02

Drainage Area Calculations - Fully-Developed/Undetained Offsite & Developed/Detained Conditions On-Site
Gateway 29 Subdivision, Leander, Williamson County, Texas
NOAA ATLAS 14 HECHMS Rainfall Distribution Precipitation Data for Leander, Williamson County, Texas

Existing Conditions Soils
FaB-Fairlie clay, Type D
FaA-Fairlie Clay, Type D
GsB-Georgetown stony clay loam, type D

Existing Ground Cover / **Developed Ground Cover**
Woods, Good Condition (Type D Soils) CN = 77
Brush, Fair Condition (Type D Soils) CN = 77
Concrete, CN = 98
Grassland, Good Condition (Type D Soils) CN = 80

DM02.2 - Developed Conditions Drainage Calculations (Per HECHMS Model)

AREA NAME	AREA AC.	AREA MI^2	IMPERVIOUS COVER %	IMPERVIOUS COVER AC.	PERVIOUS AREA AC.	Ex. Composite CN	Tc Lag MIN.	Q2 CFS	Q10 CFS	Q25 CFS	Q100 CFS
OS-B1	0.569	0.0009	68.04%	0.387	0.182	80	3.0	2.800	4.500	5.700	7.700
							JUNCTION OS-B1	*2.800*	*4.500*	*5.700*	*7.700*
							REACH OS-B1	*2.800*	*4.500*	*5.700*	*7.700*
B1	7.820	0.0122	63.93%	4.999	2.821	80	3.0	39.100	61.400	77.000	104.100
							POND D (IN)	*39.100*	*61.400*	*77.000*	*104.100*
							POND D (OUT/DETAINED)	*17.000*	*29.200*	*38.900*	*59.000*
OS-B2	0.593	0.0009	75.82%	0.450	0.143	80	3.0	2.900	4.600	5.800	7.700
							JUNCTION OS-B2	2.900	4.600	5.800	7.700
							REACH OS-B2	2.900	4.500	5.700	7.600
B2	5.029	0.0079	4.85%	0.244	4.785	80	3.0	17.70	33.30	44.10	62.80
							JUNCTION B1	*33.300*	*59.400*	*78.600*	*115.400*
							REACH B1	*33.300*	*59.600*	*78.800*	*116.000*
OS-A1	75.560	0.1181	68.00%	51.381	24.179	77.7	18.5	195.000	306.600	384.700	519.600
							JUNCTION 1	*217.800*	*344.900*	*433.900*	*589.100*
							REACH 1	*217.800*	*344.600*	*433.700*	*589.100*
A3	3.850	0.0060	80.00%	3.080	0.770	80	3.0	20.30	31.20	38.80	52.00
							JUNCTION A3	*20.30*	*31.20*	*38.80*	*52.00*
							REACH A3	*20.10*	*31.00*	*38.50*	*51.50*
							JUNCTION 2	*222.30*	*352.10*	*443.00*	*601.50*
							REACH 2	*222.30*	*351.90*	*442.90*	*601.50*
A1	5.777	0.0090	80.00%	4.622	1.155	80	3.0	30.500	46.800	58.200	77.900
							POND A (IN)	*30.500*	*46.800*	*58.200*	*77.900*
							POND A (OUT/DETAINED)	*8.800*	*19.200*	*31.000*	*53.100*
							JUNCTION 3	*231.00*	*368.50*	*465.20*	*632.90*
							REACH 3	*231.10*	*368.40*	*465.20*	*632.60*
A2	11.694	0.0183	77.50%	9.063	2.631	80	3.0	61.500	94.800	118.000	158.100
							POND B (IN)	*61.500*	*94.800*	*118.000*	*158.100*
							POND B (OUT/DETAINED)	*12.100*	*37.600*	*63.300*	*113.100*
OS-A2	0.878	0.0014	72.19%	0.634	0.244	80	3.0	4.600	7.200	9.000	12.000
							JUNCTION 4	*4.600*	*7.200*	*9.000*	*12.000*
							REACH 4	*4.600*	*7.100*	*8.800*	*11.800*
OS-A3	0.827	0.00129	22.51%	0.186	0.641	80	3.0	3.500	5.900	7.600	10.600
							STUDY POINT #1	***245.20***	***405.40***	***517.10***	***705.90***

Culvert Data Summary	2 - 6'x3'	4 - 6'x3'
Q Total (cfs)	705.9	693.9
Q Each Pipe (cfs)	352.95	173.475
Flow Area (ft^2)	16.55	10.04
Velocity V1 (fps)	9.64	6.82
Velocity V2 (fps)	19.6	9.64
n-value	0.012	0.012
Hydraulic Radius (ft)	1.436	1.07
Slope (ft/ft)	0.0183	0.0183
Wetted Perimeter (ft)	11.52	9.35
Length (ft)	55	21
Ke	0.2	
g	32.2	
Pressure P1	0	
Pressure P2	0	
Elevation U.S. Z1 (ft)	H + 990.9	
Elevation D.S. Z2 (ft)	989.5	

MINOR LOSS @ CONTRACTION
COA DCM 5.5.2.C: Gradual Contraction. The headlosses due to a gradual contraction are determined by the following equation with a constant headloss coefficient.

$H_{gc} = 0.04 \times V^2 / 2g$
V = Velocity in Smaller Pipe = 19.6 fps
$H_{gc} = 0.04 \times 384.16 / 64.4$
$H_{gc} = 0.24$ ft

FRICTION LOSS (Hf):
2 - 6'x3' RCBC Section
Q = (1.49/n)*A*R^(2/3)*S^(1/2)
S^(1/2) = Q / ((1.49/n) * A * R^(2/3))
S^(1/2) = Q * n / (1.49 * A * R^(2/3))
S^(1/2) = 4.2354 / 31.3873
S^(1/2) = 0.13494
S1 = 0.018209
4 - 6'x3' RCBC Section
Q = (1.49/n)*A*R^(2/3)*S^(1/2)
S^(1/2) = Q / ((1.49/n) * A * R^(2/3))
S^(1/2) = Q * n / (1.49 * A * R^(2/3))
S^(1/2) = 2.0817 / 15.64981
S^(1/2) = 0.133018
S2 = 0.017694
Hf = S1*L1 + S2*L2
Hf = 1.36 ft

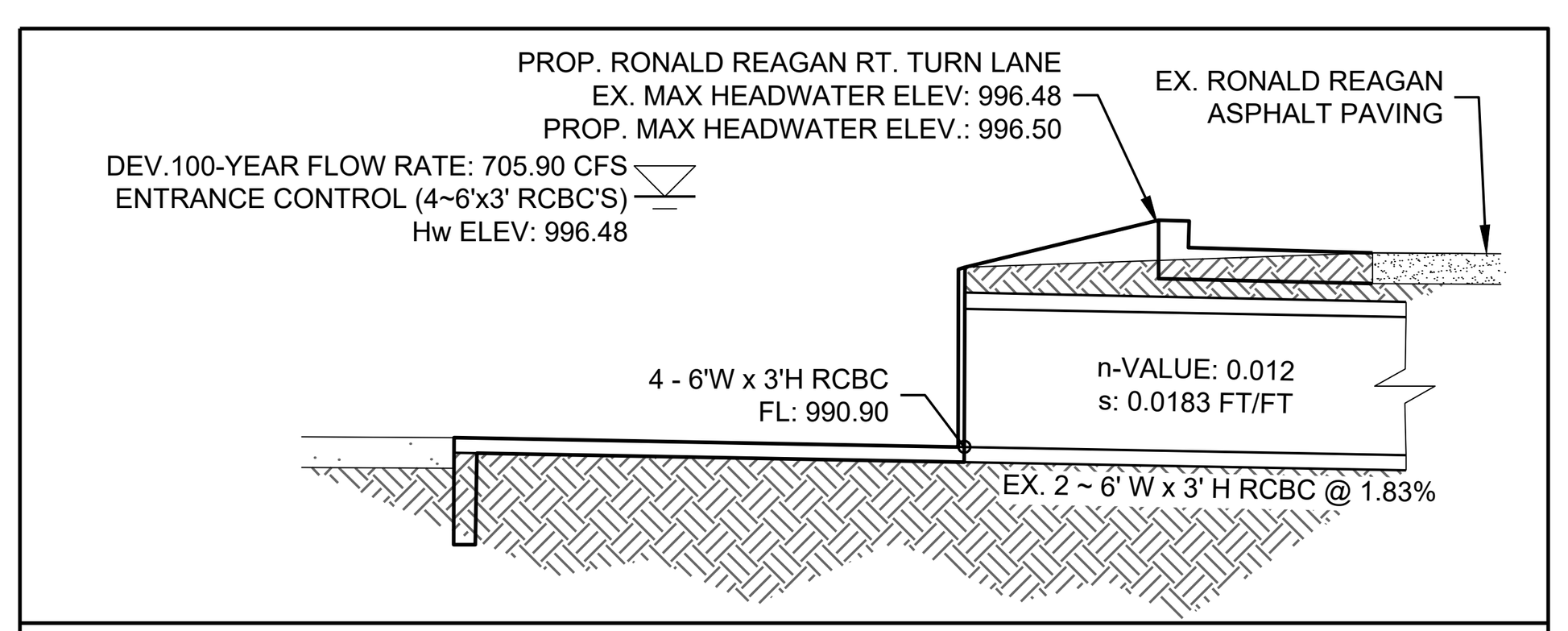
ENTRANCE LOSS:
4 - 6'x3' RCBC
$He = Ke (V2^2 - V1^2)/2g$
He = 9.298867 / 64.4
He = 0.14 ft

TOTAL HEAD LOSS:
H = Hf + He
Hf = 1.36 ft
He = 0.14 ft
Hgc = 0.24 ft
H = 1.74 ft

BERNOULLI'S ENERGY EQUATION:
V1^2/2g + P1/γ + Z1 = V2^2/2g + P2/γ + Z2 + Headloss
Z1 = V2^2/2g + P2/γ + Z2 + Headloss - P1/γ - V1^2/2g
H + 990.9 = 384.16/64.4 + 0 + 989.5 + 1.74 - 0 - 46.5124/64.4 - H
H = 5.965217 + 0 + 989.5 + 1.74 - 0 - 0.722242 - 990.9
H = 5.58 ft

HEADWATER ELEVATION:
Headwater Elevation = U.S. FL EL + H
= 990.9 + 5.58
Headwater Elevation = 996.48 FT

Ex. High Point at Upstream Culvert	=	996.50 FT
Is High Point Elev > Headwater Elev?	=	YES

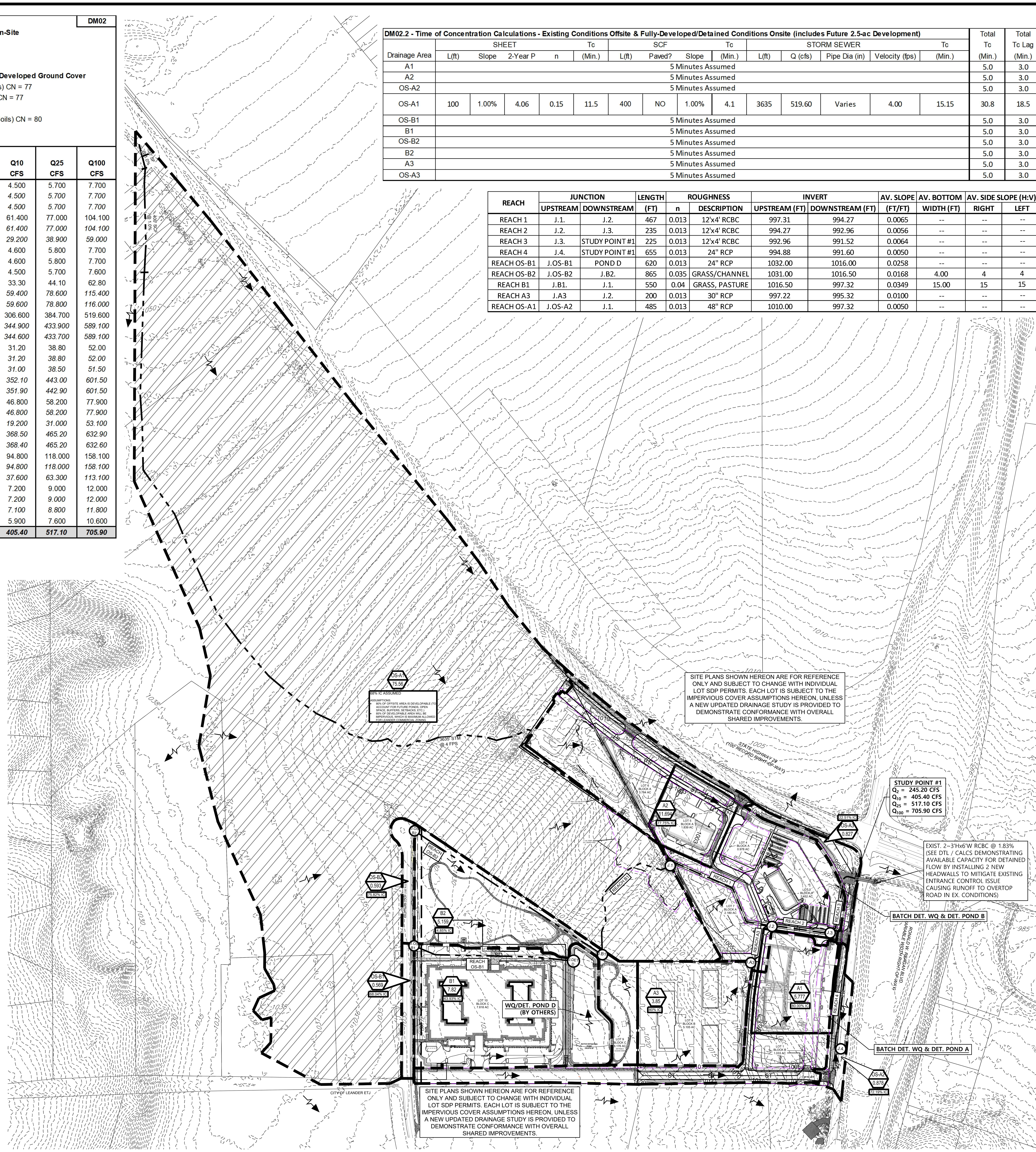


6' W x 3' H RCBC HEADWATER SUMMARY DETAIL
NTS

DM02.2 - Time of Concentration Calculations - Existing Conditions Offsite & Fully-Developed/Detained Conditions Onsite (includes Future 2.5-ac Development)

Drainage Area	SHEET L(ft)	SHEET Slope	SHEET 2-Year P	SHEET n	Tc (Min.)	SCF L(ft)	SCF Paved?	SCF Slope	Tc (Min.)	STORM SEWER L(ft)	STORM SEWER Q (cfs)	STORM SEWER Pipe Dia (in)	STORM SEWER Velocity (fps)	Tc (Min.)	Total Tc (Min.)	Total Tc Lag (Min.)
A1	5 Minutes Assumed														5.0	3.0
A2	5 Minutes Assumed														5.0	3.0
OS-A2	5 Minutes Assumed														5.0	3.0
OS-A1	100	1.00%	4.06	0.15	11.5	400	NO	1.00%	4.1	3635	519.60	Varies	4.00	15.15	30.8	18.5
OS-B1	5 Minutes Assumed														5.0	3.0
B1	5 Minutes Assumed														5.0	3.0
OS-B2	5 Minutes Assumed														5.0	3.0
B2	5 Minutes Assumed														5.0	3.0
A3	5 Minutes Assumed														5.0	3.0
OS-A3	5 Minutes Assumed														5.0	3.0

REACH	JUNCTION UPSTREAM	JUNCTION DOWNSTREAM	LENGTH (FT)	ROUGHNESS n	ROUGHNESS DESCRIPTION	INVERT UPSTREAM (FT)	INVERT DOWNSTREAM (FT)	AV. SLOPE (FT/FT)	AV. BOTTOM WIDTH (FT)	AV. SIDE SLOPE (H:V) RIGHT	AV. SIDE SLOPE (H:V) LEFT
REACH 1	J.1.	J.2.	467	0.013	12'x4' RCBC	997.31	994.27	0.0065	--	--	--
REACH 2	J.2.	J.3.	235	0.013	12'x4' RCBC	994.27	992.96	0.0056	--	--	--
REACH 3	J.3.	STUDY POINT #1	225	0.013	12'x4' RCBC	992.96	991.52	0.0064	--	--	--
REACH 4	J.4.	STUDY POINT #1	655	0.013	24" RCP	994.88	991.60	0.0050	--	--	--
REACH OS-B1	J.OS-B1	POND D	620	0.013	24" RCP	1032.00	1016.00	0.0258	--	--	--
REACH OS-B2	J.OS-B2	J.B2.	865	0.035	GRASS/CHANNEL	1031.00	1016.50	0.0168	4.00	4	4
REACH B1	J.B1.	J.1.	550	0.04	GRASS, PASTURE	1016.50	997.32	0.0349	15.00	15	15
REACH A3	J.A3	J.2.	200	0.013	30" RCP	997.22	995.32	0.0100	--	--	--
REACH OS-A1	J.OS-A2	J.1.	485	0.013	48" RCP	1010.00	997.32	0.0050	--	--	--



200 100 0 200 400
SCALE IN FEET

LEGEND

- OS-A1 / 7.082 / 2.65% IC — DRAINAGE AREA NUMBER AND ACREAGE
- DRAINAGE AREA
- PROPERTY LINE
- TC AND/OR REACH PATH
- XXX' LF SF @ X.XX% — SHEET FLOW
- XXX' LF SCF @ X.XX% — SHALLOW CONCENTRATED FLOW
- OFFSITE AREA ASSUMED TO BE 80% DEVELOPABLE WITH 85% IMPERVIOUS COVER ON DEVELOPABLE AREA
- Q25 = 16.64 cfs / Q100 = 23.62 cfs — Q_{25} / Q_{100}
- FLOW DIRECTION ARROW

NOTES
1. PROJECT LOCATED IN THE EDWARDS AQUIFER RECHARGE ZONE PER TCEQ MAPS.
2. THERE IS NO FLOODPLAIN PRESENT ON THE SITE. THE AREA LIES IN ZONE "X" (AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN), AS IDENTIFIED BY THE FEDERAL EMERGENCY AGENCY, NATIONAL FLOOD INSURANCE PROGRAM, AS SHOWN ON MAP NO., 48491C0275E, EFFECTIVE SEPTEMBER 25, 2008.
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4. EXISTING OFFSITE CONTOURS TAKEN FROM CITY OF LEANDER LIDAR.
5. EXISTING ONSITE CONTOURS TAKEN FROM DIAMOND SURVEYING & LJA SURVEY FIELD TOPOGRAPHIC SURVEYS.

NOTE:

THIS DEVELOPED CONDITIONS DRAINAGE ANALYSIS ASSUMES A FULL-BUILD OUT OF THE GATEWAY 29 SUBDIVISION AND THE ADJACENT 2.45-AC PARCEL (ALONG SH 29) ONLY.

ALL OTHER OFFSITE & UPGRADIENT CONTRIBUTING DRAINAGE AREAS ARE STUDIED AS FULLY DEVELOPED AND UNDETAINED PER CITY OF LEANDER REQUIREMENTS.

Overall Drainage Study Point Summary		
Fully-Dev./Undet. Offsite & Dev/Det. Conditions On-Site		
Study Point #1		
Storm Event	EXISTING CONDITIONS DM01	DEVELOPED CONDITIONS DM02
2-Year	269.60	245.20
10-Year	438.10	405.40
25-Year	556.40	517.10
100-Year	761.00	705.90

CITY OF LEANDER APPROVAL

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GATEWAY 29 WPAP / SCS
OVERALL SUBDIVISION IMPROVEMENTS
DEVELOPED CONDITIONS DRAINAGE AREA MAP
LEANDER, WILLIAMSON COUNTY, TEXAS

NO.	DESCRIPTION	BY	DATE

REVISIONS

DATE: 03/13/2024
DESIGNED BY: CRH
DRAWN BY: LJA
CHECKED BY: CRH
DRAWING NAME: A633-0401-P-DM02_FULLY_DEV_OS_WPAP.DWG

03/13/2024
STATE OF TEXAS
CHARLES R. HAGER V
127034
LICENSED PROFESSIONAL ENGINEER

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Austin, Texas 78735
Phone 512.439.4700
Fax 512.439.4716
FRN-F-1386

JOB NUMBER: A633-0401

DM02

SHEET NO. 19 OF 90 SHEETS

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Plot Date/Time: Mar. 14, 24 - 14:16:18

RATIONAL METHOD - City of Leander Drainage Criteria and Design Standards

Drainage Area Calculations

City of Leander Park ATLAS 14 Intensity-Duration-Frequency Curves				
	2 Yr	10 Yr	25 Yr	100 Yr
a	58	77	89	106.00
b	11.27	10.53	10.16	9.46
c	0.805	0.775	0.759	0.732

Coefficients for Composite Analysis		
	25-YR	100-YR
DEVELOPE		
Asphaltic	0.86	0.95
Concrete	0.88	0.97
GRASS,		
Avg, 2-7%	0.39	0.46

$Q = CiA$

Where:

Q = peak runoff in cubic feet per second.
C = the coefficient of runoff
A = the area in acres contributing runoff to the point of design.
i = the average intensity of rainfall in inches per hour

$i = a/(t+b)^c$

Where,
t = Time of concentration for the entire drainage area of interest

T(sht flow) = Ln/(42s$^{0.5}$) T(shallow concentrated flow) = Ln/(60

where,
L = Length of the reach in ft.
n = Manning's n
s = Slope of the ground in ft/ft

Developed Conditions Drainage Calculations (Site Calculations)

DRAINAGE AREA	AREA (AC)	PERV. (AC)	IMP. (AC)	C25	C100	ToC (min.)	I25	I100	Q25 (cfs)	Q100 (cfs)
OS-1	2.262	0.226	2.036	0.813	0.901	5	11.30	15.00	20.79	30.57
OS-2	0.725	0.072	0.652	0.813	0.901	5	11.30	15.00	6.66	9.79
OS-3	8.449	8.396	0.054	0.393	0.463	21	6.58	8.75	21.86	34.23
JUNC. 1	SEE JUNCTION 1 - SHEET DM02								433.90	589.10
LOT 2	2.257	0.207	2.051	0.817	0.905	5	11.30	15.00	20.85	30.65
A1-B	0.734	0.734	0.000	0.390	0.460	5	11.30	15.00	3.23	5.06
A2	0.135	0.013	0.123	0.816	0.904	5	11.30	15.00	1.25	1.83
A3	1.284	0.612	0.672	0.636	0.716	5	11.30	15.00	9.23	13.79
A4	0.595	0.235	0.360	0.675	0.757	5	11.30	15.00	4.54	6.76
A5	0.392	0.112	0.279	0.725	0.809	5	11.30	15.00	3.21	4.76
A (POND)	0.494	0.494	0.000	0.390	0.460	5	11.30	15.00	2.18	3.41
OS-A*	0.895	0.272	0.623	0.717	0.801	5	11.30	15.00	7.26	10.75
B1-A	0.445	0.206	0.238	0.642	0.723	5	11.30	15.00	3.23	4.82
B1-B	0.669	0.251	0.418	0.684	0.766	5	11.30	15.00	5.17	7.68
LOT 5	1.499	0.148	1.351	0.814	0.902	5	11.30	15.00	13.78	20.27
B1-C	0.716	0.716	0.000	0.390	0.460	5	11.30	15.00	3.15	4.94
B2	0.631	0.218	0.413	0.697	0.780	5	11.30	15.00	4.97	7.39
B3	0.577	0.370	0.207	0.558	0.635	5	11.30	15.00	3.64	5.50
B4-A	0.145	0.145	0.000	0.390	0.460	5	11.30	15.00	0.64	1.00
B4-B	0.379	0.379	0.000	0.390	0.460	5	11.30	15.00	1.67	2.62
LOT 3	1.548	0.125	1.423	0.822	0.910	5	11.30	15.00	14.39	21.14
B6	0.469	0.373	0.096	0.486	0.560	5	11.30	15.00	2.58	3.94
B7	1.720	1.027	0.693	0.579	0.657	5	11.30	15.00	11.26	16.96
B (POND)	0.594	0.533	0.060	0.438	0.510	5	11.30	15.00	2.94	4.54
OS-B**	1.130	0.941	0.189	0.469	0.542	5	11.30	15.00	5.99	9.19

NOTE:
1. *DRAINAGE AREA OS-A DOES NOT DRAIN TO WQ/DET. BASIN A & THEREFORE COMPENSITORY WATER QUALITY TREATMENT IS PROVIDED IN BASIN A.

2. **DRAINAGE AREA OS-B DOES NOT DRAIN TO WQ/DET. BASIN B & THEREFORE COMPENSITORY WATER QUALITY TREATMENT IS PROVIDED IN BASIN B.

GRATE INLET CALCULATIONS FOR 100 YR STORM (WITH 50% REDUCTION)

MODELED AS AN ORIFICE $Q=C_O A_G (2\ g\ d)^{.5}$, C_O =0.67 MODELED AS A WEIR $Q=C_w P\ d^{1.5}$, Cw =3.0

AREA #	Q100 (CFS)	Flow Area (Sq. In.)	Inlet Size	A (SF)	A x 50% (SF)	P (FT)	$d_{ORIFICE}$ (FT)	d_{WEIR} (FT)	d_{allow} (FT)	Is $d_{orifice}$ and/or $d_{weir} > d_{allow}$?
OS-3	34.23	1728	48"x48"	12.00	6.00	16.00	1.13	0.80	2.50	NO
B1-A	4.82	1728	48"x48"	12.00	6.00	16.00	0.02	0.22	0.50	NO
B1-B	7.68	1728	48"x48"	12.00	6.00	16.00	0.06	0.29	0.50	NO
B1-C	4.94	1728	48"x48"	12.00	6.00	16.00	0.02	0.22	0.50	NO

SUMP INLET CALCULATIONS FOR 100YR STORM

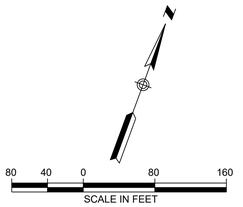
Weir Equation $Q = C_w h^{1.5} L$ C_w = 3.0

If $h_{water} > 0.5$, use orifice equation $Q=C_O A_G (2\ g\ d)^{.5}$, C_O =0.67, A_G = Lx6"/12

Note: Per Standard Curb Inlet Detail, Curb Inlets have 6" depression from the curb gutter with a distance of 11.75" from the lip to top of curb (h_{allow}). The inlet opening has a height of 6". The centroid of the inlet opening is 3" above the inlet lip.

INLET NO.	FLOW (CFS)	Q_{BYPASS} (CFS)	Q_{TOTAL} (CFS)	L (FT)	WEIR CALC Q/L or A (CFS/LF)	WEIR CALC h_{weir}(FT) (a+Yo)	ORIFICE CALC A_g (SF)	ORIFICE CALC $h_{orifice}$ (FT)	h_{allow} (FT)	INLET TYPE
A3	13.8	0.0	13.8	9.0	1.53	0.64	4.50	0.58	0.98	10' Curb Inlet
A4	6.8	0.0	6.8	9.0	0.75	0.40	4.50	0.33	0.98	10' Curb Inlet
A5	4.8	0.0	4.8	9.0	0.53	0.31	4.50	0.29	0.98	10' Curb Inlet
B3	5.5	0.0	5.5	9.0	0.61	0.35	4.50	0.30	0.98	10' Curb Inlet
B6	3.9	0.0	3.9	9.0	0.44	0.28	4.50	0.28	0.98	10' Curb Inlet
B7	17.0	0.0	17.0	9.0	1.88	0.73	4.50	0.74	0.98	10' Curb Inlet
OS-A*	10.8	0.0	10.8	9.0	1.19	0.54	4.50	0.45	0.98	10' Curb Inlet





LEGEND

- OS-A* / 7.082 / 0.65% IC — DRAINAGE AREA NUMBER AND ACREAGE
- DRAINAGE AREA
- PROPERTY LINE
- TC AND/OR REACH PATH
- XXX' LF SF @ X.XX% — SHEET FLOW
- XXX' LF SCF @ X.XX% — SHALLOW CONCENTRATED FLOW
- Q100: 7.05 CFS — 100 YEAR FLOW RATE
- FLOW DIRECTION ARROW

NOTES
1. PROJECT LOCATED IN THE EDWARDS AQUIFER RECHARGE ZONE PER TCEQ MAPS.
2. THERE IS NO FLOODPLAIN PRESENT ON THE SITE. THE AREA LIES IN ZONE "X" (AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN), AS IDENTIFIED BY THE FEDERAL EMERGENCY AGENCY, NATIONAL FLOOD INSURANCE PROGRAM, AS SHOWN ON MAP NO., 48491C0275E, EFFECTIVE SEPTEMBER 25, 2008.
3. THIS SUBDIVISION MUST COMPLY WITH THE STANDARDS SET FORTH IN THE SH 29 & RONALD REAGAN BLVD PUD 20-Z-021, ORD. 05-018-00.
4. EXISTING OFFSITE CONTOURS TAKEN FROM CITY OF LEANDER LIDAR.
5. EXISTING ONSITE CONTOURS TAKEN FROM DIAMOND SURVEYING & LJA SURVEY FIELD TOPOGRAPHIC SURVEYS.

CITY OF LEANDER APPROVAL

LOCATION OF EXISTING UNDERGROUND AND OVERHEAD UTILITIES ARE APPROXIMATE LOCATIONS ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES PRIOR TO BEGINNING WORK AND SHALL BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT OCCUR.

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

GATEWAY 29 WPAP / SCS
OVERALL SUBDIVISION IMPROVEMENTS
ONSITE DRAINAGE AREA MAP
LEANDER, WILLIAMSON COUNTY, TEXAS

NO.	DESCRIPTION	BY	DATE
	REVISIONS		

DATE: 03/13/2024
DESIGNED BY: CRH
DRAWN BY: LJA
CHECKED BY: CRH
DRAWING NAME: A633-0401-P-DM03_WPAP.dwg

03/13/2024

STATE OF TEXAS
CHARLES R. HAGER
127034
LICENSED PROFESSIONAL ENGINEER

LJA Engineering, Inc.
7500 Rialto Boulevard
Building II, Suite 100
Austin, Texas 78735
Phone 512.439.4700
Fax 512.439.4716
FRN-F-1386

JOB NUMBER: A633-0401

DM03

SHEET NO. 20 OF 90 SHEETS

CITY OF LEANDER PROJECT No. SD-23-0140

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User: cgehringer
Last Modified: Mar. 13, 24 - 14:21
Plot Date/Time: Mar. 13, 24 - 14:40:38

LOT 5 ONSITE DRAINAGE AREA CALCULATIONS

RATIONAL METHOD - City of Leander Drainage Criteria and Design Standards

Drainage Area Calculations

City of Leander Park ATLAS 14 Intensity-Duration-Frequency Curves

	2 Yr	10 Yr	25 Yr	100 Yr
a	58	77	89	106.00
b	11.27	10.53	10.16	9.46
c	0.805	0.775	0.759	0.732

Rational Method Runoff Coefficients for Composite Analysis

	25-YR	100-YR
DEVELOPED		
Asphaltic	0.86	0.95
Concrete	0.88	0.97
GRASS, Good Cond.		
Avg. 2-7%	0.39	0.46

$Q = CiA$

Where:

Q = peak runoff in cubic feet per second.
C = the coefficient of runoff
A = the area in acres contributing runoff to the point of design.
i = the average intensity of rainfall in inches per hour

$i = a/(t+b)^c$

Where,

t = Time of concentration for the entire drainage area of interest

T(sht flow) = $Ln/(42s^{0.5})$ T(shallow concentrated flow) = $Ln/(60s^{0.5})$

where,

L = Length of the reach in ft.
n = Manning's n
s = Slope of the ground in ft/ft

Developed Conditions Drainage Calculations (Site Calculations)

DRAINAGE AREA	AREA (AC)	PERV. (AC)	IMP. (AC)	C25	C100	ToC (min.)	I25	I100	Q25 (cfs)	Q100 (cfs)
A1	0.219	0.049	0.170	0.755	0.841	5	11.30	15.00	1.87	2.76
A2	0.276	0.011	0.265	0.841	0.930	5	11.30	15.00	2.62	3.85
A3	0.285	0.027	0.259	0.816	0.904	5	11.30	15.00	2.63	3.87
A4	0.254	0.009	0.245	0.844	0.933	5	11.30	15.00	2.42	3.56
B1	0.069	0.012	0.057	0.778	0.865	5	11.30	15.00	0.61	0.89
B2	0.396	0.041	0.355	0.812	0.900	5	11.30	15.00	3.63	5.34

GRATE INLET CALCULATIONS FOR 100 YR STORM (WITH 50% REDUCTION)

MODELED AS AN ORIFICE $Q=C_G A_G (2\ g\ d)^{.5}$, $C_G = 0.67$ **MODELED AS A WEIR** $Q=C_w P\ d^{1.5}$, $Cw = 3.0$

AREA #	Q100 (CFS)	Flow Area (Sq. In.)	Inlet Size	A (SF)	A x 50% (SF)	P (FT)	$d_{ORIFICE}$ (FT)	d_{WEIR} (FT)	d_{allow} (FT)	Is $d_{orifice}$ and/or $d_{weir} > d_{allow}$?
A1	2.76	432	**24"x24"**	3.00	1.50	16.00	0.12	0.15	0.50	NO
A2	3.85	432	**24"x24"**	3.00	1.50	16.00	0.23	0.19	0.50	NO
A3	3.87	972	**36"x36"**	6.75	3.38	16.00	0.05	0.19	0.50	NO
A4	3.56	1728	**48"x48"**	12.00	6.00	16.00	0.01	0.18	0.50	NO
B2	5.34	432	**24"x24"**	3.00	1.50	16.00	0.44	0.23	1.50	NO

SUMP INLET CALCULATIONS FOR 100YR STORM

Weir Equation $Q = C_w h^{1.5} L$

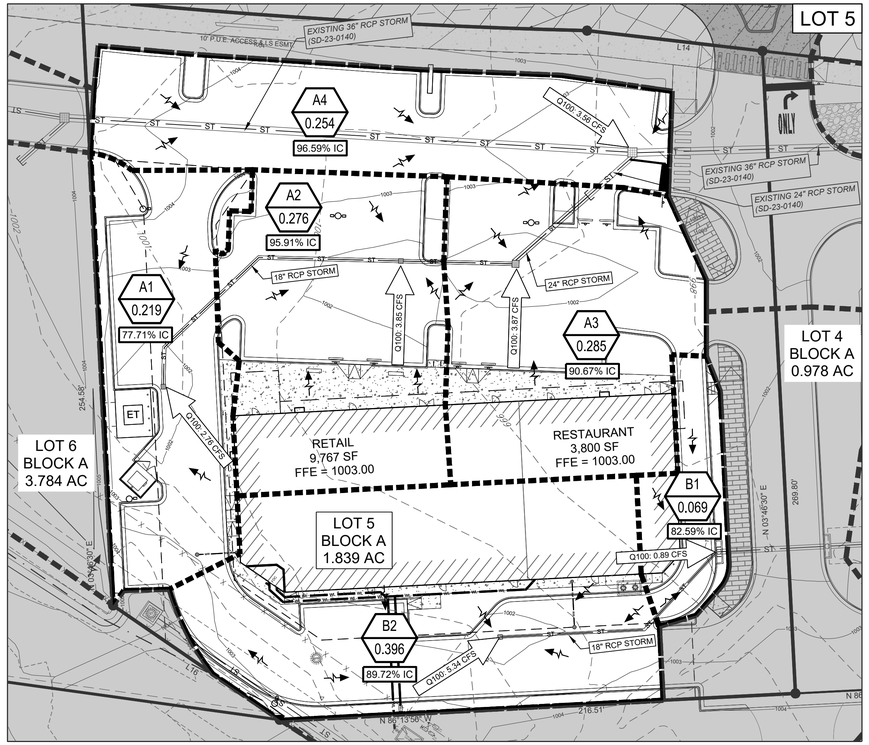
$C_w = 3.0$

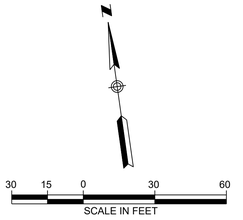
If $h_{WATER} > 0.5$, use orifice equation

$Q=C_G A_G (2\ g\ d)^{.5}$, $C_G = 0.67$, $A_G = Lx6"/12$

Note: Per Standard Curb Inlet Detail, Curb Inlets have 6" depression from the curb gutter with a distance of 11.75" from the lip to top of curb (h_{allow}). The inlet opening has a height of 6". The centroid of the inlet opening is 3" above the inlet lip.

INLET NO.	FLOW (CFS)	Q_{BYPASS} (CFS)	Q_{TOTAL} (CFS)	L (FT)	WEIR CALC Q/L or A (CFS/LF)	WEIR CALC h_{weir}(FT) (a+Yo)	ORIFICE CALC A_E (SF)	ORIFICE CALC $h_{orifice}$ (FT)	h_{allow} (FT)	INLET TYPE
B1	1.76	0.0	1.8	9.0	0.20	0.16	4.50	0.26	0.98	10' Curb Inlet





LEGEND

- A5-A / 7.082 / 7.65% IC — DRAINAGE AREA NUMBER AND ACREAGE
- DRAINAGE AREA
- PROPERTY LINE
- TC AND/OR REACH PATH
- XXX' LF SF @ X.XX% — SHEET FLOW
- XXX' LF SCF @ X.XX% — SHALLOW CONCENTRATED FLOW
- Q100: 7.05 CFS — 100 YEAR FLOW RATE
- FLOW DIRECTION ARROW

NOTES

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2. THERE IS NO FLOODPLAIN PRESENT ON THE SITE. THE AREA LIES IN ZONE "X" (AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN), AS IDENTIFIED BY THE FEDERAL EMERGENCY AGENCY, NATIONAL FLOOD INSURANCE PROGRAM, AS SHOWN ON MAP NO., 48491C0275E, EFFECTIVE SEPTEMBER 25, 2008.
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4. EXISTING OFFSITE CONTOURS TAKEN FROM CITY OF LEANDER LIDAR.
5. EXISTING ONSITE CONTOURS TAKEN FROM DIAMOND SURVEYING & LJA SURVEY FIELD TOPOGRAPHIC SURVEYS.

LOT 3 ONSITE DRAINAGE AREA CALCULATIONS

RATIONAL METHOD - City of Leander Drainage Criteria and Design Standards

Drainage Area Calculations

City of Leander Park ATLAS 14 Intensity-Duration-Frequency Curves

	2 Yr	10 Yr	25 Yr	100 Yr
a	58	77	89	106.00
b	11.27	10.53	10.16	9.46
c	0.805	0.775	0.759	0.732

Rational Method Runoff Coefficients for Composite Analysis

	25-YR	100-YR
DEVELOPED		
Asphaltic	0.86	0.95
Concrete	0.88	0.97
GRASS, Good Cond.		
Avg. 2-7%	0.39	0.46

$Q = CiA$

Where:

Q = peak runoff in cubic feet per second.
C = the coefficient of runoff
A = the area in acres contributing runoff to the point of design.
i = the average intensity of rainfall in inches per hour

$i = a/(t+b)^c$

Where,

t = Time of concentration for the entire drainage area of interest

T(sht flow) = $Ln/(42s^{0.5})$ T(shallow concentrated flow) = $Ln/(60s^{0.5})$

where,

L = Length of the reach in ft.
n = Manning's n
s = Slope of the ground in ft/ft

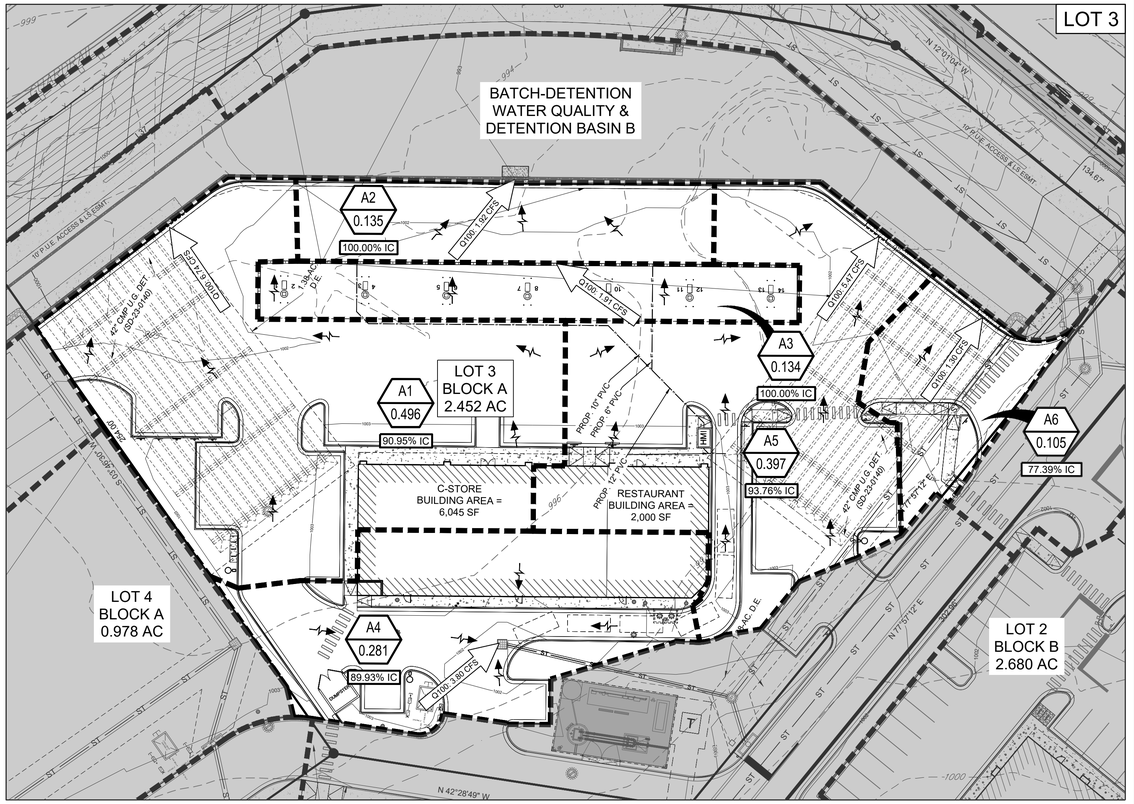
Developed Conditions Drainage Calculations (Site Calculations)

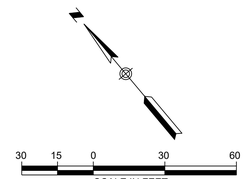
DRAINAGE AREA	AREA (AC)	PERV. (AC)	IMP. (AC)	C25	C100	ToC (min.)	I25	I100	Q25 (cfs)	Q100 (cfs)
A1	0.496	0.045	0.451	0.817	0.906	5	11.30	15.00	4.59	6.74
A2	0.135	0.000	0.135	0.860	0.950	5	11.30	15.00	1.31	1.92
A3	0.134	0.000	0.134	0.860	0.950	5	11.30	15.00	1.30	1.91
A4	0.281	0.028	0.253	0.813	0.901	5	11.30	15.00	2.58	3.80
A5	0.397	0.025	0.372	0.831	0.919	5	11.30	15.00	3.73	5.47
A6	0.105	0.027	0.078	0.737	0.822	5	11.30	15.00	0.88	1.30

GRATE INLET CALCULATIONS FOR 100 YR STORM (WITH 50% REDUCTION)

MODELED AS AN ORIFICE $Q=C_G A_G (2\ g\ d)^{.5}$, $C_G = 0.67$ **MODELED AS A WEIR** $Q=C_w P\ d^{1.5}$, $Cw = 3.0$

AREA #	Q100 (CFS)	Flow Area (Sq. In.)	Inlet Size	A (SF)	A x 50% (SF)	P (FT)	$d_{ORIFICE}$ (FT)	d_{WEIR} (FT)	d_{allow} (FT)	Is $d_{orifice}$ and/or $d_{weir} > d_{allow}$?
A4	3.80	1728	**48"x48"**	12.00	6.00	16.00	0.01	0.18	0.50	NO
A2	1.92	44496	**VARIABLE**	309.00	154.50	24.00	0.00	0.09	0.50	NO





CITY OF LEANDER APPROVAL

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CITY OF LEANDER PROJECT No. SD-23-0140

GATEWAY 29 WPAP / SCS
OVERALL SUBDIVISION IMPROVEMENTS
ONSITE DRAINAGE AREA MAP LOTS 3 & 5

LEANDER, WILLIAMSON COUNTY, TEXAS

NO.	REVISIONS DESCRIPTION	BY	DATE

DATE: 03/13/2024
DESIGNED BY: CRH
DRAWN BY: LJA
CHECKED BY: CRH
DRAWING NAME: A633-0401-P-DM03_WPAP.dwg

03/13/2024

STATE OF TEXAS — CHARLES R. HAGER — 127034 — LICENSED PROFESSIONAL ENGINEER

LJA Engineering, Inc.
7500 Rialto Boulevard
Building II, Suite 100
Austin, Texas 78735
Phone 512.439.4700
Fax 512.439.4716
FRN-F-1386

JOB NUMBER: A633-0401

DM03-A

SHEET NO. 21 OF 90 SHEETS

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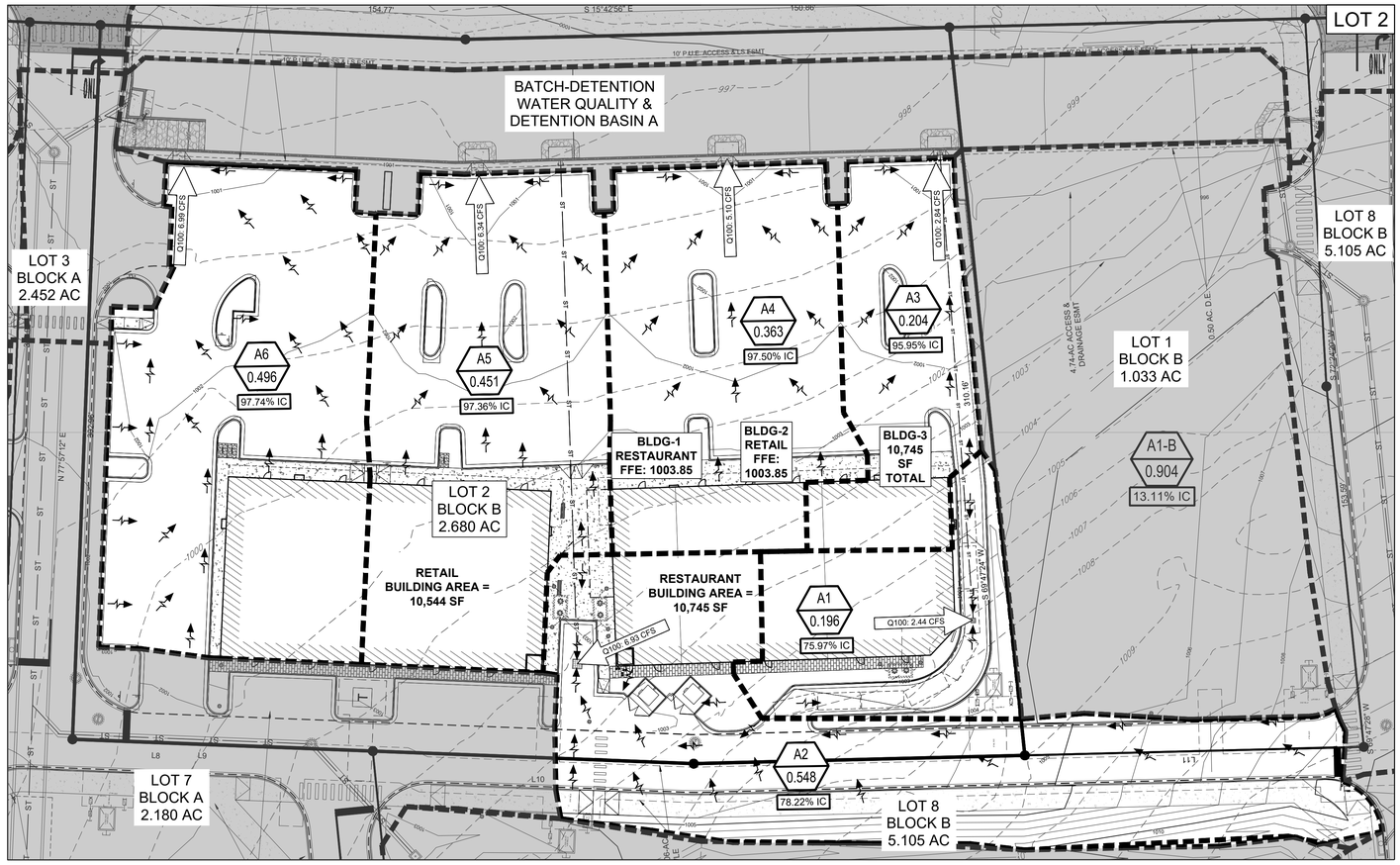


LOT 2 ONSITE DRAINAGE AREA CALCULATIONS

RATIONAL METHOD - City of Leander Drainage Criteria and Design Standards

Drainage Area Calculations

City of Leander Park ATLAS 14 Intensity-Duration-Frequency Curves

	2 Yr	10 Yr	25 Yr	100 Yr
a	58	77	89	106.00
b	11.27	10.53	10.16	9.46
c	0.805	0.775	0.759	0.732

Rational Method Runoff Coefficients for Composite Analysis

	25-YR	100-YR
DEVELOPED		
Asphaltic	0.86	0.95
Concrete	0.88	0.97
GRASS, Good Cond.		
Avg, 2-7%	0.39	0.46

$Q = CiA$

Where:

Q = peak runoff in cubic feet per second.
C = the coefficient of runoff
A = the area in acres contributing runoff to the point of design.
i = the average intensity of rainfall in inches per hour

$i = a/(t+b)^c$

Where,

t = Time of concentration for the entire drainage area of interest

T(sht flow) = $Ln/(42s^{0.5})$ T(shallow concentrated flow) = $Ln/(60s^{0.5})$

where,

L = Length of the reach in ft.
n = Manning's n
s = Slope of the ground in ft/ft

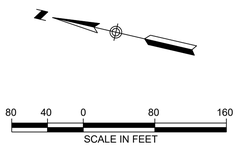
Developed Conditions Drainage Calculations (Site Calculations)

DRAINAGE AREA	AREA (AC)	PERV. (AC)	IMP. (AC)	C25	C100	ToC (min.)	I25	I100	Q25 (cfs)	Q100 (cfs)
A1	0.196	0.047	0.149	0.747	0.832	5	11.30	15.00	1.65	2.44
A2	0.548	0.119	0.429	0.758	0.843	5	11.30	15.00	4.69	6.93
A3	0.204	0.008	0.195	0.841	0.930	5	11.30	15.00	1.93	2.84
A4	0.363	0.009	0.354	0.848	0.938	5	11.30	15.00	3.48	5.10
A5	0.451	0.012	0.439	0.848	0.937	5	11.30	15.00	4.32	6.34
A6	0.511	0.011	0.500	0.850	0.939	5	11.30	15.00	4.91	7.21

GRATE INLET CALCULATIONS FOR 100 YR STORM (WITH 50% REDUCTION)

MODELED AS AN ORIFICE $Q=C_Q A_G (2\ g\ d)^{.5}$, C_Q=0.67 — MODELED AS A WEIR $Q=C_w P\ d^{1.5}$, Cw=3.0

AREA #	Q100 (CFS)	Flow Area (Sq. In.)	Inlet Size	A (SF)	A x 50% (SF)	P (FT)	$d_{ORIFICE}$ (FT)	d_{WEIR} (FT)	d_{allow} (FT)	Is $d_{orifice}$ and/or $d_{weir} > d_{allow}$?
A1	2.44	432	**24"x24"**	3.00	1.50	8.00	0.09	0.22	0.50	NO
A2	6.93	1728	**48"x48"**	12.00	6.00	16.00	0.05	0.28	0.50	NO



LEGEND

- A6 / 0.496 / 97.74% IC — DRAINAGE AREA NUMBER AND ACREAGE
- DRAINAGE AREA
- PROPERTY LINE
- TC AND/OR REACH PATH
- XXX' LF SF @ X.XX% — SHEET FLOW
- XXX' LF SCF @ X.XX% — SHALLOW CONCENTRATED FLOW
- Q100: 7.05 CFS — 100 YEAR FLOW RATE
- FLOW DIRECTION ARROW

NOTES

1. PROJECT LOCATED IN THE EDWARDS AQUIFER RECHARGE ZONE PER TCEQ MAPS.
2. THERE IS NO FLOODPLAIN PRESENT ON THE SITE. THE AREA LIES IN ZONE "X" (AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN), AS IDENTIFIED BY THE FEDERAL EMERGENCY AGENCY, NATIONAL FLOOD INSURANCE PROGRAM, AS SHOWN ON MAP NO., 48491C0275E, EFFECTIVE SEPTEMBER 25, 2008.
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4. EXISTING OFFSITE CONTOURS TAKEN FROM CITY OF LEANDER LIDAR.
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CITY OF LEANDER APPROVAL

LOCATION OF EXISTING UNDERGROUND AND OVERHEAD UTILITIES ARE APPROXIMATE LOCATIONS ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES PRIOR TO BEGINNING WORK AND SHALL BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT OCCUR.

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

GATEWAY 29 WPAP / SCS
OVERALL SUBDIVISION IMPROVEMENTS
ONSITE DRAINAGE AREA MAP LOT 2

LEANDER, WILLIAMSON COUNTY, TEXAS

REVISIONS

NO.	DESCRIPTION	BY	DATE

DATE: 03/13/2024
DESIGNED BY: CRH
DRAWN BY: LJA
CHECKED BY: CRH
DRAWING NAME: A633-0401-P-DM03_WPAP.dwg

03/13/2024

STATE OF TEXAS — CHARLES R. HAGER V — 127034 — LICENSED PROFESSIONAL ENGINEER

LJA Engineering, Inc.
7500 Rialto Boulevard
Building II, Suite 100
Austin, Texas 78735
Phone 512.439.4700
Fax 512.439.4716
FRN-F-1386

JOB NUMBER: A633-0401

DM03-B

SHEET NO. 22 OF 90 SHEETS

CITY OF LEANDER PROJECT No. SD-23-0140

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User: cgehringer
Last Modified: Mar. 13, 24 - 14:21
Plot Date/Time: Mar. 13, 24 - 14:41:12

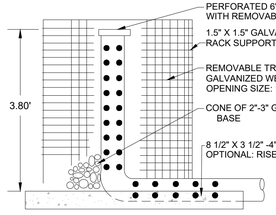
CONTROLS NARRATIVE:

BATCH DETENTION POND IS EQUIPPED WITH A RAIN SENSOR MOUNTED AT THE CONTROL PANEL. VALVE IS TO REMAIN NORMALLY CLOSED. WHEN CONTACT IS MADE BY LEVEL SWITCH, 12 HOUR DELAY TIMER SHALL BEGIN AS SOON AS NO MOISTURE IS DETECTED BY THE RAIN SENSOR. IF THE RAIN SENSOR DETECTS PRECIPITATION, DELAY TIMER WILL RESET TO 12 HOURS. ONCE VALVE OPENS, IT WILL REMAIN OPEN UNTIL THE POND IS DRAINED OR RAIN SENSOR RESETS.

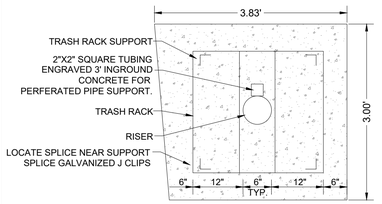
CONSTRUCTION NOTES:

1. FOR THE POND AND BERMS, EARTHWORK SHALL BE IN CONFORMANCE WITH THE CITY OF LEANDER STANDARD SPECIFICATIONS AND EARTHWORK SECTION OF THE GEOTECHNICAL REPORT.
2. EMBANKMENT SHALL BE INSTALLED IN LIFTS AND COMPACTED PER GEOTECHNICAL REPORT.
3. ALL WORK SHALL BE PERFORMED WITHIN LIMITS OF CONSTRUCTION.
4. CONTRACTOR TO PROOF ROLL BOTTOM AND SIDES OF POND TO ENSURE FIRM BOTTOM. IF BOTTOM APPEARS FRACTURED CONTRACTOR TO NOTIFY ENGINEER PRIOR TO PLACEMENT OF SAND BED ON TOPSOIL.
5. THE CONTRACTOR WILL BE REQUIRED TO PERFORM TESTING REQUIREMENTS TO SATISFY CITY OF LEANDER INSPECTIONS. THIS SHALL INCLUDE BUT NOT LIMITED TO PROVIDING NECESSARY WATER AS REQUESTED BY INSPECTOR.
7. THE CONTRACTOR WILL BE RESPONSIBLE FOR POSITIVE DRAINAGE IN BASIN AREA.
8. CONTRACTOR SHALL PROVIDE STRUCTURAL DESIGN FOR ALL RETAINING WALLS GREATER THAN 4 FEET HIGH AS A SUBMITTAL TO THE ENGINEER PRIOR TO CONSTRUCTION.
6. CONTRACTOR TO OVER EXCAVATE IN POND AREAS AS REQUIRED FOR PLACEMENT OF TOPSOIL & LINER PER THIS SHEET.
7. THE DETENTION AND BATCH WATER QUALITY BASIN IS TO BE CONSTRUCTED FIRST IN THE SEQUENCE OF CONSTRUCTION (SOC) BEFORE SITE CLEARING AND GRADING TO ACT AS A SEDIMENTATION POND DURING CONSTRUCTION.
8. A DE-WATERING METHOD/PLAN FOR THE POND MUST BE APPROVED BY THE CITY ENVIRONMENTAL INSPECTOR IF THE TEMPORARY SEDIMENTATION POND IS DE-WATERED AFTER RAINFALL EVENTS. THE DE-WATERING METHOD/PLAN MUST MINIMIZE THE DISCHARGE OF SUSPENDED SEDIMENTS IN THE PONDED WATER TO THE GREATEST EXTENT FEASIBLE.
9. ALL WALLS SHALL BE INTEGRALLY TINTED IN AN EARTHEN TONE AND TEXTURED TO APPEAR AS IF CONSTRUCTED OF STONE OR BRICK.

Overall Drainage Study Point Summary		
Fully-Dev./Undet. Offsite & Dev/Det. Conditions On-Site		
Study Point #1		
Storm Event	EXISTING CONDITIONS DM01	DEVELOPED CONDITIONS DM02
2-Year	269.60	245.20
10-Year	438.10	405.40
25-Year	556.40	517.10
100-Year	761.00	705.90

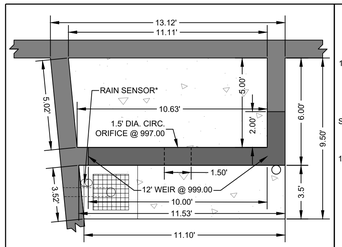


SIDE VIEW OF RISER



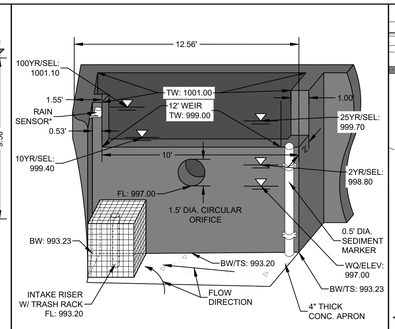
TOP VIEW OF RISER (SQUARE DESIGN)

INTAKE RISER DETAIL
NOT TO SCALE



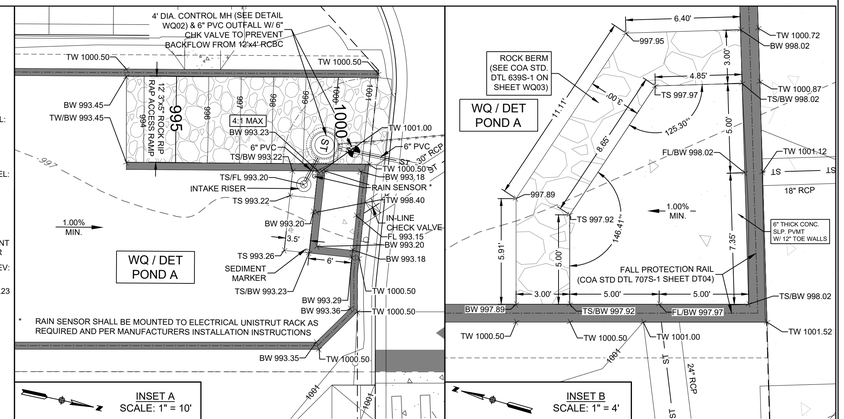
* RAIN SENSOR SHALL BE MOUNTED TO ELECTRICAL UNISTRUT RACK AS REQUIRED AND PER MANUFACTURERS INSTALLATION INSTRUCTIONS

POND A OUTFALL DETAIL (PLAN)
SCALE: 1" = 4'



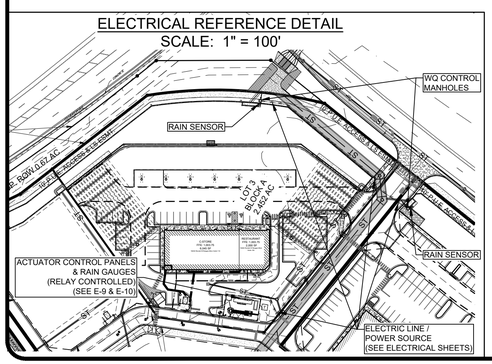
* RAIN SENSOR SHALL BE MOUNTED TO ELECTRICAL UNISTRUT RACK AS REQUIRED AND PER MANUFACTURERS INSTALLATION INSTRUCTIONS

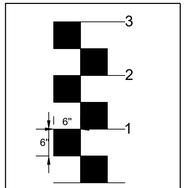
POND A OUTFALL STRUCTURE DETAIL (FRONT X-SECTION)
SCALE: 1" = 4'



* RAIN SENSOR SHALL BE MOUNTED TO ELECTRICAL UNISTRUT RACK AS REQUIRED AND PER MANUFACTURERS INSTALLATION INSTRUCTIONS

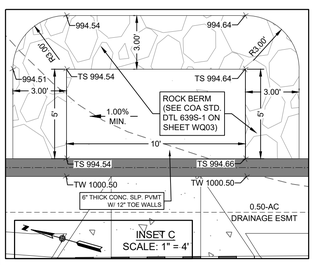
ELECTRICAL REFERENCE DETAIL
SCALE: 1" = 100'



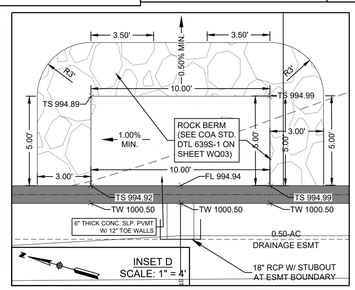


SEDIMENT MARKER DETAIL

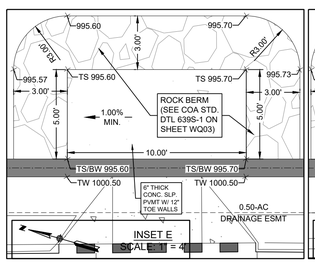
CONTRACTOR TO PAINT 6" STAINLESS STEEL POLE WITH BLACK PAINT AND LABEL ELEVATIONS IN INCREMENTS OF 1' TO ACT AS SEDIMENT DEPTH MARKER.



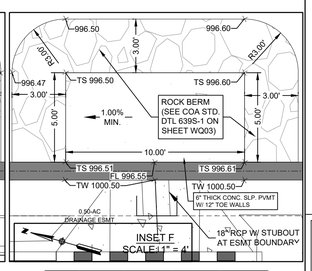
* D_{50} IS LESS THAN 5.8 MIN., USE CLASS I (D_{50} = 6" DIA.) RIP RAP



Inset D Outfall Rip Rap Sizing	
Q_{100} =	4.39 cfs
V =	0.62 fps (18" Pipe Out)
D_{50} =	0.05 (D_{50} = 0.0105$V^{2.05}$) inches min.
USE CLASS I(D_{50} = 6" DIA.) RIP-RAP	



* D_{50} IS LESS THAN 5.8 MIN., USE CLASS I (D_{50} = 6" DIA.) RIP RAP



Inset F Outfall Rip Rap Sizing	
Q_{100} =	5.66 cfs
V =	0.80 fps (18" Pipe Out)
D_{50} =	0.08 (D_{50} = 0.0105$V^{2.05}$) inches min.
USE CLASS I(D_{50} = 6" DIA.) RIP-RAP	

NOTE:
TOP OF WALL ELEVATION FOR THE BATCH-DETENTION WATER QUALITY & DETENTION BASIN A IS 1001.00' TYPICAL.

POND SHALL BE INSTALLED WITH 6' HT. FENCE / PEDESTRIAN FALL RAIL ALONG TOP OF POND WALLS PER COA STD. DTL. 707S-1. THE TOTAL COMBINED HEIGHT OF THE WALL AND FENCE MUST BE A MINIMUM OF SIX (6) FEET ABOVE THE EXTERIOR FINISHED GRADE.



LEGEND

- UNDERGROUND ELECTRIC
- BOUNDARY LINE/ R.O.W.
- 990 PROPOSED CONTOURS
- 990 EXISTING CONTOURS
- CONCRETE
- ROCK RIPRAP

NOTES

1. PROJECT LOCATED IN THE EDWARDS AQUIFER RECHARGE ZONE.
2. UPON COMPLETION OF THE PROPOSED SITE IMPROVEMENTS, AND PRIOR TO THE RELEASE OF THE CERTIFICATE OF OCCUPANCY BY THE CITY OF LEANDER, THE DESIGN ENGINEER SHALL CERTIFY IN WRITING THAT THE PROPOSED WATER QUALITY & DETENTION FACILITIES WERE CONSTRUCTED IN CONFORMANCE WITH THE APPROVED PLANS.
3. TOPSOIL MUST BE PLACED ON THE BASIN FLOOR AFTER EXCAVATED BOTTOM IS SCARIFIED TO A DEPTH OF 2 TO 3 INCHES . THE TOPSOIL MUST BE 6 TO 8 INCHES DEEP AND A SOIL MIXTURE OF 5-15% SAND OR GRANITE SAND, 60-70% TOPSOIL, AND SHALL BE A MINIMUM OF 25% COMPOST. SOIL BLEND MUST HAVE CLAY CONTENT LESS THAN 20 PERCENT AND BE FREE OF STONES, STUMPS, ROOTS, OR OTHER SIMILAR OBJECTS LARGER THAN 1 INCH.
4. NON WOVEN FILTER FABRIC WITH A MINIMUM OPENING OF 0.15 MM (U.S. SIEVE SIZE 100) SHALL BE WRAPPED AROUND THE RISER. THE RISER SHALL BE DOUBLE WRAPPED WITH FILTER FABRIC UNTIL THE CONTRIBUTING DRAINAGE AREA IS VEGETATED AND STABILIZED.
5. DISCHARGE COEFFICIENTS FOR OUTLETS TO CONTROL DISCHARGE TIME ARE 0.6.
6. ALL EXPOSED CONCRETE SHALL BE INTEGRALLY TINTED IN AN EARTHEN TONE AND TEXTURED TO APPEAR AS IF CONSTRUCTED OF STONE OR BRICK.
7. MAINTENANCE OF DRAINAGE AND WATER QUALITY IMPROVEMENTS CONTAINED IN DETENTION AND WATER QUALITY AREAS IS THE RESPONSIBILITY OF THE PROPERTY OWNER OR HIS OR HER ASSIGNS.
8. NO FENCING IS PROPOSED, HOWEVER, IF IT IS REQUIRED AT A LATER DATE, IT IS REQUIRED TO BE DECORATIVE BLACK TUBULAR METAL OR WROUGHT IRON.
9. ALL POND OUTFALLS AND CONCRETE STRUCTURES (EX. SAFETY END TREATMENTS, HEADWALLS, CONCRETE RIP-RAP, AND OUTFALL STRUCTURES) SHALL BE APPROVED BY THE PLANNING DIRECTOR PRIOR TO INSTALLATION IF STONE IS NOT PROPOSED
10. ALL WALLS SHALL BE INTEGRALLY TINTED IN AN EARTHEN TONE AND TEXTURED TO APPEAR AS IF CONSTRUCTED OF STONE OR BRICK.
11. ALLOWABLE FENCE MATERIALS INCLUDE, BUT ARE NOT LIMITED TO, CHAIN LINK, SOLID WOOD, MASONRY, STONE OR WROUGHT IRON. METAL COMPONENTS OF THE FENCE SHALL BE CORROSION RESISTANT AND WOOD COMPONENTS OF THE FENCE SHALL BE WEATHER RESISTANT. ANY FENCE POSTS USED SHALL BE GALVANIZED STEEL WITH A CONCRETE FOOTING OF AT LEAST TWELVE (12) INCHES IN DIAMETER AND AT LEAST EIGHTEEN (18) INCHES IN DEPTH (SEE STANDARD SPECIFICATION NO. 701).
12. ALL SIDE SLOPES, EARTHEN EMBANKMENTS, AND POND BOTTOMS, SHALL BE COMPACTED TO NINETY-FIVE (95) PERCENT OF MAXIMUM DENSITY IN ACCORDANCE WITH ESTABLISHED EMBANKMENT CONSTRUCTION REQUIREMENTS (STANDARD SPECIFICATION 132S).

CITY OF LEANDER APPROVAL

LOCATION OF EXISTING UNDERGROUND AND OVERHEAD UTILITIES ARE APPROXIMATE LOCATIONS ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES PRIOR TO BEGINNING WORK AND SHALL BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT OCCUR.

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

GATEWAY 29 WPAP / SCS
OVERALL SUBDIVISION IMPROVEMENTS
WATER QUALITY PLAN AND PROFILE SHEET 1

LEANDER, WILLIAMSON COUNTY, TEXAS

NO.	DESCRIPTION	BY	DATE
	REVISIONS		

DATE: 03/13/2024
DESIGNED BY: CRH
DRAWN BY: CRH
CHECKED BY: CRH
DRAWING NAME: A633-0401-P-WQ01_WPAP.dwg

03/13/2024
STATE OF TEXAS
CHARLES R. HAGER
127034
LICENSED PROFESSIONAL ENGINEER

LJA Engineering, Inc.
7500 Rialto Boulevard
Building II, Suite 100
Austin, Texas 78735
Phone 512.439.4700
Fax 512.439.4716
FRN-F-1386

JOB NUMBER: A633-0401

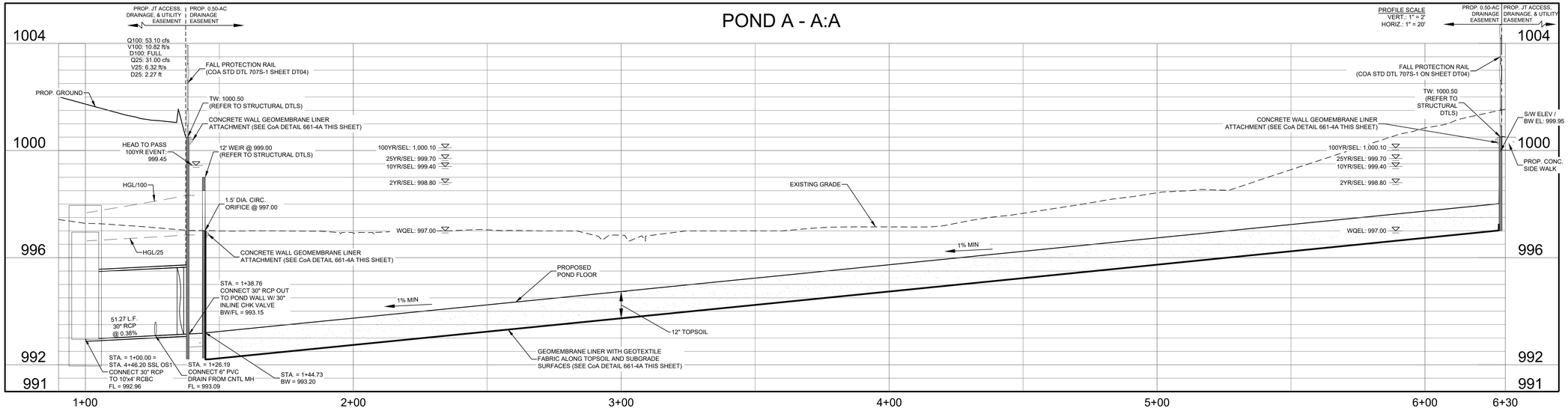
WQ01

SHEET NO. 23 OF 90 SHEETS

CITY OF LEANDER PROJECT No. SD-23-0140

I:\a633-Gateway\2401\Submittal Sheets\WPAP\a633-0401-p-wq01_WPAP.dwg
User: cgeisinger
Last Modified: Mar. 12, 24 - 17:22
Plot Date/Time: Mar. 13, 24 - 14:42:14

POND A - A:A



Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009 **Project Name: Gateway 29 - POND A (ACTUAL DESIGN)**
Date Prepared: 3/12/2024

Additional information is provided for cells with a red triangle in the upper right corner. Place the cursor over the cell.
Text shown in blue indicate location of instructions in the Technical Guidance Manual - RG-348.
Characters shown in red are data entry fields.
Characters shown in black (Bold) are calculated fields. Changes to these fields will remove the equations used in the spreadsheet.

1. The Required Load Reduction for the total project: Calculations from RG-348 Pages 3-27 to 3-30

Page 3-29 Equation 3.3: $L_M = 27.2(A_N \times P)$

where:
$L_{M\ TOTAL\ PROJECT}$ = Required TSS removal resulting from the proposed development = 80% of increased load
A_N = Net increase in impervious area for the project
P = Average annual precipitation, inches

Site Data: Determine Required Load Removal Based on the Entire Project

County =	Williamson		
Total project area included in plan * =	32.26	acres	<--TOTAL SITE AREA
Predevelopment impervious area within the limits of the plan * =	0.00	acres	
Total post-development impervious area within the limits of the plan * =	8.23	acres	
Total post-development impervious cover fraction * =	0.25		
P =	33	inches	
$L_{M\ TOTAL\ PROJECT}$ =	7143	lbs.	

*** The values entered in these fields should be for the total project area.**

Number of drainage basins / outfalls areas leaving the plan area = 2

2. Drainage Basin Parameters (This information should be provided for each basin):

Drainage Basin/Outfall Area No. = BASIN 'A'

Total drainage basin/outfall area =	5.89	acres	<--TOTAL AREA CONTRIBUTING TO WQ BASIN 'A'
Predevelopment impervious area within drainage basin/outfall area =	0.00	acres	(SEE SHEET DM03, DRAINAGE AREAS A-AS)
Post-development impervious area within drainage basin/outfall area =	3.31	acres	
Post-development impervious fraction within drainage basin/outfall area =	0.56		
$L_{M\ THIS\ BASIN}$ * =	2881	lbs.	

Compository Drainage Provided by Basin 'A' Water Quality Pond Summary

Total drainage basin/outfall area =	5.893	acres	<--AREA ADJACENT TO BASIN 'A' NOT CAPTURED BY POND A
Predevelopment impervious area within drainage basin/outfall area =	0.37	acres	(SEE SHEET DM03, DRAINAGE AREA OS-A)
Post-development impervious area within drainage basin/outfall area =	0.62	acres	
Post-development impervious fraction within drainage basin/outfall area =	0.70		
$L_{M\ Compository}$ * =	220	lbs.	
$L_{M\ TOTAL}$ * =	3101	lbs.	

3. Indicate the proposed BMP Code for this basin.

Proposed BMP = **Extended Detention** (Batch Detention Basin)
Removal efficiency = 91 percent

4. Calculate Maximum TSS Load Removed (L_R) for this Drainage Basin by the selected BMP Type.

RG-348 Page 3-33 Equation 3.7: L_R = (BMP efficiency) x P x (A_N x 34.6 + A_P x 0.54)

where:
A_N = Total On-Site drainage area in the BMP catchment area
A_I = Impervious area proposed in the BMP catchment area
A_P = Pervious area remaining in the BMP catchment area
L_M = TSS Load removed from this catchment area by the proposed BMP

A_N =	5.892	acres
A_I =	3.310	acres
A_P =	2.58	acres
L_M =	3376	lbs

5. Calculate Fraction of Annual Runoff to Treat the drainage basin / outfall area

Desired $L_{M\ TOTAL\ BASIN}$ * = 3101 lbs.

F = **0.92**

6. Calculate Capture Volume required by the BMP Type for this drainage basin / outfall area. Calculations from RG-348 Pages 3-34 to 3-36

Rainfall Depth =	2.00	inches
Post Development Runoff Coefficient =	0.39	
On-site Water Quality Volume =	16863	cubic feet

Calculations from RG-348 Pages 3-36 to 3-37

Off-site area draining to BMP =	0.00	acres
Off-site Impervious cover draining to BMP =	0.00	acres
Impervious fraction of off-site area =	0.00	
Off-site Runoff Coefficient =	0.00	
Off-site Water Quality Volume =	0	cubic feet
Storage for Sediment =	3373	
Total Capture Volume (required water quality volume(s) x 1.20) =	20235	cubic feet

The following sections are used to calculate the required water quality volume(s) for the selected BMP.
The values for BMP Types not selected in cell C45 will show NA.

8. Extended Detention Basin System Designed as Required in RG-348 Pages 3-46 to 3-51

Required Water Quality Volume for extended detention basin =	20,235	cubic feet
PROVIDED WATER QUALITY VOLUME=	26,203	cubic feet

BATCH DETENTION WATER QUALITY
W/ STACKED DETENTION POND CALCULATIONS
FOR TCEQ WPAP PERMITTING IN WILLIAMSON COUNTY
POND A (Ronald Reagan - East) - ACTUAL CONDITIONS

DRAINAGE AREA DATA:

THE WATER QUALITY CONTROL IS TO BE BATCH DETENTION (91% REMOVAL EFFICIENCY)	
DRAINAGE AREA TO CONTROL (A_C)	5.890 ACRES
DRAINAGE AREA IMPERVIOUS COVER (IC)	56.20 PERCENT (Drainage Area A1)
DRAINAGE AREA PROP. IMPERVIOUS COVER (A_I)	3.31 ACRES
DRAINAGE AREA EXIST. IMPERVIOUS COVER (A_I)	0.00 ACRES
AV. ANNUAL PRECIPITATION (P)	32.00 IN
L_M TOTAL DRAINING TO POND	2881 LBS
L_M TOTAL COMPENSITORY	220 LBS (Compensatory IC for s/w & dwy adjacent to Pond)
L_M TOTAL (POND DESIGN)	3101 LBS
PERVIOUS AREA REMAINING IN DA (A_P)	2.58 ACRES
TSS LOAD REMOVED BY PROP. WQ POND (L_R)	3376 LBS
FRACTION OF ANNUAL RUNOFF / OUTFALL AREA (F)	0.92
RAINFALL DEPTH	1.80 IN
POST-DEV. RUNOFF COEFFICIENT	0.56
ON-SITE WATER QUALITY VOL. REQUIRED (WQV)	16,863 CF
TOTAL CAPTURE VOLUME (WQV x 1.20)	20,237 CF

WATER QUALITY CONTROL CALCULATIONS:	REQUIRED	PROVIDED
THE WATER QUALITY CONTROL IS TO BE BATCH DETENTION		
WATER QUALITY VOLUME (WQV = CD*DA*3630)	20,237 CF	26,203 CF
MAX PONDING DEPTH ABOVE WQ OUTLET (H)		3.80 FT
WATER QUALITY ELEVATION		997.00 FT MSL

BATCH DETENTION BASIN:

ELEV.	AREA [SF]	A1+A2+SQR (A1*A2) [SF]	INC. VOL. [CF]	TOT. VOL. [CF]	TOT. VOL. [AC-FT]
993.2	0	0	0	0	0
994	2782	2,782	742	742	0.017
995	6651	13,735	4,578	5,320	0.122
996	10505	25,515	8,505	13,825	0.317
997	14350	37,133	12,378	26,203	0.602
998	18160	48,653	16,218	42,420	0.974
999	18460	54,929	18,310	60,730	1.394
1000	18622	55,623	18,541	79,271	1.820
1000.5	18677	55,948	9,325	88,596	2.034

NOTE:
COEFFICIENTS FOR ORIFICES ARE MODELED AS 0.6 $\pi^5/_8$
COEFFICIENTS FOR ORIFICES ARE MODELED AS 3.0 $\pi^5/_8$

Outlet Structure - Stage Discharge Table

Stage / Elevation	1.5' DIA. CIR. OR. @ 997.0 Q (cfs)	12' Weir @ 999.0 Q (cfs)	TOTAL Q (cfs)
997.00	0.00	0.00	0.00
998.00	7.70	0.00	7.70
999.00	11.47	16.56	28.03
1000.00	14.28	70.92	85.20
1000.50	15.50	105.72	121.22

Detention Pond - Stage Storage Table

Elevation (FT)	Area (AC)	A1+A2+SQR (A1*A2) (AC)	Incremental Volume (AC-FT)	Cumulative Volume (AC-FT)
993.2	0.000	0.000	0.000	0.000
994	0.064	0.064	0.017	0.017
995	0.153	0.315	0.105	0.122
996	0.241	0.586	0.195	0.317
997	0.329	0.852	0.284	0.602
998	0.417	1.117	0.372	0.974
999	0.424	1.261	0.420	1.394
1000	0.428	1.277	0.426	1.820
1000.5	0.429	1.284	0.214	2.034

DETENTION POND SUMMARY - A

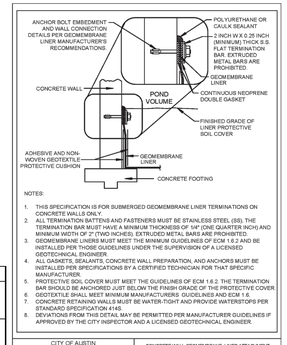
STORM EVENT	INFLOW (CFS)	Time to Peak (hrs)	OUTFLOW (CFS)	Time to Peak (hrs)	WS ELEV.
2YR	30.50	12.04	8.80	12.17	998.80
10YR	46.80	12.04	19.20	12.12	999.40
25YR	58.20	12.04	31.00	12.10	999.70
100YR	77.90	12.04	53.10	12.08	1,000.10

WATER QUALITY POND MAINTENANCE

FACILITY OPERATOR:
SAMIR MAREDIA
(832) 713-4985

EDWARDS AQUIFER ID:
RN111804993 (11003712)
TCEQ REGION 11: (512) 339-2929

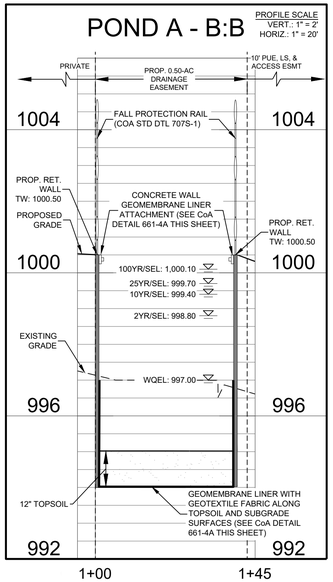
WQ POND SIGN (RG-348A)
(N.T.S.)

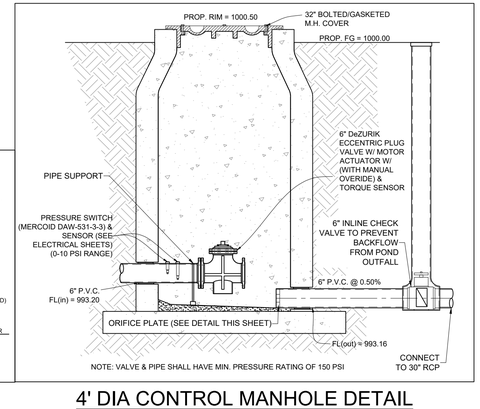


CITY OF AUSTIN	CONCRETE WALL GEOMEMBRANE LINER ATTACHMENT
WATERWAY PROTECTION DEPARTMENT	STANDARD NO.
3/23/2023 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD. 661-4A

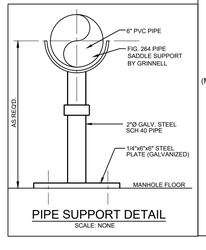
POND A - B:B

PROFILE SCALE VERT.: 1" = 2' HORIZ.: 1" = 20'





4' DIA CONTROL MANHOLE DETAIL
N.T.S.



PIPE SUPPORT DETAIL
SCALE: NONE

CITY OF LEANDER APPROVAL

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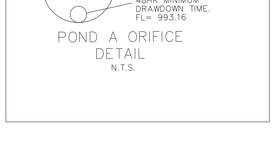
811 Know what's below. Call before you dig.

HEAD REQUIRED TO PASS 100-YR EVENT INTO 30" POND A RCP OUT	
100-yr Storm Event Ponding Height (above centroid)=	$(Q/(C_d*A))^2/(2*32.2)$
0.6	Cd
OR	PIPE OR ORIFICE? (PIPE, OR)
30	Pipe Diameter or Orifice Height (in)
1	No. of Pipes/Culverts
4.91	Orifice Area (SF)
53.1	Discharge (100 Yr) (cfs)
993.15	Pipe FL (ft)
5.05	Height Above Centroid (ft)
999.45	**100-Yr WSEL to Pass 100-yr Discharge (ft)**
1000.10	**Pond 100-yr WSEL (ft)**
Yes	**Is Pond 100-yr WSEL > Head to Pass 100-year Storm Event?**



POND A ORIFICE DETAIL
N.T.S.

DRAWDOWN CALCULATION FOR BATCH DET WQ BASIN

WQ VOLUME =	26203	CF
MINIMUM DRAWDOWN TIME = 36 HR = 129600 SECONDS	(48 HRS w/ 12-HR DELAY)	
FLOW = 26203 CF / 129600 SEC =	0.202	CFS
HEAD= 996.12-993.75	= 4.05 (POND AVG HEAD TO ORIFICE CL)	
A = 0.202 CFS/(.60 *	(64.4 *4.05) ^.5)=	0.020865 SF
R =(A/(3.14))^.5 =	0.08 FT	
D (in.) = 2R * 12 =	**1.96 inch orifice**	
Q =0.0209 * .60 * (64.4 * 4.05)^.5 =	0.202	CFS
DRAWDOWN TIME =	26203 CF / 0.202 CFS	= 129600 SEC = 36 HRS

THEREFORE, POND WILL DRAWDOWN IN LESS THAN 72 HRS

Water Quality Drawdown Calculations

Time (HRS)	Drawdown Percentage (%)	Remaining WQ Volume (CF)	WQ Stage Elevation (FT)
0:00	0	26,203	997.00
12:00	0	26,203	997.00
24:00	25	19,652	996.69
36:00	50	13,101	995.91
48:00	75	6,551	995.27
60:00	100	0	993.20

Note: Batch Det. Requires 12-hr Lag and to be drained w/in the next 48-hrs.

GATEWAY 29 WPAP / SCS
OVERALL SUBDIVISION IMPROVEMENTS
WATER QUALITY PLAN AND PROFILE SHEET 2
LEANDER, WILLIAMSON COUNTY, TEXAS

REVISIONS

NO.	DESCRIPTION	BY	DATE

DATE: 03/13/2024
DESIGNED BY: CRH
DRAWN BY: CRH
CHECKED BY: CRH
DRAWING NAME: A633-0401-P-WQ02_WPAP.DWG

03/13/2024
STATE OF TEXAS
CHARLES R. HAGER
127034
LICENSED PROFESSIONAL ENGINEER

LJA Engineering, Inc.
7500 Rialto Boulevard
Building II, Suite 100
Austin, Texas 78735
Phone 512.439.4700
Fax 512.439.4716
FRN-F-1386

JOB NUMBER: A633-0401

WQ02

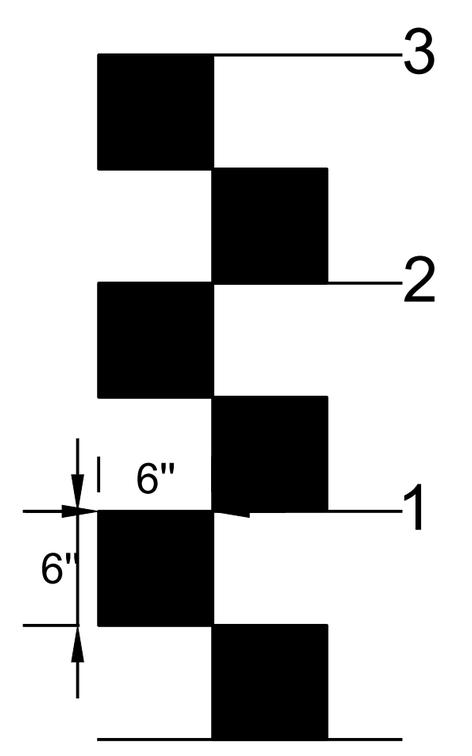
SHEET NO. 24 OF 90 SHEETS

CITY OF LEANDER PROJECT No. SD-23-0140

I:\A633-Gateway\CAD\Submittal Sheets\WPAP\a633-0401-p-wq01_WPAP.dwg
User: cgallagher
Last Modified: Mar. 12, 24 - 17:22
Plot Date/Time: Mar. 13, 24 - 14:42:26

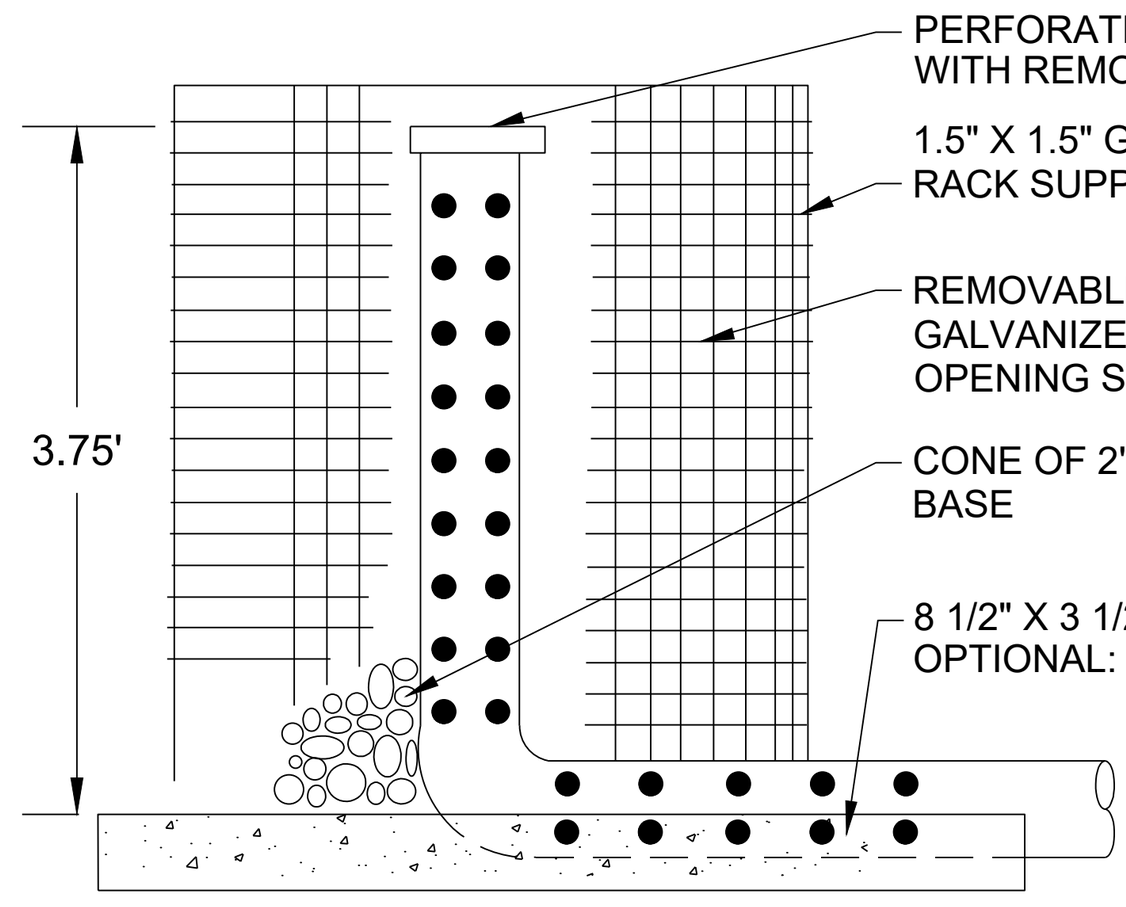
CONTROLS NARRATIVE:

BATCH DETENTION POND IS EQUIPPED WITH A RAIN SENSOR MOUNTED AT THE CONTROL PANEL. VALVE IS TO REMAIN NORMALLY CLOSED. WHEN CONTACT IS MADE BY LEVEL SWITCH, 12 HOUR DELAY TIMER SHALL BEGIN AS SOON AS NO MOISTURE IS DETECTED BY THE RAIN SENSOR. IF THE RAIN SENSOR DETECTS PRECIPITATION, DELAY TIMER WILL RESET TO 12 HOURS. ONCE VALVE OPENS, IT WILL REMAIN OPEN UNTIL THE POND IS DRAINED OR RAIN SENSOR RESETS.

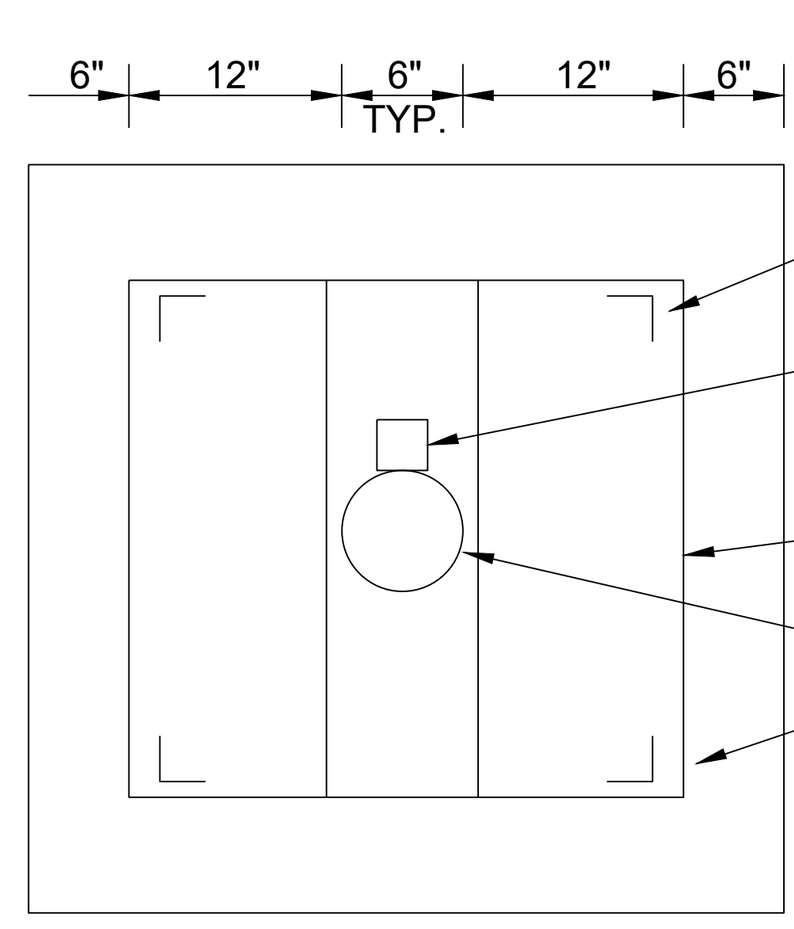


SEDIMENT MARKER DETAIL

CONTRACTOR TO PAINT 6" STAINLESS STEEL POLE WITH BLACK PAINT AND LABEL ELEVATIONS IN INCREMENTS OF 1' TO ACT AS SEDIMENT DEPTH MARKER.



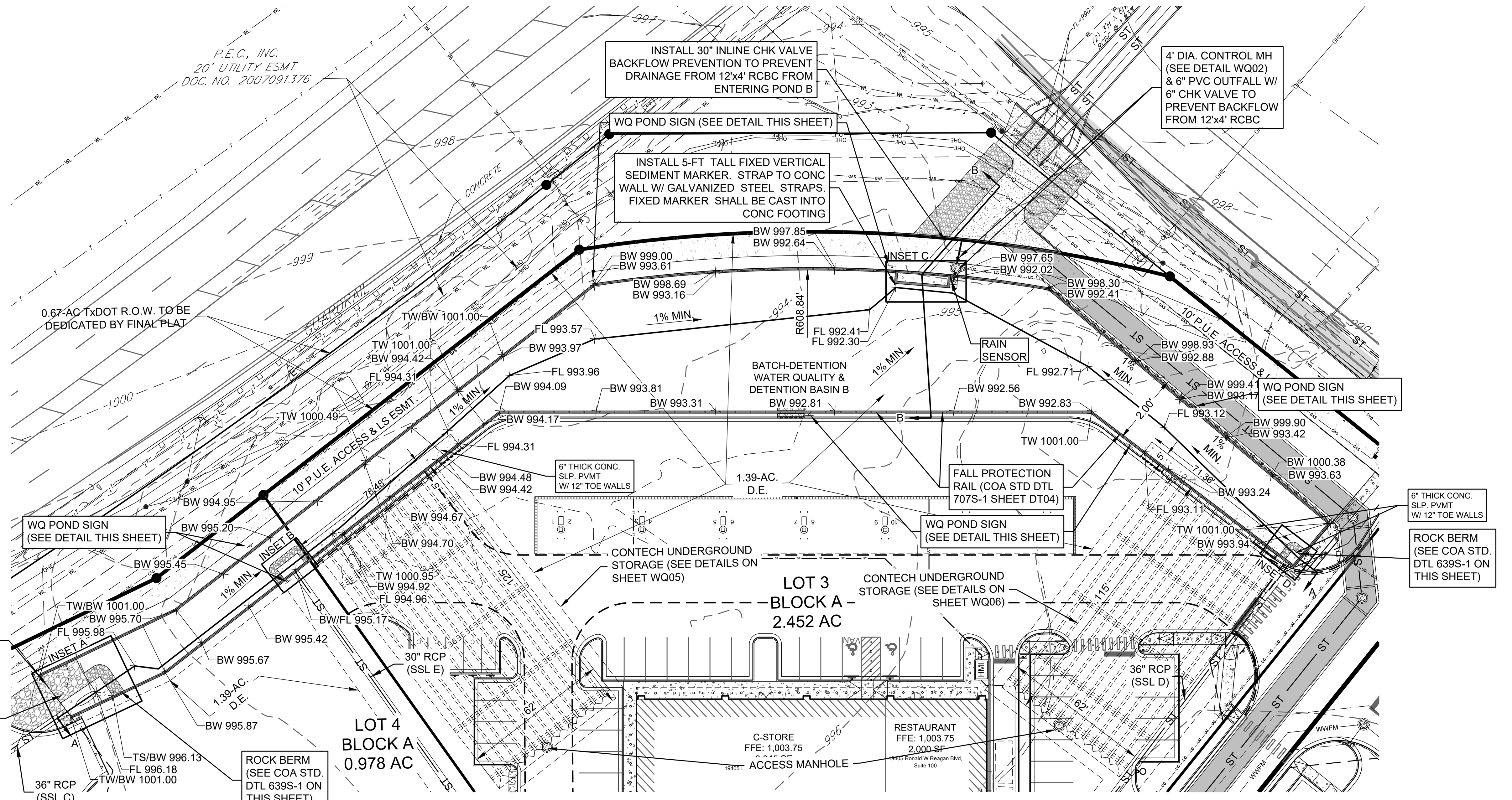
SIDE VIEW OF RISER

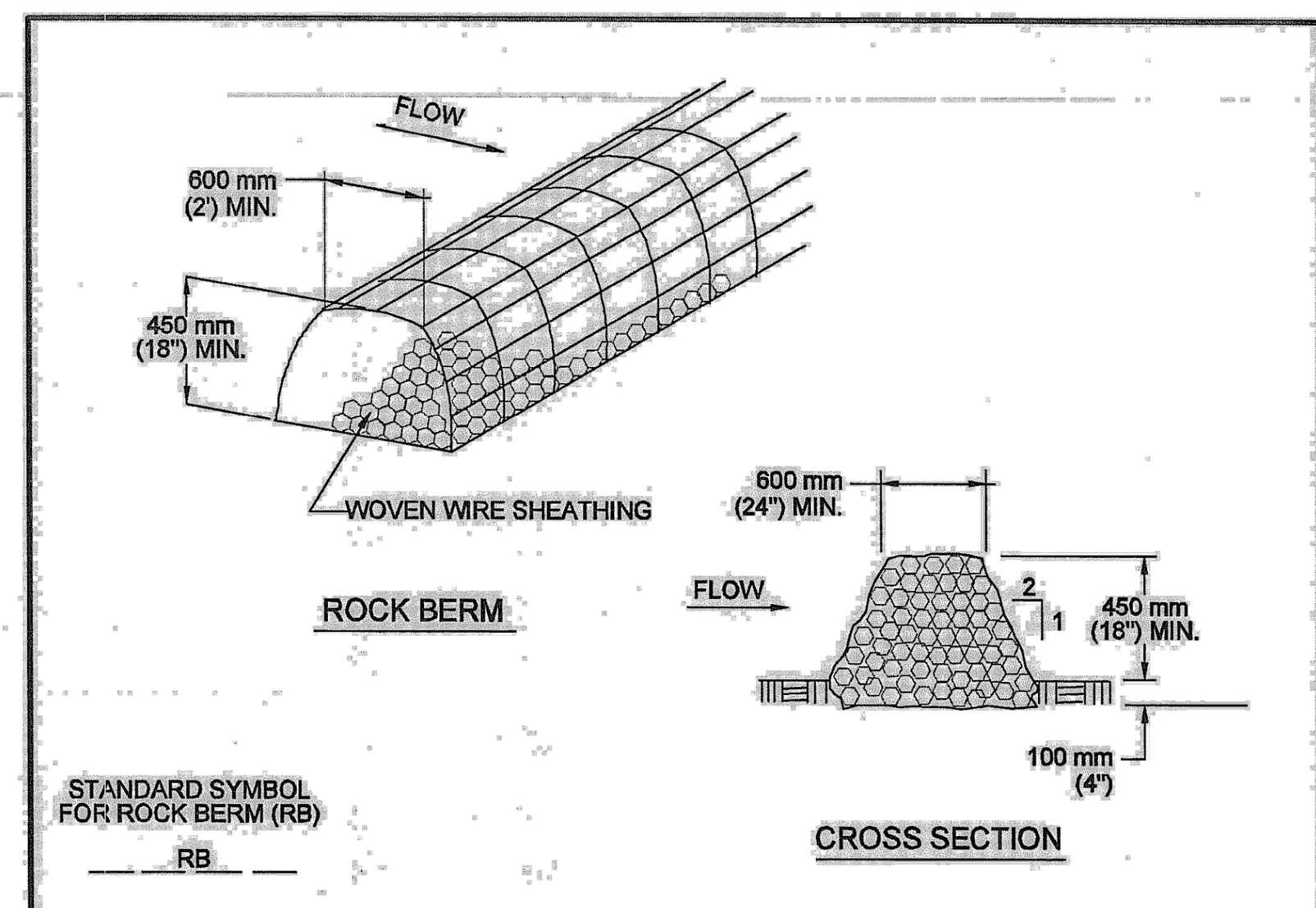


TOP VIEW OF RISER (SQUARE DESIGN)

INTAKE RISER DETAIL
NOT TO SCALE

Overall Drainage Study Point Summary		
Fully-Dev./Undet. Offsite & Dev/Det. Conditions On-Site		
Study Point #1		
Storm Event	EXISTING CONDITIONS DM01	DEVELOPED CONDITIONS DM02
2-Year	269.60	245.20
10-Year	438.10	405.40
25-Year	556.40	517.10
100-Year	761.00	705.90

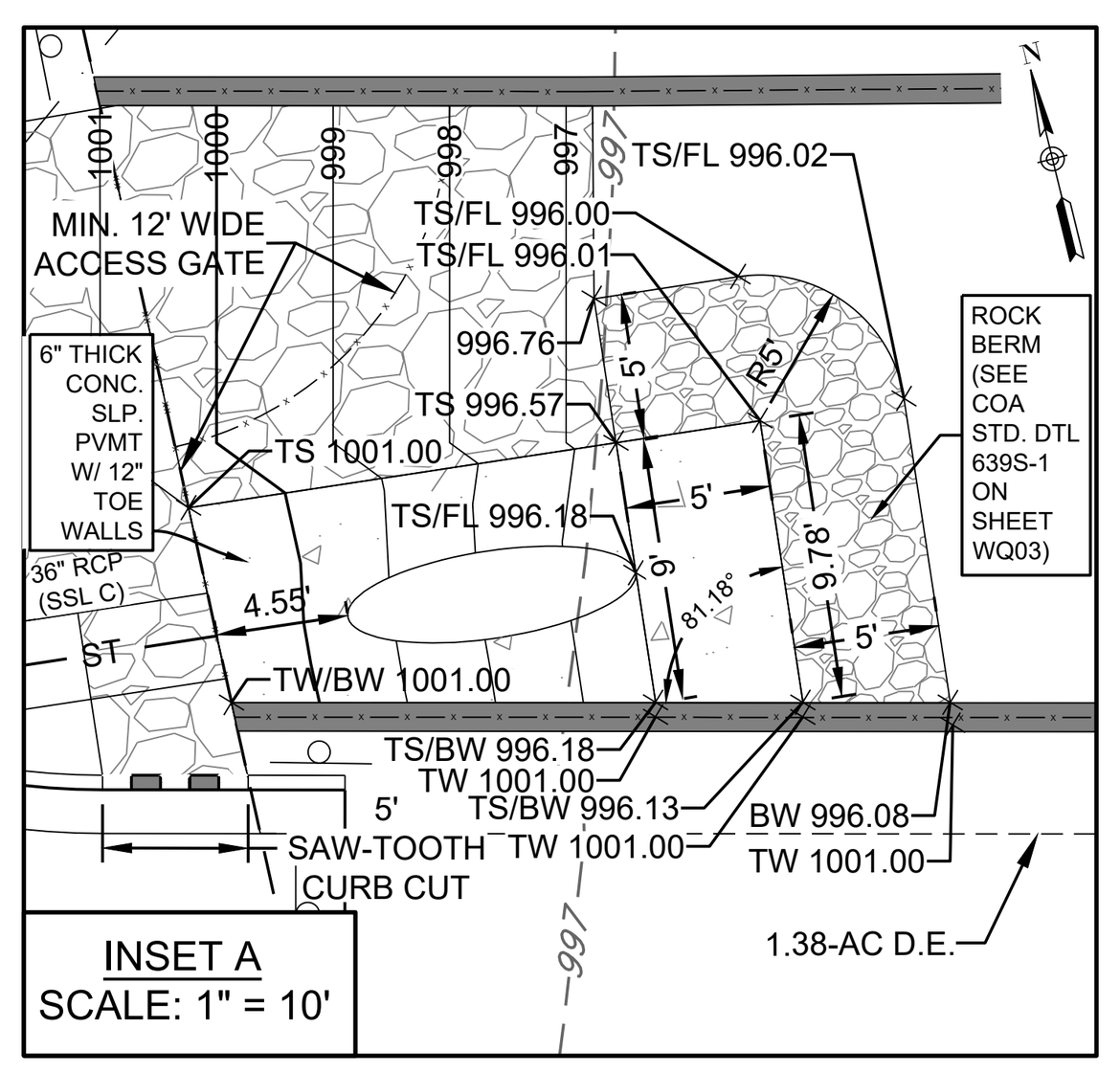




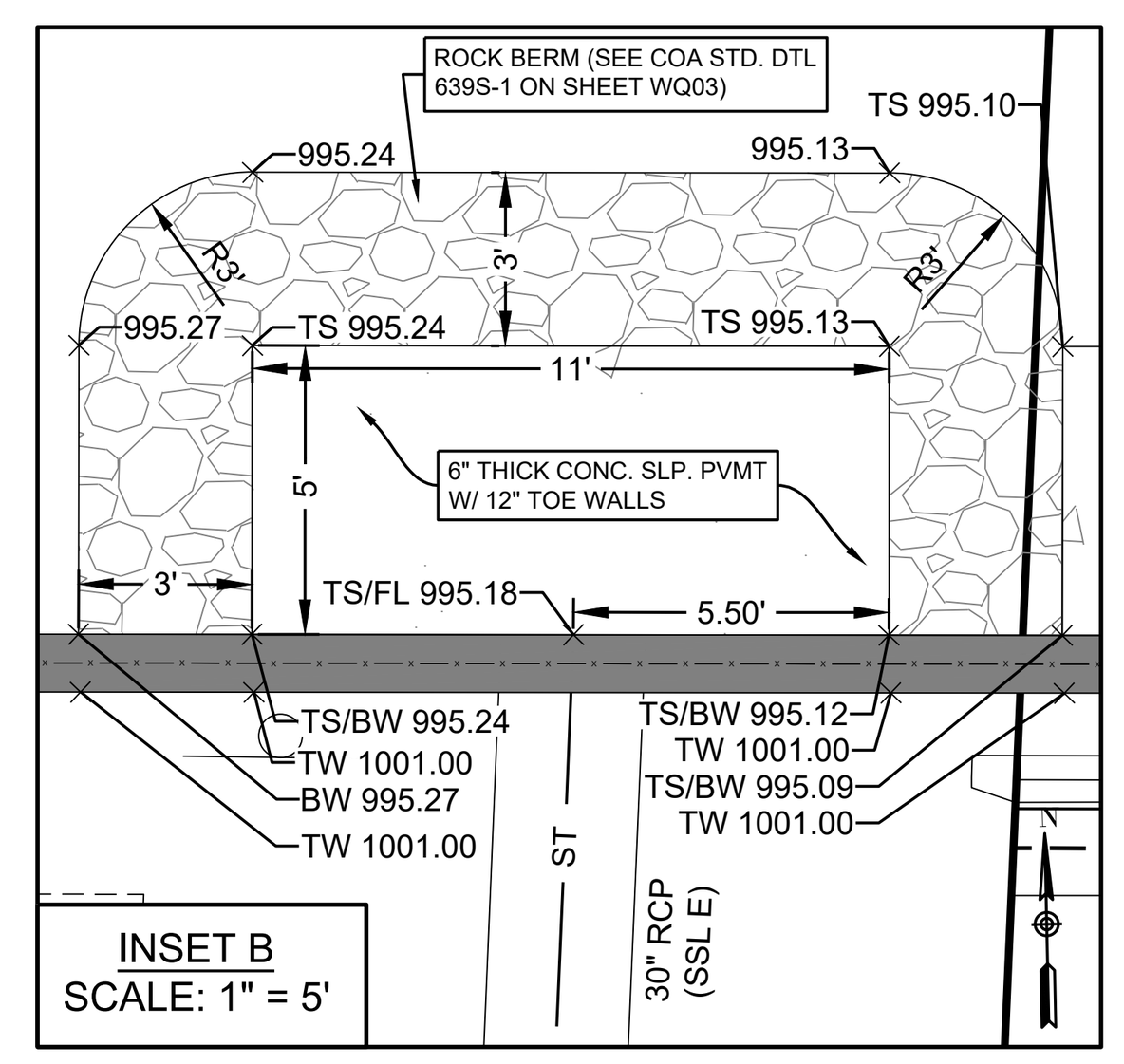
NOTES:

1. USE ONLY OPEN GRADED ROCK 75 to 125 mm (3 to 5") DIAMETER FOR ALL CONDITIONS.
2. THE ROCK BERM SHALL BE SECURED WITH A WOVEN WIRE SHEATHING HAVING MAXIMUM 25 mm (1") OPENING AND MINIMUM WIRE DIAMETER OF 12.9 mm (20 GAUGE).
3. THE ROCK BERM SHALL BE INSPECTED DAILY OR AFTER EACH RAIN, AND THE STONE AND/OR FABRIC CORE-WOVEN SHEATHING SHALL BE REPLACED WHEN THE STRUCTURE CEASES TO FUNCTION AS INTENDED, DUE TO SEDIMENT ACCUMULATION AMONG THE ROCKS, WASHOUT, CONSTRUCTION TRAFFIC DAMAGE, ETC.
4. IF SEDIMENT REACHES A DEPTH EQUAL TO ONE-THIRD THE HEIGHT OF THE BERM OR 150 mm (6"), WHICHEVER IS LESS, THE SEDIMENT SHALL BE REMOVED AND DISPOSED OF ON AN APPROVED SITE AND IN A MANNER THAT WILL NOT CREATE A SEDIMENTION PROBLEM.
5. WHEN THE SITE IS COMPLETELY STABILIZED,THE BERM AND ACCUMULATED SEDIMENT SHALL BE REMOVED AND DISPOSED OF IN AN APPROVED MANNER.

CITY OF AUSTIN WATERSHED PROTECTION DEPARTMENT	ROCK BERM	
8/24/2010 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 639S-1



INSET A
SCALE: 1" = 10'



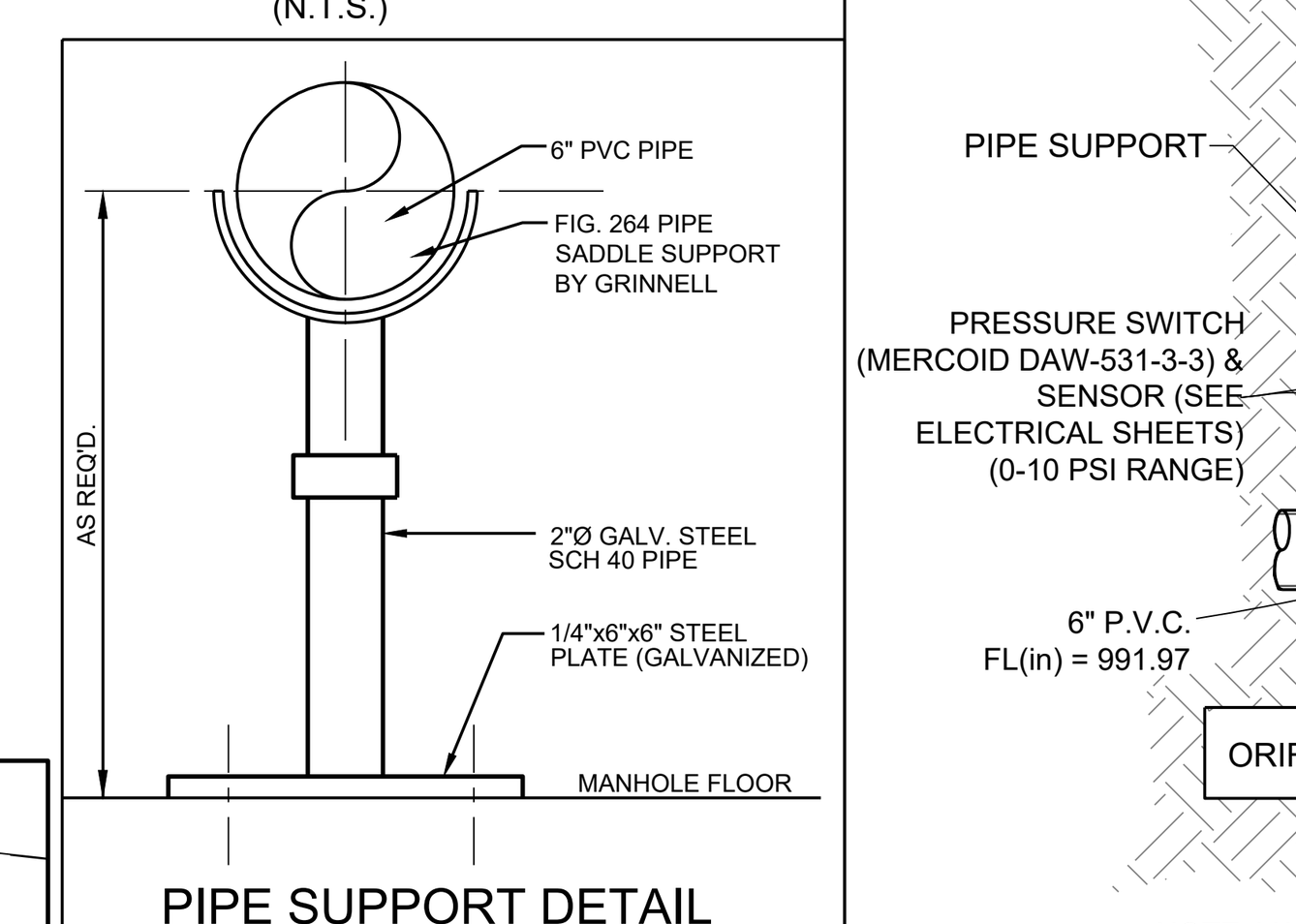
INSET B
SCALE: 1" = 5'

WATER QUALITY POND MAINTENANCE

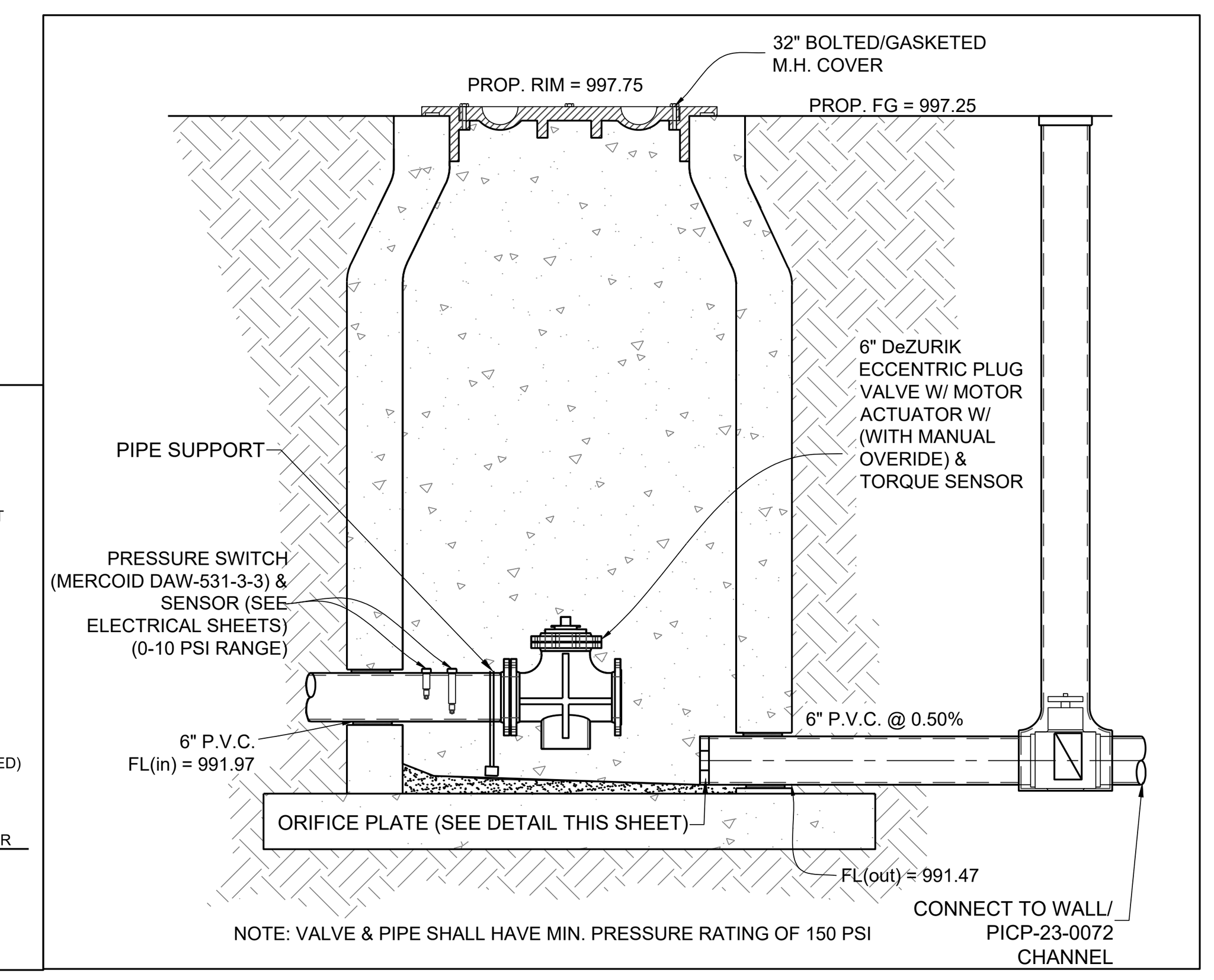
FACILITY OPERATOR:
SAMIR MAREDIA
(832) 713-4985

EDWARDS AQUIFER ID:
RN111804993 (11003712)
TCEQ REGION 11: (512) 339-2929

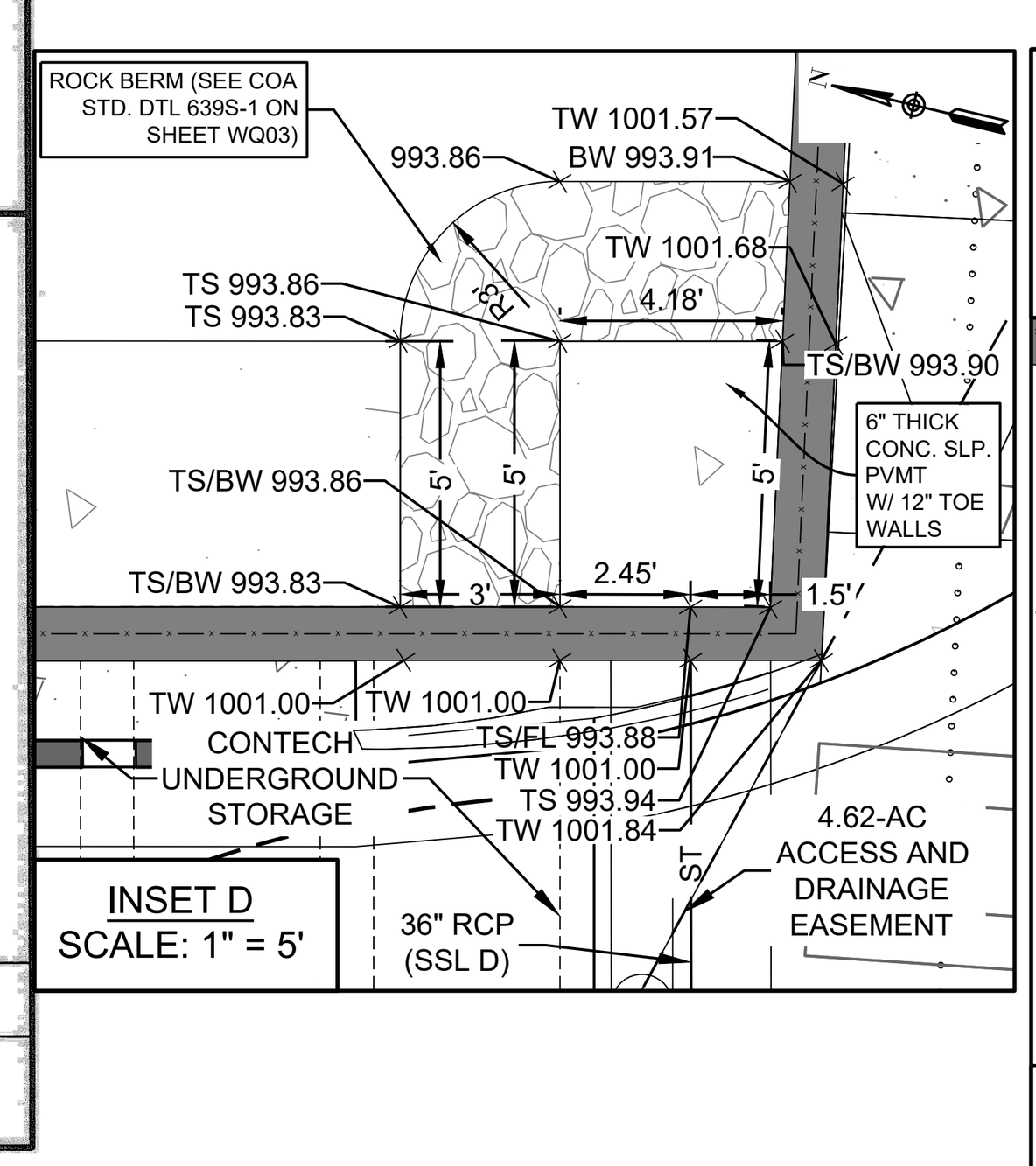
WQ POND SIGN (RG-348A)
(N.T.S.)



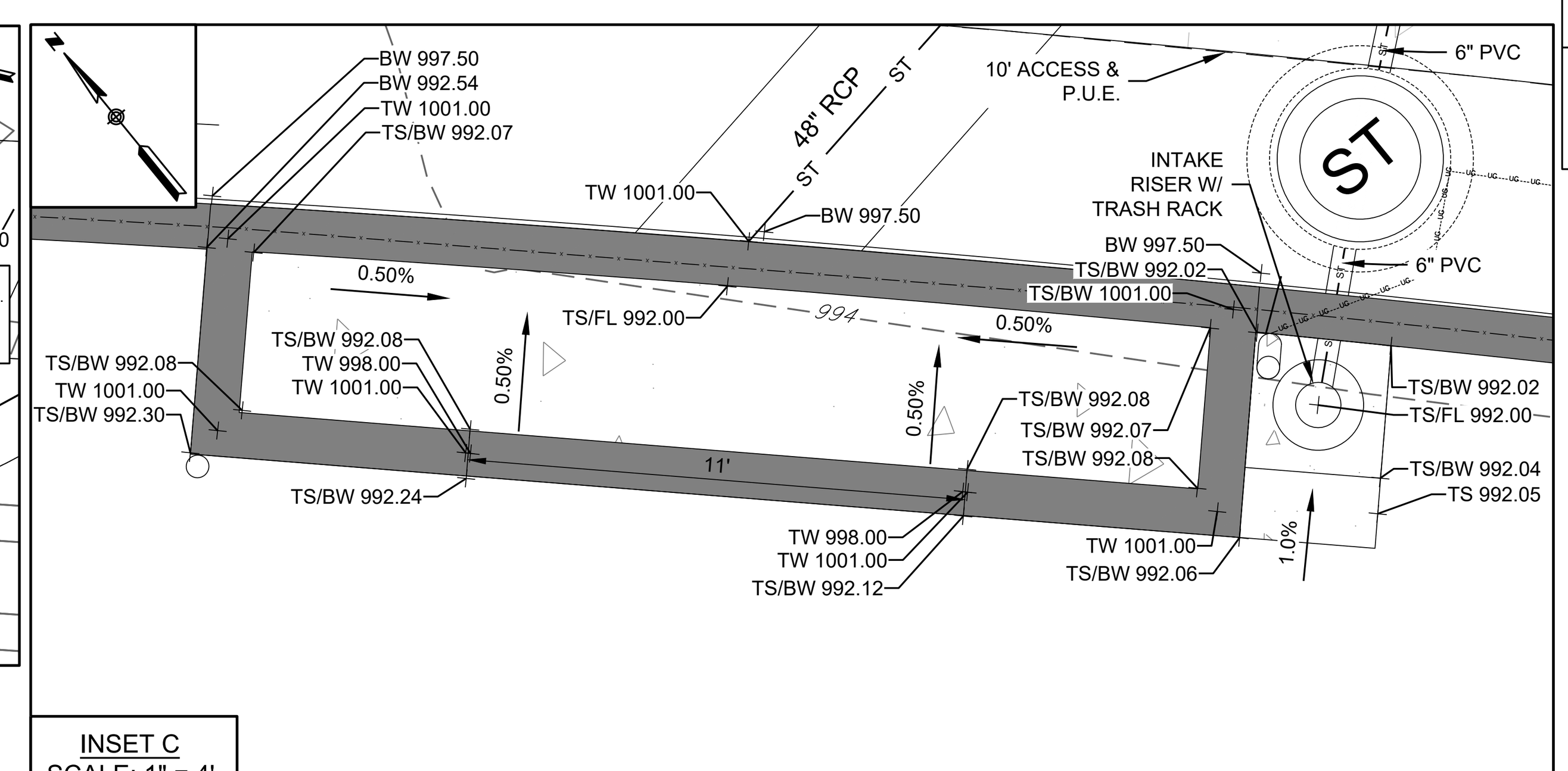
PIPE SUPPORT DETAIL
SCALE: NONE



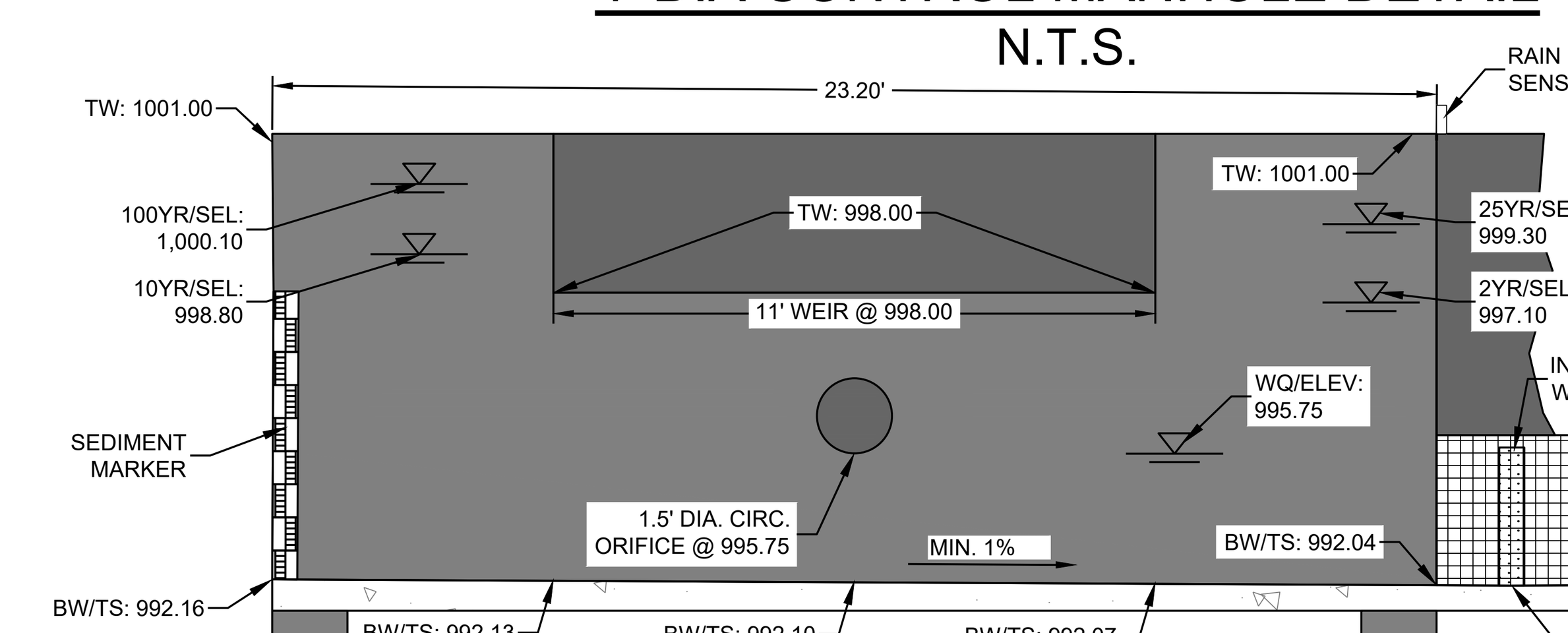
4' DIA CONTROL MANHOLE DETAIL
N.T.S.



INSET D
SCALE: 1" = 5'

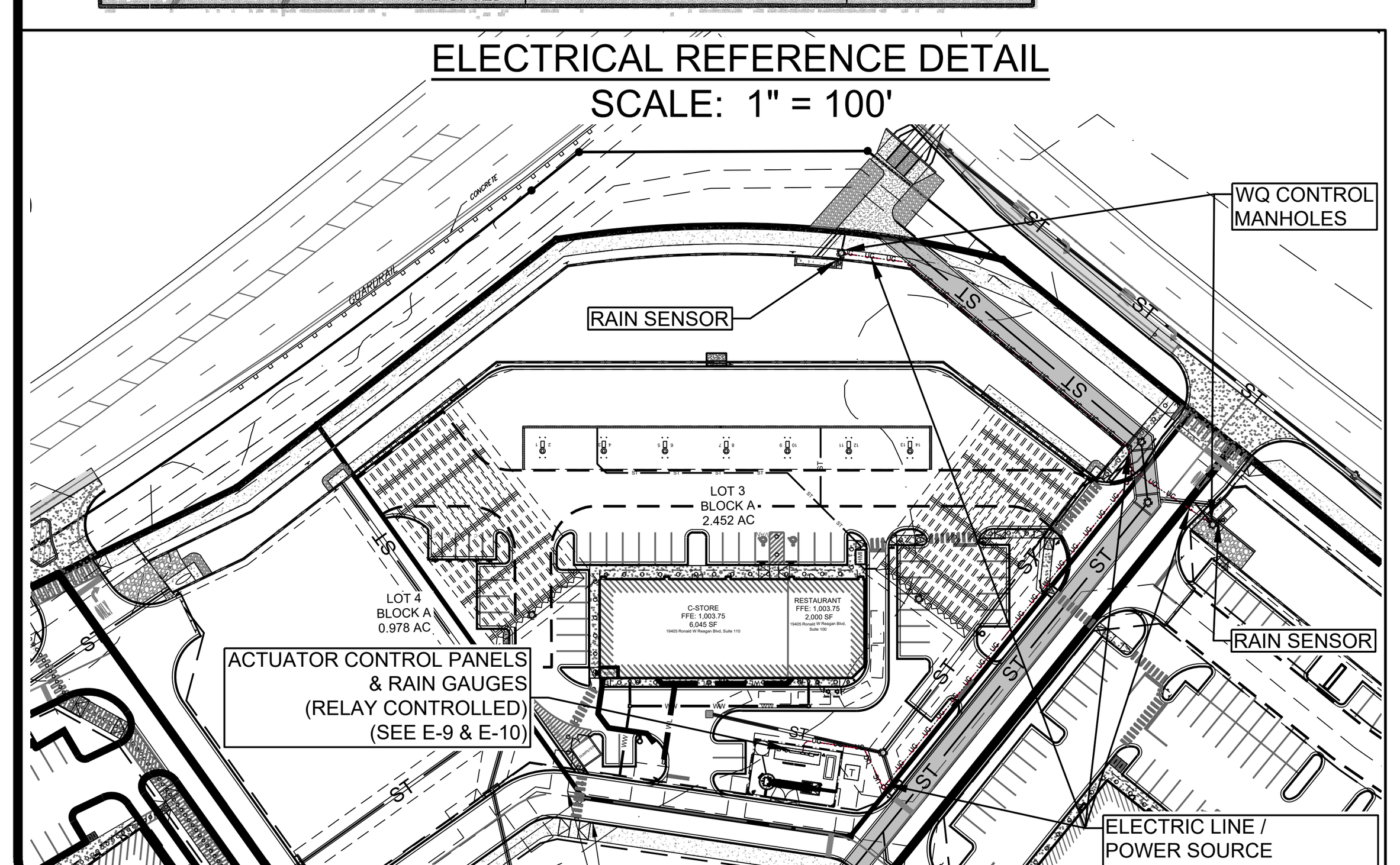


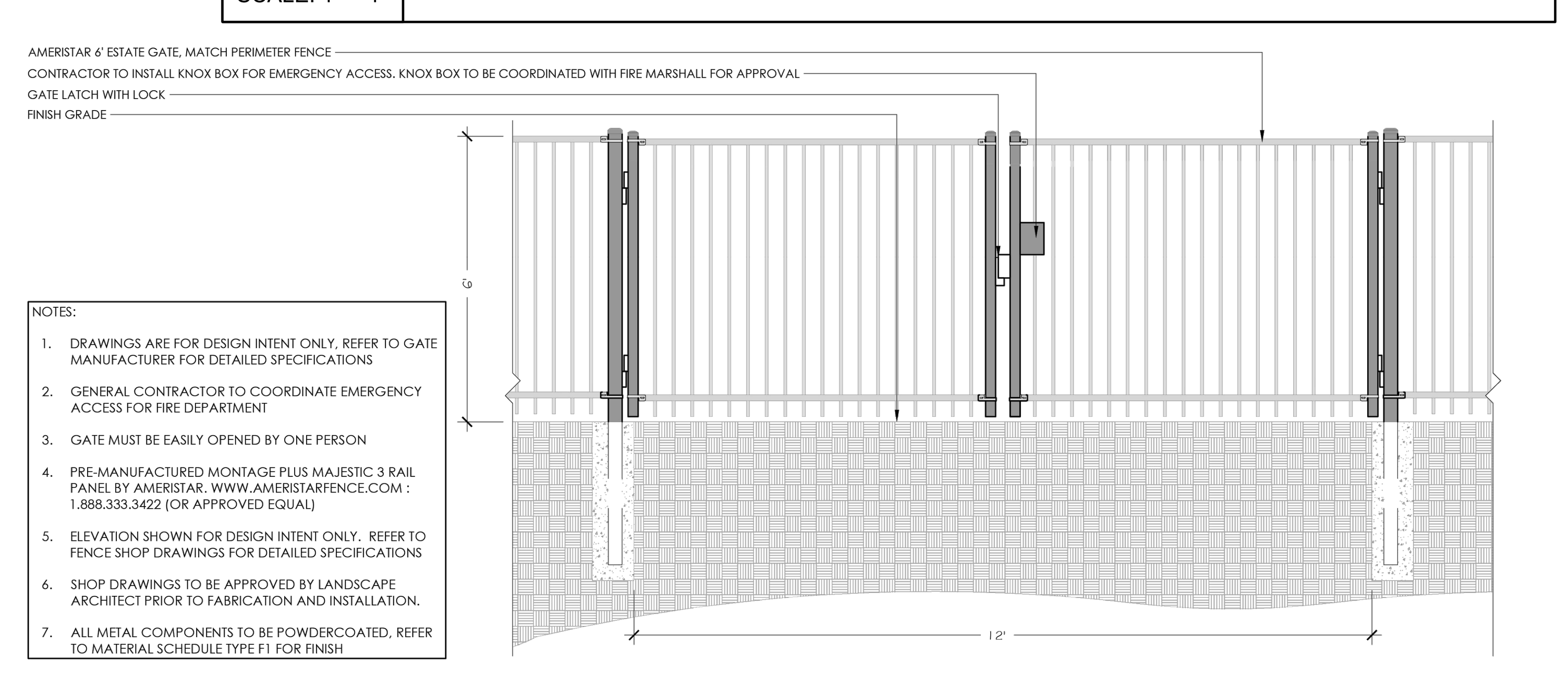
INSET C
SCALE: 1" = 4'



* RAIN SENSOR SHALL BE MOUNTED TO ELECTRICAL UNISTRUT RACK AS REQUIRED AND PER MANUFACTURERS INSTALLATION INSTRUCTIONS

POND B OUTFALL STRUCTURE DETAIL (FRONT X-SECTION)
SCALE: 1" = 4'



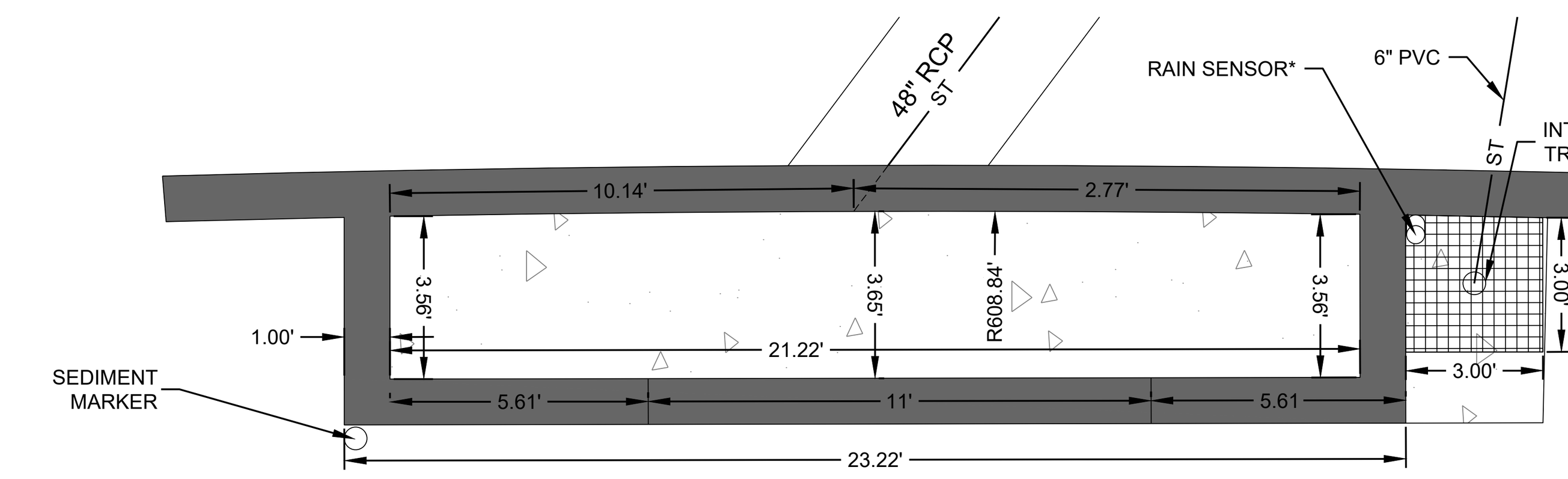


NOTES:

1. DRAWINGS ARE FOR DESIGN INTENT ONLY, REFER TO GATE MANUFACTURER FOR DETAILED SPECIFICATIONS
2. GENERAL CONTRACTOR TO COORDINATE EMERGENCY ACCESS FOR FIRE DEPARTMENT
3. GATE MUST BE EASILY OPENED BY ONE PERSON
4. PRE-MANUFACTURED MONTAGE PLUS MAJESTIC 3 RAIL PANEL BY AMERISTAR. WWW.AMERISTARFENCE.COM : 1.888.333.3422 (OR APPROVED EQUAL)
5. ELEVATION SHOWN FOR DESIGN INTENT ONLY. REFER TO FENCE SHOP DRAWINGS FOR DETAILED SPECIFICATIONS
6. SHOP DRAWINGS TO BE APPROVED BY LANDSCAPE ARCHITECT PRIOR TO FABRICATION AND INSTALLATION.
7. ALL METAL COMPONENTS TO BE POWDERCOATED, REFER TO MATERIAL SCHEDULE TYPE F1 FOR FINISH

POND ACCESS GATE
1/2" = 1'-0"

P-RE-2714O-DETA-12



* RAIN SENSOR SHALL BE MOUNTED TO ELECTRICAL UNISTRUT RACK AS REQUIRED AND PER MANUFACTURERS INSTALLATION INSTRUCTIONS

POND B OUTFALL STRUCTURE DETAIL (PLAN VIEW)
SCALE: 1" = 4'

SCALE IN FEET (40 20 0 40 80)

LEGEND

—UG---UG---UG—	UNDERGROUND ELECTRIC
———	BOUNDARY LINE/ R.O.W.
——990——	PROPOSED CONTOURS
— — 990 — —	EXISTING CONTOURS
(concrete pattern)	CONCRETE
(riprap pattern)	ROCK RIPRAP

NOTES

1. PROJECT LOCATED IN THE EDWARDS AQUIFER RECHARGE ZONE.
2. UPON COMPLETION OF THE PROPOSED SITE IMPROVEMENTS, AND PRIOR TO THE RELEASE OF THE CERTIFICATE OF OCCUPANCY BY THE CITY OF LEANDER, THE DESIGN ENGINEER SHALL CERTIFY IN WRITING THAT THE PROPOSED WATER QUALITY & DETENTION FACILITIES WERE CONSTRUCTED IN CONFORMANCE WITH THE APPROVED PLANS.
3. TOPSOIL MUST BE PLACED ON THE BASIN FLOOR AFTER EXCAVATED BOTTOM IS SCARIFIED TO A DEPTH OF 2 TO 3 INCHES . THE TOPSOIL MUST BE 6 TO 8 INCHES DEEP AND A SOIL MIXTURE OF 5-15% SAND OR GRANITE SAND, 60-70% TOPSOIL, AND SHALL BE A MINIMUM OF 25% COMPOST. SOIL BLEND MUST HAVE CLAY CONTENT LESS THAN 20 PERCENT AND BE FREE OF STONES, STUMPS, ROOTS, OR OTHER SIMILAR OBJECTS LARGER THAN 1 INCH.
4. NON WOVEN FILTER FABRIC WITH A MINIMUM OPENING OF 0.15 MM (U.S. SIEVE SIZE 100) SHALL BE WRAPPED AROUND THE RISER. THE RISER SHALL BE DOUBLE WRAPPED WITH FILTER FABRIC UNTIL THE CONTRIBUTING DRAINAGE AREA IS VEGETATED AND STABILIZED.
5. DISCHARGE COEFFICIENTS FOR OUTLETS TO CONTROL DISCHARGE TIME ARE 0.6.
6. ALL EXPOSED CONCRETE SHALL BE INTEGRALLY TINTED IN AN EARTHEN TONE AND TEXTURED TO APPEAR AS IF CONSTRUCTED OF STONE OR BRICK.
7. MAINTENANCE OF DRAINAGE AND WATER QUALITY IMPROVEMENTS CONTAINED IN DETENTION AND WATER QUALITY AREAS IS THE RESPONSIBILITY OF THE PROPERTY OWNER OR HIS OR HER ASSIGNS.
8. NO FENCING IS PROPOSED, HOWEVER, IF IT IS REQUIRED AT A LATER DATE, IT IS REQUIRED TO BE DECORATIVE BLACK TUBULAR METAL OR WROUGHT IRON.
9. ALL POND OUTFALLS AND CONCRETE STRUCTURES (EX. SAFETY END TREATMENTS, HEADWALLS, CONCRETE RIP-RAP, AND OUTFALL STRUCTURES) SHALL BE APPROVED BY THE PLANNING DIRECTOR PRIOR TO INSTALLATION IF STONE IS NOT PROPOSED
10. ALL WALLS SHALL BE INTEGRALLY TINTED IN AN EARTHEN TONE AND TEXTURED TO APPEAR AS IF CONSTRUCTED OF STONE OR BRICK.
11. ALLOWABLE FENCE MATERIALS INCLUDE, BUT ARE NOT LIMITED TO, CHAIN LINK, SOLID WOOD, MASONRY, STONE OR WROUGHT IRON. METAL COMPONENTS OF THE FENCE SHALL BE CORROSION RESISTANT AND WOOD COMPONENTS OF THE FENCE SHALL BE WEATHER RESISTANT. ANY FENCE POSTS USED SHALL BE GALVANIZED STEEL WITH A CONCRETE FOOTING OF AT LEAST TWELVE (12) INCHES IN DIAMETER AND AT LEAST EIGHTEEN (18) INCHES IN DEPTH (SEE STANDARD SPECIFICATION NO. 701).
12. ALL SIDE SLOPES, EARTHEN EMBANKMENTS, AND POND BOTTOMS, SHALL BE COMPACTED TO NINETY-FIVE (95) PERCENT OF MAXIMUM DENSITY IN ACCORDANCE WITH ESTABLISHED EMBANKMENT CONSTRUCTION REQUIREMENTS (STANDARD SPECIFICATION 132S).

CITY OF LEANDER APPROVAL

LOCATION OF EXISTING UNDERGROUND AND OVERHEAD UTILITIES ARE APPROXIMATE LOCATIONS ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES PRIOR TO BEGINNING WORK AND SHALL BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT OCCUR.

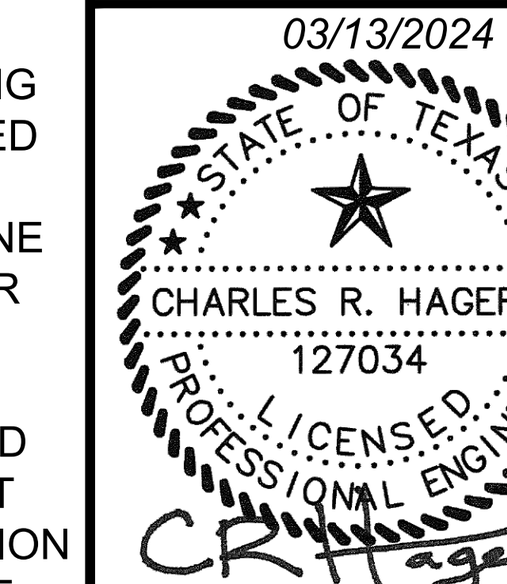
811 Know what's below. Call before you dig.

GATEWAY 29 WPAP / SCS
OVERALL SUBDIVISION IMPROVEMENTS
WATER QUALITY PLAN AND PROFILE SHEET 3
LEANDER, WILLIAMSON COUNTY, TEXAS

REVISIONS

NO.	DESCRIPTION	BY	DATE

DATE: 03/13/2024
DESIGNED BY: CRH
DRAWN BY:
CHECKED BY: CRH
DRAWING NAME: A633-0401-P-WQ01_WPAP.DWG



LJA Engineering, Inc.
7500 Rialto Boulevard
Building II, Suite 100
Austin, Texas 78735
Phone 512.439.4700
Fax 512.439.4716
FRN-F-1386

JOB NUMBER: A633-0401

WQ03

SHEET NO. 25 OF 90 SHEETS

CITY OF LEANDER PROJECT No. SD-23-0140

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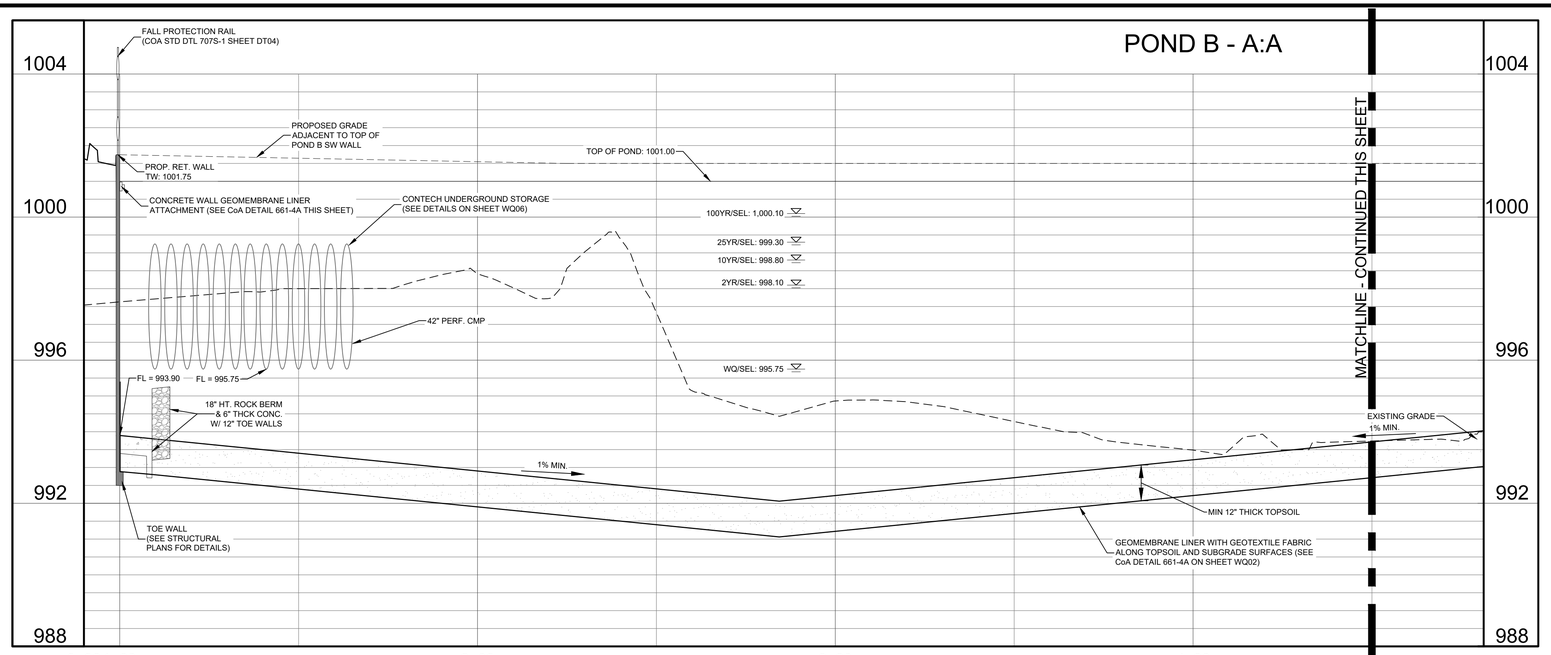
User: agetsinger
Last Modified: Mar. 12, 24 - 17:22
Plot Date/Time: Mar. 13, 24 - 14:42:54

POND B - A:A



Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009 **Project Name: Gateway 29 - POND B (ACTUAL DESIGN)**
Date Prepared: 3/12/2024

Additional information is provided for cells with a red triangle in the upper right corner. Place the cursor over the cell.
Text shown in blue indicate location of instructions in the Technical Guidance Manual - RG-348.
Characters shown in red are data entry fields.
Characters shown in black (Bold) are calculated fields. Changes to these fields will remove the equations used in the spreadsheet.

1. The Required Load Reduction for the total project: Calculations from RG-348 Pages 3-27 to 3-30

Page 3-29 Equation 3.3: $L_M = 27.2(A_N \times P)$

where:
$L_{M\ TOTAL\ PROJECT}$ = Required TSS removal resulting from the proposed development = 80% of increased load
A_N = Net increase in impervious area for the project
P = Average annual precipitation, inches

Site Data: Determine Required Load Removal Based on the Entire Project

County =	**Williamson**		
Total project area included in plan * =	**32.26**	acres	<--TOTAL SITE AREA
Predevelopment impervious area within the limits of the plan * =	**0.00**	acres	
Total post-development impervious area within the limits of the plan * =	**8.53**	acres	
Total post-development impervious cover fraction * =	**0.26**		
P =	**35**	inches	
$L_{M\ TOTAL\ PROJECT}$ =	**7143**	lbs.	

*** The values entered in these fields should be for the total project area.**

Number of drainage basins / outfalls areas leaving the plan area = **2**

2. Drainage Basin Parameters (This information should be provided for each basin):

Drainage Basin/Outfall Area No. = BASIN 'B'

Total drainage basin/outfall area =	**9.39**	acres	<--TOTAL AREA CONTRIBUTING TO WQ BASIN 'B'
Predevelopment impervious area within drainage basin/outfall area =	**0.00**	acres	(SEE SHEET DM03, DRAINAGE AREAS B-B7)
Post-development impervious area within drainage basin/outfall area =	**4.90**	acres	
Post-development impervious fraction within drainage basin/outfall area =	**0.52**		
$L_{M\ THIS\ BASIN}$ * =	**4360**	lbs.	

Compository Drainage Provided by Basin 'B' Water Quality Pond Summary

Total drainage basin/outfall area =	**1.136**	acres	<--AREA ADJACENT TO BASIN 'B' NOT CAPTURED BY POND B
Predevelopment impervious area within drainage basin/outfall area =	**0.00**	acres	(SEE SHEET DM03, DRAINAGE AREA OS-B)
Post-development impervious area within drainage basin/outfall area =	**0.19**	acres	
Post-development impervious fraction within drainage basin/outfall area =	**0.17**		
$L_{M\ COMPENSATING}$ * =	**165**	lbs.	
$L_{M\ TOTAL}$ * =	**4425**	lbs.	

3. Indicate the proposed BMP Code for this basin.

Proposed BMP = **Extended Detention** (Batch Detention Basin)
Removal efficiency = **91** percent

4. Calculate Maximum TSS Load Removed (L_R) for this Drainage Basin by the selected BMP Type.

RG-348 Page 3-33 Equation 3.7: L_R = (BMP efficiency) x P x (A_N x 34.6 + A_P x 0.54)

where:
A_C = Total On-Site drainage area in the BMP catchment area
A_I = Impervious area proposed in the BMP catchment area
A_P = Pervious area remaining in the BMP catchment area
L_M = TSS Load removed from this catchment area by the proposed BMP

A_C =	**9.391**	acres
A_I =	**4.898**	acres
A_P =	**4.49**	acres
L_M =	**5006**	lbs.

5. Calculate Fraction of Annual Runoff to Treat the drainage basin / outfall area.

Desired $L_{M\ THIS\ BASIN}$ * = **4425** lbs.

P = **0.88**

6. Calculate Capture Volume required by the BMP Type for this drainage basin / outfall area. Calculations from RG-348 Pages 3-34 to 3-36

Rainfall Depth =	**1.50**	inches
Post Development Runoff Coefficient =	**0.37**	
On-site Water Quality Volume =	**19902**	cubic feet

Calculations from RG-348 Pages 3-36 to 3-37

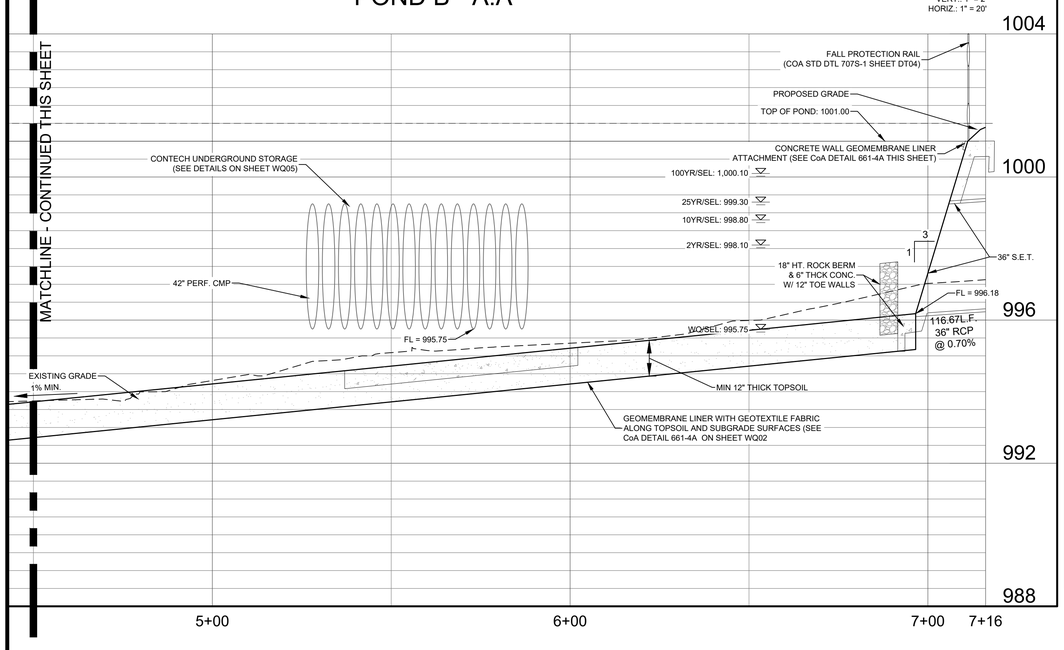
Off-site area draining to BMP =	**0.00**	acres
Off-site Impervious cover draining to BMP =	**0.00**	acres
Impervious fraction of off-site area =	**0**	
Off-site Runoff Coefficient =	**0.00**	
Off-site Water Quality Volume =	**0**	cubic feet
Storage for Sediment =	**3780**	
Total Capture Volume (required water quality volume(s) x 1.20) =	**23883**	cubic feet

The following sections are used to calculate the required water quality volume(s) for the selected BMP.
The values for BMP Types not selected in cell C45 will show NA.

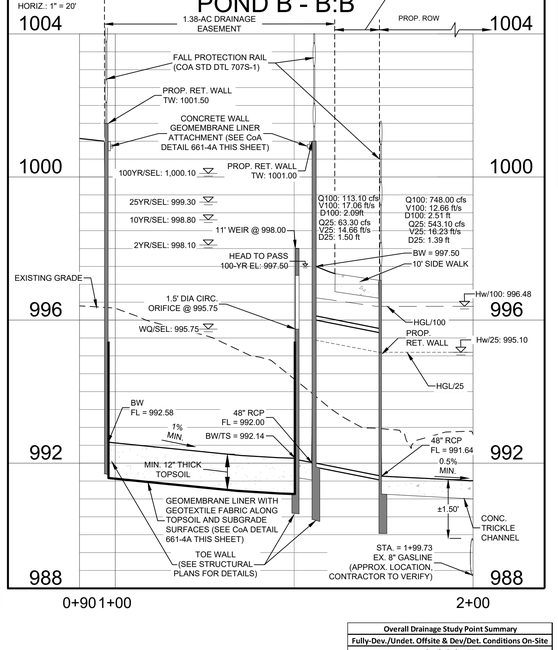
8. Extended Detention Basin System Designed as Required in RG-348 Pages 3-46 to 3-51

Required Water Quality Volume for extended detention basin =	**22,683**	cubic feet
PROVIDED WATER QUALITY VOLUME=	**47,178**	cubic feet

POND B - A:A



POND B - B:B



Detention Pond - Total Stage Storage Table

Total Storage		Dry Chamber				Under-ground
Elevation (FT)	Cumulative Volume (AC-FT)	Area (AC)	A1+A2+SQR (A1*A2) (AC)	Incremental Volume (AC-FT)	Cumulative Volume (AC-FT)	Cumulative Volume (AC-FT)
992.00	0.000	0.000	0.000	0.000	0.000	0.000
993.00	0.066	0.198	0.198	0.066	0.066	0.000
994.00	0.350	0.381	0.853	0.284	0.350	0.000
995.00	0.753	0.424	1.207	0.402	0.753	0.000
995.75	1.083	0.457	1.322	0.330	1.083	0.000
996.00	1.222	0.468	1.388	0.116	1.199	0.024
997.00	1.912	0.478	1.419	0.473	1.672	0.240
998.00	2.659	0.480	1.437	0.479	2.151	0.508
999.00	3.355	0.481	1.441	0.480	2.631	0.724
999.25	3.499	0.481	1.444	0.120	2.751	0.848
1000.00	3.861	0.483	1.446	0.361	3.113	0.000
1001.00	4.344	0.485	1.451	0.484	3.596	0.000

DETENTION POND SUMMARY - B

STORM EVENT	INFLOW (CFS)	Time to Peak (hrs)	OUTFLOW (CFS)	Time to Peak (hrs)	WS ELEV.
2YR	61.50	12.04	12.10	12.21	998.10
10YR	94.80	12.04	37.60	12.12	998.80
25YR	118.00	12.04	63.30	12.10	999.30
100YR	158.10	12.04	113.10	12.08	1,000.10

NOTE:
COEFFICIENTS FOR ORIFICES ARE MODELED AS 0.6 $ft^{.5}/s$
COEFFICIENTS FOR ORIFICES ARE MODELED AS 3.0 $ft^{.5}/s$

Outlet Structure-Stage Discharge Table

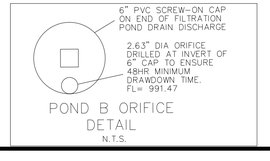
Stage / Elevation	1.5' Dia. Cir. Or. @ 995.75 Q (cfs)	11' Weir @ 998.00 Q (cfs)	TOTAL Q (cfs)
994.5	0.00	0.00	0.00
995.00	0.00	0.00	0.00
996.00	5.83	0.00	5.83
997.00	10.31	0.00	10.31
998.00	13.37	0.00	13.37
999.00	15.84	32.40	48.24
1000.00	17.98	89.94	107.92
1001.00	19.89	162.12	182.01

HEAD REQUIRED TO PASS 100-YR EVENT INTO 48" POND B RCP OUT

100-yr Storm Event Ponding Height (above centroid)=	$(Q/(C_d*A))^2/(2*32.2)$
0.6	Cd
OR	PIPE OR ORIFICE? (PIPE, OR)
48	Pipe Diameter or Orifice Height (in)
	No. of Pipes/Culverts
12.57	Orifice Area (SF)
113.1	Discharge (100 Yr) (cfs)
992.02	Pipe FL (ft)
3.49	Height Above Centroid (ft)
997.51	**100-YR WSEL to Pass 100-yr Discharge (ft)**
1000.10	**Pond 100-yr WSEL (ft)**
Yes	**Is Pond 100-yr WSEL > Head to Pass 100-year Storm Event?**

Overall Drainage Study Point Summary

Fully-Dev./Undet. Offsite & Dev/Det. Conditions On-Site	
Study Point #1	
EXISTING CONDITIONS DM01	DEVELOPED CONDITIONS DM02
Storm Event	
2-Year	269.60	245.20
10-Year	438.10	405.40
25-Year	556.40	517.10
100-Year	761.00	705.90



POND B ORIFICE
DETAIL
N.T.S.

DRAWDOWN CALCULATION FOR BATCH DET WQ BASIN B

WQ VOLUME =	47178 CF	
MINIMUM DRAWDOWN TIME = 36 HR = 129600 SECONDS		(48 HRS w/ 12-HR DELAY)
FLOW = 47178 CF / 129600 SEC =	0.364 CFS	
HEAD= 996.12-993.75	= 4.00 (POND AVG HEAD TO ORIFICE CL)	
A = 0.364 CFS/(.60 *	(64.4 *4.00) ^.5)=	0.037802 SF
R =(A/(3.14))^.5 =	0.11 FT	
D (in.) = 2R * 12 =	**2.63 inch orifice**	
Q =0.0378 * .60 * (64.4 * 4.00)^.5 =	0.364 CFS	
DRAWDOWN TIME =	47178 CF / 0.364 CFS	= 129600 SEC = 36 HRS

THEREFORE, POND WILL DRAWDOWN IN LESS THAN 72 HRS

Water Quality Basin B Drawdown Calculations

Time (HRS)	Drawdown Percentage (%)	Remaining WQ Volume (CF)	WQ Stage Elevation (FT)
0:00	0	47,178	995.75
12:00	0	47,178	995.75
24:00	25	35,384	995.18
36:00	50	23,589	994.48
48:00	75	11,795	993.72
60:00	100	0	992.00

Note: Batch Det. Requires 12-hr lag and to be drained w/in the next 48-hrs.

BATCH DETENTION WATER QUALITY
W/ STACKED DETENTION POND CALCULATIONS
FOR TCEQ WPAP PERMITTING IN WILLIAMSON COUNTY
POND B (Ronald Reagan - HWY 29 - Northeast) - ACTUAL BUILD OUT

DRAINAGE AREA DATA:

THE WATER QUALITY CONTROL IS TO BE BATCH DETENTION (91% REMOVAL EFFICIENCY)		
DRAINAGE AREA TO CONTROL (A_C)	9.390	ACRES
DRAINAGE AREA IMPERVIOUS COVER (IC)	52.16	PERCENT (Drainage Area A2)
DRAINAGE AREA IMPERVIOUS COVER (IA)	4.90	ACRES
AV. ANNUAL PRECIPITATION (P)	32.00	IN
L_M TOTAL DRAINING TO POND	4260.3	LBS
L_M TOTAL COMPENSITORY	165	LBS (Compensatory IC for s/w & adjacent dwy)
L_M TOTAL (POND DESIGN)	4425	LBS
PERVIOUS AREA REMAINING IN DA (A_P)	4.49	ACRES
TSS LOAD REMOVED BY PROP. WQ POND (L_M)	5006	LBS
FRACTION OF ANNUAL RUNOFF / OUTFALL AREA (F)	0.88	
RAINFALL DEPTH	1.50	IN
POST-DEV. RUNOFF COEFFICIENT	0.60	
ON-SITE WATER QUALITY VOL. REQUIRED (WQV)	18,901	CF
TOTAL CAPTURE VOLUME (WQV x 1.20)	22,683	CF

WATER QUALITY CONTROL CALCULATIONS:	REQUIRED	PROVIDED
THE WATER QUALITY CONTROL IS TO BE BATCH DETENTION		
WATER QUALITY VOLUME (WQV = CD*DA*3630)	22,683 CF	47,178 CF
MAX PONDING DEPTH ABOVE WQ OUTLET (H)		3.75 FT
WATER QUALITY ELEVATION		995.75 FT MSL

BATCH DETENTION BASIN:

TOTAL ELEV. (FT)	TOTAL TOT. VOL (CF)	DRY CHAMBER AREA (SF)	DRY CHAMBER A1+A2+SQR (A1*A2) (SF)	INC. VOL. (CF)	TOT. VOL. (CF)	TOT. VOL (AC-FT)
992.00	0	0	0.00	0	0	0.000
993.00	2,874	8,623	8,623.00	2,874	2,874	0.066
994.00	15,261	16,580	37,159.98	12,387	15,261	0.350
995.00	32,784	18,483	52,568.66	17,523	32,784	0.753
995.75	47,178	19,911	57,577.72	14,394	47,178	1.083
996.00	52,215	20,387	60,445.59	5,037	52,215	1.199
997.00	72,822	20,827	61,819.83	20,607	72,822	1.672
998.00	93,682	20,893	62,579.97	20,860	93,682	2.151
999.00	114,605	20,953	62,768.98	20,923	114,605	2.631
999.25	119,845	20,970	62,884.12	5,240	119,845	2.751
1000.00	135,592	21,020	62,984.61	15,746	135,592	3.113
1001.00	156,659	21,114	63,200.95	21,067	156,659	3.596

CITY OF LEANDER APPROVAL

LOCATION OF EXISTING UNDERGROUND AND OVERHEAD UTILITIES ARE APPROXIMATE LOCATIONS ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES PRIOR TO BEGINNING WORK AND SHALL BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT OCCUR.

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

CITY OF LEANDER PROJECT No. SD-23-0140

GATEWAY 29 WPAP / SCS
OVERALL SUBDIVISION IMPROVEMENTS
WATER QUALITY PLAN AND PROFILE SHEET
4
LEANDER, WILLIAMSON COUNTY, TEXAS

NO.	DESCRIPTION	BY	DATE
	REVISIONS		

DATE: 03/13/2024
DESIGNED BY: CRH
DRAWN BY: CRH
CHECKED BY: CRH
DRAWING NAME: A633-0401-P-WQ01_WPAP.DWG

03/13/2024
STATE OF TEXAS
CHARLES R. HAGER
127034
LICENSED PROFESSIONAL ENGINEER

LJA Engineering, Inc.
7500 Rialto Boulevard
Building II, Suite 100
Austin, Texas 78735
Phone 512.439.4700
Fax 512.439.4716
FRN-F-1386

JOB NUMBER: A633-0401

WQ04

SHEET NO. 26 OF 90 SHEETS

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User: sgehringer
Last Modified: Mar. 12, 24 - 17:22
Plot Date/Time: Mar. 13, 24 - 14:53:11

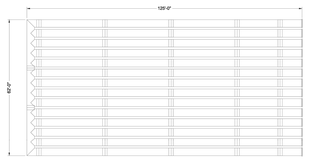
PROJECT SUMMARY

CALCULATION DETAILS
- I LOADING = HS20HS20
- APPROX. LINEAR FOOTAGE = 1,763 LF

STORAGE SUMMARY
- STORAGE VOLUME REQUIRED = NA
- PIPE STORAGE VOLUME = 16,960 CF
- MACHFILL STORAGE VOLUME = 4,896 CF
- TOTAL STORAGE PROVIDED = 21,857 CF

PIPE DETAILS
- DIAMETER = 42"
- CORRUGATION = 2 2⅔x1/2
- GAGE = 16
- COATING = ALTZ
- WALL TYPE = SOLID
- BARREL SPACING = 12"

BACKFILL DETAILS
- WIDTH AT ENDS = 12"
- ABOVE PIPE = 6"
- WIDTH AT SIDES = 12"
- BELOW PIPE = 0"



NOTES
- ALL RISER AND STUB DIMENSIONS ARE TO CENTERLINE. ALL ELEVATIONS, DIMENSIONS, AND LOCATIONS OF CONNECTING PIPES, SHALL BE VERIFIED BY THE ENGINEER OF RECORD PRIOR TO RELEASING FOR FABRICATION
- ALL FITTINGS AND REINFORCEMENT COMPLY WITH ASTM A998.
- ALL RISERS AND STUBS ARE 2⅔" x ½" CORRUGATION AND 16 GAGE UNLESS OTHERWISE NOTED.
- RISERS TO BE FIELD TRIMMED TO GRADE.
- QUANTITY OF PIPE SHOWN DOES NOT PROVIDE EXTRA PIPE FOR CONNECTING THE SYSTEM TO DRAINAGE FACILITIES. CONTRACTOR TO PROVIDE ANY SYSTEM AS DETAILED PROVIDED NOMINAL INLET AND/OR OUTLET PIPE STUB FOR CONNECTION TO DRAINAGE FACILITIES. IF ADDITIONAL PIPE IS NEEDED IT IS THE RESPONSIBILITY OF THE CONTRACTOR.
- BAND TYPE TO BE DETERMINED UPON FINAL DESIGN.
- THE PROJECT SUMMARY IS REFLECTIVE OF THE CONTECH DESIGN ENGINEER'S BEST JUDGEMENT AND SHOULD BE VERIFIED UPON FINAL DESIGN AND APPROVAL. FOR EXAMPLE, TOTAL EXCAVATION DOES NOT INCLUDE OVEREXCAVATION FOR FOUNDATION AND ONLY ACCOUNTS FOR MATERIAL WITHIN THE ESTIMATED EXCAVATION FOOTPRINT.
- THESE DRAWINGS ARE FOR CONCEPTUAL PURPOSES AND DO NOT REFLECT ANY LOCAL PREFERENCES OR REGULATIONS. PLEASE CONTACT YOUR LOCAL CONTECH REP FOR MODIFICATIONS.

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They are responsible for providing any temporary or permanent equipment required for their work. They are responsible for providing any temporary or permanent personnel required for their work. They are responsible for providing any temporary or permanent training required for their work. They are responsible for providing any temporary or permanent documentation required for their work. They are responsible for providing any temporary or permanent reports required for their work. They are responsible for providing any temporary or permanent records required for their work. They are responsible for providing any temporary or permanent submittals required for their work. They are responsible for providing any temporary or permanent shop drawings required for their work. They are responsible for providing any temporary or permanent samples required for their work. They are responsible for providing any temporary or permanent mock-ups required for their work. They are responsible for providing any temporary or permanent testing required for their work. They are responsible for providing any temporary or permanent inspection required for their work. They are responsible for providing any temporary or permanent quality control required for their work. They are responsible for providing any temporary or permanent quality assurance required for their work. They are responsible for providing any temporary or permanent safety required for their work. They are responsible for providing any temporary or permanent security required for their work. They are responsible for providing any temporary or permanent environmental protection required for their work. They are responsible for providing any temporary or permanent waste management required for their work. They are responsible for providing any temporary or permanent recycling required for their work. They are responsible for providing any temporary or permanent disposal required for their work. They are responsible for providing any temporary or permanent cleanup required for their work. They are responsible for providing any temporary or permanent restoration required for their work. They are responsible for providing any temporary or permanent mitigation required for their work. They are responsible for providing any temporary or permanent monitoring required for their work. They are responsible for providing any temporary or permanent reporting required for their work. They are responsible for providing any temporary or permanent documentation

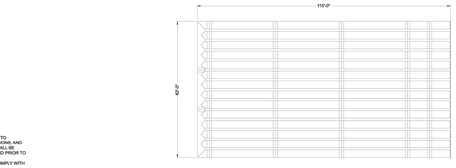
PROJECT SUMMARY

CALCULATION DETAILS
- LOADING = HS20+S2/25
- APPROX. LINEAR FOOTAGE = 1,623 LF

STORAGE SUMMARY
- STORAGE VOLUME REQUIRED = N/A
- PIPE STORAGE VOLUME = 15,615 CF
- BACKFILL STORAGE VOLUME = 4,238 CF
- TOTAL STORAGE PROVIDED = 19,853 CF

PIPE DETAILS
- DIAMETER = 42"
- CORRUGATION = 2 2/3x1/2
- GAGE = 16
- COATING = ALTZ
- WALL TYPE = SOLID
- BARREL SPACING = 12"

BACKFILL DETAILS
- WIDTH AT ENDS = 12"
- ABOVE PIPE = 0"
- WIDTH AT SIDES = 12"
- BELOW PIPE = 0"



ASSEMBLY
SCALE: 1" = 20'

NOTES
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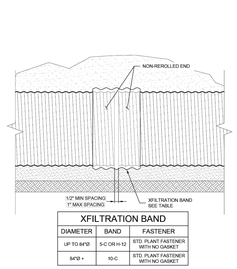
DATE	REVISION DESCRIPTION	BY

CONTECH ENGINEERED SOLUTIONS LLC
www.ContechES.com
9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069
800-338-1122 513-645-7000 513-645-7993 FAX

CONTECH CMP DETENTION SYSTEMS
CONTECH DYODS Drawings

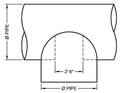
DYO39554 Gateway 29 Leander
SE 42 xFiltration System
Leander, TX
DETENTION SYSTEM

PROJECT No.	SEQ. No.	DATE
DYO	39554	10/18/2023
DESIGNED	DRAWN	
DYO	DYO	
CHECKED	APPROVED	
DYO	DYO	
SHEET NO.		
1		



XFILTRATION BAND		
DIAMETER	BAND	FASTENER
UP TO 84"Ø	S-C OR H-10	STD. PLANT FASTENER WITH NO GASKET
84"Ø +	10-C	STD. PLANT FASTENER WITH NO GASKET

XFILTRATION JOINT DETAIL
NOT TO SCALE

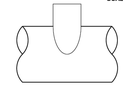


PLAN

TYPICAL MANWAY DETAIL
SCALE: N.T.S.

FRONT

NOTE:
MANWAY DETAIL APPLICABLE FOR CMP SYSTEMS WITH DIAMETERS 48" AND LARGER. MANWAYS MAY BE REQUIRED ON SMALLER SYSTEMS DEPENDING ON ACTUAL SITE SPECIFIC CONDITIONS.



ELEVATION



END

NOTE:
LADDERS ARE OPTIONAL, AND ARE NOT REQUIRED FOR ALL SYSTEMS.

TYPICAL RISER DETAIL
SCALE: N.T.S.

PROJECT SUMMARY
CALCULATION DETAILS
- LOADING = HS20+S2/25
- APPROX. LINEAR FOOTAGE = 1,623 LF

STORAGE SUMMARY
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- BACKFILL STORAGE VOLUME = 4,238 CF
- TOTAL STORAGE PROVIDED = 19,853 CF

PIPE DETAILS
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- CORRUGATION = 2 2/3x1/2
- GAGE = 16
- COATING = ALTZ
- WALL TYPE = SOLID
- BARREL SPACING = 12"

BACKFILL DETAILS
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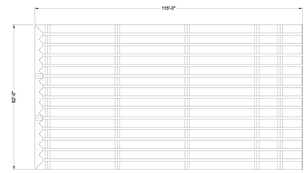
- ABOVE PIPE = 0"
- WIDTH AT SIDES = 12"
- BELOW PIPE = 0"



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- RISERS TO BE FIELD TRIMMED TO GRADE.
- QUANTITY OF PIPE SHOWN DOES NOT PROVIDE EXTRA PIPE FOR CONNECTING THE SYSTEM TO EXISTING PIPE OR DRAINAGE STRUCTURES. OUR SYSTEM AS DETAILED PROVIDES NOMINAL INLET AND/OR OUTLET PIPE STUB FOR CONNECTION TO EXISTING DRAINAGE FACILITIES. IF ADDITIONAL PIPE IS NEEDED IT IS THE RESPONSIBILITY OF THE CONTRACTOR.
- BAND TYPE TO BE DETERMINED UPON FINAL DESIGN.
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ASSEMBLY
SCALE: 1" = 20'

DYO39554 Gateway 29 Leander
SE 42 xFiltration System
Leander, TX
DETENTION SYSTEM

PROJECT No.	SEQ. No.	DATE
DYO	39554	10/18/2023
DESIGNED	DRAWN	
DYO	DYO	
CHECKED	APPROVED	
DYO	DYO	
SHEET NO.		
1		

CONSTRUCTION LOADS

FOR TEMPORARY CONSTRUCTION VEHICLE LOADS, AN EXTRA AMOUNT OF COMPACTED COVER MAY BE REQUIRED OVER THE TOP OF THE PIPE. THE HEIGHT-OF-COVER SHALL MEET THE MINIMUM REQUIREMENTS SHOWN IN THE TABLE BELOW. THE USE OF HEAVY CONSTRUCTION EQUIPMENT WITH LESS THAN THE SPECIFIED COVER MAY EXPOSE THE PIPE TO LOADS GREATER THAN DESIGN LOADS AND CAUSE DAMAGE TO THE PIPE. CONTECH RECOMMENDS GREATER PROTECTION FOR THE PIPE THAN FINISHED GRADE COVER MINIMUMS FOR NORMAL HIGHWAY TRAFFIC.

PIPE SPAN, INCHES	AXLE LOADS (kips)			
	18-50	50-75	75-110	110-150
	MINIMUM COVER (FT)			
12-42	2.0	2.5	3.0	3.5
48-72	3.0	3.0	3.5	4.0
78-108	3.0	3.5	4.0	4.0
120-144	3.5	4.0	4.5	4.5

*MINIMUM COVER MAY VARY, DEPENDING ON LOCAL CONDITIONS. THE CONTRACTOR MUST PROVIDE THE ADDITIONAL COVER REQUIRED TO AVOID DAMAGE TO THE PIPE. MINIMUM COVER IS MEASURED FROM THE TOP OF THE PIPE TO THE TOP OF THE MAINTAINED CONSTRUCTION ROADWAY SURFACE.

CONSTRUCTION LOADING DIAGRAM
SCALE: N.T.S.

SECTION VIEW

ROUND OPTION PLAN VIEW

SQUARE OPTION PLAN VIEW

NOTES:
1. DESIGN IN ACCORDANCE WITH AASHTO, 17th EDITION
2. DESIGN LOAD H025
3. EARTH COVER = 1' MAX.
4. CONCRETE STRENGTH = 3,500 psi
5. REINFORCING STEEL = ASTM A615, GRADE 60.
6. PROVIDE ADDITIONAL REINFORCING AROUND OPENINGS EQUAL TO THE BARS INTERRUPTED, HALF EACH SIDE. ADDITIONAL BARS TO BE IN THE SAME PLANE.
7. TWIN OPENING WITH DIAGONAL #4 BARS, EXTEND BARS A MINIMUM OF 12" BEYOND OPENING, BEND BARS AS REQUIRED TO MAINTAIN BAR COVER.
8. PROTECTION SLAB AND ALL MATERIALS TO BE PROVIDED AND INSTALLED BY CONTRACTOR.
9. DETAIL DESIGN BY DELTA ENGINEERING, BINGHAMTON, NY.

MANHOLE CAP DETAIL
SCALE: N.T.S.

REINFORCING TABLE

Ø CMP RISER	A	Ø B	REINFORCING	**BEARING PRESSURE (PSF)
24"	Ø 4" 4"Ø	26"	#5 @ 12" OCEW #5 @ 12" OCEW	2,410 1,780
30"	Ø 4'-6" 4'-6" 4'-6"	32"	#5 @ 12" OCEW #5 @ 12" OCEW	2,120 1,530
36"	Ø 5' 5' 5'	38"	#5 @ 10" OCEW #5 @ 10" OCEW	1,890 1,350
42"	Ø 5'-6" 5'-6" 5'-6"	44"	#5 @ 10" OCEW #5 @ 7" OCEW	1,720 1,210
48"	Ø 6' 6' 6'	50"	#5 @ 9" OCEW #5 @ 6" OCEW	1,600 1,100

** ASSUMED SOIL BEARING CAPACITY

PIPE DIAMETER	MIN. WIDTH OF TRENCH
12" - 24"	2'-0"
30" - 60"	3'-0"
66" - 84"	4'-0"
90" - 120"	5'-0"

SPECIFICATION FOR DESIGNED DETENTION SYSTEM:

SCOPE:
THIS SPECIFICATION COVERS THE MANUFACTURE AND INSTALLATION OF THE DESIGNED DETENTION SYSTEM DETAILED IN THE PROJECT PLANS.

MATERIAL:
THE MATERIAL SHALL CONFORM TO THE APPLICABLE REQUIREMENTS LISTED BELOW:

ALUMINIZED TYPE 2 STEEL COILS SHALL CONFORM TO THE APPLICABLE REQUIREMENTS OF AASHTO M-274 OR ASTM A-92.

THE GALVANIZED STEEL COILS SHALL CONFORM TO THE APPLICABLE REQUIREMENTS OF AASHTO M-218 OR ASTM A-929.

THE POLYMER COATED STEEL COILS SHALL CONFORM TO THE APPLICABLE REQUIREMENTS OF AASHTO M-246 OR ASTM A-742.

THE ALUMINUM COILS SHALL CONFORM TO THE APPLICABLE REQUIREMENTS OF AASHTO M-197 OR ASTM B-744.

CONSTRUCTION LOADS:
CONSTRUCTION LOADS MAY BE HIGHER THAN FINAL LOADS. FOLLOW THE MANUFACTURER'S OR NCSPA GUIDELINES.

NOTE:
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PIPE
THE PIPE SHALL BE MANUFACTURED IN ACCORDANCE TO THE APPLICABLE REQUIREMENTS LISTED BELOW:

ALUMINIZED TYPE 2: AASHTO M-36 OR ASTM A-760

GALVANIZED: AASHTO M-36 OR ASTM A-760

POLYMER COATED: AASHTO M-245 OR ASTM A-762

ALUMINUM: AASHTO M-196 OR ASTM B-745

HANDLING AND ASSEMBLY
SHALL BE IN ACCORDANCE WITH NCSPS (NATIONAL CORRUGATED STEEL PIPE ASSOCIATION) FOR ALUMINIZED TYPE 2, GALVANIZED OR POLYMER COATED STEEL. SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS FOR ALUMINUM PIPE.

INSTALLATION
SHALL BE IN ACCORDANCE WITH AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, SECTION 26 FOR ALUMINIZED TYPE 2 OR SECTION 27 FOR ALUMINIZED TYPE 2, GALVANIZED OR POLYMER COATED STEEL) OR ASTM B-788 (FOR ALUMINUM PIPE) AND IN CONFORMANCE WITH THE PROJECT PLANS AND SPECIFICATIONS. IF THERE ARE ANY INCONSISTENCIES OR CONFLICTS THE CONTRACTOR SHOULD DISCUSS AND RESOLVE WITH THE SITE ENGINEER.

IT IS ALWAYS THE RESPONSIBILITY OF THE CONTRACTOR TO FOLLOW OSHA GUIDELINES FOR SAFE PRACTICES.

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CONTECH ENGINEERED SOLUTIONS LLC
www.ContechES.com
9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069
800-338-1122 513-645-7000 513-645-7993 FAX

CONTECH CMP DETENTION SYSTEMS
CONTECH DYODS Drawings

XFILTRATION JOINT SYSTEM DETAILS

PROJECT No.	SEQ. No.	DATE
DESIGNED	DRAWN	
CHECKED	APPROVED	
SHEET NO.		

CMP DETENTION INSTALLATION GUIDE

PROPER INSTALLATION OF A FLEXIBLE UNDERGROUND DETENTION SYSTEM WILL ENSURE LONG TERM PERFORMANCE. THE CONFIGURATION OF THESE SYSTEMS often REQUIRES SPECIAL CONSTRUCTION PRACTICES THAT DIFFER FROM CONVENTIONAL FLEXIBLE PIPE CONSTRUCTION. CONTECH ENGINEERED SOLUTIONS STRONGLY SUGGESTS SCHEDULING A PRE-CONSTRUCTION MEETING WITH YOUR LOCAL SALES ENGINEER TO DETERMINE IF ADDITIONAL MEASURES, NOT COVERED IN THIS GUIDE, ARE APPROPRIATE FOR YOUR SITE.

FOUNDATION

CONSTRUCT A FOUNDATION THAT CAN SUPPORT THE DESIGN LOADING APPLIED BY THE PIPE AND ADJACENT BACKFILL WEIGHT AS WELL AS MAINTAIN ITS INTEGRITY DURING CONSTRUCTION.

IF SOFT OR UNSUITABLE SOILS ARE ENCOUNTERED, REMOVE THE POOR SOILS DOWN TO A SUITABLE DEPTH AND THEN BUILD UP TO THE BOTTOM OF THE PIPE WITH STRUCTURAL FILL MATERIAL. THE STRUCTURAL FILL MATERIAL UNDERNEATH SHOULD NOT ALLOW THE MIGRATION OF FINES, WHICH CAN CAUSE SETTLEMENT OF THE DETENTION SYSTEM OR PAVEMENT ABOVE. IF THE STRUCTURAL FILL MATERIAL IS NOT COMPATIBLE WITH THE UNDERLYING SOILS AN ENGINEERING FABRIC SHOULD BE USED AS A SEPARATOR. IN SOME CASES, USING A STIFF REINFORCING GEOGRID REDUCES OVER EXCAVATION AND REPLACEMENT FILL QUANTITIES.

GRADE THE FOUNDATION SUBGRADE TO A UNIFORM OR SLIGHTLY SLOPING GRADE. IF THE SUBGRADE IS CLAY OR RELATIVELY NON-POROUS AND THE CONSTRUCTION SEQUENCE WILL LAST FOR AN EXTENDED PERIOD OF TIME, IT IS BEST TO SLOPE THE GRADE TO ONE END OF THE SYSTEM. THIS WILL ALLOW EXCESS WATER TO DRAIN QUICKLY, PREVENTING SATURATION OF THE SUBGRADE.

GEOMEMBRANE BARRIER

A SITE'S RESISTIVITY MAY CHANGE OVER TIME WHEN VARIOUS TYPES OF SALTING AGENTS ARE USED, SUCH AS ROAD SALTS FOR DIDICING AGENTS. IF SALTING AGENTS ARE USED ON OR NEAR THE PROJECT SITE, A GEOMEMBRANE BARRIER IS RECOMMENDED WITH THE SYSTEM. THE GEOMEMBRANE LINER IS INTENDED TO HELP PROTECT THE SYSTEM FROM THE POTENTIAL ADVERSE EFFECTS THAT MAY RESULT FROM THE USE OF SUCH AGENTS INCLUDING PREMATURE CORROSION AND REDUCED ACTUAL SERVICE LIFE.

FOR PROJECTS SHOWN BY RECORD AS TO EVALUATE WHETHER SALTING AGENTS WILL BE USED ON OR NEAR THE PROJECT SITE, AND USE HIGHER'S BEST JUDGEMENT TO DETERMINE IF ANY ADDITIONAL PROTECTIVE MEASURES ARE REQUIRED. BELOW IS A TYPICAL DETAIL SHOWING THE PLACEMENT OF A GEOMEMBRANE BARRIER FOR PROJECTS WHERE SALTING AGENTS ARE USED ON OR NEAR THE PROJECT SITE.

IN-SITU TRENCH WALL

IF EXCAVATION IS REQUIRED, THE TRENCH WALL NEEDS TO BE CAPABLE OF SUPPORTING THE LOAD THAT THE PIPE SHEETS AS THE SYSTEM IS LOADED. IF SOILS ARE NOT CAPABLE OF SUPPORTING THESE LOADS, THE PIPE CAN DEFLECT. PERFORM A SIMPLE SOIL PRESSURE CHECK USING THE APPLIED LOADS TO DETERMINE THE LIMITS OF EXCAVATION BEYOND THE SPRING LINE OF THE SYSTEM THAT MOST PIPES.

IN MOST CASES THE REQUIREMENTS FOR A SAFE WORK ENVIRONMENT AND PROPER BACKFILL PLACEMENT AND COMPACTION TAKE CARE OF THIS CONCERN.

BACKFILL PLACEMENT

MATERIAL SHALL BE WORKED INTO THE PIPE HAUNCHES BY MEANS OF SHOVEL-SLICING, RODDING, AIR TAMPER, VIBRATORY ROD, OR OTHER EFFECTIVE METHODS.

IF AASHTO T99 PROCEDURES ARE DETERMINED INFEASIBLE BY THE GEOTECHNICAL ENGINEER OF RECORD, COMPACTION IS CONSIDERED ADEQUATE WHEN NO FURTHER YIELDING OF THE MATERIAL IS OBSERVED UNDER THE COMPACTOR, OR UNDER FOOT, AND THE GEOTECHNICAL ENGINEER OF RECORD (OR REPRESENTATIVE THEREOF) IS SATISFIED WITH THE LEVEL OF COMPACTION.

FOR LARGE SYSTEMS, CONVEYOR SYSTEMS, BACKHOES WITH LONG REACHES OR DRAGLINES WITH STONE BUCKETS MAY BE USED TO PLACE BACKFILL. ONCE MINIMUM COVER FOR CONSTRUCTION LOADING ACROSS ALL BARRELS TO THE DESIGN SYSTEM HAS BEEN ACHIEVED, ADVANCE THE EQUIPMENT TO THE END OF THE SYSTEM AND BACKFILL ALL ROWS IN THE SAME MANNER AGAIN UNTIL THE SYSTEM IS COMPLETELY BACKFILLED. THIS TYPE OF CONSTRUCTION SEQUENCE PROVIDES ROOM FOR STOCKPILED BACKFILL DIRECTLY BEHIND THE BACKHOE, AS WELL AS THE MOVEMENT OF EQUIPMENT OVER THE SYSTEM WITHOUT THE NEED TO HAUL THE BACKFILLED DETENTION SYSTEM SHOULD BE LIMITED TO 8- TO 10-FEET HIGH AND MUST PROVIDE BALANCED LOADING ACROSS ALL BARRELS TO DETERMINE THE PROPER COVER OVER THE PIPES TO ALLOW THE MOVEMENT OF CONSTRUCTION EQUIPMENT SEE TABLE 1, OR CONTACT YOUR LOCAL CONTECH SALES ENGINEER.

WHEN FLOWABLE FILL IS USED, YOU MUST PREVENT PIPE FLOATATION. THROUGH FILL SMALL LIFTS ARE PLACED BETWEEN THE PIPES AND THEN ALLOWED TO SET UP PRIOR TO THE PLACEMENT OF THE NEXT LIFT. THE ALLOWABLE THICKNESS OF THE CLSM LIFT IS A FUNCTION OF A PROPER BALANCE BETWEEN THE UPLIFT FORCE OF THE CLSM, THE OPPOSING WEIGHT OF THE PIPE AND THE CLSM LIFT, AND THE FLOTATION MEASURES. THE PIPE CAN CARRY LIMITED FLUID PRESSURE WITHOUT PIPE DISTORTION OR DISPLACEMENT, WHICH ALSO AFFECTS THE CLSM LIFT THICKNESS. YOUR LOCAL CONTECH SALES ENGINEER CAN HELP DETERMINE THE PROPER LIFT THICKNESS.

CONSTRUCTION LOADING

TYPICALLY, THE MINIMUM COVER SPECIFIED FOR A PROJECT ASSUMES H-20 LIVE LOAD. BECAUSE CONSTRUCTION LOADS OFTEN EXCEED DESIGN LIVE LOADS, INCREASED TEMPORARY MINIMUM COVER REQUIREMENTS ARE NECESSARY. SINCE CONSTRUCTION EQUIPMENT VARIES FROM JOB TO JOB, IT IS BEST TO ADDRESS EQUIPMENT SPECIFIC MINIMUM COVER REQUIREMENTS WITH YOUR LOCAL CONTECH SALES ENGINEER DURING YOUR PRE-CONSTRUCTION MEETING.

ADDITIONAL CONSIDERATIONS

BECAUSE MOST SYSTEMS ARE CONSTRUCTED BELOW-GRADE, RAINFALL CAN RAPIDLY FILL THE EXCAVATION, POTENTIALLY CAUSING FLOATATION AND MOVEMENT OF THE PREVIOUSLY PLACED PIPES. TO HELP MITIGATE POTENTIAL PROBLEMS, IT IS BEST TO START THE INSTALLATION AT THE DOWNSTREAM END WITH THE OUTLET ALREADY CONSTRUCTED TO ALLOW A ROUTE FOR THE WATER TO ESCAPE. TEMPORARY DIVERSION MEASURES MAY BE REQUIRED FOR HIGH FLOWS DUE TO THE RESTRICTED NATURE OF THE OUTLET PIPE.

CMP DETENTION SYSTEM INSPECTION AND MAINTENANCE

UNDERGROUND STORMWATER DETENTION AND INFILTRATION SYSTEMS MUST BE INSPECTED AND MAINTAINED AT REGULAR INTERVALS FOR PURPOSES OF PERFORMANCE AND LONGEVITY.

INSPECTION

INSPECTION IS THE KEY TO EFFECTIVE MAINTENANCE OF CMP DETENTION SYSTEMS AND IS EASILY PERFORMED. CONTECH RECOMMENDS ONGOING ANNUAL INSPECTIONS. SITES WITH HIGH TRASH LOAD OR SMALL OUTLET CONTROL ORIFICES MAY NEED MORE FREQUENT INSPECTIONS. THE RATE AT WHICH THE SYSTEM COLLECTS POLLUTANTS WILL VARY DEPENDING MORE ON SITE SPECIFIC ACTIVITIES RATHER THAN THE SIZE OR CONFIGURATION OF THE SYSTEM.

INSPECTIONS SHOULD BE PERFORMED MORE OFTEN IN EQUIPMENT WASHDOWN AREAS, IN CLIMATES WHERE SANDING AND/OR SALTING OPERATIONS TAKE PLACE, AND IN OTHER VARIOUS INSTANCES IN WHICH ONE WOULD EXPECT HIGHER ACCUMULATIONS OF SEDIMENT OR ABRASIVE/CORROSIVE CONDITIONS. A RECORD OF EACH INSPECTION IS TO BE MAINTAINED FOR THE LIFE OF THE SYSTEM

MAINTENANCE

CMP DETENTION SYSTEMS SHOULD BE CLEANED WHEN AN INSPECTION REVEALS ACCUMULATED SEDIMENT OR TRASH IS CLOGGING THE DISCHARGE ORIFICE.

ACCUMULATED SEDIMENT AND TRASH CAN TYPICALLY BE EVACUATED THROUGH THE MANHOLE OVER THE OUTLET ORIFICE. IF MAINTENANCE IS NOT PERFORMED WHEN THERE IS NO FLOW ENTERING THE SYSTEM, ACCUMULATION IN FRONT OF THE OUTLET ORIFICE, MANHOLE COVERS SHOULD BE SECURELY SEATED FOLLOWING CLEANING ACTIVITIES. CONTECH SUGGESTS THAT ALL MANHOLE COVERS BE EQUIPPED WITH LOCKING MECHANISMS AND BE SITUATED AT GRADE. IT MAY BE NECESSARY TO REMOVE SOME OUTLET ORIFICE PLATES IN ORDER TO GET INSIDE THE SYSTEM TO PERFORM MAINTENANCE ACTIVITIES. ALL APPROPRIATE PRECAUTIONS REGARDING CONFINED SPACE ENTRY AND OSHA REGULATIONS SHOULD BE FOLLOWED.

ANNUAL INSPECTIONS ARE BEST PRACTICE FOR ALL UNDERGROUND DETENTION AND INFILTRATION SYSTEMS. IF SALTING AGENTS OR OTHER DICING AGENTS IS OBSERVED WITHIN THE SYSTEM, IT IS BEST PRACTICE FOR THE SYSTEM TO BE RINSED, INCLUDING ABOVE THE SPRING LINE SOON AFTER THE SPRING THAW AS PART OF THE MAINTENANCE PROGRAM FOR THE SYSTEM.

MAINTAINING AN UNDERGROUND DETENTION OR INFILTRATION SYSTEM IS EASIEST WHEN THERE IS NO FLOW ENTERING THE SYSTEM. FOR THIS REASON, IT IS A GOOD IDEA TO SCHEDULE THE CLEANOUT DURING DRY WEATHER.

THE FOREGOING INSPECTION AND MAINTENANCE EFFORTS HELP ENSURE LONG-TERM FUNCTIONALITY OF THE SYSTEM. FAILURE TO PROPERLY CONTINUE THE FUNCTION AS INTENDED BY USER-TYPES RECOMMENDED REGULAR INSPECTION AND MAINTENANCE PRACTICES. INSPECTION AND MAINTENANCE RELATED TO THE STRUCTURAL INTEGRITY OF THE PIPE OR THE SOUNDNESS OF PIPE JOINT CONNECTIONS IS BEYOND THE SCOPE OF THIS GUIDE.

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PROJECT No.	SEQ. No.	DATE
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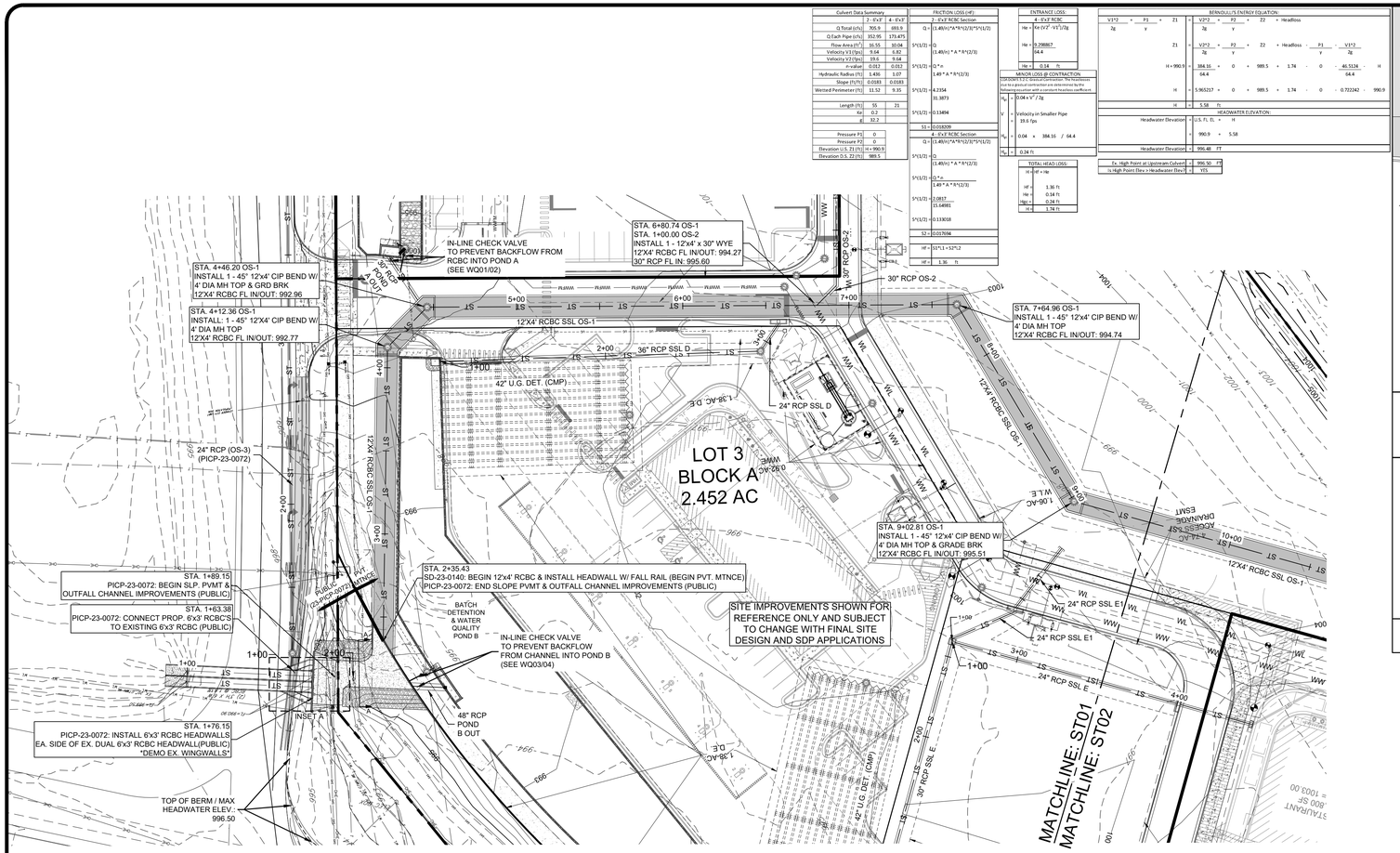
CITY OF LEANDER APPROVAL

LOCATION OF EXISTING UNDERGROUND AND OVERHEAD UTILITIES ARE APP


LOT 6
BLOCK A
3.784 AC
LOT 5
BLOCK A
1.839 AC
LOT 4
BLOCK A
0.978 AC
LOT 3
BLOCK A
2.452 AC
LOT 7
BLOCK A
2.180 AC
SITE IMPROVEMENTS SHOWN FOR REFERENCE ONLY AND SUBJECT TO CHANGE WITH FINAL SITE DESIGN AND SDP APPLICATIONS
SITE IMPROVEMENTS SHOWN FOR REFERENCE ONLY AND SUBJECT TO CHANGE WITH FINAL SITE DESIGN AND SDP APPLICATIONS
0.67-AC TxDOT R.O.W. TO BE DEDICATED BY FINAL PLAT
PROP. ROW 0.67 AC
PROP. PICP-23-0072 HEADWALL IMPROVEMENTS BY OTHERS (SEE ST01 FOR REFERENCE)
OFFSITE STORM IMPROVEMENTS SHOWN HEREON BY OTHERS UNDER PICP-23-0072
4.74-AC ACCESS & DRAINAGE ESMT
4.57-AC ACCESS & DRAINAGE ESMT
1.05-AC D.E.
1.38-AC D.E.
0.27-AC D.E.
0.50 AC. D.E.
1.1-AC TEMP. D.E. (202401105O)
DEV. A14 100-YR FP & BUFFER ZONE
0.92-AC WWE
1.06-AC WLE
1.04-AC WLE
42" U.G. DET. (CMP)
48" RCP POND B OUT
WQ/DET POND A
WQ/DET POND B
PROP. 12'Wx4'H & 4'Wx4'H HEADWALL (SEE ST02)
12'X4' RCBC SSL OS-1
30" RCP OS-2
24" RCP SSL B
24" RCP SSL B2
18" RCP SSL B1
24" RCP SSL C
36" RCP SSL C
30" RCP SSL E
24" RCP SSL E
24" RCP SSL E1
24" RCP SSL D
30" RCP SSL D
48" RCP SSL A @ 0.00%
ISOLATED WETLAND
IZEKELMAN PROPERTY LEANDER, 53 50.774-AC DOC. NO. 2021128467
MATCHLINE VP01
MATCHLINE VP02
VP01
VP02
2.5' P.U.E.
10.0' LCRA TRANSMISSION SERVICES CORPORATION EASEMENT (VOL. 2114, PG. 54, O.P.R.W.C.T.)
10.0' LCRA TRANSMISSION SERVICES CORPORATION EASEMENT (VOL. 2114, PG. 57, O.P.R.W.C.T.)
EX. 10" GTMN
EX. 24" RCP
EX. 36" RCP
EX. 48" RCP
EX. 12" WL
EX. 8" WL
EX. 6" WL
EX. 8" WW
EX. 12" WW
EX. 15" WW
EX. 18" WW
EX. 24" WW
EX. 30" WW
EX. 36" WW
EX. 42" WW
EX. 48" WW
EX. 54" WW
EX. 60" WW
EX. 66" WW
EX. 72" WW
EX. 78" WW
EX. 84" WW
EX. 90" WW
EX.



Culvert Data Summary	2 - 6'x3'	4 - 6'x3'
Q Total (cfs)	705.9	691.9
Q Each Pipe (cfs)	352.95	173.475
Flow Area (sf)	35.55	32.04
Velocity V1 (fps)	9.64	5.82
Velocity V2 (fps)	19.6	9.64
n-value	0.013	0.013
Hydraulic Radius (ft)	1.406	1.07
Slope (ft/ft)	0.0183	0.0183
Wetted Perimeter (ft)	11.52	9.35
Length (ft)	55	21
ke	0.2	0.2
g	32.2	
Pressure P1	0	
Pressure P2	0	
Elevation O.S. 71 (ft)	H + 990.9	
Elevation O.S. 72 (ft)	989.5	

FRICTION LOSS (HF):

2 - 6'x3' RCBC Section

$Q = (1.49/n)*A*R^{(2/3)}*S^{(1/2)}$

$S^{(1/2)} = Q / (1.49/n) * A * R^{(2/3)}$

$S^{(1/2)} = Q * n / 1.49 * A * R^{(2/3)}$

$S^{(1/2)} = 4.2354 / 0.3873$

$S^{(1/2)} = 0.13494$

$S1 = 0.018209$

4 - 6'x3' RCBC Section

$Q = (1.49/n)*A*R^{(2/3)}*S^{(1/2)}$

$S^{(1/2)} = Q / (1.49/n) * A * R^{(2/3)}$

$S^{(1/2)} = Q * n / 1.49 * A * R^{(2/3)}$

$S^{(1/2)} = 2.0817 / 15.04991$

$S^{(1/2)} = 0.133018$

$S2 = 0.017694$

$HF = S1*L1 + S2*L2$

$HF = 1.36$ ft

ENTRANCE LOSS:

4 - 6'x3' RCBC

$He = Ke\,(V2^2 - V1^2)/2g$

$He = 0.298867 * 64.4$

$He = 0.14$ ft

MINOR LOSS @ CONTRACTION

FOR BOXES S.S.C. General Contraction: The Head losses due to a gradual contraction are determined by the following equation with a constant hcarless coefficient

$H_{cc} = 0.04 * V^2 / 2g$

V = Velocity in Smaller Pipe = 19.6 fps

$H_{cc} = 0.04 \times 384.16 / 64.4$

$H_{cc} = 0.24$ ft

TOTAL HEAD LOSS:

$H = HF + He$

HF = 1.36 ft

He = 0.14 ft

Hcc = 0.24 ft

H = 1.74 ft

BERNOULI'S ENTROY EQUATION:

$V1^2/2g + P1/y + Z1 = V2^2/2g + P2/y + Z2 + Headloss$

$Z1 = V2^2/2g + P2/y + Z2 + Headloss - P1/y - V1^2/2g$

$H + 990.9 = 384.16/64.4 + 0 + 989.5 + 1.74 - 0 - 46.5136/64.4$

$H = 5.963217 + 0 + 989.5 + 1.74 - 0 - 0.722242 - 990.9$

H = 5.58 ft

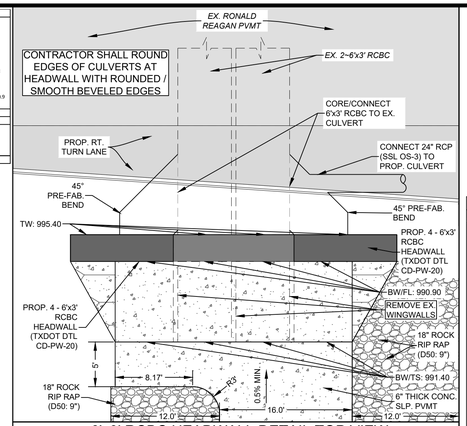
HEADWATER ELEVATION:

Headwater Elevation = U.S. FL. FL + H

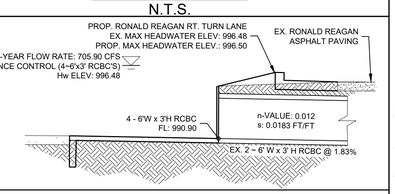
= 990.9 + 5.58

Headwater Elevation = 996.48 FT

Ex. High Point at Upstream Culvert is High Point Elev > Headwater Elev? = YES



6'x3' RCBC HEADWALL DETAIL TOP VIEW
(FOR REFERENCE ONLY - TO BE CONSTRUCTED UNDER PICP-23-0072)
N.T.S.



6' W x 3' H RCBC HEADWATER SUMMARY DETAIL
NTS



LEGEND

PROPOSED	EXISTING	
ST	ST	STORM SEWER LINE
WW	WW	WASTEWATER LINE
		WASTEWATER SERVICE
WL	WL	WATER LINE
		WATER SERVICE
		WATER VALVE
		FIRE HYDRANT
WMH	WMH	WASTEWATER MANHOLE
SMH	SMH	STORMSEWER MANHOLE
		CURB INLET
		GRATE INLET
		1/2" REBAR FOUND (OR AS NOTED)
		1/2" REBAR WITH CAP FOUND
		1/2" REBAR WITH CHAPARRAL CAP SET
		WATER METER
		UTILITY POLE
	OU	OVERHEAD UTILITIES
		ELEC. UTILITY
		ELEC. MANHOLE
		LIGHT POLE
		TELEPHONE UTILITY
		UNDERGROUND FIBER OPTIC MARKER
		TELEPHONE MANHOLE
		UNDERGROUND GAS MARKER
		CHAIN LINK FENCE

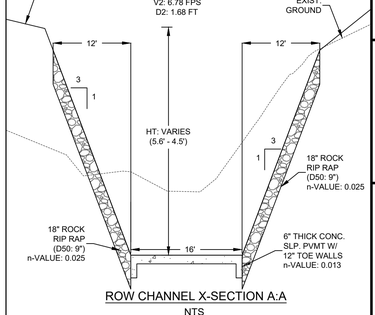
NOTES:
1. CONTRACTOR TO FIELD VERIFY EXACT LOCATION OF ALL EXISTING UTILITIES HORIZONTALLY AND VERTICALLY PRIOR TO CONSTRUCTION.
2. CONTRACTOR TO FILL AND COMPACT TO 95% DENSITY IN FILL SECTIONS OVER STORM SEWER LINES. 2.0'(MIN) COVER OVER WATER PRIOR TO CONSTRUCTION.
3. ALL STORM SEWER PIPE SHALL BE HP-PP OR APPROVED EQUAL. ALL PUBLIC STORM SEWERS SHALL BE RCP. STORM SEWER LINES OUTSIDE OF PAVEMENT AND EASEMENTS MAY BE INSTALLED AS PVC OR APPROVED EQUAL.
4. ALL PIPE SHALL BE INSTALLED IN ACCORDANCE WITH CITY OF LEANDER SPECIFICATIONS.
5. ALL BENDS AND FITTINGS SHALL BE PREFABRICATED BY MANUFACTURER EXCEPT FOR PROPOSED RCBC'S, WHICH SHALL FOLLOW TxDOT DETAILS INCLUDED ON DETAIL SHEETS.

CHANNEL SLOPE: 0.005 FT/FT
COMPOSITE N-VALUE: 0.021

Q100: 693.90 CFS
V100: 6.82 FPS
D100: 3.74 FT
VELOCITY HEAD: 0.72 FT
CHANNEL DEPTH REQ'D: D100+Vh = 4.46 FT
CHANNEL DEPTH PROVIDED = 4.5' MIN. - 5.6' MAX (AT HEADWALLS)

Q25: 503.90 CFS
V25: 8.09 FPS
D25: 2.61 FT

Q2: 240.60 CFS
V2: 6.78 FPS
D2: 1.68 FT

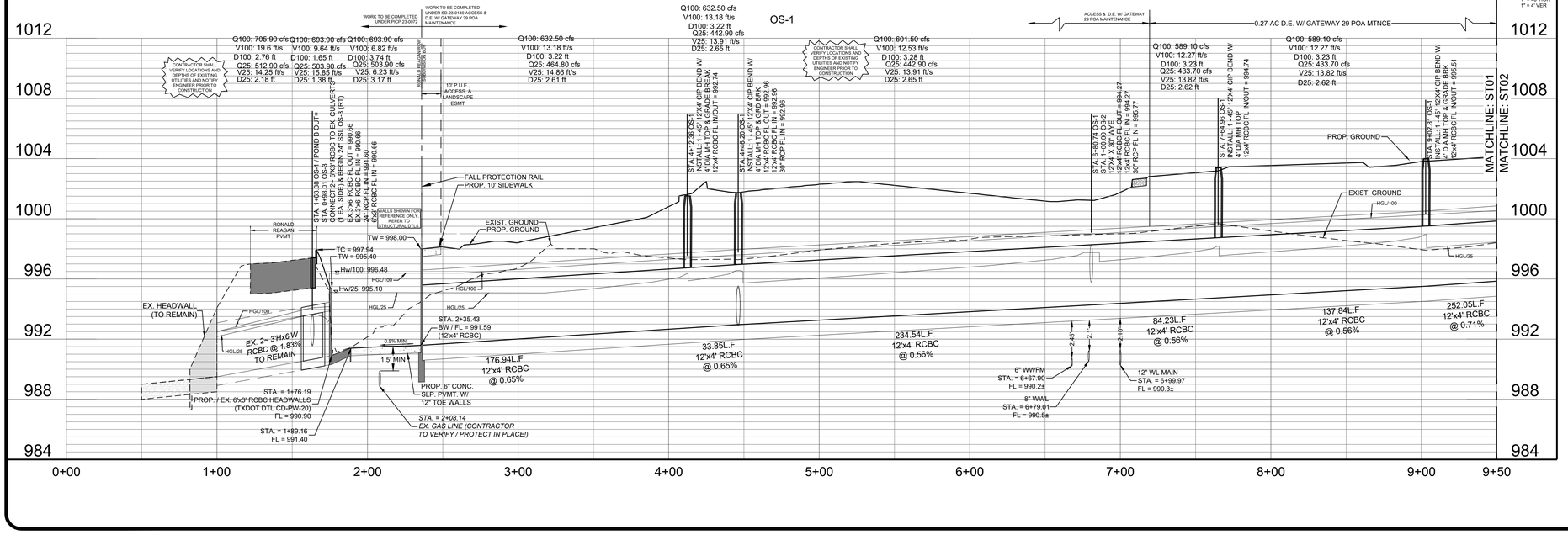


ROW CHANNEL X-SECTION A:A
NTS

CITY OF LEANDER APPROVAL

LOCATION OF EXISTING UNDERGROUND AND OVERHEAD UTILITIES ARE APPROXIMATE LOCATIONS ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES PRIOR TO BEGINNING WORK AND SHALL BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT OCCUR.

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



LJA Engineering, Inc.
7500 Rialto Boulevard
Building II, Suite 100
Austin, Texas 78735
Phone 512.439.4700
Fax 512.439.4716
FRN-F-1386

GATEWAY 29 WPAP / SCS
OVERALL SUBDIVISION IMPROVEMENTS
STORM PLAN AND PROFILE SHEET 1
LEANDER, WILLIAMSON COUNTY, TEXAS

NO.	DESCRIPTION	BY	DATE
	REVISIONS		

DATE: 03/13/2024
DESIGNED BY: CRH
DRAWN BY: CRH
CHECKED BY:
DRAWING NAME: A633-0401-P-ST01_PVT_WPAP

03/13/2024
STATE OF TEXAS
CHARLES R. HAGER
127034
LICENSED PROFESSIONAL ENGINEER

JOB NUMBER:

ST01

SHEET NO. 30
OF 99 SHEETS

CITY OF LEANDER PROJECT No. SD-23-0140

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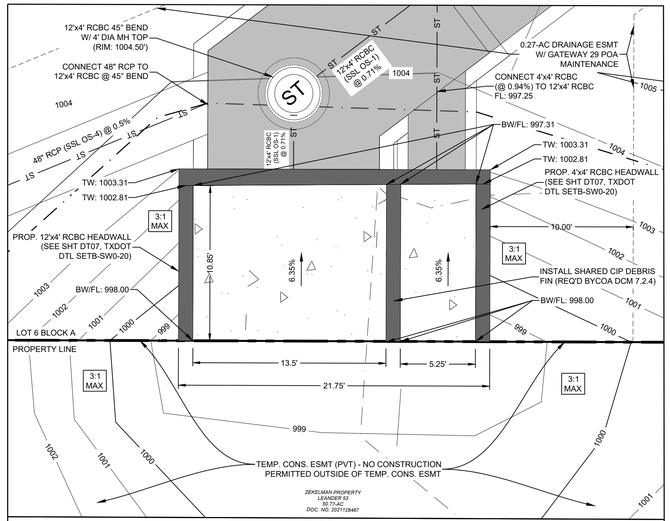
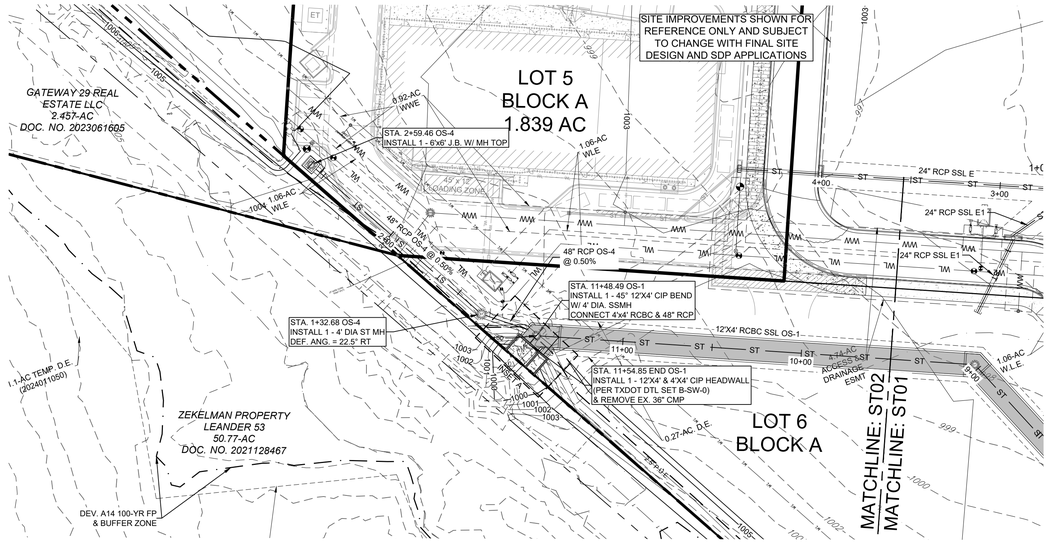
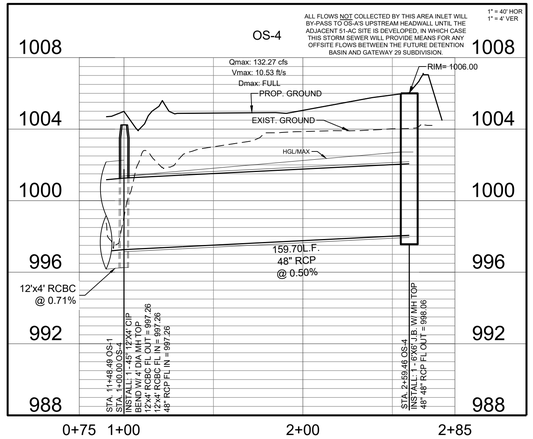
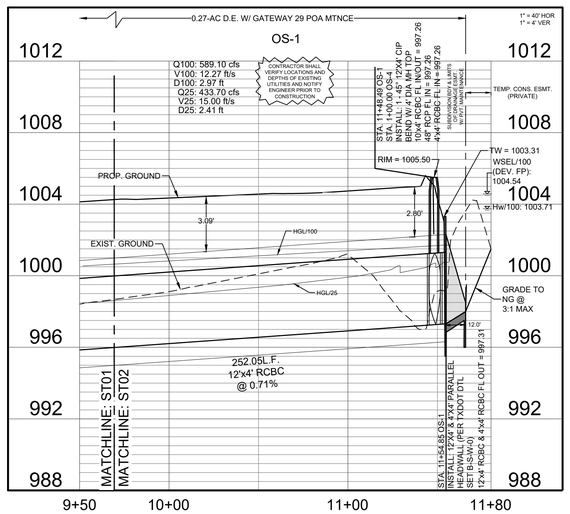


INSET A: 12'Wx4'H & 4'Wx4'H RCBC HEADWALL
DETAIL TOP VIEW
1" : 5'



Proposed Condition Analysis				
HEAD REQUIRED TO PASS 100-YR EVENT INTO 12'Wx4'H RCBC SSL OS1				
589.10	Q100 (Developed Junction 1) (cfs)			
0.2	Ke (90° Wingwalls w/ 45° bevel)			
4'H x 12'W RCBC Headwall		4'H x 4'W RCBC Headwall		
BOX	BOX or PIPE	BOX	BOX or PIPE	
4	Barrel Height "D" (ft)	4	Barrel Height "D" (ft)	
12	Barrel Width (ft)	4	Barrel Width (ft)	
1	No. of Pipes/Culverts	1	No. of Pipes/Culverts	
48.00	Orifice Area (SF) Total	16.00	Orifice Area (SF) Total	
64.00	Orifice Area (SF) Total			
997.31	Upstream Pipe FL (ft)			
1003.50	Ex. High Point at Upstream Culvert			
36.82	Drainage / Foot Barrel Width (Q/NB) - EACH (cfs/ft)			
6.19	Max Ponding Height Above Flowline (ft)			
Inlet Control Summary				
1.50	Hw/Depth (Required w/o Overtopping to pass Q100)			
6.00	Hw (Required w/o Overtopping to pass Q100) (ft)			
36.82	Drainage per Foot of Barrel Width (Q/NB) - EACH (ACTUAL) (cfs/ft)			
1003.31	**Ponding Height Required to Pass Q100 (ft)**			
Capacity Control Summary				
4'H x 12'W RCBC ONLY				
0.012	Mannings "n" Value			
0.071	Pipe Slope (ft/ft)			
3.99	Normal Depth (ft)			
891.50	Maximum Flow Capacity (cfs) without Surgarging Culvert (4'H x 12'W RCBC)			





LEGEND

PROPOSED	EXISTING	
ST	ST	STORM SEWER LINE
WW	WW	WASTEWATER LINE
		WASTEWATER SERVICE
WL	WL	WATER LINE
		WATER SERVICE
		WATER VALVE
		FIRE HYDRANT
	WWMH	WASTEWATER MANHOLE
	SSMH	STORMSEWER MANHOLE
		CURB INLET
		GRATE INLET
		1/2" REBAR FOUND (OR AS NOTED)
		1/2" REBAR WITH CAP FOUND
		1/2" REBAR WITH CHAPARRAL CAP SET
		WATER METER
		UTILITY POLE
OU	OU	OVERHEAD UTILITIES
		ELEC. UTILITY
		ELEC. MANHOLE
		LIGHT POLE
		TELEPHONE UTILITY
		UNDERGROUND FIBER OPTIC MARKER
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		UNDERGROUND GAS MARKER
O	O	CHAIN LINK FENCE

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CITY OF LEANDER APPROVAL

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GATEWAY 29 WPAP / SCS
OVERALL SUBDIVISION IMPROVEMENTS
STORM PLAN AND PROFILE SHEET 2
LEANDER, WILLIAMSON COUNTY, TEXAS

NO.	DESCRIPTION / REVISIONS	BY	DATE

DATE: 03/13/2024
DESIGNED BY: CRH
DRAWN BY: CRH
CHECKED BY:
DRAWING NAME: AES-3401-P-ST01_PVT_WPAP

03/13/2024

STATE OF TEXAS
CHARLES R. HAGER
127034
LICENSED PROFESSIONAL ENGINEER

LJA Engineering, Inc.
7500 Rialto Boulevard
Building II, Suite 100
Austin, Texas 78735
Phone 512.439.4700
Fax 512.439.4716
FRN-F-1386

JOB NUMBER:

ST02

SHEET NO. 31 OF 99 SHEETS

CITY OF LEANDER PROJECT No. SD-23-0140

I:\AES-Gateway\2401\Submittal Sheets\WPAP\AES-2401-P-ST01_PVT_WPAP.dwg
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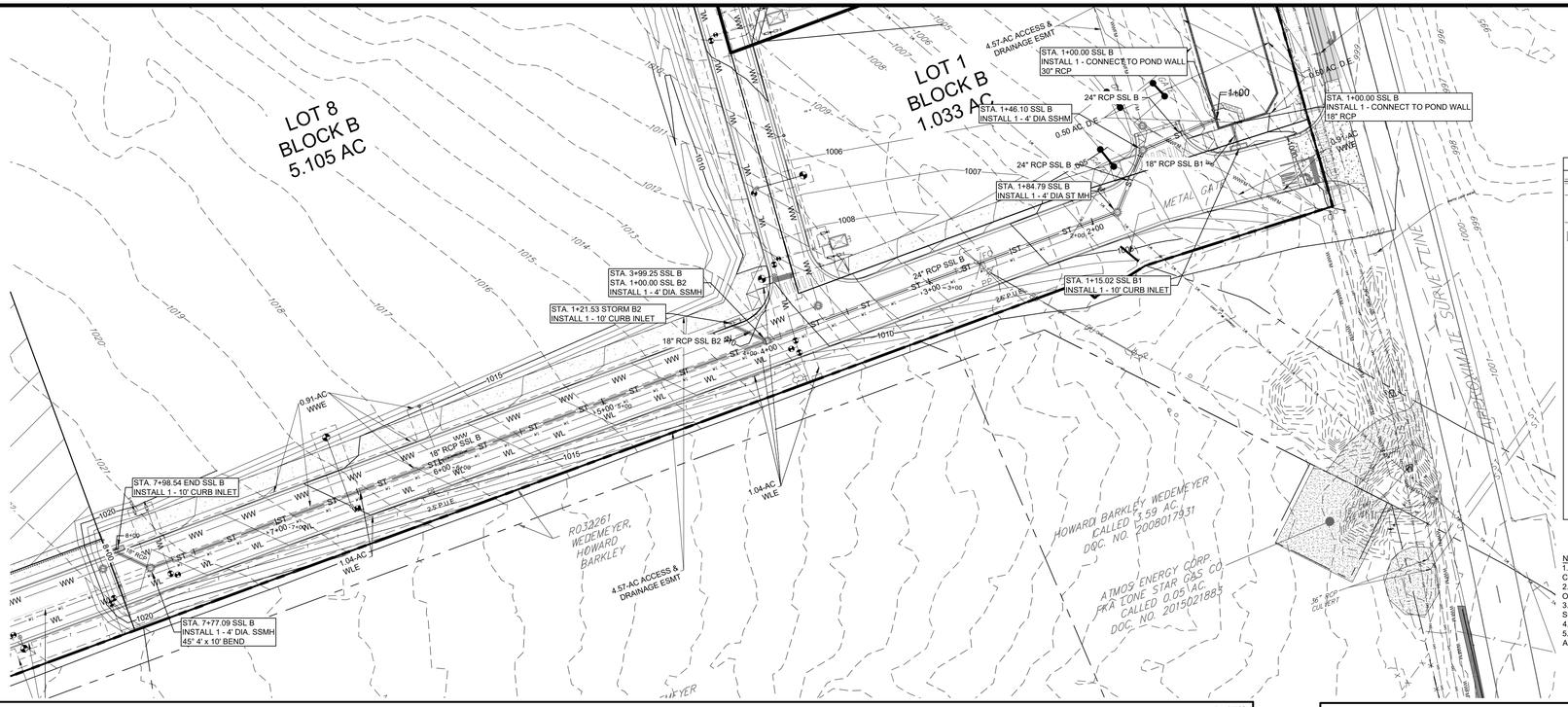
Plot Date/Time: Mon, 13, 24 - 14:45:13



LEGEND

PROPOSED	EXISTING	
ST	ST	STORM SEWER LINE
WW	WW	WASTEWATER LINE
		WASTEWATER SERVICE
WL	WL	WATER LINE
		WATER SERVICE
		WATER VALVE
		FIRE HYDRANT
		WASTEWATER MANHOLE
		STORMSEWER MANHOLE
		CURB INLET
		GRATE INLET
		1/2" REBAR FOUND (OR AS NOTED)
		1/2" REBAR WITH CAP FOUND
		1/2" REBAR WITH CHAPARRAL CAP SET
		WATER METER
		UTILITY POLE
	OU	OVERHEAD UTILITIES
		ELEC. UTILITY
		ELEC. MANHOLE
		LIGHT POLE
		TELEPHONE UTILITY
		UNDERGROUND FIBER OPTIC MARKER
		TELEPHONE MANHOLE
		UNDERGROUND GAS MARKER
	G	CHAIN LINK FENCE

40 20 0 40 80
SCALE IN FEET

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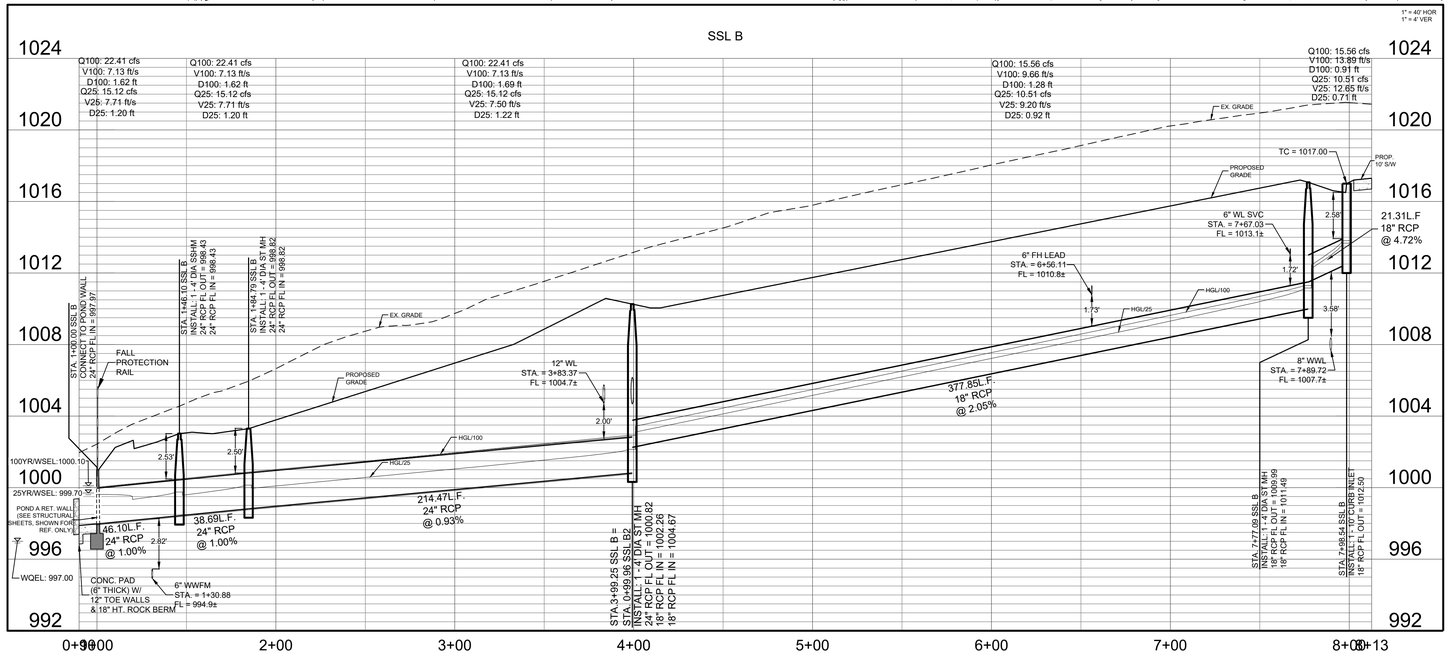

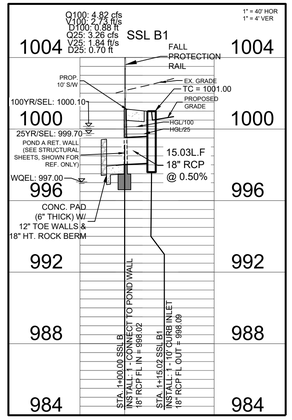

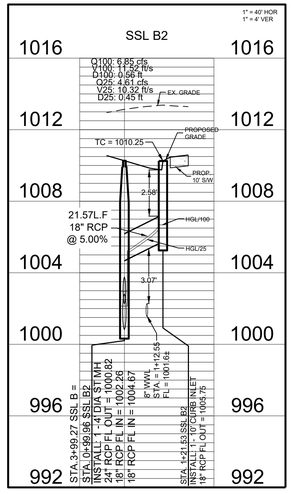

CITY OF LEANDER APPROVAL

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CITY OF LEANDER PROJECT No. SD-23-0140

GATEWAY 29 WPAP / SCS
OVERALL SUBDIVISION IMPROVEMENTS
STORM PLAN AND PROFILE SHEET 3
LEANDER, WILLIAMSON COUNTY, TEXAS

NO.	DESCRIPTION	BY	DATE
	REVISIONS		

DATE: 03/13/2024
DESIGNED BY: CRH
DRAWN BY: CRH
CHECKED BY:
DRAWING NAME: A533-0401-P-ST01_PVT.WPAP

03/13/2024
STATE OF TEXAS
CHARLES R. HAGER
127034
LICENSED PROFESSIONAL ENGINEER

LJA Engineering, Inc.
7500 Rialto Boulevard
Building II, Suite 100
Austin, Texas 78735
Phone 512.439.4700
Fax 512.439.4716
FRN-F-1386

JOB NUMBER:

ST03

SHEET NO.
32
OF 99 SHEETS

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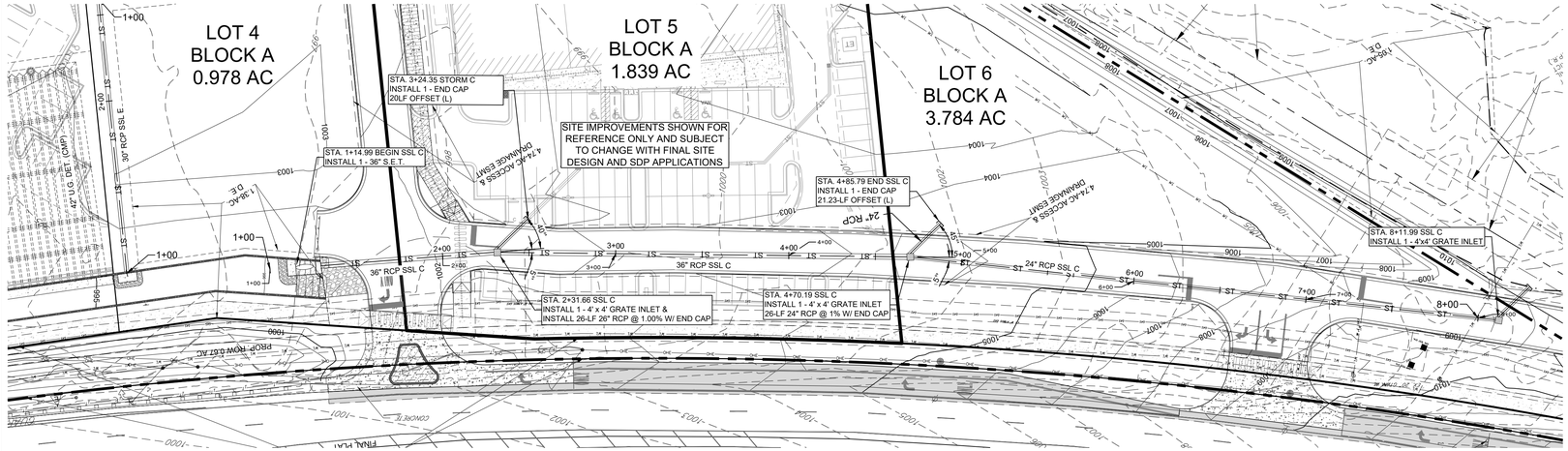

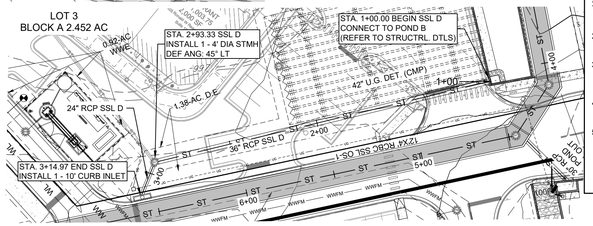

LEGEND

PROPOSED	EXISTING	
ST	ST	STORM SEWER LINE
WW	WW	WASTEWATER LINE
		WASTEWATER SERVICE
WL	WL	WATER LINE
		WATER SERVICE
		WATER VALVE
		FIRE HYDRANT
	WWMH	WASTEWATER MANHOLE
	SSMH	STORMSEWER MANHOLE
		CURB INLET
		GRATE INLET
		1/2" REBAR FOUND (OR AS NOTED)
		1/2" REBAR WITH CAP FOUND
		1/2" REBAR WITH CHAPARRAL CAP SET
		WATER METER
		UTILITY POLE
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		ELEC. UTILITY
		ELEC. MANHOLE
		LIGHT POLE
		TELEPHONE UTILITY
		UNDERGROUND FIBER OPTIC MARKER
		TELEPHONE MANHOLE
		UNDERGROUND GAS MARKER
	O	CHAIN LINK FENCE

SCALE IN FEET: 40 20 0 40 80

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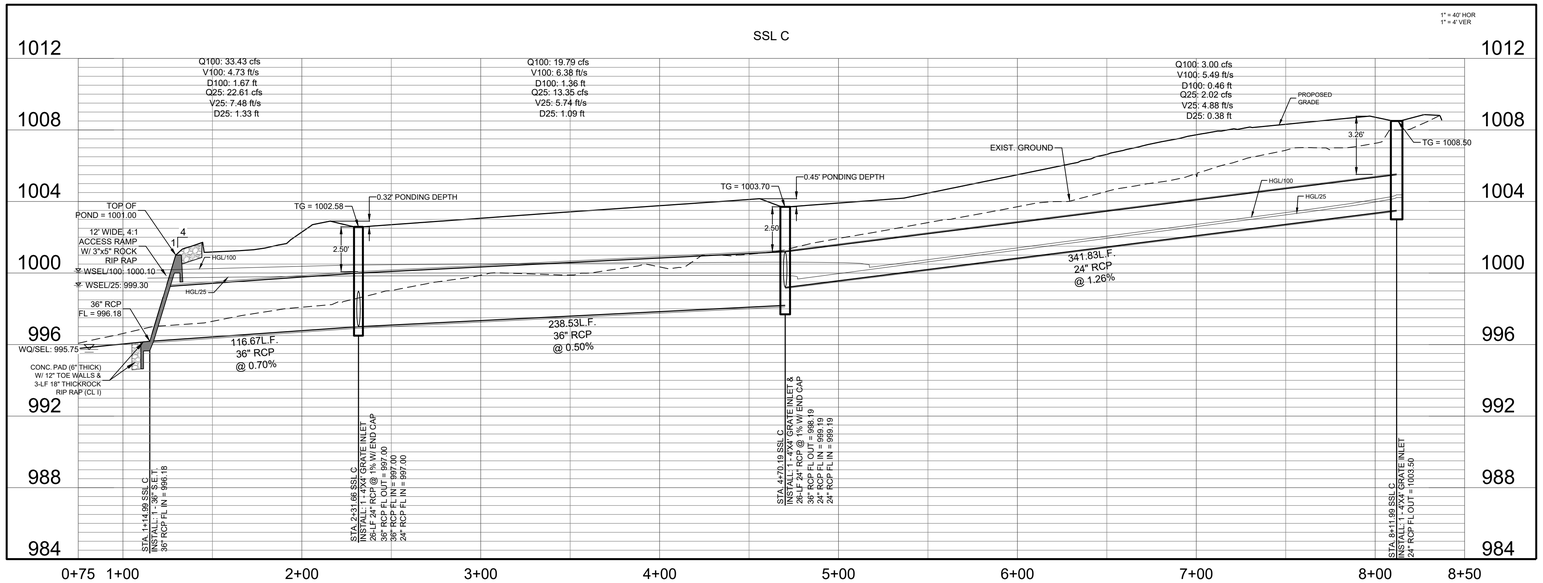

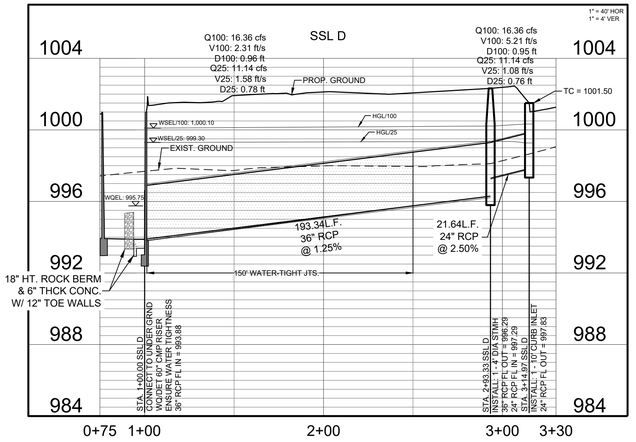

CITY OF LEANDER APPROVAL

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CITY OF LEANDER PROJECT No. SD-23-0140

GATEWAY 29 WPAP / SCS
OVERALL SUBDIVISION IMPROVEMENTS
STORM PLAN AND PROFILE SHEET 4
LEANDER, WILLIAMSON COUNTY, TEXAS

NO.	DESCRIPTION	BY	DATE
	REVISIONS		

DATE: 03/13/2024
DESIGNED BY: CRH
DRAWN BY: CRH
CHECKED BY:
DRAWING NAME: A633-0401-P-ST01_PVT_WPAP

03/13/2024
STATE OF TEXAS
CHARLES R. HAGER
127034
LICENSED PROFESSIONAL ENGINEER

LJA Engineering, Inc.
7500 Rialto Boulevard
Building II, Suite 100
Austin, Texas 78735
Phone 512.439.4700
Fax 512.439.4716
FRN-F-1386

JOB NUMBER:

ST04

SHEET NO. 33 OF 99 SHEETS

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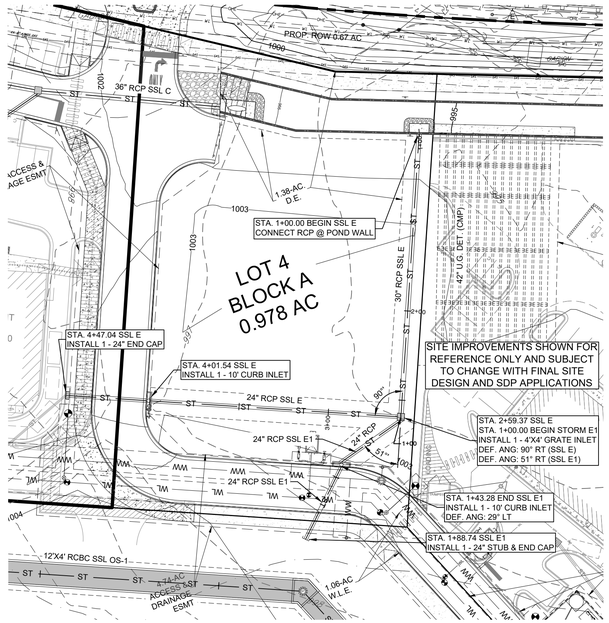

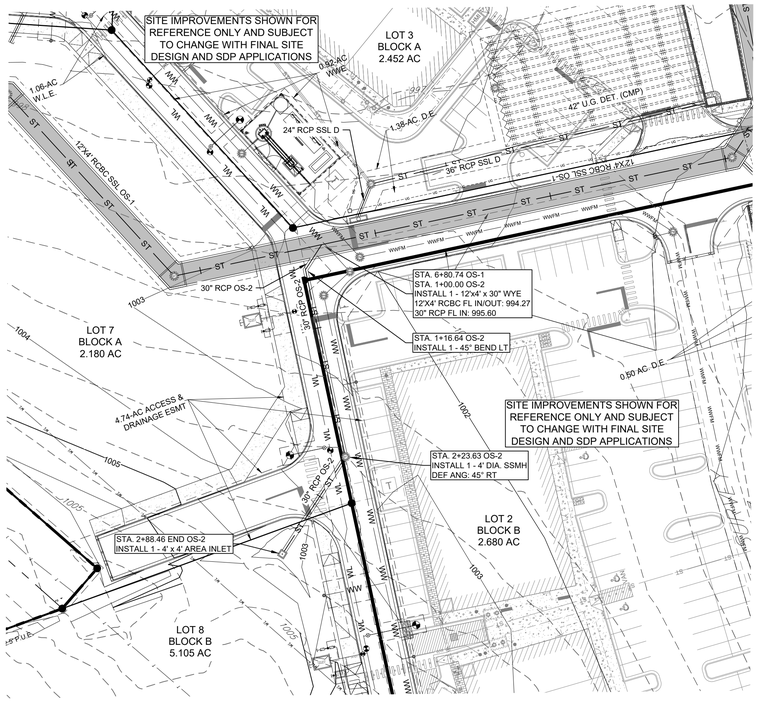

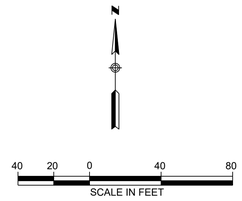

LEGEND

PROPOSED	EXISTING	
ST	ST	STORM SEWER LINE
WW	WW	WASTEWATER LINE
		WASTEWATER SERVICE
WL	WL	WATER LINE
		WATER SERVICE
		WATER VALVE
		FIRE HYDRANT
WW	WWMH	WASTEWATER MANHOLE
ST	SSMH	STORMSEWER MANHOLE
		CURB INLET
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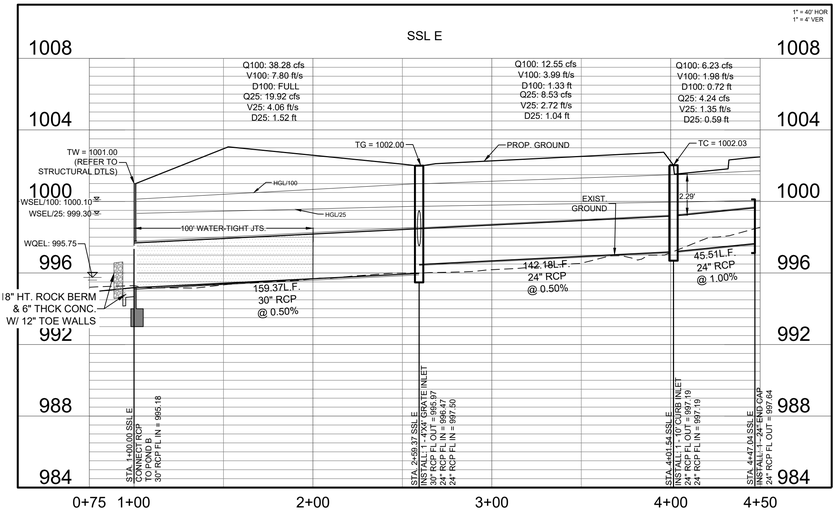

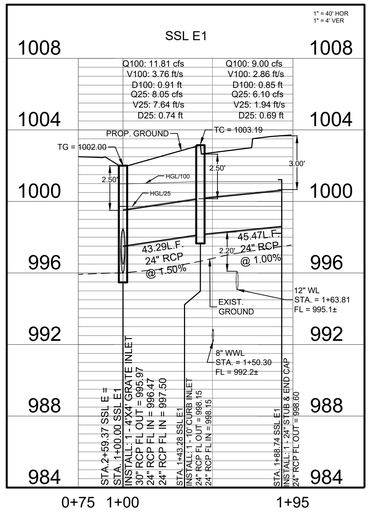

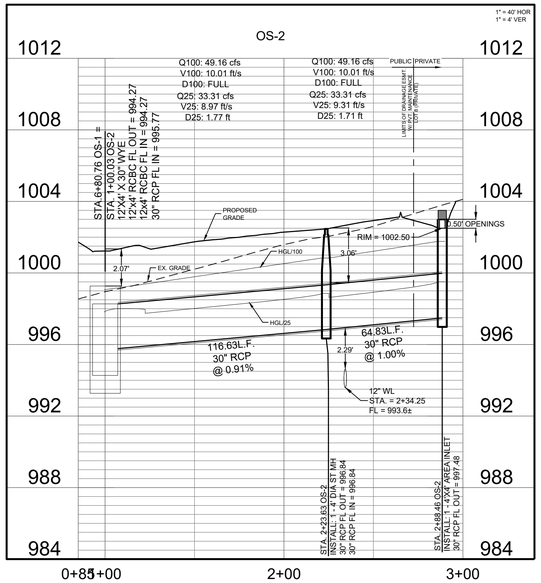

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CITY OF LEANDER PROJECT No. SD-23-0140

GATEWAY 29 WPAP / SCS
OVERALL SUBDIVISION IMPROVEMENTS
STORM PLAN AND PROFILE SHEET 5
LEANDER, WILLIAMSON COUNTY, TEXAS

NO.	REVISIONS DESCRIPTION	BY	DATE

DATE: 03/13/2024
DESIGNED BY: CRH
DRAWN BY: CRH
CHECKED BY:
DRAWING NAME: AES-3401-P-STS1_PVT_WPAP

03/13/2024
STATE OF TEXAS
CHARLES R. HAGER
127034
LICENSED PROFESSIONAL ENGINEER

LJA Engineering, Inc.
7500 Rialto Boulevard
Building II, Suite 100
Austin, Texas 78735
Phone 512.439.4700
Fax 512.439.4716
FRN-F-1386

JOB NUMBER:

ST05

SHEET NO. 34 OF 99 SHEETS

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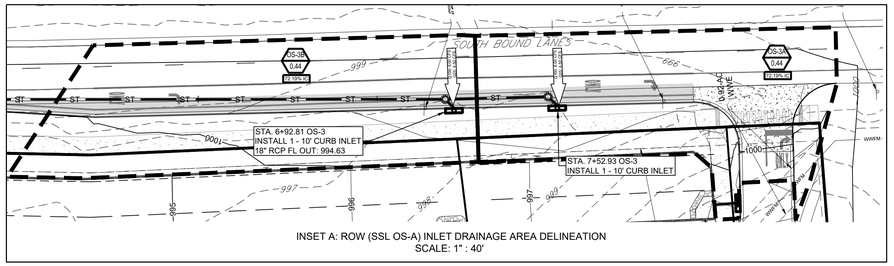
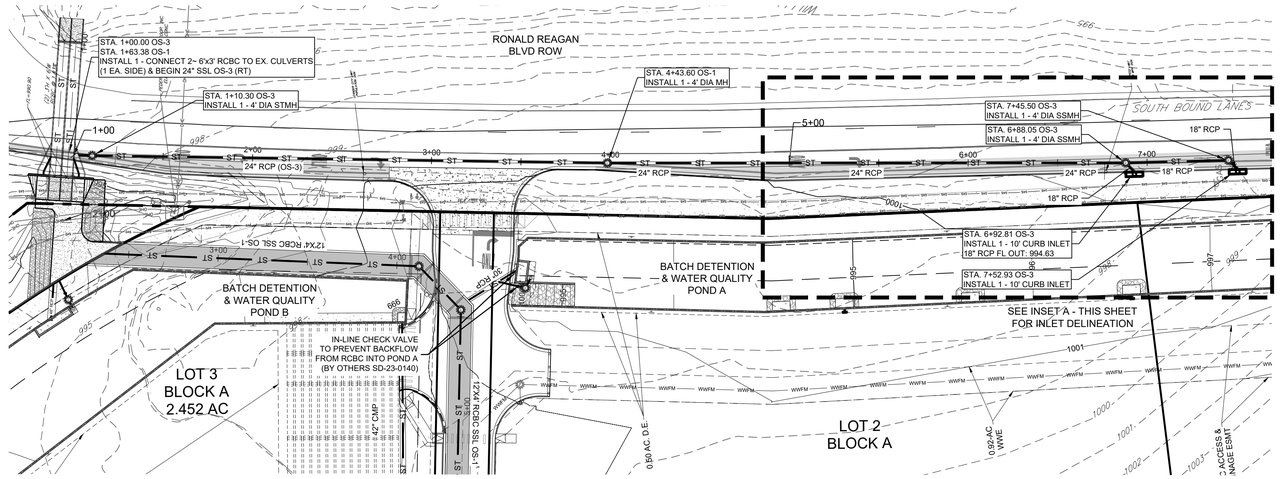
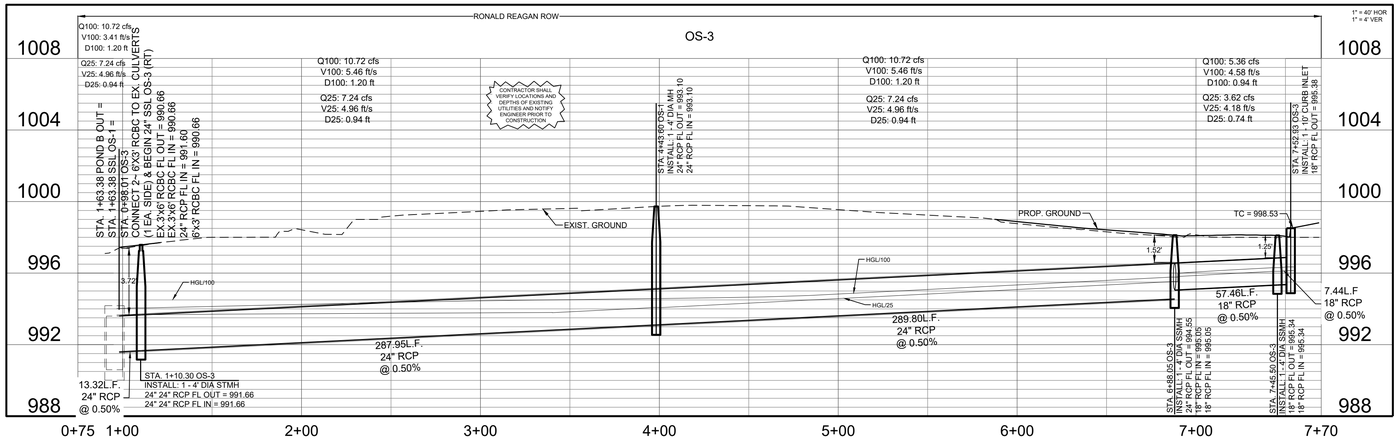
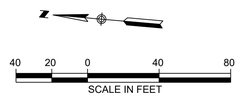
User: cgeringer
Last Modified: Mon, 13, 24 - 13:52
Plot Date/Time: Mon, 13, 24 - 14:46:34



INSET A: ROW (SSL OS-A) INLET DRAINAGE AREA DELINEATION
SCALE: 1" : 40'







LEGEND

PROPOSED	EXISTING	
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WL	WL	WATER LINE
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		LIGHT POLE
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GATEWAY 29 WPAP / SCS
OVERALL SUBDIVISION IMPROVEMENTS
RONALD REAGAN BLVD STORM PLAN
LEANDER, WILLIAMSON COUNTY, TEXAS

NO.	DESCRIPTION	BY	DATE

DATE: 2/27/2024
DESIGNED BY: CRH
DRAWN BY:
CHECKED BY: CRH
DRAWING NAME: A633-3401-P-ST01_PICP_ONLY_WPAP

2/27/2024

STATE OF TEXAS
CHARLES R. HAGER V
127034
LICENSED PROFESSIONAL ENGINEER

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Building II, Suite 100
Austin, Texas 78735
Phone 512.439.4700
Fax 512.439.4716
FRN-F-1386

JOB NUMBER:

ST06

SHEET NO.
35
OF 90 SHEETS

CITY OF LEANDER APPROVAL

LOCATION OF EXISTING UNDERGROUND AND OVERHEAD UTILITIES ARE APPROXIMATE LOCATIONS ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES PRIOR TO BEGINNING WORK AND SHALL BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT OCCUR.

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

CITY OF LEANDER PROJECT No. PICP-23-0072

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User: rgallinger
Last Modified: Mar. 13, 24 - 14:21
Plot Date/Time: Mar. 13, 24 - 14:41

Culvert Data Summary	2 - 6'x3'	4 - 6'x3'
Q Total (cfs)	705.9	693.9
Q Each Pipe (cfs)	352.95	173.475
Flow Area (ft²)	16.55	10.04
Velocity V1 (fps)	9.64	6.82
Velocity V2 (fps)	19.6	9.64
n-value	0.012	0.012
Hydraulic Radius (ft)	1.436	1.07
Slope (ft/ft)	0.0183	0.0183
Wetted Perimeter (ft)	11.52	9.35
Length (ft)	55	21
Ke	0.2	
g	32.2	
Pressure P1	0	
Pressure P2	0	
Elevation U.S. Z1 (ft)	H + 990.9	
Elevation D.S. Z2 (ft)	989.5	

FRICTION LOSS (Hf):

2 - 6'x3' RCBC Section

Q = (1.49/n)*A*R^(2/3)*S^(1/2)

S^(1/2) = Q / (1.49/n) * A * R^(2/3)

S^(1/2) = Q * n / 1.49 * A * R^(2/3)

S^(1/2) = 4.2354 / 31.3873

S^(1/2) = 0.13494

S1 = 0.018209

4 - 6'x3' RCBC Section

Q = (1.49/n)*A*R^(2/3)*S^(1/2)

S^(1/2) = Q / (1.49/n) * A * R^(2/3)

S^(1/2) = Q * n / 1.49 * A * R^(2/3)

S^(1/2) = 2.0817 / 15.64981

S^(1/2) = 0.133018

S2 = 0.017694

Hf = S1*L1 + S2*L2

Hf = 1.36 ft

MINOR LOSS @ CONTRACTION

COA DCM 5.5.2.C: Gradual Contraction. The headlosses due to a gradual contraction are determined by the following equation with a constant headloss coefficient.

H_{gc} = 0.04 x V^2 / 2g

V = Velocity in Smaller Pipe = 19.6 fps

H_{gc} = 0.04 x 384.16 / 64.4

H_{gc} = 0.24 ft

TOTAL HEAD LOSS:	
H =	Hf + He
Hf =	1.36 ft
He =	0.14 ft
Hgc =	0.24 ft
H =	1.74 ft

BERNOULLI'S ENERGY EQUATION:

V1^2/2g + P1/y + Z1 = V2^2/2g + P2/y + Z2 + Headloss

Z1 = V2^2/2g + P2/y + Z2 + Headloss - P1/y - V1^2/2g

H + 990.9 = 384.16/64.4 + 0 + 989.5 + 1.74 - 0 - 46.5124/64.4 - H

H = 5.965217 + 0 + 989.5 + 1.74 - 0 - 0.722242 - 990.9

H = 5.58 ft

HEADWATER ELEVATION:

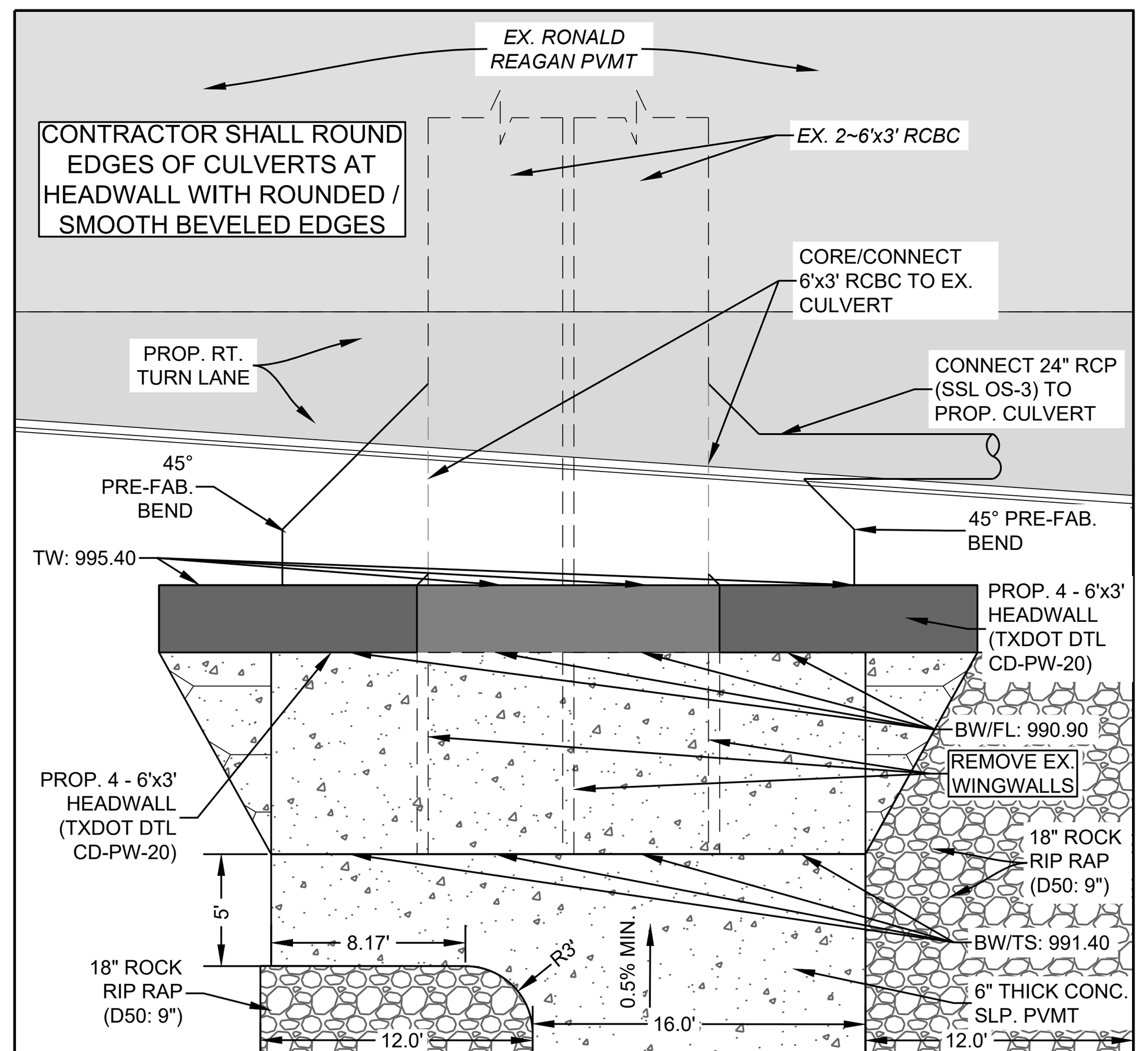
Headwater Elevation = U.S. FL EL + H

= 990.9 + 5.58

Headwater Elevation = 996.48 FT

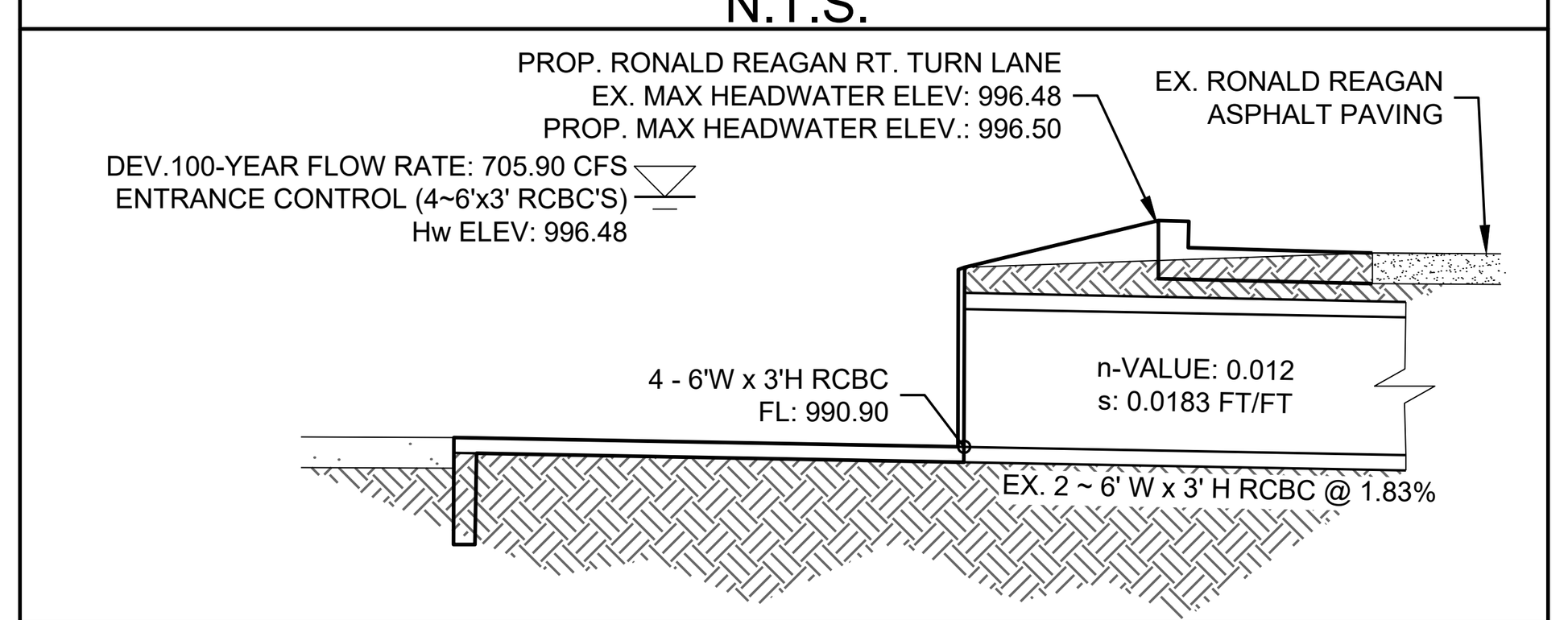
Ex. High Point at Upstream Culvert = 996.50 FT

Is High Point Elev > Headwater Elev? = YES



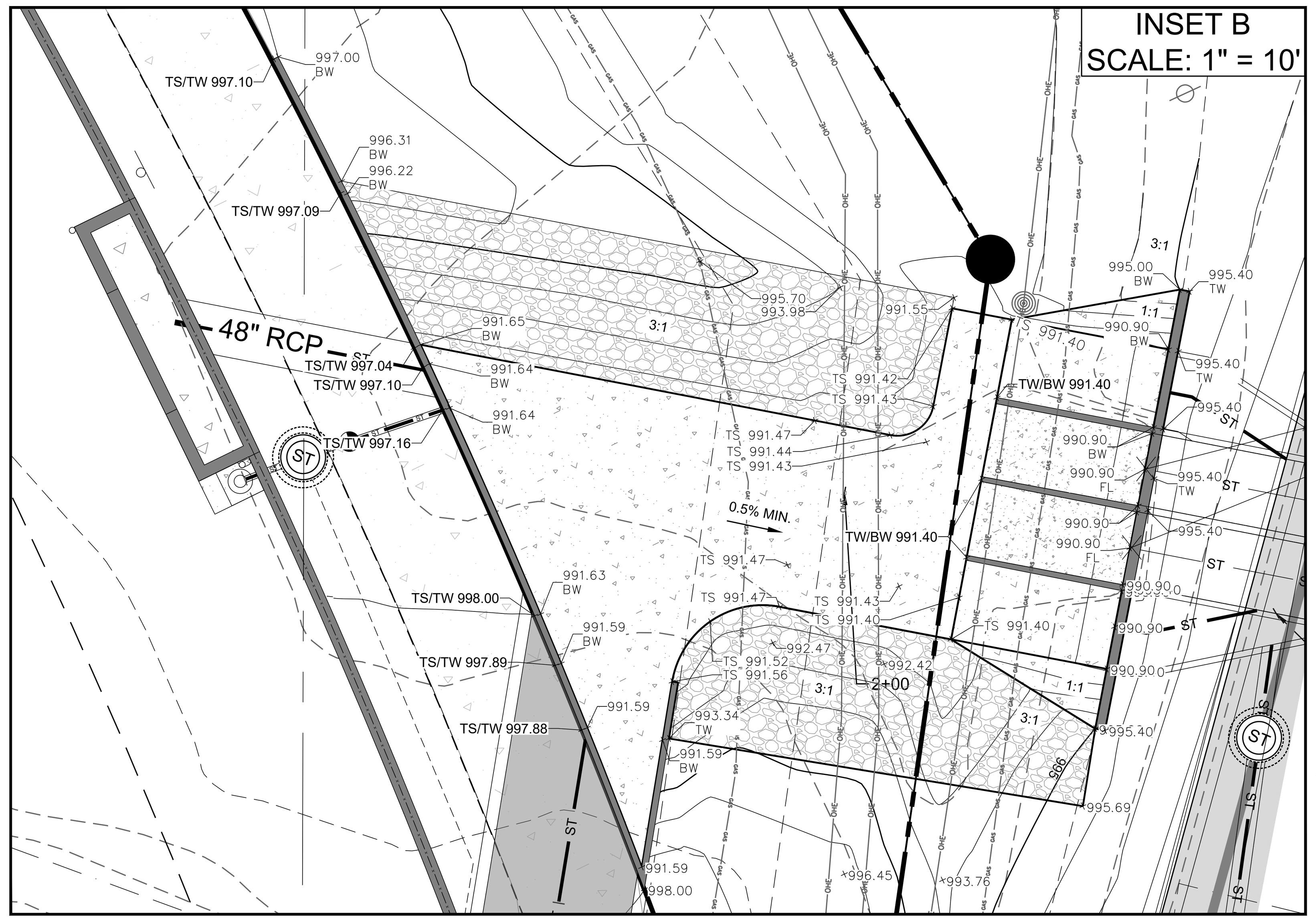
6'x3' RCBC HEADWALL DETAIL TOP VIEW (FOR REFERENCE ONLY - TO BE CONSTRUCTED UNDER PICP-23-0072)

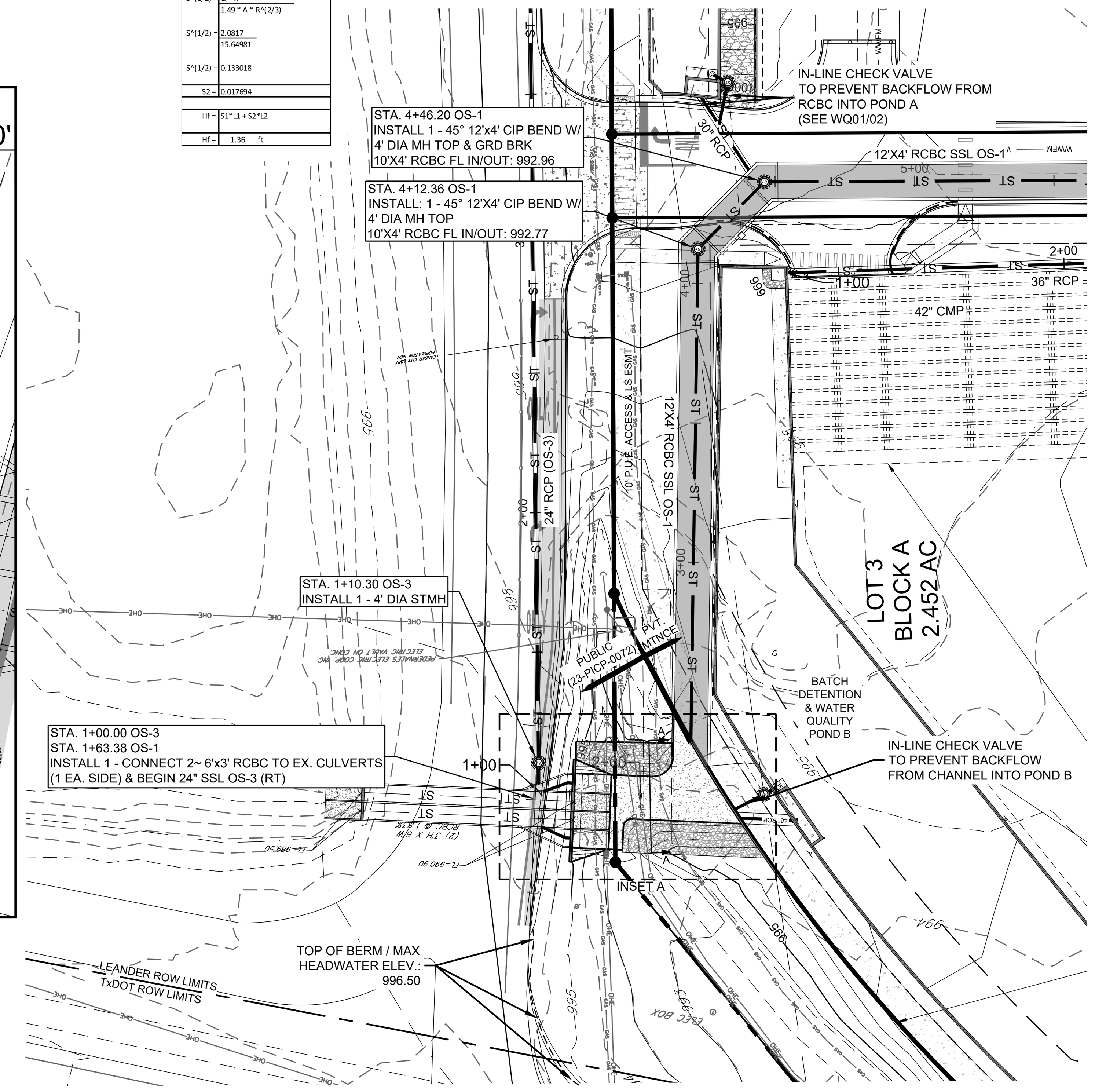
N.T.S.



6' W x 3' H RCBC HEADWATER SUMMARY DETAIL

NTS





SCALE IN FEET (40 20 0 40 80)

LEGEND

PROPOSED	EXISTING	
ST	ST	STORM SEWER LINE
WW	WW	WASTEWATER LINE
		WASTEWATER SERVICE
WL	WL	WATER LINE
		WATER SERVICE
		WATER VALVE
		FIRE HYDRANT
WW	WWMH	WASTEWATER MANHOLE
ST	SSMH	STORMSEWER MANHOLE
		CURB INLET
		GRATE INLET
		1/2" REBAR FOUND (OR AS NOTED)
	CH	1/2" REBAR WITH CAP FOUND
		1/2" REBAR WITH CHAPARRAL CAP SET
	W	WATER METER
		UTILITY POLE
	OU	OVERHEAD UTILITIES
	E	ELEC. UTILITY
	E	ELEC. MANHOLE
		LIGHT POLE
	T	TELEPHONE UTILITY
	F	UNDERGROUND FIBER OPTIC MARKER
	T	TELEPHONE MANHOLE
	G	UNDERGROUND GAS MARKER
		CHAIN LINK FENCE

NOTES:

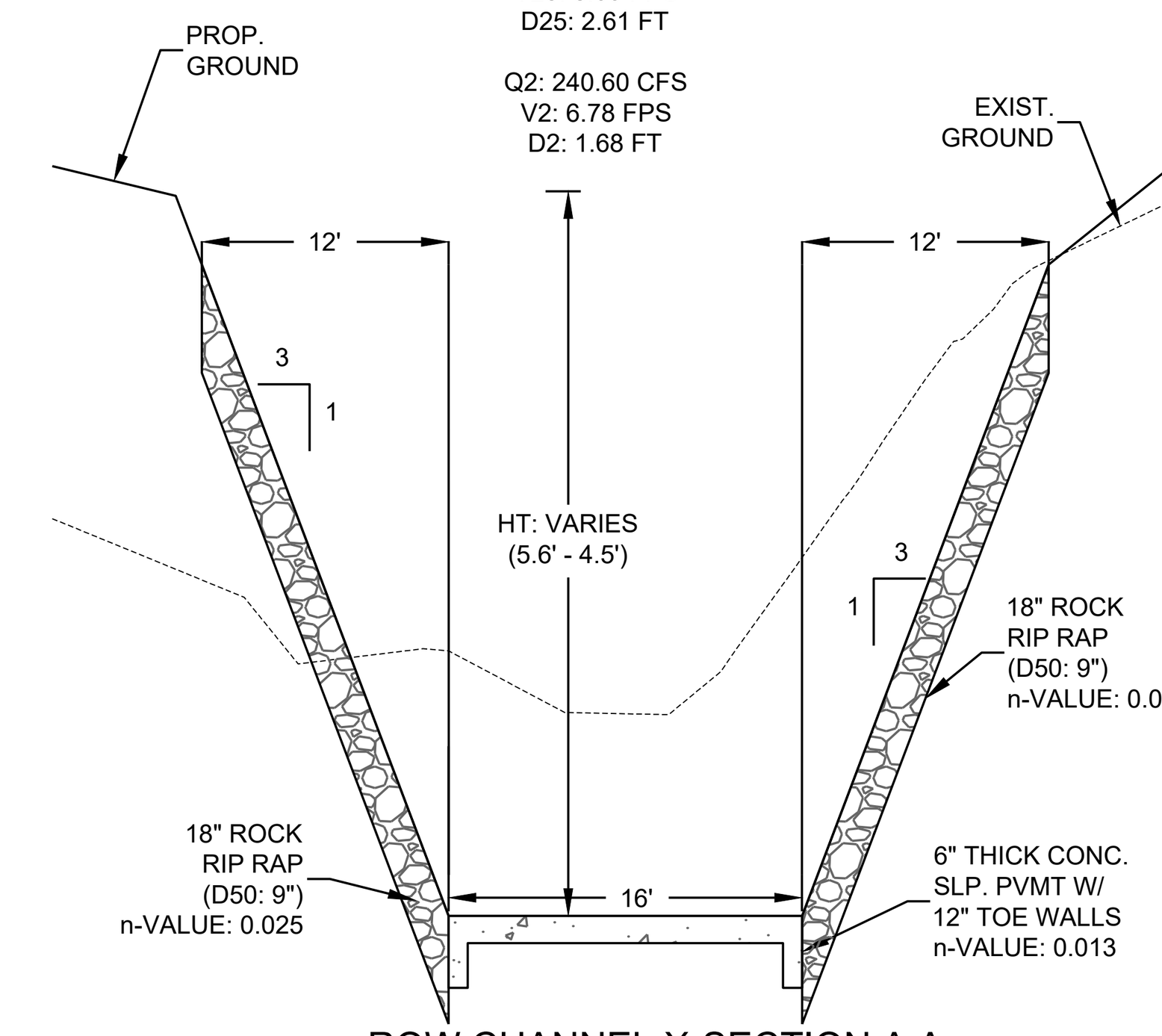
1. CONTRACTOR TO FIELD VERIFY EXACT LOCATION OF ALL EXISTING UTILITIES HORIZONTALLY AND VERTICALLY PRIOR TO CONSTRUCTION.
2. CONTRACTOR TO FILL AND COMPACT TO 95% DENSITY IN FILL SECTIONS OVER STORM SEWER LINES. 2.0'(MIN) COVER OVER WATER PRIOR TO CONSTRUCTION.
3. ALL STORM SEWER PIPE SHALL BE HP-PP OR APPROVED EQUAL. ALL PUBLIC STORM SEWERS SHALL BE RCP. STORM SEWER LINES OUTSIDE OF PAVEMENT AND EASEMENTS MAY BE INSTALLED AS PVC OR APPROVED EQUAL.
4. ALL PIPE SHALL BE INSTALLED IN ACCORDANCE WITH CITY OF LEANDER SPECIFICATIONS.
5. ALL BENDS AND FITTINGS SHALL BE PREFABRICATED BY MANUFACTURER. NO FIELD FABRICATION OF FITTINGS IS ALLOWED.

CHANNEL SLOPE: 0.005 FT/FT
COMPOSITE N-VALUE: 0.021

Q100: 693.90 CFS
V100: 6.82 FPS
D100: 3.74 FT
VELOCITY HEAD: 0.72 FT
CHANNEL DEPTH REQ'D: D100+Vh = 4.46 FT
CHANNEL DEPTH PROVIDED = 4.5' MIN. - 5.6' MAX (AT HEADWALLS)

Q25: 503.90 CFS
V25: 8.09 FPS
D25: 2.61 FT

Q2: 240.60 CFS
V2: 6.78 FPS
D2: 1.68 FT



ROW CHANNEL X-SECTION A:A

NTS

TABLE OF DIMENSIONS AND REINFORCING STEEL (Wings for one structure end)

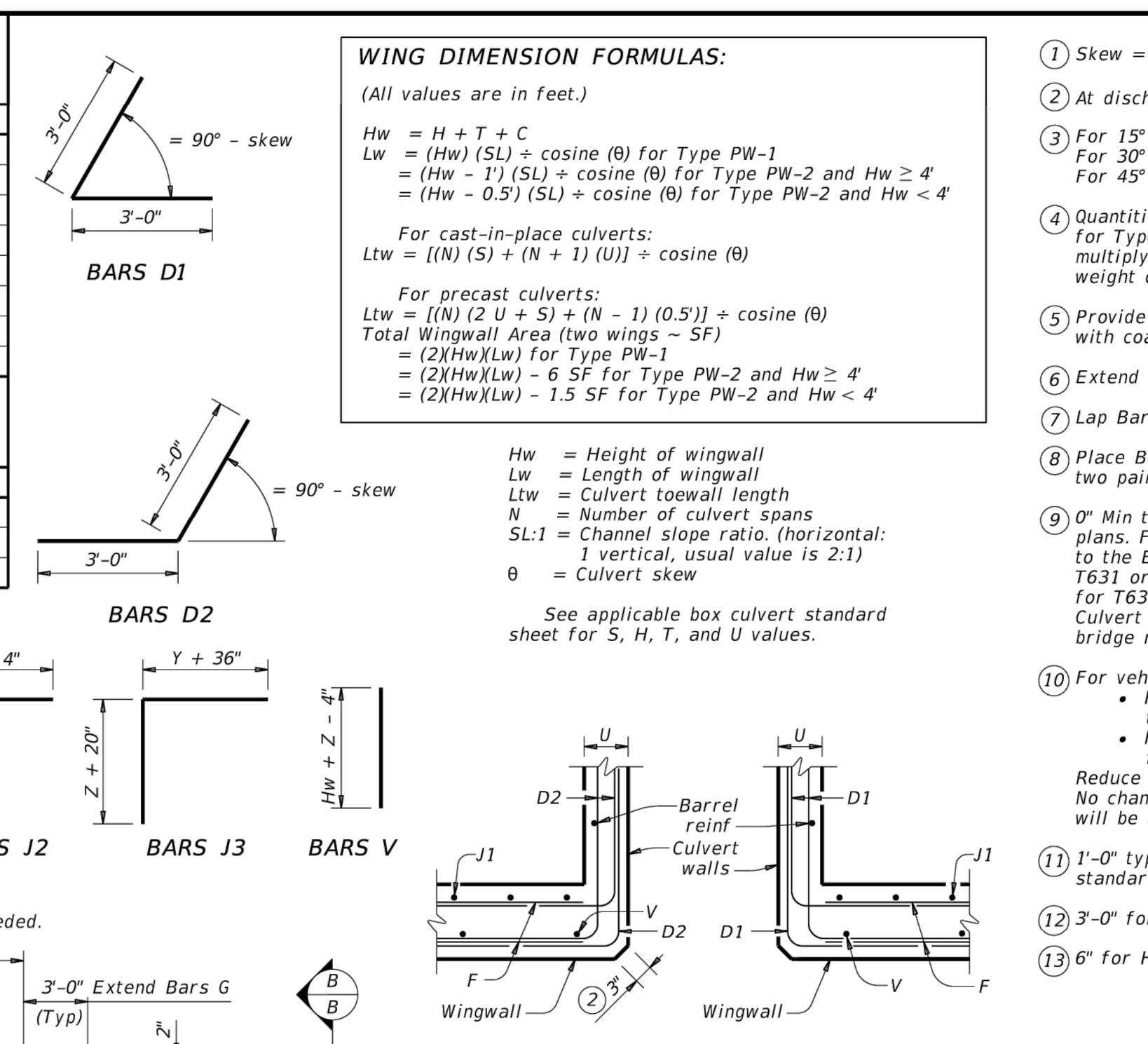
Maximum Wingwall Height Hw	W	X	Y	Z	Bars J1 Size	Bars J1 Spa	Bars J2 Size	Bars J2 Spa	Est. Quantities per ft of wing (2~wings) (4) Reinf (Lb/Ft)	Conc (CY/Ft)	Est. Quantities per ft of Toewall (1~toewall) Reinf (Lb/Ft)	Conc (CY/Ft)
2'-6"	2'-10"	10"	1'-0"	7"	#4	1'-0"	#4	1'-0"	48.64	0.406	6.85	0.071
2'-9"	2'-10"	10"	1'-0"	7"	#4	1'-0"	#4	1'-0"	49.31	0.424	6.85	0.071
3'-0"	2'-10"	10"	1'-0"	7"	#4	1'-0"	#4	1'-0"	49.98	0.444	6.85	0.071
3'-3"	2'-10"	10"	1'-0"	7"	#4	1'-0"	#4	1'-0"	53.32	0.462	6.85	0.071
3'-6"	2'-10"	10"	1'-0"	7"	#4	1'-0"	#4	1'-0"	53.98	0.480	6.85	0.071
4'-0"	3'-2"	1'-2"	1'-0"	7"	#4	1'-0"	#4	1'-0"	55.77	0.532	6.85	0.071
4'-6"	3'-2"	1'-2"	1'-0"	7"	#4	1'-0"	#4	1'-0"	59.77	0.568	6.85	0.071
5'-0"	3'-9"	1'-7"	1'-2"	7"	#4	1'-0"	#4	1'-0"	63.45	0.632	6.96	0.075
5'-6"	3'-9"	1'-7"	1'-2"	7"	#4	1'-0"	#4	1'-0"	67.46	0.668	6.96	0.075
6'-0"	4'-4"	2'-0"	1'-4"	7"	#5	1'-0"	#5	1'-0"	80.67	0.730	7.07	0.078
6'-6"	4'-4"	2'-0"	1'-4"	7"	#5	1'-0"	#5	1'-0"	85.05	0.768	7.07	0.078
7'-0"	5'-0"	2'-3"	1'-9"	8"	#5	1'-0"	#5	1'-0"	92.15	0.864	8.07	0.093
7'-6"	5'-0"	2'-3"	1'-9"	8"	#5	1'-0"	#5	1'-0"	96.54	0.902	8.07	0.093
8'-0"	5'-6"	2'-8"	1'-10"	8"	#5	6"	#5	6"	139.04	0.962	8.13	0.095
8'-6"	5'-6"	2'-8"	1'-10"	8"	#5	6"	#5	6"	144.47	1.000	8.13	0.095
9'-6"	6'-0"	2'-10"	2'-2"	9"	#5	6"	#5	6"	156.93	1.136	8.41	0.110
10'-6"	6'-5"	3'-0"	2'-5"	9"	#6	6"	#5	6"	196.27	1.234	8.57	0.117
11'-6"	7'-2"	3'-6"	2'-8"	11"	#6	6"	#6	6"	230.13	1.438	9.52	0.140
12'-6"	7'-8"	3'-9"	2'-11"	1'-0"	#7	6"	#6	6"	283.41	1.592	9.74	0.157
13'-6"	8'-2"	4'-0"	3'-2"	1'-2"	#8	6"	#6	6"	348.72	1.804	10.02	0.186
14'-6"	8'-10"	4'-5"	3'-5"	1'-4"	#9	6"	#6	6"	432.94	2.046	10.30	0.218
15'-6"	9'-6"	4'-10"	3'-8"	1'-6"	#9	6"	#7	6"	489.52	2.302	11.24	0.253
16'-0"	9'-11"	5'-0"	3'-11"	1'-7"	#9	6"	#7	6"	505.72	2.448	11.47	0.279

TABLE OF WINGWALL REINFORCING (2~wings)

Bar	Size	No.	Spa
D1	#6	~	1'-0"
D2	#6	~	1'-0"
E1	#4	~	1'-0"
F	#4	~	1'-0"
G	#6	~	8"
M1	#4	4	~
P	#4	~	1'-0"
V	#4	~	1'-0"

TABLE OF TOEWALL REINFORCING

Bar	Size	No.	Spa
J3	#4	~	1'-0"
M2	#4	2	~
E2	#4	~	1'-0"



WING DIMENSION FORMULAS:

(All values are in feet.)

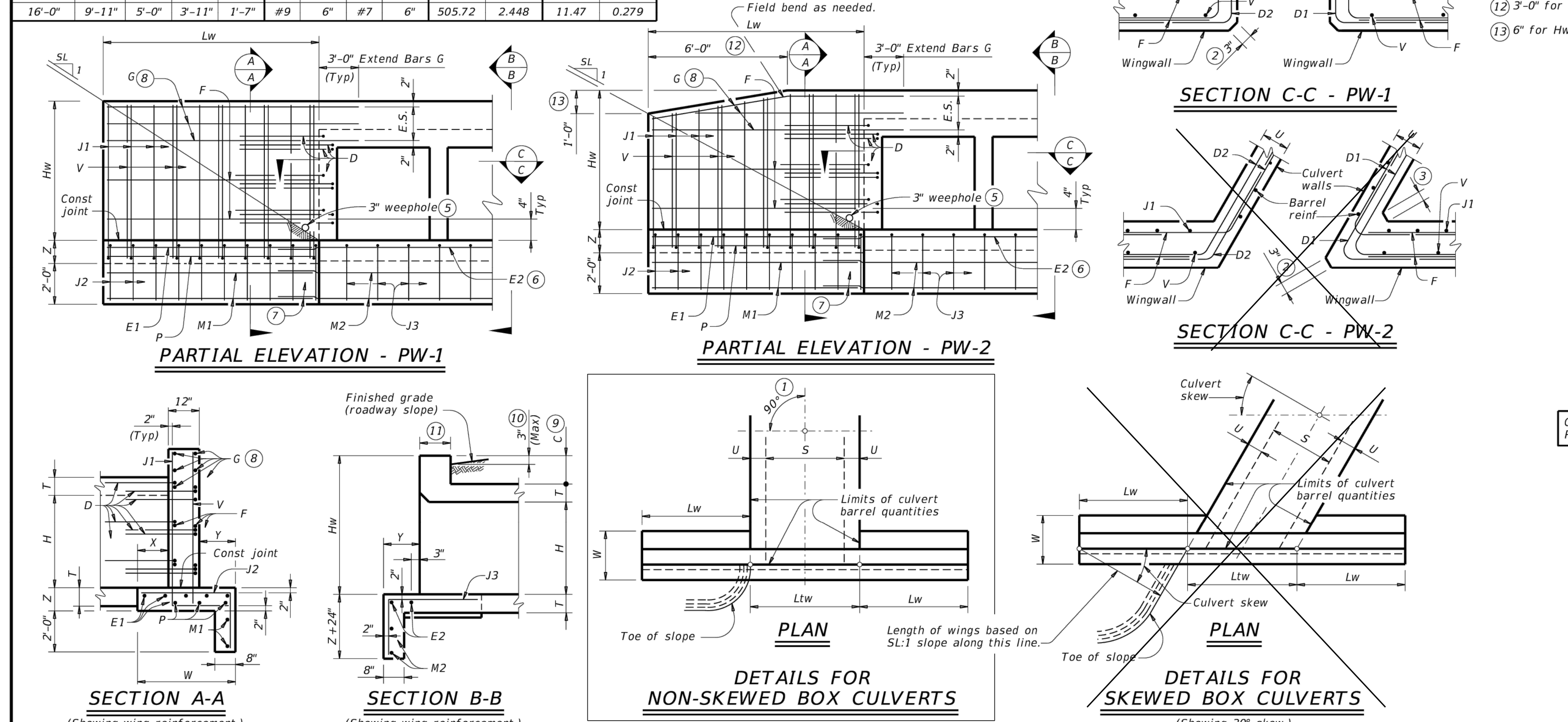
Hw = H + T + C
Lw = (Hw) (SL) ÷ cosine (θ) for Type PW-1
= (Hw - 1') (SL) ÷ cosine (θ) for Type PW-2 and Hw ≥ 4'
= (Hw - 0.5') (SL) ÷ cosine (θ) for Type PW-2 and Hw < 4'

For cast-in-place culverts:
Ltw = [(N) (S) + (N + 1) (U)] ÷ cosine (θ)

For precast culverts:
Ltw = [(N) (2 U + S) + (N - 1) (0.5')] ÷ cosine (θ)
Total Wingwall Area (two wings ~ SF)
= (2)(Hw)(Lw) for Type PW-1
= (2)(Hw)(Lw) - 6 SF for Type PW-2 and Hw ≥ 4'
= (2)(Hw)(Lw) - 1.5 SF for Type PW-2 and Hw < 4'

Hw = Height of wingwall
Lw = Length of wingwall
Ltw = Culvert toewall length
N = Number of culvert spans
SL:1 = Channel slope ratio. (horizontal: 1 vertical, usual value is 2:1)
θ = Culvert skew

See applicable box culvert standard sheet for S, H, T, and U values.



1. Skew = 0°
2. At discharge end, chamfer may be ¾" minimum.
3. For 15° skew ~ 1"
For 30° skew ~ 2"
For 45° skew ~ 3"
4. Quantities shown are for two Type PW-1 wings. Adjust concrete volume for Type PW-2 wings. To determine estimated quantities for two wings, multiply the tabulated values by Lw. Quantities shown do not include weight of Bars D.
5. Provide weepholes for Hw = 5'-0" and greater. Fill around weepholes with coarse gravel.
6. Extend Bars E2 1'-6" minimum into the wingwall footing.
7. Lap Bars M1 1'-6" minimum with Bars M2.
8. Place Bars G as shown, equally spaced at 8" maximum. Provide at least two pairs of Bars G per wing.
9. 0" Min to 5'-0" Max. Estimated curb heights are shown elsewhere in the plans. For structures with pedestrian rail or curbs taller than 1'-0, refer to the Extended Curb Details (ECD) standard sheet. For structures with T631 or T631LS bridge rail, refer to the Mounting Details for T631 & T631LS Rails (T631-CM) standard sheet. Refer to the Box Culvert Rail Mounting Details (RAC) standard sheet for structures with bridge rail other than T631 or T631LS.
10. For vehicle safety, the following requirements must be met:
    - For structures without bridge rail, construct curbs no more than 3" above finished grade.
    - For structures with bridge rail, construct curbs flush with finished grade.
    Reduce curb heights, if necessary, to meet the above requirements. No changes will be made in quantities and no additional compensation will be allowed for this work.
11. 1'-0" typical. 2'-3" when the Box Culvert Rail Mounting Details (RAC) standard sheet is referred to elsewhere in the plans.
12. 3'-0" for Hw < 4'.
13. 6" for Hw < 4'.

DESIGNER NOTES:
Type PW-1 can be used for all applications and must be used if railing is to be mounted to the wingwall.
Type PW-2 can only be used for applications without a railing mounted to the wingwall.

MATERIAL NOTES:
Provide Class C concrete (f'c=3,600 psi).
Provide Grade 60 reinforcing steel.
Provide galvanized reinforcing steel if required elsewhere in the plans.

GENERAL NOTES:
Designed in accordance with AASHTO LRFD Bridge Design Specifications.
Depth of toewalls for wingwalls and culverts may be reduced or eliminated when founded on solid rock, when directed by the Engineer.
See Box Culvert Supplement (BCS) standard sheet for wingwall type and additional dimensions and information.
Quantities for concrete and reinforcing steel resulting from the formulas given on this sheet are for the Contractor's information only.

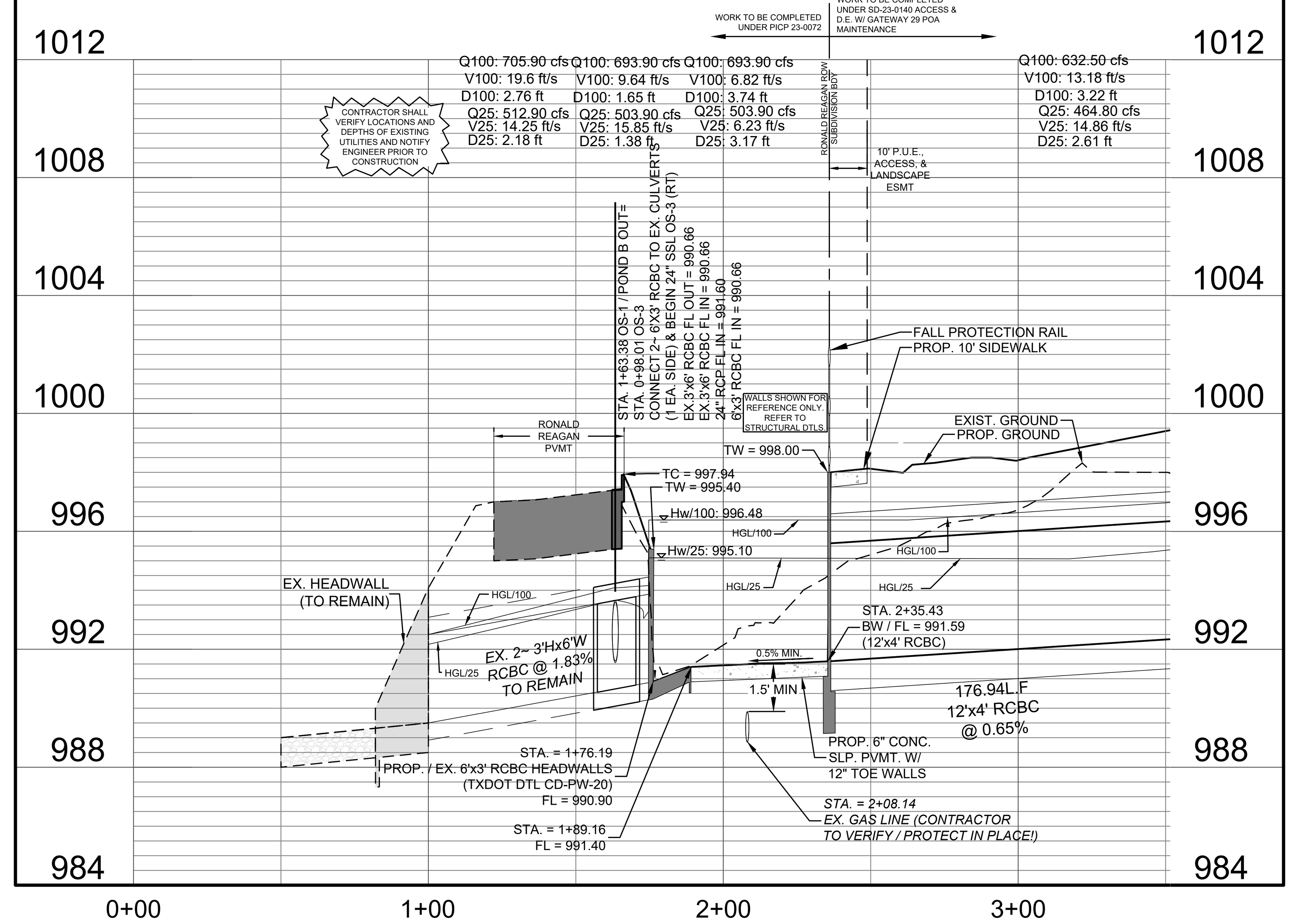
Cover dimensions are clear dimensions, unless noted otherwise. Reinforcing dimensions are out-to-out of bars.

Texas Department of Transportation — Bridge Division Standard

CONCRETE WINGWALLS WITH PARALLEL WINGS FOR BOX CULVERTS TYPES PW-1 AND PW-2

PW

FILE: CD-PW-20.dgn | DN: GAF | CK: CAT | DW: TxDOT | CK: TxDOT
©TxDOT February 2020 | CONT | SECT | JOB | HIGHWAY
REVISIONS | DIST | COUNTY | SHEET NO.



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GATEWAY 29 WPAP / SCS
OVERALL SUBDIVISION IMPROVEMENTS
HIGHWAY 29 STORM PLAN
LEANDER, WILLIAMSON COUNTY, TEXAS

REVISIONS

NO.	DESCRIPTION	BY	DATE

DATE: 2/27/2024
DESIGNED BY: CRH
DRAWN BY:
CHECKED BY: CRH
DRAWING NAME: A633-0401-P-ST01_PICP ONLY_WPAP

2/27/2024
STATE OF TEXAS — CHARLES R. HAGER V — 127034 — LICENSED PROFESSIONAL ENGINEER

LJA Engineering, Inc.
7500 Rialto Boulevard
Building II, Suite 100
Austin, Texas 78735
Phone 512.439.4700
Fax 512.439.4716
FRN-F-1386

JOB NUMBER:

ST07

SHEET NO. 36 OF 90 SHEETS

CITY OF LEANDER PROJECT No. PICP-23-0072

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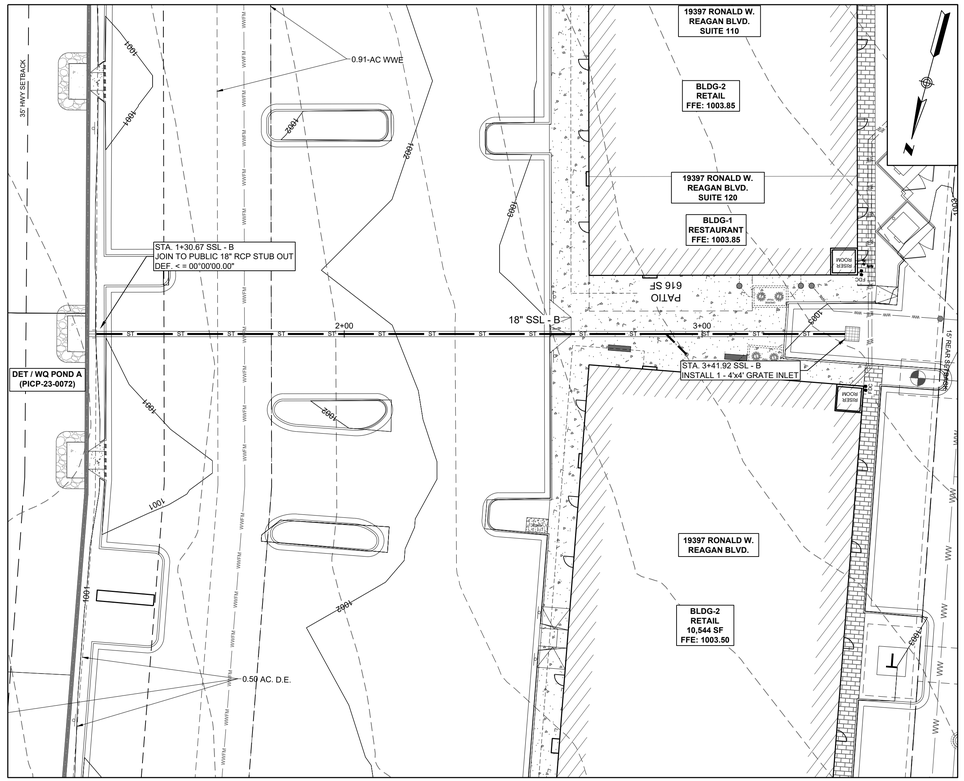
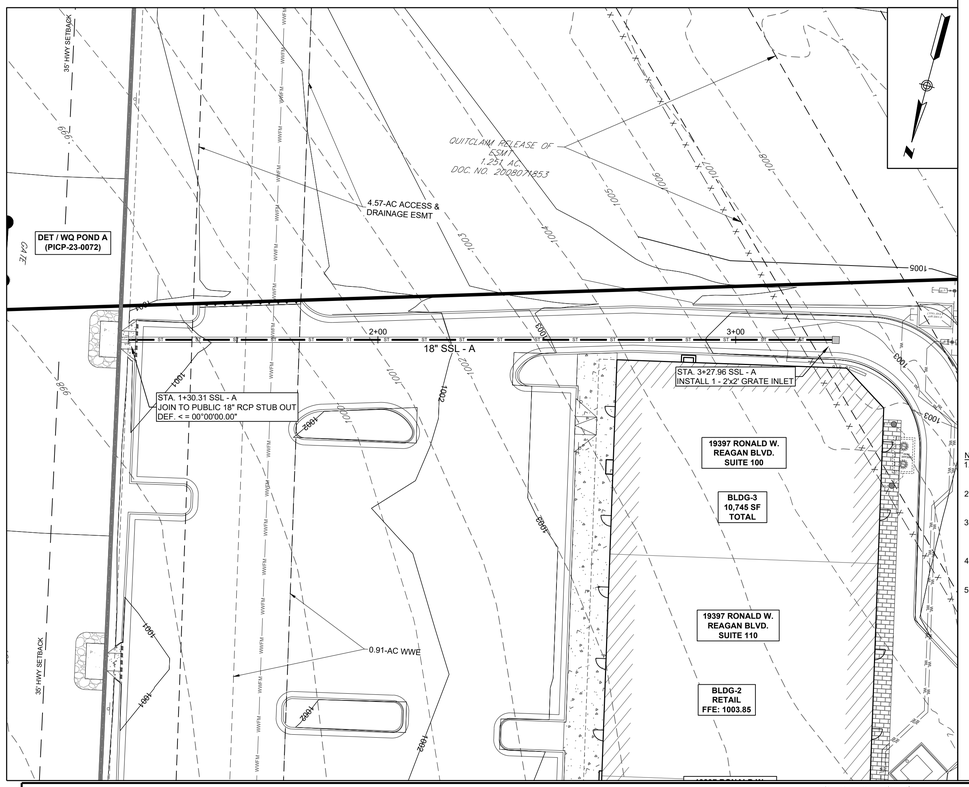
Plot Date/Time: Mar. 13, 24 - 14:47:43





20 10 0 20 40

SCALE IN FEET

LEGEND

PROPOSED	EXISTING	
ST	ST	STORM SEWER LINE
WW	WW	WASTEWATER LINE
		WASTEWATER SERVICE
WL	WL	WATER LINE
		WATER SERVICE
		WATER VALVE
		FIRE HYDRANT
		WASTEWATER MANHOLE
		STORMSEWER MANHOLE
		CURB INLET
		GRATE INLET
		1/2" REBAR FOUND (OR AS NOTED)
		1/2" REBAR WITH CAP FOUND
		1/2" REBAR WITH CHAPARRAL CAP SET
		WATER METER
		UTILITY POLE
	OU	OVERHEAD UTILITIES
		ELEC. UTILITY
		ELEC. MANHOLE
		LIGHT POLE
		TELEPHONE UTILITY
		UNDERGROUND FIBER OPTIC MARKER
		TELEPHONE MANHOLE
		UNDERGROUND GAS MARKER
		CHAIN LINK FENCE

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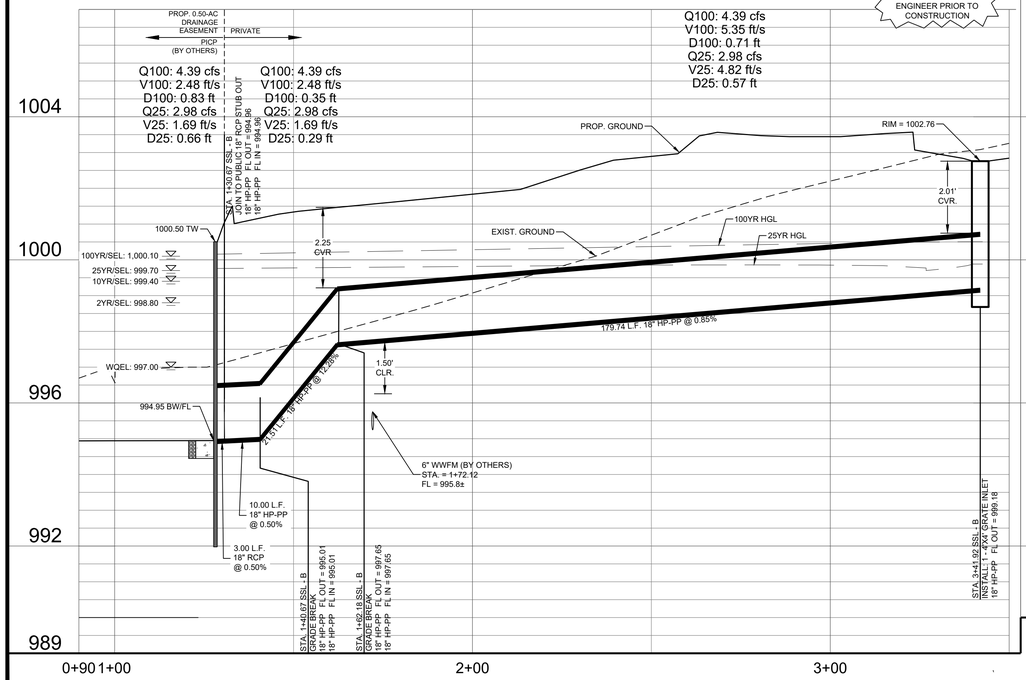
SSL - B

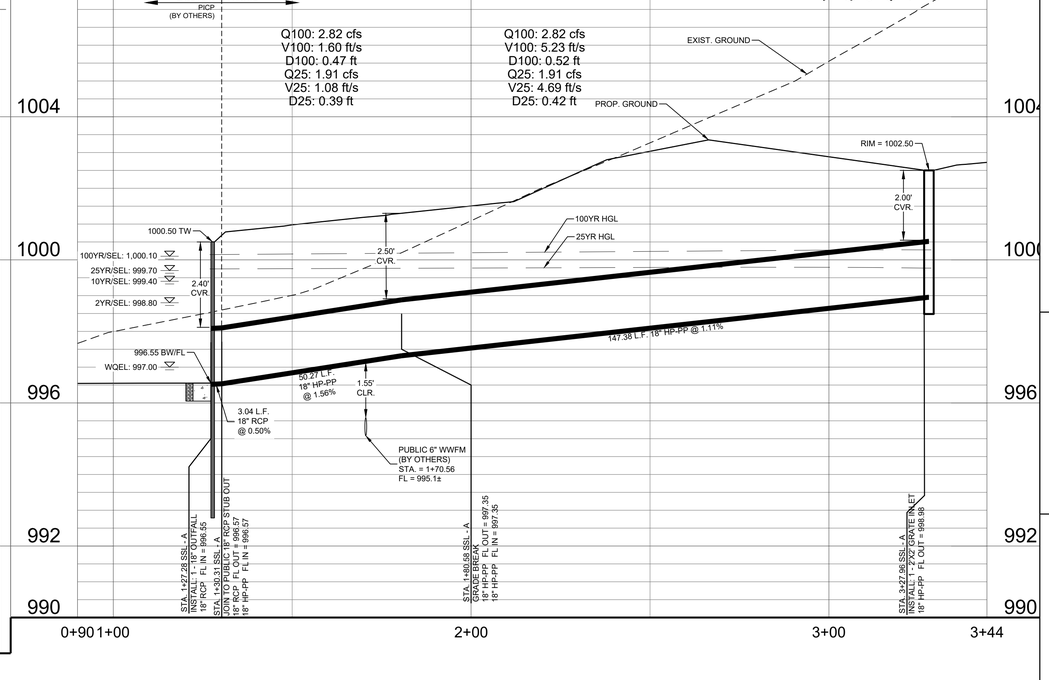
CONTRACTOR SHALL VERIFY LOCATIONS AND DEPTHS OF EXISTING UTILITIES AND NOTIFY ENGINEER PRIOR TO CONSTRUCTION



SSL - A

CONTRACTOR SHALL VERIFY LOCATIONS AND DEPTHS OF EXISTING UTILITIES AND NOTIFY ENGINEER PRIOR TO CONSTRUCTION

PROFILE SCALE
VERT.: 1" = 2'
HORIZ.: 1" = 20'



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CITY OF LEANDER APPROVAL

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GATEWAY 29 WPAP / SCS OVERALL SUBDIVISION IMPROVEMENTS

STORM PLAN AND PROFILE - LOT 2

LEANDER, WILLIAMSON COUNTY, TEXAS

NO.	DESCRIPTION	BY	DATE
	REVISIONS		

DATE: 03/13/2024
DESIGNED BY: --
DRAWN BY: --
CHECKED BY: --
DRAWING NAME: A633-0401-P-ST01_L2_PROF.DWG

03/13/2024

STATE OF TEXAS
CHARLES R. HAGER IV
127034
LICENSED PROFESSIONAL ENGINEER

LJA Engineering, Inc.
7500 Rialto Boulevard
Building II, Suite 100
Austin, Texas 78735
Phone 512.439.4700
Fax 512.439.4716
FRN-F-1386

JOB NUMBER: A633-0401

ST07

SHEET NO. 37 OF 90 SHEETS

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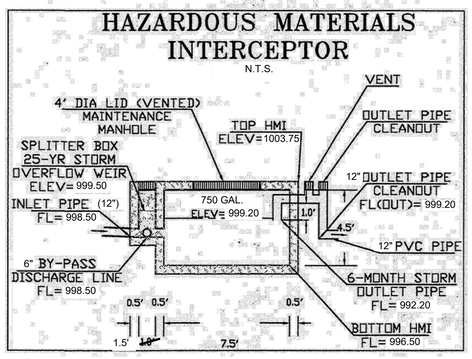

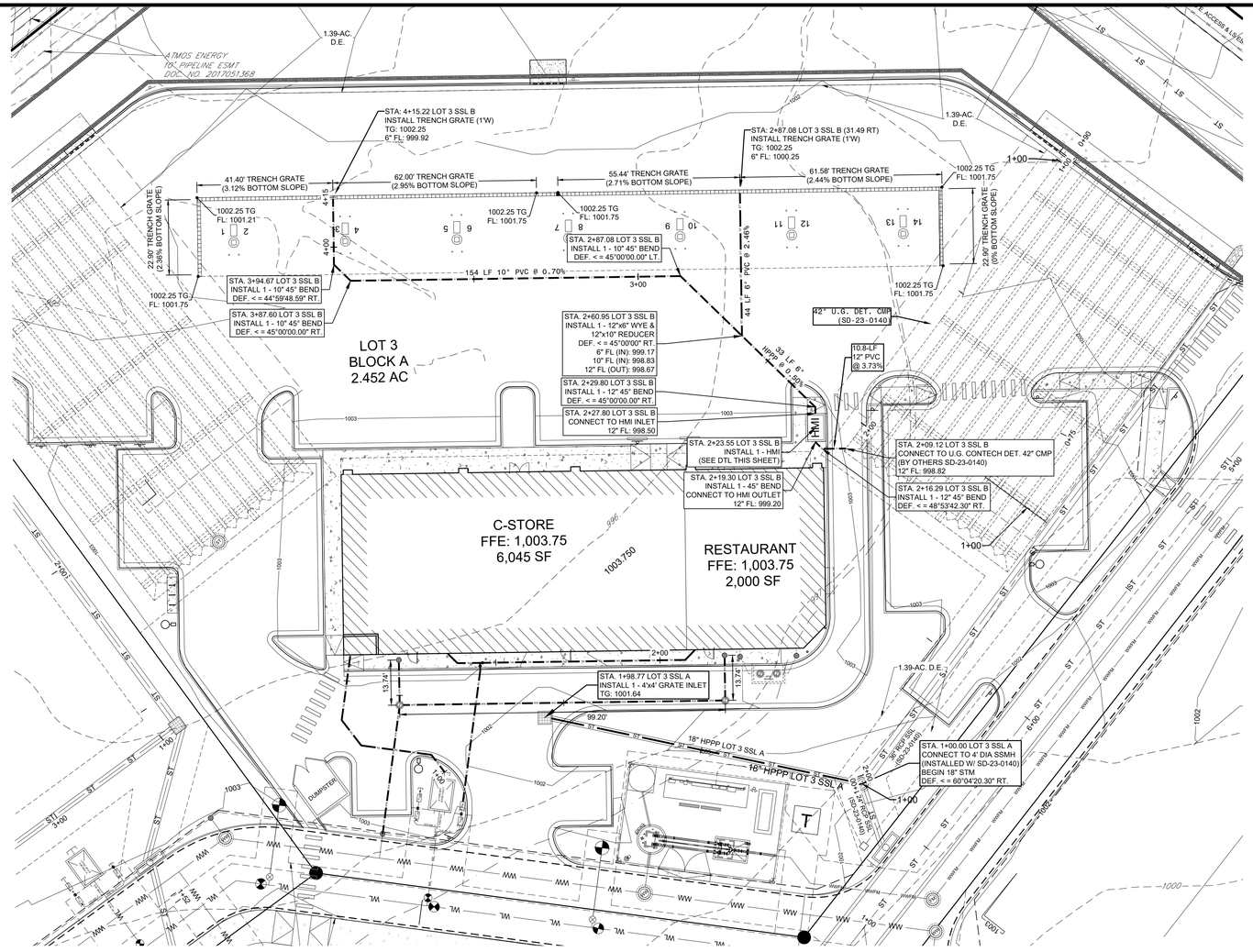

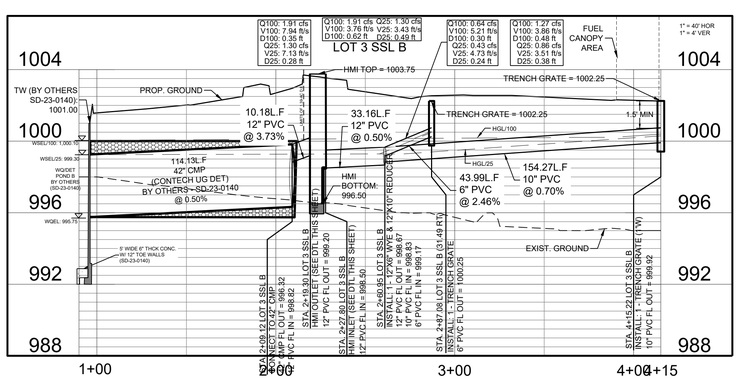

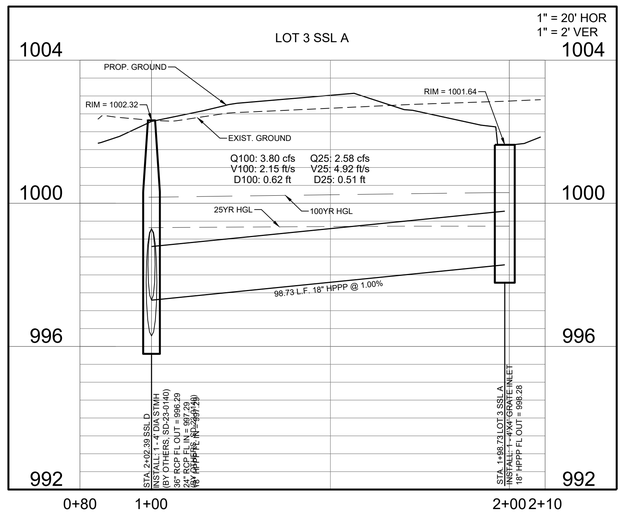

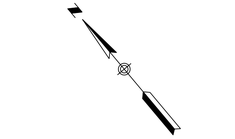

LEGEND

PROPOSED	EXISTING	
ST	ST	STORM SEWER LINE
WW	WW	WASTEWATER LINE
		WASTEWATER SERVICE
WL	WL	WATER LINE
		WATER SERVICE
		WATER VALVE
		FIRE HYDRANT
	WWMH	WASTEWATER MANHOLE
	SSMH	STORMSEWER MANHOLE
		CURB INLET
		GRATE INLET

NOTES:

1. CONTRACTOR TO FIELD VERIFY EXACT LOCATION OF ALL EXISTING UTILITIES HORIZONTALLY AND VERTICALLY PRIOR TO CONSTRUCTION.
2. CONTRACTOR TO FILL AND COMPACT TO 95% DENSITY IN FILL SECTIONS OVER STORM SEWER LINES. 2.0'(MIN) COVER OVER WATER PRIOR TO CONSTRUCTION.
3. ALL STORM SEWER PIPE SHALL BE HP-PP OR APPROVED EQUAL. ALL PUBLIC STORM SEWERS SHALL BE RCP. STORM SEWER LINES OUTSIDE OF PAVEMENT AND EASEMENTS MAY BE INSTALLED AS PVC OR APPROVED EQUAL.
4. ALL PIPE SHALL BE INSTALLED IN ACCORDANCE WITH CITY OF LEANDER SPECIFICATIONS.
5. ALL BENDS AND FITTINGS SHALL BE PREFABRICATED BY MANUFACTURER. NO FIELD FABRICATION OF FITTINGS IS ALLOWED.
6. ALL EASEMENTS PROPOSED AS PART OF THE GATEWAY 29 PROJECT ARE DONE SO BY FINAL PLAT (FP-23-0072).

CONTRACTOR SHALL VERIFY LOCATIONS AND DEPTHS OF EXISTING UTILITIES AND NOTIFY ENGINEER PRIOR TO CONSTRUCTION

CITY OF LEANDER APPROVAL

LOCATION OF EXISTING UNDERGROUND AND OVERHEAD UTILITIES ARE APPROXIMATE LOCATIONS ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES PRIOR TO BEGINNING WORK AND SHALL BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT OCCUR.

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

GATEWAY 29 WPAP / SCS
OVERALL SUBDIVISION IMPROVEMENTS

STORM PLAN AND PROFILE - LOT 3

LEANDER, WILLIAMSON COUNTY, TEXAS

NO.	DESCRIPTION	BY	DATE
	REVISIONS		

DATE: 03/13/2024
DESIGNED BY: CRH
DRAWN BY:
CHECKED BY: CRH
DRAWING NAME: A633-0401P-ST01_L3_WPAP.DWG

03/13/2024

STATE OF TEXAS
CHARLES R. HAGER
127034
LICENSED PROFESSIONAL ENGINEER

LJA Engineering, Inc.
7500 Rialto Boulevard
Building II, Suite 100
Austin, Texas 78735
Phone 512.439.4700
Fax 512.439.4716
FRN-F-1386

JOB NUMBER: A633-0401

ST08

SHEET NO. 38 OF 90 SHEETS

I:\a633-Gateway\0401\Submittal Sheets\WPAP\a633-0401P-ST01_L3_WPAP.dwg
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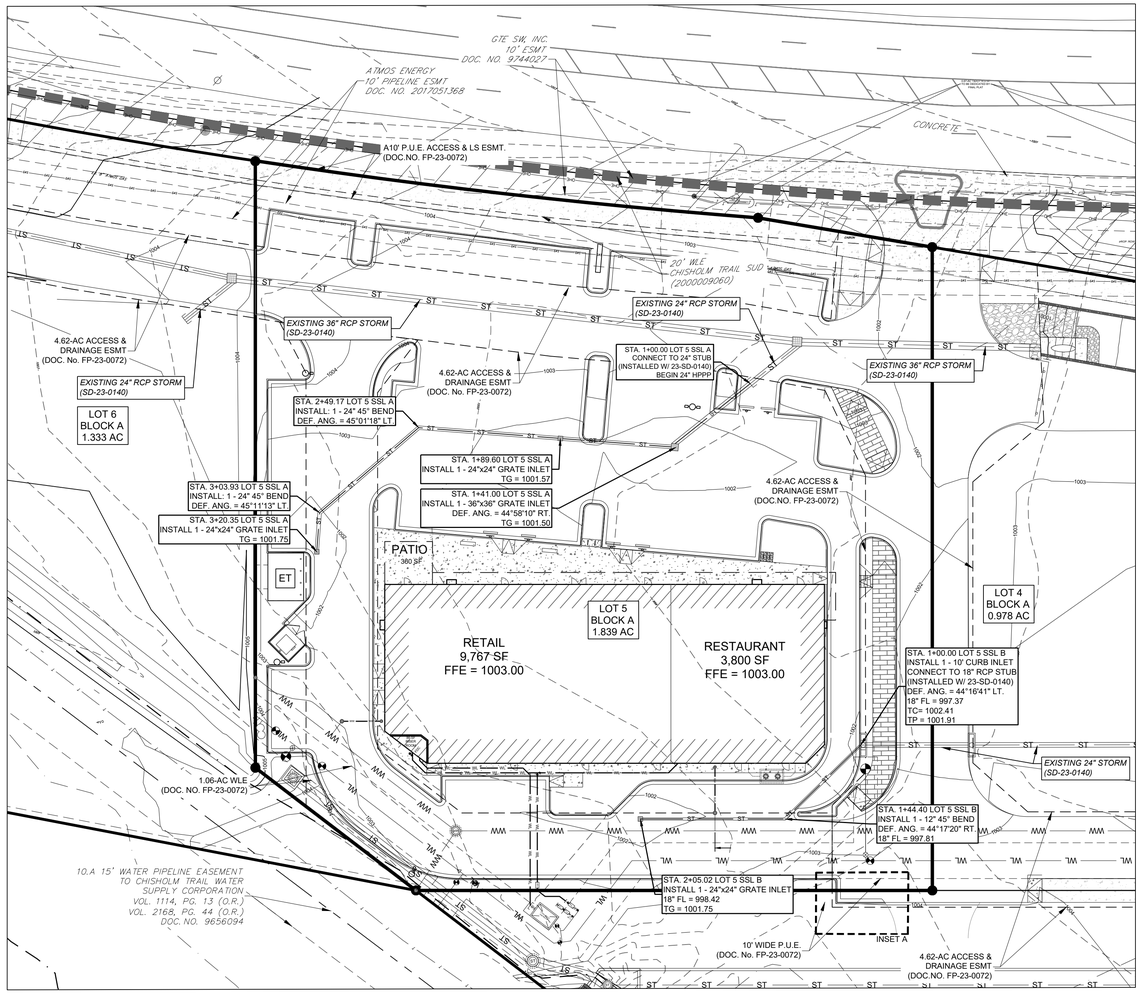

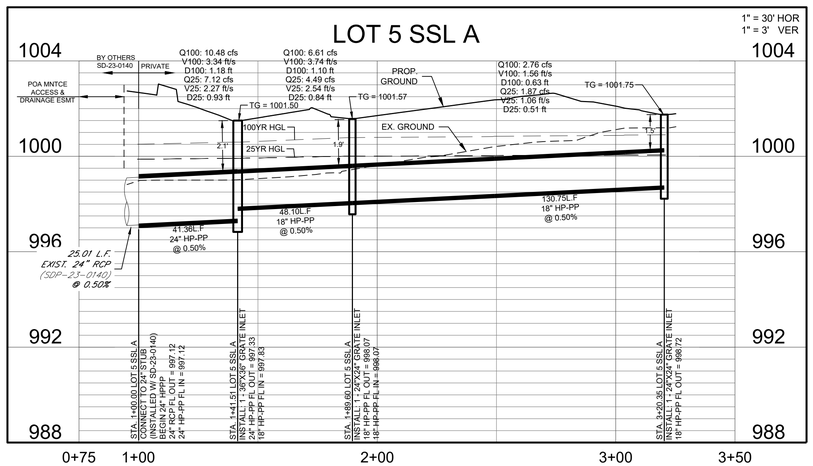

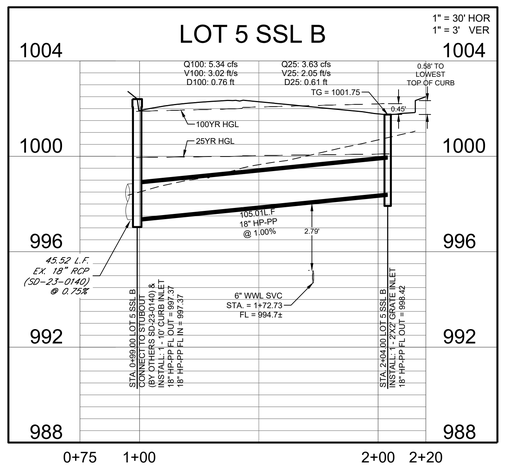

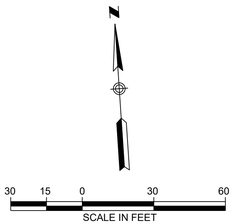

LEGEND

PROPOSED	EXISTING	
ST	ST	STORM SEWER LINE
WW	WW	WASTEWATER LINE
		WASTEWATER SERVICE
WL	WL	WATER LINE
		WATER SERVICE
		WATER VALVE
		FIRE HYDRANT
	WWMH	WASTEWATER MANHOLE
	SSMH	STORMSEWER MANHOLE
		CURB INLET
		GRATE INLET
		1/2" REBAR FOUND (OR AS NOTED)
		1/2" REBAR WITH CAP FOUND
		1/2" REBAR WITH CHAPARRAL CAP SET
		WATER METER
		UTILITY POLE
	OU	OVERHEAD UTILITIES
		ELEC. UTILITY
		ELEC. MANHOLE
		LIGHT POLE
		TELEPHONE UTILITY
		UNDERGROUND FIBER OPTIC MARKER
		TELEPHONE MANHOLE
		UNDERGROUND GAS MARKER
		CHAIN LINK FENCE

NOTES:
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2. CONTRACTOR TO FILL AND COMPACT TO 95% DENSITY IN FILL SECTIONS OVER STORM SEWER LINES. 2.0'(MIN) COVER OVER WATER PRIOR TO CONSTRUCTION.
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CONTRACTOR SHALL VERIFY LOCATIONS AND DEPTHS OF EXISTING UTILITIES AND NOTIFY ENGINEER PRIOR TO CONSTRUCTION.

CITY OF LEANDER APPROVAL

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GATEWAY 29 WPAP / SCS
OVERALL SUBDIVISION IMPROVEMENTS

STORM PLAN AND PROFILE - LOT 5

LEANDER, WILLIAMSON COUNTY, TEXAS

REVISIONS

NO.	DESCRIPTION	BY	DATE

DATE: 02/27/2024
DESIGNED BY: CRH
DRAWN BY:
CHECKED BY: CRH
DRAWING NAME: A633-0401P-ST01_LS_WPAP.DWG

02/27/2024

STATE OF TEXAS
CHARLES R. HAGER
127034
LICENSED PROFESSIONAL ENGINEER

LJA Engineering, Inc.
7500 Rialto Boulevard
Building II, Suite 100
Austin, Texas 78735
Phone 512.439.4700
Fax 512.439.4716
FRN-F-1386

JOB NUMBER: A633-0401

SHEET NO. 39 OF 90 SHEETS

CITY OF LEANDER PROJECT No. SDP-23-0139

I:\a633-Gateway\0401\Submittal Sheets\WPAP\a633-0401P-ST01_LS_WPAP.dwg
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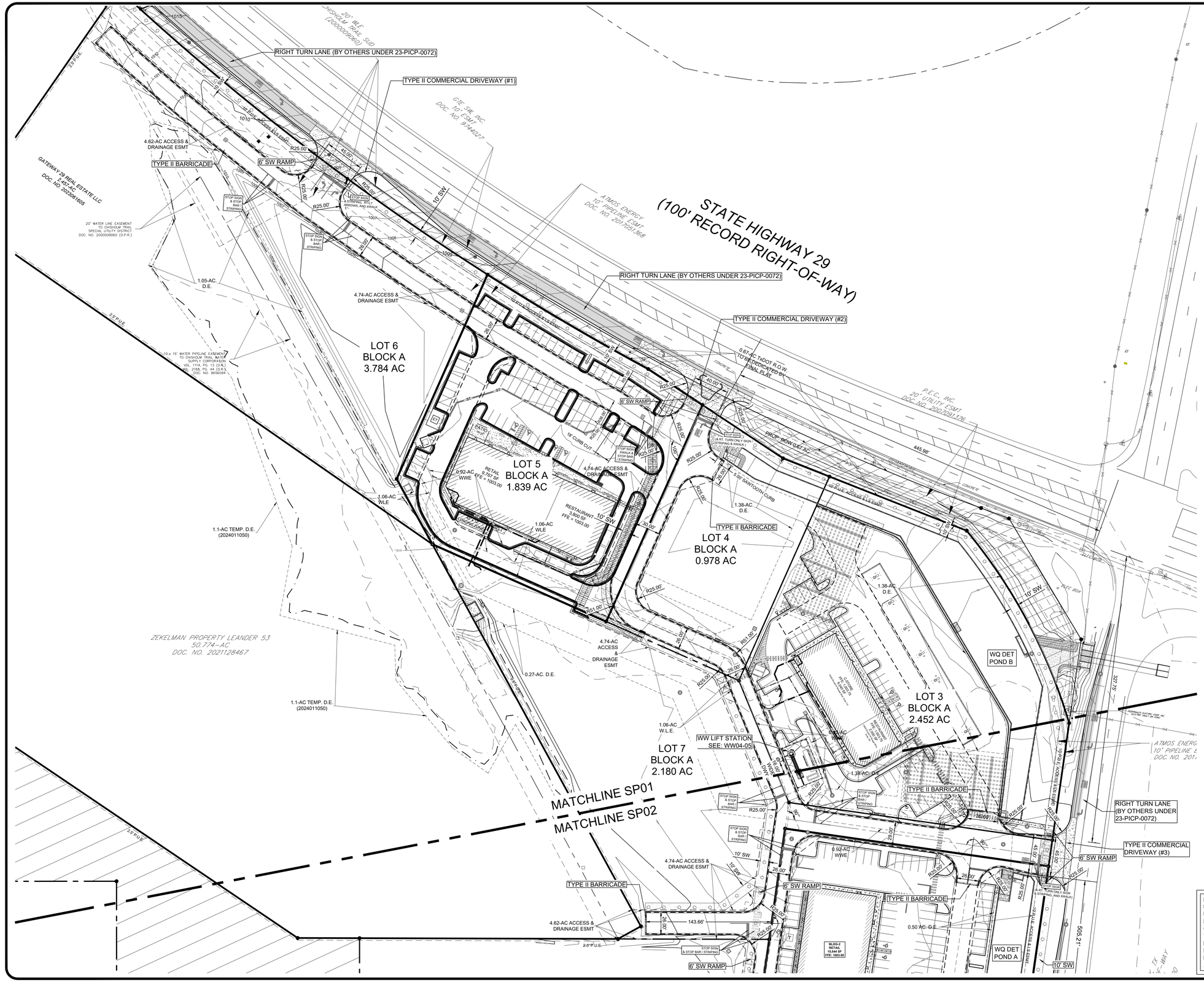
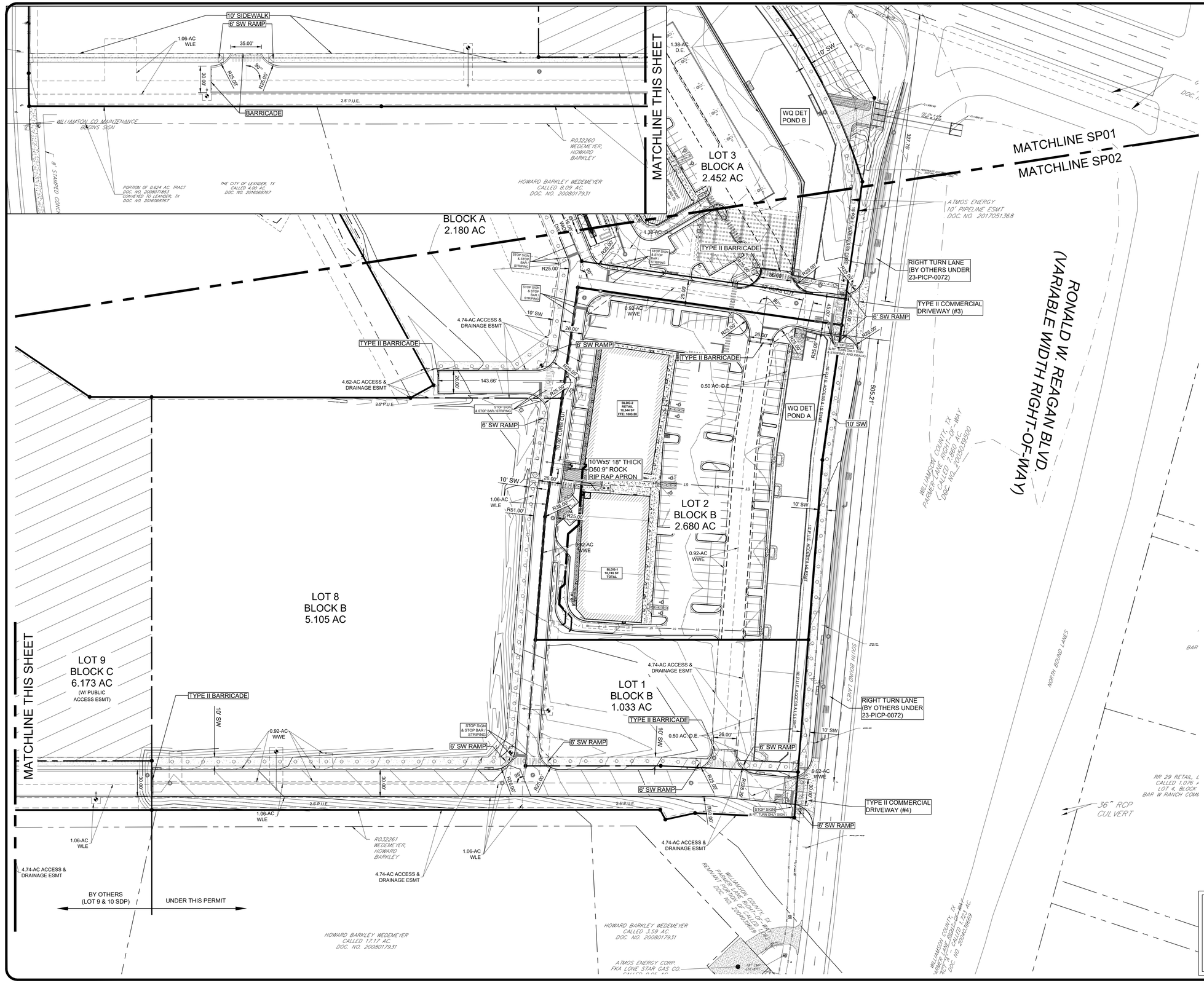

STATE HIGHWAY 29
(100' RECORD RIGHT-OF-WAY)
GATEWAY 29 REAL ESTATE LLC
3.457 AC
DOC. NO. 2023061605
ZEKELMAN PROPERTY LEANDER 53
50.774-AC
DOC. NO. 2021128467
LOT 6
BLOCK A
3.784 AC
LOT 5
BLOCK A
1.839 AC
LOT 4
BLOCK A
0.978 AC
LOT 3
BLOCK A
2.452 AC
LOT 7
BLOCK A
2.180 AC
MATCHLINE SP01
MATCHLINE SP02
RIGHT TURN LANE (BY OTHERS UNDER 23-PICP-0072)
TYPE II COMMERCIAL DRIVEWAY (#1)
TYPE II COMMERCIAL DRIVEWAY (#2)
TYPE II COMMERCIAL DRIVEWAY (#3)
TYPE II BARRICADE
6' SW RAMP
WW LIFT STATION
SEE: WW04-05
WQ DET POND A
WQ DET POND B
4.62-AC ACCESS & DRAINAGE ESMT
4.74-AC ACCESS & DRAINAGE ESMT
1.05-AC D.E.
1.06-AC W.L.E.
1.1-AC TEMP. D.E. (2024011050)
0.27-AC. D.E.
1.38-AC. D.E.
0.50 AC. D.E.
0.92-AC WWE
0.87-AC TxDOT R.O.W. TO BE DEDICATED BY FINAL PLAT
PROP. ROW 0.67 AC.
445.98'
505.21'
327.79'
143.66'
RETAIL 3,767 SF FFE = 1003.00
RESTAURANT 3,800 SF FFE = 1003.00
BLDG-3 RETAIL 10,944 SF FFE: 1003.50
20' WLE (2000009960)
20' WATER LINE EASEMENT TO CHISHOLM TRAIL SPECIAL UTILITY DISTRICT DOC. NO. 2000009960 (O.P.R.)
10 to 15' WATER PIPELINE EASEMENT TO CHISHOLM TRAIL WATER SUPPLY CORPORATION VOL. 1114, PG. 13 (O.R.) 2168, PG. 44 (O.R.), DOC. NO. 9656094
GTE, SW, INC. TO ESMT DOC. NO. 9744027
ATMOS ENERGY 10" PIPELINE ESMT DOC. NO. 2017091368
P.E.C., INC. 20' UTILITY ESMT DOC. NO. 2007091376
25' P.U.E.
2.5' P.U.E.
10' SW
6' SW
5.00' SAWTOOTH CURB
15' CURB CUT
STOP SIGN & STOP BAR / STRIPING
STOP SIGN & STOP BAR / STRIPING AND XWALK
(R) RT. TURN ONLY SIGN / STRIPING & XWALK
RAMP DETECTABLE WARNING SURFACE
PATIO
CONCRETE
ASPHALT
EXISTING 8" WATER LINE
EXISTING 12" WATER LINE
EXISTING 8" WASTEWATER LINE
EXISTING 12" WASTEWATER LINE
EXISTING 24" STORM SEWER LINE
EXISTING 30" STORM SEWER LINE
EXISTING 36" STORM SEWER LINE
EXISTING 42" STORM SEWER LINE
EXISTING 48" STORM SEWER LINE
EXISTING 54" STORM SEWER LINE
EXISTING 60" STORM SEWER LINE
EXISTING 66" STORM SEWER LINE
EXISTING



LEGEND

PROPOSED	EXISTING	
		CONCRETE SIDEWALK
		PROPERTY BOUNDARY
		EASEMENT LINE / SETBACK
		FIRE LANE
		ACCESSIBLE ROUTE
		SIDEWALK RAMP CURB & GUTTER
	VAN	HANDICAPPED PARKING SPACE & SIDEWALK RAMP
		CROSSWALK
	ST	STORM SEWER LINE
WW	WW	WASTEWATER LINE
WL	WL	WATER LINE
		DRAINAGE SWALE
		DUMPSTER
		BIKE RACK
		WATER VALVE
		FIRE HYDRANT
	WWMH	WASTEWATER MANHOLE
	SSMH	STORMSEWER MANHOLE
		GRATE INLETS

NOTES:
1. ALL DIMENSIONS ARE TO FACE OF CURB UNLESS OTHERWISE NOTED.
2. ALL RADII ARE 3' UNLESS OTHERWISE NOTED.
3. ALL SIDEWALKS ADJACENT FRONT OF BUILDINGS OR ALONG PRIMARY CUSTOMER ENTRANCES SHALL BE MINIMUM 6' TOTAL WIDTH (INCLUDING TOP OF CURB). ALL OTHER SIDEWALKS SHALL BE 5' WIDE UNLESS OTHERWISE NOTED.
4. ALL PAVEMENT SHALL BE INSTALLED PER GEOTECHNICAL REPORT PREPARED BY GEOSCIENCE ENGINEERS, INC. ON 04/05/2020, WITH CURB AND GUTTER.
5. ALL EASEMENTS OF RECORD AS INDICATED ON THE MOST RECENT TITLE RUN (DATED: 1/13/2021 CONDUCTED BY TITLE RESOURCES GUARANTY COMPANY) FOR THIS PROPERTY ARE SHOWN ON THIS SITE PLAN.
6. ALL SITE UTILITY LINES ARE PROPOSED TO BE LOCATED UNDERGROUND.
7. EXTERIOR LIGHTING SHALL BE SHIELDED SUCH THAT THE LIGHT SOURCE IS NOT DIRECTLY VISIBLE FROM THE PUBLIC ROW OR ADJACENT RESIDENTIAL DISTRICTS OR USES AT THE PROPERTY LINE. UNSHIELDED "WALL PACK" LIGHTING IS NOT PROPOSED.
8. AL CLAWSON DISPOSAL, INC. SHALL BE THE SOLE PROVIDER OF WASTE HAULING FOR THIS SITE AFTER CONSTRUCTION. AIR CONDITIONING UNITS ARE NOT PROPOSED FORWARD THE FRONT WALL OF THE BUILDING.
9. GARBAGE DUMPSTERS ARE LOCATED NO CLOSER TO A ROADWAY THAN THE FRONT WALL OF THE PRINCIPAL STRUCTURE LOCATED CLOSEST TO THE ROADWAY. GARBAGE DUMPSTERS ARE SCREENED BY A WALL (COMPRISED OF MASONRY COMPATIBLE WITH THE STRUCTURE OR WOODCRETE) AT LEAST AS HIGH AS THE CONTAINER. THE OPEN SIDE TO THE DUMPSTER OR OTHER TRASH RECEPTACLE IS A GATE CONSTRUCTED OF SOLID WOOD OR METAL. THE DUMPSTER IS ORIENTED FOR PICKUP BY A FRONT LOAD GARBAGE TRUCK.
10. FOR 90 GALLON ROLL OUT CONTAINER STORED OUTSIDE, IT IS REQUIRED TO BE ENCLOSED BY PRIVACY FENCE.

Heavy Traffic	Min. Thickness (Inches)
Portland Cement Concrete	6
Minimum Lime Stabilized Subgrade	6
Compacted subgrade	6

CITY OF LEANDER APPROVAL

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GATEWAY 29 WPAP / SCS
OVERALL SUBDIVISION IMPROVEMENTS
DIMENSIONAL CONTROL PLAN
SHEET 2

LEANDER, WILLIAMSON COUNTY, TEXAS

NO.	DESCRIPTION	BY	DATE
	REVISIONS		

DATE: 03/13/2024
DESIGNED BY: CRH
DRAWN BY: RMB
CHECKED BY: CRH
DRAWING NAME: A633-0401-P-SP01_WPAP

03/13/2024

STATE OF TEXAS
CHARLES R. HAGER
127034
LICENSED PROFESSIONAL ENGINEER

LJA Engineering, Inc.
7500 Rialto Boulevard
Building II, Suite 100
Austin, Texas 78735
Phone 512.439.4700
Fax 512.439.4716
FRN-F-1386

JOB NUMBER:

SP02

SHEET NO. 41 OF 90 SHEETS

CITY OF LEANDER PROJECT No. SD-23-0140

I:\A633-Gateway\0401\Submittal Sheets\WPAP\A633-0401-P-SP01_WPAP.dwg
User: rgehringer
Last Modified: Mar. 13, 24 - 14:04
Plot Date/Time: Mar. 13, 24 - 14:06:06

LOT 7
BLOCK A
2.180 AC

LOT 8
BLOCK B
5.105 AC

LOT 2
BLOCK B
2.680 AC

INSET: A

4.74-AC ACCESS & DRAINAGE ESMT

4.62-AC ACCESS & DRAINAGE ESMT

E II BARRICADE

6' SW RAMP

FIRE HYDRANT (23-PICP-0072)

26.0' FIRE LANE (SD-23-0140)

15' FRONT SETBACK

10' SW

142.66'

15' SIDE SETBACK

5' PAVING SETBACK

15' REAR SETBACK

5' DECORATIVE PAVERS SIDEWALK (SEE DETAIL ON SHEET 23 - SP03)

5' SW

BLDG-2 RETAIL 10,544 SF FFE: 1003.50

19397 RONALD W. REAGAN BLVD.

REMOVE CURB AND GUTTER ALONG PROP. PARKING AND DRIVES THAT WILL BE INSTALLED UNDER SD-23-0140

2~BENCHES

12.5' FDC TO HYDRANT

6' SW RAMPS AND STRIPING TO BE ADDED TO EXIST. SW AND ACCESS DRIVE

PATIO 616 SF

45'x12' LOADING

1.06-AC WLE

BLDG-1 RESTAURANT FFE: 1003.85 7,500 SF

19397 RONALD W. REAGAN BLVD. SUITE 120

DUMPSTER & RECYCLING W/ SCREEN WALLS AND GATE

BLDG-2 RETAIL FFE: 1003.85

19397 RONALD W. REAGAN BLVD. SUITE 110

DRIVE-THRU LANE W/ ROOM FOR STACKING 8 VEHICLES

BLDG-3 10,745 SF TOTAL

ORDER BOARD & BOLLARDS

19397 RONALD W. REAGAN BLVD. SUITE 100

26' FIRE LANE (BY OTHERS - SD-23-0140)

0.92-AC WWE

0.50 AC. D.E.

BIKE RACKS (2, 4 SP)

BIKE RACK (1, 2 SP)

STOP BAR & STOP SIGN

REMOVE CURB AND GUTTER ALONG PROP. DRIVEWAY THAT WILL BE INSTALLED UNDER SD-23-0140

POND ACCESS RAMP (SD-23-0140)

CONCRETE FLUME

11-LF SAWTOOTH CURB (1' SPACING)

WQ DET POND A BY OTHERS (SD-23-0140)

35' HWY SETBACK

TYP. 40' ACCESS & I.E. ESMT

CONCRETE FLUME

11-LF SAWTOOTH CURB (1' SPACING)

4.62-AC ACCESS & DRAINAGE ESMT

TYPE II BARRICADE

SOUTH 1ST

FM 973

SCALE IN FEET
20 10 0 20 40

LEGEND

PROPOSED	EXISTING	
		CONCRETE SIDEWALK
		BRICK PAVER SIDEWALK
		PROPERTY BOUNDARY
		EASEMENT LINE / SETBACK
		FIRE LANE
		ACCESSIBLE ROUTE
		SIDEWALK RAMP CURB & GUTTER
VAN		HANDICAPPED PARKING SPACE & SIDEWALK RAMP
		TYPE II BARRICADE
		CROSSWALK
ST	ST	STORM SEWER LINE
WW	WW	WASTEWATER LINE
WL	WL	WATER LINE
		DRAINAGE SWALE
		DUMPSTER
		BIKE RACK
		WATER VALVE
		FIRE HYDRANT
WWMH	WWMH	WASTEWATER MANHOLE
DSMH	DSMH	STORMSEWER MANHOLE
		GRATE INLETS
		STEEL PLATE OVER FG FOR DRAINAGE
		1/2" REBAR FOUND (OR AS NOTED)
		1/2" REBAR WITH CAP FOUND
CH	CH	1/2" REBAR WITH CHAPARRAL CAP SET

NOTES:
1. ALL DIMENSIONS ARE TO FACE OF CURB UNLESS OTHERWISE NOTED.
2. ALL RADII ARE 3' UNLESS OTHERWISE NOTED.
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CITY OF LEANDER APPROVAL

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GATEWAY 29 WPAP / SCS
OVERALL SUBDIVISION IMPROVEMENTS
SITE PLAN - LOT 2

19397 RONALD REAGAN BLVD., WILLIAMSON COUNTY, TEXAS, LEANDER, TEXAS 78626

NO.	DESCRIPTION	BY	DATE
	REVISIONS		

DATE: 02/27/2024
DESIGNED BY: CRH
DRAWN BY: CRH
CHECKED BY:
DRAWING NAME: A633-0401-P-SP01_L2

02/27/2024

STATE OF TEXAS
CHARLES R. HAGER
127034
LICENSED PROFESSIONAL ENGINEER
CIVIL

LJA Engineering, Inc.
7500 Rialto Boulevard
Building II, Suite 100
Austin, Texas 78735
Phone 512.439.4700
Fax 512.439.4716
FRN-F-1386

JOB NUMBER: A633-0401

SP03

SHEET NO. 42 OF 90 SHEETS

CITY OF LEANDER PROJECT No. SD-23-0135

I:\a633-Gateway\0401\Submittal Sheets\WPAP\a633-0401-P-SP01_L2.dwg
User: cgallagher
Last Modified: Mon, 13, 24 - 14:04
Plot Date/Time: Mon, 13, 24 - 14:06:29

LOT 4
BLOCK A
0.978 AC

LOT 7
BLOCK A
2.180 AC

LOT 2
BLOCK A

STATE HIGHWAY 29 (100' RECORD RIGHT-OF-WAY)

RONALD W. REAGAN BLVD (VARIABLE WIDTH RIGHT-OF-WAY)

CONCRETE

PROP. ROW 0.67 AC

10' P.U.E. ACCESS & L.S. ESMT

26.0' FIRE LANE

42" CMP U.G. DET. (SD-23-0140)

11' SAW-TOOTH CURB @ 1'W EA

WQ/DET. POND B (BY OTHERS SD-23-0140)

TRENCH GRATE ALONG LOW SIDE OF FUEL PAD

5 COMPACT SPACES @ 7.5' = 37.50'

4 SP @ 9.0' = 36.00'

6 SP @ 9.0' = 54.00'

7 SP @ 9.0' = 63.00'

5 SP @ 9.0' = 45.00'

2 SP @ 9.0' = 18.00'

3 SP @ 9.0' = 27.00'

BIKE RACKS (4 SP)

BIKE RACKS (2 SP)

PROP. 10" PVC

PROP. 6" PVC

PROP. 12" PVC

PROP. 18" HPPP

6' SW RAMP

5' SW

8' SW

6' SW

10' SW (SD-23-0140)

INSTALL 2 6' SW RAMPS & XWLK STRIPING

51.18' FDC TO HYDRANT

DUMPSTER

RESTAURANT
FFE: 1,003.75
2,000 SF
19405 Ronald W Reagan Blvd, Suite 100

C-STORE
FFE: 1,003.75
6,045 SF
19405 Ronald W Reagan Blvd, Suite 110

WW LIFT STATION (SD-23-0140)

24" RCP (SD-23-0140)

36" RCP (SD-23-0140)

1.38-AC. D.E.

1.06-AC W.L.E.

1.39-AC. D.E.

4.62-AC ACCESS & DRAINAGE ESMT

4.74-AC ACCESS & DRAINAGE ESMT

0.92-AC WWE

34' FIRE LANE

11' SAW-TOOTH CURB @ 1'W EA

42" CMP U.G. DET. (SD-23-0140)

CITY OF LEANDER APPROVAL

CITY OF LEANDER PROJECT No. SDP-23-0136

NOTES:
1. ALL DIMENSIONS ARE TO FACE OF CURB UNLESS OTHERWISE NOTED.
2. ALL RADII ARE 3' UNLESS OTHERWISE NOTED.
3. ALL SIDEWALKS ADJACENT FRONT OF BUILDINGS OR ALONG PRIMARY CUSTOMER ENTRANCES SHALL BE MINIMUM 6' TOTAL WIDTH (INCLUDING TOP OF CURB). ALL OTHER SIDEWALKS SHALL BE 5' WIDE UNLESS OTHERWISE NOTED.
4. ALL PAVEMENT SHALL BE INSTALLED PER GEOTECHNICAL REPORT PREPARED BY GEOSCIENCE ENGINEERS, INC. ON 04/05/2020, WITH CURB AND GUTTER.
5. ALL EASEMENTS OF RECORD AS INDICATED ON THE MOST RECENT TITLE RUN (DATED: 1/13/2021 CONDUCTED BY TITLE RESOURCES GUARANTY COMPANY) FOR THIS PROPERTY ARE SHOWN ON THIS SITE PLAN.
6. ALL SITE UTILITY LINES ARE PROPOSED TO BE LOCATED UNDERGROUND.
7. EXTERIOR LIGHTING SHALL BE SHIELDED SUCH THAT THE LIGHT SOURCE IS NOT DIRECTLY VISIBLE FROM THE PUBLIC ROW OR ADJACENT RESIDENTIAL DISTRICTS OR USES AT THE PROPERTY LINE. UNSHIELDED "WALL PACK" LIGHTING IS NOT PROPOSED.
8. AL CLAWSON DISPOSAL, INC. SHALL BE THE SOLE PROVIDER OF WASTE HAULING FOR THIS SITE AFTER CONSTRUCTION. AIR CONDITIONING UNITS ARE NOT PROPOSED FORWARD THE FRONT WALL OF THE BUILDING.
9. GARBAGE DUMPSTERS ARE LOCATED NO CLOSER TO A ROADWAY THAN THE FRONT WALL OF THE PRINCIPAL STRUCTURE LOCATED CLOSEST TO THE ROADWAY. GARBAGE DUMPSTERS ARE SCREENED BY A WALL (COMPRISED OF MASONRY COMPATIBLE WITH THE STRUCTURE OR WOODCRETE) AT LEAST AS HIGH AS THE CONTAINER. THE OPEN SIDE TO THE DUMPSTER OR OTHER TRASH RECEPTACLE IS A GATE CONSTRUCTED OF SOLID WOOD OR METAL. THE DUMPSTER IS ORIENTED FOR PICKUP BY A FRONT LOAD GARBAGE TRUCK.
10. FOR 90 GALLON ROLL OUT CONTAINER STORED OUTSIDE, IT IS REQUIRED TO BE ENCLOSED BY PRIVACY FENCE.

20 10 0 20 40
SCALE IN FEET

LEGEND

PROPOSED	EXISTING	
		CONCRETE SIDEWALK
		PROPERTY BOUNDARY
		EASEMENT LINE / SETBACK
		FIRE LANE
		ACCESSIBLE ROUTE
		SIDEWALK RAMP CURB & GUTTER
		HANDICAPPED PARKING SPACE & SIDEWALK RAMP
		CROSSWALK
ST	ST	STORM SEWER LINE
WW	WW	WASTEWATER LINE
WL	WL	WATER LINE
		DRAINAGE SWALE
		DUMPSTER
		BIKE RACK
		WATER VALVE
		FIRE HYDRANT
WM	WMH	WASTEWATER MANHOLE
ST	SSMH	STORMSEWER MANHOLE
		GRATE INLETS
		STEEL PLATE OVER FG FOR DRAINAGE
		1/2" REBAR FOUND (OR AS NOTED)
	CH	1/2" REBAR WITH CAP FOUND
	CH	1/2" REBAR WITH CHAPARRAL CAP SET
		WATER METER
		UTILITY POLE
OU	OU	OVERHEAD UTILITIES
		ELEC. MANHOLE
		LIGHT POLE
		UNDERGROUND FIBER OPTIC MARKER
		TELEPHONE MANHOLE
		UNDERGROUND GAS MARKER
		CHAIN LINK FENCE

LOCATION OF EXISTING UNDERGROUND AND OVERHEAD UTILITIES ARE APPROXIMATE LOCATIONS ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES PRIOR TO BEGINNING WORK AND SHALL BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT OCCUR.

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

GATEWAY 29 WPAP / SCS
OVERALL SUBDIVISION IMPROVEMENTS
SITE PLAN - LOT 3

19405 RONALD W REAGAN BLVD, SUITE 100 & SUITE 110 LEANDER TEXAS 78628
LEANDER, WILLIAMSON COUNTY, TEXAS

NO.	DESCRIPTION	BY	DATE

REVISIONS

DATE: 02/27/2024
DESIGNED BY: CRH
DRAWN BY: CRH
CHECKED BY: CRH
DRAWING NAME: A533-0401-P-SP01_L3_WPAP

02/27/2024
STATE OF TEXAS
CHARLES R. HAGER
127034
LICENSED PROFESSIONAL ENGINEER

LJA Engineering, Inc.
7500 Rialto Boulevard
Building II, Suite 100
Austin, Texas 78735
Phone 512.439.4700
Fax 512.439.4716
FRN-F-1386

JOB NUMBER:

SP04

SHEET NO. 43 OF 90 SHEETS

I:\A533-Gateway\0401\Submittal Sheets\WPAP\A533-0401-P-SP01_L3_WPAP.dwg
User: cgallagher
Last Modified: Mon, 13, 24 - 14:54
Plot Date/Time: Mon, 13, 24 - 14:55:47

STATE HIGHWAY 29
(100' RECORD RIGHT-OF-WAY

TYPE II COMMERCIAL DRIVEWAY
BY OTHERS (PICP-23-0072)

PROP. ROW 0.67 AC

LOT 6
BLOCK A
1.333 AC

LOT 5
BLOCK A
1.839 AC

RETAIL
9,767 SF
FFE = 1003.00
SUITE 110

RESTAURANT
3,800 SF
FFE = 1003.00
SUITE 100

LOT 4
BLOCK A
0.978 AC

LOT 7
BLOCK A
2.180 AC

PATIO
360 SF

BICYCLE PARKING

45' x 12'
LOADING ZONE

6' SW RAMP

ONLY

15' PAVING

30' HWY

1.38-AC. D.E.

1.06-AC WLE

0.92-AC WWE

4.62-AC ACCESS & DRAINAGE ESMT

10' DECORATIVE PAVERS SIDEWALK (SEE DETAIL ON SHEET 23 - SP03)

LOT 5 ADDRESS (PER LEANDER GIS):
8481 W STATE HWY 29, LEANDER, TEXAS 78628
SUITE 100: RESTAURANT
SUITE 110: RETAIL

30.00' FIRE LANE (SD-23-0140)

26.00' FIRE LANE

DISTANCE FROM FDC TO HYDRANT: 51.97'

25' WIDE CONS. ESMT

SCALE IN FEET
20 10 0 20 40

LEGEND

PROPOSED	EXISTING	
		CONCRETE SIDEWALK
		BRICK PAVER SIDEWALK
		PROPERTY BOUNDARY
		EASEMENT LINE / SETBACK
		FIRE LANE
		ACCESSIBLE ROUTE
		SIDEWALK RAMP CURB & GUTTER
		HANDICAPPED PARKING SPACE & SIDEWALK RAMP
		TYPE II BARRICADE
		CROSSWALK
ST	ST	STORM SEWER LINE
WW	WW	WASTEWATER LINE
WL	WL	WATER LINE
		DRAINAGE SWALE
		DUMPSTER
		BIKE RACK
		WATER VALVE
		FIRE HYDRANT
WWMH	WWMH	WASTEWATER MANHOLE
SSMH	SSMH	STORMSEWER MANHOLE
		GRATE INLETS
		STEEL PLATE OVER FG FOR DRAINAGE
		1/2" REBAR FOUND (OR AS NOTED)
		1/2" REBAR WITH CAP FOUND
		1/2" REBAR WITH CHAPARRAL CAP SET

NOTES:
1. ALL DIMENSIONS ARE TO FACE OF CURB UNLESS OTHERWISE NOTED.
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CITY OF LEANDER APPROVAL

LOCATION OF EXISTING UNDERGROUND AND OVERHEAD UTILITIES ARE APPROXIMATE LOCATIONS ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES PRIOR TO BEGINNING WORK AND SHALL BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT OCCUR.

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GATEWAY 29 WPAP / SCS
OVERALL SUBDIVISION IMPROVEMENTS
SITE PLAN - LOT 5

LEANDER, WILLIAMSON COUNTY, TEXAS

NO.	DESCRIPTION	BY	DATE
	REVISIONS		

DATE: 02/27/2024
DESIGNED BY: CRH
DRAWN BY: CRH
CHECKED BY:
DRAWING NAME: A633-0401-F-SP01_LS_WPAP

02/27/2024

STATE OF TEXAS
CHARLES R. HAGER
127034
LICENSED PROFESSIONAL ENGINEER

LJA Engineering, Inc.
7500 Rialto Boulevard
Building II, Suite 100
Austin, Texas 78735
Phone 512.439.4700
Fax 512.439.4716
FRN-F-1386

JOB NUMBER:

SP05

SHEET NO.
53
OF 99 SHEETS

CITY OF LEANDER PROJECT No. SDP-23-0139

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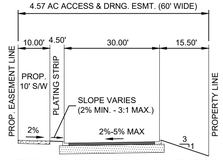
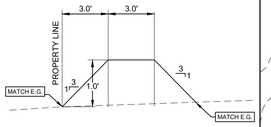


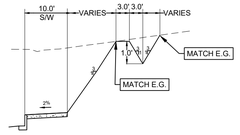
PROPOSED SHARED INTERNAL DRIVEWAY SECTION A-A

(N.T.S.)



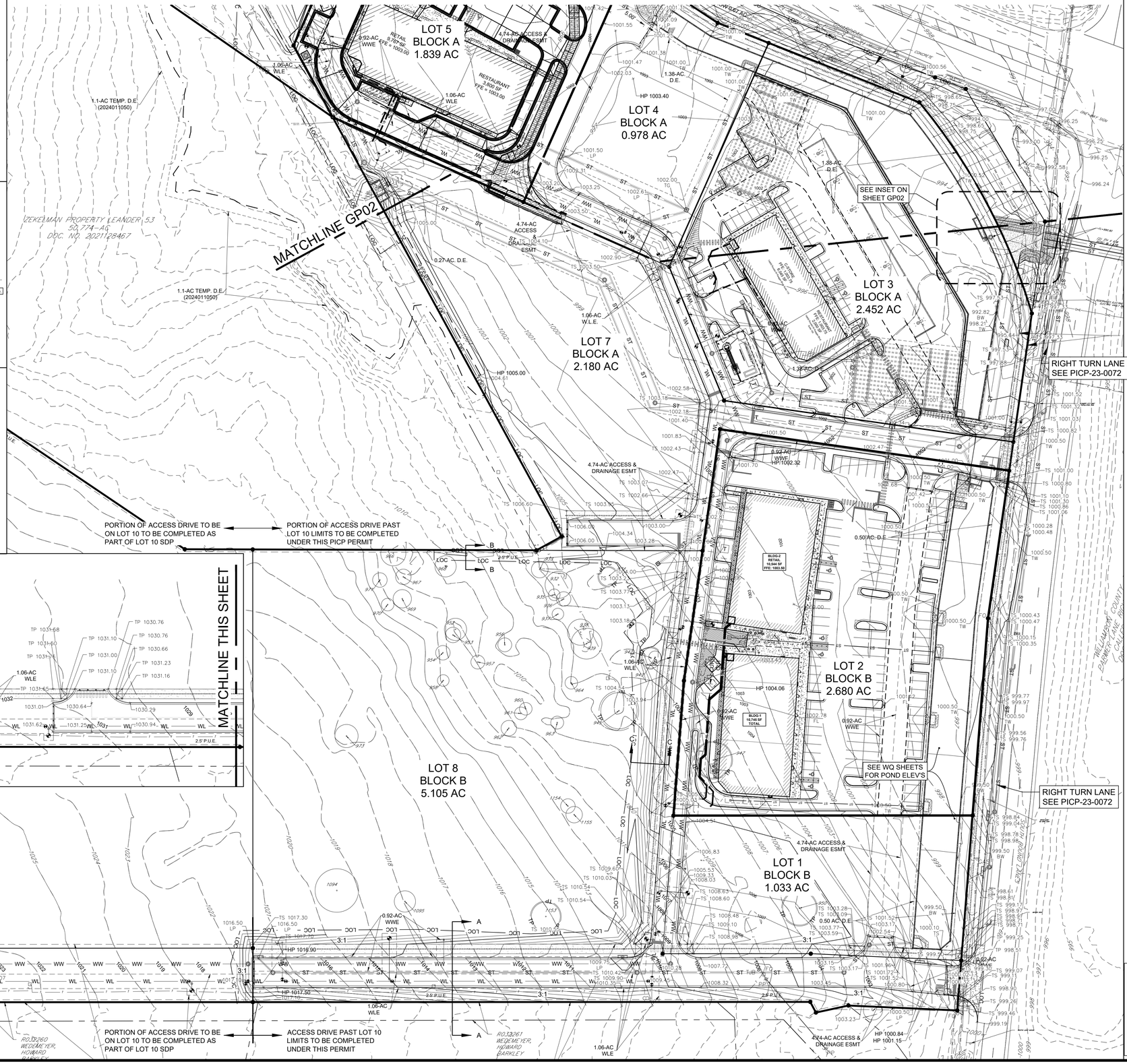
PROPOSED DIVERSION DIKE / SWALE SECTION B-B

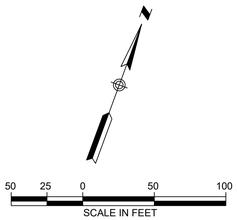
(N.T.S.)



PROPOSED SWALE SECTION C-C

(N.T.S.)





LEGEND

PROPOSED	EXISTING	
800	800	CONTOURS
		PROPOSED RETAINING WALL
		CORR. EX. 100-YR A14 FP & BUFFER ZONE
		CORR. ULT-DEV 100-YR A14 FP
		FEMA FLOODPLAIN
100.00		TOP OF PAVEMENT
100.00 TC		TOP OF CURB/CONCRETE
100.00 TG		TOP OF GRATE
100.00 LP		LOW POINT
100.00 HP		HIGH POINT
100.00 FS		FINISHED SLAB
100.00 TW		TOP OF WALL
100.00 BW		BOTTOM OF WALL
100.00 FG		FINISHED GROUND
		TREE TO REMAIN
		TREE TO BE REMOVED
ST	ST	STORM SEWER LINE
WW	WW	WASTEWATER LINE
WL	WL	WATER LINE
		WATER VALVE
		FIRE HYDRANT
	WWMH	WASTEWATER MANHOLE
	SSMH	STORMSEWER MANHOLE
		1/2" REBAR FOUND (OR AS NOTED)
		1/2" REBAR WITH CAP FOUND
		1/2" REBAR WITH CHAPARRAL CAP SET
		COTTON SPINDLE WITH CHAPARRAL WASHER SET
		WATER METER
		UTILITY POLE
	OU	OVERHEAD UTILITIES
		ELEC. UTILITY
		ELEC. MANHOLE
		LIGHT POLE
		TELEPHONE UTILITY
		UNDERGROUND FIBER OPTIC MARKER
		TELEPHONE MANHOLE
		UNDERGROUND GAS MARKER
		CHAIN LINK FENCE

NOTES:

1. ALL DIMENSIONS ARE TO FACE OF CURB UNLESS OTHERWISE NOTED.
2. ALL RADII ARE 3' UNLESS OTHERWISE NOTED.
3. ALL SIDEWALKS SHALL BE 6' WIDE. ALL TRAILS SHALL BE 10' WIDE UNLESS OTHERWISE NOTED.
4. ALL SPOT ELEVATIONS ARE TO TOP OF PAVEMENT UNLESS OTHERWISE NOTED.
5. ALL SIDEWALKS SHALL HAVE A MAX. RUNNING SLOPE OF 5%.
6. ALL SIDEWALKS SHALL HAVE A MAX. CROSS SLOPE OF 2%.
7. RAMPS SHALL NOT EXCEED 8.33%. RAMPS LONGER THAN 6' REQUIRE HANDRAILS. RAMPS LONGER THAN 30' REQUIRE A LEVEL LANDING.
8. ALL PAVEMENT SHALL BE CONCRETE WITH CURB AND GUTTER.

CITY OF LEANDER APPROVAL

LOCATION OF EXISTING UNDERGROUND AND OVERHEAD UTILITIES ARE APPROXIMATE LOCATIONS ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES PRIOR TO BEGINNING WORK AND SHALL BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT OCCUR.

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GATEWAY 29 WPAP / SCS
OVERALL SUBDIVISION IMPROVEMENTS
GRADING PLAN SHEET 1

LEANDER, WILLIAMSON COUNTY, TEXAS

NO.	DESCRIPTION	BY	DATE

DATE: 03/13/2024
DESIGNED BY: CRH
DRAWN BY:
CHECKED BY: CRH
DRAWING NAME: AE53-3401-P-GP01_WPAP.dwg

03/13/2024

STATE OF TEXAS
CHARLES R. HAGER
127034
LICENSED PROFESSIONAL ENGINEER

LJA Engineering, Inc.
7500 Rialto Boulevard
Building II, Suite 100
Austin, Texas 78735
Phone 512.439.4700
Fax 512.439.4716
FRN-F-1386

JOB NUMBER:

GP01

SHEET NO. 45 OF 90 SHEETS

CITY OF LEANDER PROJECT No. SD-23-0140

I:\p53-Gateway\2401\Submittal Sheets\WPAP\p53-2401-p-gp01_WPAP.dwg
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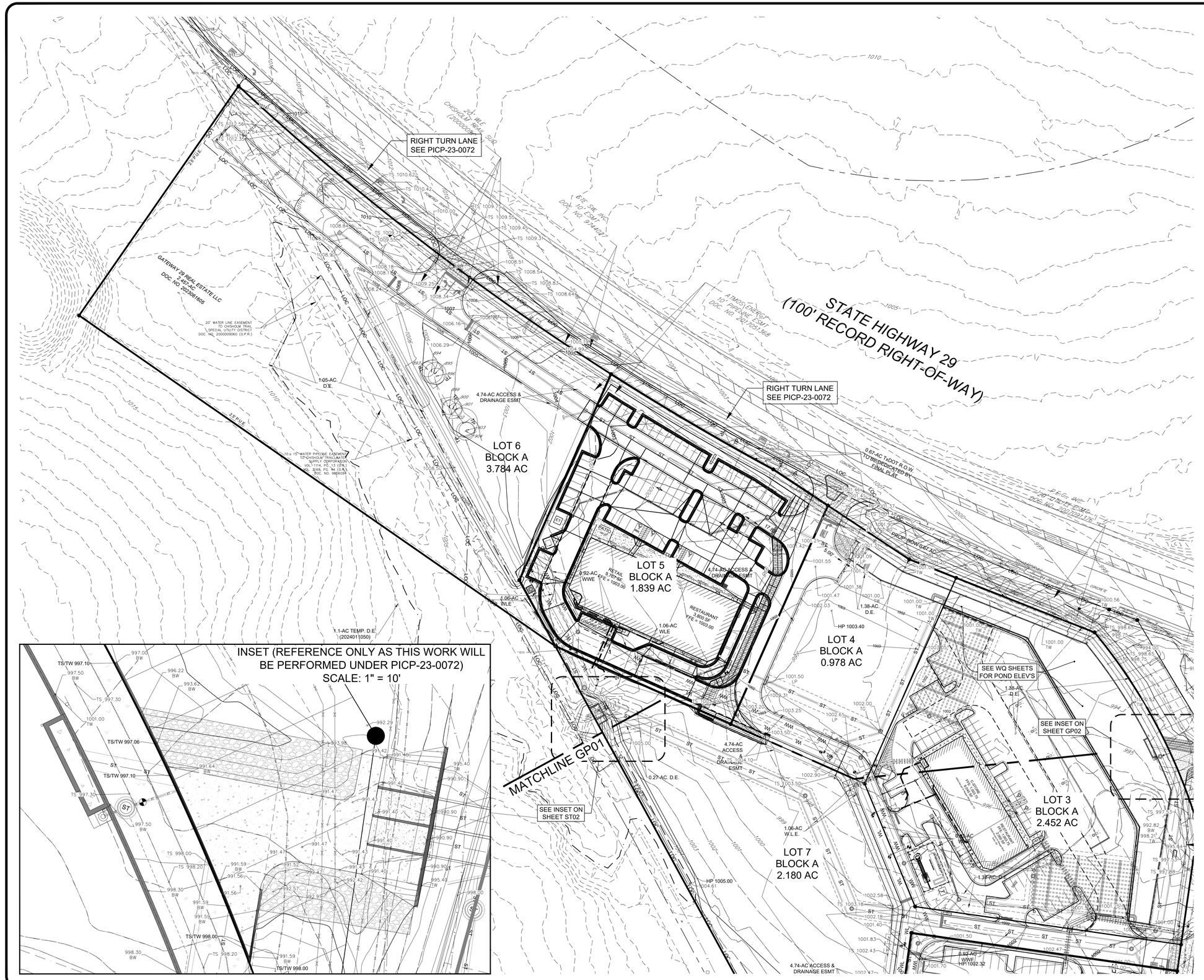

LEGEND

PROPOSED	EXISTING	
800	800	CONTOURS
		PROPOSED RETAINING WALL
		CORR. EX. 100-YR A14 FP & BUFFER ZONE
		CORR. ULT-DEV 100-YR A14 FP
		FEMA FLOODPLAIN
x 100.00		TOP OF PAVEMENT
x 100.00 TC		TOP OF CURB/CONCRETE
x 100.00 TG		TOP OF GRATE
x 100.00 LP		LOW POINT
x 100.00 HP		HIGH POINT
x 100.00 FS		FINISHED SLAB
x 100.00 TW		TOP OF WALL
x 100.00 BW		BOTTOM OF WALL
x 100.00 FG		FINISHED GROUND
		TREE TO REMAIN
		TREE TO BE REMOVED
ST	ST	STORM SEWER LINE
WW	WW	WASTEWATER LINE
WL	WL	WATER LINE
		WATER VALVE
		FIRE HYDRANT
	WWMH	WASTEWATER MANHOLE
	SSMH	STORMSEWER MANHOLE
		1/2" REBAR FOUND (OR AS NOTED)
		1/2" REBAR WITH CAP FOUND
		1/2" REBAR WITH CHAPARRAL CAP SET
		COTTON SPINDLE WITH CHAPARRAL WASHER SET
		WATER METER
		UTILITY POLE
	OU	OVERHEAD UTILITIES
		ELEC. UTILITY
		ELEC. MANHOLE
		LIGHT POLE
		TELEPHONE UTILITY
		UNDERGROUND FIBER OPTIC MARKER
		TELEPHONE MANHOLE
		UNDERGROUND GAS MARKER
	O	CHAIN LINK FENCE

NOTES:

1. ALL DIMENSIONS ARE TO FACE OF CURB UNLESS OTHERWISE NOTED.
2. ALL RADII ARE 3' UNLESS OTHERWISE NOTED.
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CITY OF LEANDER APPROVAL

LOCATION OF EXISTING UNDERGROUND AND OVERHEAD UTILITIES ARE APPROXIMATE LOCATIONS ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES PRIOR TO BEGINNING WORK AND SHALL BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT OCCUR.

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GATEWAY 29 WPAP / SCS
OVERALL SUBDIVISION IMPROVEMENTS
GRADING PLAN SHEET 2

LEANDER, WILLIAMSON COUNTY, TEXAS

NO.	DESCRIPTION	BY	DATE
	REVISIONS		

DATE: 03/13/2024
DESIGNED BY: CRH
DRAWN BY:
CHECKED BY: CRH
DRAWING NAME: A633-3401-P-GP01_WPAP

03/13/2024
STATE OF TEXAS
CHARLES R. HAGER
127034
LICENSED PROFESSIONAL ENGINEER

LJA Engineering, Inc.
7500 Rialto Boulevard
Building II, Suite 100
Austin, Texas 78735
Phone 512.439.4700
Fax 512.439.4716
FRN-F-1386

JOB NUMBER:

GP02

SHEET NO.
46
OF 90 SHEETS

CITY OF LEANDER PROJECT No. SD-23-0140

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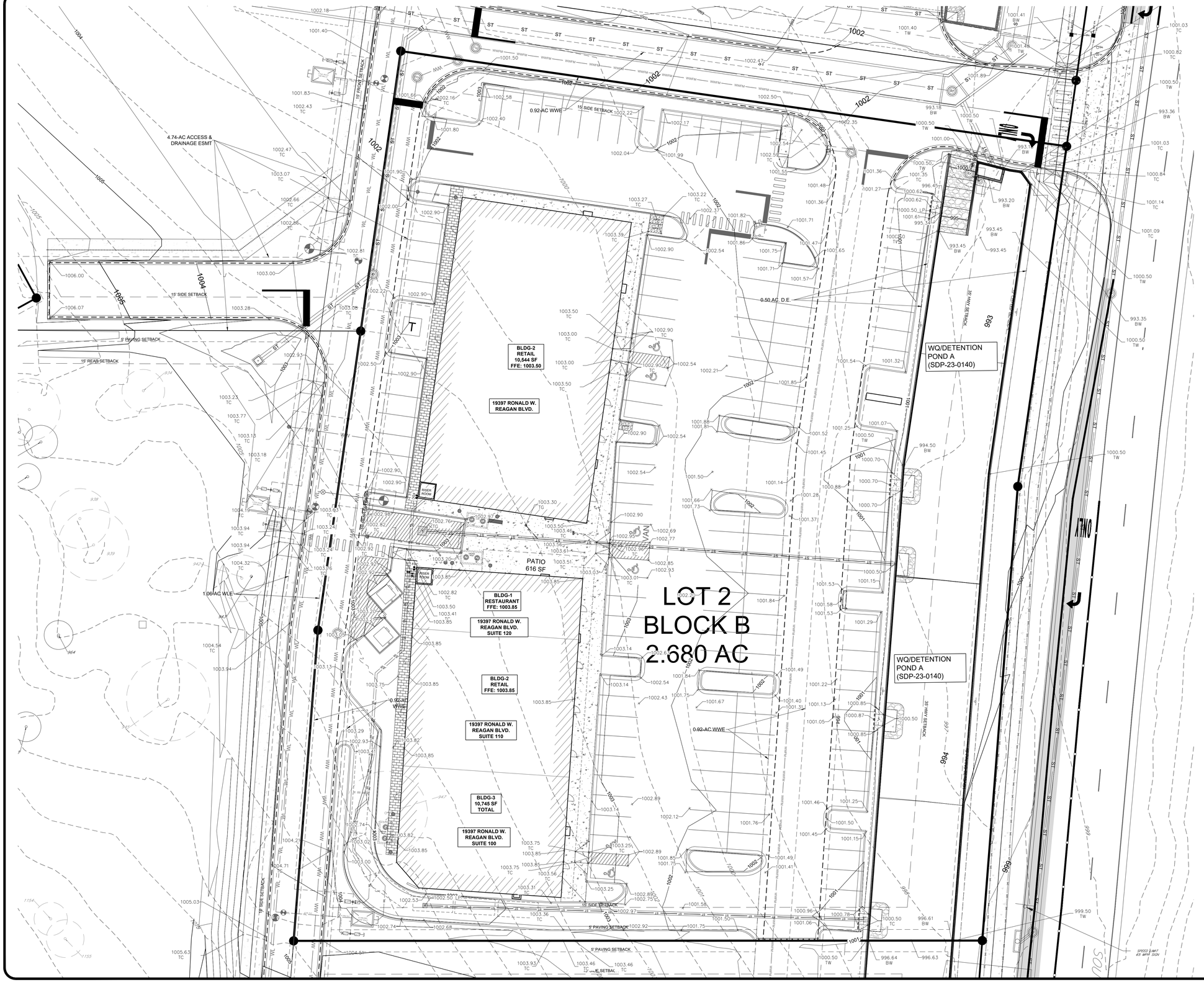

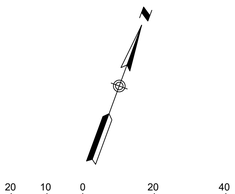

LEGEND

PROPOSED	EXISTING	
800	800	CONTOURS
		PROPOSED RETAINING WALL
		CORR. EX. 100-YR A14 FP & BUFFER ZONE
		CORR. ULT-DEV 100-YR A14 FP
		FEMA FLOODPLAIN
100.00		TOP OF PAVEMENT
100.00 TC		TOP OF CURB/CONCRETE
100.00 TG		TOP OF GRATE
100.00 LP		LOW POINT
100.00 HP		HIGH POINT
100.00 FS		FINISHED SLAB
100.00 TW		TOP OF WALL
100.00 BW		BOTTOM OF WALL
100.00 FG		FINISHED GROUND
		TREE TO REMAIN
		TREE TO BE REMOVED
ST	ST	STORM SEWER LINE
WW	WW	WASTEWATER LINE
WL	WL	WATER LINE
		WATER VALVE
		FIRE HYDRANT
	WWMH	WASTEWATER MANHOLE
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		1/2" REBAR FOUND (OR AS NOTED)
		1/2" REBAR WITH CAP FOUND
		1/2" REBAR WITH CHAPARRAL CAP SET
		COTTON SPINDLE WITH CHAPARRAL WASHER SET
		WATER METER
		UTILITY POLE
OU	OU	OVERHEAD UTILITIES
		ELEC. UTILITY
		ELEC. MANHOLE
		LIGHT POLE
		TELEPHONE UTILITY
		UNDERGROUND FIBER OPTIC MARKER
		TELEPHONE MANHOLE
		UNDERGROUND GAS MARKER
		CHAIN LINK FENCE

NOTES:

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CITY OF LEANDER APPROVAL

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GATEWAY 29 WPAP / SCS
OVERALL SUBDIVISION IMPROVEMENTS
GRADING PLAN - LOT 2

19397 RONALD REAGAN BLVD, WILLIAMSON COUNTY, LEANDER, TEXAS 78626

NO.	DESCRIPTION	BY	DATE

DATE: 02/27/2024
DESIGNED BY: CRH
DRAWN BY: CRH
CHECKED BY:
DRAWING NAME: A633-0401-P-GP01_L2_WPAP

02/27/2024

STATE OF TEXAS
CHARLES R. HAGER
127034
LICENSED PROFESSIONAL ENGINEER

LJA Engineering, Inc.
7500 Rialto Boulevard
Building II, Suite 100
Austin, Texas 78735
Phone 512.439.4700
Fax 512.439.4716
FRN-F-1366

JOB NUMBER: A633-0401

GP03

SHEET NO. 47 OF 90 SHEETS

CITY OF LEANDER PROJECT No. SD-23-0135

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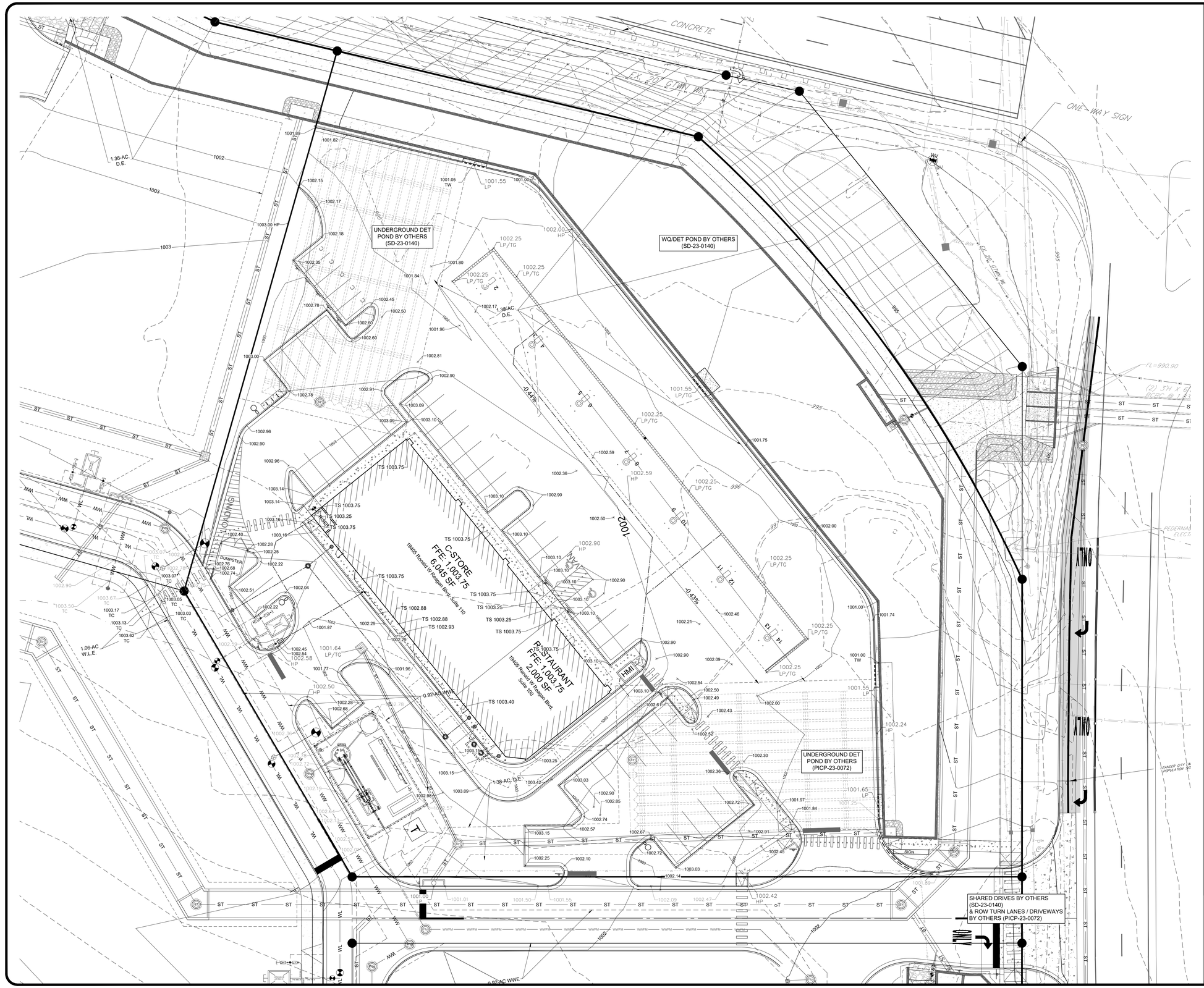

20 10 0 20 40
SCALE IN FEET

LEGEND

PROPOSED	EXISTING	
800	800	CONTOURS
		PROPOSED RETAINING WALL
		CORR. EX. 100-YR A14 FP & BUFFER ZONE
		CORR. ULT-DEV 100-YR A14 FP
		FEMA FLOODPLAIN
100.00		TOP OF PAVEMENT
100.00 TC		TOP OF CURB/CONCRETE
100.00 TG		TOP OF GRATE
100.00 LP		LOW POINT
100.00 HP		HIGH POINT
100.00 FS		FINISHED SLAB
100.00 TW		TOP OF WALL
100.00 BW		BOTTOM OF WALL
100.00 FG		FINISHED GROUND
		TREE TO REMAIN
		TREE TO BE REMOVED
ST	ST	STORM SEWER LINE
WW	WW	WASTEWATER LINE
WL	WL	WATER LINE
		WATER VALVE
		FIRE HYDRANT
	WWMH	WASTEWATER MANHOLE
	SSMH	STORMSEWER MANHOLE
		1/2" REBAR FOUND (OR AS NOTED)
		1/2" REBAR WITH CAP FOUND
		1/2" REBAR WITH CHAPARRAL CAP SET
		COTTON SPINDLE WITH CHAPARRAL WASHER SET
		WATER METER
		UTILITY POLE
	OU	OVERHEAD UTILITIES
		ELEC. UTILITY
		ELEC. MANHOLE
		LIGHT POLE
		TELEPHONE UTILITY
		UNDERGROUND FIBER OPTIC MARKER
		TELEPHONE MANHOLE
		UNDERGROUND GAS MARKER
	O	CHAIN LINK FENCE

NOTES:

1. ALL DIMENSIONS ARE TO FACE OF CURB UNLESS OTHERWISE NOTED.
2. ALL RADII ARE 3' UNLESS OTHERWISE NOTED.
3. ALL SIDEWALKS SHALL BE 6' WIDE. ALL TRAILS SHALL BE 10' WIDE UNLESS OTHERWISE NOTED.
4. ALL SPOT ELEVATIONS ARE TO TOP OF PAVEMENT UNLESS OTHERWISE NOTED.
5. ALL SIDEWALKS SHALL HAVE A MAX. RUNNING SLOPE OF 5%.
6. ALL SIDEWALKS SHALL HAVE A MAX. CROSS SLOPE OF 2%.
7. RAMPS SHALL NOT EXCEED 8.33%. RAMPS LONGER THAN 6' REQUIRE HANDRAILS. RAMPS LONGER THAN 30' REQUIRE A LEVEL LANDING.
8. ALL PAVEMENT SHALL BE CONCRETE WITH CURB AND GUTTER.

CITY OF LEANDER APPROVAL

LOCATION OF EXISTING UNDERGROUND AND OVERHEAD UTILITIES ARE APPROXIMATE LOCATIONS ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES PRIOR TO BEGINNING WORK AND SHALL BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT OCCUR.

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

GATEWAY 29 WPAP / SCS
OVERALL SUBDIVISION IMPROVEMENTS
GRADING PLAN - LOT 3

19405 RONALD W REAGAN BLVD, SUITE 100 & SUITE 110 LEANDER TEXAS 78628
LEANDER, WILLIAMSON COUNTY, TEXAS

NO.	REVISIONS DESCRIPTION	BY	DATE

DATE: 02/27/2024
DESIGNED BY: CRH
DRAWN BY: CRH
CHECKED BY: CRH
DRAWING NAME: A633-0401-P-GP01_L3_WPAP

02/27/2024

STATE OF TEXAS
CHARLES R. HAGER
127034
LICENSED PROFESSIONAL ENGINEER
CRHager

LJA Engineering, Inc.
7500 Rialto Boulevard
Building II, Suite 100
Austin, Texas 78735
Phone 512.439.4700
Fax 512.439.4716
FRN-F-1386

JOB NUMBER:

GP04

SHEET NO. 48 OF 90 SHEETS

CITY OF LEANDER PROJECT No. SDP-23-0136

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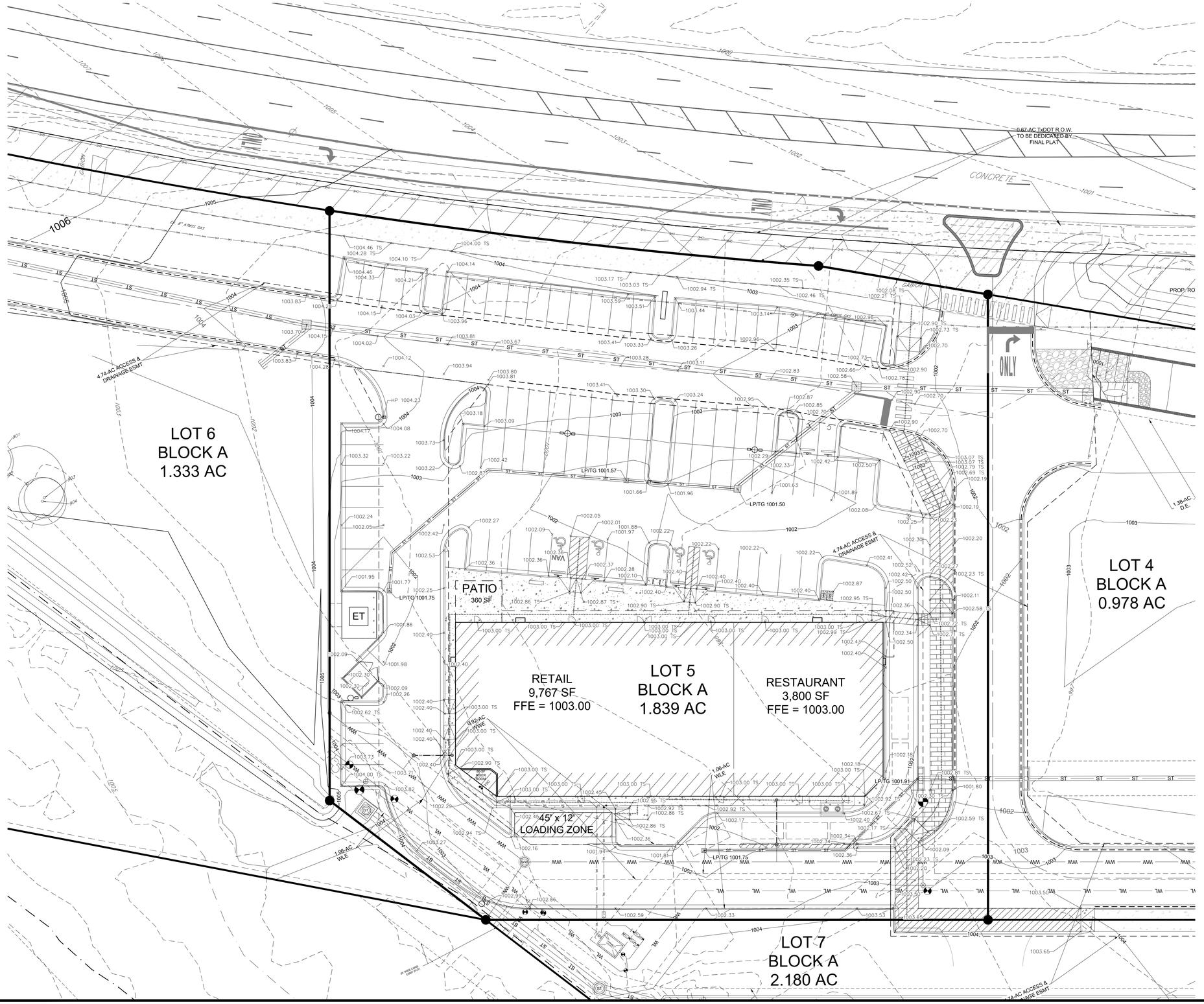

20 10 0 20 40

SCALE IN FEET

LEGEND

PROPOSED	EXISTING	
800	800	CONTOURS
		PROPOSED RETAINING WALL
		CORR. EX. 100-YR A14 FP & BUFFER ZONE
		CORR. ULT-DEV 100-YR A14 FP
		FEMA FLOODPLAIN
100.00		TOP OF PAVEMENT
100.00 TC		TOP OF CURB/CONCRETE
100.00 TG		TOP OF GRATE
100.00 LP		LOW POINT
100.00 HP		HIGH POINT
100.00 FS		FINISHED SLAB
100.00 TW		TOP OF WALL
100.00 BW		BOTTOM OF WALL
100.00 FG		FINISHED GROUND
		TREE TO REMAIN
		TREE TO BE REMOVED
ST	ST	STORM SEWER LINE
WW	WW	WASTEWATER LINE
WL	WL	WATER LINE
		WATER VALVE
		FIRE HYDRANT
	WWMH	WASTEWATER MANHOLE
	SSMH	STORMSEWER MANHOLE
		1/2" REBAR FOUND (OR AS NOTED)
		1/2" REBAR WITH CAP FOUND
		1/2" REBAR WITH CHAPARRAL CAP SET
		COTTON SPINDLE WITH CHAPARRAL WASHER SET
		WATER METER
		UTILITY POLE
OU	OU	OVERHEAD UTILITIES
		ELEC. UTILITY
		ELEC. MANHOLE
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		TELEPHONE UTILITY
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		TELEPHONE MANHOLE
		UNDERGROUND GAS MARKER
		CHAIN LINK FENCE

NOTES:

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CITY OF LEANDER APPROVAL

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GATEWAY 29 WPAP / SCS
OVERALL SUBDIVISION IMPROVEMENTS
GRADING PLAN - LOT 5

LEANDER, WILLIAMSON COUNTY, TEXAS

NO.	DESCRIPTION	BY	DATE

REVISIONS

DATE: 02/27/2024
DESIGNED BY: CRH
DRAWN BY: CRH
CHECKED BY:
DRAWING NAME: A633-0401-P-GP01_LS_WPAP

02/27/2024

STATE OF TEXAS
CHARLES R. HAGER
127034
LICENSED
PROFESSIONAL ENGINEER

LJA Engineering, Inc.
7500 Rialto Boulevard
Building II, Suite 100
Austin, Texas 78735
Phone 512.439.4700
Fax 512.439.4716
FRN-F-1386

JOB NUMBER:

GP05

SHEET NO.
49
OF 90 SHEETS

CITY OF LEANDER PROJECT No. SDP-23-0139

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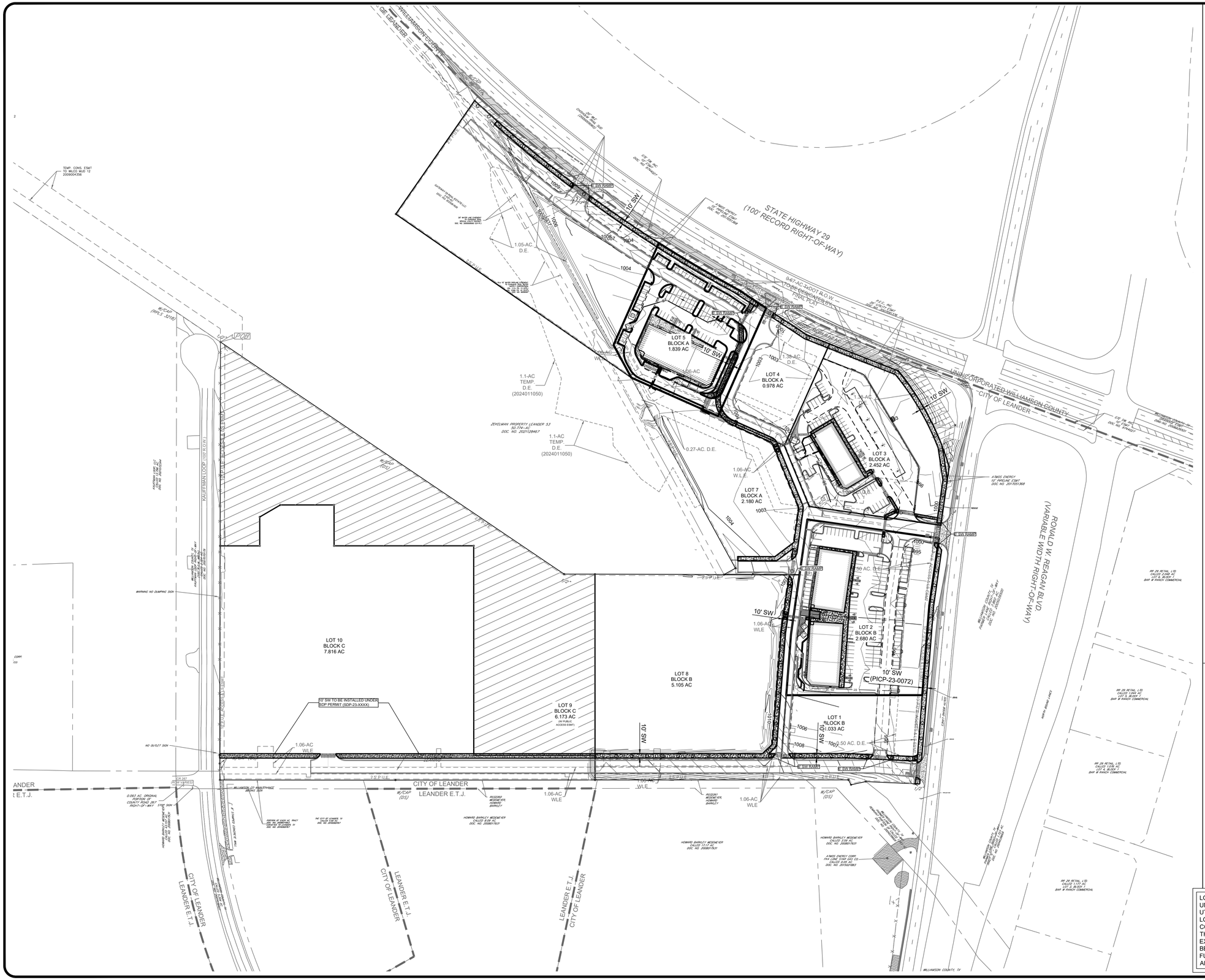
WILLIAMSON COUNTY
CR 152 AND DEB
STATE HIGHWAY 29
(100' RECORD RIGHT-OF-WAY)
UNINCORPORATED WILLIAMSON COUNTY
CITY OF LEANDER
RONALD W. REAGAN BLVD
(VARIABLE WIDTH RIGHT-OF-WAY)
KAUFFMAN LOOP (100' R.O.W.)
TEMP. CONS. ESWT TO WILCO MUD 12 2009004356
W/CAP (RPLS - 5218)
POB
LOT 5 BLOCK A 1.839 AC
LOT 4 BLOCK A 0.978 AC
LOT 3 BLOCK A 2.452 AC
LOT 7 BLOCK A 2.180 AC
LOT 2 BLOCK B 2.680 AC
LOT 1 BLOCK B 1.033 AC
LOT 10 BLOCK C 7.816 AC
LOT 8 BLOCK B 5.105 AC
LOT 9 BLOCK C 6.173 AC
(W PUBLIC ACCESS ESMT)
10' SW
10' SW (PICP-23-0072)
8' SW TO BE INSTALLED UNDER SDP PERMIT (SDP-23-XXXX)
8' SW RAMPS
1.05-AC D.E.
1.1-AC TEMP. D.E. (2024011050)
0.27-AC. D.E.
1.35-AC D.E.
0.50 AC. D.E.
1.06-AC W.L.E.
25' P.U.E.
ZEKEMAN PROPERTY LEANDER 53 50.774-AC DOC. NO. 2021128467
GATEWAY 29 REAL ESTATE, LLC 32.257-AC DOC. NO. 2023040899
0.647-AC TXDOT R.O.W. TO BE DEDICATED BY FINAL PLAT
A TWOG ENERGY 10" PIPELINE ESMT DOC. NO. 2017051368
A TWOG ENERGY 10" PIPELINE ESMT DOC. NO. 2017051369
A TWOG ENERGY 14" CONC. CASING CO CALLED 0.05 AC DOC. NO. 2015021983
RR 29 RETAIL, LTD CALLED 5.042 AC 15" & 36" OAK BAR W RANCH COMMERCIAL
RR 29 RETAIL, LTD CALLED 1.004 AC 15" & 36" OAK BAR W RANCH COMMERCIAL
RR 29 RETAIL, LTD CALLED 0.172 AC 15" & 36" OAK BAR W RANCH COMMERCIAL
WILLIAMSON CO. (PUBLIC ACCESS) DOC. NO. 2020006858
HOWARD BARKLEY WEDEMEYER CALLED 11.17 AC. DOC. NO. 2008017930
HOWARD BARKLEY WEDEMEYER CALLED 3.58 AC. DOC. NO. 2008017931
HOWARD BARKLEY WEDEMEYER CALLED 0.05 AC DOC. NO. 2008017932
WILLIAMSON CO. ROAD EASEMENT DOC. NO. 2008017933
WILLIAMSON CO. ROAD EASEMENT DOC. NO. 2008017934
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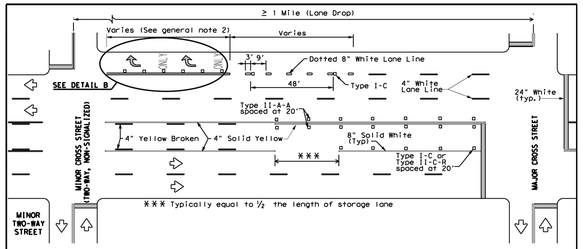
WILLIAMSON CO. ROAD EASEMENT DOC. NO.



TYPICAL TWLTL AT TWO-WAY CROSS STREET AND RIGHT TURN LANE DROP



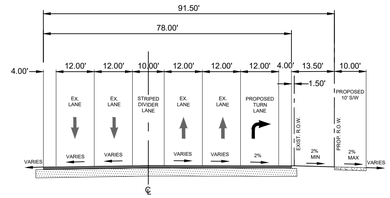
Texas Department of Transportation — Traffic Safety Division Standard

TWO-WAY LEFT TURN LANES, RURAL LEFT TURN BAYS, AND LANE REDUCTION PAVEMENT MARKINGS
PM(3)-20

FILE:	pm3-20.dgn	DN:	CK:	DW:	CK:
©TxDOT April 1998		CONT	SECT	JOB	HIGHWAY
REVISIONS		DIST	COUNTY		SHEET NO.
5-00 2-10					
8-00 2-12					
3-03 6-20					

PROPOSED ROADWAY SECTION A:A

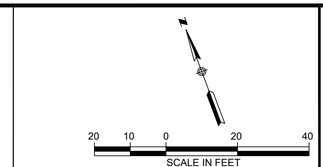
(N.T.S.)



NOTES

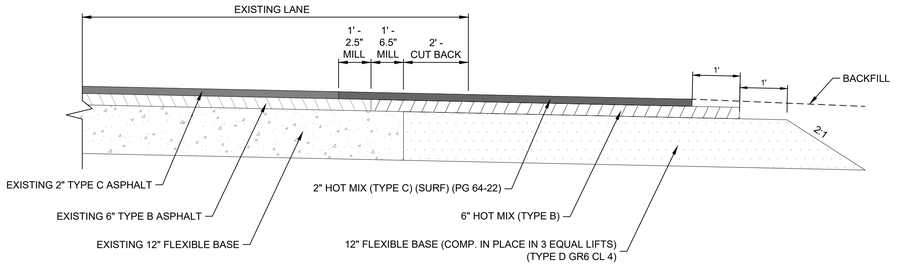
1. THIS PROJECT LIES WITHIN THE BOUNDARY OF THE EDWARDS AQUIFER RECHARGE ZONE PER TCEQ MAPS.
2. THE SUBJECT SITE IS NOT LOCATED WITHIN A DESIGNATED FLOODPLAIN, AS DEPICTED ON THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) FLOOD INSURANCE RATE MAP (FIRM) OF WILLIAMSON COUNTY, PANEL NUMBER 48491C0275E EFFECTIVE SEPTEMBER 26, 2008.
3. EXISTING ONSITE CONTOURS (1 FT INTERVAL) TAKEN FROM WESTAR ALAMO LAND SURVEYORS FIELD TOPOGRAPHIC SURVEY DATED 3/20/2020. EXISTING OFFSITE CONTOURS (2 FT INTERVAL) TAKEN FROM CITY OF LEANDER GIS
4. ALL DIMENSIONS ARE TO FACE OF CURB UNLESS OTHERWISE NOTED.
5. PROPOSED RIGHT TURN LANE FINISHED GRADE TO MATCH EXISTING PAVEMENT GRADES. REMOVE ALL STRIPING FROM WITHIN TURN LANE AREA AND REPLACE WITH STRIPING SHOWN HEREON.
6. ALL SPOT ELEVATIONS ARE TO TOP OF PAVEMENT UNLESS OTHERWISE NOTED.
7. PROTECT ALL EXISTING UNDERGROUND UTILITIES IN PLACE.
8. ALL STREET SIGNS AND PAVEMENT MARKING SHALL CONFORM TO THE STANDARDS SET FORTH IN THE LATEST EDITION OF THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (TMUTCD).
9. ALL PAVEMENT MARKINGS SHALL BE TYPE I THERMOPLASTIC AND INSTALLED IN ACCORDANCE WITH ITEM 666 OF THE TXDOT STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MAINTENANCE OF HIGHWAYS, STREETS, AND BRIDGES.

CONTRACTOR TO LOCATE AND VERIFY LOCATION AND ELEVATIONS OF ALL EXISTING UTILITIES AND NOTIFY ENGINEER PRIOR TO CONSTRUCTION.



LEGEND

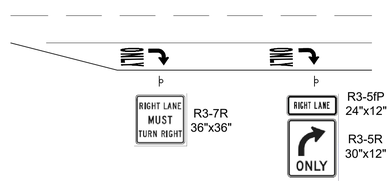
667	EXISTING CONTOUR MINOR
670	EXISTING CONTOUR MAJOR
	PROPERTY LINE
	PROPOSED PROPERTY LINE
	EASEMENT LINE
	SETBACK LINE
	DRAINAGE CENTERLINE
	ZONING BOUNDARY
WQZ	WATER QUALITY / BUFFER ZONE
ST ST	STORM SEWER LINE
WW WW	WASTEWATER LINE
	WASTEWATER SERVICE
WL WL	WATER LINE
	WATER SERVICE
	5/8" IRON ROD WITH PLASTIC CAP STAMPED "LJA SURVEY" SET
	IRON ROD FOUND (AS NOTED)
	IRON PIPE FOUND (AS NOTED)



PROPOSED PAVEMENT DETAIL

(N.T.S.)

* TURN LANE PAVEMENT TO MATCH EXISTING PAVEMENT DESIGN (PARMER LANE EXTENSION PHASE II, PROJECT NO. 0Z WC) UNLESS AN EQUAL IS APPROVED FOR USE



TURN LANE SIGNAGE DETAIL

(N.T.S.)

CITY OF LEANDER APPROVAL

LOCATION OF EXISTING UNDERGROUND AND OVERHEAD UTILITIES ARE APPROXIMATE LOCATIONS ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES PRIOR TO BEGINNING WORK AND SHALL BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT OCCUR.

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

CITY OF LEANDER PROJECT No. PICP-23-0072

GATEWAY 29 WPAP / SCS
OVERALL SUBDIVISION IMPROVEMENTS
TURN LANE PLAN SHEET 1
LEANDER, WILLIAMSON COUNTY, TEXAS

NO.	DESCRIPTION	BY	DATE

DATE: 2/27/2024
DESIGNED BY: CRH
DRAWN BY: DLB
CHECKED BY: CRH
DRAWING NAME: A633-0401-P-TL01_WPAP.dwg

2/27/2024
STATE OF TEXAS
CHARLES R. HAGER
127034
LICENSED
PROFESSIONAL ENGINEER

LJA Engineering, Inc.
7500 Rialto Boulevard
Building II, Suite 100
Austin, Texas 78735
Phone 512.439.4700
Fax 512.439.4716
FRN-F-1386

JOB NUMBER: A633-0401

TL01

SHEET NO. 51 OF 99 SHEETS

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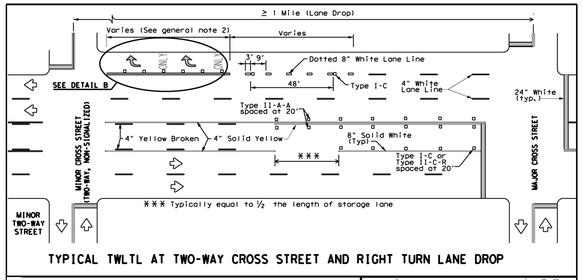
Last Modified: Mar. 13, 24 - 14:05
Plot Date/Time: Mar. 13, 24 - 14:54:09



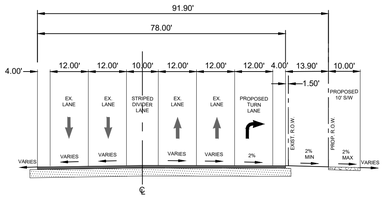
Texas Department of Transportation — Traffic Safety Division Standard

TWO-WAY LEFT TURN LANES, RURAL LEFT TURN BAYS, AND LANE REDUCTION PAVEMENT MARKINGS PM(3)-20

FILE: pm3-20.dgn	DN:	CK:	DW:	CK:
©TxDOT April 1998	CONT	SECT	JOB	HIGHWAY
REVISIONS				
5-00 2-10				
5-00 2-12				
5-03 6-20	DIST	COUNTY		SHEET NO.

PROPOSED ROADWAY SECTION A:A

(N.T.S.)



NOTES

1. THIS PROJECT LIES WITHIN THE BOUNDARY OF THE EDWARDS AQUIFER RECHARGE ZONE PER TCEQ MAPS.
2. THE SUBJECT SITE IS NOT LOCATED WITHIN A DESIGNATED FLOODPLAIN, AS DEPICTED ON THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) FLOOD INSURANCE RATE MAP (FIRM) OF WILLIAMSON COUNTY, PANEL NUMBER 48491C0275E EFFECTIVE SEPTEMBER 26, 2008.
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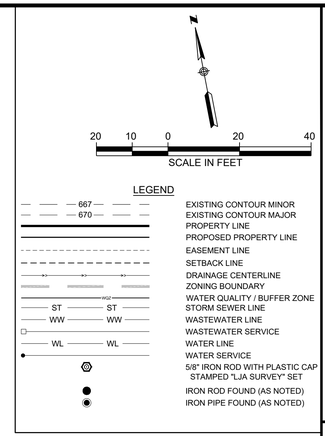
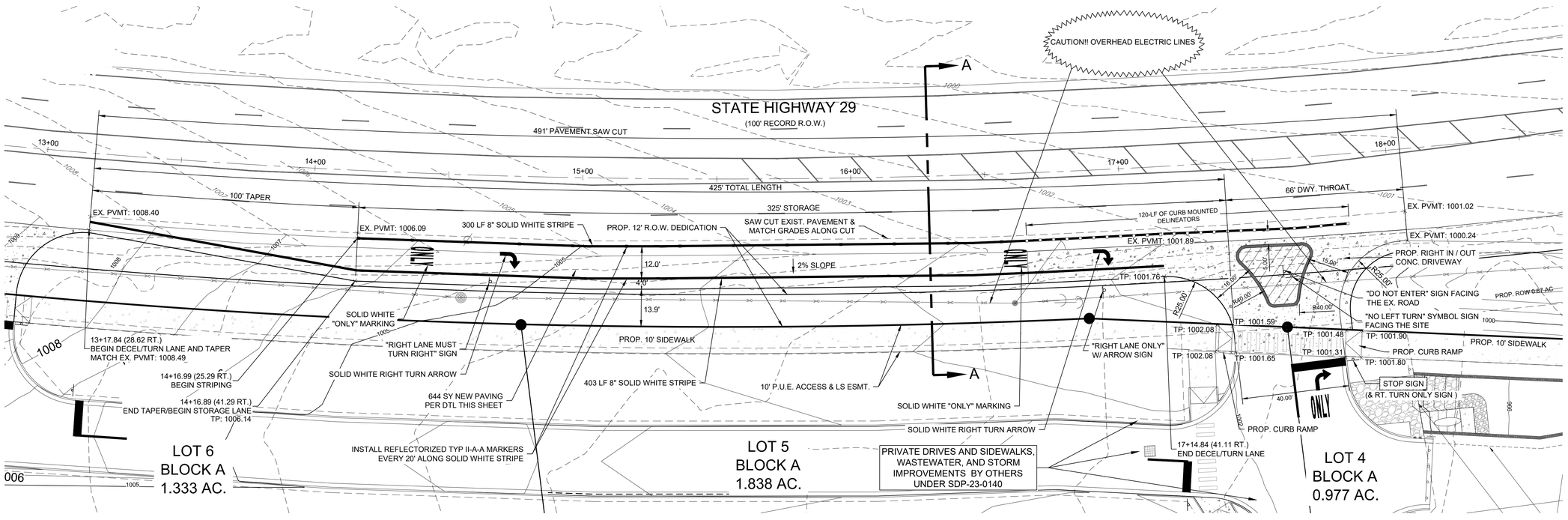
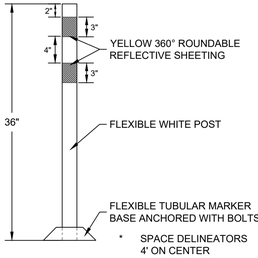
CONTRACTOR TO LOCATE AND VERIFY LOCATION AND ELEVATIONS OF ALL EXISTING UTILITIES AND NOTIFY ENGINEER PRIOR TO CONSTRUCTION.



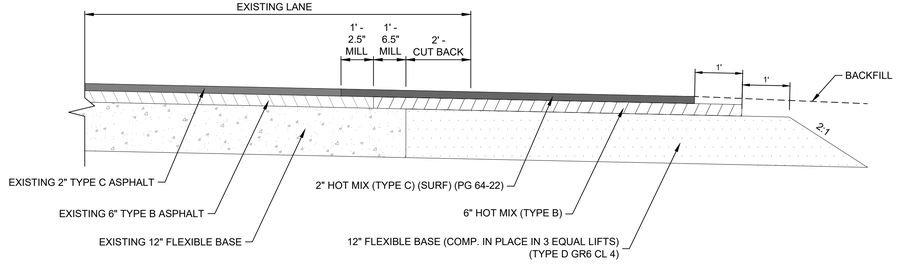




CURB MOUNTED DELINEATOR DETAIL

(N.T.S.)

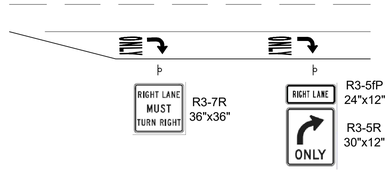
* USE OMNI FLEX 36 INCH TUBULAR TRAFFIC DELINEATOR POST OR EQUIVALENT MATCHING ABOVE DETAILED SPECIFICATIONS



PROPOSED PAVEMENT DETAIL

(N.T.S.)

* TURN LANE PAVEMENT TO MATCH EXISTING PAVEMENT DESIGN (PARMER LANE EXTENSION PHASE II, PROJECT NO. 0Z WC) UNLESS AN EQUAL IS APPROVED FOR USE



TURN LANE SIGNAGE DETAIL

(N.T.S.)

CITY OF LEANDER APPROVAL

LOCATION OF EXISTING UNDERGROUND AND OVERHEAD UTILITIES ARE APPROXIMATE LOCATIONS ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES PRIOR TO BEGINNING WORK AND SHALL BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT OCCUR.

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

CITY OF LEANDER PROJECT No. PICP-23-0072

GATEWAY 29 WPAP / SCS
OVERALL SUBDIVISION IMPROVEMENTS

TURN LANE PLAN SHEET 2

LEANDER, WILLIAMSON COUNTY, TEXAS

REVISIONS

NO.	DESCRIPTION	BY	DATE

DATE: 2/27/2024
DESIGNED BY: CRH
DRAWN BY: DLB
CHECKED BY: CRH
DRAWING NAME: A633-0401-PLTL01.WORK

2/27/2024
STATE OF TEXAS
CHARLES R. HAGER
127034
LICENSED PROFESSIONAL ENGINEER

LJA Engineering, Inc.
7500 Rialto Boulevard
Building II, Suite 100
Austin, Texas 78735
Phone 512.439.4700
Fax 512.439.4716
TBPE-F-1386

JOB NUMBER: A633-0401

TL02

SHEET NO. 52 OF 99 SHEETS

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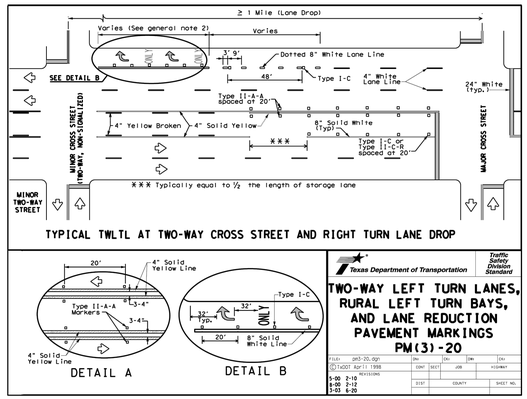
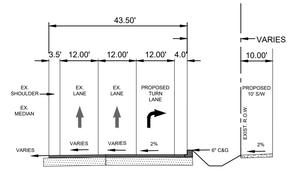
Plot Date/Time: Mar. 13, 24 - 14:54:20



PROPOSED ROADWAY SECTION A:A

(N.T.S.)



NOTES

1. THIS PROJECT LIES WITHIN THE BOUNDARY OF THE EDWARDS AQUIFER RECHARGE ZONE PER TCEQ MAPS.
2. THE SUBJECT SITE IS NOT LOCATED WITHIN A DESIGNATED FLOODPLAIN, AS DEPICTED ON THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) FLOOD INSURANCE RATE MAP (FIRM) OF WILLIAMSON COUNTY, PANEL NUMBER 48491C0275E EFFECTIVE SEPTEMBER 26, 2008.
3. EXISTING ONSITE CONTOURS (1 FT INTERVAL) TAKEN FROM WESTAR ALAMO LAND SURVEYORS FIELD TOPOGRAPHIC SURVEY DATED 3/20/2020. EXISTING OFFSITE CONTOURS (2 FT INTERVAL) TAKEN FROM CITY OF LEANDER GIS
4. ALL DIMENSIONS ARE TO FACE OF CURB UNLESS OTHERWISE NOTED.
5. PROPOSED RIGHT TURN LANE FINISHED GRADE TO MATCH EXISTING PAVEMENT GRADES. REMOVE ALL STRIPING FROM WITHIN TURN LANE AREA AND REPLACE WITH STRIPING SHOWN HEREON.
6. ALL SPOT ELEVATIONS ARE TO TOP OF PAVEMENT UNLESS OTHERWISE NOTED.
7. PROTECT ALL EXISTING UNDERGROUND UTILITIES IN PLACE.
8. ALL STREET SIGNS AND PAVEMENT MARKING SHALL CONFORM TO THE STANDARDS SET FORTH IN THE LATEST EDITION OF THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (TMUTCD).
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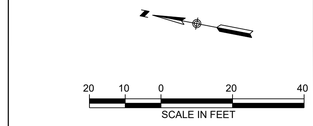
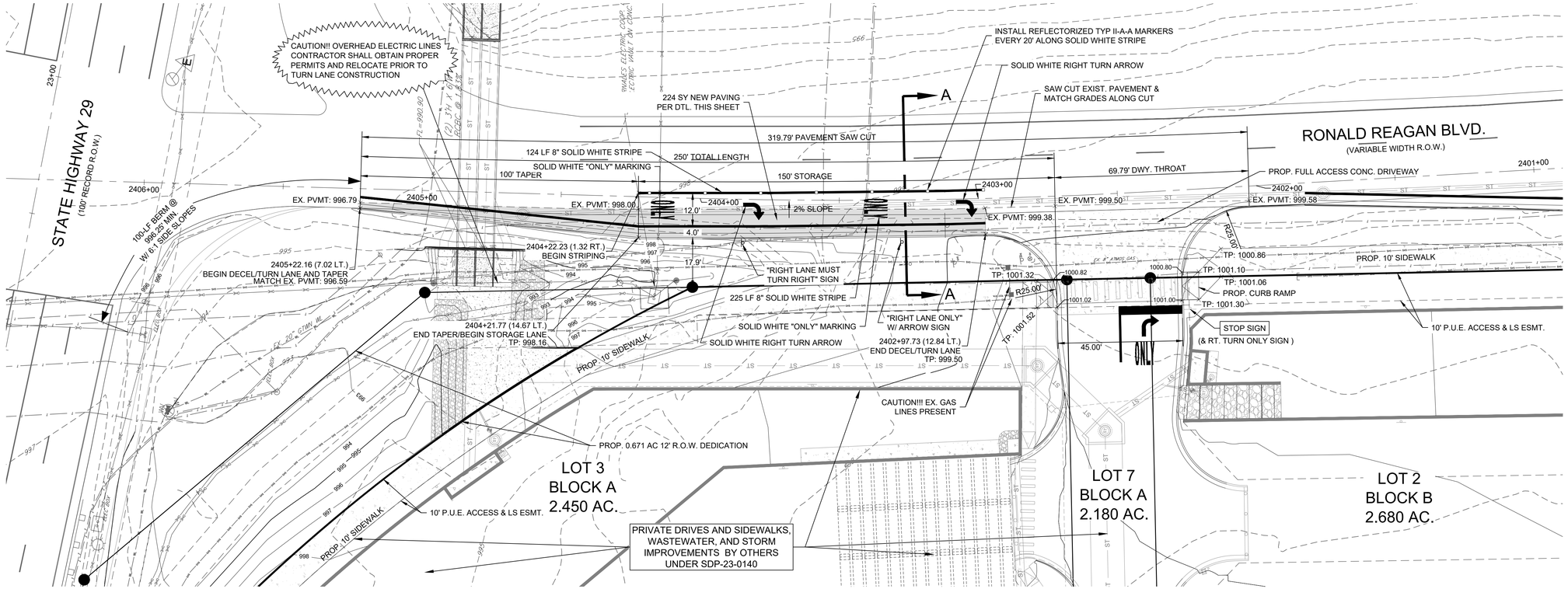
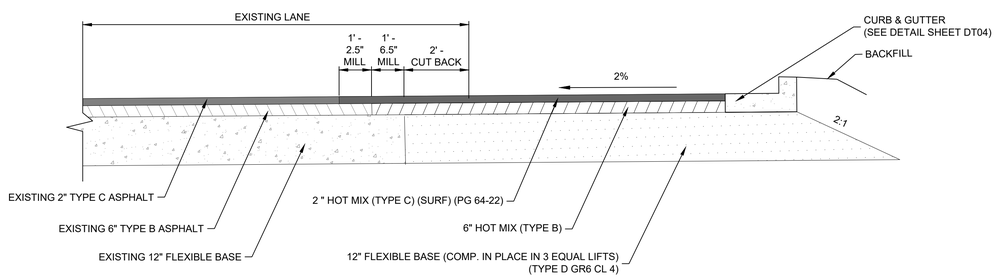
CONTRACTOR TO LOCATE AND VERIFY LOCATION AND ELEVATIONS OF ALL EXISTING UTILITIES AND NOTIFY ENGINEER PRIOR TO CONSTRUCTION.



LEGEND

- 667 — EXISTING CONTOUR MINOR
- 670 — EXISTING CONTOUR MAJOR
- PROPERTY LINE
- PROPOSED PROPERTY LINE
- EASEMENT LINE
- SETBACK LINE
- DRAINAGE CENTERLINE
- ZONING BOUNDARY
- WQZ — WATER QUALITY / BUFFER ZONE
- ST ST — STORM SEWER LINE
- WW WW — WASTEWATER LINE
- WASTEWATER SERVICE
- WL WL — WATER LINE
- WATER SERVICE
- 5/8" IRON ROD WITH PLASTIC CAP STAMPED "LJA SURVEY" SET
- IRON ROD FOUND (AS NOTED)
- IRON PIPE FOUND (AS NOTED)

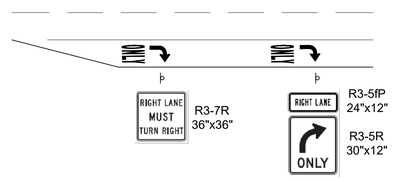




PROPOSED PAVEMENT DETAIL

(N.T.S.)

* TURN LANE PAVEMENT TO MATCH EXISTING PAVEMENT DESIGN (PARMER LANE EXTENSION PHASE II, PROJECT NO. 0Z WC) UNLESS AN EQUAL IS APPROVED FOR USE



TURN LANE SIGNAGE DETAIL

(N.T.S.)

CITY OF LEANDER APPROVAL

LOCATION OF EXISTING UNDERGROUND AND OVERHEAD UTILITIES ARE APPROXIMATE LOCATIONS ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES PRIOR TO BEGINNING WORK AND SHALL BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT OCCUR.

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

CITY OF LEANDER PROJECT No. PICP-23-0072

GATEWAY 29 WPAP / SCS
OVERALL SUBDIVISION IMPROVEMENTS
TURN LANE PLAN SHEET 3
LEANDER, WILLIAMSON COUNTY, TEXAS

REVISIONS

NO.	DESCRIPTION	BY	DATE

DATE: 2/27/2024
DESIGNED BY: CRH
DRAWN BY: DLB
CHECKED BY: CRH
DRAWING NAME: A633-0401-P-TL01_WPAP.dwg

2/27/2024

STATE OF TEXAS
CHARLES R. HAGER
127034
LICENSED PROFESSIONAL ENGINEER

LJA Engineering, Inc.
7500 Rialto Boulevard
Building II, Suite 100
Austin, Texas 78735
Phone 512.439.4700
Fax 512.439.4716
FRN-F-1386

JOB NUMBER: A633-0401

TL03

SHEET NO. 53 OF 99 SHEETS

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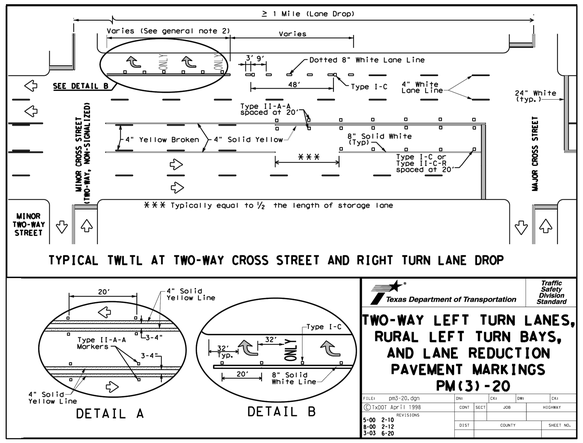
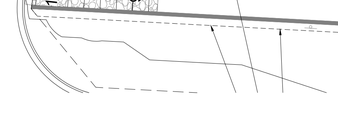
User: cgrisinger
Last Modified: Mon 13, 24 - 14:05
Plot Date/Time: Mon 13, 24 - 14:54:30



TYPICAL TWLTL AT TWO-WAY CROSS STREET AND RIGHT TURN LANE DROP



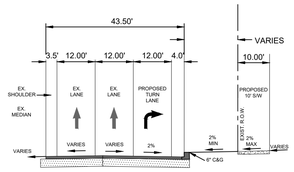
Texas Department of Transportation — Traffic Safety Division Standard

TWO-WAY LEFT TURN LANES, RURAL LEFT TURN BAYS, AND LANE REDUCTION PAVEMENT MARKINGS
PM(3)-20

FILE:	pm3-20.dgn	DN:	CK:	DW:	CK:
©TxDOT April 1998		CONT	SECT	JOB	HIGHWAY
REVISIONS		DIST	COUNTY		SHEET NO.
5-00 2-10					
8-00 2-12					
3-03 8-20					

PROPOSED ROADWAY SECTION A:A

(N.T.S.)



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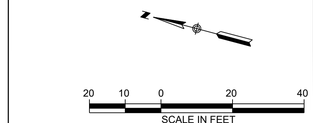

LEGEND

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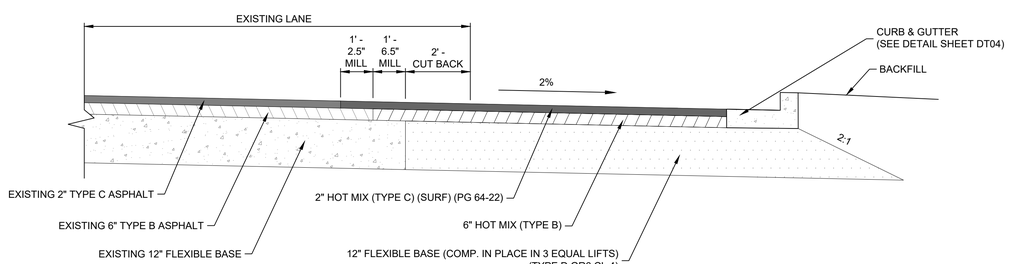

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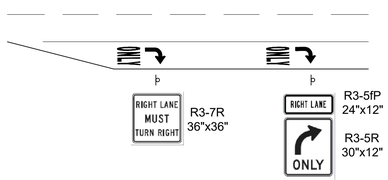

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(N.T.S.)

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CITY OF LEANDER PROJECT No. PICP-23-0072

GATEWAY 29 WPAP / SCS
OVERALL SUBDIVISION IMPROVEMENTS

TURN LANE PLAN SHEET 4

LEANDER, WILLIAMSON COUNTY, TEXAS

NO.	REVISIONS DESCRIPTION	BY	DATE

DATE: 2/27/2024
DESIGNED BY: CRH
DRAWN BY: DLB
CHECKED BY: CRH
DRAWING NAME: A633-0401-P-TL01_WPAP.dwg

2/27/2024
STATE OF TEXAS
CHARLES R. HAGER
127034
LICENSED PROFESSIONAL ENGINEER

LJA Engineering, Inc.
7500 Rialto Boulevard
Building II, Suite 100
Austin, Texas 78735
Phone 512.439.4700
Fax 512.439.4716
FRN-F-1386

JOB NUMBER: A633-0401

TL04

SHEET NO. 63 OF 99 SHEETS

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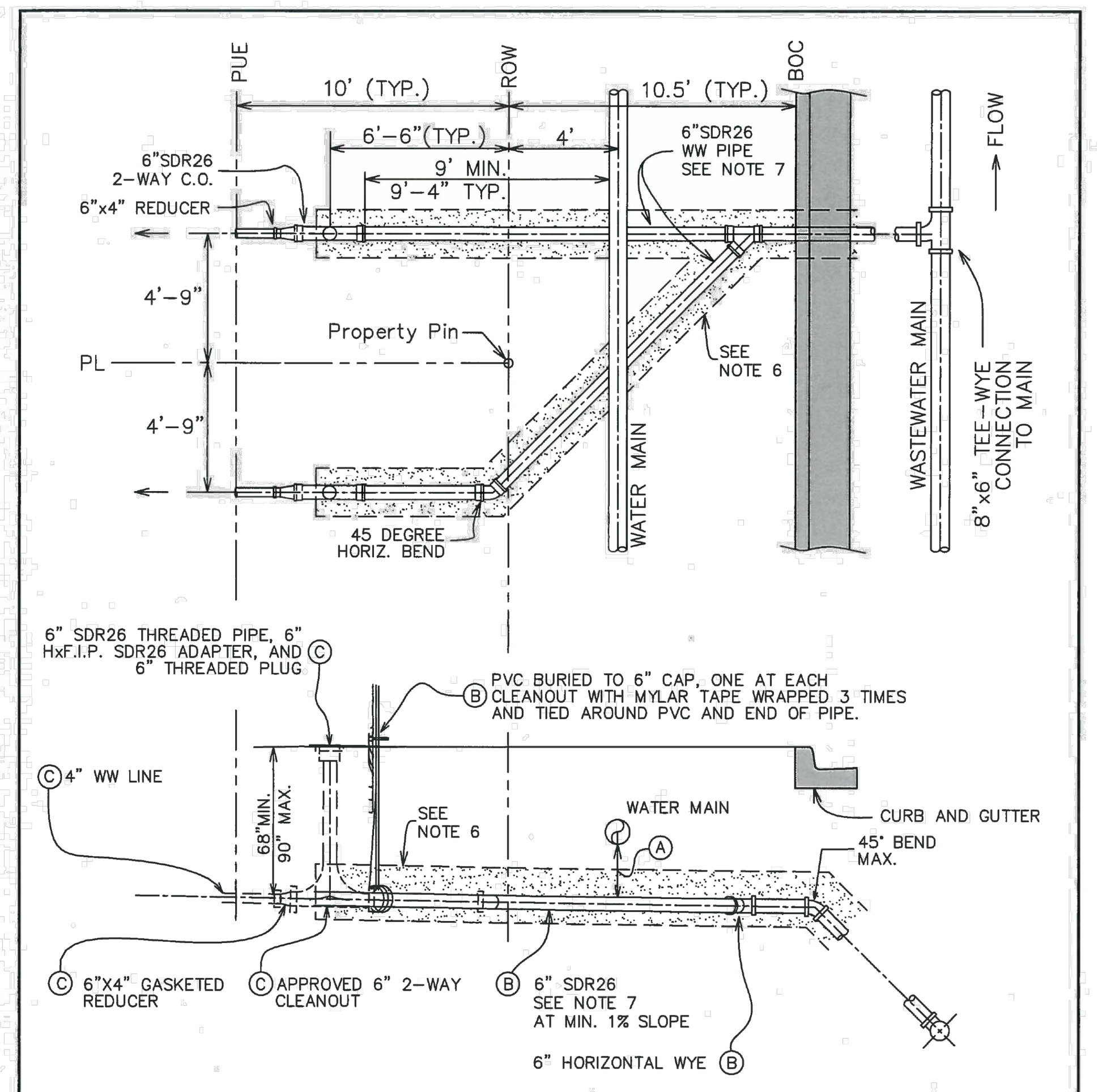
Plot Date/Time: Mar. 13, 24 - 14:54:40



NOTES:

Ⓐ WATER MAIN SHALL CROSS ABOVE 6" WASTEWATER SERVICE, TWO-FOOT (2') MINIMUM VERTICAL SEPARATION.

Ⓑ TO BE INSTALLED AND INSPECTED DURING SUBDIVISION CONSTRUCTION. UTILITY CONTRACTOR INSTALLS SERVICE STUB WITH PLUG OR CAP.

Ⓒ 2-WAY CLEANOUTS, 6" HxF.I.P. ADAPTER, REDUCER, AND 4" SERVICE LINE INSTALLED BY BLDG. PLUMBER. PERMITS DEPARTMENT SHALL INSPECT CUSTOMER'S WASTEWATER LINE AND ALL APPURTENANCES INSTALLED BY BUILDING PLUMBER.

STATE OF TEXAS WAYNE S. WATTS 86134 LICENSED PROFESSIONAL ENGINEER 09/26/18

City Of Leander, Texas
DETAIL #101-2
1 OF 2
WASTEWATER SERVICE CONNECTIONS

NOTES

1. DURING SUBDIVISION CONSTRUCTION, UTILITY CONTRACTOR INSTALLS WASTEWATER CONNECTION TO MAIN, 6" HORIZONTAL WYE FOR DOUBLE SERVICES, 6" SERVICE BRANCH, AND PLUG(S) FOR 6" SERVICE BRANCH STUB. CONTRACTOR TIES MYLAR TAPE TO END OF 6" STUB, WRAPS 3 TIMES AROUND LENGTH OF PVC BURIED TO THE DEPTH OF THE 6" STUB AND TIES TO TOP OF PVC EXTENDING A MINIMUM OF 2 FEET ABOVE GROUND.

   ALL WASTEWATER PIPING SHALL HAVE ELASTOMERIC GASKET TYPE JOINTS AND SHALL SLOPE DOWNWARD TO MAIN 1% (1/8" PER FOOT) MINIMUM TO 45° MAXIMUM. DEPTH OF SERVICE STUB AT PROPERTY LINE WILL BE SHOWN ON PLANS BY ENGINEER IF GREATER THAN 8', OTHERWISE THE INSTALLED DEPTH WILL TYPICALLY BE 6' TO 8'. IF WASTEWATER SERVICE LINE TO MAIN REQUIRES DEFLECTION EXCEEDING 45°, REFER TO DETAIL 520-6. ALL INSTALLATIONS SHALL BE MADE IN ACCORDANCE WITH INFORMATION SHOWN ON APPLICABLE STANDARD DRAWINGS AND WILL BE INSPECTED BY CITY OF LEANDER CONSTRUCTION INSPECTION PERSONNEL.

2. CUSTOMER REMOVES PLUG FROM 6" SERVICE LINE STUB, INSTALLS 6" 2-WAY CLEANOUT, 6" BY 4" REDUCER, RISER FOR CLEANOUT, 6" HxF.I.P. ADAPTER, 6" THREADED PLUG, AND 4" SERVICE LINE TO STRUCTURE. IF WASTEWATER WILL NOT SATISFACTORILY FLOW BY GRAVITY FROM STRUCTURE TO SEWER SERVICE STUB & WASTEWATER MAIN, PUMP EQUIPMENT MUST BE PROVIDED BY THE CUSTOMER AS PART OF CUSTOMER'S WASTEWATER SYSTEM.

3. CUSTOMER IS RESPONSIBLE FOR PUBLIC PIPING SYSTEM UNTIL WASTEWATER IS CONNECTED. ANY MISSING OR DAMAGED PARTS SHALL BE REINSTALLED BY CUSTOMER WHO SHALL GUARANTEE, FOR A PERIOD OF TWO (2) YEARS FROM DATE OF ACCEPTANCE, THAT CONNECTIONS TO CITY SYSTEMS ARE FREE FROM DEFECTS IN WORKMANSHIP OR MATERIAL. CUSTOMER ALSO HAS THE RESPONSIBILITY TO ASSURE THAT ALL 2-WAY-CLEANOUTS REMAIN CLEAR OF SIDEWALKS AND OTHER OBSTRUCTIONS.

4. CITY OF LEANDER ACTIVITY IS LIMITED TO INSPECTION OF CONNECTIONS TO THE CITY'S WASTEWATER SYSTEM. FOR MAINTENANCE PURPOSES, THE CITY'S RESPONSIBILITY ENDS AT THE CUSTOMER'S WASTEWATER CONNECTION TO THE 2-WAY-CLEANOUT.

5. PIPING AND TUBING IN STREET RIGHT-OF-WAY AND IN EASEMENT AREA SHALL BE BEDDED IN GRANULAR MATERIALS AS REQUIRED BY CITY OF AUSTIN STANDARD SPECIFICATION SECTION 510.3 (14) UNLESS OTHERWISE NOTED ON THIS DETAIL; MATERIALS SHALL BE AS SPECIFIED IN 510.2 (2)(A) AND (3)(B); BACKFILL ABOVE THE GRANULAR BEDDING SHALL BE AS REQUIRED BY SECTION 510.3 (25). SERVICE LINES IN THESE AREAS SHALL HAVE A MINIMUM COVER BELOW FINAL STREET GRADE OF 42". ANY EXCEPTION MUST BE SPECIFICALLY APPROVED BY THE ENGINEER.

6. ALL SANITARY SEWER PIPE WITHIN 9' OF WATER MAINS SHALL BE BEDDED IN CEMENT STABILIZED SAND PER TCEQ CHAPTER 217 & 290 REQUIREMENTS. BEDDING SHALL EXTEND A MINIMUM OF 12" ABOVE PIPE, 4" BELOW PIPE, AND 12" BEYOND JOINTS AT EACH END.

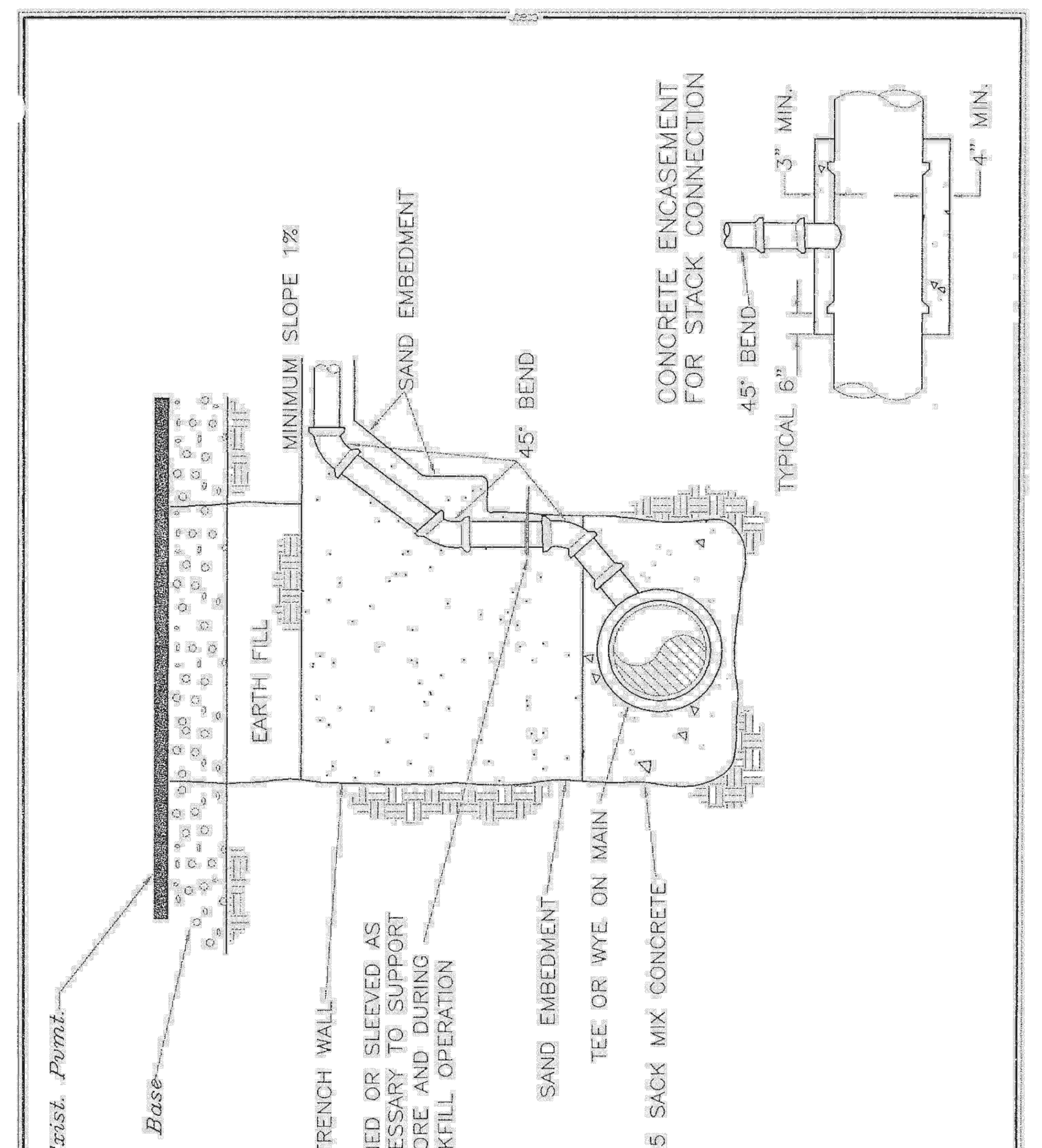
7. PIPE MATERIAL FOR WASTEWATER SERVICES SHALL BE 6" SDR-26 PVC D2241 160 PSI RATED.

8. NO METER BOX OR CLEAN OUT SHALL BE SET IN SIDEWALK OR DRIVEWAY AREA WITHOUT WRITTEN APPROVAL FROM THE CITY ENGINEERING DEPT.

9. NO JOINTS SHALL BE PERMITTED BETWEEN THE 6"x6" HORIZONTAL WYE AND THE 6" 2-WAY CLEANOUT EXCEPT FOR THE 6" 45-DEGREE BEND REQUIRED FOR DOUBLE SERVICES.

STATE OF TEXAS WAYNE S. WATTS 86134 LICENSED PROFESSIONAL ENGINEER 09/26/18

City Of Leander, Texas
DETAIL #101-2
2 OF 2
WASTEWATER SERVICE CONNECTIONS



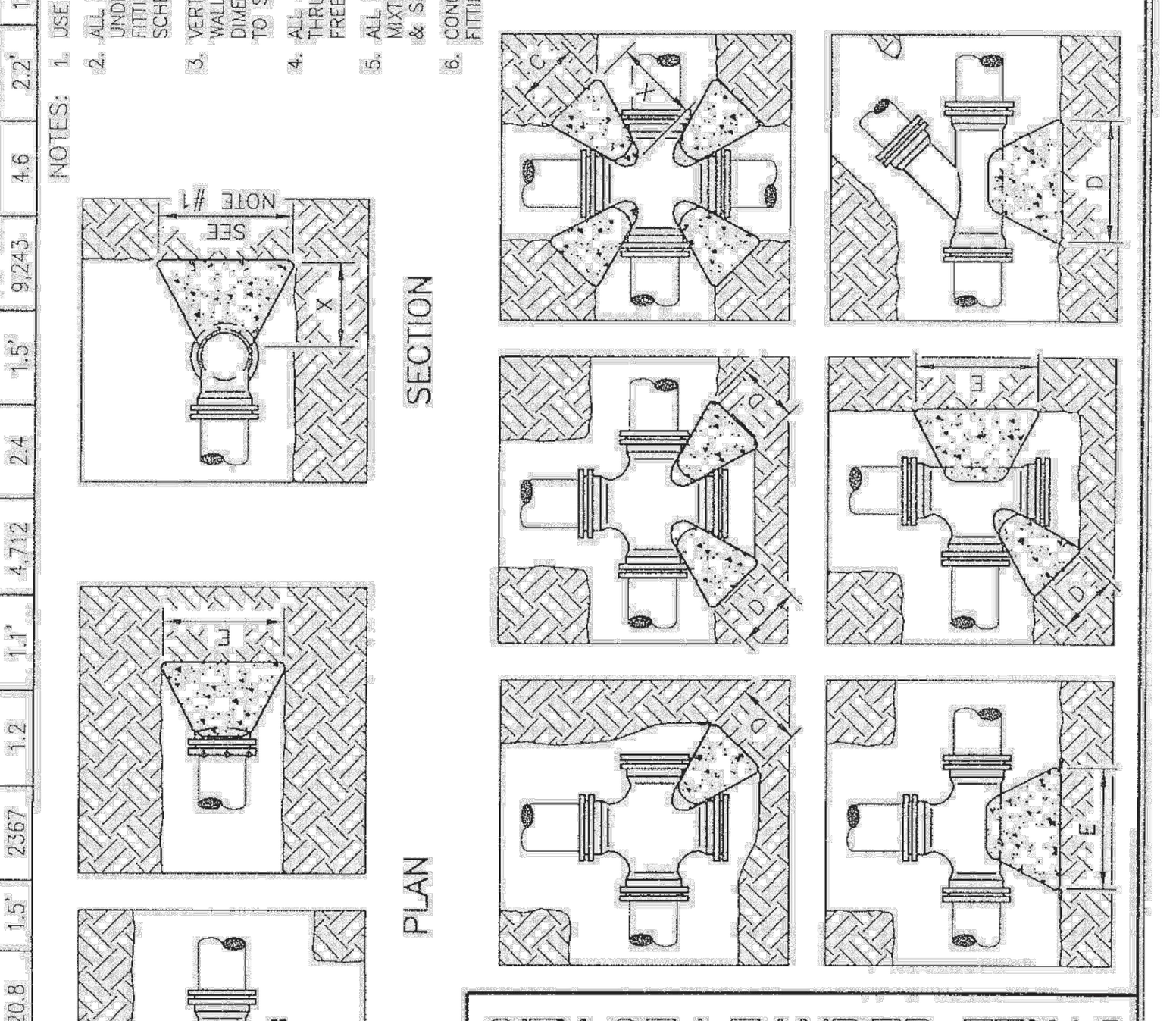
CITY OF LEANDER, TEXAS
Scale: NTS | Approved | Date | Drawn by: SDK
WATER & WASTEWATER DEEP SERVICE CONNECTION | Detail No. 102-2

THRUST BLOCKING SCHEDULE

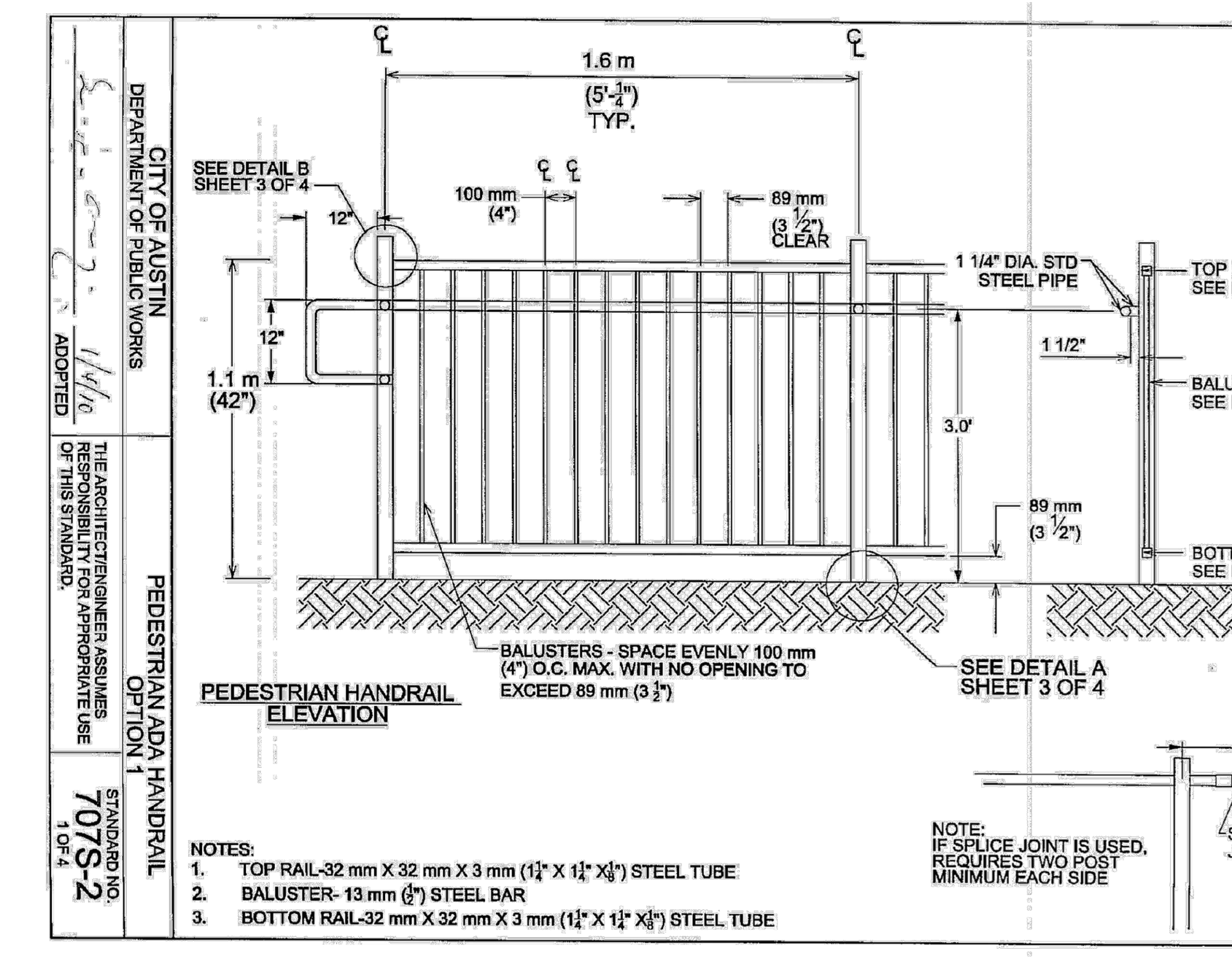
ASSUMPTIONS: LINE PRESSURE – 100 psi, ALLOWABLE BEARING – 4000 psf, SAFETY FACTOR – 3

PIPE DIAMETER	PIPE AREA Sq. In.	X	11 1/4° BEND THRUST Lbs.	11 1/4° BEND AREA Sq. Ft.	A	22 1/2° BEND THRUST Lbs.	22 1/2° BEND AREA Sq. Ft.	B	45° BEND THRUST Lbs.	45° BEND AREA Sq. Ft.	C	90° BEND THRUST Lbs.	90° BEND AREA Sq. Ft.	D	TEE & PLUG THRUST Lbs.	TEE & PLUG AREA Sq. Ft.	E
4"–12"	120.8	1.5'	2367	1.2	1.1'	4,712	2.4	1.5'	9,243	4.6	2.2'	17,078	8.5	2.9'	12,076	6.0	2.5'

NOTES:
1. USE A, B, C, D or E AS APPROPRIATE. REFER TO SCHEDULE.
2. ALL CONCRETE THRUST BLOCKS SHALL BEAR AGAINST UNDISTURBED TRENCH WALLS. DISTANCE (X) FROM PIPE FITTING TO TRENCH WALL SHALL BE AS SHOWN IN THE SCHEDULE OR A MIN. OF 12" AT THE THRUST BLOCK.
3. VERTICAL DIMENSION OF BEARING AREA AGAINST TRENCH WALL OF THRUST BLOCK SHALL BE EQUAL TO HORIZONTAL DIMENSION OF A, B, C, D, OR E AS APPROPRIATE. REFER TO SCHEDULE AND SECTION DRAWING.
4. ALL JOINTS SHALL BE TEMPORARILY JACKED WHEN POURING THRUST BLOCKS. ALL JOINTS OF FITTINGS SHALL BE KEPT FREE OF ANY CONCRETE.
5. ALL CONCRETE THRUST BLOCKS SHALL CONSIST OF A MIXTURE OF 1:2:6 OF CEMENT TO WASHED SAND TO GRAVEL & SHALL BE CURED FOR A MIN. OF 24 HRS.
6. CONCRETE THRUST BLOCKS SHALL APPLY TO ALL PIPE FITTINGS.

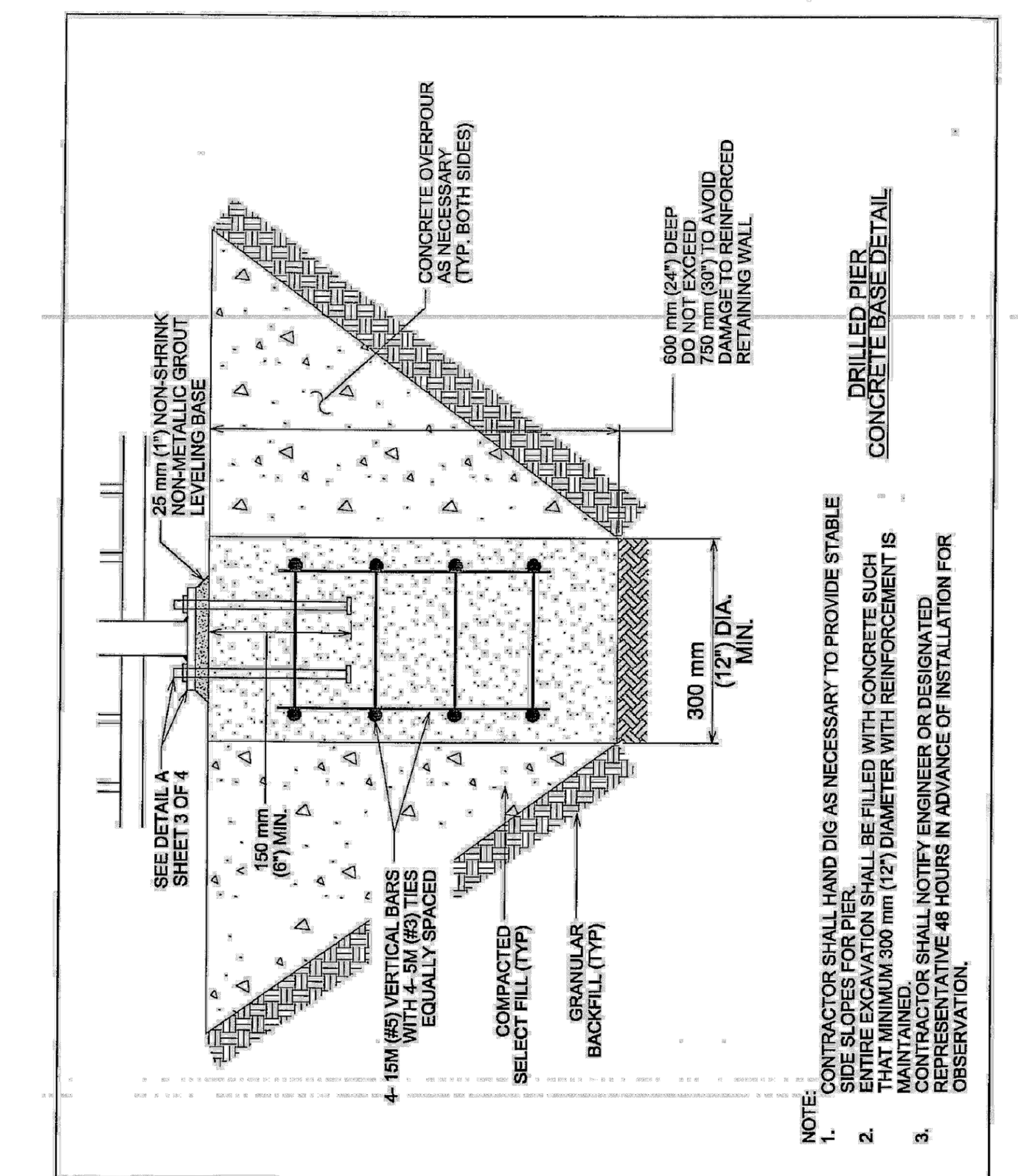


CITY OF LEANDER, TEXAS
Scale: NTS | Approved | Date | Drawn by: RPW
THRUST BLOCKING DETAILS | Detail No. 103-1



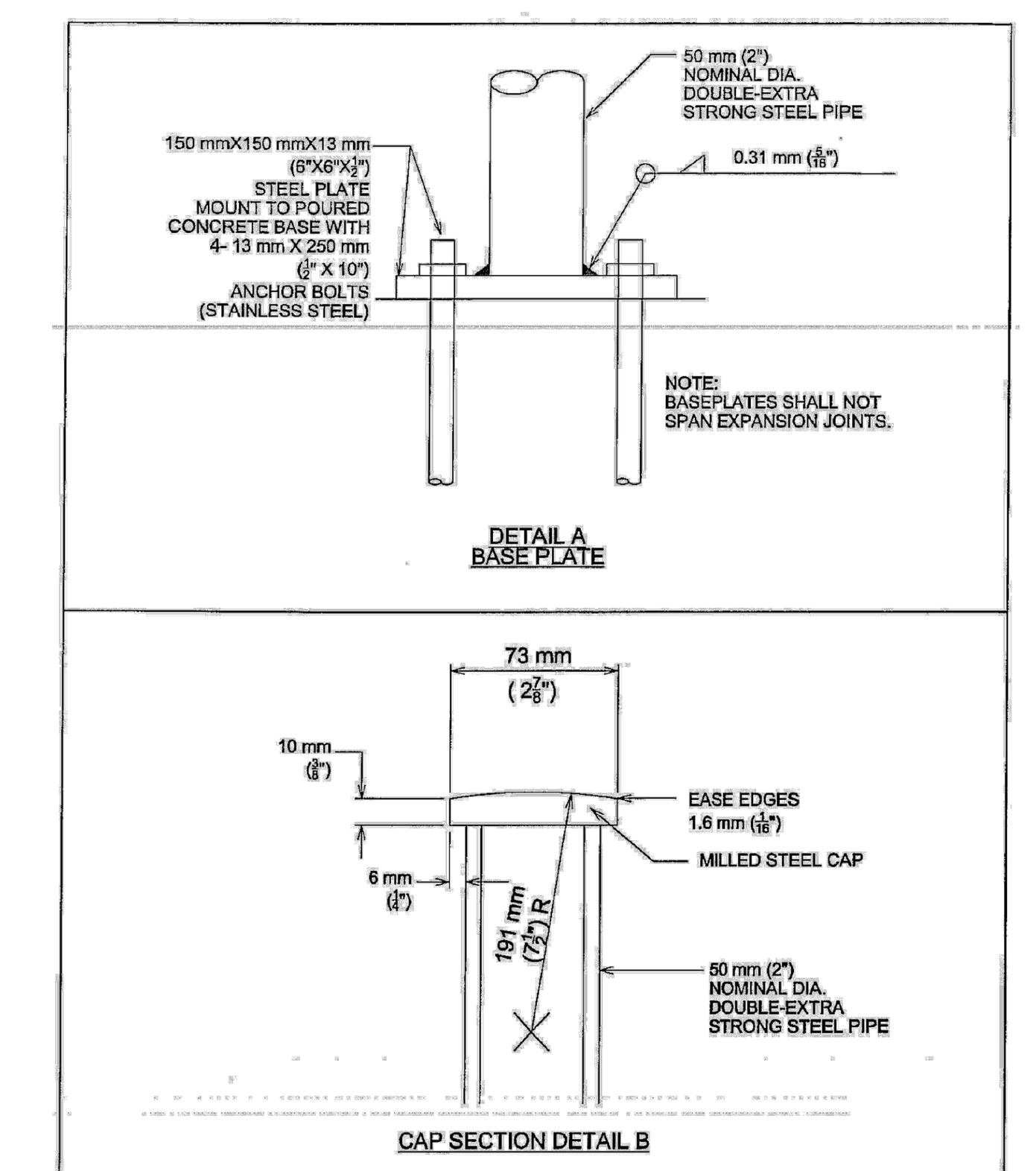
NOTES:
1. TOP RAIL-32 mm X 32 mm X 3 mm (1¼" X 1¼" X⅛") STEEL TUBE
2. BALUSTER- 13 mm (½") STEEL BAR
3. BOTTOM RAIL-32 mm X 32 mm X 3 mm (1¼" X 1¼" X⅛") STEEL TUBE

CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS | ADOPTED 1/4/10 | PEDESTRIAN ADA HANDRAIL OPTION 1 | THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD. | STANDARD NO. 707S-2 1 OF 4

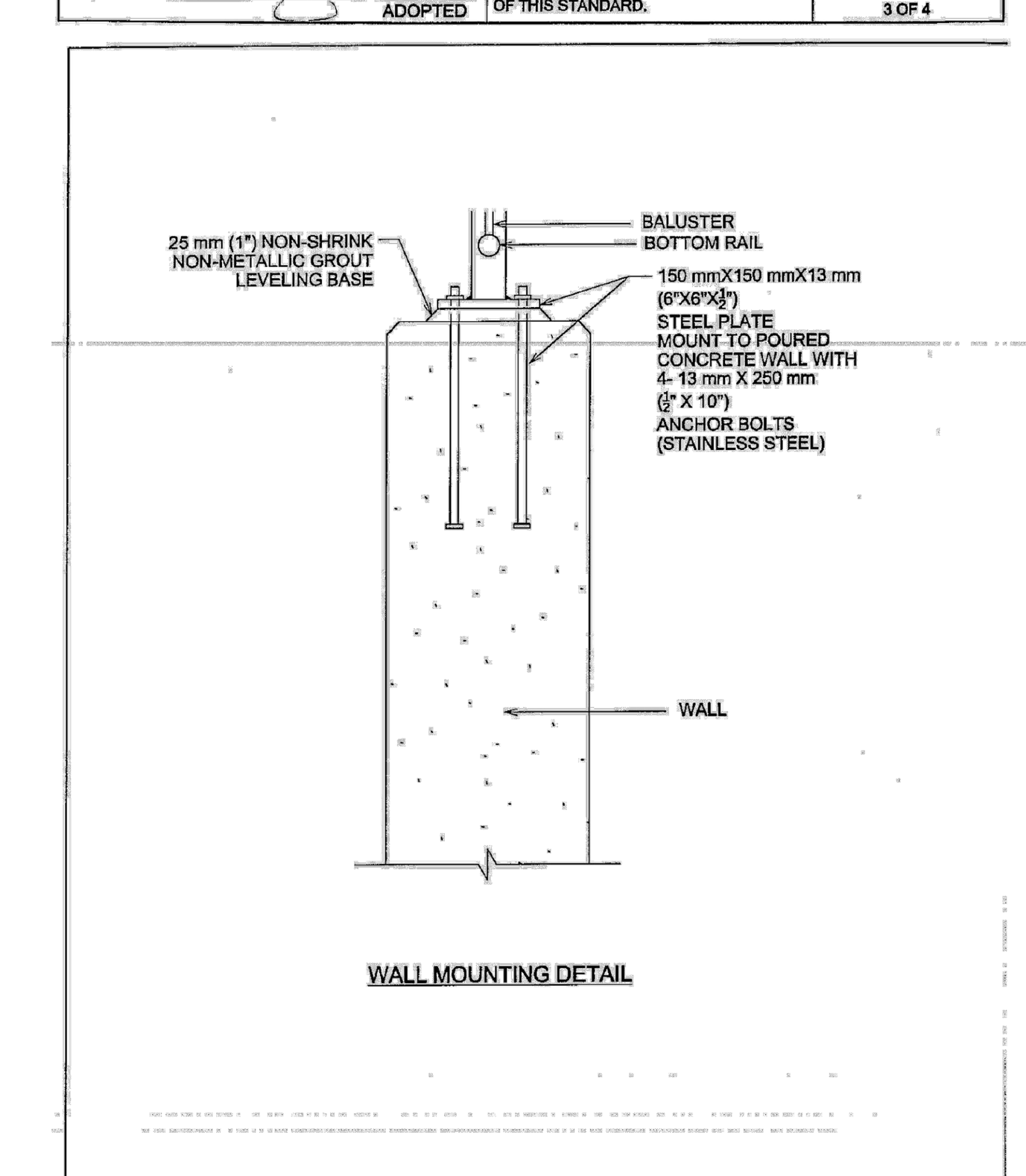


NOTE:
1. CONTRACTOR SHALL HAND DIG AS NECESSARY TO PROVIDE STABLE SIDE SLOPES FOR PIER.
2. ENTIRE EXCAVATION SHALL BE FILLED WITH CONCRETE SUCH THAT MINIMUM 300 mm (12") DIAMETER WITH REINFORCEMENT IS MAINTAINED.
3. CONTRACTOR SHALL NOTIFY ENGINEER OR DESIGNATED REPRESENTATIVE 48 HOURS IN ADVANCE OF INSTALLATION FOR OBSERVATION.

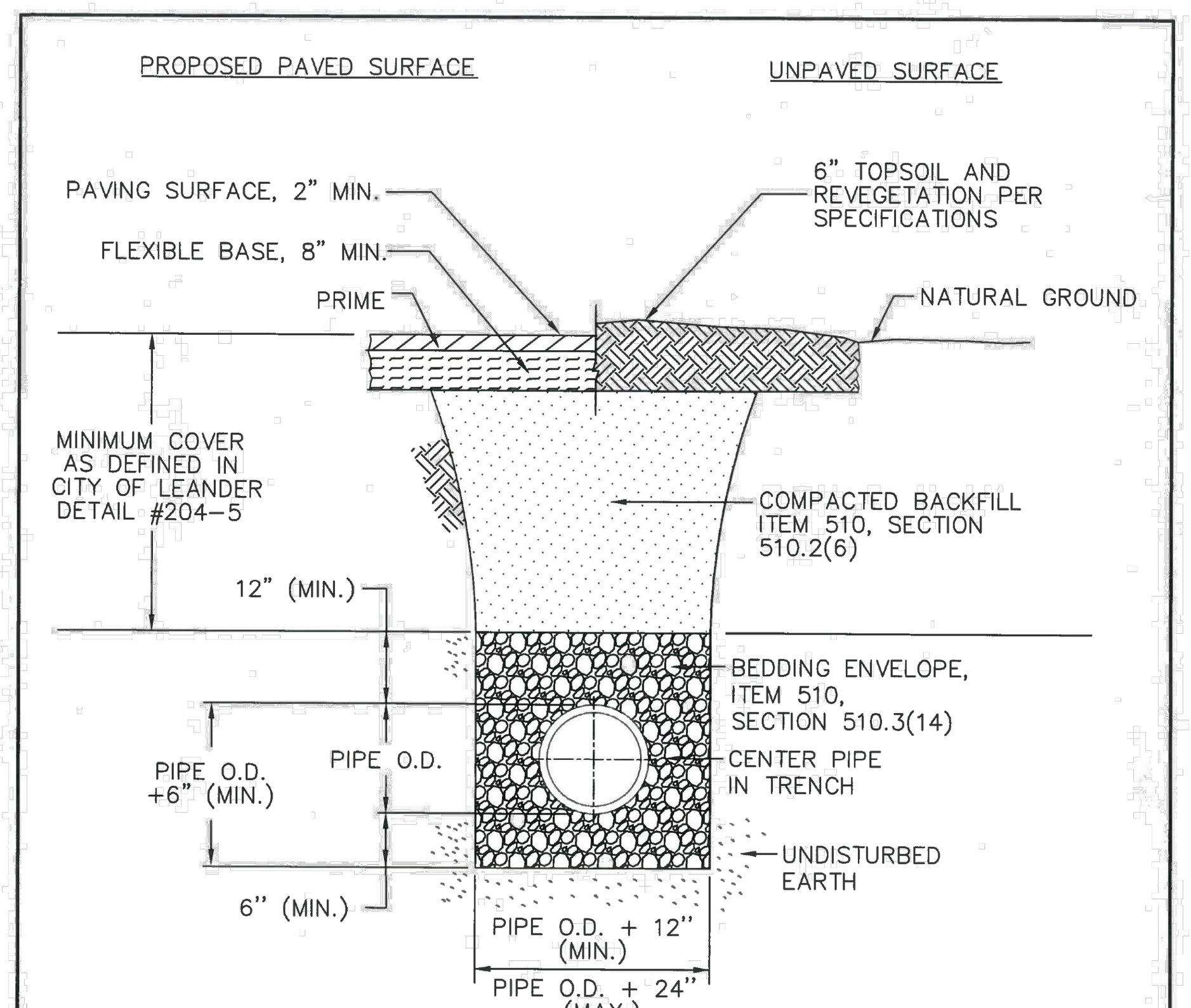
CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS | ADOPTED 1/4/10 | PEDESTRIAN ADA HANDRAIL OPTION 1 | THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD. | STANDARD NO. 707S-2 2 OF 4



CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS | ADOPTED 1/4/10 | PEDESTRIAN ADA HANDRAIL OPTION 1 | THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD. | STANDARD NO. 707S-2 3 OF 4



CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS | ADOPTED 1/4/10 | PEDESTRIAN ADA HANDRAIL OPTION 1 | THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD. | STANDARD NO. 707S-2 4 OF 4

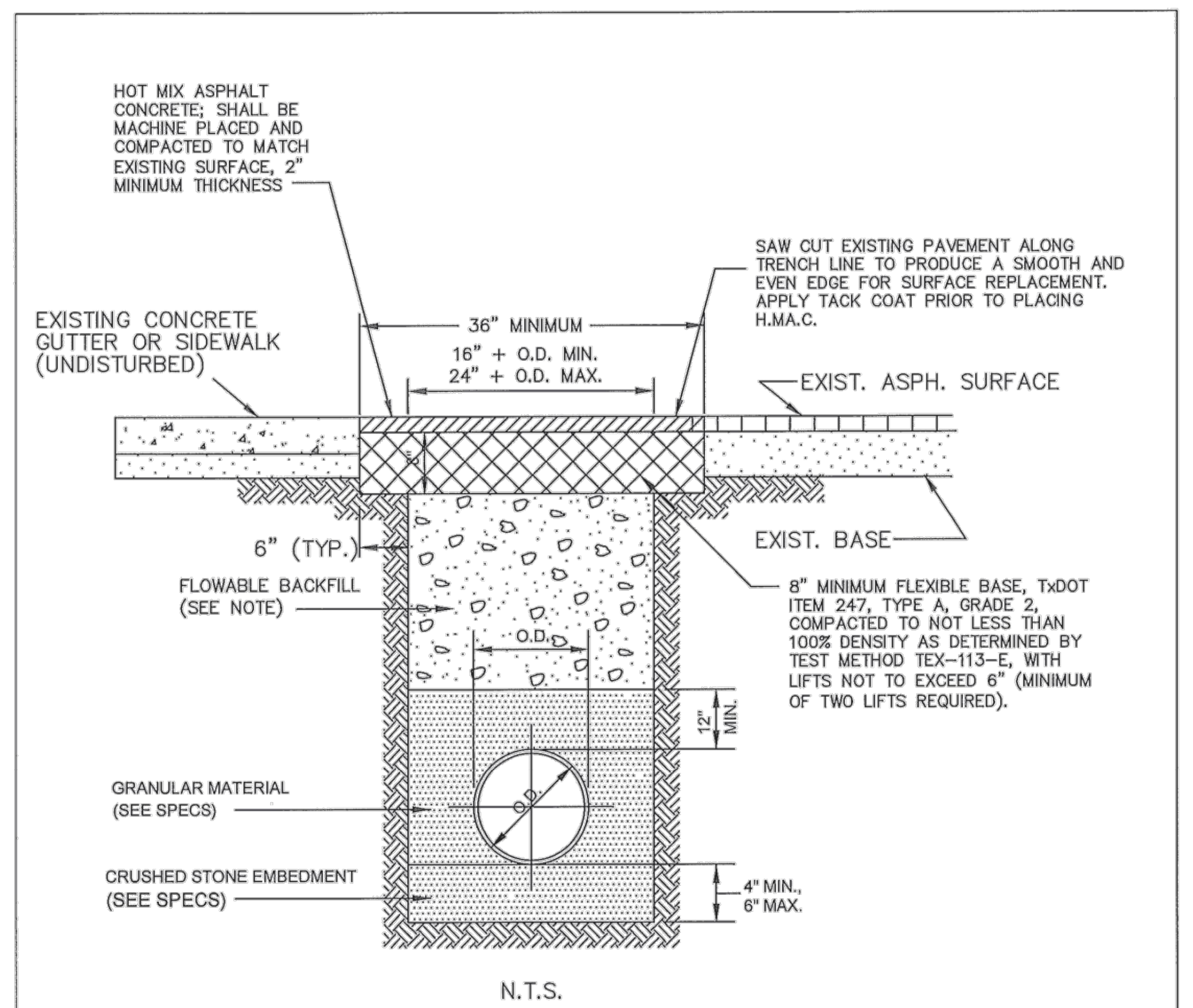


NOTES:
1. SEE CITY OF LEANDER DETAIL #104-2 FOR TYPICAL PIPE TRENCH AND EMBEDMENT IN EXISTING PAVED SURFACES.

REFERENCES:
1. CITY OF AUSTIN STANDARD SPECIFICATION MANUAL ITEM 510, SECTION 510.2(6), "SELECT BACKFILL OR BORROW"; SECTION 510.3(14), "PIPE BEDDING ENVELOPE"

STATE OF TEXAS MICHAEL LAFFERTY 118708 LICENSED PROFESSIONAL ENGINEER 2019-05-23

City Of Leander, Texas
DETAIL #104-1
TYPICAL PIPE TRENCH AND EMBEDMENT



NOTES:

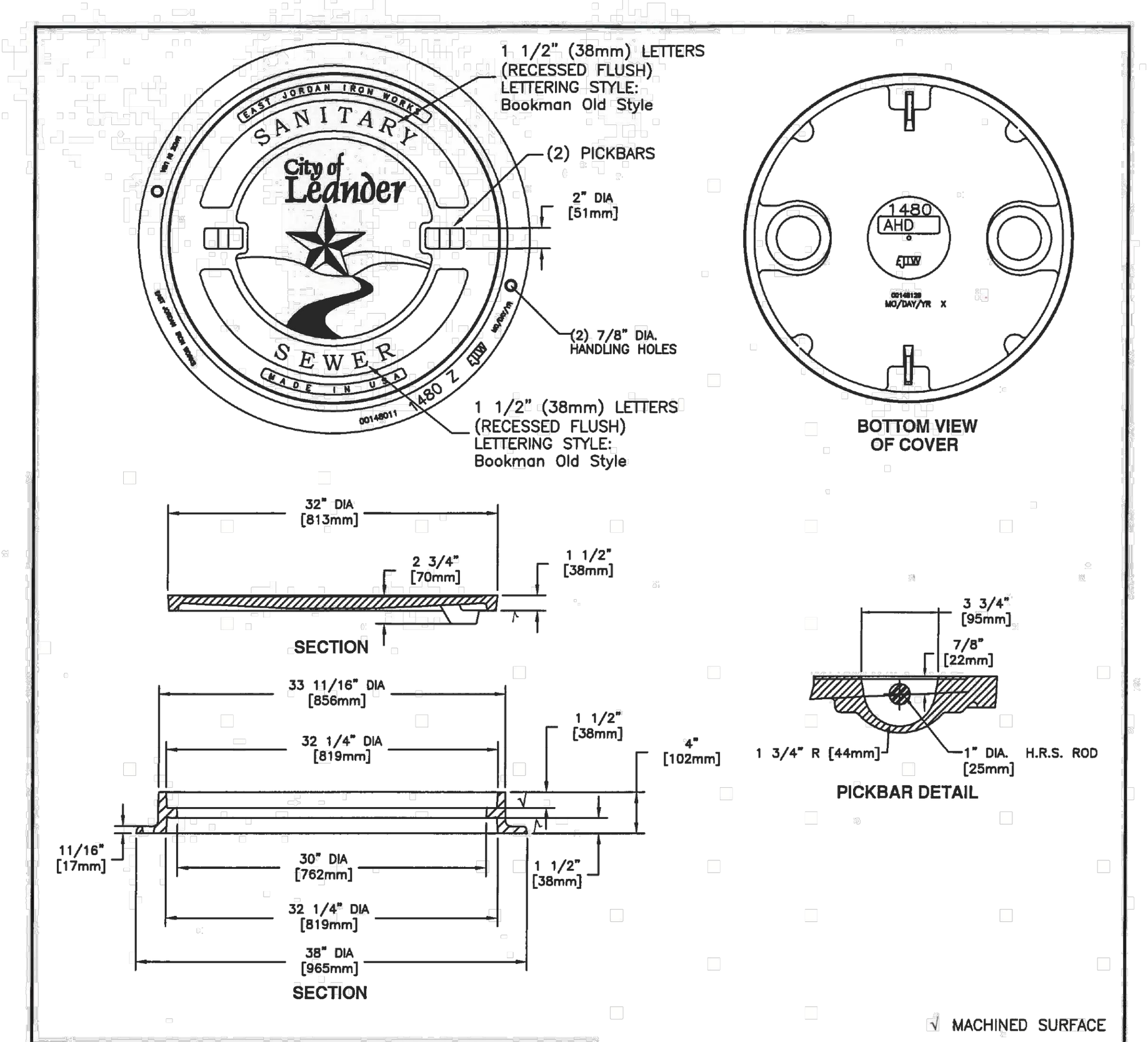
FLOWABLE BACKFILL SHALL CONSIST OF A MIXTURE OF NATIVE SOILS OR MANUFACTURED MATERIALS, CEMENT AND/OR FLY ASH, AND WATER WHICH PRODUCES A MATERIAL WITH UNCONFINED COMPRESSIVE STRENGTH OF BETWEEN 250 AND 450 PSI AFTER 28 DAYS. ANY MATERIALS USED SHALL BE PRIMARILY GRANULAR, WITH A PLASTICITY INDEX <12 AND WITH 100% PASSING A 3/4 INCH SIEVE. THE FLOWABLE MIXTURE SHALL BE MIXED IN A PUG MILL, CONCRETE MIXER, OR TRANSIT MIXER AND SHALL HAVE A MINIMUM SLUMP OF 5 INCHES. THE FLOWABLE MIXTURE MUST BE ALLOWED TO SET PRIOR TO THE PACEMENT OF ANY OVERLAYING MATERIAL.

ONE CONCRETE CYLINDER WILL BE REQUIRED FOR TESTING AND WILL BE FABRICATED BY THE CITY INSPECTOR.

THE PUBLIC WORKS DEPARTMENT IS TO BE CONTACTED AT 259-2640 PRIOR TO COMMENCEMENT OF BACKFILL OPERATIONS.

STATE OF TEXAS WAYNE S. WATTS 86134 LICENSED PROFESSIONAL ENGINEER 07/20/12

City Of Leander, Texas
DETAIL #104-2
TYPICAL TRENCH AND H.M.A.C. SURFACE REMOVAL AND REPLACEMENT DETAIL

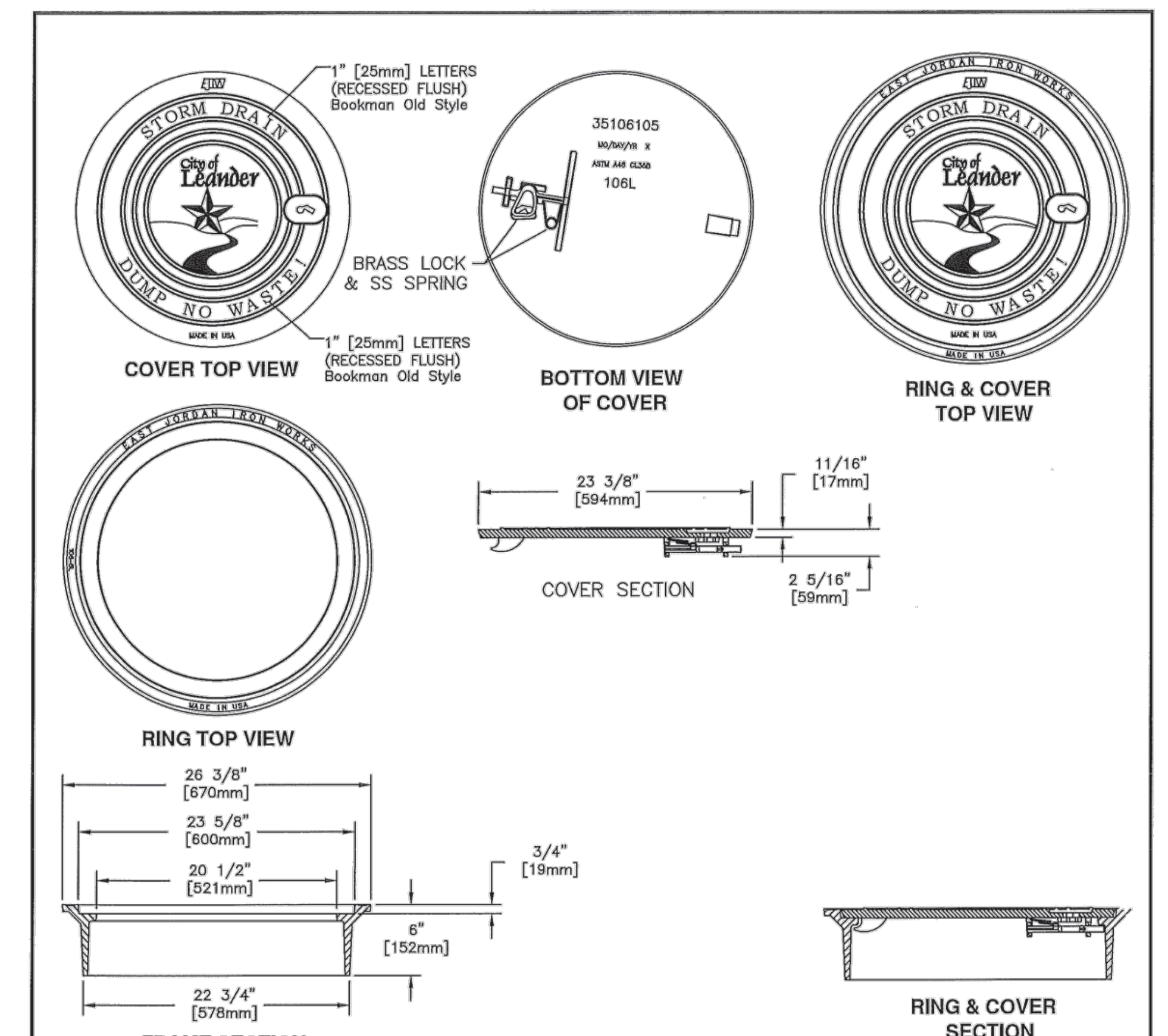


MANHOLE ASSEMBLY	EST. WT. COVER: 200 LBS 91kg; FRAME: 155 LBS 70kg; UNIT: 355 LBS 161kg
EAST JORDAN IRON WORKS PRODUCT NO. 00148107 OR NEENAH FOUNDRY DF-1274 LEANDER SANITARY	OPEN AREA N/A; MAT'L SPEC. COVER – GRAY IRON ASTM A48 CL35B; FRAME – GRAY IRON ASTM A48 CL35B

LOAD RATING: HEAVY DUTY (H20)

STATE OF TEXAS WAYNE S. WATTS 86134 LICENSED PROFESSIONAL ENGINEER 02/22/16

City Of Leander, Texas
DETAIL #107-1
SANITARY SEWER MANHOLE COVER



MANHOLE ASSEMBLY WITH LOCK	EST. WT. COVER: 86 LBS 39kg; RING: 95 LBS 43kg; TOTAL: 181 LBS 82kg
EAST JORDAN IRON WORKS PRODUCT NO. 35505205 OR APPROVED EQUAL	OPEN AREA N/A; MAT'L SPEC. COVER – GRAY IRON ASTM A48 CL35B; FRAME – GRAY IRON ASTM A48 CL35B

LOAD RATING: NON-TRAFFIC

STATE OF TEXAS WAYNE S. WATTS 86134 LICENSED PROFESSIONAL ENGINEER 02/04/14

City Of Leander, Texas
DETAIL #107-2
STORM SEWER INLET COVER (LOCKING)

GATEWAY 29 WPAP / SCS
OVERALL SUBDIVISION IMPROVEMENTS
STANDARD DETAILS SHEET 1
LEANDER, WILLIAMSON COUNTY, TEXAS

REVISIONS

NO.	DESCRIPTION	BY	DATE

DATE: 03/13/2024
DESIGNED BY: CRH
DRAWN BY: LJA
CHECKED BY: CRH
DRAWING NAME: A633-0401-P-DT01_WPAP

03/13/2024 STATE OF TEXAS CHARLES R. HAGER V 127034 LICENSED PROFESSIONAL ENGINEER

LJA Engineering, Inc.
7500 Rialto Boulevard
Building II, Suite 100
Austin, Texas 78735
Phone 512.439.4700
Fax 512.439.4716
FRN-F-1386

JOB NUMBER:

DT01

SHEET NO. 55 OF 90 SHEETS

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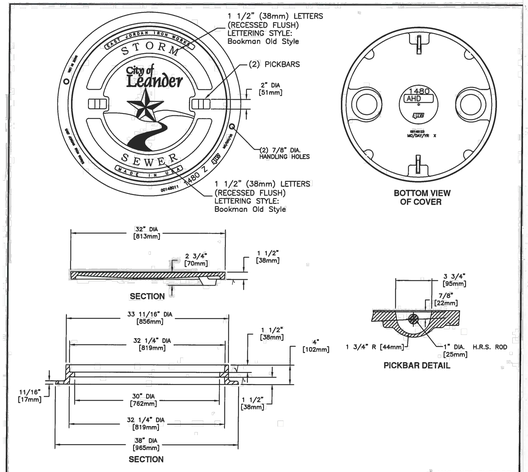
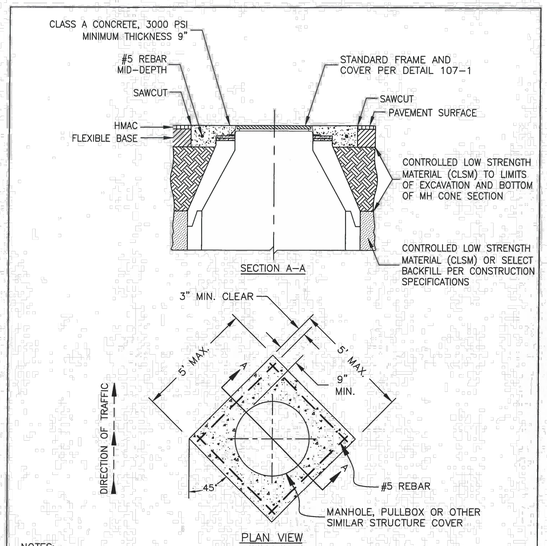
User: agetsinger
Last Modified: Mar. 13, 24 - 14:05
Plot Date/Time: Mar. 13, 24 - 14:55:00



MANHOLE ASSEMBLY	EST. WT. COVER: 200 LBS 91kg FRAME: 155 LBS 70kg UNIT: 355 LBS 161kg
EAST JORDAN IRON WORKS PRODUCT NO. 00148105 OR NEENAH FOUNDRY DF-1274 LEANDER STORM	OPEN AREA N/A
	MAT'L SPEC. COVER – GRAY IRON ASTM A48 CL35B FRAME – GRAY IRON ASTM A48 CL35B
	LOAD RATING **HEAVY DUTY (H20)**

STATE OF TEXAS · WAYNE S. WATTS · 86134 · LICENSED PROFESSIONAL ENGINEER · 02/22/16

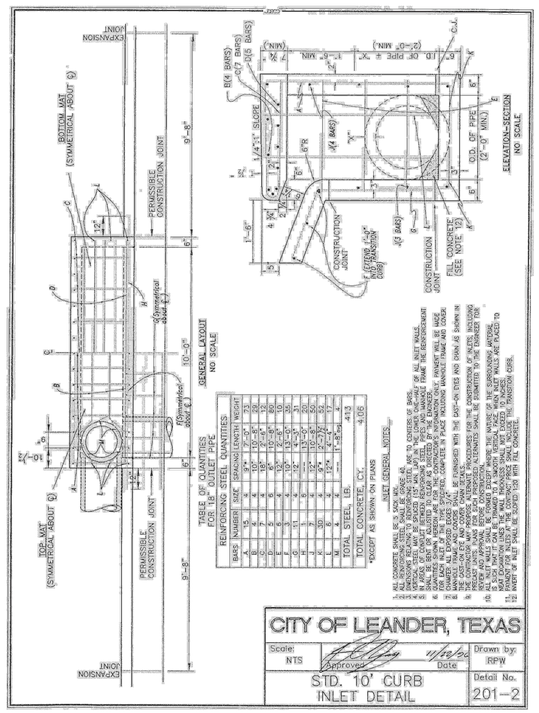
City Of Leander, Texas
DETAIL #107-3
STORM SEWER MANHOLE COVER
[HEAVY DUTY]



NOTES:
1. CONCRETE SHALL BE CLASS A, 3000 PSI MINIMUM AND SHALL BE REINFORCED WITH #5 BARS AS SHOWN. THE CONCRETE SHALL EXTEND TO SAW CUT PAVEMENT EDGE.
2. PLACEMENT OF CLSM SHALL BE BELOW FLEXIBLE BASE LAYER TO LIMITS OF EXCAVATION.
3. INSTALLATION OF HMAC OVER CONCRETE ADJUSTMENT SHALL NOT BE ALLOWED.
4. INSTALLATION OF CONCRETE CASTING ADJUSTMENT IS REQUIRED FOR ALL TYPES OF MANHOLES TO BE LOCATED IN THE ROADWAY.

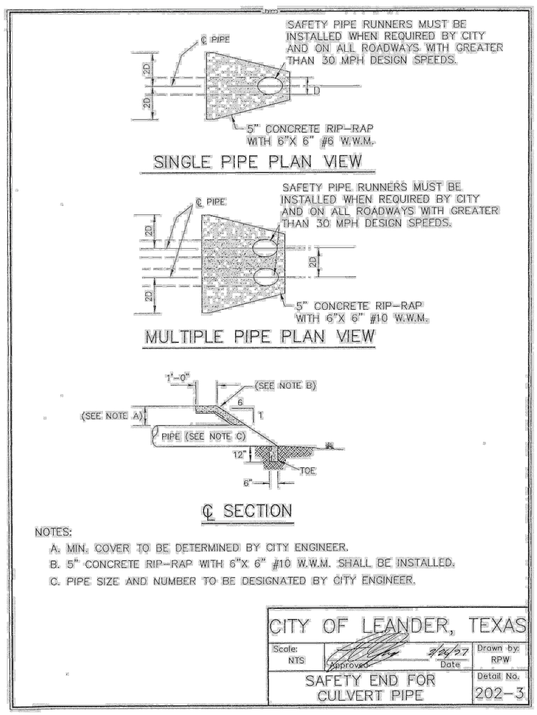
STATE OF TEXAS · WAYNE S. WATTS · 86134 · LICENSED PROFESSIONAL ENGINEER · 02/22/17

City Of Leander, Texas
DETAIL #107-4
MANHOLE CASTING ADJUSTMENT



CITY OF LEANDER, TEXAS

Scale: NTS	Approved / Date 11/22/02	Drawn by: RPW
STD. 10' CURB INLET DETAIL		Detail No. 201-2



NOTES:
A. MIN. COVER TO BE DETERMINED BY CITY ENGINEER.
B. 5" CONCRETE RIP–RAP WITH 6"X 6" #10 W.W.M. SHALL BE INSTALLED.
C. PIPE SIZE AND NUMBER TO BE DESIGNATED BY CITY ENGINEER.

CITY OF LEANDER, TEXAS

Scale: NTS	Approved / Date 9/24/97	Drawn by: RPW
SAFETY END FOR CULVERT PIPE		Detail No. 202-3

ARTERIAL ROADWAYS	
DROPOFF HEIGHT/ CONDITION	RAIL OPTIONS
< 30" DROPOFF	TXDOT PRD-13 TY C or TY E
≥ 30" DROPOFF OR ALONG BICYCLE PATH	TXDOT PRD-13 TY E

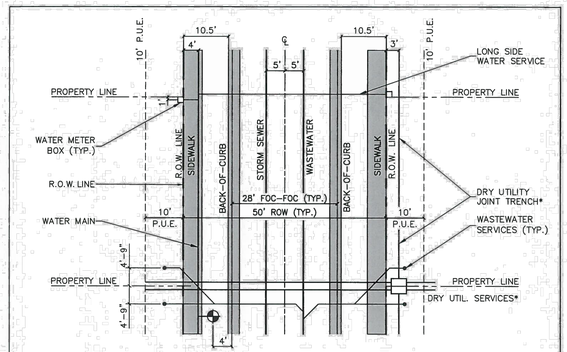
ALL OTHER ROADWAY CLASSIFICATIONS	
DROPOFF HEIGHT/ CONDITION	RAIL OPTIONS
< 30" DROPOFF	TXDOT PRD-13 TY C, TXDOT PRD-13 TY E, or COA 707S-2
≥ 30" DROPOFF OR ALONG BICYCLE PATH	TXDOT PRD-13 TY E or COA 707S-2

NOTES:
1. BICYCLE PATHS INCLUDE ALL SIDEWALKS OR PATHS GREATER THAN SIX FEET (6') IN WIDTH.
2. HANDRAIL TYPE AND FINISH SHALL REMAIN CONSISTENT AT EACH INSTALLATION LOCATION (CULVERT CROSSING, DROPOFF, ETC.).
3. ALL HANDRAIL INSTALLED ALONG ARTERIAL ROADWAYS SHALL BE GALVANIZED.
4. HANDRAIL INSTALLED ALONG ALL OTHER ROADWAYS SHALL BE GALVANIZED OR FACTORY POWDER–COATED BLACK.

REFERENCES:
1. CITY OF AUSTIN STANDARD NO. 707S–2 PEDESTRIAN HANDRAIL OPTION 1.
2. TEXAS DEPARTMENT OF TRANSPORTATION PEDESTRIAN HANDRAILS DETAIL PRD–13.

STATE OF TEXAS · MICHAEL LAFFERTY · 118708 · LICENSED PROFESSIONAL ENGINEER · 2020-04-07

City Of Leander, Texas
DETAIL #202–4
PEDESTRIAN HANDRAIL



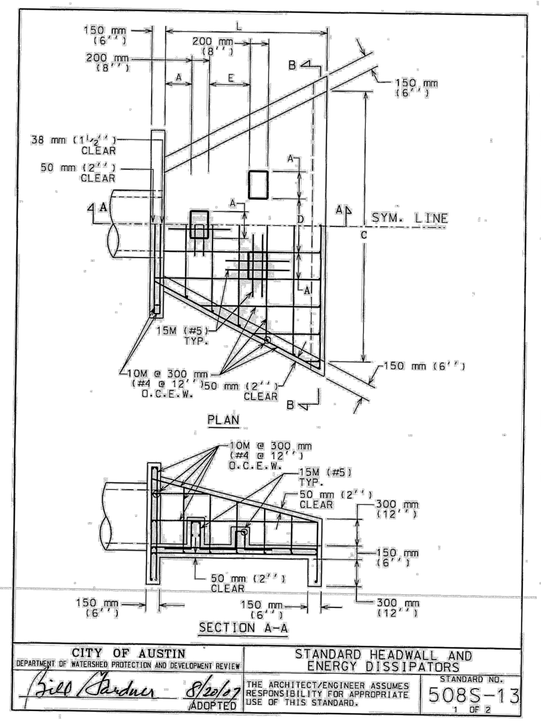
MINIMUM COVER BELOW FINISH–GRADE	
STORM SEWER	BELOW SUBGRADE
WASTEWATER	48"
WATER	36"
ELECTRIC PRIMARY*	30"
ELECTRIC SECONDARY*	24"
GAS*	24"
TELECOMMUNICATIONS*	24"

RESIDENTIAL STREET
NOT TO SCALE

*NOTE:
ALL GAS, ELECTRIC, AND TELECOMMUNICATION LINES SHALL BE INSTALLED PER THE UTILITY PROVIDER'S STANDARDS AND SPECIFICATIONS.

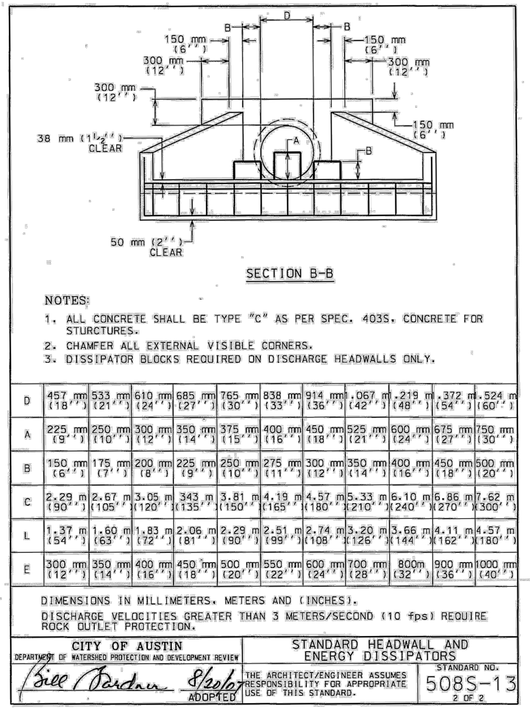
STATE OF TEXAS · WAYNE S. WATTS · 86134 · LICENSED PROFESSIONAL ENGINEER · 2/05/18

City Of Leander, Texas
DETAIL #204–5
UTILITY ASSIGNMENTS
WITHIN RESIDENTIAL DEVELOPMENT



CITY OF AUSTIN
DEPARTMENT OF WATERSHED PROTECTION AND DEVELOPMENT REVIEW
Bill Bardon 8/20/07 ADOPTED

STANDARD HEADWALL AND ENERGY DISSIPATORS
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.
STANDARD NO. 508S-13
1 OF 2



NOTES:
1. ALL CONCRETE SHALL BE TYPE "C" AS PER SPEC. 403S. CONCRETE FOR STURCTURES.
2. CHAMFER ALL EXTERNAL VISIBLE CORNERS.
3. DISSIPATOR BLOCKS REQUIRED ON DISCHARGE HEADWALLS ONLY.

D	457 mm (18")	533 mm (21")	610 mm (24")	685 mm (27")	765 mm (30")	838 mm (33")	914 mm (36")	1.067 m (42")	1.219 m (48")	1.372 m (54")	1.524 m (60")			
A	225 mm (9")	250 mm (10")	300 mm (12")	350 mm (14")	375 mm (15")	400 mm (16")	450 mm (18")	525 mm (21")	600 mm (24")	675 mm (27")	750 mm (30")			
B	150 mm (6")	175 mm (7")	200 mm (8")	225 mm (9")	250 mm (10")	275 mm (11")	300 mm (12")	350 mm (14")	400 mm (16")	450 mm (18")	500 mm (20")			
C	2.29 m (90")	2.67 m (105")	3.05 m (120")	3.43 m (135")	3.81 m (150")	4.19 m (165")	4.57 m (180")	5.33 m (210")	6.10 m (240")	6.86 m (270")	7.62 m (300")			
L	1.37 m (54")	1.60 m (63")	1.83 m (72")	2.06 m (81")	2.29 m (90")	2.51 m (99")	2.74 m (108")	3.20 m (126")	3.66 m (144")	4.11 m (162")	4.57 m (180")			
E	300 mm (12")	350 mm (14")	400 mm (16")	450 mm (18")	500 mm (20")	550 mm (22")	600 mm (24")	700 mm (28")	800m (32")	900 mm (36")	1000 mm (40")			

DIMENSIONS IN MILLIMETERS. METERS AND (INCHES).
DISCHARGE VELOCITIES GREATER THAN 3 METERS/SECOND (10 fps) REQUIRE ROCK OUTLET PROTECTION.

CITY OF AUSTIN
DEPARTMENT OF WATERSHED PROTECTION AND DEVELOPMENT REVIEW
Bill Bardon 8/20/07 ADOPTED

STANDARD HEADWALL AND ENERGY DISSIPATORS
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.
STANDARD NO. 508S-13
2 OF 2

GATEWAY 29 WPAP / SCS
OVERALL SUBDIVISION IMPROVEMENTS
STANDARD DETAILS SHEET 2
LEANDER, WILLIAMSON COUNTY, TEXAS

REVISIONS

NO.	DESCRIPTION	BY	DATE

DATE: 03/13/2024
DESIGNED BY: CRH
DRAWN BY: LJA
CHECKED BY: CRH
DRAWING NAME: A633-0401-P-DT01.WPAP

03/13/2024
STATE OF TEXAS · CHARLES R. HAGER · 127034 · LICENSED PROFESSIONAL ENGINEER

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Austin, Texas 78735
Phone 512.439.4700
Fax 512.439.4716
FRN-F-1386

JOB NUMBER:
DT02
SHEET NO.
56
OF 90 SHEETS

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Last Modified: Mar. 13, 24 - 14:05
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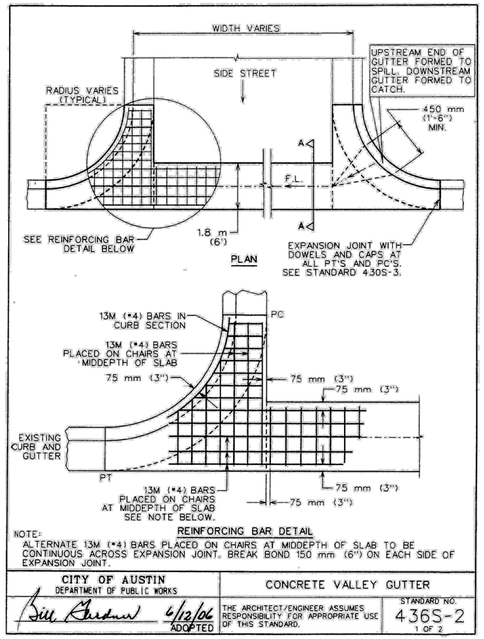
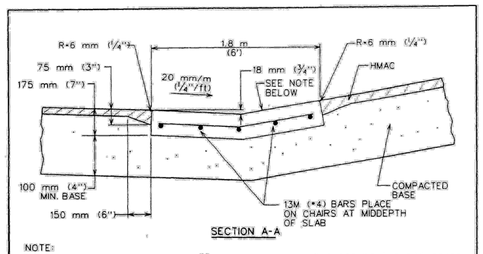


NOTE:
ALTERNATE 13M (#4) BARS PLACED ON CHAIRS AT MIDDEPTH OF SLAB TO BE CONTINUOUS ACROSS EXPANSION JOINT. BREAK BOND 150 mm (6") ON EACH SIDE OF EXPANSION JOINT.

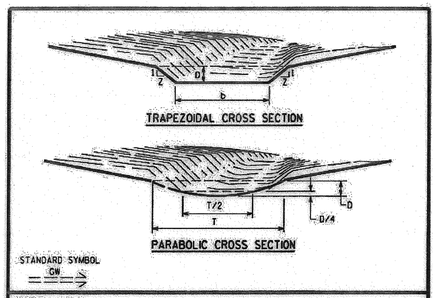
CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS	CONCRETE VALLEY GUTTER	
Bill Gardner 6/12/06 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 436S-2 1 OF 2



NOTE:
ADJUST SLOPE FROM 20 mm/m (1/4"/ft) MINIMUM TO THE SLOPE OF THE SIDE STREET.

NOTES:
1. MATERIALS AND CONSTRUCTION METHODS SHALL CONFORM TO THE CITY OF AUSTIN STANDARD SPECIFICATIONS.
2. CONCRETE FOR THE VALLEY GUTTER SHALL BE CLASS A, ITEM 403S, "CONCRETE FOR STRUCTURES".
3. MONOLITHIC CURB AND GUTTER SHALL BE MEASURED BY PLAN QUANTITY PER SQUARE FEET AND PAID AS VALLEY GUTTER.
4. THE UPSTREAM CURB MID POINT MUST BE AT OR LOWER THAN THE BEGINNING P.C. AND 0.5% MINIMUM HIGHER THAN THE OPPOSING MID POINT.
5. ALLOWABLE CONSTRUCTION JOINT AT THE CENTER LINE WHEN TRAFFIC FLOW MUST BE MAINTAINED, CONSTRUCTED AS A CONTROL JOINT.

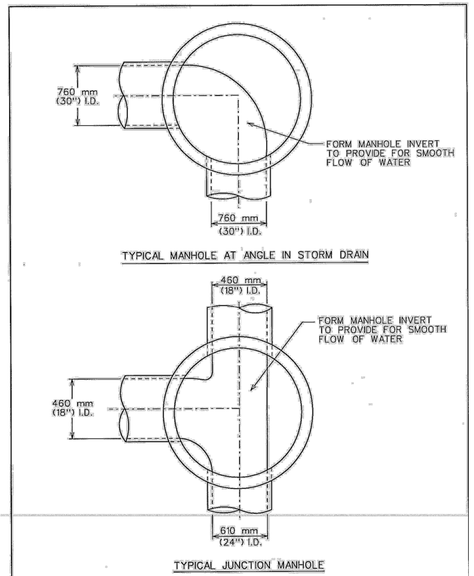
CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS	CONCRETE VALLEY GUTTER	
Bill Gardner 6/12/06 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 436S-2 2 OF 2



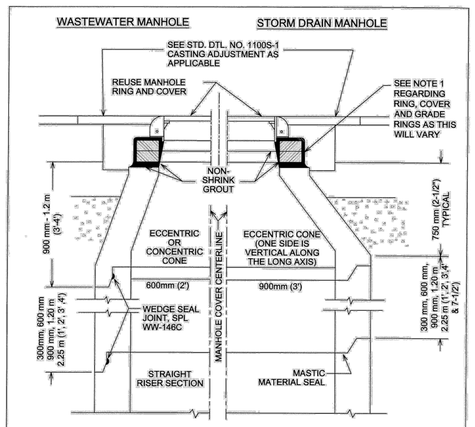
GENERAL NOTES:

1. EXCEPT AS INDICATED ON THE DRAWINGS OR DIRECTED BY THE ENGINEER OR DESIGNATED REPRESENTATIVE, ALL TREES, BRUSH, STUMPS, OBSTRUCTIONS AND OTHER OBJECTIONABLE MATERIAL SHALL BE REMOVED AND DISPOSED OF SO AS NOT TO INTERFERE WITH THE PROPER FUNCTIONING OF THE WATERWAY.
2. THE WATERWAY SHALL BE EXCAVATED OR SHAPED TO LINE, GRADE, TYPICAL SECTIONS AND CROSS-SECTION INDICATED ON THE DRAWINGS AND SHALL BE FREE OF BANK PROJECTIONS OR OTHER IRREGULARITIES, WHICH COULD IMPEDE NORMAL FLOW.
3. FILL SHALL CONFORM TO STANDARD SPECIFICATION ITEM NO. 132S, "EMBANKMENT".
4. EARTHEN CHANNELS SHALL ALWAYS BE STABILIZED WITH THE APPROPRIATE SOIL RETENTION BLANKET WHICH SHALL CONFORM TO STANDARD SPECIFICATION ITEM NO. 606S, "SOIL RETENTION BLANKET".

CITY OF AUSTIN WATERSHED PROTECTION DEPARTMENT	GRASS LINED SWALE	
ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 627S-1

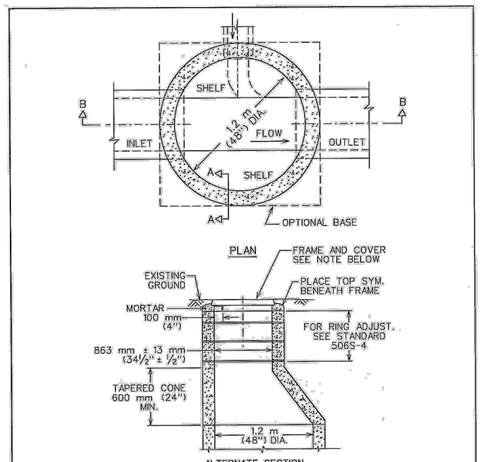


CITY OF AUSTIN DEPARTMENT OF WATERSHED PROTECTION AND DEVELOPMENT REVIEW	MANHOLE INVERT PLAN	
George E. Dowdy 2/14/07 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 506S-1



1. SEE "MINOR MANHOLE HEIGHT ADJUSTMENT" STANDARDS 506S-4 AND 506S-4A FOR ADDITIONAL INFORMATION.
2. MANHOLE SECTIONS TEMPORARILY REMOVED FOR ROADWAY CONSTRUCTION MAY BE REUSED ONLY WITH WRITTEN APPROVAL OF THE INSPECTOR. WEDGE SEALS SHALL NOT BE REUSED.
3. ANY COMBINATION OF REMOVING THE GRADE RINGS, AND/OR THE MANHOLE CONE, AND/OR THE STRAIGHT RISER SECTION OF THE MANHOLE SHALL BE ACCEPTABLE TO TEMPORARILY LOWER THE MANHOLE GRADE FOR RECONSTRUCTION.
4. WHILE THE MANHOLE IS TEMPORARILY LOWERED, A SHEET OF STEEL SUITABLE TO SUPPORT ALL IMPOSED LOADS SHALL BE USED TO COVER THE OPENING. STEEL SHALL BE PLACED SO THE SHEET WILL NOT MOVE UNDER ANY & ALL TRAFFIC CONDITIONS.
5. SUB-GRADE AND BASE MATERIALS SHALL BE COMPACTED TO 95% AND 100% DENSITIES, RESPECTIVELY. COMPACTION SHALL BE BY MECHANICAL TAMPING TO THE DENSITIES SPECIFIED, SEE STD. DTL. NO .1100S-1.

CITY OF AUSTIN AUSTIN WATER UTILITY	MAJOR MANHOLE ADJUSTMENT	
Kathi K Flowers 8-31-2011	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 506S-2

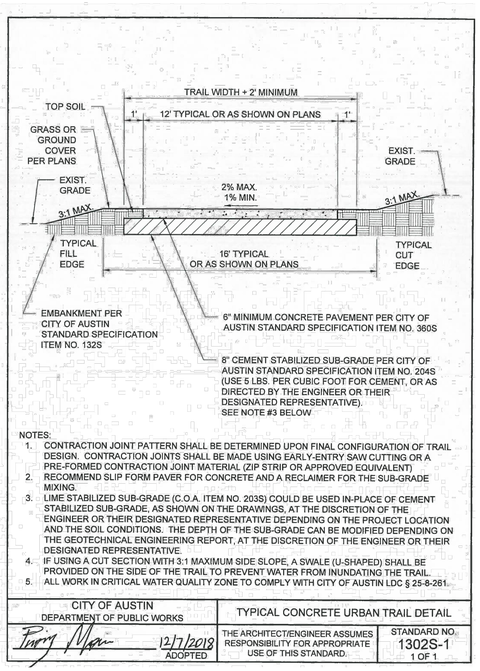


NOTE:
USE 800 mm (32") FRAME AND COVER.

MINIMUM MANHOLE DIA.	MINIMUM PIPE SIZE
1.2 m (4')	450 TO 600 mm (18 TO 24")
1.5 m (5')	750 mm TO 1.1 m (30 TO 42")
1.8 m (6')	1.2 TO 1.4 m (48 TO 54")
2.1 m (7')	1.5 TO 1.7 m (60 TO 66")

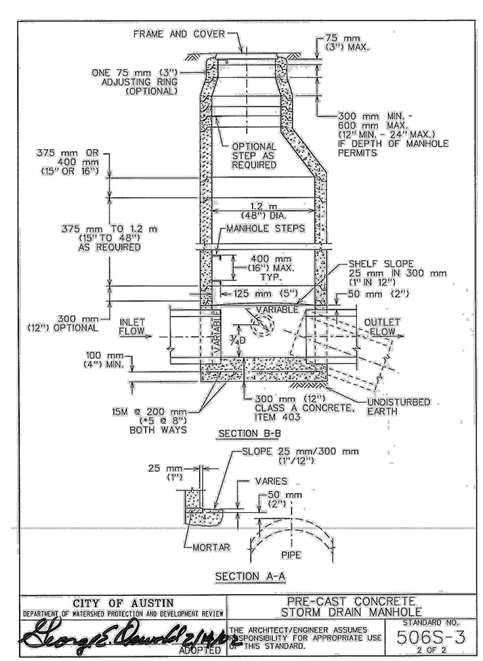
SIZE TO BE USED IS DEPENDENT ON DRAIN ANGLES.

CITY OF AUSTIN DEPARTMENT OF WATERSHED PROTECTION AND DEVELOPMENT REVIEW	PRE-CAST CONCRETE STORM DRAIN MANHOLE	
George E. Dowdy 2/14/07 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 506S-3 1 OF 2



NOTES:
1. CONTRACTION JOINT PATTERN SHALL BE DETERMINED UPON FINAL CONFIGURATION OF TRAIL DESIGN. CONTRACTION JOINTS SHALL BE MADE USING EARLY-ENTRY SAW CUTTING OR A PRE-FORMED CONTRACTION JOINT MATERIAL (ZIP STRIP OR APPROVED EQUIVALENT).
2. RECOMMEND SLIP FORM PAVER FOR CONCRETE AND A RECLAIMER FOR THE SUB-GRADE MIXING.
3. LIME STABILIZED SUB-GRADE (C.O.A. ITEM NO. 203S) COULD BE USED IN-PLACE OF CEMENT STABILIZED SUB-GRADE, AS SHOWN ON THE DRAWINGS, AT THE DISCRETION OF THE ENGINEER OR THEIR DESIGNATED REPRESENTATIVE DEPENDING ON THE PROJECT LOCATION AND THE SOIL CONDITIONS. THE DEPTH OF THE SUB-GRADE CAN BE MODIFIED DEPENDING ON THE GEOTECHNICAL ENGINEERING REPORT, AT THE DISCRETION OF THE ENGINEER OR THEIR DESIGNATED REPRESENTATIVE.
4. IF USING A CUT SECTION WITH 3:1 MAXIMUM SIDE SLOPE, A SWALE (U-SHAPED) SHALL BE PROVIDED ON THE SIDE OF THE TRAIL TO PREVENT WATER FROM INUNDATING THE TRAIL.
5. ALL WORK IN CRITICAL WATER QUALITY ZONE TO COMPLY WITH CITY OF AUSTIN LDC § 25-8-261.

CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS	TYPICAL CONCRETE URBAN TRAIL DETAIL	
Perry Lorn 12/7/2018 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 1302S-1 1 OF 1



CITY OF AUSTIN DEPARTMENT OF WATERSHED PROTECTION AND DEVELOPMENT REVIEW	PRE-CAST CONCRETE STORM DRAIN MANHOLE	
George E. Dowdy 2/14/07 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 506S-3 2 OF 2

GATEWAY 29 WPAP / SCS
OVERALL SUBDIVISION IMPROVEMENTS

STANDARD DETAILS SHEET 3

LEANDER, WILLIAMSON COUNTY, TEXAS

REVISIONS

NO.	DESCRIPTION	BY	DATE

DATE: 03/13/2024
DESIGNED BY: CRH
DRAWN BY: RMB
CHECKED BY: CRH
DRAWING NAME: A633-0401-P-DT03_WPAP.dwg

03/13/2024
STATE OF TEXAS
CHARLES R. HAGER V
127034
LICENSED PROFESSIONAL ENGINEER

LJA Engineering, Inc.
7500 Rialto Boulevard
Building II, Suite 100
Austin, Texas 78735
Phone 512.439.4700
Fax 512.439.4716
FRN-F-1386

JOB NUMBER:

DT03

SHEET NO.
57
OF 90 SHEETS

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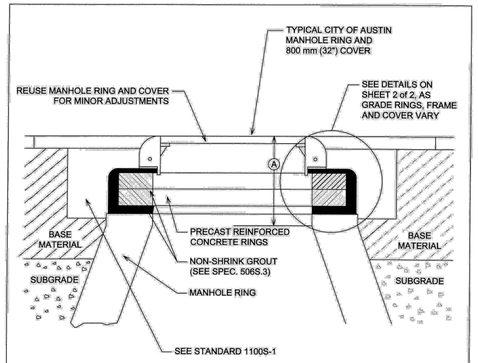
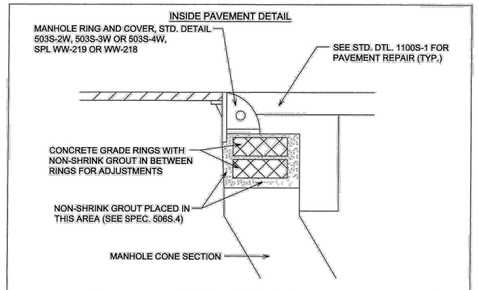
User: cgallagher
Last Modified: Mar. 13, 24 - 14:05
Plot Date/Time: Mar. 13, 24 - 14:50:30



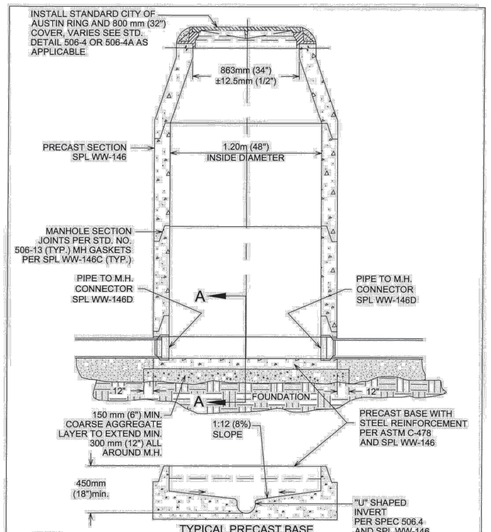
NOTES:
1. NON-SHRINK GROUT SHALL NOT EXCEED 25 mm (1") IN ANY DIMENSION.
2. SUB-GRADE AND BASE MATERIALS SHALL BE COMPACTED ACCORDING TO ITEMS 201S AND 210S, RESPECTIVELY, OF THE CITY OF AUSTIN STANDARD SPECIFICATIONS.
3. REFER TO STANDARD 1100S-1 FOR REPAIRS AROUND MANHOLES.
4. SEE STANDARD 506S-4A FOR HDPE RING INSTALLATION (FOR USE IN PAVED AREAS ONLY).

CITY OF AUSTIN AUSTIN WATER UTILITY	MINOR MANHOLE ADJUSTMENT & NEW MANHOLE CONSTRUCTION	
Kathi K Flowers 8/31/2011	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 506S-4 1 OF 2



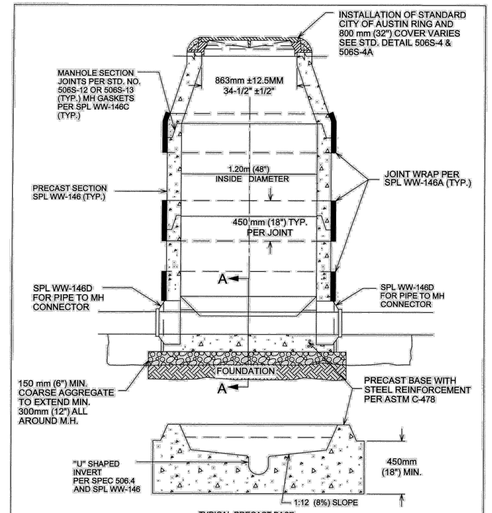
NOTES:
1. FOR USE IN UNPAVED AREAS ONLY
2. WHEN USED WITHIN 100-YEAR FLOODPLAIN, SEE DTL. 506S-6 FOR ADDITIONAL M.H. REQUIREMENTS.
3. DIMENSION B=150-300 mm (6"-12") FOR M.H. LOCATED IN 100-YR FLOOD PLAN. =50-300 mm (2"-12") FOR M.H. OUTSIDE 100-YR FLOOD PLAN.

CITY OF AUSTIN AUSTIN WATER UTILITY	MINOR MANHOLE ADJUSTMENT & NEW MANHOLE CONSTRUCTION	
Kathi K Flowers 8/31/2011	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 506S-4 2 OF 2



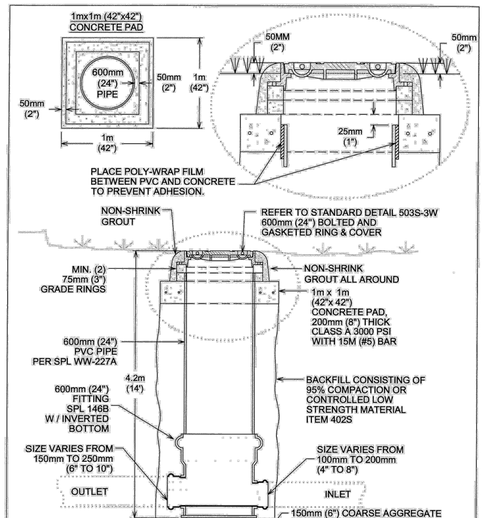
NOTE:
1. THE MANHOLE BASE SHALL BE BEDDED ON 150 mm (6") COARSE AGGREGATE. THE CONTRACTOR SHALL LEVEL AND PLUMB THE BASE PRIOR TO SETTING THE PRECAST MANHOLE RISER SECTIONS ON THE PRECAST CONCRETE BASE.
2. MH FOUNDATION SHALL MEET OR EXCEED STD. SPEC. 506.5B.

CITY OF AUSTIN AUSTIN WATER UTILITY	WASTEWATER MANHOLE ON PRECAST BASE	
Kathi K Flowers 8/31/2011	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 506S-10



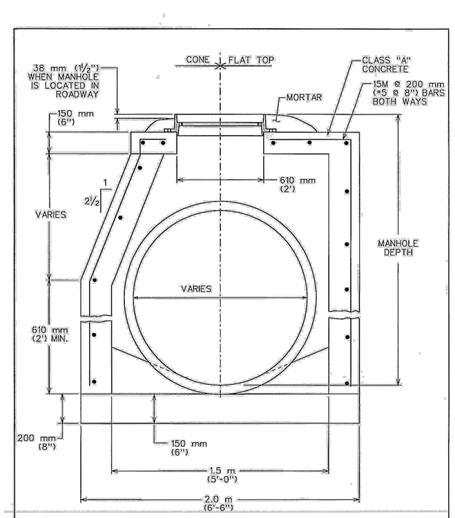
NOTE:
1. THE MANHOLE BASE SHALL BE BEDDED ON 150 mm (6") COARSE AGGREGATE. THE CONTRACTOR SHALL LEVEL AND PLUMB THE BASE PRIOR TO SETTING THE PRECAST MANHOLE RISER SECTIONS ON THE PRECAST CONCRETE BASE.
2. MANHOLE FOUNDATION SHALL MEET OR EXCEED SPEC. 506.5B.

CITY OF AUSTIN AUSTIN WATER UTILITY	WATER TIGHT WASTEWATER MANHOLE ON PRECAST BASE	
Kathi K Flowers 8/31/2011	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 506S-6

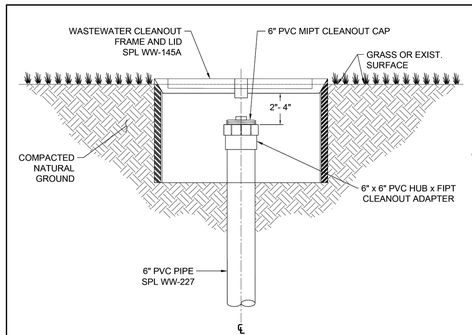


NOTE:
1. CLEAN OUT FOUNDATION SHALL MEET OR EXCEED STD, SPEC 506.5B.

CITY OF AUSTIN AUSTIN WATER UTILITY	LARGE DIAMETER CLEANOUT	
Kathi K Flowers 8/31/2011	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 506S-14

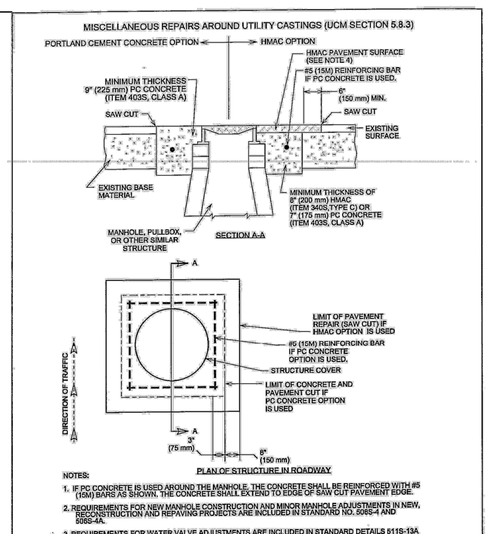


CITY OF AUSTIN DEPARTMENT OF WATERSHED PROTECTION AND DEVELOPMENT REVIEW	STORM DRAIN MANHOLE DETAIL	
George E Dowell 2/14/02 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 506S-11



NOTE:
1. WASTEWATER CLEANOUT FRAME AND LID SHALL NOT BE PLACED IN PAVED AREAS, INCLUDING SIDEWALKS, DRIVEWAYS, OR PARKING LOTS, AND MUST BE LOCATED A MINIMUM OF 6" FROM ALL PAVED AREAS.

CITY OF AUSTIN AUSTIN WATER	WASTEWATER CLEANOUT FRAME AND LID	
JEFF A. KYLE 08/16/2019 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 520-AW-03 1 OF 1



NOTES:
1. IF PC CONCRETE IS USED AROUND THE MANHOLE, THE CONCRETE SHALL BE REINFORCED WITH #5 (15M) BARS AS SHOWN. THE CONCRETE SHALL EXTEND TO EDGE OF SAW CUT PAVEMENT EDGE.
2. REQUIREMENTS FOR NEW MANHOLE CONSTRUCTION AND MINOR MANHOLE ADJUSTMENTS IN NEW, RECONSTRUCTION AND REPAVING PROJECTS ARE INCLUDED IN STANDARD NO. 506S-4 AND 506S-4A.
3. REQUIREMENTS FOR WATER VALVE ADJUSTMENTS ARE INCLUDED IN STANDARD DETAILS 511S-13A AND 511S-13B.
4. REPLACEMENT HMAC SURFACE LAYER SHALL BE OF THE TYPE AND THICKNESS BASED ON FUNCTIONAL CLASSIFICATION.
   a) MIN. 2" (50 mm) HMAC TYPE "D" FOR TRENCH REPAIR IN LOCAL/RESIDENTIAL STREETS.
   b) MIN. 3" (75 mm) HMAC TYPE "C" FOR TRENCH REPAIR IN COLLECTOR/ARTERIAL STREETS. SEE ITEM 340S, SECTION 340S.4.
5. REFER TO UCM SECTION 5.8.3 FOR ADDITIONAL BACKFILL REQUIREMENTS.

CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS	CASTING ADJUSTMENT	
1/4/10 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 1100S-1

GATEWAY 29 WPAP / SCS
OVERALL SUBDIVISION IMPROVEMENTS

STANDARD DETAILS SHEET 4

LEANDER, WILLIAMSON COUNTY, TEXAS

REVISIONS

NO.	DESCRIPTION	BY	DATE

DATE: 03/13/2024
DESIGNED BY: CRH
DRAWN BY: LJA
CHECKED BY: CRH
DRAWING NAME: A633-0401-P-DT01_WPAP

03/13/2024
STATE OF TEXAS
CHARLES R. HAGER V
127034
LICENSED PROFESSIONAL ENGINEER

LJA Engineering, Inc.
7500 Rialto Boulevard
Building II, Suite 100
Austin, Texas 78735
Phone 512.439.4700
Fax 512.439.4716
FRN-F-1386

JOB NUMBER:

DT04

SHEET NO.
58
OF 90 SHEETS

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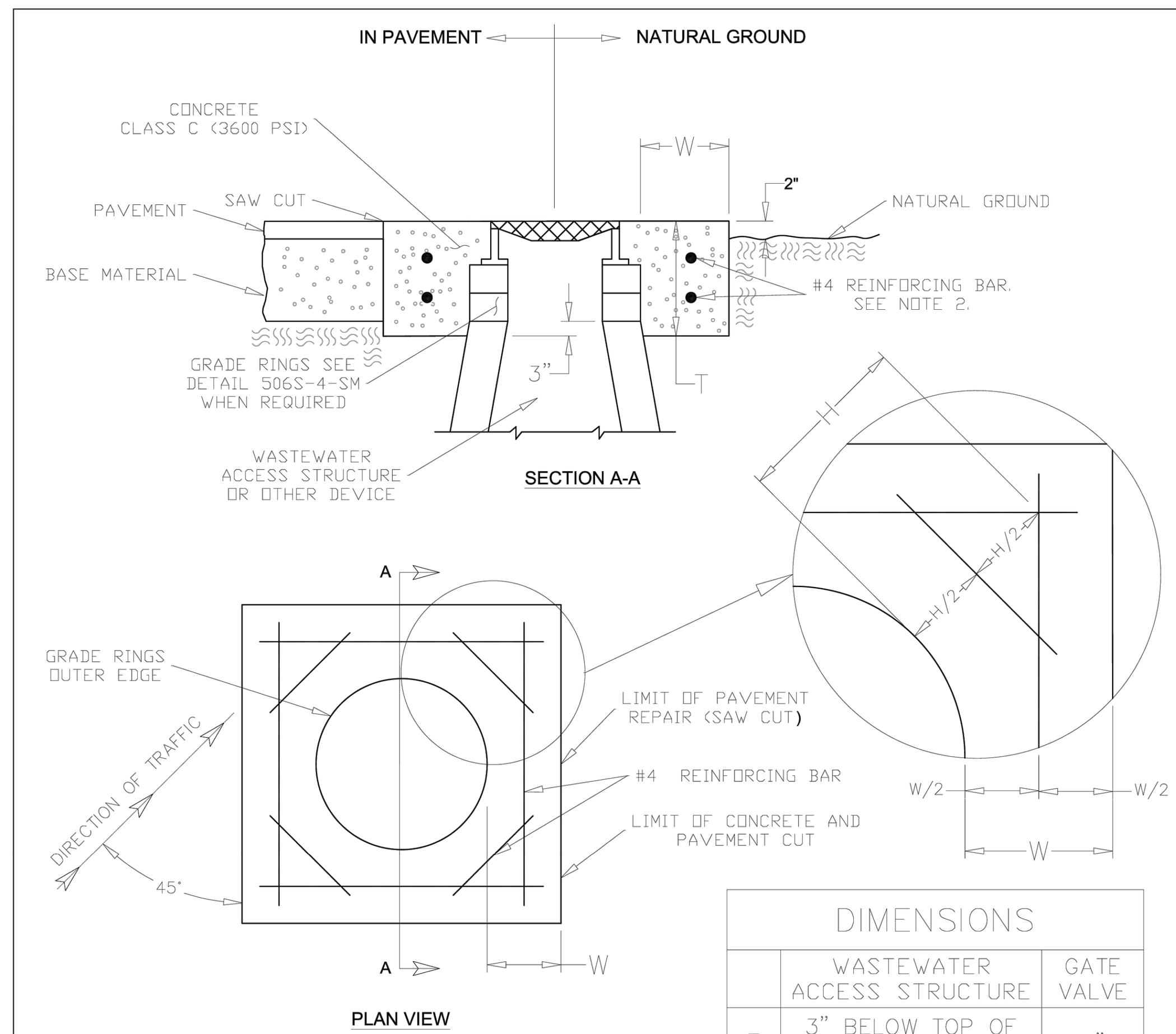
Plot Date/Time: Mar. 13, 24 - 14:55:44



	DIMENSIONS	
	WASTEWATER ACCESS STRUCTURE	GATE VALVE
T	3" BELOW TOP OF CONE (9" MIN.)	6"
W	12"	8"

NOTES:

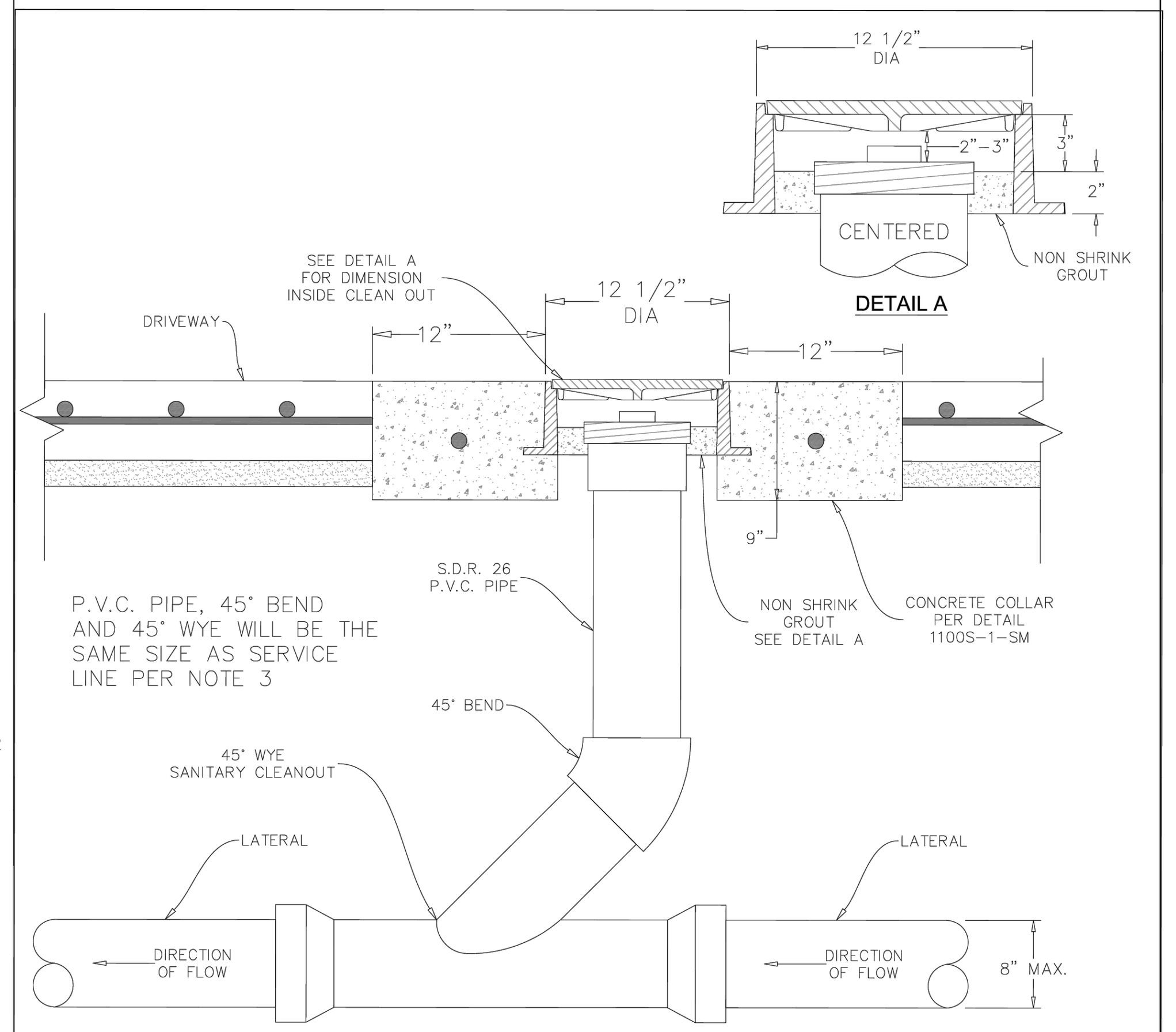
1. THE CONCRETE COLLAR SHALL BE REINFORCED WITH #4 BARS AS SHOWN. THE CONCRETE SHALL EXTEND TO EDGE OF SAW CUT PAVEMENT EDGE.
2. REBAR WILL BE PLACED IN TWO LAYERS. FIRST LAYER (1/3 T) FROM TOP OF COLLAR AND SECOND LAYER (2/3 T) FROM TOP OF COLLAR. IF (T) IS 12" OR LESS ONE LAYER OF REBAR WILL BE USED, PLACED MID POINT BETWEEN TOP AND BOTTOM OF COLLAR.
3. REQUIREMENTS FOR NEW MANHOLE CONSTRUCTION AND MINOR MANHOLE ADJUSTMENTS IN NEW RECONSTRUCTION AND REAPING PROJECTS ARE INCLUDED IN DETAIL NO. 506S-3-SM, 506S-8-SM, 506S-8A-SM AND 506S-10-SM.
4. REFER TO TRENCH DETAIL FOR ADDITIONAL BACKFILL REQUIREMENTS WITH APPROPRIATE CONDITIONS.

REFERENCES
DETAIL 506S-4-SM

The City of San Marcos
Engineering and Capital Improvements
CURRENT AS OF 1/1/2020

Concrete Riser Collar

RECORDED COPY SIGNED BY
LAURIE MOYER, P.E.
2-15-2015
ADOPTED
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD
1100S-1-SM
N.T.S. STANDARD DETAIL



NOTE:

1. SERVICE SHALL BE DESIGNED TO AVOID CLEANOUT LOCATION WITHIN DRIVEWAYS.
2. THIS STANDARD DETAIL IS ONLY FOR EXISTING CLEANOUTS THAT ARE LOCATED WITHIN EXISTING DRIVEWAYS.
3. THIS STANDARD IS ONLY FOR SERVICES 8" OR LESS AND ALL FITTING AND PIPE FOR CLEANOUT WILL BE THE SAME SIZE AS LATERAL.
4. SUBGRADE SHALL BE COMPACTED AS PER STANDARD DETAIL 510S-S&L-SM.
5. CONCRETE COLLAR IN DRIVEWAY WILL BE PER 1100S-1-SM FOR MANHOLE DIMENSIONS MINIMUM OF 9" DEPTH.
6. TRAFFIC BEARING FRAME AND COVER ONLY. HEAVY DUTY.

REFERENCES
DETAIL 510S-S&L-SM
DETAIL 1100S-1-SM

The City of San Marcos
Engineering and Capital Improvements
CURRENT AS OF 1/1/2020

EXISTING WASTEWATER CLEANOUT ADJUSTMENT TO GRADE IN DRIVEWAY

RECORDED COPY SIGNED BY
LAURIE MOYER, P.E.
2-15-2015
ADOPTED
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD
520S-4-SM
N.T.S. STANDARD DETAIL

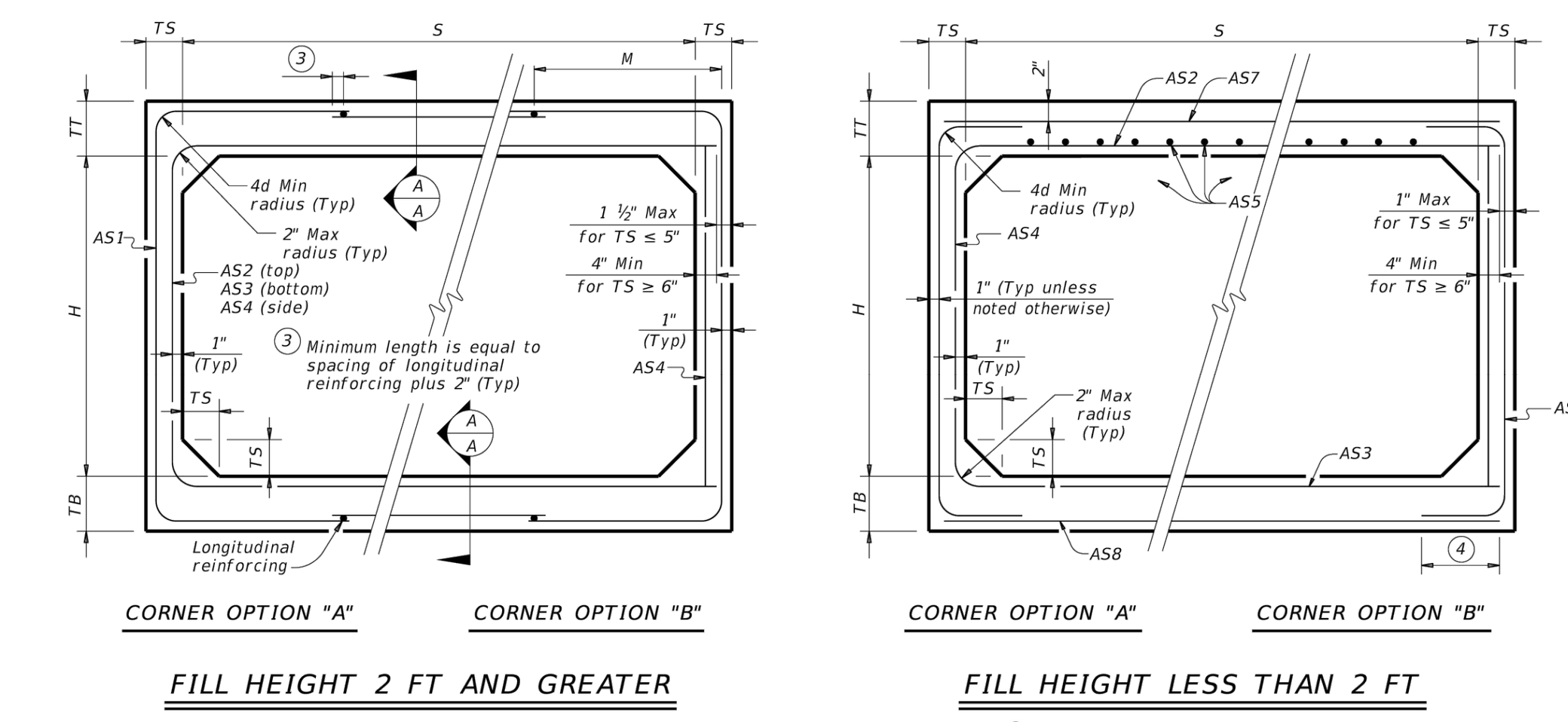
DISCLAIMER:
The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

BOX DATA

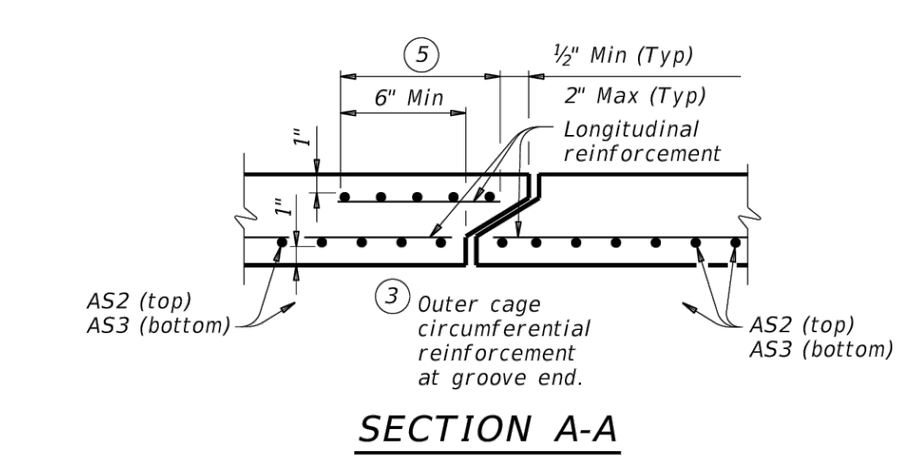
SECTION DIMENSIONS					Fill Height	M (Min)	REINFORCING (sq. in. / ft.) (2)							(1) Lift Weight
S (ft.)	H (ft.)	TT (in.)	TB (in.)	TS (in.)	(ft.)	(in.)	AS1	AS2	AS3	AS4	AS5	AS7	AS8	(tons)
4	2	7.5	6	5	< 2	-	0.18	0.27	0.15	0.12	0.18	0.18	0.14	4.5
4	2	5	5	5	2 < 3	38	0.18	0.19	0.17	0.12	-	-	-	3.6
4	2	5	5	5	3 - 5	38	0.13	0.13	0.13	0.12	-	-	-	3.6
4	2	5	5	5	10	38	0.12	0.12	0.12	0.12	-	-	-	3.6
4	2	5	5	5	15	38	0.14	0.16	0.16	0.12	-	-	-	3.6
4	2	5	5	5	20	38	0.18	0.20	0.21	0.12	-	-	-	3.6
4	2	5	5	5	25	38	0.23	0.25	0.25	0.12	-	-	-	3.6
4	2	5	5	5	30	38	0.28	0.30	0.30	0.12	-	-	-	3.6
4	3	7.5	6	5	< 2	-	0.18	0.31	0.18	0.12	0.18	0.18	0.14	5.0
4	3	5	5	5	2 < 3	38	0.15	0.23	0.20	0.12	-	-	-	4.1
4	3	5	5	5	3 - 5	38	0.12	0.16	0.16	0.12	-	-	-	4.1
4	3	5	5	5	10	38	0.12	0.14	0.14	0.12	-	-	-	4.1
4	3	5	5	5	15	38	0.12	0.18	0.18	0.12	-	-	-	4.1
4	3	5	5	5	20	38	0.14	0.23	0.24	0.12	-	-	-	4.1
4	3	5	5	5	25	38	0.17	0.29	0.29	0.12	-	-	-	4.1
4	3	5	5	5	30	38	0.21	0.35	0.35	0.12	-	-	-	4.1
4	4	7.5	6	5	< 2	-	0.18	0.33	0.20	0.12	0.18	0.18	0.14	5.5
4	4	5	5	5	2 < 3	38	0.12	0.26	0.23	0.12	-	-	-	4.6
4	4	5	5	5	3 - 5	38	0.12	0.18	0.18	0.12	-	-	-	4.6
4	4	5	5	5	10	38	0.12	0.15	0.15	0.12	-	-	-	4.6
4	4	5	5	5	15	38	0.12	0.19	0.20	0.12	-	-	-	4.6
4	4	5	5	5	20	38	0.12	0.25	0.25	0.12	-	-	-	4.6
4	4	5	5	5	25	38	0.14	0.31	0.31	0.12	-	-	-	4.6
4	4	5	5	5	30	38	0.17	0.37	0.37	0.12	-	-	-	4.6

(1) For box length = 8'-0"

(2) AS1 thru AS4, AS7 and AS8 are minimum required areas of reinforcement per linear foot of box length. AS5 is minimum required area of reinforcement per linear foot of box width.



(4) Length is equal to spacing of longitudinal reinforcing plus 2". (10" Min) (Typ)



SECTION A-A
(Showing top and bottom slab joint reinforcement.)

MATERIAL NOTES:
Provide 0.03 sq. in./ft. minimum longitudinal reinforcement at each face in slabs and walls. This minimum requirement may be met by the transverse wires when wire mesh reinforcement is used.
Provide Class H concrete (f'c = 5,000 psi).

GENERAL NOTES:
Designs shown conform to ASTM C1577. Refer to ASTM C1577 for information or details not shown.
See Box Culverts Precast Miscellaneous Details (SCP-MD) standard sheet for details and notes not shown.
In lieu of furnishing the designs shown on this sheet, the contractor may furnish an alternate design that is equal to or exceeds the box design for the design fill height in the table. Submit shop plans for alternate designs in accordance with Item "Precast Concrete Structural Members (Fabrication)."

HL93 LOADING

Texas Department of Transportation
Bridge Division Standard

SINGLE BOX CULVERTS PRECAST 4'-0" SPAN

SCP-4

FILE: CD-SCP04-20.dgn | DN: TxDOT | CK: TxDOT | DW: TxDOT | CK: TxDOT
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REVISIONS | DIST | COUNTY | SHEET NO.

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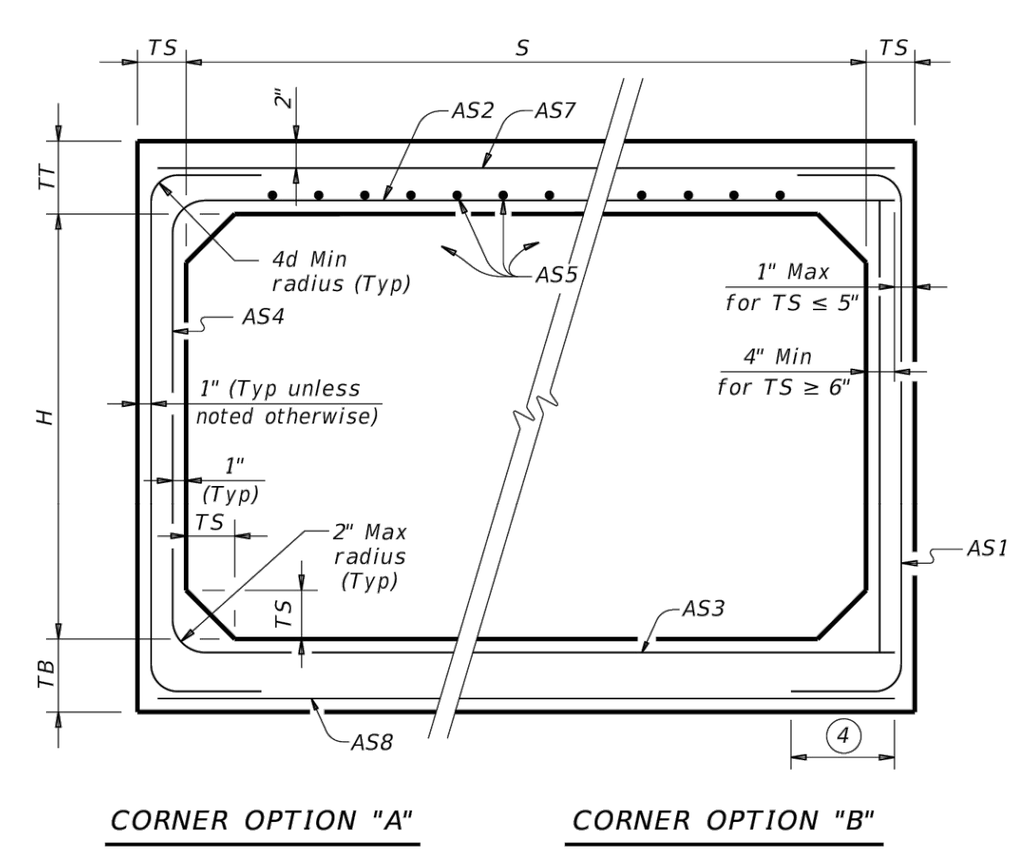
BOX DATA

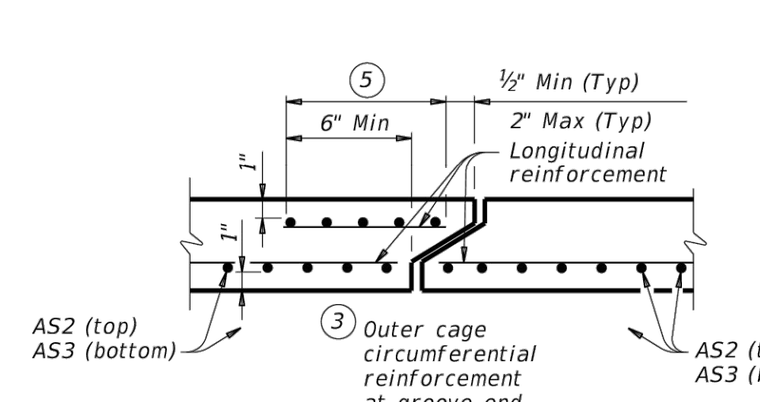
SECTION DIMENSIONS					Fill Height	M (Min)	REINFORCING (sq. in. / ft.) (2)							(1) Lift Weight
S (ft.)	H (ft.)	TT (in.)	TB (in.)	TS (in.)	(ft.)	(in.)	AS1	AS2	AS3	AS4	AS5	AS7	AS8	(tons)
12	4	12	12	12	< 2	-	0.38	0.31	0.29	0.29	0.29	0.29	0.29	22.8
12	4	12	12	12	2 < 3	73	0.44	0.37	0.30	0.29	-	-	-	22.8
12	4	12	12	12	3 - 5	66	0.37	0.30	0.29	0.29	-	-	-	22.8
12	4	12	12	12	10	66	0.44	0.34	0.35	0.29	-	-	-	22.8
12	4	12	12	12	15	59	0.60	0.46	0.48	0.29	-	-	-	22.8
12	4	12	12	12	20	59	0.78	0.60	0.61	0.29	-	-	-	22.8
12	4	12	12	12	25	59	0.97	0.74	0.75	0.29	-	-	-	22.8
12	5	12	12	12	< 2	-	0.34	0.33	0.29	0.29	0.29	0.29	0.29	24.0
12	5	12	12	12	2 < 3	66	0.41	0.40	0.33	0.29	-	-	-	24.0
12	5	12	12	12	3 - 5	61	0.34	0.33	0.30	0.29	-	-	-	24.0
12	5	12	12	12	10	59	0.41	0.38	0.39	0.29	-	-	-	24.0
12	5	12	12	12	15	59	0.55	0.51	0.52	0.29	-	-	-	24.0
12	5	12	12	12	20	59	0.71	0.66	0.67	0.29	-	-	-	24.0
12	5	12	12	12	25	59	0.88	0.81	0.82	0.29	-	-	-	24.0
12	6	12	12	12	< 2	-	0.32	0.36	0.32	0.29	0.29	0.29	0.29	25.2
12	6	12	12	12	2 < 3	66	0.38	0.43	0.36	0.29	-	-	-	25.2
12	6	12	12	12	3 - 5	59	0.32	0.36	0.33	0.29	-	-	-	25.2
12	6	12	12	12	10	59	0.38	0.41	0.42	0.29	-	-	-	25.2
12	6	12	12	12	15	53	0.51	0.55	0.57	0.29	-	-	-	25.2
12	6	12	12	12	20	53	0.65	0.71	0.72	0.29	-	-	-	25.2
12	6	12	12	12	25	53	0.81	0.87	0.89	0.29	-	-	-	25.2
12	7	12	12	12	< 2	-	0.30	0.39	0.35	0.29	0.29	0.29	0.29	26.4
12	7	12	12	12	2 < 3	66	0.35	0.46	0.39	0.29	-	-	-	26.4
12	7	12	12	12	3 - 5	59	0.29	0.38	0.36	0.29	-	-	-	26.4
12	7	12	12	12	10	59	0.36	0.43	0.45	0.29	-	-	-	26.4
12	7	12	12	12	15	53	0.47	0.58	0.61	0.29	-	-	-	26.4
12	7	12	12	12	20	53	0.61	0.75	0.77	0.29	-	-	-	26.4
12	8	12	12	12	< 2	-	0.29	0.41	0.38	0.29	0.29	0.29	0.29	27.6
12	8	12	12	12	2 < 3	66	0.33	0.49	0.42	0.29	-	-	-	27.6
12	8	12	12	12	3 - 5	59	0.29	0.41	0.38	0.29	-	-	-	27.6
12	8	12	12	12	10	59	0.34	0.46	0.48	0.29	-	-	-	27.6
12	8	12	12	12	15	53	0.44	0.61	0.64	0.29	-	-	-	27.6
12	8	12	12	12	20	53	0.57	0.78	0.81	0.29	-	-	-	27.6
12	8	12	12	12	25	53	0.69	0.96	0.99	0.29	-	-	-	27.6

BOX DATA

SECTION DIMENSIONS					Fill Height	M (Min)	REINFORCING (sq. in. / ft.) (2)							(1) Lift Weight
S (ft.)	H (ft.)	TT (in.)	TB (in.)	TS (in.)	(ft.)	(in.)	AS1	AS2	AS3	AS4	AS5	AS7	AS8	(tons)
12	9	12	12	12	< 2	-	0.29	0.43	0.40	0.29	0.29	0.29	0.29	28.8
12	9	12	12	12	2 < 3	66	0.30	0.51	0.45	0.29	-	-	-	28.8
12	9	12	12	12	3 - 5	66	0.29	0.43	0.41	0.29	-	-	-	28.8
12	9	12	12	12	10	59	0.32	0.47	0.51	0.29	-	-	-	28.8
12	9	12	12	12	15	53	0.42	0.63	0.67	0.29	-	-	-	28.8
12	9	12	12	12	20	53	0.53	0.81	0.85	0.29	-	-	-	28.8
12	9	12	12	12	25	53	0.69	0.96	0.99	0.29	-	-	-	28.8
12	10	12	12	12	< 2	-	0.29	0.45	0.43	0.29	0.29	0.29	0.29	30.0
12	10	12	12	12	2 < 3	73	0.29	0.54	0.48	0.29	-	-	-	30.0
12	10	12	12	12	3 - 5	66	0.29	0.45	0.43	0.29	-	-	-	30.0
12	10	12	12	12	10	59	0.31	0.49	0.53	0.29	-	-	-	30.0
12	10	12	12	12	15	53	0.40	0.65	0.70	0.29	-	-	-	30.0
12	10	12	12	12	20	53	0.51	0.84	0.88	0.29	-	-	-	30.0
12	10	12	12	12	25	53	0.62	1.03	1.07	0.29	-	-	-	30.0
12	11	12	12	12	< 2	-	0.29	0.47	0.45	0.29	0.29	0.29	0.29	31.2
12	11	12	12	12	2 < 3	80	0.29	0.56	0.51	0.29	-	-	-	31.2
12	11	12	12	12	3 - 5	73	0.29	0.47	0.46	0.29	-	-	-	31.2
12	11	12	12	12	10	66	0.29	0.51	0.55	0.29	-	-	-	31.2
12	11	12	12	12	15	59	0.38	0.67	0.72	0.29	-	-	-	31.2
12	11	12	12	12	20	53	0.48	0.85	0.91	0.29	-	-	-	31.2
12	11	12	12	12	25	53	0.59	1.05	1.10	0.29	-	-	-	31.2
12	12	12	12	12	< 2	-	0.29	0.49	0.48	0.33	0.29	0.29	0.29	32.4
12	12	12	12	12	2 < 3	93	0.29	0.59	0.53	0.29	-	-	-	32.4
12	12	12	12	12	3 - 5	80	0.29	0.49	0.48	0.29	-	-	-	32.4
12	12	12	12	12	10	73	0.29	0.52	0.58	0.29	-	-	-	32.4
12	12	12	12	12	15	59	0.37	0.69	0.74	0.29	-	-	-	32.4
12	12	12	12	12	20	59	0.46	0.87	0.93	0.29	-	-	-	32.4



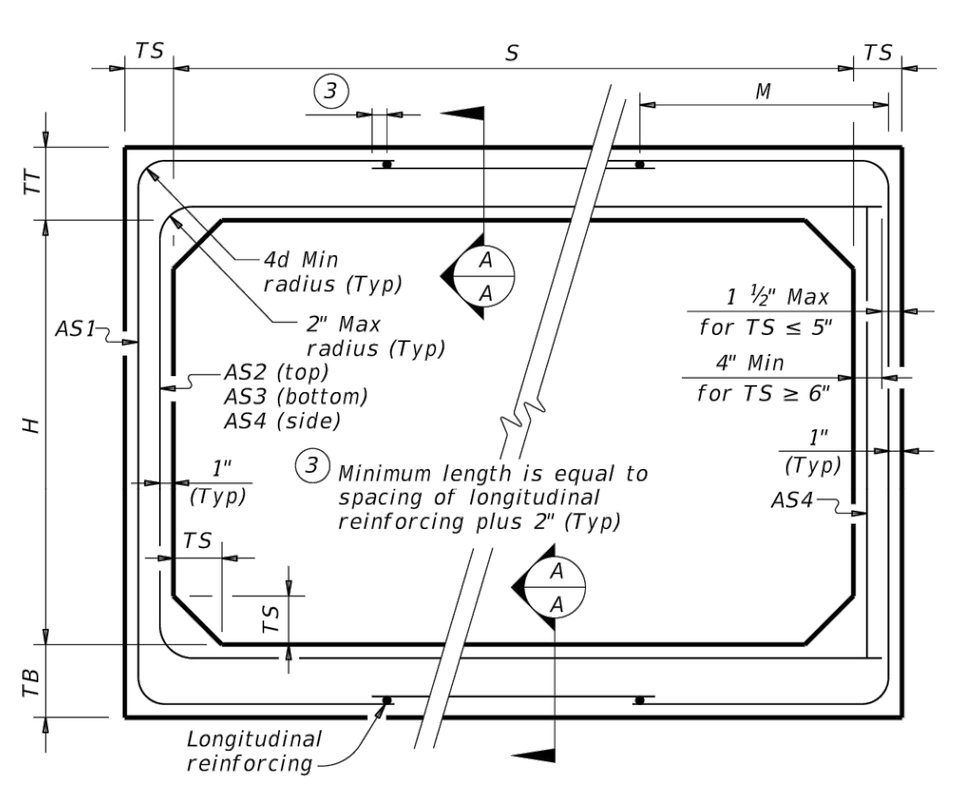
(4) Length is equal to spacing of longitudinal reinforcing plus 2". (10" Min) (Typ)



SECTION A-A
(Showing top and bottom slab joint reinforcement.)

(1) For box length = 8'-0"

(2) AS1 thru AS4, AS7 and AS8 are minimum required areas of reinforcement per linear foot of box length. AS5 is minimum required area of reinforcement per linear foot of box width.



FILL HEIGHT 2 FT AND GREATER

MATERIAL NOTES:
Provide 0.03 sq. in./ft. minimum longitudinal reinforcement at each face in slabs and walls. This minimum requirement may be met by the transverse wires when wire mesh reinforcement is used.
Provide Class H concrete (f'c = 5,000 psi).

GENERAL NOTES:
Designs shown conform to ASTM C1577. Refer to ASTM C1577 for information or details not shown.
See Box Culverts Precast Miscellaneous Details (SCP-MD) standard sheet for details and notes not shown.
In lieu of furnishing the designs shown on this sheet, the contractor may furnish an alternate design that is equal to or exceeds the box design for the design fill height in the table. Submit shop plans for alternate designs in accordance with Item "Precast Concrete Structural Members (Fabrication)."

HL93 LOADING

Texas Department of Transportation
Bridge Division Standard

SINGLE BOX CULVERTS PRECAST 12'-0" SPAN

SCP-12

FILE: CD-SCP12-20.dgn | DN: TxDOT | CK: TxDOT | DW: TxDOT | CK: TxDOT
©TxDOT February 2020 | CONT | SECT | JOB | HIGHWAY
REVISIONS | DIST | COUNTY | SHEET NO.

DATE:
FILE:

GATEWAY 29 WPAP / SCS
OVERALL SUBDIVISION IMPROVEMENTS
STANDARD DETAILS SHEET 5
LEANDER, WILLIAMSON COUNTY, TEXAS

REVISIONS

NO.	DESCRIPTION	BY	DATE

DATE: 03/13/2024
DESIGNED BY: CRH
DRAWN BY: LJA
CHECKED BY: CRH
DRAWING NAME: A633-0401-P-DT01_WPAP

03/13/2024
STATE OF TEXAS
CHARLES R. HAGER V
127034
LICENSED
PROFESSIONAL ENGINEER

LJA Engineering, Inc.
7500 Rialto Boulevard
Building II, Suite 100
Austin, Texas 78735
Phone 512.439.4700
Fax 512.439.4716
FRN-F-1386

JOB NUMBER:

DT05

SHEET NO.
59
OF 90 SHEETS

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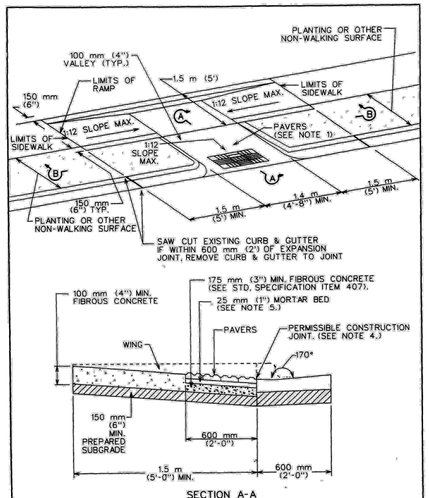
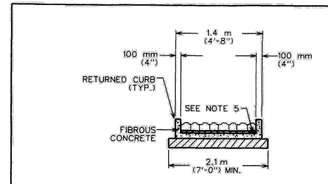
Last Modified: Mar. 13, 24 - 14:05
Plot Date/Time: Mar. 13, 24 - 14:55:56



SECTION A-A

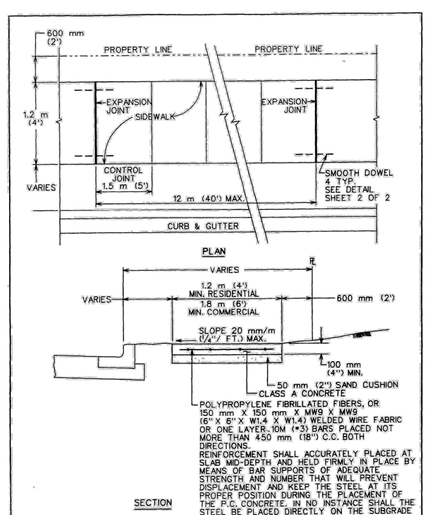
CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS	COMBINED SIDEWALK CURB RAMP WITH PAVERS	STANDARD NO.
Bill Gardner 3/13/06 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	432S-3F 1 OF 2



SECTION B-B

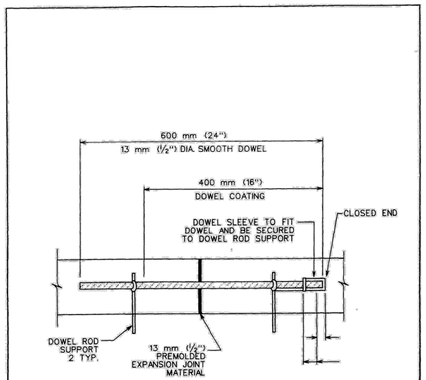
GENERAL NOTES:
1. THIS STANDARD IS APPLICABLE FOR RAMP CONSTRUCTION WITHIN RIGHT-OF-WAY OR EASEMENT ONLY.
2. PAVERS WILL HAVE DETECTABLE WARNING THAT CONSISTS OF RAISED TRUNCATED DOMES WITH A DIAMETER OF 23 mm (0.9"), A NOMINAL HEIGHT OF 5 mm (0.2") AND A NOMINAL CENTER TO CENTER SPACING OF 60 mm (2.35") AND SHALL CONTRAST VISUALLY WITH ADJOINING SURFACES, EITHER LIGHT-ON-DARK OR DARK-ON-LIGHT (Ref. ADAAG SECTION 4.29.2). MATERIAL USED TO PROVIDE CONTRAST SHALL BE AN INTEGRAL PART OF THE WALKING SURFACE. A BASKET WEAVE PAVER PATTERN SHALL BE USED UNLESS DIRECTED BY THE ENGINEER OR DESIGNATED REPRESENTATIVE. PAVER PATTERN VARIES PER MANUFACTURER'S RECOMMENDATIONS. REFER TO STANDARD DETAIL 432S-5 FOR PAVER BASE PREPARATION DETAILS.
3. THE CURB, GUTTER AND RAMP SYSTEM SHALL BE CONFIGURED TO MAINTAIN ALL RUNOFF FROM A 25 YEAR FREQUENCY STORM WITHIN THE RIGHT-OF-WAY (DRAINAGE CRITERIA MANUAL SECTION 1.2.2.B).
4. TYPICAL SIDEWALK WIDTHS AND CURB RADII ARE SHOWN FOR ILLUSTRATION ONLY. REFER TO THE TRANSPORTATION CRITERIA MANUAL FOR SIDEWALK WIDTHS, CURB RADII AND CURB BASIC REQUIREMENTS.
5. THE PERMISSIBLE CONSTRUCTION JOINT BETWEEN THE PAVERS AND THE ADJOINING SURFACE SHALL BE LIMITED TO 6 mm (1/4") JOINT SIZE. GAPS LARGER THAN 6 mm (1/4") MUST BE APPROVED BY THE ENGINEER OR DESIGNATED REPRESENTATIVE. ALL JOINTS BETWEEN BRICKS AND ADJOINING SURFACE SHALL BE MORTAR FILLED UNLESS DIRECTED OTHERWISE BY THE ENGINEER OR DESIGNATED REPRESENTATIVE.
6. MORTAR SHALL CONFORM TO STD. SPECIFICATION ITEM 403S.3.5. MORTAR AND GROUT. ALL OTHER CONCRETE SHALL CONFORM TO STD. SPECIFICATION ITEM 403S, CONCRETE FOR STRUCTURES, UNLESS OTHERWISE NOTED.
7. CURB RAMPS WITH 100 mm (4") CONCRETE VALLEY MAY ONLY BE USED WHERE PEDESTRIANS WOULD NOT NORMALLY WALK DIAGONALLY ACROSS THE RAMP.

CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS	COMBINED SIDEWALK CURB RAMP WITH PAVERS	STANDARD NO.
Bill Gardner 3/13/06 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	432S-3F 2 OF 2



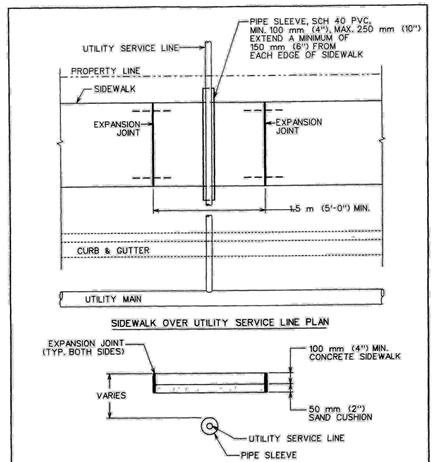
SECTION

CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS	SIDEWALK	STANDARD NO.
Bill Gardner 3/24/08 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	432S-1 1 OF 3



DOWEL DETAIL

CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS	SIDEWALK	STANDARD NO.
Bill Gardner 3/24/08 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	432S-1 2 OF 3

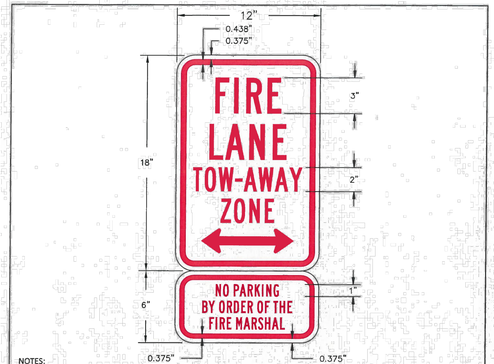


SIDEWALK OVER UTILITY SERVICE LINE PLAN

SECTION OF SIDEWALK OVER UTILITY SERVICE LINES

NOTES:
1. THIS STANDARD APPLIES TO THE INSTALLATION OF NEW UTILITIES OR UTILITIES BEING REPLACED BY A NEW LINE.
2. NO JOINTS IN UTILITY SERVICE PIPE TO BE LOCATED INSIDE PVC PIPE SLEEVE.

CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS	SIDEWALK	STANDARD NO.
Bill Gardner 3/24/08 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	432S-1 3 OF 3



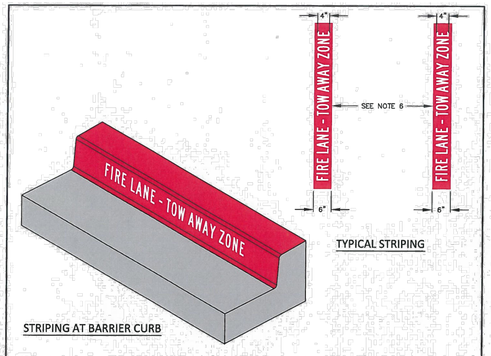
NOTES:
1. 12-INCH BY 18-INCH AND 12-INCH BY 6-INCH, 0.080 INCH THICK ALUMINUM BLANKS. COVERED WITH 3M DIAMOND GRADE, WHITE, REFLECTIVE SHEETING. BORDER AND LETTERING SHALL BE CUT FROM RED 3M ELECTRO CUT FILM
2. ALL FONTS SHALL BE TRAFFIC CAD SERIES B OR FHWA SERIES B
3. SIGNS SHALL BE PERMANENTLY AFFIXED TO A STATIONARY POST AND THE BOTTOM OF THE SIGN ASSEMBLY SHALL BE SIX FEET, SIX INCHES (6'-6") ABOVE FINISHED GRADE.
4. SIGNS SHALL BE SPACED NOT MORE THAN 35' APART.
5. SIGNS MAY BE INSTALLED ON PERMANENT BUILDINGS OR WALLS AS APPROVED BY THE FIRE CODE OFFICIAL.
6. IF THE SIGN IS AT THE END OF A FIRE ZONE, THE SIGN SHALL HAVE A SINGLE-HEADED ARROW POINTING IN THE DIRECTION OF THE ZONE. IF THE SIGN IS AT AN INTERMEDIATE POINT IN THE ZONE, THE SIGN SHALL HAVE A DOUBLE-HEADED ARROW POINTING IN BOTH DIRECTIONS.
7. FIRE LANE SIGNS SHALL BE POSTED ON BOTH SIDES OF FIRE APPARATUS ACCESS ROADS THAT ARE TWENTY FEET (20') TO TWENTY-SIX FEET (26') WIDE.
8. FIRE LANE SIGNS SHALL BE POSTED ON ONE SIDE OF FIRE APPARATUS ACCESS ROADS MORE THAN TWENTY-SIX FEET (26') WIDE AND LESS THAN THIRTY-TWO FEET (32') WIDE.

*THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD. DRAWING NOT TO SCALE.

STATE OF TEXAS MICHAEL LAFFERTY 118708 LICENSED PROFESSIONAL ENGINEER 2017-09-28

FIRE MARSHAL

City Of Leander, Texas
DETAIL #501-1
FIRE LANE SIGN ASSEMBLY



TYPICAL STRIPING

STRIPING AT BARRIER CURB

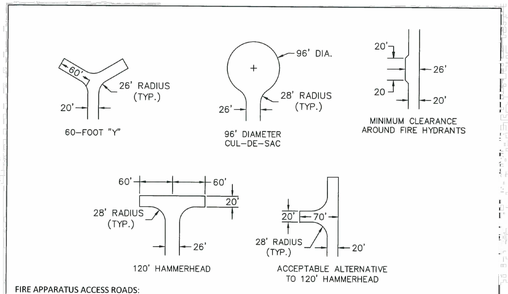
NOTES:
1. ALL FIRE LANE STRIPING SHALL COMPLY WITH THE CURRENT INTERNATIONAL FIRE CODE, AS ADOPTED BY THE CITY OF LEANDER, AND CITY OF LEANDER CODE OF ORDINANCES.
2. FIRE LANES SHALL BE CONTINUOUSLY MARKED BY RED TRAFFIC PAINT THAT IS MINIMUM SIX INCHES (6") IN WIDTH TO SHOW THE BOUNDARIES OF THE LANE.
3. "FIRE LANE - TOW AWAY ZONE" SHALL APPEAR IN FOUR INCH (4") TYPE D WHITE BLOCK LETTERS AT TWENTY-FIVE FOOT (25') INTERVALS, OR LESS, ON THE RED BORDER MARKINGS ALONG BOTH SIDES OF THE FIRE LANE.
4. WHERE A 6" BARRIER CURB EXISTS, THE FIRE LANE STRIPING SHALL BE ON BOTH THE VERTICAL FACE OF THE CURB AND TOP OF CURB. "FIRE LANE - TOW AWAY ZONE" SHALL BE MARKED IN 4" WHITE BLOCK LETTERS ON FACE OF CURB ONLY.
5. WHERE A FIRE LANE IS ADJACENT TO PARKING SPACES THE FIRE LANE STRIPING SHALL BE AN 8" RED STRIPE PAINTED ON THE DRIVE SURFACE WITH 4" WHITE LETTERS STATING "FIRE LANE NO PARKING TOW-AWAY ZONE." FIRE LANE STRIPING SHALL EXTEND BEHIND ALL PARKING SPACES.
6. WHERE A FIRE HYDRANT, FIRE DEPARTMENT CONNECTION, OR OTHER FIRE PROTECTION EQUIPMENT IS LOCATED ON A FIRE LANE, THE FIRE LANE SHALL BE A MINIMUM OF TWENTY-SIX FEET (26') IN WIDTH, EXCLUSIVE OF SHOULDERS.

*THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD. DRAWING NOT TO SCALE.

STATE OF TEXAS MICHAEL LAFFERTY 118708 LICENSED PROFESSIONAL ENGINEER 2017-09-28

FIRE MARSHAL

City Of Leander, Texas
DETAIL #501-2
FIRE LANE STRIPING



FIRE APPARATUS ACCESS ROADS:
1. ALL FIRE APPARATUS ACCESS ROADS AND TEMPORARY TURNAROUNDS SHALL COMPLY WITH THE CURRENT INTERNATIONAL FIRE CODE, AS ADOPTED BY THE CITY OF LEANDER, AND CITY OF LEANDER CODE OF ORDINANCES.
2. ALL FACILITIES, BUILDINGS OR PORTIONS OF BUILDINGS SHALL BE ACCESSIBLE TO FIRE DEPARTMENT APPARATUS BY WAY OF AN APPROVED FIRE APPARATUS ACCESS ROAD CONSTRUCTED WITH AN ASPHALT OR CONCRETE DRIVING SURFACE CAPABLE OF SUPPORTING THE IMPOSED LOAD OF A FIRE APPARATUS WEIGHING AT LEAST 75,000 POUNDS.
3. FIRE APPARATUS ACCESS ROADS SHALL NOT EXCEED TEN-PERCENT (10%) IN GRADE WITHOUT THE APPROVAL OF THE FIRE MARSHAL.
4. DEAD-END FIRE APPARATUS ACCESS ROADS IN EXCESS OF ONE HUNDRED AND FIFTY FEET (150') IN LENGTH SHALL BE PROVIDED WITH WIDTH AND TURNAROUND PROVISIONS IN ACCORDANCE WITH THE TABLE BELOW.

LENGTH (FEET)	WIDTH (FEET)	TURNAROUNDS REQUIRED
0-150	20	NONE REQUIRED
151-500	20	120-FOOT HAMMERHEAD, 60-FOOT "Y" OR 96-FOOT DIAMETER CUL-DE-SAC
501-750	26	120-FOOT HAMMERHEAD, 60-FOOT "Y" OR 96-FOOT DIAMETER CUL-DE-SAC
OVER 750	SPECIAL APPROVAL REQUIRED	

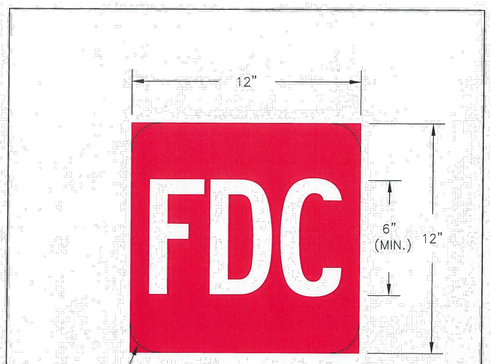
5. GATES SECURING FIRE APPARATUS ACCESS ROADS SHALL BE NOT LESS THAN TWENTY FEET (20') IN WIDTH WHERE A SINGLE GATE IS PROVIDED. WHERE A FIRE APPARATUS ROAD CONSISTS OF A DIVIDED ROADWAY, THE GATE WIDTH SHALL BE NOT LESS THAN TWELVE FEET (12').
6. ALL GATE LOCKS SHALL COMPLY WITH CITY OF LEANDER CODE OF ORDINANCES SECTION 506.1.1.
7. GATES SECURING FIRE APPARATUS ACCESS ROADS SHALL BE OF THE SWINGING OR SLIDING TYPE.
8. FIRE APPARATUS ACCESS ROADS SHALL BE TWENTY-SIX FEET (26') IN WIDTH FOR TWENTY-FEET (20') IN BOTH DIRECTIONS FROM FIRE HYDRANTS, AT MINIMUM, TO PROVIDE MINIMUM CLEARANCE FOR EMERGENCY OPERATIONS.

*THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD. DRAWING NOT TO SCALE.

STATE OF TEXAS MICHAEL LAFFERTY 118708 LICENSED PROFESSIONAL ENGINEER 2016-08-19

FIRE MARSHAL

City Of Leander, Texas
DETAIL #501-3
FIRE APPARATUS ACCESS ROADS & TURNAROUNDS



OPTIONAL 1 1/2" RADIUS CORNERS

NOTES:
1. 12-INCH BY 12-INCH, 0.080 INCH THICK ALUMINUM BLANKS. COVERED WITH 3M DIAMOND GRADE, WHITE, REFLECTIVE SHEETING. LETTERING SHALL BE UPPER CASE, MINIMUM OF 6" IN HEIGHT WITH 1-1/4" LETTER STROKE, AND CUT FROM RED 3M ELECTRO CUT FILM.
2. ALL FONTS SHALL BE TRAFFIC CAD SERIES B OR FHWA SERIES B.
3. ON BUILDINGS, WHERE THE FIRE DEPARTMENT CONNECTION (FDC) IS NOT VISIBLE FROM THE FIRE LANE, THE FDC SHALL BE INDICATED BY AN APPROVED SIGN MOUNTED AS DIRECTED BY THE FIRE MARSHAL.
4. SIGN SHALL BE INSTALLED WITH ITS HORIZONTAL CENTERLINE A MINIMUM OF FOUR FEET (4') ABOVE THE FIRE DEPARTMENT CONNECTION AND PROVIDING AN UNOBSTRUCTED VIEW FROM THE FIRE DEPARTMENT ACCESS ROAD, TO INCLUDE CONSIDERATION FOR FUTURE VEGETATIVE GROWTH.
5. NO WATER-BASED ADHESIVES ARE PERMISSIBLE FOR USE IN ANY PART OF THE SIGN.

*THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD. DRAWING NOT TO SCALE.

STATE OF TEXAS MICHAEL LAFFERTY 118708 LICENSED PROFESSIONAL ENGINEER 2017-09-28

FIRE MARSHAL

City Of Leander, Texas
DETAIL #501-4
FIRE DEPARTMENT CONNECTION SIGN

GATEWAY 29 WPAP / SCS
OVERALL SUBDIVISION IMPROVEMENTS

STANDARD DETAILS SHEET 6

LEANDER, WILLIAMSON COUNTY, TEXAS

NO.	DESCRIPTION	BY	DATE
	REVISIONS		

DATE: 03/13/2024
DESIGNED BY: CRH
DRAWN BY: LJA
CHECKED BY: CRH
DRAWING NAME: A633-0401-P-0701_WPAP

03/13/2024

STATE OF TEXAS CHARLES R. HAGER 127034 LICENSED PROFESSIONAL ENGINEER

LJA Engineering, Inc.
7500 Rialto Boulevard
Building II, Suite 100
Austin, Texas 78735
Phone 512.439.4700
Fax 512.439.4716
FRN-F-1386

JOB NUMBER:

DT06

SHEET NO.
60
OF 90 SHEETS

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User: cgeringer
Last Modified: Mar. 13, 24 - 14:05
Plot Date/Time: Mar. 13, 24 - 14:06:11

TABLE OF DIMENSIONS AND REINFORCING STEEL
(Wings for One Structure End)

Dimensions					Variable Reinforcing				Estimated Quantities per ft of wing length (Two-Wings) ③	
Maximum Wingwall Height, Hw ⑨	W	X	Y	Z	Bars J1 Size No.	Bars J1 Spa	Bars J2 Size No.	Bars J2 Spa	Reinf (Lb/Ft)	Conc (CY/Ft)
2'-6"	2'-1"	5"	1'-0"	9"	7"	#4	1'-0"	#4	1'-0"	33.73	0.248
3'-0"	2'-1"	5"	1'-0"	9"	7"	#4	1'-0"	#4	1'-0"	37.07	0.261
3'-6"	2'-1"	5"	1'-0"	9"	7"	#4	1'-0"	#4	1'-0"	37.74	0.273
4'-0"	2'-1"	5"	1'-0"	9"	7"	#4	1'-0"	#4	1'-0"	38.41	0.285
4'-6"	3'-1"	2'-1"	1'-6"	1'-0"	7"	#4	1'-0"	#4	1'-0"	41.75	0.330
5'-0"	3'-1"	2'-1"	1'-6"	1'-0"	7"	#4	1'-0"	#4	1'-0"	45.09	0.343
5'-6"	3'-1"	2'-1"	1'-6"	1'-0"	7"	#4	1'-0"	#4	1'-0"	45.75	0.355
6'-0"	3'-1"	2'-1"	1'-6"	1'-0"	7"	#4	1'-0"	#4	1'-0"	46.42	0.367
7'-0"	3'-1"	3'-8"	1'-9"	1'-3"	7"	#4	1'-0"	#4	1'-0"	52.77	0.414
8'-0"	4'-1"	2'-2"	2'-0"	1'-6"	8"	#4	1'-0"	#4	1'-0"	60.19	0.486
9'-0"	4'-1"	3'-8"	2'-3"	1'-9"	8"	#4	6"	#4	6"	81.49	0.535
10'-0"	5'-1"	2'-2"	2'-6"	2'-0"	8"	#5	6"	#4	6"	97.25	0.584
11'-0"	5'-1"	3'-8"	2'-9"	2'-3"	8"	#6	6"	#5	6"	133.65	0.634
12'-0"	6'-1"	2'-3"	3'-0"	2'-6"	9"	#7	6"	#5	6"	162.29	0.721

TABLE OF WINGWALL REINFORCING (Two-Wings)

Bar	Size	No.	Spa
D	#5	–	1'-0"
E	#4	–	1'-0"
F	#4	–	1'-0"
G	#6	4	–
M	#4	4	–
P	#4	–	1'-0"
R	#5	6	–
V	#4	–	1'-0"

TABLE OF ESTIMATED CULVERT TOEWALL QUANTITIES

Bar	Size	No.	Spa
L	#4	–	1'-6"
Q	#4	1	–
Reinf (Lb/Ft)			3.45
Conc (CY/Ft)			0.037

TABLE OF ESTIMATED ANCHOR TOEWALL QUANTITIES

Bar	Size	No.	Spa
K	#4	–	1'-0"
N	#5	6	–
OL	#4	6	–
Reinf (Lb/Ft)			9.82
Conc (CY/Ft)			0.074

① Extend Bars P 3'-0" Min into bottom slab of box culvert.

② Adjust to fit as necessary to maintain 1 1⁄4" clear cover and 4" Min between bars.

③ Quantities shown are based on an average wing height for two wings (one structure end). To determine total quantities for two wings multiply the tabulated values by Lw.

④ Recommended values of slope are: 3:1, 4:1, and 6:1. Provide 3:1 or flatter slope.

⑤ When shown elsewhere on the plans, construct 5" deep concrete riprap. Payment for riprap is as required by Item 432, "Riprap". Unless otherwise shown on the plans or directed by the Engineer, extend construction joints or grooved joints, oriented in the direction of flow, through the riprap at 10'-0" Max spacing, at intervals of approximately 35'. When such riprap is provided, the culvert toewall shown in SECTION B-B is not required.

⑥ At Contractor's option, end the culvert toewall flush with wingwall toewall. Adjust reinforcing as needed.

⑦ 3" Min to 5'-0" Max. Estimated curb heights are shown elsewhere in the plans. For structures without railing and curbs taller than 1'-0", refer to Extended Curb Details (ECD) standard sheet.

⑧ For vehicle safety, reduce curbs height, if necessary, to provide a maximum 3" projection above finished grade. No changes will be made in quantities and no additional compensation will be allowed for this work.

⑨ See Table of Maximum Wing Heights for various slopes. Height is limited based on a 33'-6" maximum safety pipe runner length.

TABLE OF MAXIMUM ⑨ WING HEIGHTS

Side Slope	Hw Max
3:1	11'-5"
4:1	8'-10"
6:1	6'- 1"

WING DIMENSION CALCULATIONS:

Hw = H + T + C - 0.250 ⑨
Lw = (Hw - 0.333') (SL)

For cast-in-place culverts:
Ltw = (N) (SL + (N + 1) (L)
For precast culverts:
Ltw = (N) (2V + SL) + (N - 1) (0.500)

Lc = (Ltw) – (2L)
Atw = Lc
Total Wingwall Area (two wings – SF)
= (Hw + 0.333) (Lw)

Hw = Height of wingwall (feet)
SL:1= Side slope ratio (horizontal : 1 vertical)
Lw = Length of wingwall (feet)
Ltw = Culvert toewall length (feet)
Lc = Culvert curb length (feet)
Atw = Culvert toewall length (feet)
N = Number of culvert spans

See applicable box culvert standard for H, S, T, and V values. See Table of Maximum Wall Heights for limits on Hw.

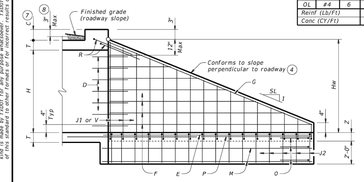
MATERIAL NOTES:

Provide Grade 60 reinforcing steel.
Provide galvanized reinforcing steel if required elsewhere in the plans.
Synthetic fibers listed on the "Fibers for Concrete" Material Producer List (MPL) may be used in lieu of steel reinforcing in riprap concrete unless noted otherwise.
Provide Class "C" concrete (f'c = 3,600 psi).
Adjust reinforcing as necessary to provide a minimum clear cover of 1 1⁄2".
Provide pipe runners and anchor pipes meeting the requirements of ASTM A53 (Type E or S, Gr B), ASTM A500 Gr B, or API 5L|X52.
Provide ASTM A307 bolts and nuts.
Provide ASTM A36 steel plates.
Paint all steel components, except reinforcing unless required elsewhere in the plans, after fabrication.
Repair galvanizing damaged during transport or construction in accordance with the Item 445, "Galvanizing".
For optional adhesive anchors, install epoxy adhesive anchorages in accordance with the manufacturer's instructions including hole size, drilling equipment and method, hole cleaning equipment and method, mixing and dispensing adhesive, and anchor insertion. Do not alter the manufacturer's mixing nozzle or dispenser. Provide anchorage rods that are clean and free of grease, oil, or any other foreign material. Demonstrate hole cleaning method to the Engineer for approval and continue the approved process for all anchorage locations. Test adhesive anchors in accordance with Item 450.3.3, "Tests." Test 3 anchors per 100 anchors installed.

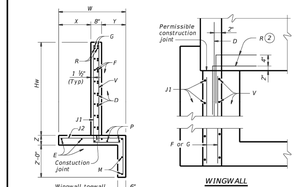
GENERAL NOTES:

Designed according to AASHTO LRFD Bridge Design Specifications.
The safety end treatments shown herein are intended for use in those installations where out of control vehicles are likely to traverse the openings approximately perpendicular to the pipe runners.
Pipe runners are designed for a traversing load of 1,800 pounds at yield as recommended by Research Report 280-1, "Safety Treatment of Roadside Cross-Drainage Structures", Texas Transportation Institute, March 1981.
When structure is founded on solid rock, depth of toewalls for culverts and wingwalls may be reduced or eliminated as directed by the Engineer.
Nuts, bolts, washers, brackets, angles, and pipe runners are considered parts of the safety end treatment for payment.
The quantities for pipe runners, reinforcing steel, and concrete, resulting from the formulas given herein are for Contractor's information only.
See Box Culvert Supplement (BCS) standard sheet for additional dimensions and information.

Cover dimensions are clear dimensions, unless noted otherwise. Reinforcing dimensions are out-to-out of bars.

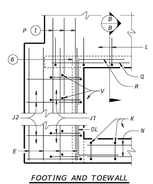


INSIDE ELEVATION OF WINGWALL
(Showing reinforcing. Culvert and culvert toewall reinforcing not shown for clarity.)



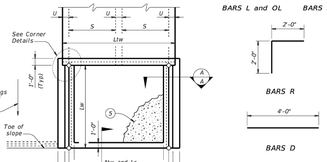
SECTION A-A

WINGWALL

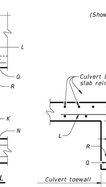


FOOTING AND TOEWALL

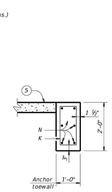
CORNER DETAILS
(Culvert and culvert toewall reinforcing not shown for clarity.)



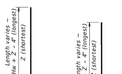
PLAN
(Showing dimensions.)

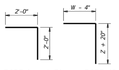


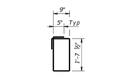
SECTION B-B ⑤



SECTION C-C







SHEET 1 OF 3

Texas Department of Transportation | Bridge Division Standard

SAFETY END TREATMENT WITH STRAIGHT WINGS

FOR 0° SKEW BOX CULVERTS
TYPE I ~ CROSS DRAINAGE

SETB-SW-O

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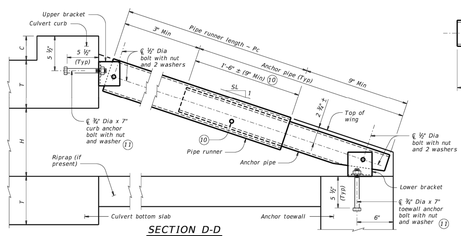
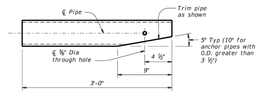
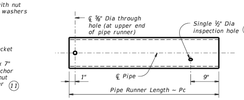


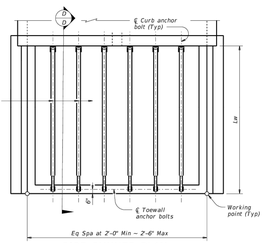
SECTION D-D
(Showing curb pipe runner.)



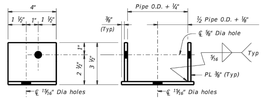
ANCHOR PIPE DETAILS



PIPE RUNNER DETAILS



PIPE RUNNER PLAN



SIDE VIEW ELEVATION

Note: Upper and lower brackets match the required pipe diameters as shown in the table.

UPPER AND LOWER BRACKET DETAILS

MAXIMUM PIPE RUNNER LENGTHS AND REQUIRED PIPE RUNNER AND ANCHOR PIPE SIZES

Maximum Pipe Runner Length (Pc)	Required Pipe Runner Size			Required Anchor Pipe Size		
	Pipe Size	Pipe O.D.	Pipe I.D.	Pipe Size	Pipe O.D.	Pipe I.D.
9'-4"	3" STD	3.500"	3.068"	2" STD	2.375"	2.067"
19'-0"	4" STD	4.500"	4.026"	3" STD	3.500"	3.068"
33'-6"	5" STD	5.563"	5.047"	4" STD	4.500"	4.026"

⑩ At installation of pipe runner, use the 9⁄16" inspection hole to ensure that the lap of the anchor pipe with the pipe runner is adequate.

⑪ At Contractor's option, an adhesive anchor may be used. Provide 5⁄8" Dia adhesive anchors that meet the requirements of ASTM A307, Gr A, fully threaded rods. Embed threaded rods into curb, wingwalls, and toewall using a Type III, Class C, D, E, or F anchor adhesive. Minimum embedment depth is 5 1⁄2". Provide anchor adhesive able to achieve a basic bond strength in tension, Nba, of 20 kips. Submit signed and sealed calculations or the manufacturer's published literature showing the proposed anchor adhesive's ability to develop this load to the Engineer for approval prior to use.

PIPE RUNNER DIMENSION CALCULATIONS:

Pc = (Lw) (K) – (1.688)

Pc = Pipe runner length (feet)

K = Constant values for use in formulas

Slope SL:1	K
4:1	1.054
5:1	1.031
6:1	1.014

SHEET 2 OF 3

Texas Department of Transportation | Bridge Division Standard

SAFETY END TREATMENT WITH STRAIGHT WINGS

FOR 0° SKEW BOX CULVERTS
TYPE I ~ CROSS DRAINAGE

SETB-SW-O

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Culvert Station and/or Creek name followed by applicable end (Lt, Rt or Both) ⑫	Lc	L2			Pipe Runner (Pc)				3'-0" Anchor Pipe	
	(Ft)	No. Spa	Spa at (Ft)	Overall Length (Ft)	No.	Length (Ft)	Size (3'-6" or 5")	Total ⑫ Length (Ft)	Size (2"-3" or 4")	Total ⑫ Length (Ft)

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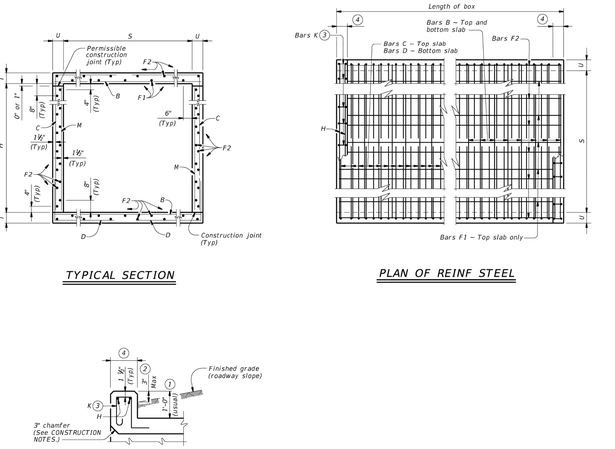


TYPICAL SECTION

SECTION THRU CURB

PLAN OF REINF STEEL

1. 0" Min to 5'-0" Max. Estimated curb heights are shown elsewhere in the plans. For structures with pedestrian rail or curbs taller than 1'-0", refer to the Extended Curb Details (ECD) standard sheet. For structures with TxDOT or TxDOT 631L bridge rail, refer to the Mounting Details for TxDOT 631 & TxDOT 631LS Rails (TxDOT-CM) standard sheet. Refer to the Rail Anchorage Curb (RAC) standard sheet for structures with bridge rail other than TxDOT or TxDOT 631LS.
2. For vehicle safety, the following requirements must be met:
   - For structures without bridge rail, construct curbs no more than 3" above finished grade.
   - For structures with bridge rail, construct curbs flush with finished grade.

   Reduce curb heights, if necessary, to meet the above requirements. No changes will be made in quantities and no additional compensation will be allowed for this work.
3. For curbs less than 1'-0" high, tilt Bars K or reduce bar height as necessary to maintain cover. For curbs less than 3" high, Bars K may be omitted.
4. 1'-0" typical. 2"-3" when the Rail Anchorage Curb (RAC) standard sheet is referred to elsewhere in the plans.

The Contractor may replace Bars B, C, D, E, F1, F2, M, Y, and/or Z with deformed welded wire reinforcement (WWR) meeting the requirements of ASTM A1064. The area of required reinforcement may be reduced by the ratio of 60 ksi / 70 ksi. Spacing of WWR is limited to 4" Min and 18" Max. When required, provide lap splices in the WWR at the same length required for the equivalent bar size, rounded up for wire sizes between conventional bar sizes. The lap length required for WWR is never less than the lap length required for uncoated #4 bars.

Example conversion: Replacing No. 6 Gr 60 at 6" Spacing with WWR.
Required WWR = (0.44 sq. in. per 0.5 ft.) x (60 ksi / 70 ksi) = 0.755 sq. in. per ft.
If D30.6 wire is used to meet the 0.755 sq. in. per ft. requirement in this example, the required spacing = (0.306 sq. in.) / (0.755 sq. in. per ft.) x (12 in. per ft.) = 4.86". Max spacing. Required lap length for the provided D30.6 wire is 2'-1" (the same minimum lap length required for uncoated #3 bars, as listed under MATERIAL NOTES).

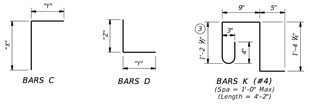
CONSTRUCTION NOTES:
Do not use permanent forms.
Chamfer the bottom edge of the top slab 3" at the entrance.
Optionally, raise construction joints shown at the flow line by a maximum of 6". If this option is taken, Bars M may be cut off or raised, Bars C and D may be reversed.

MATERIAL NOTES:
Provide Grade 60 reinforcing steel.
Provide galvanized reinforcing steel if required elsewhere in the plans.
Provide Class C concrete (f'c = 3,600 psi) for culvert barrel and curb, with the following exceptions: provide Class S concrete (f'c = 4,000 psi) for top slabs of:
- culverts with overlay,
- culverts with 1-to-2 course surface treatment, or
- culverts with the top slab as the final riding surface.

Provide bar laps, where required, as follows:
- Uncoated or galvanized — #4 = 1'-8" Min
- Uncoated or galvanized — #5 = 2'-1" Min
- Uncoated or galvanized — #6 = 2'-6" Min
- Uncoated or galvanized — #7 = 3'-3" Min

GENERAL NOTES:
Designed according to AASHTO LRFD Bridge Design Specifications for the range of fill heights shown.
See the Single Box Culverts Cast-In-Place Miscellaneous Detail (SCC-MD) standard sheet for details pertaining to skewed ends, angle sections, and lengthening.

Cover dimensions are clear dimensions, unless noted otherwise. Reinforcing bar dimensions shown are out-to-out of bar.



BARS C *BARS D* *BARS K (#4)* (Spa = 1'-0" Max) (Length = 4'-2")

HL93 LOADING — SHEET 1 OF 3

Texas Department of Transportation — Bridge Division Standard

SINGLE BOX CULVERTS CAST-IN-PLACE
0' TO 30' FILL

SCC-10

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SECTION DIMENSIONS — *BILLS OF REINFORCING STEEL (For Box Length = 40 feet)* — *QUANTITIES*

S	H	T	U	FILL HEIGHT ⑤	Bars B No.	Bars B Size	Bars B Spa	Bars B Length	Bars B Wt	Bars C No.	Bars C Size	Bars C Spa	Bars C Length	Bars C Wt	Bars C " X "	Bars C " Y "	Bars D No.	Bars D Size	Bars D Spa	Bars D Length	Bars D Wt	Bars D " Y "	Bars D " Z "	Bars M ~ #4 No.	Bars M ~ #4 Spa	Bars M ~ #4 Length	Bars M ~ #4 Wt	Bars F1 ~ #4 at 18" Spa No.	Bars F1 ~ #4 at 18" Spa Length	Bars F1 ~ #4 at 18" Spa Wt	Bars F2 ~ #4 at 18" Spa No.	Bars F2 ~ #4 at 18" Spa Length	Bars F2 ~ #4 at 18" Spa Wt	Bars H 4 ~ #4 Length	Bars H 4 ~ #4 Wt	Bars K No.	Bars K Wt	Per Foot of Barrel Conc (CY)	Per Foot of Barrel Reinf (Lb)	Curb Conc (CY)	Curb Reinf (Lb)	Total Conc (CY)	Total Reinf (Lb)
10'-0"	4'-0"	8"	7"	7'	162	#6	6"	10'-11"	2,656	162	#6	6"	10'-4"	2,514	4'-6"	5'-10"	162	#6	6"	8'-11"	2,170	5'-10"	3'-1"	108	9"	4'-0"	289	7	39'-9"	186	37	39'-9"	982	10'-11"	29	24	67	0.724	219.9	0.8	96	29.8	8,893
10'-0"	4'-0"	9"	7"	10'	162	#6	6"	10'-11"	2,656	162	#6	6"	10'-5"	2,535	4'-7"	5'-10"	162	#6	6"	9'-0"	2,190	5'-10"	3'-2"	108	9"	4'-0"	289	7	39'-9"	186	37	39'-9"	982	10'-11"	29	24	67	0.793	221.0	0.8	96	32.5	8,934
10'-0"	4'-0"	10"	8"	13'	162	#6	6"	11'-1"	2,697	162	#6	6"	10'-7"	2,573	4'-8"	5'-10"	162	#6	6"	9'-2"	2,230	5'-11"	3'-3"	82	12"	4'-0"	219	7	39'-9"	186	37	39'-9"	982	11'-1"	30	26	72	0.897	222.2	0.8	102	36.7	8,991
10'-0"	4'-0"	11"	8"	16'	162	#6	6"	11'-1"	2,697	162	#6	6"	10'-8"	2,595	4'-9"	5'-11"	162	#6	6"	9'-3"	2,251	5'-11"	3'-4"	82	12"	4'-0"	219	7	39'-9"	186	37	39'-9"	982	11'-1"	30	26	72	0.967	223.3	0.8	102	39.5	9,032
10'-0"	4'-0"	12"	9"	20'	162	#6	6"	11'-3"	2,737	162	#6	6"	10'-10"	2,636	4'-10"	6'-0"	162	#6	6"	9'-5"	2,291	6'-0"	3'-5"	108	9"	4'-0"	289	7	39'-9"	186	37	39'-9"	982	11'-3"	30	26	72	1.074	228.0	0.8	102	43.8	9,223
10'-0"	4'-0"	13"	10"	23'	162	#6	6"	11'-5"	2,778	162	#6	6"	11'-1"	2,656	4'-11"	6'-0"	162	#6	6"	9'-6"	2,312	6'-0"	3'-6"	108	9"	4'-0"	289	7	39'-9"	186	37	39'-9"	982	11'-5"	31	26	72	1.183	230.1	0.9	103	48.2	9,306
10'-0"	4'-0"	14"	11"	26'	162	#6	6"	11'-7"	2,819	162	#6	6"	11'-1"	2,697	5'-0"	6'-1"	162	#6	6"	9'-8"	2,352	6'-1"	3'-7"	108	9"	4'-0"	289	7	39'-9"	186	37	39'-9"	982	11'-7"	31	26	72	1.294	233.1	0.9	103	52.6	9,428
10'-0"	4'-0"	15"	12"	30'	162	#6	6"	11'-9"	2,859	162	#6	6"	11'-3"	2,737	5'-1"	6'-2"	162	#6	6"	9'-10"	2,393	6'-2"	3'-8"	108	9"	4'-0"	289	7	39'-9"	186	37	39'-9"	982	11'-9"	31	26	72	1.407	236.2	0.9	103	57.2	9,549
10'-0"	5'-0"	8"	7"	7'	162	#6	6"	10'-11"	2,656	162	#6	6"	11'-4"	2,758	5'-6"	5'-10"	162	#6	6"	8'-11"	2,170	5'-10"	3'-1"	108	9"	5'-0"	361	7	39'-9"	186	41	39'-9"	1,089	10'-11"	29	24	67	0.767	230.5	0.8	96	31.5	9,316
10'-0"	5'-0"	9"	7"	10'	162	#6	6"	10'-11"	2,656	162	#6	6"	11'-5"	2,778	5'-7"	5'-10"	162	#6	6"	9'-0"	2,190	5'-10"	3'-2"	108	9"	5'-0"	361	7	39'-9"	186	41	39'-9"	1,089	10'-11"	29	24	67	0.836	231.5	0.8	96	34.3	9,356
10'-0"	5'-0"	10"	8"	13'	162	#6	6"	11'-1"	2,697	162	#6	6"	11'-7"	2,819	5'-8"	5'-11"	162	#6	6"	9'-2"	2,230	5'-11"	3'-3"	82	12"	5'-0"	274	7	39'-9"	186	41	39'-9"	1,089	11'-1"	30	26	72	0.947	232.4	0.8	102	38.7	9,397
10'-0"	5'-0"	11"	8"	16'	162	#6	6"	11'-1"	2,697	162	#6	6"	11'-8"	2,839	5'-9"	5'-11"	162	#6	6"	9'-3"	2,251	5'-11"	3'-4"	82	12"	5'-0"	274	7	39'-9"	186	41	39'-9"	1,089	11'-1"	30	26	72	1.016	233.4	0.8	102	41.5	9,438
10'-0"	5'-0"	12"	9"	20'	162	#6	6"	11'-3"	2,737	162	#6	6"	11'-10"	2,878	5'-10"	6'-0"	162	#6	6"	9'-5"	2,291	6'-0"	3'-5"	108	9"	5'-0"	361	7	39'-9"	186	41	39'-9"	1,089	11'-3"	30	26	72	1.130	238.6	0.8	102	46.0	9,645
10'-0"	5'-0"	13"	10"	23'	162	#6	6"	11'-5"	2,778	162	#6	6"	12'-1"	2,940	6'-0"	6'-1"	162	#6	6"	9'-6"	2,312	6'-0"	3'-6"	108	9"	5'-0"	361	7	39'-9"	186	41	39'-9"	1,089	11'-5"	31	26	72	1.245	240.7	0.9	103	50.7	9,729
10'-0"	5'-0"	14"	11"	26'	162	#6	6"	11'-7"	2,819	162	#6	6"	12'-1"	2,940	6'-0"	6'-1"	162	#6	6"	9'-8"	2,352	6'-1"	3'-7"	108	9"	5'-0"	361	7	39'-9"	186	41	39'-9"	1,089	11'-7"	31	26	72	1.362	243.7	0.9	103	55.4	9,850
10'-0"	5'-0"	15"	12"	30'	162	#7	6"	11'-9"	3,891	162	#6	6"	12'-2"	2,981	6'-1"	6'-2"	162	#6	6"	9'-10"	2,393	6'-2"	3'-8"	108	9"	5'-0"	361	7	39'-9"	186	41	39'-9"	1,089	11'-9"	31	26	72	1.481	272.5	0.9	103	60.1	11,004
10'-0"	6'-0"	8"	7"	7'	162	#6	6"	10'-11"	2,656	162	#6	6"	12'-4"	3,001	6'-6"	5'-10"	162	#6	6"	8'-11"	2,170	5'-10"	3'-1"	108	9"	6'-0"	433	7	39'-9"	186	45	39'-9"	1,195	10'-11"	29	24	67	0.811	241.0	0.8	96	33.3	9,737
10'-0"	6'-0"	8"	7"	10'	162	#6	6"	10'-11"	2,656	162	#6	6"	12'-4"	3,001	6'-6"	5'-10"	162	#6	6"	8'-11"	2,170	5'-10"	3'-1"	108	9"	6'-0"	433	7	39'-9"	186	45	39'-9"	1,195	10'-11"	29	24	67	0.811	241.0	0.8	96	33.3	9,737
10'-0"	6'-0"	9"	8"	13'	162	#6	6"	11'-1"	2,697	162	#6	6"	12'-6"	3,042	6'-7"	5'-11"	162	#6	6"	9'-1"	2,210	5'-11"	3'-2"	82	12"	6'-0"	329	7	39'-9"	186	45	39'-9"	1,195	11'-1"	30	26	72	0.926	241.5	0.8	102	37.9	9,761
10'-0"	6'-0"	10"	8"	16'	162	#6	6"	11'-1"	2,697	162	#6	6"	12'-7"	3,062	6'-8"	5'-11"	162	#6	6"	9'-2"	2,230	5'-11"	3'-3"	82	12"	6'-0"	329	7	39'-9"	186	45	39'-9"	1,195	11'-1"	30	26	72	0.996	242.5	0.8	102	40.7	9,801
10'-0"	6'-0"	12"	9"	20'	162	#6	6"	11'-3"	2,737	162	#6	6"	12'-10"	3,123	6'-10"	6'-0"	162	#6	6"	9'-5"	2,291	6'-0"	3'-5"	108	9"	6'-0"	433	7	39'-9"	186	45	39'-9"	1,195	11'-3"	30	26	72	1.185	249.1	0.8	102	48.2	10,067
10'-0"	6'-0"	13"	10"	23'	162	#6	6"	11'-5"	2,778	162	#6	6"	12'-11"	3,143	6'-11"	6'-0"	162	#6	6"	9'-6"	2,312	6'-0"	3'-6"	108	9"	6'-0"	433	7	39'-9"	186	45	39'-9"	1,195	11'-5"	31	26	72	1.307	257.1	0.9	103	53.1	10,150
10'-0"	6'-0"	14"	11"	26'	162	#6	6"	11'-7"	2,819	162	#6	6"	13'-1"	3,183	7'-0"	6'-1"	162	#6	6"	9'-8"	2,352	6'-1"	3'-7"	108	9"	6'-0"	433	7	39'-9"	186	45	39'-9"	1,195	11'-7"	31	26	72	1.430	254.2	0.9	103	58.1	10,271
10'-0"	6'-0"	15"	12"	30'	162	#7	6"	11'-9"	3,891	162	#6	6"	13'-3"	3,224	7'-1"	6'-2"	162	#6	6"	9'-10"	2,393	6'-2"	3'-8"	108	9"	6'-0"	433	7	39'-9"	186	45	39'-9"	1,195	11'-9"	31	26	72	1.556	283.1	0.9	103	63.1	11,425
10'-0"	7'-0"	8"	7"	7'	162	#6	6"	10'-11"	2,656	162	#6	6"	13'-4"	3,244	7'-6"	5'-10"	162	#6	6"	8'-11"	2,170	5'-10"	3'-1"	108	9"	7'-0"	505	7	39'-9"	186	45	39'-9"	1,195	10'-11"	29	24	67	0.854	248.9	0.8	96	35.0	10,052
10'-0"	7'-0"	8"	7"	10'	162	#6	6"	10'-11"	2,656	162	#6	6"	13'-4"	3,244	7'-6"	5'-10"	162	#6	6"	8'-11"	2,170	5'-10"	3'-1"	108	9"	7'-0"	505	7	39'-9"	186	45	39'-9"	1,195	10'-11"	29	24	67	0.854	248.9	0.8	96	35.0	10,052
10'-0"	7'-0"	9"	8"	13'	162	#6	6"	11'-1"	2,697	162	#6	6"	13'-6"	3,285	7'-7"	5'-11"	162	#6	6"	9'-1"	2,210	5'-11"	3'-2"	82	12"	7'-0"	383	7	39'-9"	186	45	39'-9"	1,195	11'-1"	30	26	72	0.975	248.9	0.8	102	39.8	10,058
10'-0"	7'-0"	10"	8"	16'	162	#6	6"	11'-1"	2,697	162	#6	6"	13'-7"	3,305	7'-8"	5'-11"	162	#6	6"	9'-2"	2,230	5'-11"	3'-3"	82	12"	7'-0"	383	7	39'-9"	186	45	39'-9"	1,195	11'-1"	30	26	72	1.045	249.8	0.8	102	42.6	10,098
10'-0"	7'-0"	12"	9"	20'	162	#6	6"	11'-3"	2,737	162	#6	6"	13'-10"	3,366	7'-10"	6'-0"	162	#6	6"	9'-5"	2,291	6'-0"	3'-5"	108	9"	7'-0"	505	7	39'-9"	186	45	39'-9"	1,195	11'-3"	30	26	72	1.241	257.0	0.8	102	50.5	10,382
10'-0"	7'-0"	13"	10"	23'	162	#6	6"	11'-5"	2,778	162	#6	6"	13'-11"	3,386	7'-11"	6'-0"	162	#6	6"	9'-6"	2,312	6'-0"	3'-6"	108	9"	7'-0"	505	7	39'-9"	186	45	39'-9"	1,195	11'-5"	31	26	72	1.368	259.1	0.9	103	55.6	10,465
10'-0"	7'-0"	14"	11"	26'	162	#6	6"	11'-7"	2,819	162	#6	6"	14'-1"	3,427	8'-1"	6'-1"	162	#6	6"	9'-8"	2,352	6'-1"	3'-7"	108	9"	7'-0"	505	7	39'-9"	186	45	39'-9"	1,195	11'-7"	31	26	72	1.498	262.1	0.9	103	60.8	10,587
10'-0"	7'-0"	15"	12"	30'	162	#7	6"	11'-9"	3,891	162	#6	6"	14'-3"	3,467	8'-1"	6'-2"	162	#6	6"	9'-10"	2,393	6'-2"	3'-8"	108	9"	7'-0"	505	7	39'-9"	186	45	39'-9"	1,195	11'-9"	31	26	72	1.630	290.9	0.9	103	66.1	11,740
10'-0"	8'-0"	8"	7"	7'	162	#6	6"	10'-11"	2,656	162	#6	6"	14'-4"	3,488	8'-6"	5'-10"	162	#6	6"	8'-11"	2,170	5'-10"	3'-1"	108	9"	8'-0"	577	7	39'-9"	186	49	39'-9"	1,301	10'-11"	29	24	67	0.897	259.5	0.8	96	36.7	10,474
10'-0"	8'-0"	8"	7"	10'	162	#6	6"	10'-11"	2,656	162	#6	6"	14'-4"	3,488	8'-6"	5'-10"	162	#6	6"	8'-11"	2,170	5'-10"	3'-1"	108	9"	8'-0"	577	7	39'-9"	186	49	39'-9"	1,301	10'-11"	29	24	67	0.897	259.5	0.8	96	36.7	10,474
10'-0"	8'-0"	9"	8"	13'	162	#6	6"	11'-1"	2,697	162	#6	6"	14'-6"	3,528	8'-7"	5'-11"	162	#6	6"	9'-1"	2,210	5'-11"	3'-2"	82	12"	8'-0"	438	7	39'-9"	186	49	39'-9"	1,301	11'-1"	30	26	72	1.025	259.0	0.8	102	41.8	10,462
10'-0"	8'-0"	10"	8"	16'	162	#6	6"	11'-1"	2,697	162	#6	6"	14'-7"	3,548	8'-8"	5'-11"	162	#6	6"	9'-2"	2,230	5'-11"	3'-3"	82	12"	8'-0"	438	7	39'-9"	186	49	39'-9"	1,301	11'-1"	30	26	72	1.095	260.0	0.8	102	44.6	10,502
10'-0"	8'-0"	12"	9"	20'	162	#6	6"	11'-3"	2,737	162	#6	6"	14'-10"	3,609	8'-10"	6'-0"	162	#6	6"	9'-5"	2,291	6'-0"	3'-5"	108	9"	8'-0"	577	7	39'-9"	186	49	39'-9"	1,301	11'-3"	30	26	72	1.296	267.5	0.8	102	52.7	10,803
10'-0"	8'-0"	13"	10"	23'	162	#6	6"	11'-5"	2,778	162	#6	6"	14'-11"	3,630	8'-11"	6'-0"	162	#6	6"	9'-6"	2,312	6'-0"	3'-6"	108	9"	8'-0"	577	7	39'-9"	186	49	39'-9"	1,301	11'-5"	31	26	72	1.430	269.6	0.9	103	58.1	10,887
10'-0"	8'-0"	14"	11"	26'	162	#6	6"	11'-7"	2,819	162	#6	6"	15'-1"	3,670	9'-0"	6'-1"	162	#6	6"	9'-8"	2,352	6'-1"	3'-7"	108	9"	8'-0"	577	7	39'-9"	186	49	39'-9"	1,301	11'-7"	31	26	72	1.566	272.6	0.9	103	63.5	11,008
10'-0"	8'-0"	15"	12"	30'	162	#7	6"	11'-9"	3,891	162	#6	6"	15'-3"	3,711	9'-1"	6'-2"	162	#6	6"	9'-10"	2,393	6'-2"	3'-8"	108	9"	8'-0"	577	7	39'-9"	186	49	39'-9"	1,301	11'-9"	31	26	72	1.704	301.5	0.9	103	69.0	12,162

⑤ For direct traffic culverts (fill height ≤ 2 ft.), identify the required box size and select the option with the minimum fill height.

HL93 LOADING — SHEET 2 OF 3

Texas Department of Transportation — Bridge Division Standard

SINGLE BOX CULVERTS CAST-IN-PLACE
0' TO 30' FILL

SCC-10

FILE:	scc10dx-21.dgn	DN: TBE	CK: BMP	DW: TxDOT	CK: TxDOT
©TxDOT	February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS					
04/2021 Updated X values.		DIST	COUNTY		SHEET NO.

SECTION DIMENSIONS — *BILLS OF REINFORCING STEEL (For Box Length = 40 feet)* — *QUANTITIES*

S	H	T	U	FILL HEIGHT ⑤	Bars B No.	Bars B Size	Bars B Spa	Bars B Length	Bars B Wt	Bars C No.	Bars C Size	Bars C Spa	Bars C Length	Bars C Wt	Bars C " X "	Bars C " Y "	Bars D No.	Bars D Size	Bars D Spa	Bars D Length	Bars D Wt	Bars D " Y "	Bars D " Z "	Bars M ~ #4 No.	Bars M ~ #4 Spa	Bars M ~ #4 Length	Bars M ~ #4 Wt	Bars F1 ~ #4 at 18" Spa No.	Bars F1 ~ #4 at 18" Spa Length	Bars F1 ~ #4 at 18" Spa Wt	Bars F2 ~ #4 at 18" Spa No.	Bars F2 ~ #4 at 18" Spa Length	Bars F2 ~ #4 at 18" Spa Wt	Bars H 4 ~ #4 Length	Bars H 4 ~ #4 Wt	Bars K No.	Bars K Wt	Per Foot of Barrel Conc (CY)	Per Foot of Barrel Reinf (Lb)	Curb Conc (CY)	Curb Reinf (Lb)	Total Conc (CY)	Total Reinf (Lb)
10'-0"	9'-0"	8"	7"	7'	162	#6	6"	15'-4"	3,731	162	#6	6"	8'-11"	2,170	5'-10"	3'-1"	108	9"	9"	9'-0"	649	7	39'-9"	186	53	39'-9"	1,407	10'-11"	29	24	67	0.940	270.0	0.8	96	38.4	10,895
10'-0"	9'-0"	8"	7"	10'	162	#6	6"	15'-4"	3,731	162	#6	6"	8'-11"	2,170	5'-10"	3'-1"	108	9"	9"	9'-0"	649	7	39'-9"	186	53	39'-9"	1,407	10'-11"	29	24	67	0.940	270.0	0.8	96	38.4	10,895
10'-0"	9'-0"	9"	8"	13'	162	#6	6"	15'-6"	3,772	162	#6	6"	9'-1"	2,210	5'-11"	3'-2"	108	9"	9"	9'-0"	649	7	39'-9"	186	53	39'-9"	1,407	11'-1"	30	26	72	1.074	273.0	0.8	102	43.8	11,023
10'-0"	9'-0"	10"	8"	16'	162	#6	6"	15'-7"	3,792	162	#6	6"	9'-2"	2,230	5'-11"	3'-3"	162	6"	9"	9'-0"	974	7	39'-9"	186	53	39'-9"	1,407	11'-1"	30	26	72	1.144	282.2	0.8	102	46.6	11,388
10'-0"	9'-0"	11"	9"	20'	162	#6	6"	15'-10"	3,853	162	#6	6"	9'-5"	2,291	6'-0"	3'-5"	162	6"	9"	9'-0"	974	7	39'-9"	186	53	39'-9"	1,407	11'-3"	30	26	72	1.352	286.2	0.8	102	54.9	11,550
10'-0"	9'-0"	13"	10"	23'	162	#6	6"	15'-11"	3,873	162	#6	6"	9'-6"	2,312	6'-0"	3'-6"	162	6"	9"	9'-0"	974	7	39'-9"	186	53	39'-9"	1,407	11'-5"	31	26	72	1.492	288.3	0.9	103	60.5	11,633
10'-0"	9'-0"	14"	11"	26'	162	#6	6"	16'-1"	3,913	162	#6	6"	9'-8"	2,352	6'-1"	3'-7"	162	6"	9"	9'-0"	974	7	39'-9"	186	53	39'-9"	1,407	11'-7"	31	26	72	1.634	291.3	0.9	103	66.2	11,754
10'-0"	9'-0"	15"	12"	30'	162	#7	6"	16'-3"	3,954	162	#6	6"	9'-10"	2,393	6'-2"	3'-8"	162	6"	9"	9'-0"	974	7	39'-9"	186	53	39'-9"	1,407	11'-9"	31	26	72	1.778	320.1	0.9	103	72.0	12,908
10'-0"	10'-0"	8"	7"	7'	162	#6	6"	16'-4"	3,974	162	#6	6"	8'-11"	2,170	5'-10"	3'-1"	1,082	7	39'-9"	186	53	39'-9"	1,407	10'-11"	29	24	67	0.984	286.9	0.8	96	40.2	11,571
10'-0"	10'-0"	8"	7"	10'	162	#6	6"	16'-4"	3,974	162	#6	6"	8'-11"	2,170	5'-10"	3'-1"	1,082	7	39'-9"	186	53	39'-9"	1,407	10'-11"	29	24	67	0.984	286.9	0.8	96	40.2	11,571
10'-0"	10'-0"	9"	8"	13'	162	#6	6"	16'-6"	4,015	162	#6	6"	9'-1"	2,210	5'-11"	3'-2"	1,082	7	39'-9"	186	53	39'-9"	1,407	11'-1"	30	26	72	1.123	289.9	0.8	102	45.8	11,699
10'-0"	10'-0"	10"	8"	16'	162	#6	6"	16'-7"	4,035	162	#6	6"	9'-2"	2,230	5'-11"	3'-3"	1,082	7	39'-9"	186	53	39'-9"	1,407	11'-1"	30	26	72	1.193	290.9	0.8	102	48.6	11,739
10'-0"	10'-0"	12"	9"	20'	162	#6	6"	16'-10"	4,096	162	#6	6"	9'-5"	2,291	6'-0"	3'-5"	1,082	7	39'-9"	186	53	39'-9"	1,407	11'-3"	30	26	72	1.407	295.0	0.8	102	57.1	11,901
10'-0"	10'-0"	13"	10"	23'	162	#6	6"	16'-11"	4,116	162	#6	6"	9'-6"	2,312	6'-0"	3'-6"	1,082	7	39'-9"	186	53	39'-9"	1,407	11'-5"	31	26	72	1.553	297.0	0.9	103	63.0	11,984
10'-0"	10'-0"	14"	11"	26'	162	#6	6"	17'

PLAN SYMBOLS

- U/E — CONDUIT RUN UNDERGROUND OR IN FLOOR SLAB
- EXPOSED CONDUIT
- 3#10(P), 1#10(G), 3/4" C. — CONDUIT & WIRE DESIGNATION E.G., 3 # 10 POWER 1 # 10 (G) IN 3/4" CONDUIT (P) = POWER (C) = CONTROL (G) = GROUND (A) = ALARM (SH) = SPACE HEATER (I) = INSTRUMENTATION (SP) = SPARE WIRES (EC) = EMPTY CONDUIT
- HOMERUN TO PANEL CIRCUIT, MEMBERS INDICATED, SHORT HASH MARKS INDICATE PHASE WIRES, LONG HASH MARK INDICATES NEUTRAL WIRE, MARK INDICATES EQUIPMENT GROUND WIRE.
- GROUND WIRE. BARE COPPER UNDERGROUND
- CONDUIT TURNING DOWN
- CONDUIT GOING DOWN
- CONDUIT TURNING UP
- CONDUIT GOING UP
- P1 — CONDUIT TAG
- XXX-LSP-1 — EQUIPMENT TAG
- 1 — KEYNOTE SYMBOL AND KEYNOTE NUMBER
- M — SERVICE METER
- DUPLEX OUTLET
- SIMPLEX OUTLET
- 50 / M-P-1 — MOTOR — NUMBER DENOTES HP SIZE; MOTOR TAG
- GFCI — GFCI RECEPTACLE IN A WEATHER PROOF ENCLOSURE

ONE LINE DIAGRAM SYMBOLS

- CIRCUIT BREAKER
- COMBINATION MOTOR STARTER
- NORMALLY OPEN RELAY CONTACT
- NORMALLY CLOSED RELAY CONTACT
- R — PILOT LIGHT, COLOR INDICATED
- POWER TRANSFORMER
- POTENTIAL TRANSFORMER
- CURRENT TRANSFORMER
- RESET — MOMENTARY CONTACT PUSHBUTTON, NORMALLY CLOSED
- FUSE
- 50 — MOTOR. HP INDICATED
- ETM — ELAPSED TIME METER
- GROUND
- GROUND ROD
- NORMALLY OPEN SWITCH
- V — VOLTMETER
- OVERLOAD
- PMR — POWER MONITOR RELAY
- POWER RECEPTACLE—PIN & SLEEVE TYPE
- H O A — HAND—OFF—AUTOMATIC SWITCH
- SYS — START STOP SELECTOR SWITCH
- 50 A 100 A — FUSE DISCONNECT SWITCH —100 A SWITCH, 50 A FUSE
- USER TELEPHONE JACK, TYPE RJ—11
- MCP — MOTOR CIRCUIT PROTECTOR
- P1 — CONDUIT TAG
- XXX—LSP—1 — EQUIPMENT TAG
- MM — MOTOR METERING UNIT
- SOLID STATE REDUCED VOLTAGE STARTER
- CAS — PUMP MOISTURE/TEMPERATURE MONITOR FINISHED BY PUMP MANUFACTURER
- IC
- ISOLATING CONTACTOR FOR VFD

SCHEMATIC DIAGRAM SYMBOLS

- CIRCUIT BREAKER
- NORMALLY OPEN RELAY CONTACT
- NORMALLY CLOSED RELAY CONTACT
- R — PILOT LIGHT, COLOR INDICATED
- RESET — MOMENTARY CONTACT PUSHBUTTON, NORMALLY CLOSED
- FUSE
- TERMINAL BLOCK LOCATED IN MOTOR CONTROL CENTE
- SSM — SOLID STATE METERING
- CURRENT TRANSFORMER
- LEVEL SWITCH, NORMALLY OPEN
- TERMINAL BLOCK
- 10 — MOTOR. HP INDICATED
- H O A; X00; 0X0; 00X — HAND—OFF—AUTOMATIC SWITCH
- ELECTRODE
- TS — TEMPERATURE SWITCH
- PANEL INTERIOR LIGHT W/SW 25W FLUORESCENT LAMP
- FLASHER
- SNI — SYSTEM NETWORK INTERFACE —CUSTOMER TELEPHONE J—BOX BY SOUTHWESTERN BELL TELEPHONE CO.
- USER TELEPHONE JACK, TYPE RJ—11
- SWITCH SPST, 20A, 125V
- BEACON/HORN ACK.
- CRL1 — CONTROL RELAY, TAG ID "CRL1"
- DUPLEX RECEPTACLE
- UPS — UNITERUPTIBLE POWER SUPPLY
- MCP — MOTOR CIRCUIT PROTECTOR
- M — SOLID—STATE MOTOR STARTER CONTACTOR
- OVERLOAD
- GROUND GRID

P & ID SYMBOLS

- YL — GREEN OFF INDICATOR
- LAL — LEVEL ALARM LOW
- LAH — LEVEL ALARM HIGH
- TAH — TEMP. ALARM HIGH
- YL — RED RUN INDICATOR
- MAH — MOISTURE ALARM HIGH
- HS HOA — HAND SWITCH
- KQI — ELAPSED TIME METER
- UI — MULTIVARIABLE INDICATOR (AUTO DIALER)
- YI — PUMP FAIL TO START ALARM
- LSL — LOW LEVEL ALARM SWITCH
- LSO — PUMPS OFF LEVEL SWITCH
- LS1 — LEAD PUMP START LEVEL SWITCH
- LS2 — LAG PUMP START LEVEL SWITCH
- LSH — HIGH LEVEL ALARM SWITCH
- LT — LEVEL SIGNAL CONVERTER/TRANSMITTER
- LE — SUBMERSIBLE LEVEL TRANSDUCER
- TSH — MOTOR HIGH TEMPERATURE SWITCH
- M — MOTOR
- LI — LEVEL INDICATOR
- FQIT — ULTRASONIC FLOW INDICATING TRANSMITTER WITH TOTALIZER
- MS ALT — ALTERNATOR/PUMP CONTROL SELECTOR SWITCH
- LST — ULTRASONIC FLOW TRANSDUCER
- YS — GENERATOR AUXILIARY RUN CONTACTS
- ZS — POSITION SWITCH
- HMS — PUSHBUTTON SWITCH
- UA — GENERATOR GLOBAL ALARM CONTACT
- XAH — AUDIBLE ALARM HORN AND BEACON

ELECTRICAL NOTES:

1. ALL WORK SHALL MEET THE REQUIREMENTS OF THE LATEST ADOPTED VERSION OF THE NATIONAL ELECTRICAL CODE (NEC).
2. CONTRACTOR SHALL PROVIDE ELECTRICAL INSPECTION CERTIFICATION VIA UL APPROVED AGENCY HAVING AREA JURISDICTION.
3. CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL ELECTRICAL PERMITS AND ELECTRICAL INSPECTION.
4. THE CONTRACTOR SHALL FURNISH ALL MATERIALS, LABOR, AND SUPERVISION TO STORE, HANDLE, AND INSTALL EQUIPMENT AND SYSTEMS AS SHOWN ON DRAWINGS AND DESCRIBED IN NOTES. MATERIALS FURNISHED BY OTHERS SHALL BE INSTALLED COMPLETE. THE CONTRACTOR SHALL PROVIDE PROOF OF CURRENT LICENSING AS REQUIRED BY CURRENT STATE AND LOCAL REQUIREMENTS.
5. ALL MATERIAL SHALL BE NEW AND BEAR THE LABEL OR LISTING OF A NATIONALLY RECOGNIZED INDEPENDENT TESTING LABORATORY; UL, FM, ETC.
6. THE CONTRACTOR SHALL CHECK AND VERIFY ALL DIMENSIONS AND CONDITIONS AT SITE PRIOR TO STARTING WORK.
7. ALL ELECTRICAL/INSTRUMENT WORK SHALL BE COORDINATED WITH THE ENGINEER AND OWNER TO VERIFY FINAL LOCATION AND CONNECTIONS OF ALL EQUIPMENT FOR ROUGHING—IN AND FINAL CONNECTIONS. DEVICE MOUNTING HEIGHTS, UNLESS OTHERWISE NOTED, SHALL BE: TOP OF PANELS TO FINISHED GRADE—72" A.F.G.
8. ALL DEVICES SHALL BE ADEQUATELY IDENTIFIED WITH PERMANENT NAMEPLATE OR TAGS. WIRING SHALL BE IDENTIFIED AS TO PHASING AND CONDUCTOR IDENTIFICATION. CIRCUIT CHANGES AND ROUTING SHALL BE REFLECTED ON "RECORD" DRAWINGS. VOLTAGE AND PHASE CHARACTERISTICS SHALL BE INCLUDED ON PUMP CONTROL PANELS, MAIN DISCONNECT SWITCHES, AND JUNCTION BOXES.
9. THE COMPLETE INSTALLATION SHALL BE TESTED AT COMPLETION OF WORK TO BE FREE OF SHORT CIRCUIT CONDITIONS. ALL INTERLOCK AND ALARM CIRCUITS SHALL BE TESTED TO VERIFY CORRECT OPERATION OF EACH DEVICE. ALL INSTRUMENT LOOPS SHALL BE CALIBRATED AND VERIFIED FOR CORRECT OPERATION.
10. THE CONTRACTOR SHALL KEEP ONE SET OF THE LATEST ISSUE OF ELECTRICAL DRAWINGS WHICH SHALL REFLECT THE ACTUAL INSTALLED CONDITIONS AND CONNECTIONS OF ALL EQUIPMENT AND DEVICES. THE CONTRACTOR SHALL PROVIDE COPIES OF ALL MAINTENANCE INFORMATION AND INSTRUCTIONS RECEIVED WITH EQUIPMENT AND SYSTEMS. ALL "RECORD" DRAWINGS, EQUIPMENT MANUALS, AND MISCELLANEOUS INFORMATION SHALL BE GIVEN TO THE ENGINEER/OWNER AT COMPLETION OF WORK.

ELECTRICAL MATERIALS SPECIFICATIONS:

NOTE: REFER TO SHEETS E—2 AND E—3 FOR GENERATOR SPECIFICATIONS.
REFER TO SHEETS E—3 AND E—4 FOR AUTOMATIC TRANSFER SWITCH SPECIFICATIONS.
ADDITIONAL EQUIPMENT SPECIFICATIONS ARE ON SHEET E—6 AND E—9.
REFER TO SHEETS E—7 AND E—8 FOR LIFT STATION PUMP CONTROL PANEL SPECIFICATIONS.
REFER TO SHEET E—10 FOR WQ/DETENTION POND CONTROL PANEL SPECIFICATIONS.

CONDUCTORS AND CABLES

POWER AND CONTROL WIRE AND CABLE

A. UNDERGROUND OR WET LOCATION POWER AND CONTROL WIRE AND CABLE SHALL BE STRANDED COPPER WIRE TYPE XHHW—2, BELDEN, CAROL, HWC OR EQUAL WITH INSULATION RATED FOR 600V.
B. ABOVEGROUND POWER AND CONTROL WIRE AND CABLE SHALL BE STRANDED COPPER WIRE TYPE THHN, BELDEN, CAROL, HWC OR EQUAL WITH INSULATION RATED FOR 600V.
C. ANALOG SIGNAL CABLE TO BE 18AWG MINIMUM WITH 300V INSULATION. ANALOG SIGNAL CABLE TO HAVE TWO TWISTED CONDUCTORS WITH OVERALL SHIELD, DRAIN WIRE, AND COLOR CODED INSULATION.
D. MINIMUM POWER WIRE SIZE TO BE #12 AWG.
E. MINIMUM CONTROL WIRE SIZE TO BE #14 AWG.

RACEWAYS AND BOXES

UNLESS OTHERWISE NOTED, CONDUIT SHALL CONFORM TO THE FOLLOWING:

A. CONDUIT ROUTINGS ARE SHOWN DIAGRAMMATICALLY ON THE DRAWINGS. THE CONTRACTOR SHALL COORDINATE THE FINAL LOCATION OF ALL ROUTINGS TO MEET THE SPECIFIC CONDITIONS OF THE INSTALLATION.
B. ALL CONDUIT TRANSITION ELBOWS FROM UNDERGROUND TO ABOVE GROUND SHALL BE PVC COATED RIGID ALUMINUM.
C. ALL CONDUIT LEAVING WET WELL SHALL BE PVC COATED RIGID ALUMINUM.
D. UNLESS OTHERWISE NOTED ALL OUTDOORS ABOVE GROUND CONDUITS SHALL BE RIGID ALUMINUM, MINIMUM SIZE 3/4".
E. ALL UNDERGROUND CONDUITS SHALL BE 1" MINIMUM.
— REFER TO DETAILS ON SITE PLAN SHEETS E—5 AND E—9 FOR DUCTBANK DETAILS.
F. INCLUDE A GROUNDING CONDUCTOR IN ALL CONDUITS.
G. BITUMINOUS COATING IS TO BE PROVIDED FOR ALL METAL PARTS IN CONTACT WITH CONCRETE.

GROUNDING

GROUNDING SHALL BE IN ACCORDANCE WITH THE LATEST VERSION OF N.E.C. AVAILABLE AT THE TIME OF INSTALLATION. GROUNDING SHALL MEET ALL LOCAL CODES IN EFFECT AT THE TIME OF INSTALLATION.

A. GROUNDING SYSTEM
A GROUNDING SYSTEM SHALL BE INSTALLED TO TIE ALL ELECTRICAL EQUIPMENT ENCLOSURES AND DEVICES TO A COMMON REFERENCE. GROUND RODS SHALL BE COPPER CLAD, 3/4"ø X 10' LONG. ALL UNDERGROUND CONNECTIONS SHALL BE MADE WITH AN EXOTHERMIC WELD. GROUND RODS SHALL BE BURIED 18" BELOW FINISHED GRADE EXCEPT GROUND ROD IN INSPECTION CELL. GROUND RESISTANCE SHALL NOT EXCEED 5.00 OHMS.
B. GROUND ROD INSPECTION WELL
GROUND ROD INSPECTION WELL SHALL BE ERICO T416B, NOT RATED FOR ROADWAY USE, OR EQUAL. SEE "TYPICAL GROUND ROD INSPECTION WELL TERMINATION," SHEET E—11, FOR DETAILS.

ELECTRICAL SHEET LIST:

E—1	ELECTRICAL SYMBOLS AND NOTES
E—2	ELECTRICAL LIFT STATION GENERATOR SPECIFICATIONS
E—3	ELECTRICAL LIFT STATION GENERATOR/ATS SPECIFICATIONS
E—4	ELECTRICAL LIFT STATION ATS SPECIFICATIONS
E—5	ELECTRICAL LIFT STATION SITE PLAN
E—6	ELECTRICAL LIFT STATION ONE—LINE DIAGRAM
E—7	ELECTRICAL LIFT STATION PUMP CONTROL PANEL
E—8	ELECTRICAL LIFT STATION PUMP CONTROL PANEL
E—9	ELECTRICAL WQ/DETENTION PONDS OVERALL SITE PLAN AND ONE—LINE DIAGRAM
E—10	ELECTRICAL WQ/DETENTION PONDS CONTROL PANEL SCHEMATIC
E—11	ELECTRICAL GENERAL DETAILS
E—12	ELECTRICAL UTILITY DETAILS
E—13	ELECTRICAL UTILITY DETAILS

2 working days Call before you Dig. CALL 811

CITY OF LEANDER APPROVAL

No.	REVISIONS	DATE	BY

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STATE OF TEXAS — THOMAS EDWARD VAUGHAN — 135335 — LICENSED PROFESSIONAL ENGINEER — 12/5/2023

TLS PROJECT 100—009	DATE DECEMBER 2023	SCALE: AS SHOWN	DESIGNED BY: TEV	DRAWN BY: TEV	CHECKED BY: TEV

ELECTRICAL SYMBOLS AND NOTES

GATEWAY 29 OVERALL WPAP / SCS LEANDER, WILLIAMSON CO, TX

SHEET NUMBER
E-1
SHEET 63 OF 90

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125kW DIESEL GENERATOR SET SPECIFICATIONS

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

A. DRAWINGS AND GENERAL PROVISIONS OF THE CONTRACT APPLY TO THIS SECTION.

1.2 SUMMARY

A. THIS SECTION INCLUDES PACKAGED ENGINE–GENERATOR SETS SUITABLE FOR USE IN APPLICATIONS WITH THE FEATURES AS SPECIFIED AND INDICATED WHERE THE ENGINE GENERATORS WILL BE USED AS THE STANDBY POWER SOURCE FOR THE SYSTEM.

1.3 DEFINITIONS

A. EMERGENCY STANDBY POWER (ESP): PER ISO 8528: THE MAXIMUM POWER AVAILABLE DURING A VARIABLE ELECTRICAL POWER SEQUENCE, UNDER THE STATED OPERATING CONDITIONS, FOR WHICH A GENERATING SET IS CAPABLE OF DELIVERING IN THE EVENT OF A UTILITY POWER OUTAGE OR UNDER TEST CONDITIONS FOR UP TO 200 HOURS OF OPERATION PER YEAR WITH THE MAINTENANCE INTERVALS AND PROCEDURES BEING CARRIED OUT AS PRESCRIBED BY THE MANUFACTURERS. THE PERMISSIBLE AVERAGE POWER OUTPUT (PPP) OVER 24 HOURS OF OPERATION SHALL NOT EXCEED 70 PERCENT OF THE ESP UNLESS OTHERWISE AGREED BY THE RIC ENGINE MANUFACTURER.

B. PRIME POWER (PRP): PER ISO 8528: THE MAXIMUM POWER WHICH A GENERATING SET IS CAPABLE OF DELIVERING CONTINUOUSLY WHILST SUPPLYING A VARIABLE ELECTRICAL LOAD WHEN OPERATED FOR AN UNLIMITED NUMBER OF HOURS PER YEAR UNDER THE AGREED OPERATING CONDITIONS WITH THE MAINTENANCE INTERVALS AND PROCEDURES BEING CARRIED OUT AS A PRESCRIBED BY THE MANUFACTURER. THE PERMISSIBLE AVERAGE POWER OUTPUT (PPP) OVER 24 HOURS OF OPERATION SHALL NOT EXCEED 70 PERCENT OF THE PRP UNLESS OTHERWISE AGREED BY THE RIC ENGINE MANUFACTURER.

C. LIMITED TIME RUNNING POWER (LTP): PER ISO 8528: THE MAXIMUM POWER AVAILABLE, UNDER THE AGREED OPERATING CONDITIONS, FOR WHICH THE GENERATING SET IS CAPABLE OF DELIVERING FOR UP TO 500 HOURS OF OPERATION PER YEAR WITH THE MAINTENANCE INTERVALS AND PROCEDURES BEING CARRIED OUT AS PRESCRIBED BY THE MANUFACTURERS.

D. CONTINUOUS OPERATING POWER (COP): PER ISO 8528: THE MAXIMUM POWER WHICH A GENERATING SET IS CAPABLE OF DELIVERING CONTINUOUSLY WHILST SUPPLYING A CONSTANT ELECTRICAL LOAD WHEN OPERATED FOR AN UNLIMITED NUMBER OF HOURS PER YEAR UNDER THE AGREED OPERATING CONDITIONS WITH THE MAINTENANCE INTERVALS AND PROCEDURES BEING CARRIED OUT AS A PRESCRIBED BY THE MANUFACTURER.

E. DATA CENTER CONTINUOUS (DCC): THE MAXIMUM POWER WHICH A GENERATING SET IS CAPABLE OF DELIVERING CONTINUOUSLY WHILST SUPPLYING A VARIABLE OR CONSTANT ELECTRICAL LOAD WHEN OPERATED FOR AN UNLIMITED NUMBER OF HOURS IN A DATA CENTER APPLICATION UNDER THE AGREED OPERATING CONDITIONS WITH THE MAINTENANCE INTERVALS AND PROCEDURES BEING CARRIED OUT AS A PRESCRIBED BY THE MANUFACTURER. THE PERMISSIBLE AVERAGE POWER OUTPUT (PPP) OVER 24 HOURS OF OPERATION SHALL NOT EXCEED 100 PERCENT OF THE DCC RATING.

F. OPERATIONAL BANDWIDTH: THE TOTAL VARIATION FROM THE LOWEST TO HIGHEST VALUE OF A PARAMETER OVER THE RANGE OF CONDITIONS INDICATED, EXPRESSED AS A PERCENTAGE OF THE NOMINAL VALUE OF THE PARAMETER.

1.4 ACTION SUBMITTALS

A. PRODUCT DATA: FOR EACH TYPE OF PACKAGED ENGINE GENERATOR INDICATED. INCLUDE RATED CAPACITIES, OPERATING CHARACTERISTICS, AND FURNISHED SPECIALTIES AND ACCESSORIES. IN ADDITION, INCLUDE THE FOLLOWING:
1. THERMAL DAMAGE CURVE FOR GENERATOR.
2. TIME–CURRENT CHARACTERISTIC CURVES FOR GENERATOR PROTECTIVE DEVICE.
3. SOUND TEST DATA, BASED ON A FREE FIELD REQUIREMENT.

B. SHOP DRAWINGS: DETAIL EQUIPMENT ASSEMBLIES AND INDICATE DIMENSIONS, WEIGHTS, AND LOCATION AND SIZE OF EACH FIELD CONNECTION.
1. DIMENSIONED OUTLINE PLAN AND ELEVATION DRAWINGS OF ENGINE–GENERATOR SET AND OTHER COMPONENTS SPECIFIED.
2. WIRING DIAGRAMS: CONTROL INTERCONNECTION, CUSTOMER CONNECTIONS.

C. CERTIFICATIONS:
1. SUBMIT STATEMENT OF COMPLIANCE WHICH STATES THE PROPOSED PRODUCT(S) IS CERTIFIED TO THE EMISSIONS STANDARDS REQUIRED BY THE LOCATION FOR EPA, STATIONARY EMERGENCY APPLICATION.

1.5 INFORMATIONAL SUBMITTALS

A. SOURCE QUALITY–CONTROL TEST REPORTS.
1. CERTIFIED SUMMARY OF PROTOTYPE–UNIT TEST REPORT. SEE REQUIREMENTS IN PART 2 "SOURCE QUALITY CONTROL" ARTICLE PART A. INCLUDE STATEMENT INDICATING TORSIONAL COMPATIBILITY OF COMPONENTS.
2. CERTIFIED TEST REPORT: PROVIDE CERTIFIED TEST REPORT DOCUMENTING FACTORY TEST PER THE REQUIREMENTS OF THIS SPECIFICATION, AS WELL AS CERTIFIED FACTORY TEST OF GENERATOR SET SENSORS PER NFPA110 LEVEL 1.
3. LIST OF FACTORY TESTS TO BE PERFORMED ON UNITS TO BE SHIPPED FOR THIS PROJECT.
4. REPORT OF EXHAUST EMISSIONS AND COMPLIANCE STATEMENT CERTIFYING COMPLIANCE WITH APPLICABLE REGULATIONS.

B. WARRANTY:
1. SUBMIT MANUFACTURER'S WARRANTY STATEMENT TO BE PROVIDED FOR THIS PROJECT.

1.6 QUALITY ASSURANCE

A. INSTALLER QUALIFICATIONS: MANUFACTURER'S AUTHORIZED REPRESENTATIVE WHO IS TRAINED AND APPROVED FOR INSTALLATION OF UNITS REQUIRED FOR THIS PROJECT.
B. MANUFACTURER QUALIFICATIONS: A QUALIFIED MANUFACTURER. MAINTAIN, WITHIN 150 MILES OF PROJECT SITE, A SERVICE CENTER CAPABLE OF PROVIDING TRAINING, PARTS, AND EMERGENCY MAINTENANCE REPAIRS.
C. SOURCE LIMITATIONS: OBTAIN PACKAGED GENERATOR SETS AND AUXILIARY COMPONENTS THROUGH ONE SOURCE FROM A SINGLE MANUFACTURER.
D. COMPLY WITH NFPA 37 (STANDARD FOR THE INSTALLATION AND USE OF STATIONARY COMBUSTION ENGINES AND GAS TURBINES).
E. COMPLY WITH NFPA 70 (NATIONAL ELECTRICAL CODE. EQUIPMENT SHALL BE SUITABLE FOR USE IN SYSTEMS IN COMPLIANCE TO ARTICLE 700, 701, AND 702).
F. COMPLY WITH NFPA 110 (EMERGENCY AND STANDBY POWER SYSTEMS) REQUIREMENTS FOR LEVEL 1 EMERGENCY POWER SUPPLY SYSTEM.
G. COMPLY WITH UL 2200.
H. COMPLY WITH CSA 22.2.

1.7 PROJECT CONDITIONS

A. ENVIRONMENTAL CONDITIONS: ENGINE–GENERATOR SYSTEM SHALL WITHSTAND THE FOLLOWING ENVIRONMENTAL CONDITIONS WITHOUT MECHANICAL OR ELECTRICAL DAMAGE OR DEGRADATION OF PERFORMANCE CAPABILITY:
1. AMBIENT TEMPERATURE: 0.0 DEG C (32.0 DEG F) TO 40.0 DEG C (104.0 DEG F).
2. RELATIVE HUMIDITY: 0 TO 95 PERCENT.
3. ALTITUDE: SEA LEVEL TO 600.0 FEET (183.0 M).

1.8 WARRANTY

A. BASE WARRANTY: MANUFACTURER SHALL PROVIDE BASE WARRANTY COVERAGE ON THE MATERIAL AND WORKMANSHIP OF THE GENERATOR SET FOR A MINIMUM OF TWENTY–FOUR (24) MONTHS FOR STANDBY PRODUCT FROM REGISTERED COMMISSIONING AND START–UP.

PART 2 – PRODUCTS

2.1 MANUFACTURERS

A. MANUFACTURERS: THE BASIS FOR THIS SPECIFICATION IS CUMMINS POWER GENERATION EQUIPMENT, THE APPROVED EQUALS LISTED BELOW MAY BE CONSIDERED IF EQUIPMENT PERFORMANCE IS SHOWN TO MEET THE REQUIREMENTS HEREIN.
1. KOHLER
2. CATERPILLAR

2.2 ENGINE–GENERATOR SET

A. FACTORY–ASSEMBLED AND –TESTED, ENGINE–GENERATOR SET.
B. MOUNTING FRAME: MAINTAIN ALIGNMENT OF MOUNTED COMPONENTS WITHOUT DEPENDING ON CONCRETE FOUNDATION; AND HAVE LIFTING ATTACHMENTS.
1. RIGGING INFORMATION: INDICATE LOCATION OF EACH LIFTING ATTACHMENT, GENERATOR–SET CENTER OF GRAVITY, AND TOTAL PACKAGE WEIGHT IN SUBMITTAL DRAWINGS.

C. CAPACITIES AND CHARACTERISTICS:
1. POWER OUTPUT RATINGS: ELECTRICAL OUTPUT POWER RATING FOR STANDBY OPERATION OF NOT LESS THAN 125.0KW, AT 80 PERCENT LAGGING POWER FACTOR, 277/480, SERIES WYE, THREE PHASE, 4 –WIRE, 60 HERTZ.
2. ALTERNATOR SHALL BE CAPABLE OF ACCEPTING MAXIMUM 497.0 KVA IN A SINGLE STEP AND BE CAPABLE OF RECOVERING TO A MINIMUM OF 90% OF RATED NO LOAD VOLTAGE. FOLLOWING THE APPLICATION OF THE SPECIFIED KVA LOAD AT NEAR ZERO POWER FACTOR APPLIED TO THE GENERATOR SET.
3. NAMEPLATES: FOR EACH MAJOR SYSTEM COMPONENT TO IDENTIFY MANUFACTURER'S NAME AND ADDRESS, AND MODEL AND SERIAL NUMBER OF COMPONENT. THE ENGINE–GENERATOR NAMEPLATE SHALL INCLUDE INFORMATION OF THE POWER OUTPUT RATING OF THE EQUIPMENT.

D. GENERATOR–SET PERFORMANCE:
1. STEADY–STATE VOLTAGE OPERATIONAL BANDWIDTH: 0.5 PERCENT OF RATED OUTPUT VOLTAGE FROM NO LOAD TO FULL LOAD.
2. TRANSIENT VOLTAGE PERFORMANCE: NOT MORE THAN 20 PERCENT VARIATION FOR 50 PERCENT STEP–LOAD INCREASE OR DECREASE. VOLTAGE SHALL RECOVER AND REMAIN WITHIN THE STEADY–STATE OPERATING BAND WITHIN 5 SECONDS. ON APPLICATION OF A 100% LOAD STEP THE GENERATOR SET SHALL RECOVER TO STABLE VOLTAGE WITHIN 10 SECONDS.
3. STEADY–STATE FREQUENCY OPERATIONAL BANDWIDTH: 0.25 PERCENT OF RATED FREQUENCY FROM NO LOAD TO FULL LOAD.
4. STEADY–STATE FREQUENCY STABILITY: WHEN SYSTEM IS OPERATING AT ANY CONSTANT LOAD WITHIN THE RATED LOAD, THERE SHALL BE NO RANDOM SPEED VARIATIONS OUTSIDE THE STEADY–STATE OPERATIONAL BAND AND NO HUNTING OR SURGING OF SPEED.
5. TRANSIENT FREQUENCY PERFORMANCE: NOT MORE THAN 10 PERCENT VARIATION FOR 50 PERCENT STEP–LOAD INCREASE OR DECREASE. FREQUENCY SHALL RECOVER AND REMAIN WITHIN THE STEADY–STATE OPERATING BAND WITHIN 1 SECOND. ON APPLICATION OF A 100% LOAD STEP THE GENERATOR SET SHALL RECOVER TO STABLE FREQUENCY WITHIN 10 SECONDS.
6. OUTPUT WAVEFORM: AT FULL LOAD, HARMONIC CONTENT MEASURED LINE TO LINE OR LINE TO NEUTRAL SHALL NOT EXCEED 5 PERCENT TOTAL AND 3 PERCENT FOR ANY SINGLE HARMONIC. TELEPHONE INFLUENCE FACTOR, DETERMINED ACCORDING TO NEMA MG 1, SHALL NOT EXCEED 50.
7. SUSTAINED SHORT–CIRCUIT CURRENT: FOR A 3–PHASE, BOLTED SHORT CIRCUIT AT SYSTEM OUTPUT TERMINALS, SYSTEM SHALL SUPPLY A MINIMUM OF 300 PERCENT OF RATED FULL–LOAD CURRENT FOR NOT LESS THAN 8 SECONDS WITHOUT DAMAGE TO GENERATOR SYSTEM COMPONENTS. FOR A 1–PHASE, BOLTED SHORT CIRCUIT AT SYSTEM OUTPUT TERMINALS, SYSTEM SHALL REGULATE BOTH VOLTAGE AND CURRENT TO PREVENT OVER–VOLTAGE CONDITIONS ON THE NON–FAULTED PHASES.
8. START TIME: COMPLY WITH NFPA 110, LEVEL 1, TYPE 10, SYSTEM REQUIREMENTS.
9. AMBIENT CONDITION PERFORMANCE: ENGINE GENERATOR SHALL BE DESIGNED TO ALLOW OPERATION AT FULL RATED LOAD IN AN AMBIENT TEMPERATURE UNDER SITE CONDITIONS, BASED ON HIGHEST AMBIENT CONDITION. AMBIENT TEMPERATURE SHALL BE AS MEASURED AT THE AIR INLET TO THE ENGINE GENERATOR FOR ENCLOSED UNITS, AND AT THE CONTROL OF THE ENGINE GENERATOR FOR MACHINES INSTALLED IN EQUIPMENT ROOMS.

2.3 ENGINE

A. FUEL: ASTM D975 #2 DIESEL FUEL
B. RATED ENGINE SPEED: 1800RPM.
C. LUBRICATION SYSTEM: THE FOLLOWING ITEMS ARE MOUNTED ON ENGINE OR SKID:
1. LUBE OIL PUMP: SHALL BE POSITIVE DISPLACEMENT, MECHANICAL, FULL PRESSURE PUMP.
2. FILTER AND STRAINER: PROVIDED BY THE ENGINE MANUFACTURER OF RECORD TO PROVIDE ADEQUATE FILTRATION FOR THE PRIME MOVER TO BE USED.
3. CRANKCASE DRAIN: ARRANGED FOR COMPLETE GRAVITY DRAINAGE TO AN EASILY REMOVABLE CONTAINER WITH NO DISASSEMBLY AND WITHOUT USE OF PUMPS, SIPHONS, SPECIAL TOOLS, OR APPLIANCES.

D. ENGINE FUEL SYSTEM: THE ENGINE FUEL SYSTEM SHALL BE INSTALLED IN STRICT COMPLIANCE TO THE ENGINE MANUFACTURER'S INSTRUCTIONS
E. MAIN FUEL PUMP: MOUNTED ON ENGINE. PUMP ENSURES ADEQUATE PRIMARY FUEL FLOW UNDER STARTING AND LOAD CONDITIONS.
F. GOVERNOR: ADJUSTABLE ISOCHRONOUS, WITH SPEED SENSING. THE GOVERNING SYSTEM DYNAMIC CAPABILITIES SHALL BE CONTROLLED AS A FUNCTION OF ENGINE COOLANT TEMPERATURE TO PROVIDE FAST, STABLE OPERATION AT VARYING ENGINE OPERATING TEMPERATURE CONDITIONS. THE CONTROL SYSTEM SHALL ACTIVELY CONTROL THE FUEL RATE AS APPROPRIATE TO THE STATE OF THE ENGINE GENERATOR. FUEL RATE SHALL BE REGULATED AS A FUNCTION OF STARTING, ACCELERATING TO START DISCONNECT SPEED, ACCELERATING TO RATED SPEED, AND OPERATING IN VARIOUS ISOCHRONOUS STATES.
G. COOLING SYSTEM: CLOSED LOOP, LIQUID COOLED
1. THE GENERATOR SET MANUFACTURER SHALL PROVIDE PROTOTYPE TEST DATA FOR THE SPECIFIC HARDWARE PROPOSED DEMONSTRATING THAT THE MACHINE WILL OPERATE AT RATED STANDBY LOAD IN AN OUTDOOR AMBIENT CONDITION OF 40 DEG C.
2. COOLANT: SOLUTION OF 50 PERCENT ETHYLENE–GLYCOL–BASED ANTIFREEZE AND 50 PERCENT WATER, WITH ANTICORROSION ADDITIVES AS RECOMMENDED BY ENGINE MANUFACTURER.
3. SIZE OF RADIATOR OVERFLOW TANK: ADEQUATE TO CONTAIN EXPANSION OF TOTAL SYSTEM COOLANT FROM COLD START TO 110 PERCENT LOAD CONDITION.
4. EXPANSION TANK: CONSTRUCTED OF WELDED STEEL PLATE AND RATED TO WITHSTAND MAXIMUM CLOSED–LOOP COOLANT SYSTEM PRESSURE FOR ENGINE USED. EQUIP WITH GAGE GLASS AND PETCOCK.
5. TEMPERATURE CONTROL: SELF–CONTAINED, THERMOSTATIC–CONTROL VALVE MODULATES COOLANT FLOW AUTOMATICALLY TO MAINTAIN OPTIMUM CONSTANT COOLANT TEMPERATURE AS RECOMMENDED BY ENGINE MANUFACTURER.
6. DUCT FLANGE: GENERATOR SETS INSTALLED INDOORS SHALL BE PROVIDED WITH A FLEXIBLE RADIATOR DUCT ADAPTER FLANGE.

H. MUFFLER/SILENCER: SELECTED WITH PERFORMANCE AS REQUIRED TO MEET SOUND REQUIREMENTS OF THE APPLICATION, SIZED AS RECOMMENDED BY ENGINE MANUFACTURER AND SELECTED WITH EXHAUST PIPING SYSTEM TO NOT EXCEED ENGINE MANUFACTURER'S ENGINE BACKPRESSURE REQUIREMENTS. FOR GENERATOR SETS WITH OUTDOOR ENCLOSURES THE SILENCER SHALL BE INSIDE THE ENCLOSURE.
I. AIR–INTAKE FILTER: ENGINE–MOUNTED AIR CLEANER WITH REPLACEABLE DRY–FILTER ELEMENT AND RESTRICTION INDICATOR.
J. STARTING SYSTEM: 12 OR 24V, AS RECOMMENDED BY THE ENGINE MANUFACTURER; ELECTRIC, WITH NEGATIVE GROUND.
1. COMPONENTS: SIZED SO THEY WILL NOT BE DAMAGED DURING A FULL ENGINE–CRANKING CYCLE WITH AMBIENT TEMPERATURE AT MAXIMUM SPECIFIED IN PART 1 "PROJECT CONDITIONS" ARTICLE.
2. CRANKING CYCLE: AS REQUIRED BY NFPA 110 FOR LEVEL 1 SYSTEMS.
3. BATTERY CABLE: SIZE AS RECOMMENDED BY ENGINE MANUFACTURER FOR CABLE LENGTH AS REQUIRED. INCLUDE REQUIRED INTERCONNECTING CONDUCTORS AND CONNECTION ACCESSORIES.
4. BATTERY COMPARTMENT: FACTORY FABRICATED OF METAL WITH ACID–RESISTANT FINISH.
5. BATTERY–CHARGING ALTERNATOR: FACTORY MOUNTED ON ENGINE WITH SOLID–STATE VOLTAGE REGULATION. THE BATTERY CHARGING ALTERNATOR SHALL HAVE SUFFICIENT CAPACITY TO RECHARGE THE BATTERIES WITH ALL PARASITIC LOADS CONNECTED WITHIN 4 HOURS AFTER A NORMAL ENGINE STARTING SEQUENCE.
6. BATTERY CHARGERS: UNIT SHALL COMPLY WITH UL 1236, PROVIDE FULLY REGULATED, CONSTANT VOLTAGE, CURRENT LIMITED, BATTERY CHARGER FOR EACH BATTERY BANK. IT WILL INCLUDE THE FOLLOWING FEATURES:
   a. OPERATION: EQUALIZING–CHARGING RATE BASED ON GENERATOR SET MANUFACTURER'S RECOMMENDATIONS SHALL BE INITIATED AUTOMATICALLY AFTER BATTERY HAS LOST CHARGE UNTIL AN ADJUSTABLE EQUALIZING VOLTAGE IS ACHIEVED AT BATTERY TERMINALS. UNIT SHALL THEN BE AUTOMATICALLY SWITCHED TO A LOWER FLOAT–CHARGING MODE AND SHALL CONTINUE TO OPERATE IN THAT MODE UNTIL BATTERY IS DISCHARGED AGAIN.
   b. AUTOMATIC TEMPERATURE COMPENSATION: ADJUST FLOAT AND EQUALIZE VOLTAGES FOR VARIATIONS IN AMBIENT TEMPERATURE FROM MINUS 20 DEG C TO PLUS 40 DEG C TO PREVENT OVERCHARGING AT HIGH TEMPERATURES AND UNDERCHARGING AT LOW TEMPERATURES.
   c. AUTOMATIC VOLTAGE REGULATION: MAINTAIN CONSTANT OUTPUT VOLTAGE REGARDLESS OF INPUT VOLTAGE VARIATIONS UP TO PLUS OR MINUS 10 PERCENT.
   d. SAFETY FUNCTIONS: SENSE ABNORMALLY LOW BATTERY VOLTAGE AND CLOSE CONTACTS PROVIDING LOW BATTERY VOLTAGE INDICATION ON CONTROL AND MONITORING PANEL. SENSE HIGH BATTERY VOLTAGE AND LOSS OF AC INPUT OR DC OUTPUT OF BATTERY CHARGER. EITHER CONDITION SHALL CLOSE CONTACTS THAT PROVIDE A BATTERY–CHARGER MALFUNCTION INDICATION AT SYSTEM CONTROL AND MONITORING PANEL.
   e. PROVIDE LED INDICATION OF GENERAL CHARGER CONDITION, INCLUDING CHARGING, FAULTS, AND MODES. PROVIDE A LCD DISPLAY TO INDICATE CHARGE RATE AND BATTERY VOLTAGE. CHARGER SHALL PROVIDE RELAY CONTACTS FOR FAULT CONDITIONS AS REQUIRED BY NFPA110.
   f. ENCLOSURE AND MOUNTING: NEMA, TYPE 1, WALL–MOUNTED CABINET.

2.4 FUEL OIL STORAGE

A. COMPLY WITH NFPA 30.
B. SUB BASE–MOUNTED FUEL OIL TANK: PROVIDE A DOUBLE WALL SECONDARY CONTAINMENT TYPE SUB BASE FUEL STORAGE TANK. THE TANK SHALL BE CONSTRUCTED OF CORROSION RESISTANT STEEL AND SHALL BE UL 142 LISTED AND LABELED. THE FUEL TANK SHALL INCLUDE THE FOLLOWING FEATURES:
1. CAPACITY: FUEL FOR 24 HOUR(S) CONTINUOUS OPERATION AT 100 PERCENT RATED POWER OUTPUT.
2. TANK RAILS AND LIFTING EYES SHALL BE RATED FOR THE FULL DRY WEIGHT OF THE TANK, GENSET, AND ENCLOSURE.
3. ELECTRICAL STUB UP(S)
4. NORMAL & EMERGENCY VENTS
5. LOCKABLE FUEL FILL
6. MECHANICAL FUEL LEVEL GAUGE
7. HIGH AND LOW LEVEL SWITCHES TO INDICATE FUEL LEVEL
8. LEAK DETECTOR SWITCH
9. SUB BASE TANK SHALL INCLUDE A WELDED STEEL CONTAINMENT BASIN, SIZED AT A MINIMUM OF 110% OF THE TANK CAPACITY TO PREVENT ESCAPE OF FUEL INTO THE ENVIRONMENT IN THE EVENT OF A TANK RUPTURE.
10. FILL PORT WITH OVERFILL PREVENTION VALVE (OFPV)
11. 5 GALLON FILL/SPILL DAM OR BUCKET
12. TANK DESIGN SHALL MEET THE REGIONAL REQUIREMENTS FOR THE PROJECT LOCATION

2.5 CONTROL AND MONITORING

A. ENGINE GENERATOR CONTROL SHALL BE MICROPROCESSOR BASED AND PROVIDE AUTOMATIC STARTING, MONITORING, PROTECTION AND CONTROL FUNCTIONS FOR THE UNIT.
B. AUTOMATIC STARTING SYSTEM SEQUENCE OF OPERATION: WHEN MODE–SELECTOR SWITCH ON THE CONTROL AND MONITORING PANEL IS IN THE AUTOMATIC POSITION, REMOTE–CONTROL CONTACTS IN ONE OR MORE SEPARATE AUTOMATIC TRANSFER SWITCHES INITIATE STARTING AND STOPPING OF GENERATOR SET. WHEN MODE–SELECTOR SWITCH IS SWITCHED TO THE ON POSITION, GENERATOR SET STARTS. THE OFF POSITION OF SAME SWITCH INITIATES GENERATOR–SET SHUTDOWN. (SWITCHES WITH DIFFERENT CONFIGURATIONS BUT EQUAL FUNCTIONS ARE ACCEPTABLE.) WHEN GENERATOR SET IS RUNNING, SPECIFIED SYSTEM OR EQUIPMENT FAILURES OR DERANGEMENTS AUTOMATICALLY SHUT DOWN GENERATOR SET AND INITIATE ALARMS. OPERATION OF THE LOCAL (GENERATOR SET–MOUNTED) AND/OR REMOTE EMERGENCY–STOP SWITCH ALSO SHUTS DOWN GENERATOR SET.
C. MANUAL STARTING SYSTEM SEQUENCE OF OPERATION: SWITCHING ON–OFF SWITCH ON THE GENERATOR CONTROL PANEL TO THE ON POSITION STARTS GENERATOR SET. THE OFF POSITION OF SAME SWITCH INITIATES GENERATOR–SET SHUTDOWN. WHEN GENERATOR SET IS RUNNING, SPECIFIED SYSTEM OR EQUIPMENT FAILURES OR DERANGEMENTS AUTOMATICALLY SHUT DOWN GENERATOR SET AND INITIATE ALARMS. OPERATION OF THE LOCAL (GENERATOR SET–MOUNTED) AND/OR REMOTE EMERGENCY–STOP SWITCH ALSO SHUTS DOWN GENERATOR SET.
D. CONFIGURATION: OPERATING AND SAFETY INDICATIONS, PROTECTIVE DEVICES, SYSTEM CONTROLS, ENGINE GAGES AND ASSOCIATED EQUIPMENT SHALL BE GROUPED IN A COMMON CONTROL AND MONITORING PANEL. MOUNTING METHOD SHALL ISOLATE THE CONTROL PANEL FROM GENERATOR–SET VIBRATION. AC OUTPUT POWER CIRCUIT BREAKERS AND OTHER OUTPUT POWER EQUIPMENT SHALL NOT BE MOUNTED IN THE CONTROL ENCLOSURE.
E. INDICATING AND PROTECTIVE DEVICES AND CONTROLS: AS REQUIRED BY NFPA 110 FOR LEVEL 1 SYSTEM, AND THE FOLLOWING:
1. AC VOLTMETER (3–PHASE, LINE TO LINE AND LINE TO NEUTRAL VALUES).
2. AC AMMETER (3–PHASES).
3. AC FREQUENCY METER.
4. AMMETER–VOLTMETER DISPLAYS SHALL SIMULTANEOUSLY DISPLAY CONDITIONS FOR ALL THREE PHASES.
5. EMERGENCY STOP SWITCH: SWITCH SHALL BE A RED "MUSHROOM HEAD" PUSHBUTTON DEVICE COMPLETE WITH LOCK–OUT/TAG–OUT PROVISIONS. DEPRESSING SWITCH SHALL CAUSE THE GENERATOR SET TO IMMEDIATELY STOP THE GENERATOR SET AND PREVENT IT FROM OPERATING.
6. FAULT RESET SWITCH: SUPPLY A DEDICATED CONTROL SWITCH TO RESET/CLEAR FAULT CONDITIONS.
7. DC VOLTMETER (ALTERNATOR BATTERY CHARGING).
8. ENGINE–COOLANT TEMPERATURE GAUGE.
9. ENGINE LUBRICATING–OIL PRESSURE GAUGE.
10. RUNNING–TIME METER.
11. GENERATOR–VOLTAGE AND FREQUENCY DIGITAL RAISE/LOWER SWITCHES. RHEOSTATS FOR THESE FUNCTIONS ARE NOT ACCEPTABLE. THE CONTROL SHALL ADJUSTMENT OF THESE PARAMETERS IN A RANGE OF PLUS OR MINUS 5% OF THE VOLTAGE AND FREQUENCY OPERATING SET POINT (NOT NOMINAL VOLTAGE AND FREQUENCY VALUES.) THE VOLTAGE AND FREQUENCY ADJUSTMENT FUNCTIONS SHALL BE DISABLED WHEN THE PARALLELING BREAKER IS CLOSED.
12. FUEL TANK DERANGEMENT ALARM.
13. FUEL TANK HIGH–LEVEL SHUTDOWN OF FUEL SUPPLY ALARM.
14. AC PROTECTIVE EQUIPMENT: THE CONTROL SYSTEM SHALL INCLUDE OVER/UNDER VOLTAGE, REVERSE KVAR OVER CURRENT, LOSS OF VOLTAGE REFERENCE, AND OVER EXCITATION SHUT DOWN PROTECTION. THERE SHALL BE A OVERLOAD WARNING, AND OVERCURRENT WARNING ALARM.
15. STATUS LED INDICATING LAMPS TO INDICATE REMOTE START SIGNAL PRESENT AT THE CONTROL, EXISTING SHUTDOWN CONDITION, EXISTING ALARM CONDITION, NOT IN AUTO, AND GENERATOR SET RUNNING.
16. A GRAPHICAL DISPLAY PANEL WITH APPROPRIATE NAVIGATION DEVICES SHALL BE PROVIDED TO VIEW ALL INFORMATION NOTED ABOVE, AS WELL AS ALL ENGINE STATUS AND ALARM/SHUTDOWN CONDITIONS (INCLUDING THOSE FROM AN INTEGRATED ENGINE EMISSION CONTROL SYSTEM). THE DISPLAY SHALL ALSO INCLUDE INTEGRATED PROVISIONS FOR ADJUSTMENT OF THE GAIN AND STABILITY SETTINGS FOR THE GOVERNING AND VOLTAGE REGULATION SYSTEMS.
17. PANEL LIGHTING SYSTEM TO ALLOW VIEWING AND OPERATION OF THE CONTROL WHEN THE GENERATOR ROOM OR ENCLOSURE IS NOT LIGHTED.
18. DATA LOGGING: THE CONTROL SYSTEM SHALL LOG THE LATEST 20 DIFFERENT ALARM AND SHUT DOWN CONDITIONS, THE TOTAL NUMBER OF TIMES EACH ALARM OR SHUTDOWN HAS OCCURRED, AND THE DATE AND TIME THE LATEST OF THESE SHUTDOWN AND FAULT CONDITIONS OCCURRED.
19. DC CONTROL POWER MONITORING: THE CONTROL SYSTEM SHALL CONTINUOUSLY MONITOR DC POWER SUPPLY TO THE CONTROL, AND ANNUNCIATE LOW OR HIGH VOLTAGE CONDITIONS. IT SHALL ALSO PROVIDE AN ALARM INDICATING IMMINENT FAILURE OF THE BATTERY BANK BASED ON DEGRADED VOLTAGE RECOVER ON LOADING (ENGINE CRANKING).

2.6 GENERATOR, EXCITER, AND VOLTAGE REGULATOR

A. COMPLY WITH NEMA MG 1.
B. DRIVE: GENERATOR SHAFT SHALL BE DIRECTLY CONNECTED TO ENGINE SHAFT. EXCITER SHALL BE ROTATED INTEGRALLY WITH GENERATOR ROTOR.
C. ELECTRICAL INSULATION: CLASS H
D. TEMPERATURE RISE: 125 / CLASS F ENVIRONMENT.
E. CONSTRUCTION SHALL PREVENT MECHANICAL, ELECTRICAL, AND THERMAL DAMAGE DUE TO VIBRATION, OVER SPEED UP TO 125 PERCENT OF RATING, AND HEAT DURING OPERATION AT 110 PERCENT OF RATED CAPACITY.
F. PERMANENT MAGNET GENERATOR (PMG) SHALL PROVIDE EXCITATION POWER FOR OPTIMUM MOTOR STARTING AND SHORT CIRCUIT PERFORMANCE.
G. ENCLOSURE: DRIP–PROOF.
H. VOLTAGE REGULATOR: SCR TYPE, SEPARATE FROM EXCITER, PROVIDING PERFORMANCE AS SPECIFIED. THE VOLTAGE REGULATION SYSTEM SHALL BE MICROPROCESSOR–CONTROLLED, FULL WAVE RECTIFIED, AND PROVIDE A PULSE–WIDTH MODULATED SIGNAL TO THE EXCITER. NO EXCEPTIONS OR DEVIATIONS TO THESE REQUIREMENTS WILL BE PERMITTED.
I. WINDINGS: TWO–THIRDS PITCH STATOR WINDING AND FULLY LINKED AMORTISSEUR WINDING.
J. SUBTRANSIENT REACTANCE: 15 PERCENT MAXIMUM, BASED ON THE RATING OF THE ENGINE GENERATOR SET.

CITY OF LEANDER APPROVAL

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DATE	DECEMBER 2023
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ELECTRICAL LIFT STATION GENERATOR SPECIFICATIONS

GATEWAY 29 OVERALL WPAP / SCS
LEANDER, WILLIAMSON CO, TX

SHEET NUMBER
E-2
SHEET 64 OF 90

125kW DIESEL GENERATOR SET SPECIFICATIONS (CONTINUED)

2.7 OUTDOOR GENERATOR-SET ENCLOSURE

A. DESCRIPTION: SOUND ATTENUATED ALUMINUM HOUSING. MULTIPLE PANELS SHALL BE LOCKABLE AND PROVIDE ADEQUATE ACCESS TO COMPONENTS REQUIRING MAINTENANCE. INSTRUMENTS, CONTROL, AND BATTERY SYSTEM SHALL BE MOUNTED WITHIN ENCLOSURE.

B. CONSTRUCTION:

1. HINGED DOORS: WITH PADLOCKING PROVISIONS. RESTRAINT/HOLD BACK HARDWARE TO PREVENT DOOR TO KEEP DOOR OPEN AT 180 DEGREES DURING MAINTENANCE. RAIN LIPS OVER ALL DOORS.
2. EXHAUST SYSTEM:
   a. MUFFLER LOCATION: WITHIN ENCLOSURE.
3. HARDWARE: ALL HARDWARE AND HINGES SHALL BE STAINLESS STEEL.
4. MOUNTING BASE: SUITABLE FOR MOUNTING ON SUB-BASE FUEL TANK OR HOUSEKEEPING PAD.
5. A WEATHER PROTECTIVE ENCLOSURE SHALL BE PROVIDED WHICH ALLOWS THE GENERATOR SET TO OPERATE AT FULL RATED LOAD WITH A STATIC PRESSURE DROP EQUAL TO OR LESS THAN 0.5 INCHES OF WATER.

C. ENGINE COOLING AIRFLOW THROUGH ENCLOSURE: HOUSING SHALL PROVIDE AMPLE AIRFLOW FOR ENGINE GENERATOR OPERATION AT RATED LOAD IN AN AMBIENT TEMPERATURE OF 40 DEG C.
1. LOUVERS: FIXED-ENGINE, COOLING-AIR INLET AND DISCHARGE.

D. SOUND PERFORMANCE: REDUCE THE SOUND LEVEL OF THE ENGINE GENERATOR WHILE OPERATING AT FULL RATED LOAD TO A MAXIMUM OF 72.2 DBA MEASURED AT ANY LOCATION 7 M FROM THE ENGINE GENERATOR IN A FREE FIELD ENVIRONMENT.

E. SITE PROVISIONS:
1. LIFTING: COMPLETE ASSEMBLY OF ENGINE GENERATOR, ENCLOSURE, AND SUB BASE FUEL TANK (WHEN USED) SHALL BE DESIGNED TO BE LIFTED INTO PLACE AS A SINGLE UNIT, USING SPREADER BARS.

2.8 VIBRATION ISOLATION DEVICES

A. VIBRATION ISOLATION: GENERATORS INSTALLED ON GRADE SHALL BE PROVIDED WITH ELASTOMERIC ISOLATOR PADS INTEGRAL TO THE GENERATOR, UNLESS THE ENGINE MANUFACTURER REQUIRES USE OF SPRING ISOLATION.

2.9 FINISHES

A. INDOOR AND OUTDOOR ENCLOSURES AND COMPONENTS: POWDER-COATED AND BAKED OVER CORROSION-RESISTANT PRETREATMENT AND COMPATIBLE PRIMER. MANUFACTURER'S STANDARD COLOR OR AS DIRECTED ON THE DRAWINGS.

2.10 SOURCE QUALITY CONTROL

A. PROTOTYPE TESTING: FACTORY TEST ENGINE-GENERATOR SET USING SAME ENGINE MODEL, CONSTRUCTED OF IDENTICAL OR EQUIVALENT COMPONENTS AND EQUIPPED WITH IDENTICAL OR EQUIVALENT ACCESSORIES.
1. TESTS: COMPLY WITH NFPA 110, LEVEL 1 ENERGY CONVERTERS. IN ADDITION, THE EQUIPMENT ENGINE, SKID, COOLING SYSTEM, AND ALTERNATOR SHALL HAVE BEEN SUBJECTED TO ACTUAL PROTOTYPE TESTS TO VALIDATE THE CAPABILITY OF THE DESIGN UNDER THE ABNORMAL CONDITIONS NOTED IN NFPA110. CALCULATIONS AND TESTING ON SIMILAR EQUIPMENT WHICH ARE ALLOWED UNDER NFPA110 ARE NOT SUFFICIENT TO MEET THIS REQUIREMENT.

B. PROJECT-SPECIFIC EQUIPMENT TESTS: BEFORE SHIPMENT, FACTORY TEST ENGINE-GENERATOR SET MANUFACTURED SPECIFICALLY FOR THIS PROJECT. PERFORM TESTS AT RATED LOAD AND POWER FACTOR. INCLUDE THE FOLLOWING TESTS:
1. TEST ENGINE GENERATOR SET MANUFACTURED FOR THIS PROJECT TO DEMONSTRATE COMPATIBILITY AND FUNCTIONALITY.
2. FULL LOAD RUN.
3. MAXIMUM POWER.
4. VOLTAGE REGULATION.
5. STEADY-STATE GOVERNING.
6. SINGLE-STEP LOAD PICKUP.
7. SIMULATED SAFETY SHUTDOWNS.

PROVIDE 14 DAYS' ADVANCE NOTICE OF TESTS AND OPPORTUNITY FOR OBSERVATION OF TESTS BY OWNER'S REPRESENTATIVE.

PART 3 – EXECUTION

3.1 INSTALLATION

A. COMPLY WITH PACKAGED ENGINE-GENERATOR MANUFACTURERS' WRITTEN INSTALLATION, APPLICATION, AND ALIGNMENT INSTRUCTIONS AND WITH NFPA 110.
B. EQUIPMENT SHALL BE INSTALLED BY THE CONTRACTOR IN ACCORDANCE WITH FINAL SUBMITTALS AND CONTRACT DOCUMENTS. INSTALLATION SHALL COMPLY WITH APPLICABLE STATE AND LOCAL CODES AS REQUIRED BY THE AUTHORITY HAVING JURISDICTION. INSTALL EQUIPMENT IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS AND INSTRUCTIONS INCLUDED IN THE LISTING OR LABELING OF UL LISTED PRODUCTS.
C. INSTALLATION OF EQUIPMENT SHALL INCLUDE FURNISHING AND INSTALLING ALL INTERCONNECTING WIRING BETWEEN ALL MAJOR EQUIPMENT PROVIDED FOR THE ON-SITE POWER SYSTEM. THE CONTRACTOR SHALL ALSO PERFORM INTERCONNECTING WIRING BETWEEN EQUIPMENT SECTIONS (WHEN REQUIRED), UNDER THE SUPERVISION OF THE EQUIPMENT SUPPLIER.
D. EQUIPMENT SHALL BE INSTALLED ON CONCRETE HOUSEKEEPING PADS. EQUIPMENT SHALL BE PERMANENTLY FASTENED TO THE PAD IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS AND SEISMIC REQUIREMENTS OF THE SITE.
E. EQUIPMENT SHALL BE INITIALLY STARTED AND OPERATED BY REPRESENTATIVES OF THE MANUFACTURER. ALL PROTECTIVE SETTINGS SHALL BE ADJUSTED AS INSTRUCTED BY THE CONSULTING ENGINEER.
F. ALL EQUIPMENT SHALL BE PHYSICALLY INSPECTED FOR DAMAGE. SCRATCHES AND OTHER INSTALLATION DAMAGE SHALL BE REPAIRED PRIOR TO FINAL SYSTEM TESTING. EQUIPMENT SHALL BE THOROUGHLY CLEANED TO REMOVE ALL DIRT AND CONSTRUCTION DEBRIS PRIOR TO INITIAL OPERATION AND FINAL TESTING OF THE SYSTEM.
G. ON COMPLETION OF THE INSTALLATION BY THE ELECTRICAL CONTRACTOR, THE GENERATOR SET SUPPLIER SHALL CONDUCT A SITE EVALUATION TO VERIFY THAT THE EQUIPMENT IS INSTALLED PER MANUFACTURER'S RECOMMENDED PRACTICE.

3.2 ON-SITE ACCEPTANCE TEST

A. THE COMPLETE INSTALLATION SHALL BE TESTED TO VERIFY COMPLIANCE WITH THE PERFORMANCE REQUIREMENTS OF THIS SPECIFICATION FOLLOWING COMPLETION OF ALL SITE WORK. TESTING SHALL BE CONDUCTED BY REPRESENTATIVES OF THE MANUFACTURER, WITH REQUIRED FUEL SUPPLIED BY CONTRACTOR. THE ENGINEER SHALL BE NOTIFIED IN ADVANCE AND SHALL HAVE THE OPTION TO WITNESS THE TESTS. THE GENERATOR SET MANUFACTURER SHALL PROVIDE A SITE TEST SPECIFICATION COVERING THE ENTIRE SYSTEM. TESTS SHALL INCLUDE:
B. PRIOR TO START OF ACTIVE TESTING, ALL FIELD CONNECTIONS FOR WIRING, POWER CONDUCTORS, AND BUS BAR CONNECTIONS SHALL BE CHECKED FOR PROPER TIGHTENING TORQUE.
C. INSTALLATION ACCEPTANCE TESTS TO BE CONDUCTED ON SITE SHALL INCLUDE A "COLD START" TEST, A TWO HOUR FULL LOAD (RESISTIVE) TEST, AND A ONE-STEP RATED LOAD PICKUP TEST IN ACCORDANCE WITH NFPA 110. PROVIDE A RESISTIVE LOAD BANK AND MAKE TEMPORARY CONNECTIONS FOR FULL LOAD TEST, IF NECESSARY.
D. PERFORM A POWER FAILURE TEST ON THE ENTIRE INSTALLED SYSTEM. THIS TEST SHALL BE CONDUCTED BY OPENING THE POWER SUPPLY FROM THE UTILITY SERVICE, AND OBSERVING PROPER OPERATION OF THE SYSTEM FOR AT LEAST 2 HOURS. COORDINATE TIMING AND OBTAIN APPROVAL FOR START OF TEST WITH SITE PERSONNEL.

3.3 TRAINING

A. THE EQUIPMENT SUPPLIER SHALL PROVIDE TRAINING FOR THE FACILITY OPERATING PERSONNEL COVERING OPERATION AND MAINTENANCE OF THE EQUIPMENT PROVIDED. TRAINING DATE SHALL BE COORDINATED WITH THE FACILITY OWNER.

3.4 FIELD QUALITY CONTROL

A. MANUFACTURER'S FIELD SERVICE: ENGAGE A FACTORY-AUTHORIZED SERVICE REPRESENTATIVE TO INSPECT COMPONENTS, ASSEMBLIES, AND EQUIPMENT INSTALLATIONS, INCLUDING CONNECTIONS, AND TO ASSIST IN TESTING.

3.5 SERVICE AND SUPPORT

A. THE GENERATOR SET SUPPLIER SHALL MAINTAIN SERVICE PARTS INVENTORY FOR THE ENTIRE POWER SYSTEM AT A CENTRAL LOCATION WHICH IS ACCESSIBLE TO THE SERVICE LOCATION 24 HOURS PER DAY, 365 DAYS PER YEAR. THE INVENTORY SHALL HAVE A COMMERCIAL VALUE OF $3 MILLION OR MORE. THE MANUFACTURER OF THE GENERATOR SET SHALL MAINTAIN A CENTRAL PARTS INVENTORY TO SUPPORT THE SUPPLIER, COVERING ALL THE MAJOR COMPONENTS OF THE POWER SYSTEM, INCLUDING ENGINES, ALTERNATORS, CONTROL SYSTEMS, PARALLELING ELECTRONICS, AND POWER TRANSFER EQUIPMENT.
B. THE GENERATOR SET SHALL BE SERVICED BY A LOCAL SERVICE ORGANIZATION THAT IS TRAINED AND FACTORY CERTIFIED IN GENERATOR SET SERVICE. THE SUPPLIER SHALL MAINTAIN AN INVENTORY OF CRITICAL POWER SYSTEM REPLACEMENT PARTS IN THE LOCAL SERVICE LOCATION. SERVICE VEHICLES SHALL BE STOCKED WITH CRITICAL REPLACEMENT PARTS. THE SERVICE ORGANIZATION SHALL BE ON CALL 24 HOURS PER DAY, 365 DAYS PER YEAR. THE SERVICE ORGANIZATION SHALL BE PHYSICALLY LOCATED WITHIN 150 MILES OF THE SITE.
C. THE MANUFACTURER SHALL MAINTAIN MODEL AND SERIAL NUMBER RECORDS OF EACH GENERATOR SET PROVIDED FOR AT LEAST 20 YEARS.

3.6 SERVICE AGREEMENT:

A. THE SUPPLIER SHALL INCLUDE IN THE BASE PRICE, A ONE-YEAR SERVICE AGREEMENT. THE MAINTENANCE SHALL BE PERFORMED BY FACTORY AUTHORIZED SERVICE TECHNICIANS CAPABLE OF SERVICING BOTH THE ENGINE GENERATOR SET AND THE TRANSFER SWITCH. THIS AGREEMENT SHALL INCLUDE THE FOLLOWING:
1. GENERATOR SUPPLIER MUST HAVE AN IN-HOUSE RENTAL FLEET WITH EQUIPMENT SIZED TO BACK UP THIS PROJECT SITE.
2. ALL ENGINE MAINTENANCE AS RECOMMENDED BY THE SERVICE MANUAL.
3. ALL ELECTRICAL CONTROLS MAINTENANCE AND CALIBRATIONS AS RECOMMENDED BY THE MANUFACTURER.
4. ALL AUXILIARY EQUIPMENT AS A PART OF THE EMERGENCY SYSTEMS.
5. THE SUPPLIER SHALL GUARANTEE EMERGENCY SERVICE.
6. ALL EXPENDABLE MAINTENANCE ITEMS ARE TO BE INCLUDED IN THIS AGREEMENT.
7. A COPY OF THIS AGREEMENT AND A SCHEDULE SHALL BE GIVEN TO THE OWNER AT THE TIME OF HIS ACCEPTANCE, SHOWING WHAT WORK IS TO BE ACCOMPLISHED AND WHEN.

225A AUTOMATIC TRANSFER SWITCH (ATS) SPECIFICATIONS

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

A. DRAWINGS AND GENERAL PROVISIONS OF THE CONTRACT APPLY TO THIS SECTION.

1.2 SUMMARY

A. THIS SECTION INCLUDES TRANSFER SWITCHES RATED 600 V AND LESS, INCLUDING THE FOLLOWING:
1. AUTOMATIC TRANSFER SWITCHES

1.3 SUBMITTALS

A. PRODUCT DATA: FOR EACH TYPE OF PRODUCT INDICATED. INCLUDE RATED CAPACITIES, WEIGHTS, OPERATING CHARACTERISTICS, FURNISHED SPECIALTIES, AND ACCESSORIES.
1. TECHNICAL DATA ON ALL MAJOR COMPONENTS OF ALL TRANSFER SWITCHES AND OTHER PRODUCTS DESCRIBED IN THIS SECTION. DATA IS REQUIRED FOR THE TRANSFER SWITCH MECHANISM, CONTROL SYSTEM, CABINET, AND PROTECTIVE DEVICES SPECIFICALLY LISTED FOR USE WITH EACH TRANSFER SWITCH. INCLUDE STEADY STATE AND FAULT CURRENT RATINGS, WEIGHTS, OPERATING CHARACTERISTICS, AND FURNISHED SPECIALTIES AND ACCESSORIES.
2. SINGLE LINE DIAGRAM: SHOW CONNECTIONS BETWEEN TRANSFER SWITCH, POWER SOURCES AND LOAD

B. SHOP DRAWINGS: DIMENSIONED PLANS, ELEVATIONS, SECTIONS, AND DETAILS SHOWING MINIMUM CLEARANCES, CONDUCTOR ENTRY PROVISIONS, GUTTER SPACE, INSTALLED FEATURES AND DEVICES, AND MATERIAL LISTS FOR EACH SWITCH SPECIFIED.
1. DIMENSIONED OUTLINE DRAWINGS OF ASSEMBLY, INCLUDING ELEVATIONS, SECTIONS, AND DETAILS INCLUDING MINIMAL CLEARANCES, CONDUCTOR ENTRY PROVISIONS, GUTTER SPACE, INSTALLED FEATURES AND DEVICES AND MATERIAL LISTS FOR EACH SWITCH SPECIFIED.
2. INTERNAL ELECTRICAL WIRING AND CONTROL DRAWINGS.
3. INTERCONNECTION WIRING DIAGRAMS, SHOWING RECOMMENDED CONDUIT RUNS AND POINT-TO-POINT TERMINAL CONNECTIONS TO GENERATOR SET.
4. INSTALLATION AND MOUNTING INSTRUCTIONS, INCLUDING INFORMATION FOR PROPER INSTALLATION OF EQUIPMENT TO MEET SEISMIC REQUIREMENTS.

C. MANUFACTURER AND SUPPLIER QUALIFICATION DATA
1. THE TRANSFER SWITCH MANUFACTURER SHALL BE CERTIFIED TO ISO 9001 INTERNATIONAL QUALITY STANDARD AND SHALL HAVE THIRD PARTY CERTIFICATION VERIFYING QUALITY ASSURANCE IN DESIGN/DEVELOPMENT, PRODUCTION, INSTALLATION, AND SERVICE, IN ACCORDANCE WITH ISO 9001.
2. THE MANUFACTURER OF THIS EQUIPMENT SHALL HAVE PRODUCED SIMILAR EQUIPMENT FOR A MINIMUM PERIOD OF 10 YEARS. WHEN REQUESTED, AN ACCEPTABLE LIST OF INSTALLATIONS WITH SIMILAR EQUIPMENT SHALL BE PROVIDED DEMONSTRATING COMPLIANCE WITH THIS REQUIREMENT.

D. OPERATION AND MAINTENANCE DATA: FOR EACH TYPE OF PRODUCT TO INCLUDE IN EMERGENCY, OPERATION, AND MAINTENANCE MANUALS, INCLUDE THE FOLLOWING:
1. FEATURES AND OPERATING SEQUENCES, BOTH AUTOMATIC AND MANUAL.
2. LIST OF ALL FACTORY SETTINGS OF RELAYS, TIMERS AND PROTECTIVE DEVICES; PROVIDE SETTING AND CALIBRATION INSTRUCTIONS WHERE APPLICABLE.

E. WARRANTY DOCUMENTS DEMONSTRATING COMPLIANCE WITH THE PROJECT'S CONTRACT REQUIREMENTS.

1.4 QUALITY ASSURANCE

A. MANUFACTURER QUALIFICATIONS: THE EQUIPMENT SUPPLIER SHALL MAINTAIN A SERVICE CENTER CAPABLE OF PROVIDING TRAINING, PARTS, MAINTENANCE AND EMERGENCY REPAIRS TO EQUIPMENT, INCLUDING TRANSFER SWITCH GENERATOR SETS AND REMOTE MONITORING EQUIPMENT (IF APPLICABLE) AT THE SITE WITHIN A RESPONSE PERIOD OF LESS THAN EIGHT HOURS FROM TIME OF NOTIFICATION.
1. THE TRANSFER SWITCH SHALL BE SERVICED BY TECHNICIANS EMPLOYED BY, AND SPECIALLY TRAINED AND CERTIFIED BY, THE GENERATOR SET SUPPLIER AND THE SUPPLIER SHALL HAVE A SERVICE ORGANIZATION THAT IS FACTORY-CERTIFIED IN BOTH GENERATOR SET AND TRANSFER SWITCH SERVICE. THE SUPPLIER SHALL MAINTAIN AN INVENTORY OF CRITICAL REPLACEMENT PARTS AT THE LOCAL SERVICE ORGANIZATION, AND IN SERVICE VEHICLES. THE SERVICE ORGANIZATION SHALL BE ON CALL 24 HOURS PER DAY, 365 DAYS PER YEAR.
2. SUBMIT NAMES, EXPERIENCE LEVEL, TRAINING CERTIFICATIONS, AND LOCATIONS FOR TECHNICIANS THAT WILL BE RESPONSIBLE FOR SERVICING EQUIPMENT AT THIS SITE.
3. THE MANUFACTURER SHALL MAINTAIN MODEL AND SERIAL NUMBER RECORDS OF EACH TRANSFER SWITCH PROVIDED FOR AT LEAST 20 YEARS.

B. SOURCE LIMITATIONS: ALL TRANSFER SWITCHES ARE TO BE OBTAINED THROUGH ONE SOURCE FROM A SINGLE MANUFACTURER. THE GENERATOR SET MANUFACTURER SHALL WARRANT TRANSFER SWITCHES TO PROVIDE A SINGLE SOURCE OF RESPONSIBILITY FOR PRODUCTS PROVIDED.

C. ELECTRICAL COMPONENTS, DEVICES, AND ACCESSORIES: LISTED AND LABELED AS DEFINED IN NFPA 70, ARTICLE 100, BY A TESTING AGENCY ACCEPTABLE TO AUTHORITIES HAVING JURISDICTION, AND MARKED AS SUITABLE FOR USE IN EMERGENCY, LEGALLY REQUIRED OR OPTIONAL STANDBY USE AS APPROPRIATE FOR THE CONNECTED LOAD.

D. THE AUTOMATIC TRANSFER SWITCH INSTALLATION AND APPLICATION SHALL CONFORM TO THE REQUIREMENTS OF THE FOLLOWING CODES AND STANDARDS:
1. TRANSFER SWITCHES AND ENCLOSURES SHALL BE UL 1008 LISTED AND LABELED AS SUITABLE FOR USE IN EMERGENCY, LEGALLY REQUIRED, AND OPTIONAL STANDBY APPLICATIONS.
2. CSA 282, EMERGENCY ELECTRICAL POWER SUPPLY FOR BUILDINGS, AND CSA C22.2, NO. 14-M91 INDUSTRIAL CONTROL EQUIPMENT
3. NFPA 70, NATIONAL ELECTRICAL CODE. EQUIPMENT SHALL BE SUITABLE FOR USE IN SYSTEMS IN COMPLIANCE WITH ARTICLES 700, 701 AND 702.
4. COMPLY WITH NEMA ICS 10-1993 AC AUTOMATIC TRANSFER SWITCHES
5. IEEE 446 – RECOMMENDED PRACTICE FOR EMERGENCY AND STANDBY POWER SYSTEMS FOR COMMERCIAL AND INDUSTRIAL APPLICATIONS
6. EN55011, CLASS B RADIATED EMISSIONS AND CLASS B CONDUCTED EMISSIONS
7. IEC 1000-4-5 (EN 61000-4-5); AC SURGE IMMUNITY
8. IEC 1000-4-4 (EN 61000-4-4) FAST TRANSIENTS IMMUNITY
9. IEC 1000-4-2 (EN 61000-4-2) ELECTROSTATIC DISCHARGE IMMUNITY
10. IEC 1000-4-3 (EN 61000-4-3) RADIATED FIELD IMMUNITY
11. IEC 1000-4-6 CONDUCTED FIELD IMMUNITY
12. IEC 1000-4-11 VOLTAGE DIP IMMUNITY
13. IEEE 62.41, AC VOLTAGE SURGE IMMUNITY
14. IEEE 62.45, AC VOLTAGE SURGE TESTING

E. COMPLY WITH NFPA 110 – EMERGENCY AND STANDBY POWER SYSTEMS. THE TRANSFER SWITCH SHALL MEET ALL REQUIREMENTS FOR LEVEL 1 SYSTEMS, REGARDLESS OF THE ACTUAL CIRCUIT LEVEL.

F. THE MANUFACTURER SHALL WARRANT THE MATERIAL AND WORKMANSHIP OF THE TRANSFER SWITCH EQUIPMENT FOR A MINIMUM OF TWO (2) YEAR FROM THE WARRANTY START DATE. THE WARRANTY START DATE IS THE DATE OF REGISTERED COMMISSIONING AND START UP OR EIGHTEEN (18) MONTHS FROM DATE OF SHIPMENT, WHICHEVER IS SOONER.

G. THE WARRANTY SHALL BE COMPREHENSIVE. NO DEDUCTIBLES SHALL BE ALLOWED FOR TRAVEL TIME, SERVICE HOURS, REPAIR PARTS COST, AND ETC. DURING THE MINIMUM NOTED WARRANTY PERIOD DESCRIBED ABOVE.

1.5 PROJECT CONDITIONS

A. INTERRUPTION OF EXISTING ELECTRICAL SERVICE: DO NOT INTERRUPT ELECTRICAL SERVICE TO FACILITIES OCCUPIED BY OWNER OR OTHERS UNLESS PERMITTED UNDER THE FOLLOWING CONDITIONS AND THEN ONLY AFTER ARRANGING TO PROVIDE TEMPORARY ELECTRICAL SERVICE:
1. NOTIFY OWNER NO FEWER THAN 14 DAYS IN ADVANCE OF PROPOSED INTERRUPTION OF ELECTRICAL SERVICE.
2. DO NOT PROCEED WITH INTERRUPTION OF ELECTRICAL SERVICE WITHOUT OWNER'S WRITTEN PERMISSION.
3. DO NOT ENERGIZE ANY NEW SERVICE OR DISTRIBUTION EQUIPMENT WITHOUT NOTIFICATION AND PERMISSION OF THE OWNER.

PART 2 – PRODUCTS

2.1 MANUFACTURERS

A. EQUIPMENT SPECIFICATIONS FOR THIS PROJECT ARE BASED ON AUTOMATIC TRANSFER SWITCHES MANUFACTURED BY CUMMINS POWER GENERATION, THE APPROVED EQUALS LISTED BELOW MAY BE CONSIDERED IF EQUIPMENT PERFORMANCE IS SHOWN TO MEET THE REQUIREMENTS HEREIN.
1. CUMMINS POWER GENERATION
2. ASCO
3. ZENITH/ABB

B. EQUIPMENT SPECIFICATIONS FOR THIS PROJECT ARE BASED ON AUTOMATIC TRANSFER SWITCHES MANUFACTURED BY CUMMINS POWER GENERATION. SWITCHES MANUFACTURED BY OTHER MANUFACTURERS THAT MEET THE REQUIREMENT OF THIS SPECIFICATION ARE ACCEPTABLE, IF APPROVED NOT LESS THAN TWO WEEKS BEFORE SCHEDULED BID DATE. PROPOSALS MUST INCLUDE A LINE-BY-LINE COMPLIANCE STATEMENT BASED ON THIS SPECIFICATION.

2.2 GENERAL TRANSFER-SWITCH PRODUCT REQUIREMENTS

A. PROVIDE TRANSFER SWITCHES IN THE NUMBER AND RATINGS THAT ARE SHOWN ON THE DRAWINGS.

B. INDICATED CURRENT RATINGS: APPLY AS DEFINED IN UL 1008 FOR CONTINUOUS LOADING AND TOTAL SYSTEM TRANSFER.

C. FAULT-CURRENT CLOSING AND WITHSTAND RATINGS: UL 1008 WCR RATINGS MUST BE SPECIFICALLY LISTED AS MEETING THE REQUIREMENTS FOR USE WITH PROTECTIVE DEVICES AT INSTALLATION LOCATIONS, UNDER SPECIFIED FAULT CONDITIONS. WITHSTAND AND CLOSING RATINGS SHALL BE BASED ON USE OF THE SAME SET OF CONTACTS FOR THE WITHSTAND TEST AND THE CLOSING TEST.

D. SOLID-STATE CONTROLS: ALL SETTINGS SHOULD BE ACCURATE TO +/- 2% OR BETTER OVER AN OPERATING TEMPERATURE RANGE OF – 40 TO + 60 DEGREES C (– 40 TO + 140 DEGREES F).

E. RESISTANCE TO DAMAGE BY VOLTAGE TRANSIENTS: COMPONENTS SHALL MEET OR EXCEED VOLTAGE-SURGE WITHSTAND CAPABILITY REQUIREMENTS WHEN TESTED ACCORDING TO IEEE C62.41. COMPONENTS SHALL MEET OR EXCEED VOLTAGE-IMPULSE WITHSTAND TEST OF NEMA ICS 1.

F. ELECTRICAL OPERATION: ACCOMPLISHED BY A NON-FUSED, MOMENTARILY ENERGIZED SOLENOID OR ELECTRIC MOTOR OPERATOR MECHANISM, MECHANICALLY AND ELECTRICALLY INTERLOCKED IN BOTH DIRECTIONS (EXCEPT THAT MECHANICAL INTERLOCK IS NOT REQUIRED FOR CLOSED TRANSITION SWITCHES).

G. SWITCH CHARACTERISTICS: DESIGNED FOR CONTINUOUS-DUTY REPETITIVE TRANSFER OF FULL-RATED CURRENT BETWEEN ACTIVE POWER SOURCES.
1. SWITCHES USING MOLDED-CASE SWITCHES OR CIRCUIT BREAKERS, OR INSULATED CASE CIRCUIT BREAKER COMPONENTS ARE NOT ACCEPTABLE.
2. TRANSFER SWITCHES SHALL BE DOUBLE-THROW, ELECTRICALLY AND MECHANICALLY INTERLOCKED, AND MECHANICALLY HELD IN THE SOURCE 1 AND SOURCE 2 POSITIONS.
3. MAIN SWITCH CONTACTS SHALL BE HIGH PRESSURE SILVER ALLOY. CONTACT ASSEMBLIES SHALL HAVE ARC CHUTES FOR POSITIVE ARC EXTINGUISHING. ARC CHUTES SHALL HAVE INSULATING COVERS TO PREVENT INTER-PHASE FLASHOVER.
4. CONTACTS SHALL BE OPERATED BY A HIGH-SPEED ELECTRICAL MECHANISM THAT CAUSES CONTACTS TO OPEN OR CLOSE WITHIN THREE ELECTRICAL CYCLES FROM SIGNAL.
5. TRANSFER SWITCH SHALL BE PROVIDED WITH FLAME RETARDANT TRANSPARENT COVERS TO ALLOW VIEWING OF SWITCH CONTACT OPERATION BUT PREVENT DIRECT CONTACT WITH COMPONENTS THAT COULD BE OPERATING AT LINE VOLTAGE LEVELS.
6. THE TRANSFER SWITCH SHALL INCLUDE THE MECHANICAL AND CONTROL PROVISIONS NECESSARY TO ALLOW THE DEVICE TO BE FIELD-CONFIGURED FOR OPERATING SPEED. TRANSFER SWITCH OPERATION WITH MOTOR LOADS SHALL BE AS IS RECOMMENDED IN NEMA MG1.
   a. PHASE ANGLE MONITORING/TIMING EQUIPMENT IS NOT AN ACCEPTABLE SUBSTITUTE FOR THIS FUNCTIONALITY
7. TRANSFER SWITCHES DESIGNATED ON THE DRAWINGS AS "3-POLE" SHALL HAVE A FULL CURRENT-RATED NEUTRAL BAR WITH LUGS.

H. FACTORY WIRING: TRANSFER SWITCH INTERNAL WIRING SHALL BE COMPOSED OF PRE-MANUFACTURED HARNESSES THAT ARE PERMANENTLY MARKED FOR SOURCE AND DESTINATION. HARNESSES SHALL BE CONNECTED TO THE CONTROL SYSTEM BY MEANS OF LOCKING DISCONNECT PLUG(S), TO ALLOW THE CONTROL SYSTEM TO BE EASILY DISCONNECTED AND SERVICED WITHOUT DISCONNECTING POWER FROM THE TRANSFER SWITCH MECHANISM

I. TERMINALS: TERMINALS SHALL BE PRESSURE TYPE AND APPROPRIATE FOR ALL FIELD WIRING. CONTROL WIRING SHALL BE EQUIPPED WITH SUITABLE LUGS, FOR CONNECTION TO TERMINAL STRIPS.

J. ENCLOSURES: ALL ENCLOSURES SHALL BE THIRD-PARTY CERTIFIED FOR COMPLIANCE TO NEMA ICS 6 AND UL 508, UNLESS OTHERWISE INDICATED:
1. THE ENCLOSURE SHALL PROVIDE WIRE BEND SPACE IN COMPLIANCE TO THE LATEST VERSION OF NFPA70, REGARDLESS OF THE DIRECTION FROM WHICH THE CONDUIT ENTERS THE ENCLOSURE.
2. EXTERIOR CABINET DOORS SHALL PROVIDE COMPLETE PROTECTION FOR THE SYSTEM'S INTERNAL COMPONENTS. DOORS MUST HAVE PERMANENTLY MOUNTED KEY-TYPE LATCHES. BOLTED COVERS OR DOORS ARE NOT ACCEPTABLE.
3. TRANSFER SWITCHES SHALL BE PROVIDED IN ENCLOSURES THAT ARE THIRD PARTY CERTIFIED FOR THEIR INTENDED ENVIRONMENT PER NEMA REQUIREMENTS.

2.3 AUTOMATIC TRANSFER SWITCHES

A. COMPLY WITH REQUIREMENTS FOR LEVEL 1 EQUIPMENT ACCORDING TO NFPA 110.

B. INDICATED CURRENT RATINGS:
1. REFER TO THE PROJECT DRAWINGS FOR SPECIFICATIONS ON THE SIZES AND TYPES OF TRANSFER SWITCH EQUIPMENT, WITHSTAND AND CLOSING RATINGS, NUMBER OF POLES, VOLTAGE AND AMPERE RATINGS, ENCLOSURE TYPE, AND ACCESSORIES.
2. MAIN CONTACTS SHALL BE RATED FOR 600 VAC MINIMUM.
3. TRANSFER SWITCHES SHALL BE RATED TO CARRY 100% OF RATED CURRENT CONTINUOUSLY IN THE ENCLOSURE SUPPLIED, IN AMBIENT TEMPERATURES OF –40 TO +60 DEGREES C (–40 TO +140 DEGREES F), RELATIVE HUMIDITY UP TO 95% (NON-CONDENSING), AND ALTITUDES UP TO 10,000 FEET (3000 METERS).

C. RELAY SIGNAL: CONTROL SHALL INCLUDE PROVISIONS FOR ADDITION OF A PRE-TRANSFER RELAY SIGNAL, ADJUSTABLE FROM 0 TO 60 SECONDS, TO BE PROVIDED IF NECESSARY FOR ELEVATOR OPERATION, BASED ON EQUIPMENT PROVIDED FOR THE PROJECT.

D. TRANSFER SWITCHES THAT ARE DESIGNATED ON THE DRAWINGS AS 3-POLE SHALL BE PROVIDED WITH A NEUTRAL BUS AND LUGS. THE NEUTRAL BUS SHALL BE SIZED TO CARRY 100% OF THE CURRENT DESIGNATED ON THE SWITCH RATING.

E. AUTOMATIC TRANSFER SWITCH CONTROL FEATURES
1. THE TRANSFER SWITCH CONTROL SYSTEM SHALL BE CONFIGURABLE IN THE FIELD FOR ANY OPERATING VOLTAGE LEVEL UP TO 600 VAC. VOLTAGE SENSING SHALL BE MONITORED BASED ON THE NORMAL VOLTAGE AT THE SITE. SYSTEMS THAT UTILIZE VOLTAGE MONITORING BASED ON STANDARD VOLTAGE CONDITIONS THAT ARE NOT FIELD CONFIGURABLE ARE NOT ACCEPTABLE.
2. ALL TRANSFER SWITCH SENSING SHALL BE CONFIGURABLE FROM AN OPERATOR PANEL OR FROM A WINDOWS XP OR LATER PC-BASED SERVICE TOOL. DESIGNS UTILIZING DIP SWITCHES OR OTHER ELECTROMECHANICAL DEVICES ARE NOT ACCEPTABLE.
3. THE TRANSFER SWITCH SHALL PROVIDE A RELAY CONTACT SIGNAL PRIOR TO TRANSFER OR RE-TRANSFER. THE TIME PERIOD BEFORE AND AFTER TRANSFER SHALL BE ADJUSTABLE IN A RANGE OF 0 TO 60 SECONDS.
4. THE CONTROL SYSTEM SHALL BE DESIGNED AND PROTOTYPE TESTED FOR OPERATION IN AMBIENT TEMPERATURES FROM – 40 DEGREES C TO + 60 DEGREES C (– 40 TO +140 DEGREES F). IT SHALL BE DESIGNED AND TESTED TO COMPLY WITH THE REQUIREMENTS OF THE NOTED VOLTAGE AND RFI/EMI STANDARDS.
5. THE CONTROL SHALL HAVE OPTICALLY ISOLATED LOGIC INPUTS, HIGH ISOLATION TRANSFORMERS FOR AC INPUTS AND RELAYS ON ALL OUTPUTS, TO PROVIDE OPTIMUM PROTECTION FROM LINE VOLTAGE SURGES, RFI AND EMI.
6. THE TRANSFER SWITCH NETWORK MONITORING EQUIPMENT, WHEN SUPPLIED, SHALL BE PROVIDED WITH A BATTERY-BASED AUXILIARY POWER SUPPLY TO ALLOW MONITORING OF THE TRANSFER SWITCH WHEN BOTH AC POWER SOURCES ARE NON-OPERATIONAL.

CITY OF LEANDER APPROVAL

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TLS PROJECT 100-009
DATE DECEMBER 2023
SCALE: AS SHOWN
DESIGNED BY: TEV
DRAWN BY: TEV
CHECKED BY: TEV

ELECTRICAL LIFT STATION GENERATOR/ATS SPECIFICATIONS

GATEWAY 29 OVERALL WPAP / SCS
LEANDER, WILLIAMSON CO, TX

SHEET NUMBER
E-3
SHEET 65 OF 90

7. THE INDICATOR PANEL LEDS SHALL DISPLAY:
   a. WHICH SOURCE THE LOAD IS CONNECTED TO (SOURCE 1 OR SOURCE 2)
   b. WHICH SOURCE OR SOURCES ARE AVAILABLE
   c. WHEN SWITCH IS NOT SET FOR AUTOMATIC OPERATION, THE CONTROL IS DISABLED
   d. WHEN THE SWITCH IS IN TEST/EXERCISE MODE
8. THE INDICATOR SHALL HAVE PUSHBUTTONS THAT ALLOW THE OPERATOR TO ACTIVATE THE FOLLOWING FUNCTIONS:
   a. ACTIVATE PRE-PROGRAMMED TEST SEQUENCE
   b. OVERRIDE PROGRAMMED DELAYS, AND IMMEDIATELY GO TO THE NEXT OPERATION

F. TRANSFER SWITCH CONTROL PANEL: THE TRANSFER SWITCH SHALL HAVE A MICROPROCESSOR-BASED CONTROL WITH A SEALED MEMBRANE PANEL INCORPORATING PUSHBUTTONS FOR OPERATOR-CONTROLLED FUNCTIONS, AND LED LAMPS FOR SYSTEM STATUS INDICATORS. PANEL DISPLAY AND INDICATING LAMPS SHALL INCLUDE PERMANENT LABELS.

G. CONTROL FUNCTIONS: FUNCTIONS MANAGED BY THE CONTROL SHALL INCLUDE:
   a. ENGINE START (PREVENTS NUISANCE GENSET STARTS IN THE EVENT OF MOMENTARY POWER FLUCTUATION): 0 TO 10 SECONDS (DEFAULT 3 SEC)
   b. TRANSFER NORMAL TO EMERGENCY (ALLOWS GENSET TO STABILIZE BEFORE LOAD IS TRANSFERRED): 0 TO 300 SECONDS (DEFAULT 5 SEC)
   c. RE-TRANSFER EMERGENCY TO NORMAL (ALLOWS UTILITY TO STABILIZE BEFORE LOAD IS TRANSFERRED FROM GENSET): 0 TO 30 MINUTES (DEFAULT 10 MIN)
   d. ENGINE COOLDOWN: 0 TO 30 MINUTES (DEFAULT 10 MIN)
   e. PROGRAMMED TRANSITION: 0 TO 60 SECONDS (DEFAULT 0 SEC)
   2. UNDER FREQUENCY SENSING (EMERGENCY SIDE):
      a. PICKUP: 90% OF NOMINAL FREQUENCY
      b. DROPOUT: 85% OF NOMINAL FREQUENCY

H. CONTROL FEATURES SHALL INCLUDE:
   1. PROGRAMMABLE GENSET EXERCISER: A FIELD-PROGRAMMABLE CONTROL SHALL PERIODICALLY START AND RUN THE GENERATOR WITH OR WITHOUT TRANSFERRING THE LOAD FOR A PRESET TIME PERIOD, THEN RE-TRANSFER AND SHUT DOWN THE GENERATOR AFTER A PRESET COOL-DOWN PERIOD.
   2. IN EVENT OF A LOSS OF POWER TO THE CONTROL, ALL CONTROL SETTINGS AND THE ENGINE START-TIME DELAY SETTING WILL BE RETAINED.

I. CONTROL INTERFACE
   1. PROVIDE ONE SET FORM C AUXILIARY CONTACTS ON BOTH SIDES, OPERATED BY TRANSFER SWITCH POSITION, RATED 10 AMPS 250 VAC.

J. ENGINE STARTING CONTACTS
   1. ONE ISOLATED AND NORMALLY CLOSED PAIR OF CONTACTS RATED 8A AT 30 VDC MINIMUM.

PART 3 – EXECUTION

3.1 INSTALLATION

A. RACK MOUNT TRANSFER SWITCH AS SHOWN ON CONTRACT DRAWINGS.

B. SET FIELD-ADJUSTABLE INTERVALS AND DELAYS, RELAYS, AND ENGINE EXERCISER CLOCK.

3.2 CONNECTIONS

A. WIRING TO REMOTE COMPONENTS: MATCH TYPE AND NUMBER OF CABLES AND CONDUCTORS TO CONTROL AND COMMUNICATION REQUIREMENTS OF TRANSFER SWITCHES AS RECOMMENDED BY MANUFACTURER. INCREASE RACEWAY SIZES AT NO ADDITIONAL COST TO OWNER IF NECESSARY TO ACCOMMODATE REQUIRED WIRING.

B. FIELD CONTROL CONNECTIONS SHALL BE MADE ON A COMMON TERMINAL BLOCK THAT IS CLEARLY AND PERMANENTLY LABELED.

C. TRANSFER SWITCH SHALL BE PROVIDED WITH AL/CU MECHANICAL LUGS SIZED TO ACCEPT THE FULL OUTPUT RATING OF THE SWITCH. LUGS SHALL BE SUITABLE FOR THE NUMBER AND SIZE OF CONDUCTORS SHOWN ON THE DRAWINGS.

3.3 SOURCE QUALITY CONTROL

A. PRIOR TO SHIPPING, FACTORY SHALL TEST AND INSPECT COMPONENTS, ASSEMBLED SWITCHES, AND ASSOCIATED EQUIPMENT TO ENSURE PROPER OPERATION.

B. FACTORY SHALL CHECK TRANSFER TIME AND VOLTAGE, FREQUENCY, AND TIME-DELAY SETTINGS FOR COMPLIANCE WITH SPECIFIED REQUIREMENTS.

C. FACTORY SHALL PERFORM DIELECTRIC STRENGTH TEST COMPLYING WITH NEMA ICS 1.3.4 FIELD QUALITY CONTROL

A. MANUFACTURER'S FIELD SERVICE: THE SUPPLIER OF THE TRANSFER SWITCH(ES) AND ASSOCIATED EQUIPMENT SHALL INSPECT, TEST, AND ADJUST COMPONENTS, ASSEMBLIES, AND EQUIPMENT INSTALLATIONS, INCLUDING CONNECTIONS, AND REPORT RESULTS IN WRITING.

B. MANUFACTURER'S REPRESENTATIVE SHALL PERFORM TESTS AND INSPECTIONS AND PREPARE TEST REPORTS.

C. AFTER INSTALLING EQUIPMENT AND AFTER ELECTRICAL CIRCUITRY HAS BEEN ENERGIZED, INSTALLER SHALL TEST FOR COMPLIANCE WITH REQUIREMENTS.
   7. PERFORM RECOMMENDED INSTALLATION TESTS AS RECOMMENDED IN MANUFACTURER'S INSTALLATION AND SERVICE MANUALS.
   8. AFTER ENERGIZING CIRCUITS, DEMONSTRATE INTERLOCKING SEQUENCE AND OPERATIONAL FUNCTION FOR EACH SWITCH.
      a. SIMULATE POWER FAILURES OF NORMAL SOURCE TO AUTOMATIC TRANSFER SWITCHES AND OF EMERGENCY SOURCE WITH NORMAL SOURCE AVAILABLE.
      b. VERIFY TIME-DELAY SETTINGS.
      c. VERIFY THAT THE TRANSFER SWITCH IS ACCURATELY METERING AC VOLTAGE AND CURRENT.
      d. VERIFY PROPER SEQUENCE AND CORRECT TIMING OF AUTOMATIC ENGINE STARTING, TRANSFER TIME DELAY, RETRANSFER TIME DELAY ON RESTORATION OF NORMAL POWER, AND ENGINE COOL-DOWN AND SHUTDOWN.

D. INFRARED SCANNING: AFTER SUBSTANTIAL COMPLETION, BUT NOT MORE THAN 60 DAYS AFTER FINAL ACCEPTANCE, PERFORM AN INFRARED SCAN OF EACH SWITCH. REMOVE ALL ACCESS PANELS SO JOINTS AND CONNECTIONS ARE ACCESSIBLE TO PORTABLE SCANNER.
   1. FOLLOW-UP INFRARED SCANNING: PERFORM AN ADDITIONAL FOLLOW-UP INFRARED SCAN OF EACH SWITCH 11 MONTHS AFTER DATE OF SUBSTANTIAL COMPLETION.
   2. INSTRUMENT: USE AN INFRARED SCANNING DEVICE DESIGNED TO MEASURE TEMPERATURE OR TO DETECT SIGNIFICANT DEVIATIONS FROM NORMAL VALUES. PROVIDE CALIBRATION RECORD FOR DEVICE.
   3. RECORD OF INFRARED SCANNING: PREPARE A CERTIFIED REPORT THAT IDENTIFIES SWITCHES CHECKED AND THAT DESCRIBES SCANNING RESULTS. INCLUDE NOTATION OF DEFICIENCIES DETECTED, REMEDIAL ACTION TAKEN, AND OBSERVATIONS AFTER REMEDIAL ACTION.

3.5 DEMONSTRATION

A. AFTER GENERATOR SET INSTALLATION, THE GENERATOR AND TRANSFER SWITCH SUPPLIER SHALL CONDUCT A COMPLETE OPERATION, BASIC MAINTENANCE, AND EMERGENCY SERVICE SEMINAR COVERING GENERATOR SET AND TRANSFER SWITCH EQUIPMENT, FOR UP TO 10 PEOPLE EMPLOYED BY THE OWNER.
   1. THE SEMINAR SHALL INCLUDE INSTRUCTION ON OPERATION OF THE TRANSFER EQUIPMENT, NORMAL TESTING AND EXERCISE, ADJUSTMENTS TO THE CONTROL SYSTEM, USE OF THE PC BASED SERVICE AND MAINTENANCE TOOLS PROVIDED UNDER THIS CONTRACT, AND EMERGENCY OPERATION PROCEDURES.

3.6 SERVICE AND SUPPORT

A. THE MANUFACTURER SHALL SUPPLY THE SERVICE PROVIDER WITH A COMPLETE SET OF THE SERVICE AND MAINTENANCE SOFTWARE REQUIRED TO SUPPORT THE PRODUCT. THE SOFTWARE SHALL BE PROVIDED AT A TRAINING CLASS ATTENDED BY THE USER, TO QUALIFY THE USER IN PROPER USE OF THE SOFTWARE. THE SOFTWARE SHALL HAVE THE FOLLOWING FEATURES AND CAPABILITIES:
   1. THE SOFTWARE SHALL ALLOW ADJUSTMENT OF ALL FUNCTIONS DESCRIBED HEREIN, ADJUSTMENT OF OPERATING LEVELS OF ALL PROTECTIVE FUNCTIONS, AND PROGRAMMING OF ALL OPTIONAL FUNCTIONS IN THE CONTROLLER. ADJUSTMENTS SHALL BE POSSIBLE OVER MODEM FROM A FACILITY THAT IS REMOTE FROM THE GENERATOR SET.
   2. THE SOFTWARE SHALL BE CAPABLE OF STORING AND DISPLAYING DATA FOR ANY FUNCTION MONITORED BY THE GENERATOR SET CONTROL. THIS DATA SHALL BE AVAILABLE IN COMMON FILE FORMATS, AND ON GRAPHICAL "STRIP CHART" DISPLAYS.
   3. THE SOFTWARE SHALL AUTOMATICALLY RECORD ALL CONTROL OPERATIONS AND ADJUSTMENTS PERFORMED BY ANY OPERATOR OR SOFTWARE USER, FOR TRACKING OF CHANGES TO THE CONTROL.
   4. THE SOFTWARE SHALL DISPLAY ALL WARNING, SHUTDOWN, AND STATUS CHANGES PROGRAMMED INTO TRANSFER SWITCH CONTROLLER. FOR EACH EVENT, THE CONTROL SHALL PROVIDE INFORMATION ON THE NATURE OF THE EVENT, WHEN IT LAST OCCURRED, AND HOW MANY TIMES IT HAS OCCURRED.

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TLS PROJECT	100-009
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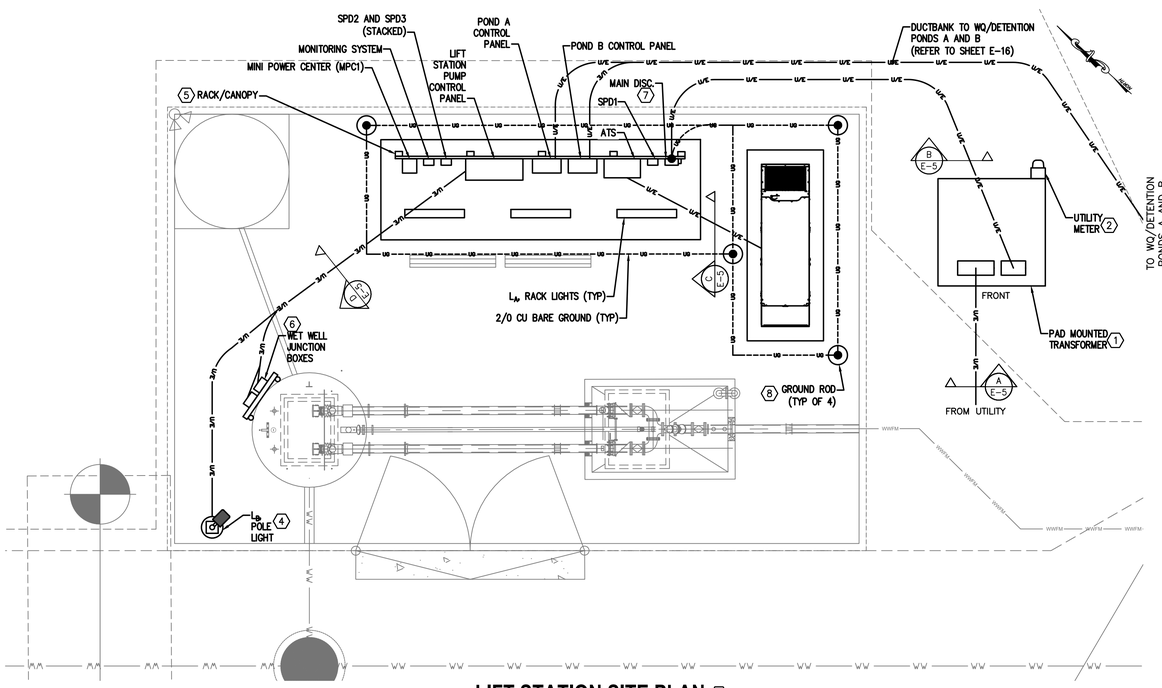
DESIGNED BY:	TEV
DRAWN BY:	TEV
CHECKED BY:	TEV

ELECTRICAL LIFT STATION ATS SPECIFICATIONS

GATEWAY 29 OVERALL WPAP / SCS LEANDER, WILLIAMSON CO, TX

SHEET NUMBER
E-4
SHEET 66 OF 90



LIFT STATION SITE PLAN 3

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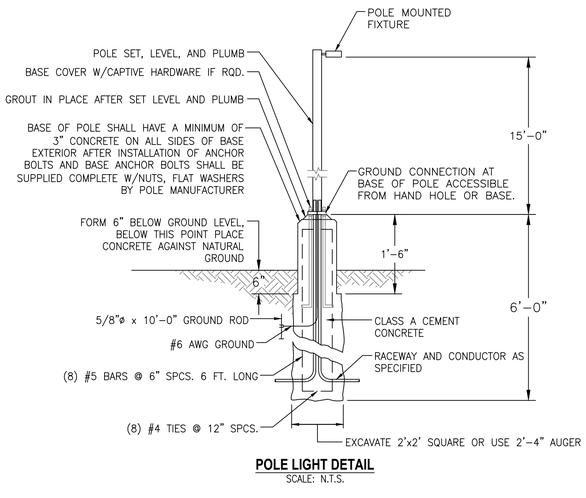
1"=5'



POLE LIGHT DETAIL

SCALE: N.T.S.

LUMINAIRE SCHEDULE

FIXTURE ID	QUANTITY	MANUFACTURER/ MODEL	DESCRIPTION	REMARKS
L_A (RACK LIGHTS)	3	COOPER LIGHTING 4VT2-LD5-4-DR-UNV L840-CD1-WL-U	4FT LED LIGHT FIXTURE, 4000 LUMENS, 4000K, UNIVERSAL VOLTAGE 120-277V. DR HIGH IMPACT ADDITIVE LENS.	MOUNT UNDER CANOPY. LIGHT FIXTURE IS TO BE CONTROLLED BY SWITCH AT EQUIPMENT RACK.
L_B (POLE LIGHT)	1	COOPER LIGHTING PRV-C40-D-UNV-T4-SA-BZ ASS OPTION: HSS	17,100 NOMINAL LUMENS, 4000K, TYPE IV, UNIVERSAL VOLTAGE, BRONZE POLE SHALL BE COOPER SQUARE STRAIGHT ALUMINUM POLE, 4" SHAFT, BRONZE FINISH. PROVIDE POLE LENGTH AS INDICATED ON "POLE LIGHT DETAIL," THIS SHEET.	PROVIDE NECESSARY MOUNTING ACCESSORIES TO MOUNT LIGHT FIXTURE AS SHOWN ON THIS SHEET. PROVIDE PHOTOCONTROL. LIGHT FIXTURE IS TO BE CONTROLLED BY PHOTOCONTROL AND SWITCH AT EQUIPMENT RACK.

A E-5 (1)(2)

RACEWAY	SIZE	CONTENTS	DESCRIPTION	FROM	TO
1	3"	PER UTILITY	UTILITY PRIMARY	UTILITY	UTILITY PADMOUNT TRANSFORMER
2	3"	PER UTILITY	UTILITY PRIMARY		
COORDINATE PRIMARY DUCTBANK REQUIREMENTS WITH PEC. REFER TO SHEETS E-19 AND E-20.					

B E-5 (1)(2)

RACEWAY	SIZE	CONTENTS	DESCRIPTION	FROM	TO
1	2"	(4) 2/0	SERVICE ENTRANCE	UTILITY PADMOUNT TRANSFORMER	MAIN DISCONNECT
2	2"	PULLCORD W/LABEL	SPARE		STUB UP 6" AFG AT MAIN DISCONNECT
RUN DUCTBANK PER "TYPICAL DUCTBANK DETAIL (GRAVEL)" DETAIL, THIS SHEET.					

C E-5 (4)(5)(6)(1)(2)(3)

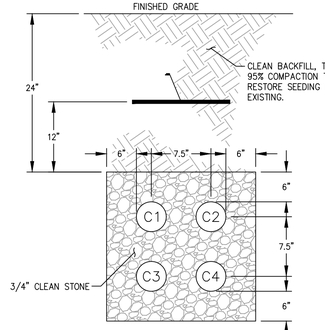
RACEWAY	SIZE	CONTENTS	DESCRIPTION	FROM	TO
1	2"	(4) 2/0, #6G	POWER	ATS	GENERATOR
2	2"	PULLCORD W/LABEL	SPARE		
3	1"	(2) #12, #12G	BLOCK HEATER	MPC1	
4	1"	(2) #12, #12G	BATTERY CHARGER		
5	1"	(2) #14	SIGNAL	ATS	
6	1"	(8) #14	GEN FAULT, GEN RUN STATUS, GEN LOW FUEL, GEN FUEL TANK RUPTURE	MONITORING SYSTEM	
RUN DUCTBANK PER "TYPICAL DUCTBANK DETAIL (GRAVEL)" DETAIL, THIS SHEET.					

D E-5 (4)(5)(6)(1)(2)(3)

RACEWAY	SIZE	CONTENTS	DESCRIPTION	FROM	TO
1	1 1/4"	(3) #4, #8G	PUMP 1	PUMP CONTROL PANEL	WET WELL J-BOX (POWER)
2	1 1/4"	(3) #4, #8G	PUMP 2		
3	1"	PULLCORD W/LABEL	WET WELL SPARE	STUB UP 6" AFG AT RACK AND CAP	STUB UP 6" AFG AT WET WELL AND CAP
4	1"	(18) #14G	PUMP SIGNALS AND FIVE BACKUP FLOATS	PUMP CONTROL PANEL	WET WELL J-BOX (INSTR)
5	1"	(1) #18 TSP	SUBMERSIBLE LEVEL SENSOR		
6	1"	(2) #12, #12G	POLE LIGHT POWER	MPC1	POLE LIGHT
RUN DUCTBANK PER "TYPICAL DUCTBANK SECTION (GRAVEL)" DETAIL, THIS SHEET.					

KEY NOTES

1. PROVIDE AND INSTALL NEW 175A, 277/480V/3PH/4W ELECTRIC SERVICE PER PEDERNALES ELECTRIC COOPERATIVE'S SPECIFICATIONS. CONTRACTOR TO COORDINATE WITH PEC BEFORE STARTING WORK: (1-888-554-4732). SEE SHEETS E-12 AND E-13 FOR ADDITIONAL INFORMATION.
2. PROVIDE AND INSTALL METER SOCKET PER PEDERNALES ELECTRIC COOPERATIVE'S REQUIREMENTS. SEE SHEETS E-12 AND E-13 FOR ADDITIONAL INFORMATION.
3. REFER TO SHEET E-6 FOR KEY NOTES FOR DETAILED EQUIPMENT INFORMATION.
4. PROVIDE AND INSTALL POLE LIGHT, PER "POLE LIGHT DETAIL," THIS SHEET.
5. PROVIDE AND INSTALL CANOPY RACK PER DETAIL ON SHEET E-11.
6. PROVIDE AND INSTALL WET WELL JUNCTION BOXES PER DETAIL ON SHEET E-11. TWO (2) BOXES SHALL BE PROVIDED FOR: POWER AND INSTRUMENTATION.
7. LOCATE CU BUS BAR AT EQUIPMENT RACK. CU BUS BAR SHALL BE MINIMUM 1/4" X 2", LENGTH AS REQUIRED FOR CONNECTIONS SHOWN ON ONE-LINE DIAGRAM, SHEET E-6.
8. PROVIDE AND INSTALL GROUND ROD PER DETAIL "TYPICAL GROUND ROD INSPECTION WELL TERMINATION" ON SHEET E-11.



TYPICAL DUCTBANK SECTION (GRAVEL)

SCALE: N.T.S.

NOTE:
NUMBER OF CONDUITS TO BE ADJUSTED TO SATISFY REQUIREMENTS SHOWN ELSEWHERE ON DRAWINGS. SECTION SHOWN PROVIDES TYPICAL SPACING, ADJUST NUMBER OF CONDUITS AND SIZE OF CONDUITS AS REQUIRED.

CITY OF LEANDER APPROVAL

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ELECTRICAL LIFT STATION SITE PLAN

GATEWAY 29 OVERALL WPAP / SCS LEANDER, WILLIAMSON CO, TX

SHEET NUMBER
E-5
SHEET 67 OF 90

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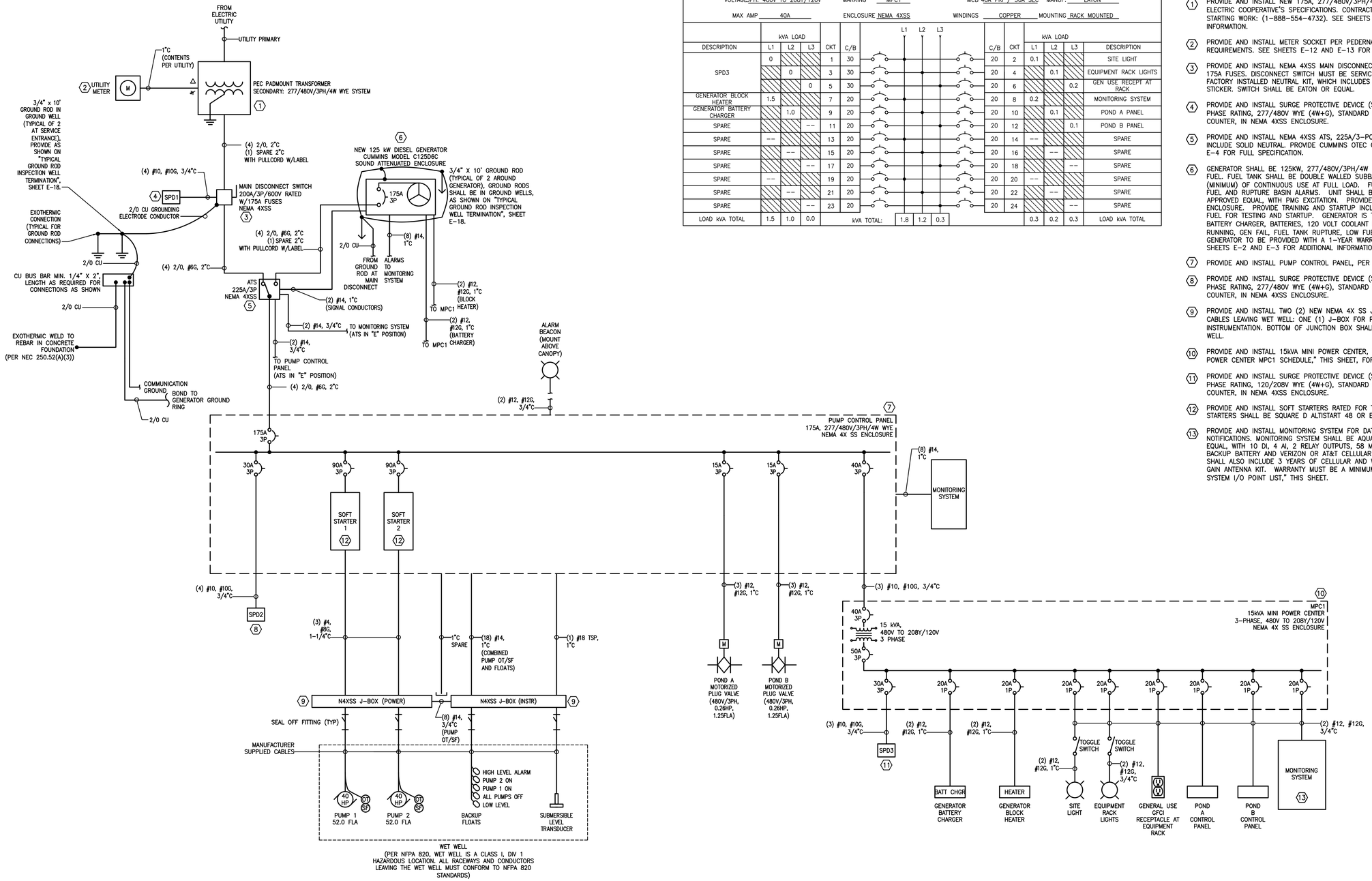

LIFT STATION ONE-LINE DIAGRAM

NOT TO SCALE

MINI POWER CENTER "MPC1" SCHEDULE

VOLTAGE: 3PH: 480V TO 208Y/120V — MARKING: MPC1 — MCB 40A PRI / 50A SEC — MANUF.: EATON

MAX AMP: 40A — ENCLOSURE: NEMA 4XSS — WINDINGS: COPPER — MOUNTING: RACK MOUNTED

kVA LOAD L1	kVA LOAD L2	kVA LOAD L3	CKT	C/B	DESCRIPTION	C/B	CKT	kVA LOAD L1	kVA LOAD L2	kVA LOAD L3	DESCRIPTION
0			1	30	SPD3	20	2	0.1			SITE LIGHT
	0		3	30		20	4		0.1		EQUIPMENT RACK LIGHTS
		0	5	30		20	6			0.2	GEN USE RECEPT AT RACK
1.5			7	20	GENERATOR BLOCK HEATER	20	8	0.2			MONITORING SYSTEM
	1.0		9	20	GENERATOR BATTERY CHARGER	20	10		0.1		POND A PANEL
		--	11	20	SPARE	20	12			0.1	POND B PANEL
--			13	20	SPARE	20	14	--			SPARE
	--		15	20	SPARE	20	16		--		SPARE
		--	17	20	SPARE	20	18			--	SPARE
--			19	20	SPARE	20	20	--			SPARE
	--		21	20	SPARE	20	22		--		SPARE
		--	23	20	SPARE	20	24			--	SPARE
1.5	1.0	0.0	kVA TOTAL:			1.8	1.2	0.3			
LOAD kVA TOTAL								0.3	0.2	0.3	LOAD kVA TOTAL

L1 L2 L3

KEY NOTES

1. PROVIDE AND INSTALL NEW 175A, 277/480V/3PH/4W ELECTRIC SERVICE PER PEDERNALES ELECTRIC COOPERATIVE'S SPECIFICATIONS. CONTRACTOR TO COORDINATE WITH PEC BEFORE STARTING WORK: (1-888-554-4732). SEE SHEETS E-12 AND E-13 FOR ADDITIONAL INFORMATION.
2. PROVIDE AND INSTALL METER SOCKET PER PEDERNALES ELECTRIC COOPERATIVE'S REQUIREMENTS. SEE SHEETS E-12 AND E-13 FOR ADDITIONAL INFORMATION.
3. PROVIDE AND INSTALL NEMA 4XSS MAIN DISCONNECT SWITCH: 200A/3P/600V RATED, WITH 175A FUSES. DISCONNECT SWITCH MUST BE SERVICE ENTRANCE RATED AND INCLUDE FACTORY INSTALLED NEUTRAL KIT, WHICH INCLUDES SERVICE ENTRANCE BONDING KIT AND STICKER. SWITCH SHALL BE EATON OR EQUAL.
4. PROVIDE AND INSTALL SURGE PROTECTIVE DEVICE (SPD), EATON OR EQUAL: 200kA PER PHASE RATING, 277/480V WYE (4W+G), STANDARD FEATURE PACKAGE WITH SURGE COUNTER, IN NEMA 4XSS ENCLOSURE.
5. PROVIDE AND INSTALL NEMA 4XSS ATS, 225A/3-POLE, FOR 277/480V/3PH/4W SYSTEM. INCLUDE SOLID NEUTRAL. PROVIDE CUMMINS OTEC OR EQUAL. REFER TO SHEETS E-3 AND E-4 FOR FULL SPECIFICATION.
6. GENERATOR SHALL BE 125KW, 277/480V/3PH/4W RATED. UNIT SHALL OPERATE ON DIESEL FUEL. FUEL TANK SHALL BE DOUBLE WALLED SUBBASE TYPE SIZED FOR 24 HOURS (MINIMUM) OF CONTINUOUS USE AT FULL LOAD. FUEL TANK IS TO BE PROVIDED WITH LOW FUEL AND RUPTURE BASIN ALARMS. UNIT SHALL BE CUMMINS MODEL C125D6C OR APPROVED EQUAL, WITH PMG EXCITATION. PROVIDE GENERATOR WITH SOUND ATTENUATING ENCLOSURE. PROVIDE TRAINING AND STARTUP INCLUDING 2HR LOAD BANK TEST. PROVIDE FUEL FOR TESTING AND STARTUP. GENERATOR IS TO BE PROVIDED WITH MAIN BREAKER, BATTERY CHARGER, BATTERIES, 120 VOLT COOLANT HEATER, COMMON ALARM CONTACTS (GEN RUNNING, GEN FAIL, FUEL TANK RUPTURE, LOW FUEL), AND CRITICAL GRADE MUFFLER. GENERATOR TO BE PROVIDED WITH A 1-YEAR WARRANTY. REFER TO FULL SPECIFICATION ON SHEETS E-2 AND E-3 FOR ADDITIONAL INFORMATION.
7. PROVIDE AND INSTALL PUMP CONTROL PANEL, PER SHEETS E-7 AND E-8.
8. PROVIDE AND INSTALL SURGE PROTECTIVE DEVICE (SPD), EATON OR EQUAL: 100kA PER PHASE RATING, 277/480V WYE (4W+G), STANDARD FEATURE PACKAGE WITH SURGE COUNTER, IN NEMA 4XSS ENCLOSURE.
9. PROVIDE AND INSTALL TWO (2) NEW NEMA 4X SS JUNCTION BOXES FOR SPLICING OF CABLES LEAVING WET WELL: ONE (1) J-BOX FOR POWER, ONE (1) J-BOX FOR INSTRUMENTATION. BOTTOM OF JUNCTION BOX SHALL BE A MINIMUM OF 18" ABOVE WET WELL.
10. PROVIDE AND INSTALL 15kVA MINI POWER CENTER, EATON OR EQUAL. REFER TO "MINI POWER CENTER MPC1 SCHEDULE," THIS SHEET, FOR ADDITIONAL REQUIREMENTS.
11. PROVIDE AND INSTALL SURGE PROTECTIVE DEVICE (SPD), EATON OR EQUAL: 50kA PER PHASE RATING, 120/208V WYE (4W+G), STANDARD FEATURE PACKAGE WITH SURGE COUNTER, IN NEMA 4XSS ENCLOSURE.
12. PROVIDE AND INSTALL SOFT STARTERS RATED FOR THE SPECIFIC PUMP PROVIDED. SOFT STARTERS SHALL BE SQUARE D ALTISTART 48 OR EQUAL.
13. PROVIDE AND INSTALL MONITORING SYSTEM FOR DATA, REPORTS AND CRITICAL ALARM NOTIFICATIONS. MONITORING SYSTEM SHALL BE AQUAVX MANUFACTURED BY CATTRON, OR EQUAL, WITH 10 DI, 4 AI, 2 RELAY OUTPUTS, 58 MODBUS PLC CHANNELS, KEYPAD, DISPLAY, BACKUP BATTERY AND VERIZON OR AT&T CELLULAR MODEM IN A NEMA 4X ENCLOSURE. SHALL ALSO INCLUDE 3 YEARS OF CELLULAR AND WEBSITE SERVICES AND OPTION FOR HIGH GAIN ANTENNA KIT. WARRANTY MUST BE A MINIMUM OF 2 YEARS. REFER TO "MONITORING SYSTEM I/O POINT LIST," THIS SHEET.

MONITORING SYSTEM I/O POINT LIST

ALARM NUMBER	I/O TYPE	DESCRIPTION	FROM
1	DI	PUMP 1 FAIL	PUMP CONTROL PANEL
2	DI	PUMP 2 FAIL	PUMP CONTROL PANEL
3	DI	WET WELL HIGH LEVEL	PUMP CONTROL PANEL
4	DI	WET WELL LOW LEVEL	PUMP CONTROL PANEL
5	DI	GEN RUNNING	GENERATOR
6	DI	GEN FAIL	GENERATOR
7	DI	GEN LOW FUEL	GENERATOR
8	DI	GEN FUEL TANK RUPTURE	GENERATOR
9	DI	ATS IN "E" POSITION	ATS
10	DI	SPARE	-

LIFT STATION PUMP CONTROL PANEL OVERCURRENT PROTECTION CALCULATION

ITEM	DESCRIPTION	CIRCUIT BREAKER RATING	AMPS	KVA
1	40HP PUMP #1 (ACTIVE)	90A/3P	52.0	43
2	40HP PUMP #2 (ACTIVE)	90A/3P	52.0	43
3	POND A MOTORIZED PLUG VALVE	15A/3P	1.25	1
4	POND B MOTORIZED PLUG VALVE	15A/3P	1.25	1
6	15kVA MINI POWER CENTER	40A/3P	18.0	15
		LARGEST RATING OF CIRCUIT BREAKER (A)		90
		SUM OF ADDITIONAL LOADS (A)		72.5
		CALCULATION TOTAL (A)		162.5
		PUMP CONTROL PANEL MCB		**175 AMPS**

NOTES:
1. PUMP CONTROL PANEL OVERCURRENT PROTECTION RATING IS CALCULATED PER NATIONAL ELECTRICAL CODE (NEC) ARTICLE 409.21, C.

LIFT STATION GENERATOR STEP LOADING

STEP	DESCRIPTION	TIME DELAY
1	15 kVA MINI POWER CENTER	0 SEC
	POND A MOTORIZED PLUG VALVE	
	POND B MOTORIZED PLUG VALVE	
2	40HP PUMP (LEAD)	30 SEC
3	40HP PUMP (LAG)	60 SEC

NOTES:
1. PUMP CONTROL PANEL SHALL RECEIVE A SIGNAL FROM THE ATS STATING THAT IT IS IN "E" POSITION, STARTING TIME DELAYS.
2. GENERATOR SHALL BE SIZED FOR ALL LOADS ABOVE.

CITY OF LEANDER APPROVAL

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THOMAS EDWARD VAUGHAN
135335
LICENSED PROFESSIONAL ENGINEER
12-15-2023

TLS PROJECT 100-009	DATE DECEMBER 2023	SCALE: AS SHOWN	DESIGNED BY: TEV	DRAWN BY: TEV	CHECKED BY: TEV

ELECTRICAL LIFT STATION ONE-LINE DIAGRAM

GATEWAY 29 OVERALL WPAP / SCS

LEANDER, WILLIAMSON CO, TX

SHEET NUMBER
E-6
SHEET 68 OF 90

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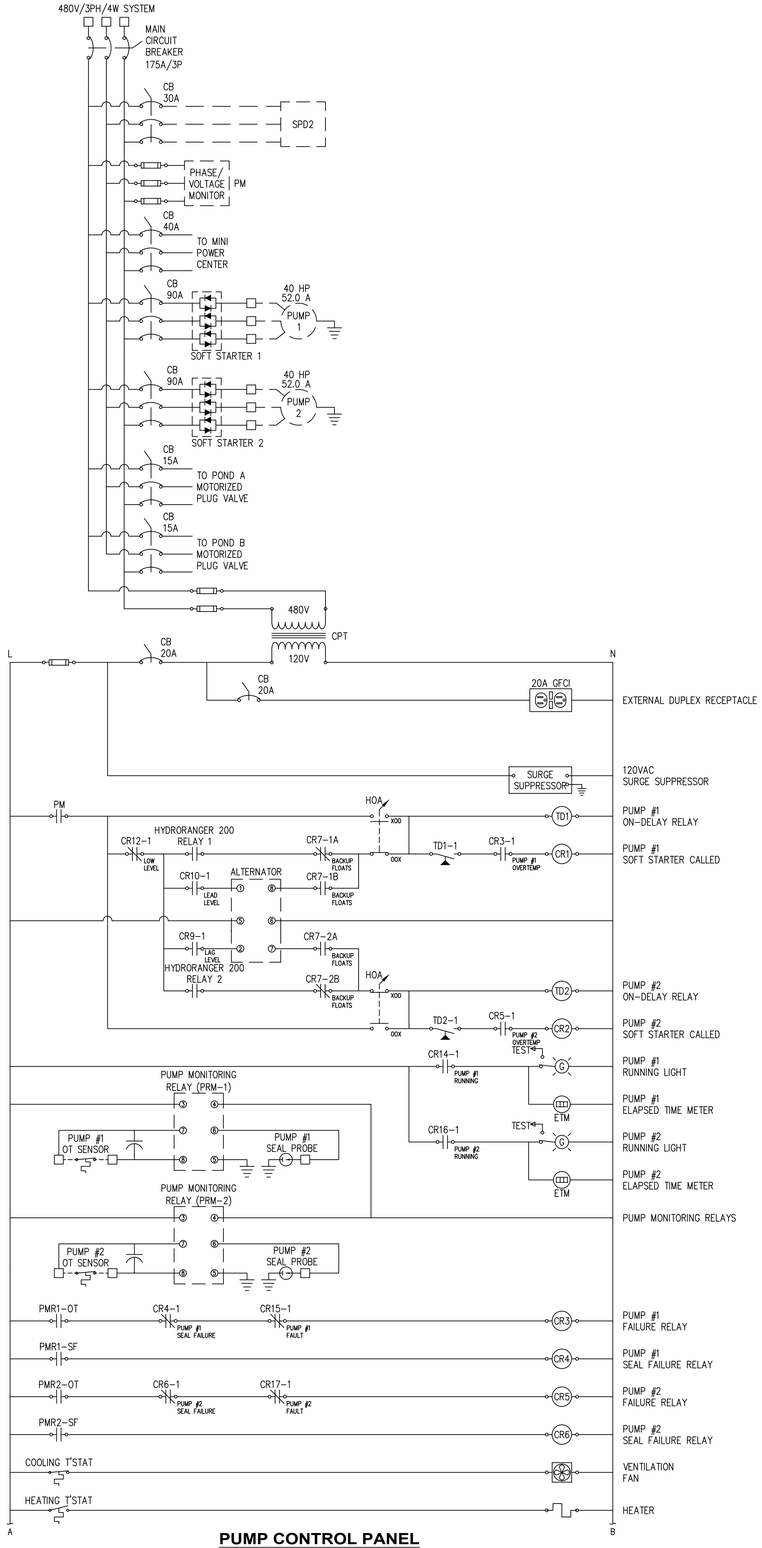
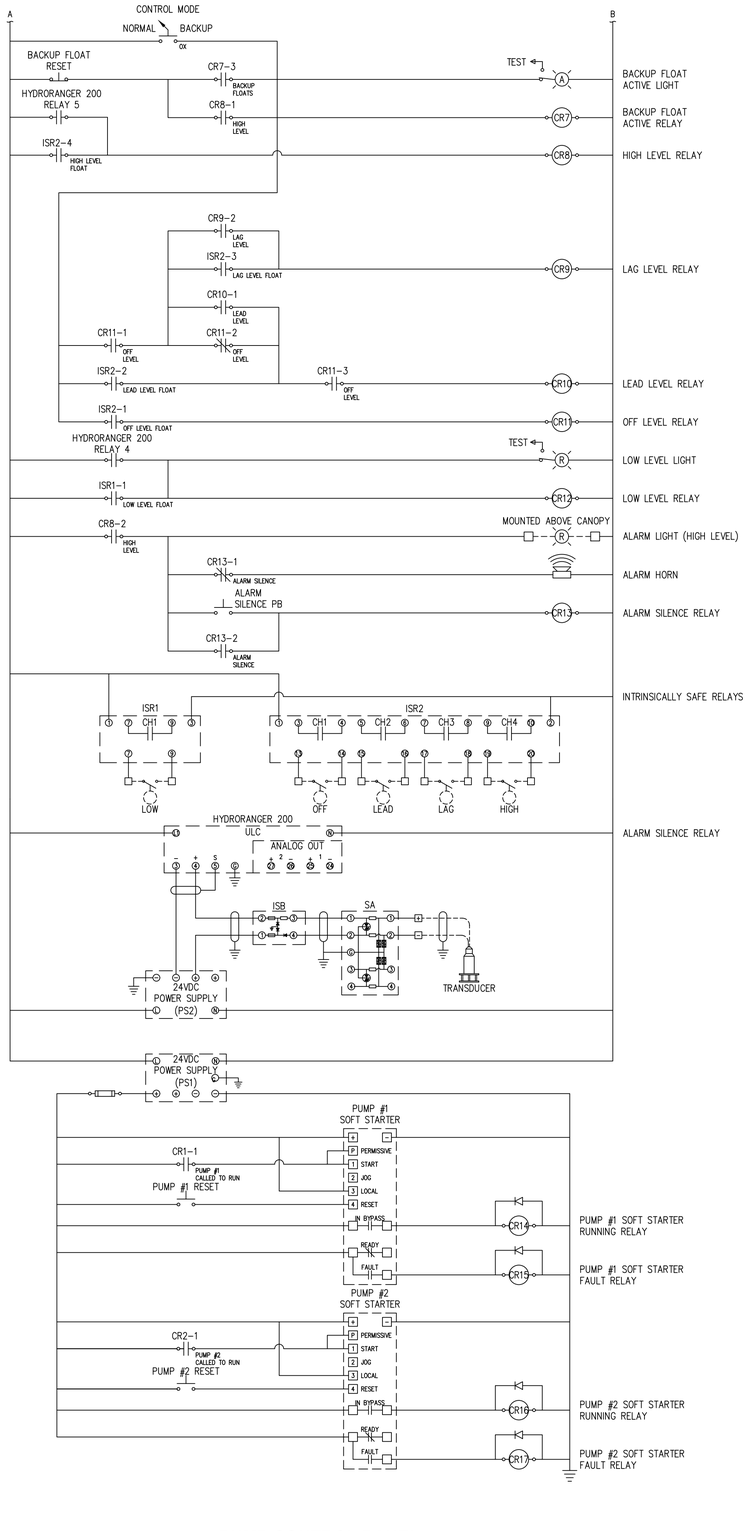


PUMP CONTROL PANEL
LADDER DIAGRAM
NOT TO SCALE



PUMP CONTROL PANEL
LADDER DIAGRAM (CONTINUED)
NOT TO SCALE

OUTPUTS TO MONITORING SYSTEM		
DESCRIPTION	**FROM**	**TO**
PUMP 1 FAIL	PUMP CONTROL PANEL	MONITORING SYSTEM
PUMP 2 FAIL	PUMP CONTROL PANEL	MONITORING SYSTEM
WET WELL HIGH LEVEL	PUMP CONTROL PANEL	MONITORING SYSTEM
WET WELL LOW LEVEL	PUMP CONTROL PANEL	MONITORING SYSTEM

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ELECTRICAL
LIFT STATION
PUMP CONTROL PANEL

GATEWAY 29
OVERALL WPAP / SCS
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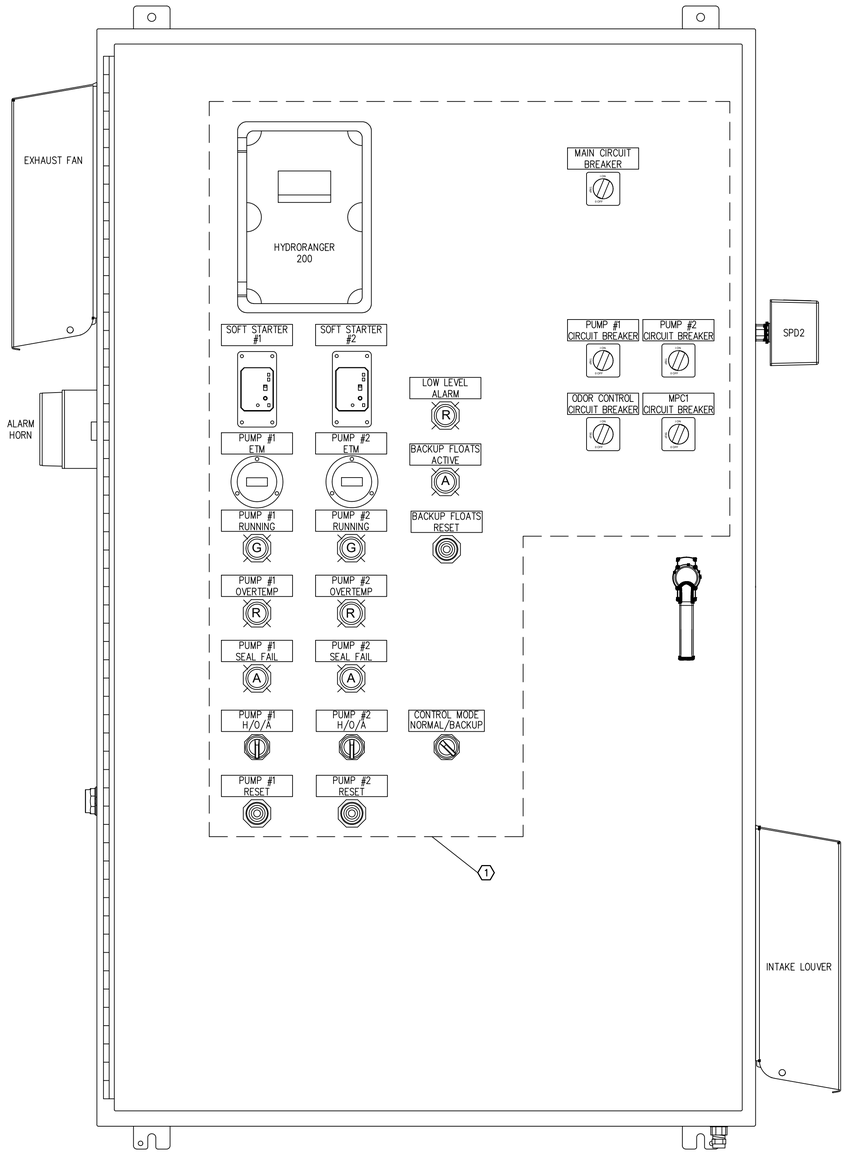
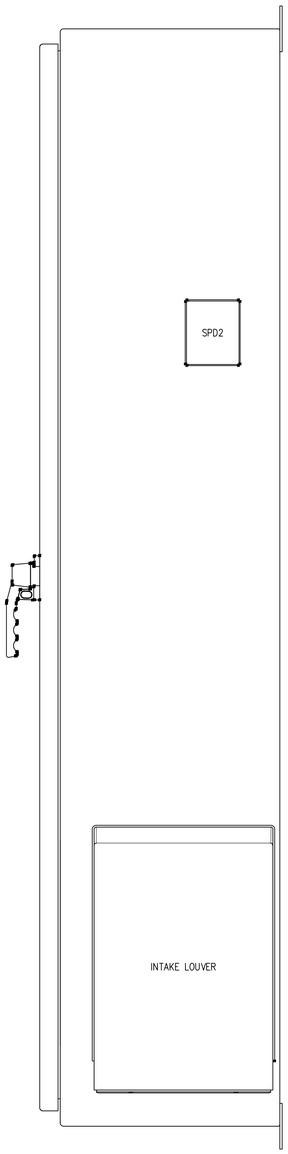


PUMP CONTROL PANEL
ENCLOSURE EXTERIOR (FRONT)
NOT TO SCALE



PUMP CONTROL PANEL
ENCLOSURE EXTERIOR (SIDE)
NOT TO SCALE

GENERAL NOTES

1. PROVIDE AND INSTALL PUMP CONTROL PANEL.
2. DIAGRAM IS TYPICAL IN NATURE, FINAL HARDWARE CONFIGURATION WILL VARY ACCORDING TO CONTROL PANEL SPECIFICATIONS/REQUIREMENTS FOR THE PUMP MODELS PROVIDED.
3. PUMP CONTROL PANEL ENCLOSURE SHALL INCLUDE A DEAD FRONT DOOR, WITH CONTROLS ON INTERIOR DOOR. ENCLOSURE SHALL BE NEMA 4X 316 SS.
4. PUMP CONTROL PANEL SHALL BE PROVIDED BY AN EXPERIENCED PANEL BUILDER, WITH 5-YEARS MINIMUM OF LIFT STATION PUMP CONTROL PANEL BUILDING EXPERIENCE. PANEL BUILDER MUST HAVE AND MAINTAIN ENVIRONMENTALLY CONTROLLED SPACE DEDICATED TO THE PRODUCTION, ASSEMBLY, CHECK-OUT, AND TESTING OF CUSTOM CONTROL PANELS WITH 4,000 SQ FT MINIMUM DEDICATED SHOP SPACE. THE ORGANIZATION MUST BE A CERTIFIED UL-698A FACILITY AND HAVE A ISO 9001 QUALITY MANAGEMENT STANDARD. PANEL BUILDER TO INCLUDE STATEMENT OF QUALIFICATIONS WITH THEIR BIDDING PACKAGE, STATING THAT THESE REQUIREMENTS ARE MET.

KEY NOTES

(1) NOTE THAT CONTROLS SHALL BE ON INTERIOR DOOR. SHOWN HERE FOR CLARITY.

CONTROL STRATEGY

1. PRIMARY LEVEL SENSING FOR PUMP OPERATION SHALL BE BY A SUBMERSIBLE LEVEL TRANSDUCER IN THE WET WELL. BACKUP LEVEL SENSING IS TO BE PERFORMED BY FIVE (5) BACK-UP FLOATS:
   - 1.1. LOW LEVEL ALARM
   - 1.2. ALL PUMPS OFF
   - 1.3. LEAD PUMP ON
   - 1.4. LAG PUMP ON
   - 1.5. HIGH LEVEL ALARM
2. PRIMARY LEVEL CONTROL (SUBMERSIBLE LEVEL TRANSDUCER):
   - 2.1. LEVEL SETPOINTS SHALL BE PROGRAMMED INTO CONTROLLER AS SHOWN ON CIVIL PLANS.
   - 2.2. PUMPS SHALL ALTERNATE TO MAINTAIN EQUAL RUN TIMES.
   - 2.3. PUMPS SHALL START WITH TIME DELAYS PER "GENERATOR STEP LOADING" SCHEDULE, SHEET E-5.
   - 2.4. AS WET WELL LEVEL RISES TO "LEAD PUMP ON" SETTING, PUMP 1 SHALL BE CALLED TO RUN. IF WET WELL LEVEL LOWERS TO "ALL PUMPS OFF" SETTING, THE PUMP SHALL STOP. IF WET WELL LEVEL CONTINUES TO RISE TO "LAG PUMP ON" SETTING, PUMP 2 SHALL BE CALLED TO RUN. IF WET WELL LEVEL LOWERS TO "ALL PUMPS OFF" SETTING, THEN ALL PUMPS SHALL STOP. IF WET WELL LEVEL CONTINUES TO RISE TO "HIGH LEVEL ALARM," THIS SHOULD TRIGGER A HORN ALARM AND BEACON ALARM, IN ADDITION TO AN ALARM OUTPUT TO THE MONITORING SYSTEM. LEVEL DROPPING TO "LOW LEVEL ALARM" SHALL TRIGGER AN ALARM LIGHT AND LOCKOUT THE PUMPS FROM RUNNING, IN ADDITION TO AN ALARM OUTPUT TO THE MONITORING SYSTEM.
3. BACKUP LEVEL CONTROL (FIVE (5) BACKUP FLOATS):
   - 3.1. FLOAT ELEVATIONS SHALL BE SET AS SHOWN ON CIVIL PLANS.
   - 3.2. PUMPS SHALL ALTERNATE TO MAINTAIN EQUAL RUN TIMES.
   - 3.3. PUMPS SHALL START WITH TIME DELAYS PER "GENERATOR STEP LOADING" SCHEDULE, SHEET E-5.
   - 3.4. AS WET WELL LEVEL RISES TO "LEAD PUMP ON" FLOAT, PUMP 1 SHALL BE CALLED TO RUN. IF WET WELL LEVEL LOWERS TO "ALL PUMPS OFF" FLOAT, THE PUMP SHALL STOP. IF WET WELL LEVEL CONTINUES TO RISE TO "LAG PUMP ON" FLOAT, PUMP 2 SHALL BE CALLED TO RUN. IF WET WELL LEVEL LOWERS TO "ALL PUMPS OFF" FLOAT, THEN ALL PUMPS SHALL STOP. IF WET WELL LEVEL CONTINUES TO RISE TO "HIGH LEVEL ALARM" FLOAT, THIS SHOULD TRIGGER A HORN ALARM AND BEACON ALARM, IN ADDITION TO AN ALARM OUTPUT TO THE MONITORING SYSTEM. LEVEL DROPPING TO "LOW LEVEL ALARM" FLOAT SHALL TRIGGER AN ALARM LIGHT AND LOCKOUT THE PUMPS FROM RUNNING, IN ADDITION TO AN ALARM OUTPUT TO THE MONITORING SYSTEM.

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ELECTRICAL
LIFT STATION
PUMP CONTROL PANEL

GATEWAY 29
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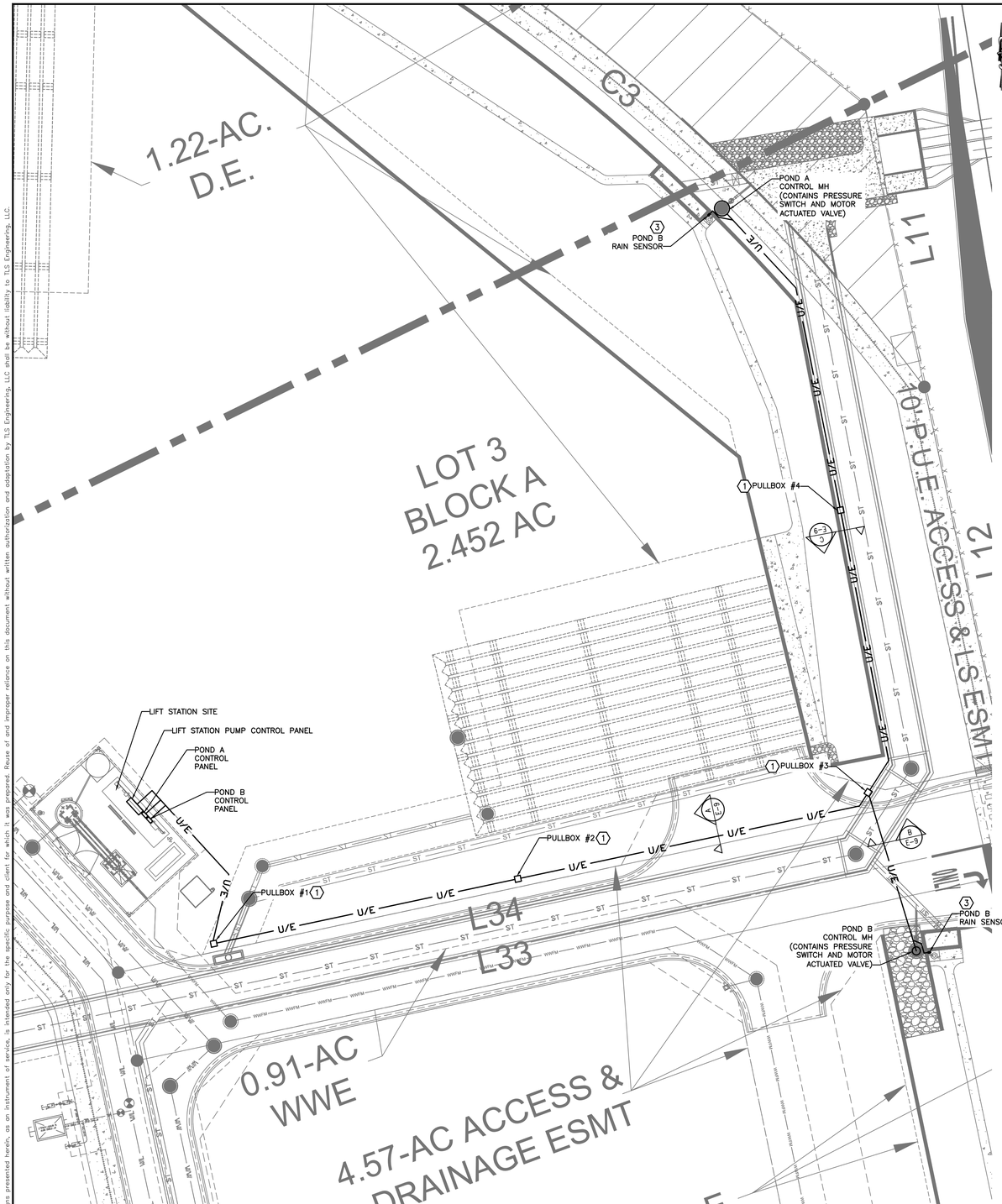
LEANDER, WILLIAMSON CO, TX

SHEET NUMBER
E-8
SHEET 70 OF 90



ELECTRICAL OVERALL SITE PLAN

0 20 40 60

1"=20'

A E-9 — 6 7 8 9 10 / 1 2 3 4 5

RACEWAY	SIZE	CONTENTS	DESCRIPTION	FROM	TO
1	1"	(3) #12, #12G	POND A MOTORIZED PLUG VALVE POWER	LIFT STATION PCP	POND A MOTORIZED PLUG VALVE
2	1"	(8) #14, #14G	POND A MOTORIZED PLUG VALVE CONTROL	POND A CONTROL PANEL	
3	1"	(2) #14	POND A PRESSURE SWITCH SIGNAL		POND A PRESSURE SWITCH
4	1"	(2) #14	POND A RAIN SENSOR SIGNAL		POND A RAIN SENSOR
5	1"	PULLCORD W/LABEL	POND A SPARE		POND A CONTROL MANHOLE
6	1"	(3) #12, #12G	POND B MOTORIZED PLUG VALVE POWER	LIFT STATION PCP	POND B MOTORIZED PLUG VALVE
7	1"	(8) #14, #14G	POND B MOTORIZED PLUG VALVE CONTROL	POND B CONTROL PANEL	
8	1"	(2) #14	POND B PRESSURE SWITCH SIGNAL		POND B PRESSURE SWITCH
9	1"	(2) #14	POND A RAIN SENSOR SIGNAL		POND A RAIN SENSOR
10	1"	PULLCORD W/LABEL	POND B SPARE		POND B CONTROL MANHOLE

RUN DUCTBANK PER "TYPICAL DUCTBANK SECTION (CONCRETE)" DETAIL, THIS SHEET.

B E-9 — 1 2 3 4 5

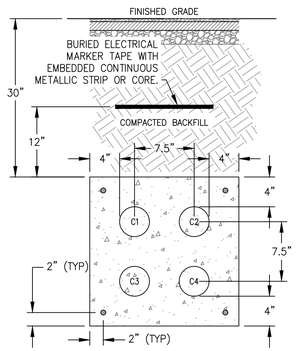
RACEWAY	SIZE	CONTENTS	DESCRIPTION	FROM	TO
1	1"	(3) #12, #12G	POND B MOTORIZED PLUG VALVE POWER	LIFT STATION PCP	POND B MOTORIZED PLUG VALVE
2	1"	(8) #14, #14G	POND B MOTORIZED PLUG VALVE CONTROL	POND B CONTROL PANEL	
3	1"	(2) #14	POND B PRESSURE SWITCH SIGNAL		POND B PRESSURE SWITCH
4	1"	(2) #14	POND B RAIN SENSOR SIGNAL		POND B RAIN SENSOR
5	1"	PULLCORD W/LABEL	POND B SPARE		POND B CONTROL MANHOLE

RUN DUCTBANK PER "TYPICAL DUCTBANK SECTION (CONCRETE)" DETAIL, THIS SHEET.

C E-9 — 1 2 3 4 5

RACEWAY	SIZE	CONTENTS	DESCRIPTION	FROM	TO
1	1"	(3) #12, #12G	POND A MOTORIZED PLUG VALVE POWER	LIFT STATION PCP	POND A MOTORIZED PLUG VALVE
2	1"	(8) #14, #14G	POND A MOTORIZED PLUG VALVE CONTROL	POND A CONTROL PANEL	
3	1"	(2) #14	POND A PRESSURE SWITCH SIGNAL		POND A PRESSURE SWITCH
4	1"	(2) #14	POND A RAIN SENSOR SIGNAL		POND A RAIN SENSOR
5	1"	PULLCORD W/LABEL	POND A SPARE		POND A CONTROL MANHOLE

RUN DUCTBANK PER "TYPICAL DUCTBANK SECTION (CONCRETE)" DETAIL, THIS SHEET.



TYPICAL DUCTBANK SECTION (CONCRETE)

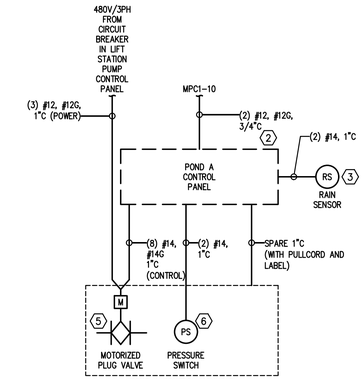
SCALE: N.T.S.

NOTE:

1. #4 REBAR 4 PLACES. TIE HORZ REBAR @ 48" INTERVAL W/#4 REBAR. FOR DUCT BANKS 4' WIDE AND LARGER ADD #4 REBAR CENTERED TOP AND BOTTOM. USE PLASTIC SUPPORT SPACERS W/3" MIN BETWEEN CONDUITS.
2. NUMBER OF CONDUITS TO BE ADJUSTED TO SATISFY REQUIREMENTS SHOWN ELSEWHERE ON DRAWINGS.
3. SECTION SHOWN PROVIDES TYPICAL SPACING, ADJUST NUMBER OF CONDUITS AND SIZE OF CONDUITS AS REQUIRED.
4. CONDUIT IN DUCTBANK SHALL BE PVC SCHEDULE 80.
5. MAINTAIN 24" SEPARATION BETWEEN POWER AND INSTRUMENTATION RACEWAYS.

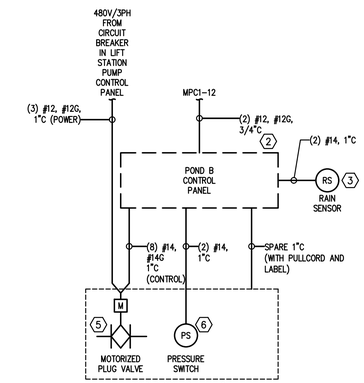
KEY NOTES

1. PROVIDE AND INSTALL NEW PULLBOX, HUBBELL QUAZITE OR EQUAL, 11" X 18" X 18" MINIMUM, PG STYLE, TIER 8, POLYMER CONCRETE, OPEN BOTTOM. NOTE THAT PULLBOX IS SHOWN OVERSIZED ON SITE PLAN FOR CLARITY.
2. PROVIDE AND INSTALL CONTROL PANEL PER SHEET E-10.
3. PROVIDE AND INSTALL RAIN SENSOR BY RAIN BIRD, RSD-BEx, OR EQUAL. RAIN SENSOR SHALL BE MOUNTED TO POND WALL, AS SHOWN ON "ELECTRICAL OVERALL SITE PLAN," THIS SHEET. MOUNT SENSOR SO THAT BOTTOM OF SENSOR IS AT TOP OF POND WALL.
4. REFER TO CIVIL DRAWINGS FOR CONTROL MANHOLE DETAILS.
5. ACTUATOR SHALL BE LIMITORQUE Q4-4 QUARTER TURN ELECTRIC MOTOR ACTUATOR, 480V/3PH/60HZ.
6. PRESSURE SWITCH SHALL BE MERCOID DAW-531-3-3 AND SENSOR.



WQ/DETENTION POND A ONE-LINE DIAGRAM

NOT TO SCALE



WQ/DETENTION POND B ONE-LINE DIAGRAM

NOT TO SCALE

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No.	REVISIONS	DATE	BY

TLS PROJECT 100-009
DATE DECEMBER 2023
SCALE: AS SHOWN
DESIGNED BY: TEV
DRAWN BY: TEV
CHECKED BY: TEV

ELECTRICAL WQ/DETENTION PONDS OVERALL SITE PLAN AND ONE-LINE DIAGRAM

GATEWAY 29 OVERALL WPAP / SCS

LEANDER, WILLIAMSON CO, TX

SHEET NUMBER
E-9
SHEET 71 OF 90

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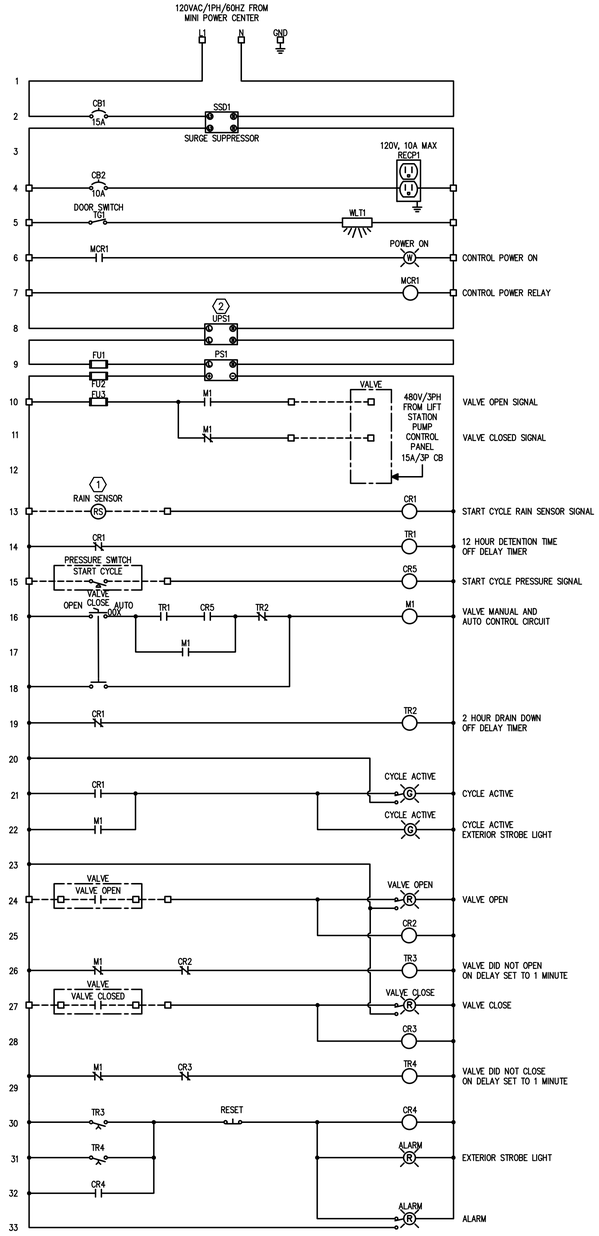
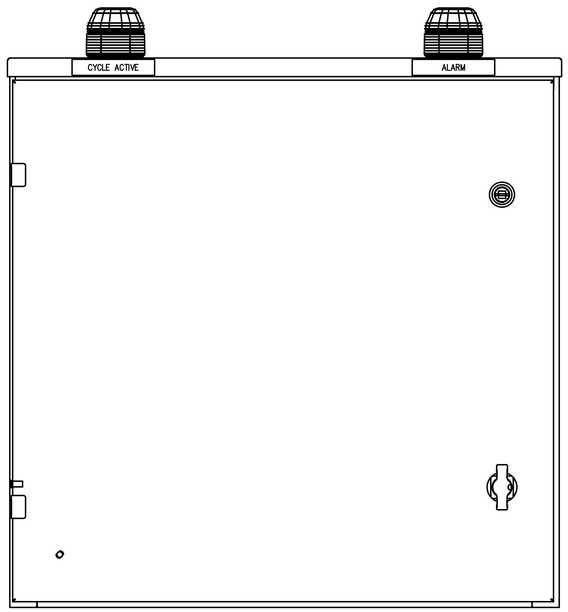
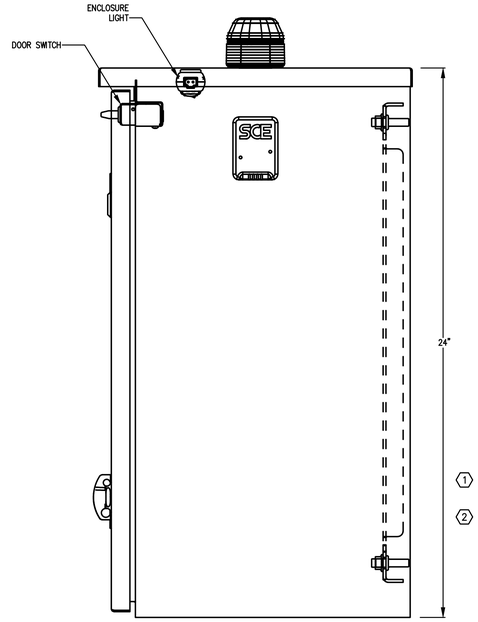


CONTROL PANEL LADDER DIAGRAM
NOT TO SCALE



FACE OF PANEL VIEW
NOT TO SCALE



RIGHT SIDE PANEL VIEW
NOT TO SCALE

GENERAL NOTES

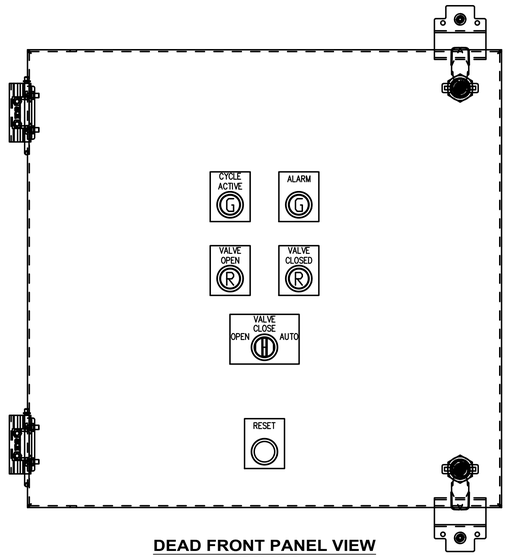
1. ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL CONTROL PANELS (QTY 2) FOR WATER QUALITY PONDS 'A' AND 'B.'
2. DIAGRAM IS TYPICAL IN NATURE, FINAL HARDWARE CONFIGURATION WILL VARY ACCORDING TO CONTROL PANEL SPECIFICATIONS/REQUIREMENTS FOR THE SPECIFIC EQUIPMENT PROVIDED.
3. CONTROL PANEL ENCLOSURE SHALL INCLUDE A DEAD FRONT DOOR, WITH CONTROLS ON INTERIOR DOOR. ENCLOSURE SHALL BE NEMA 3R.
3. CONTROL PANEL SHALL BE PROVIDED BY AN EXPERIENCED PANEL BUILDER, WITH 5–YEARS MINIMUM OF WATER QUALITY POND CONTROL PANEL BUILDING EXPERIENCE. PANEL BUILDER MUST HAVE AND MAINTAIN ENVIRONMENTALLY CONTROLLED SPACE DEDICATED TO THE PRODUCTION, ASSEMBLY, CHECK–OUT, AND TESTING OF CUSTOM CONTROL PANELS WITH 4,000 SQ FT MINIMUM DEDICATED SHOP SPACE. THE ORGANIZATION MUST BE A CERTIFIED UL–508A FACILITY AND HAVE A ISO 9001 QUALITY MANAGEMENT STANDARD. PANEL BUILDER TO INCLUDE STATEMENT OF QUALIFICATIONS WITH THEIR BIDDING PACKAGE, STATING THAT THESE REQUIREMENTS ARE MET.

CONTROL STRATEGY

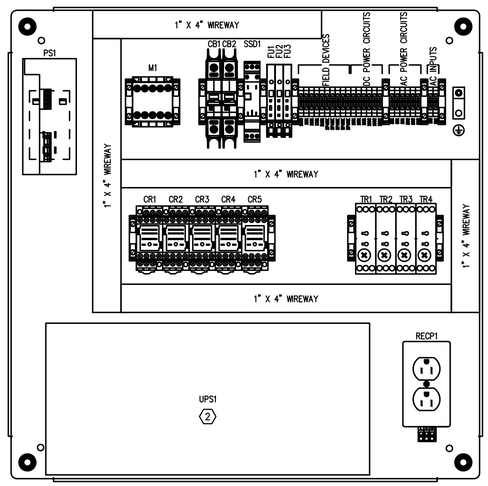
1. BATCH DETENTION POND IS EQUIPPED WITH A RAIN SENSOR MOUNTED TO POND WALL, AS SHOWN ON SHEET E–9.
2. VALVE IS TO REMAIN NORMALLY CLOSED.
3. WHEN CONTACT IS MADE BY PRESSURE SWITCH, 12 HOUR DELAY TIMER SHALL BEGIN AS SOON AS NO MOISTURE IS DETECTED BY THE RAIN SENSOR.
4. IF THE RAIN SENSOR DETECTS PRECIPITATION, DELAY TIMER WILL RESET TO 12 HOURS.
5. ONCE VALVE OPENS, IT WILL REMAIN OPEN UNTIL THE POND IS DRAINED OR RAIN SENSOR RESETS.

KEY NOTES

1. PROVIDE AND INSTALL 24VAC INTERPOSING RELAY FOR RAIN SENSOR INPUT SIGNAL, IN ORDER TO PROVIDE A 24VDC OUTPUT SIGNAL. RAIN SENSOR SHALL BE MOUNTED TO POND WALL, AS SHOWN ON SHEET E–9.
2. PROVIDE AND INSTALL UPS, 500VA, 325W, 120VAC, LINE INTERACTIVE, 94% (FULL LOAD) EFFICIENCY, 2 HOUR BATTERY RECHARGE TIME, APC DIN RAIL MOUNTED OR EQUAL.



DEAD FRONT PANEL VIEW
NOT TO SCALE



SUBPANEL LAYOUT
NOT TO SCALE

CITY OF LEANDER APPROVAL

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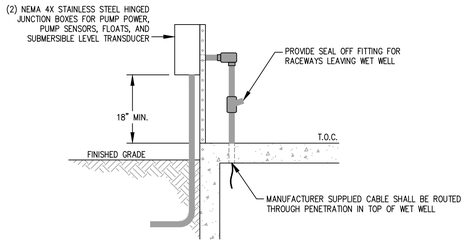
LICENSED PROFESSIONAL ENGINEER
12-15-2023

TLS PROJECT	100-009
DATE	DECEMBER 2023
SCALE:	AS SHOWN
DESIGNED BY:	TEV
DRAWN BY:	TEV
CHECKED BY:	TEV

ELECTRICAL WQ/DETENTION PONDS CONTROL PANEL SCHEMATIC

GATEWAY 29 OVERALL WPAP / SCS LEANDER, WILLIAMSON CO, TX

SHEET NUMBER
E-10
SHEET 72 OF 90

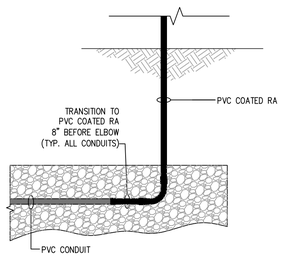


JUNCTION BOX DETAIL

SCALE: N.T.S.

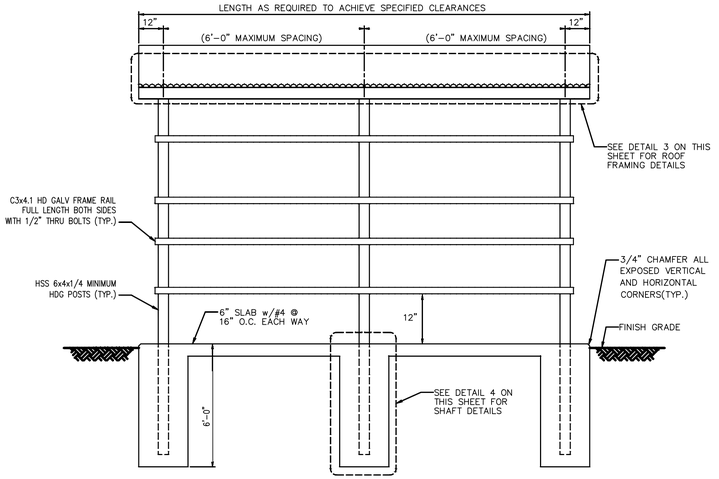
NOTES:

1. TERMINAL BLOCKS SHALL BE INSTALLED IN THE JUNCTION BOXES FOR TERMINATING THE MANUFACTURER SUPPLIED CONDUCTORS TO THE CONDUCTORS PROVIDED BY THE CONTRACTOR.



RACEWAY TRANSITION DETAIL

SCALE: N.T.S.

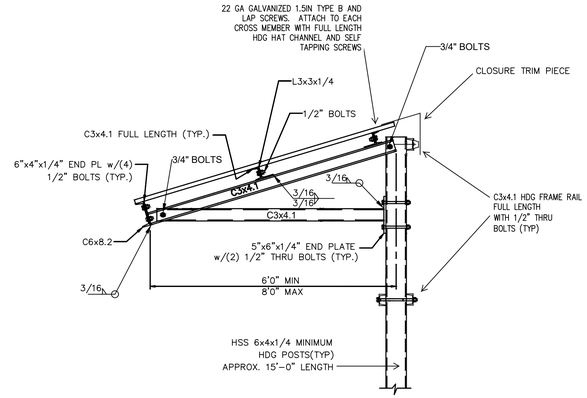


CANOPY (FRONT) DETAIL 1

SCALE: N.T.S.

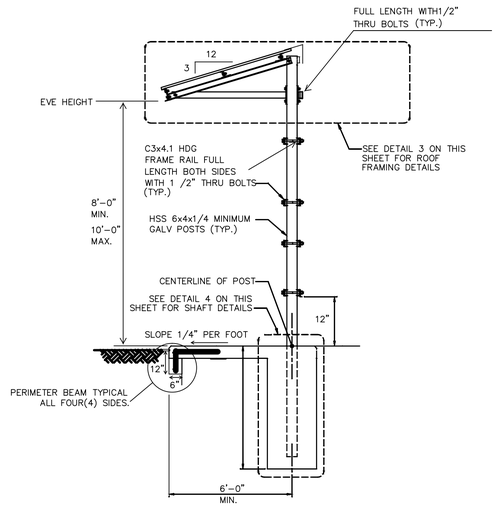
CANOPY NOTES

1. ALL BOLTS, NUTS, AND HARDWARE TO BE 316SS. FLAT WASHERS AND LOCK WASHERS ARE REQUIRED FOR ALL BOLTS AND NUTS. APPLY ANTI-SEIZE COMPUND TO THREADS PRIOR TO INSTALLATION.
2. STRUCTURE TO BE HOT DIP GALVANIZED (HDG) AFTER FABRICATION. FIELD CUTTING AND WELDING IS NOT ALLOWED. SPLICING OF MATERIAL IS NOT ALLOWED.
3. ATTACH ALL ELECTRICAL ENCLOSURES AND DEVICES TO STRUCTURE WITH VERTICAL 316SS STRUT. CLAMPS AND HARDWARE TO BE 316SS.
4. UNLESS OTHERWISE NOTED, VERTICAL STACKING OF ENCLOSURES IS NOT ALLOWED. PROVIDE 6" MINIMUM CLEARANCE BETWEEN ENCLOSURES. PROVIDE 12" MINIMUM CLEARANCE FROM CENTER OF END POSTS TO ENCLOSURES. CONTRACTOR SHALL SUBMIT A DIMENSIONED ELECTRICAL LAYOUT DRAWING DEMONSTRATING THE REQUIRED CLEARANCES PRIOR TO FABRICATION OF CANOPY.
5. ALARM BEACON TO BE MOUNTED 12" ABOVE TOP OF ROOF AT END OF CANOPY. DO NOT PENETRATE CANOPY ROOF.



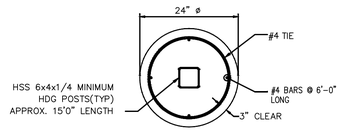
ROOF AND WALL DETAIL 3

SCALE: N.T.S.

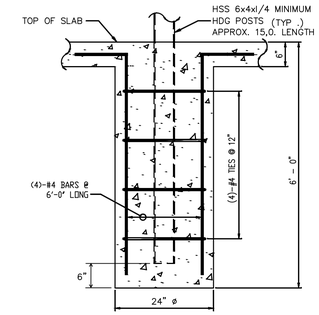


CANOPY (SIDE) DETAIL 2

SCALE: N.T.S.



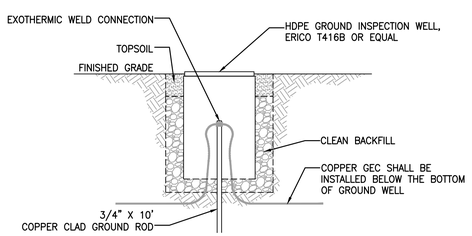
PLAN



SECTION

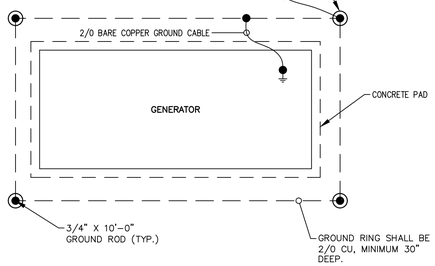
SHAFT DETAIL 4

SCALE: N.T.S.



TYPICAL GROUND ROD INSPECTION WELL TERMINATION

SCALE: N.T.S.



GENERATOR GROUND RING DETAIL

SCALE: N.T.S.

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12-15-2023

TLS PROJECT	100-009
DATE	DECEMBER 2023
SCALE:	AS SHOWN
DESIGNED BY:	TEV
DRAWN BY:	TEV
CHECKED BY:	TEV

ELECTRICAL GENERAL DETAILS

GATEWAY 29 OVERALL WPAP / SCS LEANDER, WILLIAMSON CO, TX

SHEET NUMBER
E-11
SHEET 73 OF 90

TRENCH SPECIFICATIONS:

Installation of conduit:

1. Minimum cover to be 30" from the top of primary conduit to sub-grade.
2. Bottom of trench shall be sanded to provide smooth, even support for conduits.
3. Sand to be placed directly around conduits for initial backfill.
4. There is to be a minimum of 12" separation between electrical conduits and all other utilities' conduits.
5. Warning tape to be a minimum of 12" above electrical conduits.
6. Concrete or flowable fill to be poured around all conduit crossings and 90-degree bends. On conduit bends of other angles, concrete or flowable fill may be required upon inspection.
7. Trench may be used jointly if adequate separation is provided. (See drawings 510-014, 510-022, 510-023, 510-024 and 510-025).
8. Conduit may be under pavement if a depth of 30" cover to sub-grade is maintained.
9. Trench may be on property if adequate depth is maintained. "Adequate depth" is defined as 30" below the lowest point between the edge of pavement and property line.

Inspection schedule:

1. After primary conduit installation.
2. After initial backfill.
3. After secondary conduit installation.
4. After remainder of initial backfill and warning tape.
5. After secondary backfill (rock-free dirt).

Failure to receive inspection will require removal of the backfill to allow inspection.

DEVELOPER/CONTRACTOR CONTRIBUTION:

1. Payment to PEC for materials per the Line Extension Policy.
2. Trench.
3. Conduit:
   a. 3" conduit Schedule 40, conduit bends Schedule 80 with 3", 36" minimum radius and accessories.
   b. 4" conduit Schedule 40, conduit bends Schedule 80 with 4", 48" minimum radius and accessories.
   c. Conduit for service will be sized as needed.
   d. 2" conduit for controls or temporary service only.
   e. Conduit bends with a 24" radius may be used only for secondary.

   NOTE: Contractor may be required to pull a mandrel, of a diameter not less than 80% of the inside diameter of the conduit through all conduits, under the supervision of a PEC representative.
4. Conduit spacers.
5. Transformer pads.
6. Meter pedestal pads.
7. Underground secondary enclosures and extensions.
8. Ground rods and clamps.
9. Polyester pulling tape (2,500-pound tensile strength) in all conduit. No knots to be tied in the mule tape. It must be a continuous run.
10. Sand for initial backfill.
11. Rock-free dirt over initial backfill.
12. 1/2" to 3/4" gravel for the bottom of vaults and secondary enclosures.
13. Concrete or flowable fill where required. Flowable fill is NOT allowed as a substitute for concrete for PEC equipment pads. Flowable fill may be used as backfill in situations where trench settling may be an issue or anywhere that does not require structural strength. The 28-day compressive strength range when tested must be a minimum of 300-psi. Flowable fill is NOT a substitute for concrete except where explicitly listed in the Underground Installation Specifications.
14. Install meter socket when metering on building.
15. Furnish and install any gang-type meter sockets.
16. Primary enclosures and extensions (if applicable).
17. Meter sockets (PEC will provide pedestal-mounted sockets only).
18. Switchgear (if applicable).
19. Bollards, if deemed necessary by PEC to protect electrical equipment. Design must be approved by PEC prior to installation.

MEMBER'S RESPONSIBILITY:

Meter pedestals are approved by PEC. In situations where meter pedestals are used, the following conditions will apply:

1. Purchase and install circuit breaker in box. Circuit breakers are the bolt-in type. The box will accommodate 150 and 200 amp breakers. The breaker must have an interrupting capacity of 10,000 amps rated at 240 volts. GE Cat. No. TQD22 (amp needed) WL and Eaton Cuttler-Hammer FD2200 or equal (old Westinghouse # CA2200W).
2. Install insulated jumpers from bottom of meter socket to top of breakers.
3. Install galvanized rigid conduit, Schedule 40 PVC or an approved equal from pedestal pad to bottom of box.
4. Member will be responsible for the installation of underground cable from the meter pedestal to the house and the connections to the bottom of the circuit breakers. The underground cable used from the meter pedestal to the house shall be an approved type for underground installation (USE or UF type). Conductor size will be based on member load, location of meter and National Electrical Code for size of conduit.

Refer to applicable drawings within these specifications.

REV	B	DATE	07/09/2020	REVISION	ADD 2" CONDUIT AND FLOWABLE FILL NOTES	BY	RWC	CHK	SSS	APR	MMG

UNDERGROUND INSTALLATION SPECIFICATIONS

DEVELOPER/MEMBER/PEC SUPPLIED MATERIAL

PAGE 1 OF 2

drawn:	approved:	date:	
RWC	MMG	07/09/2020	500-100

MEMBER'S RESPONSIBILITY CONTINUED:

5. Underground conductor from secondary enclosure/transformer to meter shall have 24" of cover. This depth may be reduced to 18" when a 2" supplemental protective covering of concrete or flowable fill is provided. If rigid conduit is used, the depth can be reduced by 6". Red electric warning tape is also required in the ditch.
6. Apply and receive all applicable inspections.
7. When all work is completed according to specifications, notify PEC you are ready for electric service. PEC will make the connect and set the meter on a routine connect order.
8. For commercial and residential applications, the member shall supply the CT enclosure (if needed) and all secondary cable in accordance with the National Electrical Code.

PEC CONTRIBUTION PAID FOR BY DEVELOPER/MEMBER AS INDICATED ON THE LINE EXTENSION POLICY:

1. Primary conductors.
2. Secondary conductors.
3. Cable terminations.
4. Transformers.
5. Meter pedestals.
6. Switchgear.
7. Secondary GelPort connectors.
8. Meter socket combo.

PEC RESPONSIBILITY:

1. Furnish and install meter pedestal.
2. Furnish and install combination meter socket and breaker box.
3. Install jumper wires from top of meter socket to pedestal connector and set meter on connect order after all work has been completed.

Refer to applicable drawings within these specifications.

REV	B	DATE	07/09/2020	REVISION	ADD 2" CONDUIT AND FLOWABLE FILL NOTES	BY	RWC	CHK	SSS	APR	SSS

UNDERGROUND INSTALLATION SPECIFICATIONS

DEVELOPER/MEMBER/PEC SUPPLIED MATERIAL

PAGE 2 OF 2

drawn:	approved:	date:	
RWC	MMG	07/09/2020	500-100

Typical All Pads

1. Require 3" conduit (unless otherwise specified by PEC) with bell-end fittings to extend 1 1/2" to 2" above pad.
2. Pads must extend a minimum of 4" above final grade and 1 1/2" below final grade. All pads must be placed on a slope less than or equal to 3:1. If greater than 3:1, contractor must bring slope to required grade.
3. All disturbed soil underneath pad must be replaced by concrete.
4. All ground rods shall be 3/4" X 10' copper-clad with clamp and must extend 3" above top of pad.
5. Wood float finish leaving pad square and level with no dips or crown.
6. **Contact PEC before pouring concrete and comply with the following instructions:**
   - Pre-pour inspection: Check framing and layout of pad and conduit components.
   - Final inspection: Overall review of pad and conduits. Ensure bell ends are on conduit.

Typical For Single-Phase Transformer, Combination, Sectionalizer, and Secondary Pads

7. Concrete to have minimum strength of 3,000 PSI.
8. Steel reinforcing shall be 6" X 6" No. 10 wire mesh or 3/8" re-bar on 12" center to stop 1" from the sides.

Typical For Three-Phase Transformer Pads

9. Concrete testing, 4,000 PSI; 4%-6% entrained air, 3/4" maximum-size aggregate.
10. Steel reinforcement shall be 3/8" re-bar on 12" center to stop 1" from sides.
11. Minimum concrete cover over reinforcing steel 2" unless noted.

Typical Trench Details

12. Schedule 40 electrical grade PVC conduit. Schedule 80 electrical-grade conduit can be used in place of sand in secondary-only trenches.
13. Initial backfill shall be manufactured or commercial sand. Minimum 3/8" pea gravel may be used for initial backfill in flood-prone areas.
14. With PEC approval, minimum cover requirements may be reduced by six inches with every two inches of 3,000 PSI concrete poured directly onto conduit. ***Contact PEC before pouring concrete***
15. If any type of vault or pedestal for the underground electric is planned, then all other utilities should be routed around these facilities.
16. For 2" and **smaller** waterlines, special permission must be granted by PEC. Water lines larger than 2" will not be allowed in PEC trench.
17. Refer to drawings 510-023 and 510-025 for PEC specifications and trench details on gas joint trench installations.

Legend
Typical in all drawings

(P) Primary Conduit (S) Secondary Conduit (CW) Communications or Water (G) Gas line (AS) Alternate Secondary Conduit

REV	B	DATE	07/23/2020	REVISION	NOTE 4: 3/4" X 10' GROUND ROD WAS 5/8" X 8'	BY	RWC	CHK	SSS	APR	MMG

UNDERGROUND INSTALLATION SPECIFICATIONS

TYPICAL NOTES REFERENCE PAGE

drawn:	approved:	date:	
RWC	MMG	07/23/2020	510-009

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TLS PROJECT 100-009
DATE DECEMBER 2023
SCALE AS SHOWN
DESIGNED BY: TEV
DRAWN BY: TEV
CHECKED BY: TEV

ELECTRICAL UTILITY DETAILS

GATEWAY 29 OVERALL WPAP / SCS LEANDER, WILLIAMSON CO, TX

SHEET NUMBER
E-12
SHEET 74 OF 90

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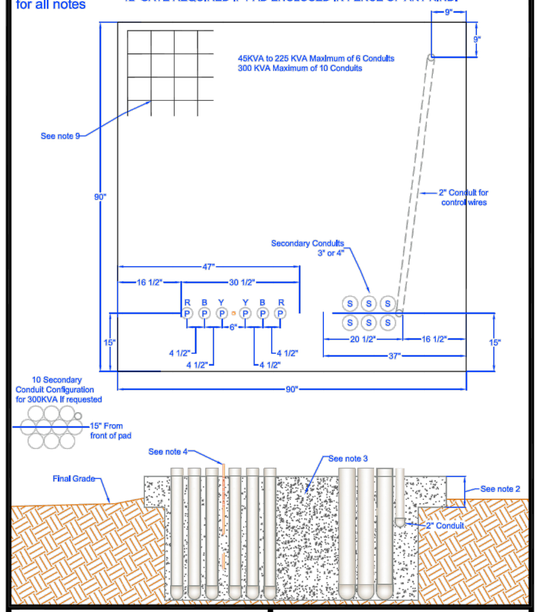
Reference Drawing
510-009-0911
for all notes

12' GATE REQUIRED IF PAD ENCLOSED IN FENCE OF ANY KIND.



PEDERNALES ELECTRIC COOPERATIVE, INC.
URD DEVELOPER'S SPECIFICATIONS

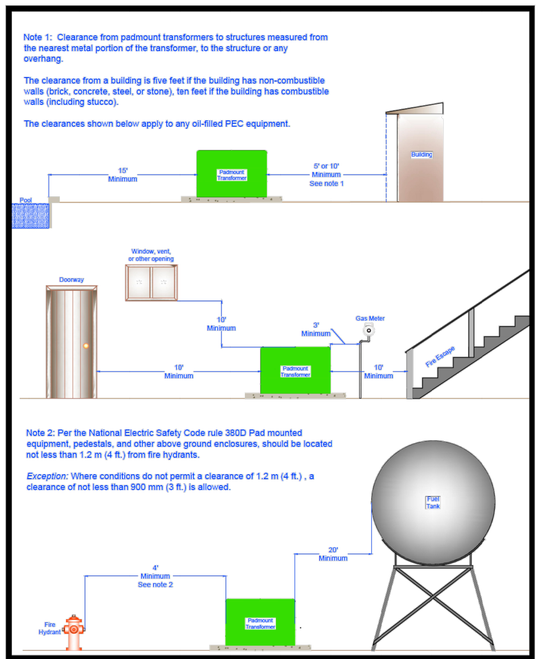
3Ø Transformer Pad
45-300 KVA

drawn:	approved	date:	drawing number:
JBS	MJB	December 12, 2011	530-030-0911

Note 1: Clearance from padmount transformers to structures measured from the nearest metal portion of the transformer, to the structure or any overhang.

The clearance from a building is five feet if the building has non-combustible walls (brick, concrete, steel, or stone), ten feet if the building has combustible walls (including stucco).

The clearances shown below apply to any oil-filled PEC equipment.

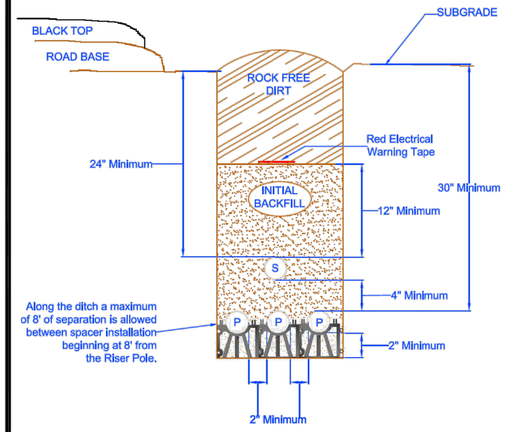


PEDERNALES ELECTRIC COOPERATIVE, INC.
URD DEVELOPER'S SPECIFICATIONS

Safety Clearances around
Padmount Transformers

drawn:	approved	date:	drawing number:
JBS	MJB	March 11, 2015	570-010-0911

OPTION
1



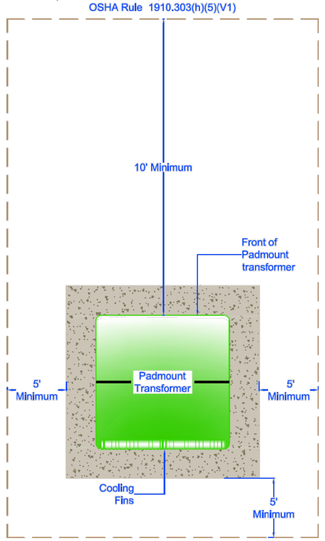
Reference Drawing
510-009-0911 for
Typical Trench Details

PEDERNALES ELECTRIC COOPERATIVE, INC.
URD DEVELOPER'S SPECIFICATIONS

3Ø Conduit Arrangement
Electric Only
Primary and Secondary

drawn:	approved	date:	drawing number:
JBS	MJB	December 12, 2011	510-020-0911

A minimum clearance of ten feet of clear, level, unobstructed working space is required in front of a padmount transformer, to allow use of hot sticks.
OSHA Rule 1910.303(h)(5)(V1)



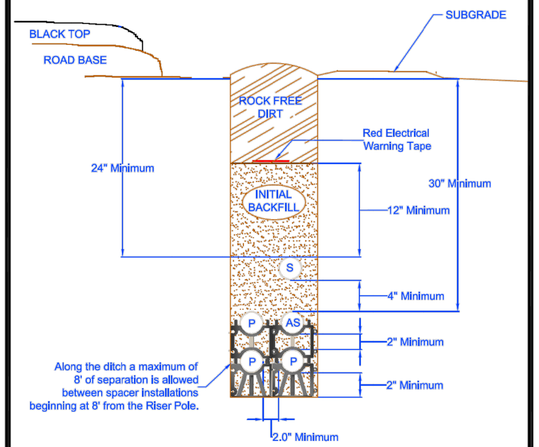
The clearances shown above applies to all PEC padmounted electrical equipment over 600 volts PEC equipment.

PEDERNALES ELECTRIC COOPERATIVE, INC.
URD DEVELOPER'S SPECIFICATIONS

Working Clearances around
Padmount Transformers

drawn:	approved	date:	drawing number:
JBS	MJB	February 28, 2013	570-015-0911

OPTION
2



Reference Drawing
510-009-0911 for
Typical Trench Details

PEDERNALES ELECTRIC COOPERATIVE, INC.
URD DEVELOPER'S SPECIFICATIONS

3Ø Conduit Arrangement
Electric Only
Primary and Secondary

drawn:	approved	date:	drawing number:
JBS	MJB	December 12, 2011	510-020-0911

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TBPE Firm #-23165

STATE OF TEXAS
THOMAS EDWARD VAUGHAN
135335
LICENSED PROFESSIONAL ENGINEER
12.15.2023

TLS PROJECT 100-009	DATE DECEMBER 2023	SCALE: AS SHOWN	DESIGNED BY: TEV	DRAWN BY: TEV	CHECKED BY: TEV

ELECTRICAL
UTILITY DETAILS

GATEWAY 29
OVERALL WPAP / SCS
LEANDER, WILLIAMSON CO, TX

SHEET NUMBER
E-13
SHEET 75 OF 90

STRUCTURAL GENERAL NOTES AND SPECIFICATIONS

GENERAL REQUIREMENTS

1 APPLICABLE CODES AND STANDARDS - ALL CODES AND STANDARDS REFERENCED SHALL BE IN ACCORDANCE WITH IBC 2021 AND LOCAL AMENDMENTS.

2 ANY REQUIRED CHANGES TO THE STRUCTURAL DRAWINGS DUE TO THE ACCEPTANCE OR INCLUSION OF ALTERNATES OR SUBSTITUTIONS ARE THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW.

3 THE CONTRACTOR SHALL COMPARE THE STRUCTURAL DRAWINGS WITH THE CIVIL DRAWINGS AND REPORT ANY DISCREPANCY TO THE ENGINEER PRIOR TO FABRICATION OR INSTALLATION OF STRUCTURAL MEMBERS.

4 JOB SITE SAFETY SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR SHALL, AS A MINIMUM, ADHERE TO OCCUPATIONAL SAFETY AND HEALTH (OSHA) REGULATIONS TO PROTECT PERSONNEL.

FOUNDATION NOTES

1 DESIGN LOADS

ACTIVE LATERAL EARTH PRESSURE - EQUIVALENT FLUID PRESSURE OF 45 PCF FOR COMPACTED SELECT FILL.

SURCHARGE PRESSURE - 250 PSF ON HEEL SIDE OF WALL

2 DESIGN ALLOWABLE SOIL BEARING PRESSURE

3,000 PSF ON PROOF-ROLLED NATURAL LIMESTONE SUBGRADE.

3 THE GEOTECHNICAL INVESTIGATION FOR THIS PROJECT WAS PREPARED BY GEOSCIENCE ENGINEERS, LLC, PROJECT NO. 23-DG3639, DATED APRIL, 2023. THE CONTRACTOR SHALL OBTAIN A COPY OF THIS REPORTS AND REVIEW THEIR CONTENTS TO BECOME FAMILIAR WITH THE GEOTECHNICAL CONDITIONS THAT EXIST AT THIS SITE AND THE RECOMMENDATIONS PRESENTED IN THE GEOTECHNICAL INVESTIGATION.

4 PRIOR TO COMMENCEMENT OF EXCAVATION OPERATIONS, FIELD LOCATE AND ADEQUATELY PROTECT ANY EXISTING STRUCTURES, TREES, UTILITIES AND/OR OTHER PERMANENT ELEMENTS TO REMAIN. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE REPAIR OR REPLACEMENT OF ANY DAMAGE RESULTING FROM CONSTRUCTION OPERATIONS.

5 THE CONTRACTOR SHALL PROVIDE AND ENSURE PROPER DRAINAGE OF THE SITE PRIOR TO BEGINNING CONSTRUCTION OF THE POND STRUCTURES. DRAINAGE SHALL BE SUCH THAT SURFACE RUNOFF IS ROUTED AROUND OR AWAY FROM THE CONSTRUCTION AREA. MEASURES SHALL BE TAKEN TO PREVENT THE PONDING OF WATER WITHIN THE FOUNDATION AREA.

6 THE CONSTRUCTION AREA FOR THE POND STRUCTURES SHALL BE STRIPPED OF ALL VEGETATION, LOOSE TOP SOIL, DEBRIS, ORGANICS AND OTHER DELETERIOUS MATERIAL. ROOTS AND STUMPS OF TREES WITHIN THE CONSTRUCTION AREA SHALL BE REMOVED FOR THEIR FULL DEPTH, INCLUDING THE DRY SOILS AROUND THE ROOT BULB. EXCAVATIONS IN CUT AREAS SHALL BE BENCHED.

7 ALL WALL FOOTINGS SHALL BE FOUNDED ON PROOF-ROLLED NATURAL LIMESTONE SUBGRADE. EXCAVATIONS SHALL BE NEAT AND FREE OF ALL LOOSE MATERIALS AND DEBRIS PRIOR TO PLACEMENT OF CONCRETE. CONTRACTOR SHALL USE CARE TO PROTECT EXCAVATIONS FROM CAVING AND SLOUGHING DUE TO TRAFFIC FROM EQUIPMENT OR WORKMEN.

8 ONCE FINAL SUBGRADE ELEVATIONS HAVE BEEN ACHIEVED, THE EXPOSED SUBGRADE SHALL BE CAREFULLY PROOFROLLED WITH A 15-TON PNEUMATIC ROLLER OR EQUIVALENT EQUIPMENT TO DETECT WEAK ZONES IN THE SUBGRADE. WEAK AREAS DETECTED DURING PROOFROLLING SHALL BE REMOVED AND REPLACED WITH SOILS EXHIBITING SIMILAR CLASSIFICATION, MOISTURE CONTENT AND DENSITY AS THE ADJACENT IN-SITU SOILS. PRIOR TO FOOTING CONSTRUCTION, THE SUBGRADE PREPARATION SHALL BE APPROVED BY THE GEOTECHNICAL ENGINEER.

9 IN THE EVENT THAT EXCAVATIONS ARE COMPLETED TO A DEPTH GREATER THAN THAT REQUIRED BY THE DRAWINGS, THE CONTRACTOR SHALL FILL THE OVEREXCAVATION WITH CONCRETE. CONCRETE REQUIRED TO COMPENSATE THE OVEREXCAVATION SHALL BE AT THE CONTRACTOR'S EXPENSE.

10 ANY WATER ACCUMULATIONS IN EXCESS OF 1 INCH SHALL BE PUMPED OUT PRIOR TO PLACEMENT OF CONCRETE. REBAR AND CONCRETE FOR FOOTINGS SHALL BE PLACED AS SOON AS PRACTICAL FOLLOWING COMPLETION OF EXCAVATIONS TO PREVENT EXCESSIVE DRYING OR WETTING OF THE SUBGRADE.

12 ALL SELECT FILL MATERIAL DIRECTLY BEHIND THE POND WALLS SHALL CONSIST OF SELECT FILL MATERIAL AS SPECIFIED BELOW.

ALL SELECT FILL MATERIAL BEHIND THE WATER QUALITY POND STRUCTURES SHALL CONSIST OF IMPORTED SELECT FILL OR ON-SITE PROCESSED LIMESTONE MATERIAL APPROVED BY THE GEOTECHNICAL ENGINEER.

IMPORTED SELECT FILL - IMPORTED SELECT FILL SHALL CONSIST OF LIMESTONE BASE MATERIAL MEETING THE REQUIREMENTS OF TXDOT ITEM 247, TYPE A, GRADE 4 OR A LOW PLASTICITY CLAYEY SOIL WITH A PLASTICITY INDEX BETWEEN 7 AND 20 PERCENT, A MAXIMUM GRAVEL CONTENT (PERCENT RETAINED ON THE NO. 4 SIEVE) OF 40 PERCENT, AND ROCKS NO LARGER THAN FOUR INCHES IN THEIR LARGEST DIMENSION.

ON-SITE PROCESSED LIMESTONE MATERIAL - IT IS ANTICIPATED THAT EXISTING ON-SITE WEATHERED LIMESTONE MAY BE ACCEPTABLE AS SELECT FILL. THE ON-SITE MATERIAL SHALL BE PROCESSED SUCH THAT A RELATIVELY WELL GRADED GRAIN SIZE DISTRIBUTION WITH A MAXIMUM PARTICLE SIZE OF 4 INCHES IS ACHIEVED. IN ADDITION, THE PLASTICITY INDEX OF THE MATERIAL PASSING THE NO. 40 SEIVE SHALL NOT EXCEED 20. THE USE OF ON-SITE MATERIAL SHALL BE APPROVED AND MONITORED BY THE TESTING LABORATORY OR GEOTECHNICAL ENGINEER.

ALL SELECT FILL MATERIAL SHALL BE PLACED IN UNIFORM LOOSE LIFT THICKNESS OF 8 INCHES MAXIMUM AND COMPACTED TO UNIFORM LIFTS NOT EXCEEDING 6 INCHES IN THICKNESS. SELECT FILL SHALL BE COMPACTED TO A MINIMUM OF 95 PERCENT OF THE STANDARD PROCTOR (ASTM D 698) MAXIMUM DRY DENSITY AT +/- 3% OF OPTIMUM MOISTURE CONTENT.

THE TOP 12 INCHES OF BACKFILL SHALL CONSIST OF A CLAY MATERIAL WITH A MINIMUM PI OF 32. THE CLAY MATERIAL SHALL BE PLACED AND COMPACTED IN ACCORDANCE WITH THE STANDARD SPECIFICATION.

13 BACKFILLING OPERATIONS SHALL NOT BEGIN UNTIL CONCRETE WALLS HAVE CURED A MINIMUM OF 7 DAYS. FORMS SHALL REMAIN IN PLACE FOR A MINIMUM OF 7 DAYS. IF DESIRED, FORMS MAY BE REMOVED UPON SATISFACTORY EVIDENCE THAT CONCRETE HAS ACHIEVED 75% OF ITS SPECIFIED 28 DAY STRENGTH AND PROVIDED THAT CONCRETE IS CURED USING WET COTTON MATS FOR THE REMAINDER OF THE 7 DAY CURING PERIOD. UNDER NO CIRCUMSTANCES SHALL BACKFILLING COMMENCE IN LESS THAN 7 DAYS. THE BACKFILL PLACEMENT AND COMPACTION OPERATIONS SHALL BE CAREFULLY CONTROLLED TO PREVENT OVERCOMPACTION OR DAMAGE TO THE STRUCTURES.

REINFORCED CONCRETE NOTES

1 ALL CONCRETE SHALL BE CLASS C (3,600 PSI) NORMAL WEIGHT CONCRETE WITH A WATER/CEMENT RATIO OF NOT MORE THAN 0.45 AND A SLUMP IN THE RANGE OF 5 TO 8 INCHES. WATER CONTENT SHALL BE CLOSELY MONITORED DURING BATCHING. UNDER NO CIRCUMSTANCES SHALL THE WATER/CEMENT RATIO BE PERMITTED TO EXCEED THE SPECIFIED MAXIMUM. THE USE OF A MID RANGE WATER REDUCING ADMIXTURE IS RECOMMENDED TO IMPROVE WORKABILITY DURING PLACING OPERATIONS.

2 THE USE OF FLY ASH IS REQUIRED. CONCRETE SHALL BE PROPORTIONED WITH A FLY ASH CONTENT EQUAL TO 25 PERCENT OF THE TOTAL WEIGHT OF THE FLY ASH PLUS CEMENT. FLY ASH MAY BE CLASS F OR C, BUT CONCRETE MIXED WITH CLASS C FLY ASH SHALL BE SUBJECT TO THE FOLLOWING RESTRICTIONS:

A COARSE AGGREGATE SHALL CONSIST OF CRUSHED LIMESTONE. THE USE OF RIVER GRAVEL AGGREGATE WILL NOT BE PERMITTED.

B CEMENT SHALL BE TYPE II LA (LOW ALKALI) OR TYPE I/II LA. ALKALI CONTENT OF THE CEMENT SHALL BE LESS THAN 0.60%. CONTRACTOR SHALL SUBMIT EVIDENCE OF THE ALKALI CONTENT CERTIFIED BY AN INDEPENDENT TESTING LABORATORY.

3 REINFORCING STEEL SHALL BE ASTM/ANSI A615, GRADE 60. DETAILING, FABRICATION AND ERECTION OF REINFORCING BARS SHALL BE IN ACCORDANCE WITH THE AMERICAN CONCRETE INSTITUTE "MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES," ACI 315.

4 CONCRETE CONSTRUCTION, INCLUDING MINIMUM REINFORCING STEEL COVERAGE BY CONCRETE, SHALL BE IN ACCORDANCE WITH THE AMERICAN CONCRETE INSTITUTE "BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE," ACI 318, UNLESS OTHERWISE NOTED.

5 PROVIDE SUPPORTS OR CHAIRS TO SUPPORT REBAR AT THE POSITIONS REQUIRED BY THE DRAWINGS. REINFORCEMENT FOR FOOTINGS SHALL BE SUPPORTED ON PRECAST CONCRETE BLOCKS OF A THICKNESS TO PROPERLY POSITION THE REBAR. BLOCKS SHALL BE PROVIDED AT 3'-0" MAXIMUM ON CENTERS.

6 LAP CONTINUOUS UNSCHEDULED REINFORCING BARS 40 BAR DIAMETERS UNLESS OTHERWISE NOTED.

7 THERE SHALL BE NO HORIZONTAL CONSTRUCTION JOINTS EXCEPT WHERE SPECIFICALLY NOTED ON THESE DRAWINGS.

8 THE CONTRACTOR SHALL ENSURE THAT ALL EMBEDDED ITEMS ARE DELIVERED TO THE SITE IN A TIMELY FASHION AND INSTALLED IN THE FORMWORK PRIOR TO PLACEMENT OF CONCRETE.

9 FIELD CUTTING OF REINFORCEMENT SHALL BE BY SHEARING OR SAWING. FIELD CUTTING OF REINFORCEMENT BY TORCH WILL BE PERMITTED ONLY WITH THE APPROVAL OF THE ENGINEER.

10 UNLESS OTHERWISE NOTED, ALL 90, 135 AND 180 DEGREE REINFORCING STEEL HOOKS SHALL BE STANDARD ACI HOOKS.

11 THE CONTRACTOR SHALL USE A TREMIE TO PLACE CONCRETE IN ALL AREAS WHERE THE FALL OF THE CONCRETE WILL EXCEED 5 FEET.

12 THE CONTRACTOR SHALL USE CARE TO PROPERLY VIBRATE CONCRETE DURING PLACING OPERATIONS TO ENSURE GOOD DENSITY OF CONCRETE AND TO MINIMIZE SURFACE DEFECTS.

13 CHAMFER ALL EXPOSED EDGES 3/4 INCH.

14 FORMWORK FOR SURFACES TO BE EXPOSED TO VIEW IN THE FINISHED CONSTRUCTION SHALL BE SMOOTH, EITHER WOOD OR METAL. SMOOTH FORMS SHALL BE FREE OF RAISED GRAIN, TORN SURFACES, WORN EDGES, PATCHES, DENTS OR OTHER DEFECTS. STRENGTH OF FORMS SHALL BE SUCH THAT NO WARPING, BULGING OR BOWING OCCUR UNDER THE WEIGHT OF THE WET CONCRETE. JOINTS SHALL BE SMOOTH AND MORTAR TIGHT. FORMS WHICH DO NOT PRESENT A SMOOTH SURFACE OR LINE UP PROPERLY SHALL NOT BE USED. FORMS SHALL BE FREE OF RUST, GREASE OR OTHER FOREIGN SURFACES THAT MAY DISCOLOR THE FINISHED CONCRETE.

15 WALL TIES AT RETAINING WALLS SHALL BE FABRICATED SO THAT ENDS OR END FASTENERS CAN BE REMOVED WITHOUT CAUSING SPALLING OF FACE OF CONCRETE. TIES SHALL BE PROVIDED WITH A WATER SEAL FEATURE. REMOVE ENDS OF FORM TIES SUCH THAT THE EMBEDDED PORTION OF TIE IS AT LEAST 3/4 INCH FROM THE FORMED CONCRETE FACE. PATCH TIE HOLES IMMEDIATELY AFTER REMOVAL OF FORMS.

CONCRETE FINISHING

1 REPAIR OF SURFACE DEFECTS - DEFECTIVE AREAS SHALL BE REPAIRED IMMEDIATELY AFTER REMOVAL OF FORMS. HONEYCOMBED AND OTHER DEFECTIVE AREAS SHALL BE REMOVED DOWN TO SOUND CONCRETE. THE DEFECTIVE AND SURROUNDING AREA SHALL BE DAMPENED AND A BONDING GROUT APPLIED TO THE AREA. BONDING GROUT SHALL CONSIST OF APPROXIMATELY ONE PART CEMENT TO ONE PART FINE SAND PASSING A NO. 30 SIEVE. MIX GROUT TO THE CONSISTENCY OF A THICK CREAM AND BRUSH THOROUGHLY INTO THE SURFACE.

PATCHING MORTAR SHALL BE OF THE SAME MATERIALS AND APPROXIMATELY THE SAME PROPORTIONS AS CONCRETE EXCEPT THAT COARSE AGGREGATE SHALL BE OMITTED. PREPARE MORTAR WITH NO MORE THAN ONE PART CEMENT TO 2 1/2 PARTS SAND. USE WHITE PORTLAND CEMENT FOR PART OF THE GRAY CEMENT TO MIX A MORTAR OF A COLOR TO MATCH THE SURROUNDING CONCRETE. USE NO MORE WATER THAN NECESSARY AND MIX MORTAR TO THE STIFFEST CONSISTENCY THAT WILL PERMIT PLACING.

AFTER SURFACE WATER FROM THE BONDING GROUT HAS DISSIPATED, THOROUGHLY BRUSH PATCHING MORTAR INTO THE BONDING GROUT.

IN LIEU OF USE OF BONDING GROUT, A LATEX BONDING AGENT MAY BE USED.

2 ALL VERTICAL CONCRETE SURFACES EXPOSED TO VIEW SHALL RECEIVE A RUBBED FINISH. ALL HORIZONTAL CONCRETE SURFACES EXPOSED TO VIEW SHALL RECEIVE A SMOOTH TROWELED FINISH.

WATERSTOPS

1 WATERSTOPS AT EXPANSION JOINTS SHALL BE 9 INCH RIBBED PVC WITH 1" CENTERBULB. ALL OTHER WATERSTOPS SHALL BE 6 INCH RIBBED PVC OR PREFORMED PLASTIC SEALING TYPE WATERSTOP SUCH AS SYNKO-FLEX. PLASTIC SEALING TYPE WATERSTOP SHALL BE INSTALLED IN STRICT ACCORDANCE WITH THE MANUFACTURERS RECOMMENDATIONS.

2 PVC WATERSTOPS SHALL BE SPLICED VIA FUSION TECHNIQUES IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

3 WATERSTOP JUNCTIONS AT BASE OF EXPANSION JOINTS - IF PVC WATERSTOPS ARE USED FOR BOTH THE EXPANSION JOINTS AND THE CONSTRUCTION JOINT BETWEEN WALL AND FOOTING, THE JUNCTIONS AT THE BASE OF THE EXPANSION JOINT SHALL CONSIST OF A PREFABRICATED FLAT TEE SECTION.

IF PLASTIC TYPE WATERSTOP IS USED AT CONSTRUCTION JOINT BETWEEN WALL AND FOOTING, THEN THE PVC WATERSTOP AT THE EXPANSION JOINT SHALL BE EMBEDDED 3 INCHES MINIMUM INTO THE TOP OF THE FOOTING. THE PLASTIC TYPE WATERSTOP SHALL THEN BE CONTINUOUS ACROSS THE VERTICAL EXPANSION JOINT WATERSTOP.

SEALANT

1 SEALANT AT JOINTS SHALL CONSIST OF POLYURETHANE BASED NON-SAG ELASTOMERIC SEALANT FOR USE IN WATER IMMERSION APPLICATIONS. SEALANT SHALL BE APPLIED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS, INCLUDING USE OF A PRIMER AS REQUIRED. AN ACCEPTABLE PRODUCT IS SIKAFLEX 1A SEALANT WITH SIKAFLEX PRIMER 429 AS MANUFACTURED BY SIKA CORPORATION.

SUBMITTALS

THE FOLLOWING ITEMS SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW. WORK ASSOCIATED WITH THESE ITEMS SHALL NOT COMMENCE UNTIL THE SUBMITTALS HAVE BEEN REVIEWED AND RETURNED BY THE ENGINEER. THE CONTRACTOR SHALL SUBMIT THE FOLLOWING:

1 TEST DATA AND MIX DESIGNS FOR EACH TYPE AND STRENGTH OF CONCRETE SPECIFIED.

2 REINFORCING STEEL SHOP DRAWINGS DETAILING REINFORCEMENT FABRICATION AND BAR PLACEMENT. SHOP DRAWINGS SHALL CLEARLY INDICATE THE LOCATION, SIZE, SPACING, SPLICES AND PIECEMARK FOR ALL REINFORCING STEEL. THE SHOP DRAWINGS SHALL PROVIDE SUFFICIENT DETAIL TO PERMIT PLACEMENT OF REINFORCEMENT WITHOUT THE USE OF THE DESIGN DRAWINGS. THE SHOP DRAWINGS SHALL INCLUDE A COMPLETE BILL OF MATERIALS FOR ALL REINFORCING STEEL. FABRICATION OF REINFORCING STEEL SHALL NOT COMMENCE UNTIL THE ENGINEER HAS COMPLETED THE REVIEW OF THE SHOP DRAWINGS.

3 LABORATORY TEST REPORT CERTIFYING THAT THE SELECT FILL PROPOSED FOR THE PROJECT MEETS THE REQUIREMENTS SPECIFIED IN THESE CONSTRUCTION DOCUMENTS.

4 LABORATORY TEST RESULTS FOR CONCRETE CYLINDER COMPRESSION TESTS AND SUBGRADE AND FILL COMPACTION TESTS.

TESTING LABORATORY REQUIREMENTS

THE CONTRACTOR SHALL SECURE THE SERVICES OF A COMMERCIAL TESTING LABORATORY TO PERFORM ALL REQUIRED MATERIALS TESTS AND INSPECTIONS.

1 ONE SET OF CONCRETE TEST CYLINDERS SHALL BE OBTAINED FOR EVERY 50 CUBIC YARDS OF CONCRETE PLACED, OR ANY PORTION THEREOF PLACED IN A SINGLE DAY, AS FOLLOWS:

A FIVE (5) CONCRETE TEST CYLINDERS SHALL BE MOLDED FROM EACH SAMPLE AND CURED ACCORDING TO ASTM C 31. COMPRESSIVE TESTS SHALL BE PERFORMED ON ONE CYLINDER AT 7 DAYS AND THREE CYLINDERS AT 28 DAYS. THE FIFTH CYLINDER SHALL BE RETAINED FOR 56 DAYS AND TESTED ONLY IF THE AVERAGE STRENGTH OF THE 28 DAYS TESTS DO NOT MEET THE MINIMUM REQUIRED COMPRESSIVE STRENGTH.

B A SLUMP TEST AND TEMPERATURE MEASUREMENT SHALL BE PERFORMED FOR EACH SAMPLE.

C COMPUTATION OF WATER/CEMENT RATIO, AS REQUIRED OR DIRECTED BY THE ENGINEER.

2 ADDITIONAL CYLINDERS MAY BE MADE AND TESTED, AS NECESSARY, FOR ACCELERATED REMOVAL OF FORMS OR ERECTION OF MEMBERS TO VERIFY THAT NECESSARY STRENGTHS HAVE BEEN OBTAINED. SUCH CYLINDERS SHALL BE MADE AT THE CONTRACTOR'S EXPENSE.

3 APPROPRIATE TESTS SHALL BE PERFORMED TO CERTIFY THAT THE SELECT FILL PROPOSED FOR USE IN THE CONSTRUCTION IS ACCEPTABLE.

4 FIELD DENSITY TESTS SHALL BE PERFORMED ON THE SUBGRADE AND EACH LIFT OF FILL MATERIAL. ONE DENSITY TEST WILL BE REQUIRED FOR EACH 5,000 SQUARE FEET, BUT NOT LESS THAN THREE (3) TESTS PER LIFT.

5 REINFORCED CONCRETE CONSTRUCTION - SERVICES ARE TO BE PROVIDED AS FOLLOWS:

A INSPECT EXCAVATIONS, SUBGRADE PREPARATIONS AND REINFORCING STEEL PLACEMENT PRIOR TO CONCRETE POUR.

6 THE CONTRACTOR SHALL COOPERATE AND COORDINATE FULLY WITH THE TESTING LABORATORY.

7 IN THE EVENT THAT CONCRETE ELEMENTS OR MEMBERS DO NOT ACHIEVE THE SPECIFIED MINIMUM COMPRESSIVE STRENGTHS, THE ENGINEER MAY REQUIRE ADDITIONAL ANALYSIS, TESTING OR REMOVAL AND REPLACEMENT OF MEMBERS. ANY AND ALL SUCH ADDITIONAL ANALYSIS OR TESTING SHALL BE AT THE CONTRACTOR'S EXPENSE, WHETHER SUCH ANALYSIS OR TESTING DEMONSTRATES ADEQUATE STRENGTH OR NOT. REPLACEMENT OF ANY MEMBERS DEEMED QUESTIONABLE OR INADEQUATE BY THE ENGINEER SHALL BE AT THE CONTRACTOR'S EXPENSE.

8 THE CONTRACTOR SHALL ARRANGE FOR COPIES OF THE INSPECTION AND TESTING REPORTS TO BE SENT TO THE ENGINEER. COPIES OF TEST AND INSPECTION REPORTS SHALL BE FORWARDED TO THE ENGINEER AS QUICKLY AS POSSIBLE FOLLOWING COMPLETION OF THE TESTS AND INSPECTIONS.

CITY OF LEANDER APPROVAL

S1-1

PKA PROJECT NO. 011-5957

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Texas Registration No. F-1491

GATEWAY 29 SHARED IMPROVEMENTS
SITE DEVELOPMENT PLANS
STRUCTURAL GENERAL NOTES & SPECIFICATIONS
LEANDER, WILLIAMSON COUNTY, TEXAS

REVISIONS			
NO.	DESCRIPTION	BY	DATE

DATE: 2/7/2024
DESIGNED BY: JIR
DRAWN BY: JIR
CHECKED BY: ARB
DRAWING NAME: 5957-S1-1.dwg

STATE OF TEXAS
ADDISON R. BARNETT
137437
LICENSED PROFESSIONAL ENGINEER
2/7/2024

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JOB NUMBER: A633-0401

S-1

SHEET NO. 76 OF 90 SHEETS

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Plot Date/Time: Feb. 07, 24 - 14:59:13
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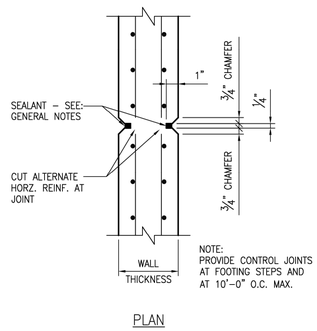
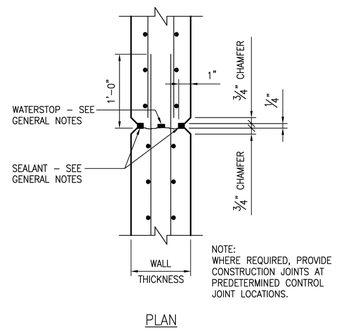
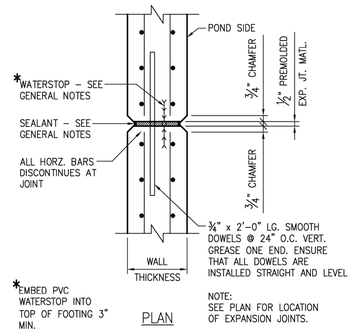


1 RETAINING WALL CONTROL JOINT
TYPICAL DETAIL
N.T.S.



2 RETAINING WALL CONSTRUCTION JOINT
TYPICAL DETAIL
N.T.S.



3 RETAINING WALL EXPANSION JOINT
TYPICAL DETAIL
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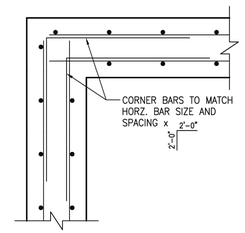
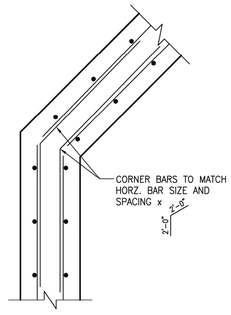
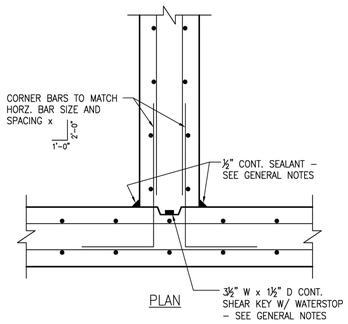


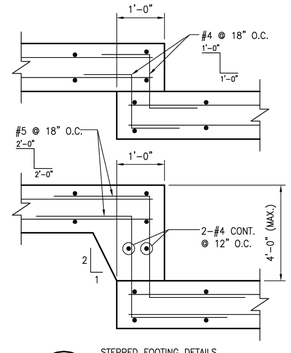
4 WALL CORNER
TYPICAL DETAIL
N.T.S.



5 WALL CORNER
TYPICAL DETAIL
N.T.S.



6 WALL INTERSECTION
TYPICAL DETAIL
N.T.S.



7 STEPPED FOOTING DETAILS
TYPICAL DETAIL
N.T.S.

CITY OF LEANDER APPROVAL

S1-2

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GATEWAY 29 SHARED IMPROVEMENTS
SITE DEVELOPMENT PLANS
TYPICAL STRUCTURAL DETAILS
LEANDER, WILLIAMSON COUNTY, TEXAS

REVISIONS

NO.	DESCRIPTION	BY	DATE

DATE: 2/7/2024
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DRAWING NAME: 5957-S1-2.dwg

STATE OF TEXAS
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FRN - F-1386

JOB NUMBER: A633-0401

S-2

SHEET NO. 77 OF 90 SHEETS



CITY OF LEANDER APPROVAL

NOTES:

1. SEE SHEET S1-2 FOR TYPICAL RETAINING WALL CONSTRUCTION DETAILS.
2. CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND ELEVATIONS VERSUS CIVIL DRAWINGS AND REPORT ANY DISCREPANCIES TO THE ENGINEER PRIOR TO CONSTRUCTION.
3. THE DENTENTION AND BATCH WATER QUALITY BASIN IS TO BE CONSTRUCTED FIRST IN THE SEQUENCE OF CONSTRUCTION (SOC) BEFORE SITE CLEANRING AND GRADING TO ACT AS A SEDIMENTATION POND DURING CONSTRUCTION

1 OVERALL PLAN
SCALE: 1" = 50'-0"

S1-3

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GATEWAY 29 SHARED IMPROVEMENTS
SITE DEVELOPMENT PLANS
OVERALL POND A & POND B PLAN
LEANDER, WILLIAMSON COUNTY, TEXAS

REVISIONS

NO.	DESCRIPTION	BY	DATE

DATE: 2/7/2024
DESIGNED BY: JIR
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CHECKED BY: ARB
DRAWING NAME: 5957-S1-3.dwg

STATE OF TEXAS
ADDISON R. BARNETT
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2/7/2024

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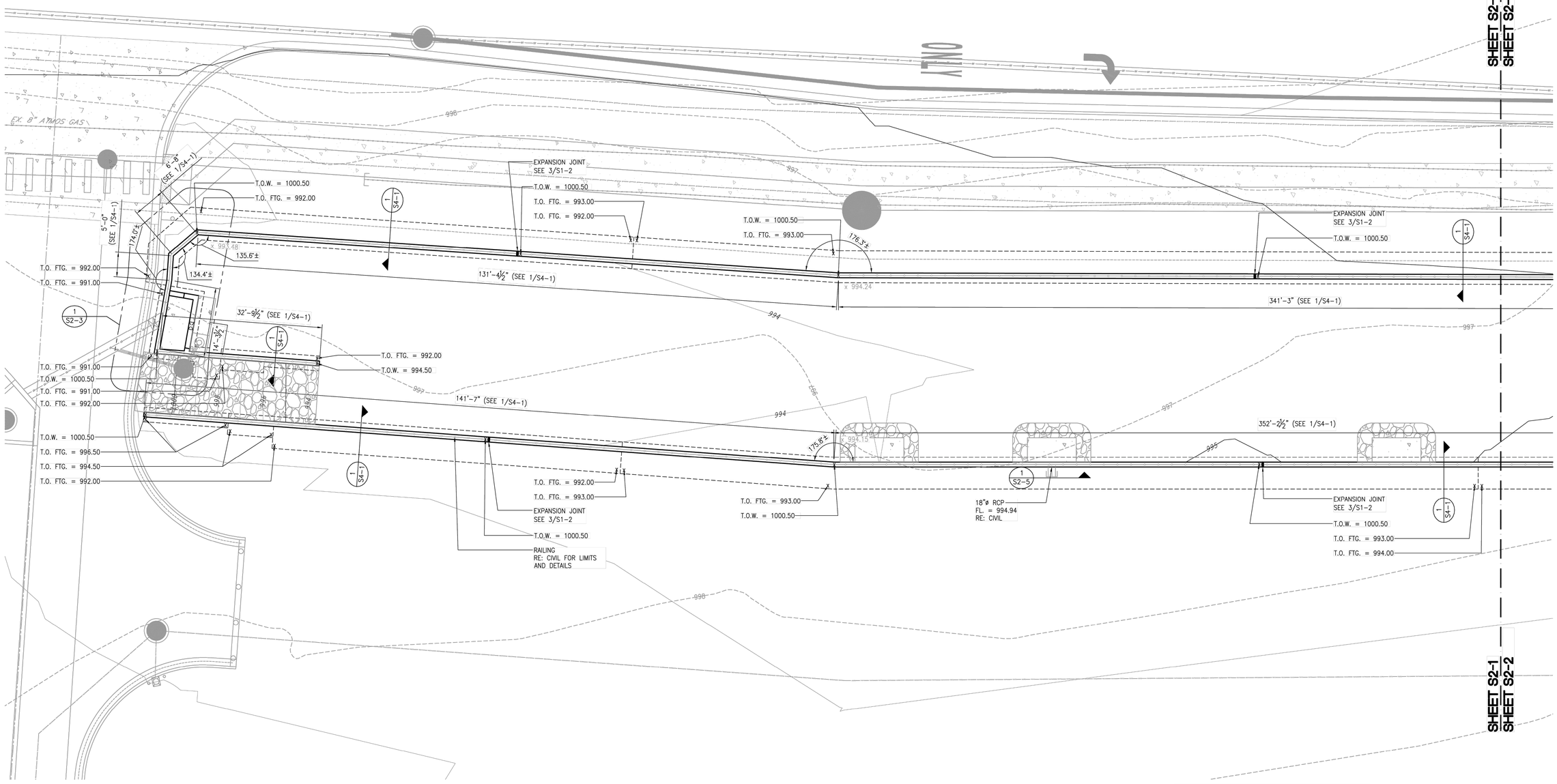
JOB NUMBER:
A633-0401

S-3

SHEET NO.
78
OF 90 SHEETS

RONALD REAGAN BLVD R.O.W.



1 POND A PARTIAL PLAN
SCALE: 1" = 10'-0"

NOTES:

1. SEE SHEET S1-2 FOR TYPICAL RETAINING WALL CONSTRUCTION DETAILS.
2. CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND ELEVATIONS VERSUS CIVIL DRAWINGS AND REPORT ANY DISCREPANCIES TO THE ENGINEER PRIOR TO CONSTRUCTION.
3. THE DENTENTION AND BATCH WATER QUALITY BASIN IS TO BE CONSTRUCTED FIRST IN THE SEQUENCE OF CONSTRUCTION (SOC) BEFORE SITE CLEANRING AND GRADING TO ACT AS A SEDIMENTATION POND DURING CONSTRUCTION

CITY OF LEANDER APPROVAL

GATEWAY 29 SHARED IMPROVEMENTS
SITE DEVELOPMENT PLANS
POND A PARTIAL PLAN
LEANDER, WILLIAMSON COUNTY, TEXAS

REVISIONS			
NO.	DESCRIPTION	BY	DATE

DATE: 2/7/2024
DESIGNED BY: JJR
DRAWN BY: JJR
CHECKED BY: ARB
DRAWING NAME: S957-S2-1.dwg

STATE OF TEXAS
ADDISON R. BARNETT
137437
LICENSED PROFESSIONAL ENGINEER
2/7/2024

LJA Engineering, Inc.
7500 Rialto Boulevard Building II, Suite 100
Austin, Texas 78735
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Fax 512.439.4716
FRN - F-1386

JOB NUMBER: A633-0401

S-4

SHEET NO. 79 OF 90 SHEETS

S2-1

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Austin, Texas 78759 • Phone 512-345-5538
Texas Registration No. F-1481

K:\Projects\LJA\Gateway 29 Pond Structures\S957-S2-1.dwg
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Last modified Mon, 02 Sep - 17:14
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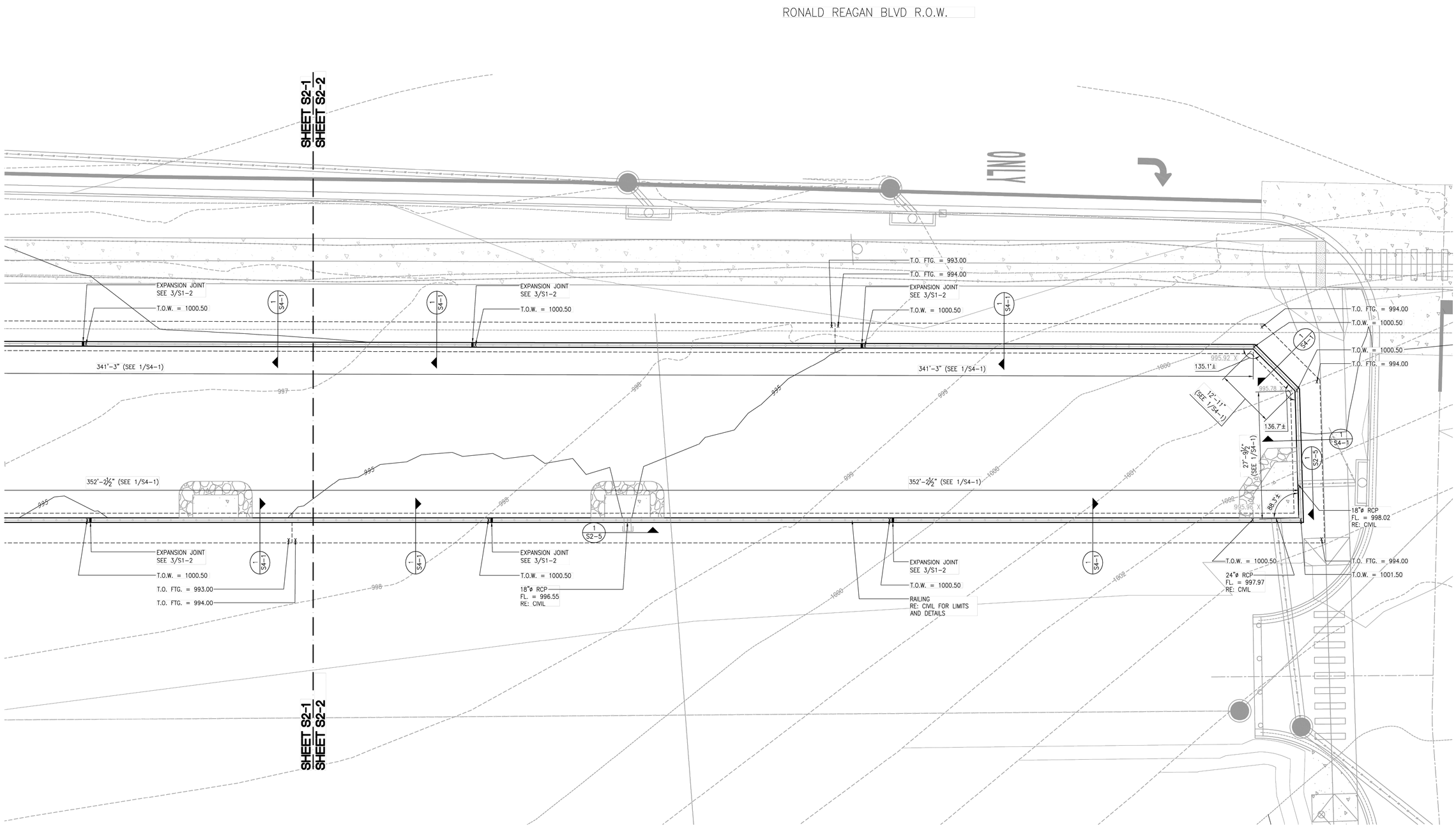

1 POND A PARTIAL PLAN
SCALE: 1" = 10'-0"

NOTES:

1. SEE SHEET S1-2 FOR TYPICAL RETAINING WALL CONSTRUCTION DETAILS.
2. CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND ELEVATIONS VERSUS CIVIL DRAWINGS AND REPORT ANY DISCREPANCIES TO THE ENGINEER PRIOR TO CONSTRUCTION.
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CITY OF LEANDER APPROVAL

S2-2

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GATEWAY 29 SHARED IMPROVEMENTS
SITE DEVELOPMENT PLANS
POND A PARTIAL PLAN
LEANDER, WILLIAMSON COUNTY, TEXAS

REVISIONS

NO.	DESCRIPTION	BY	DATE

DATE: 2/7/2024
DESIGNED BY: JIR
DRAWN BY: JIR
CHECKED BY: ARB
DRAWING NAME: 5957-S2-2.dwg

STATE OF TEXAS
ADDISON R. BARNETT
137437
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PROFESSIONAL ENGINEER
2/7/2024

LJA Engineering, Inc.
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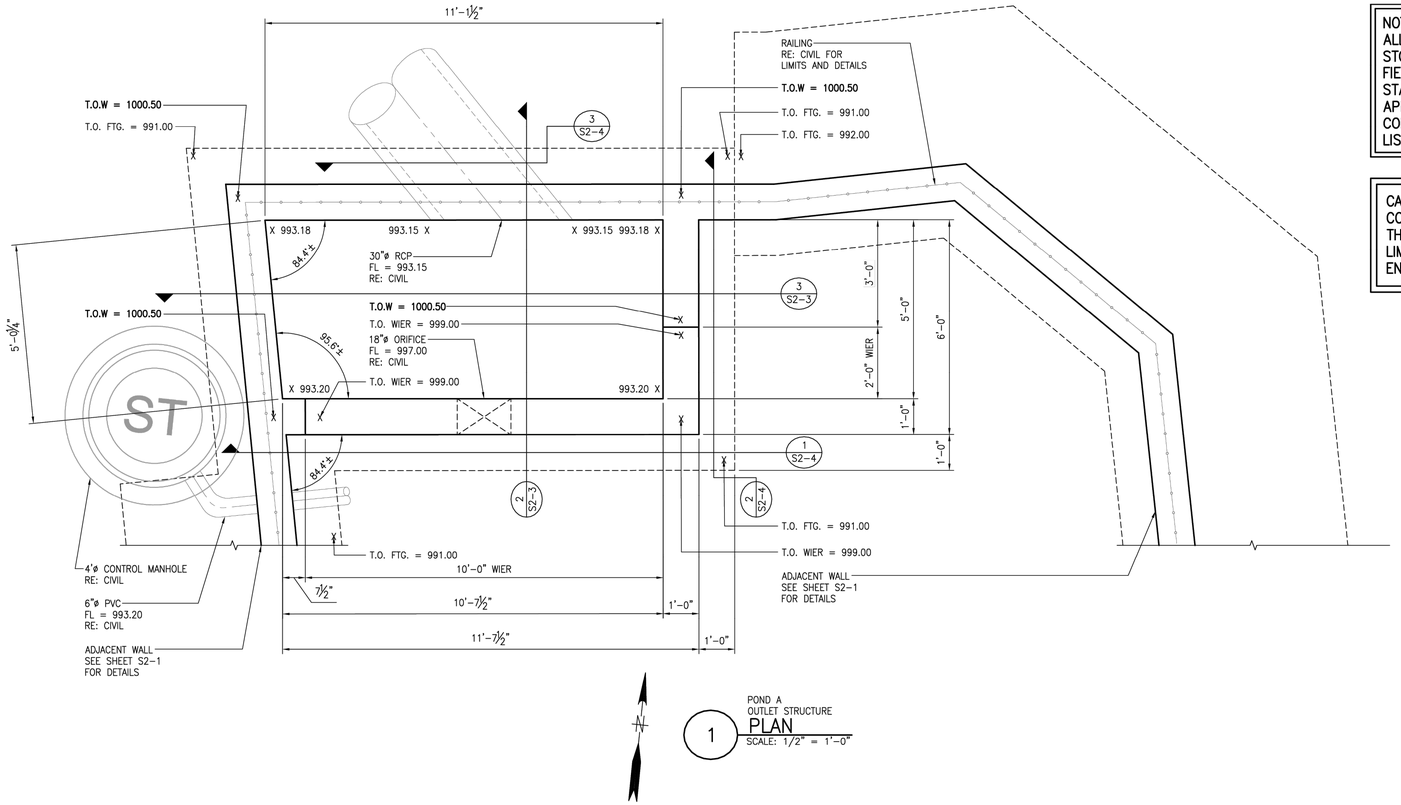
Suite 100
Austin, Texas 78735
Phone 512.439.4700
Fax 512.439.4716
FRN - F-1386

JOB NUMBER: A633-0401

S-5

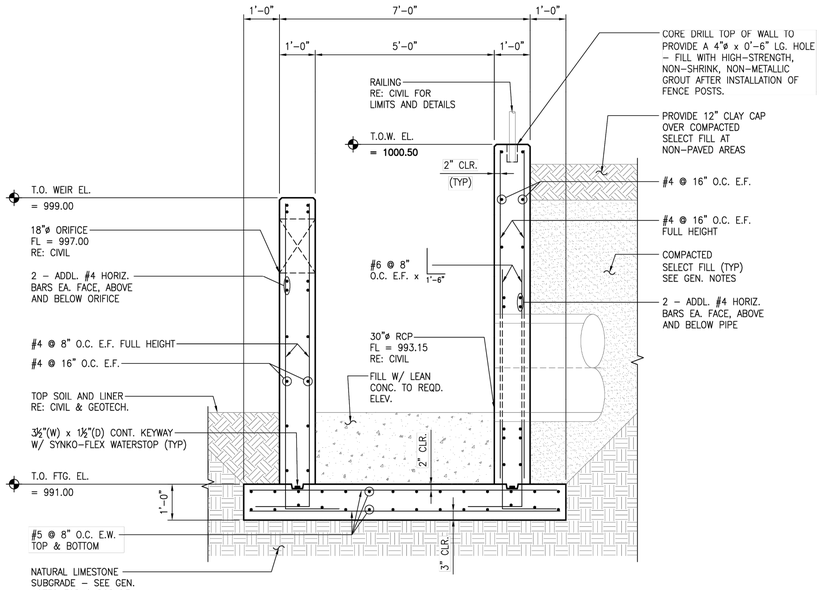
SHEET NO. 80 OF 90 SHEETS



1 POND A OUTLET STRUCTURE **PLAN**
SCALE: 1/2" = 1'-0"

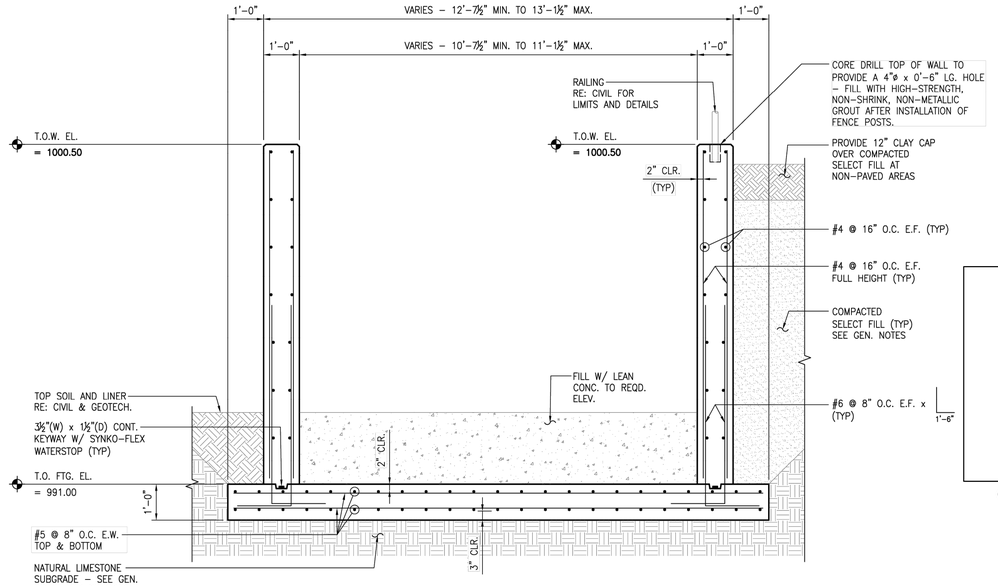
NOTE:
ALL EXPOSED CONCRETE THAT IS VISIBLE IS REQUIRED TO BE MADE OF STONE OR CLAD IN STONE INCLUDING BUT NOT LIMITED TO LEDGESTONE, FIELDSTONE, CAST STONE, OR OTHER DECORATIVE MATERIALS SUCH AS STAMPED AND TINTED CONCRETE THAT RESEMBLES STONE OR BRICK AS APPROVED BY THE DIRECTOR OF PLANNING. ALL OTHER EXPOSED CONCRETE IS REQUIRED TO BE MADE OF STONE OR CLAD IN STONE AS LISTED ABOVE OR TEXTURED AND TINTED IN EARTHERN COLORS.

CAUTION!!
CONTRACTOR SHALL ALERT THE ENGINEER IF COMPETENT LIMESTONE SUBGRADE IS NOT ENCOUNTERED



NOTE:
CAST ALL SIDES OF OUTLET STRUCTURE FOOTING DIRECTLY AGAINST LIMESTONE EXCAVATION. DO NOT FORM!!

2 SECTION
SCALE: 1/2" = 1'-0"



NOTE:
CAST ALL SIDES OF OUTLET STRUCTURE FOOTING DIRECTLY AGAINST LIMESTONE EXCAVATION. DO NOT FORM!!

3 SECTION
SCALE: 1/2" = 1'-0"

CITY OF LEANDER APPROVAL

GATEWAY 29 SHARED IMPROVEMENTS
SITE DEVELOPMENT PLANS
POND A OUTLET STRUCTURE PLAN & SECTIONS
LEANDER, WILLIAMSON COUNTY, TEXAS

REVISIONS

NO.	DESCRIPTION	BY	DATE

DATE: 2/7/2024
DESIGNED BY: JIR
DRAWN BY: JIR
CHECKED BY: ARB
DRAWING NAME: 5957-S2-3.dwg

STATE OF TEXAS
ADDISON R. BARNETT
137437
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S-6

SHEET NO. 81 OF 90 SHEETS

S2-3

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Last Modified: Mon, Jan 22, 2024 - 12:14pm
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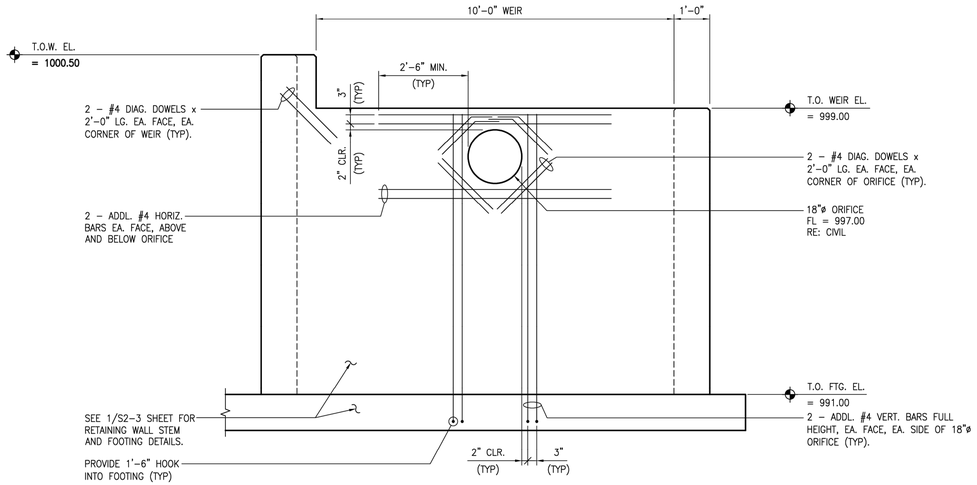
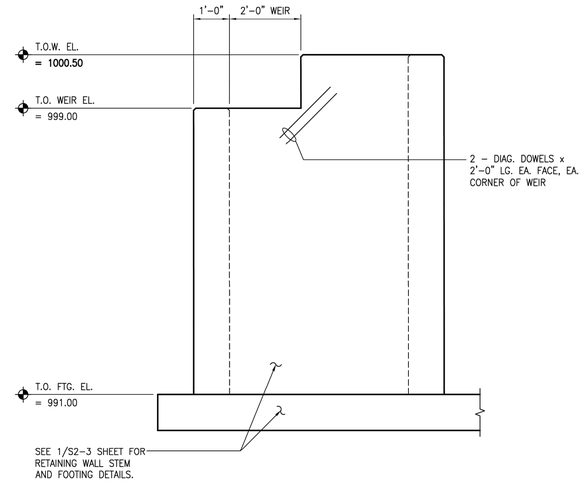
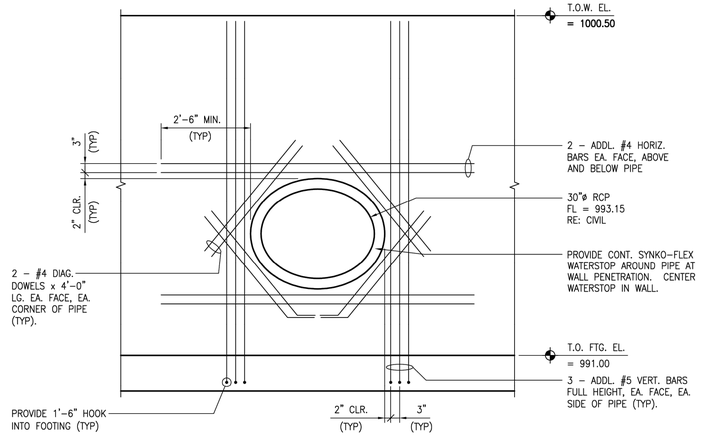


1 ADDL. REINF. AT WEIR
DETAIL
SCALE: 1/2" = 1'-0"



2 ADDL. REINF. AT WEIR
DETAIL
SCALE: 1/2" = 1'-0"



3 ADDL. REINF. AT 30"ø RCP
DETAIL
SCALE: 1/2" = 1'-0"

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S2-4

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GATEWAY 29 SHARED IMPROVEMENTS
SITE DEVELOPMENT PLANS
POND A OUTLET STRUCTURE DETAILS
LEANDER, WILLIAMSON COUNTY, TEXAS

REVISIONS

NO.	DESCRIPTION	BY	DATE

DATE: 2/7/2024
DESIGNED BY: JIR
DRAWN BY: JIR
CHECKED BY: ARB
DRAWING NAME: 5957-S2-4.dwg

STATE OF TEXAS
ADDISON R. BARNETT
137437
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FRN - F-1386

JOB NUMBER: A633-0401

S-7

SHEET NO. 82
OF 90 SHEETS

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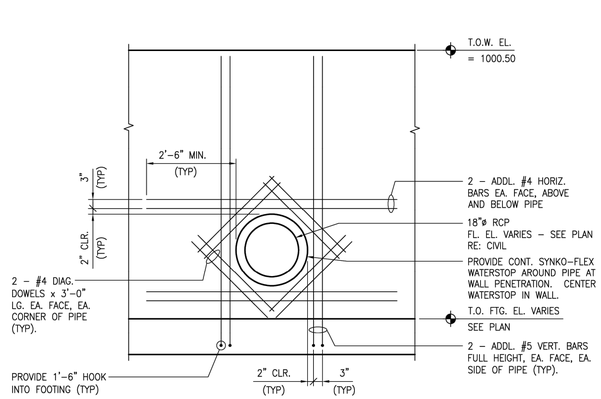
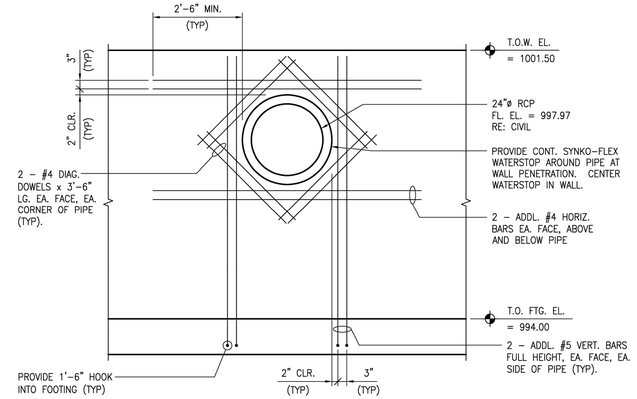


1 ADDL. REINF. AT 18"ø RCP
DETAIL
SCALE: 1/2" = 1'–0"



2 ADDL. REINF. AT 24"ø RCP
DETAIL
SCALE: 1/2" = 1'–0"

CITY OF LEANDER APPROVAL

GATEWAY 29 SHARED IMPROVEMENTS
SITE DEVELOPMENT PLANS

POND A DETAILS

LEANDER, WILLIAMSON COUNTY, TEXAS

NO.	DESCRIPTION	BY	DATE

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DATE: 2/7/2024
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DRAWN BY: JIR
CHECKED BY: ARB
DRAWING NAME: 5957-S2-5.dwg

STATE OF TEXAS
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JOB NUMBER: A633-0401

S-8

SHEET NO. 83
OF 90 SHEETS

S2-5

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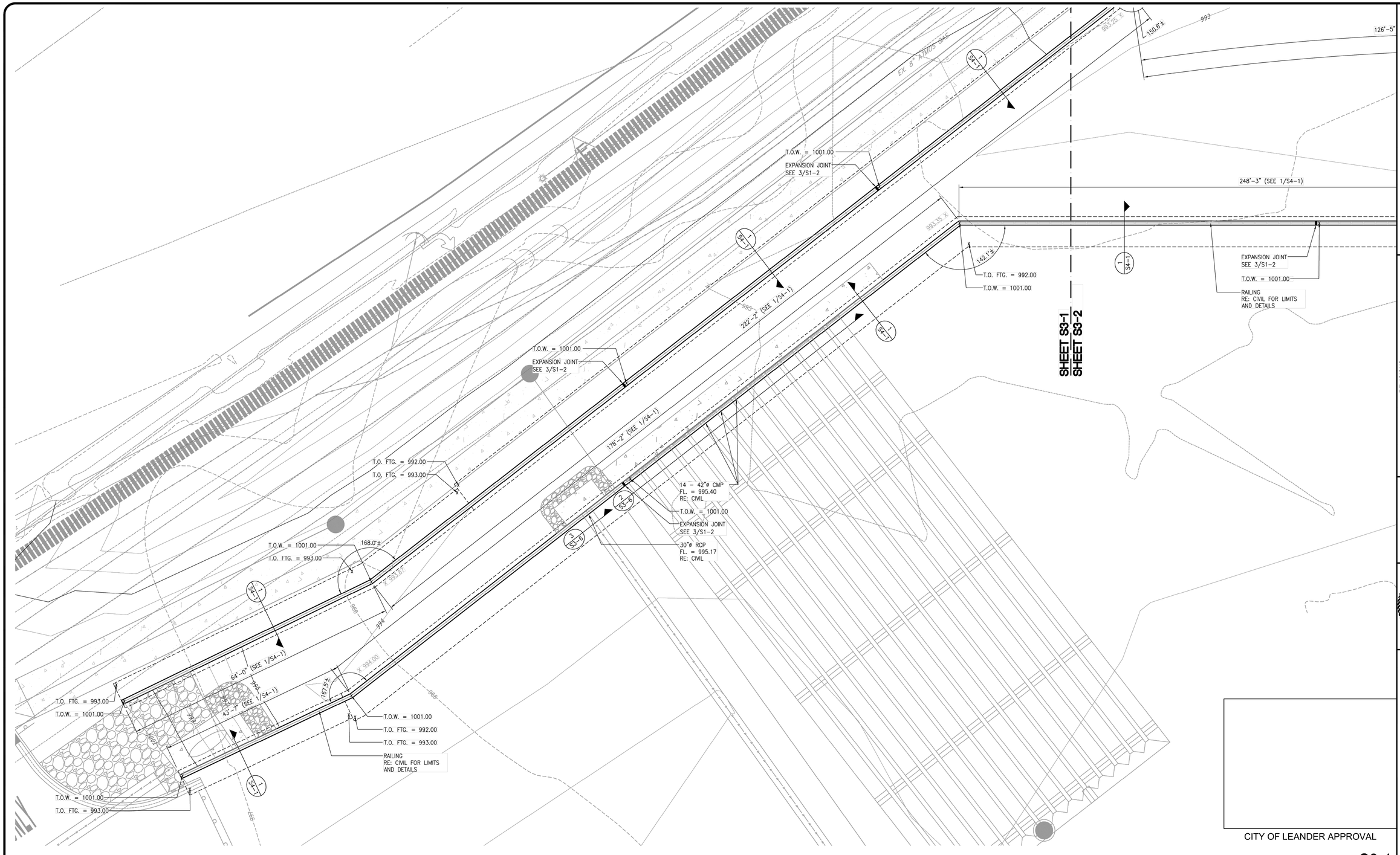

1 POND B PARTIAL PLAN
SCALE: 1" = 10'-0"

NOTES:

1. SEE SHEET S1-2 FOR TYPICAL RETAINING WALL CONSTRUCTION DETAILS.
2. CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND ELEVATIONS VERSUS CIVIL DRAWINGS AND REPORT ANY DISCREPANCIES TO THE ENGINEER PRIOR TO CONSTRUCTION.
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CITY OF LEANDER APPROVAL

GATEWAY 29 SHARED IMPROVEMENTS
SITE DEVELOPMENT PLANS
POND B PARTIAL PLAN
LEANDER, WILLIAMSON COUNTY, TEXAS

REVISIONS

NO.	DESCRIPTION	BY	DATE

DATE: 2/7/2024
DESIGNED BY: JIR
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DRAWING NAME: 5957-S3-1.dwg

STATE OF TEXAS
ADDISON R. BARNETT
137437
LICENSED PROFESSIONAL ENGINEER
2/7/2024

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Fax 512.439.4716
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S-9

SHEET NO. 84
OF 90 SHEETS

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S3-1

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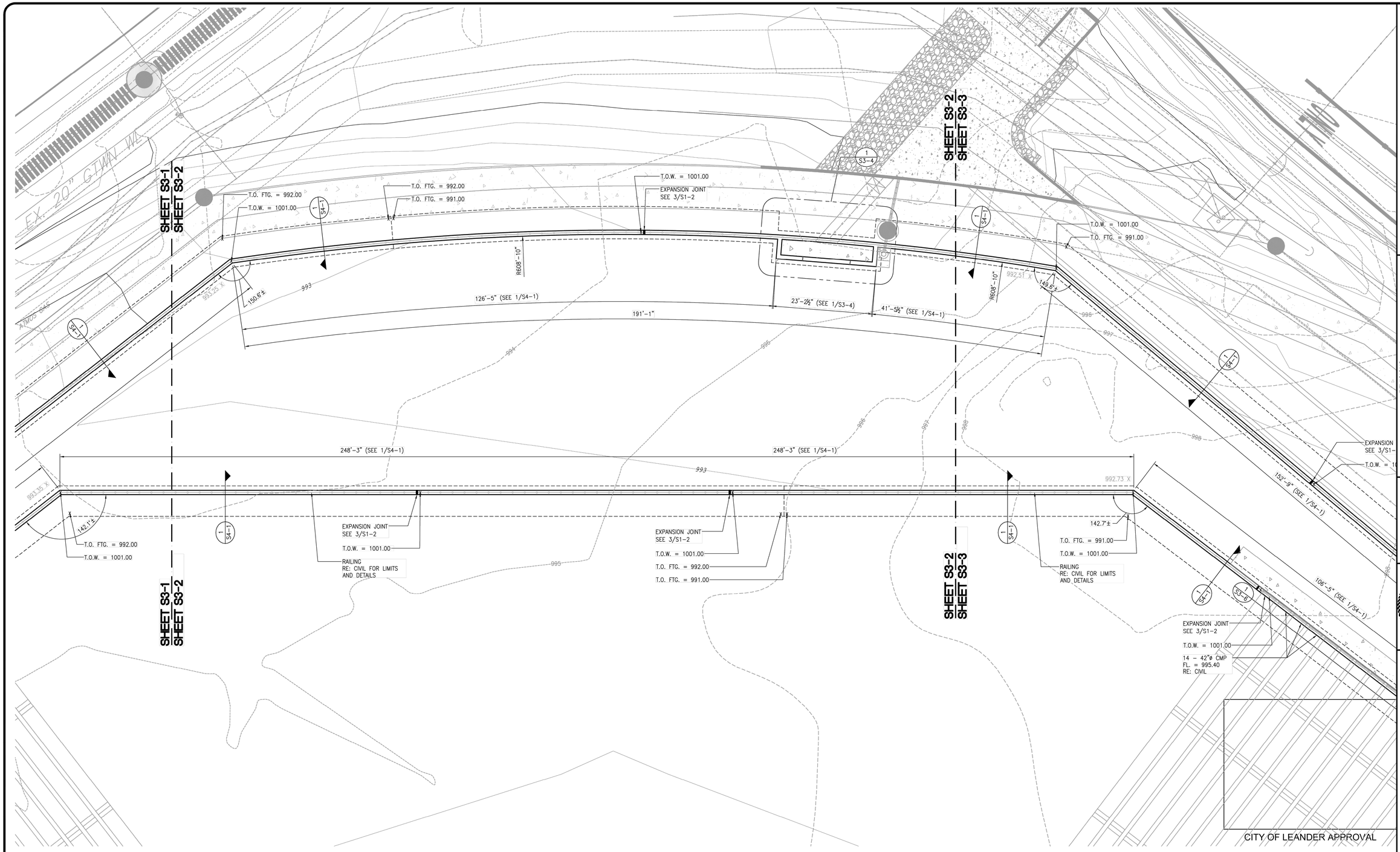

1 POND B PARTIAL PLAN
SCALE: 1" = 10'-0"

NOTES:

1. SEE SHEET S1-2 FOR TYPICAL RETAINING WALL CONSTRUCTION DETAILS.
2. CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND ELEVATIONS VERSUS CIVIL DRAWINGS AND REPORT ANY DISCREPANCIES TO THE ENGINEER PRIOR TO CONSTRUCTION.
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GATEWAY 29 SHARED IMPROVEMENTS
SITE DEVELOPMENT PLANS
POND B PARTIAL PLAN
LEANDER, WILLIAMSON COUNTY, TEXAS

REVISIONS

NO.	DESCRIPTION	BY	DATE

DATE: 2/7/2024
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DRAWN BY: JIR
CHECKED BY: ARB
DRAWING NAME: 5957-S3-2.dwg

STATE OF TEXAS
ADDISON R. BARNETT
137437
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2/7/2024

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S3-2

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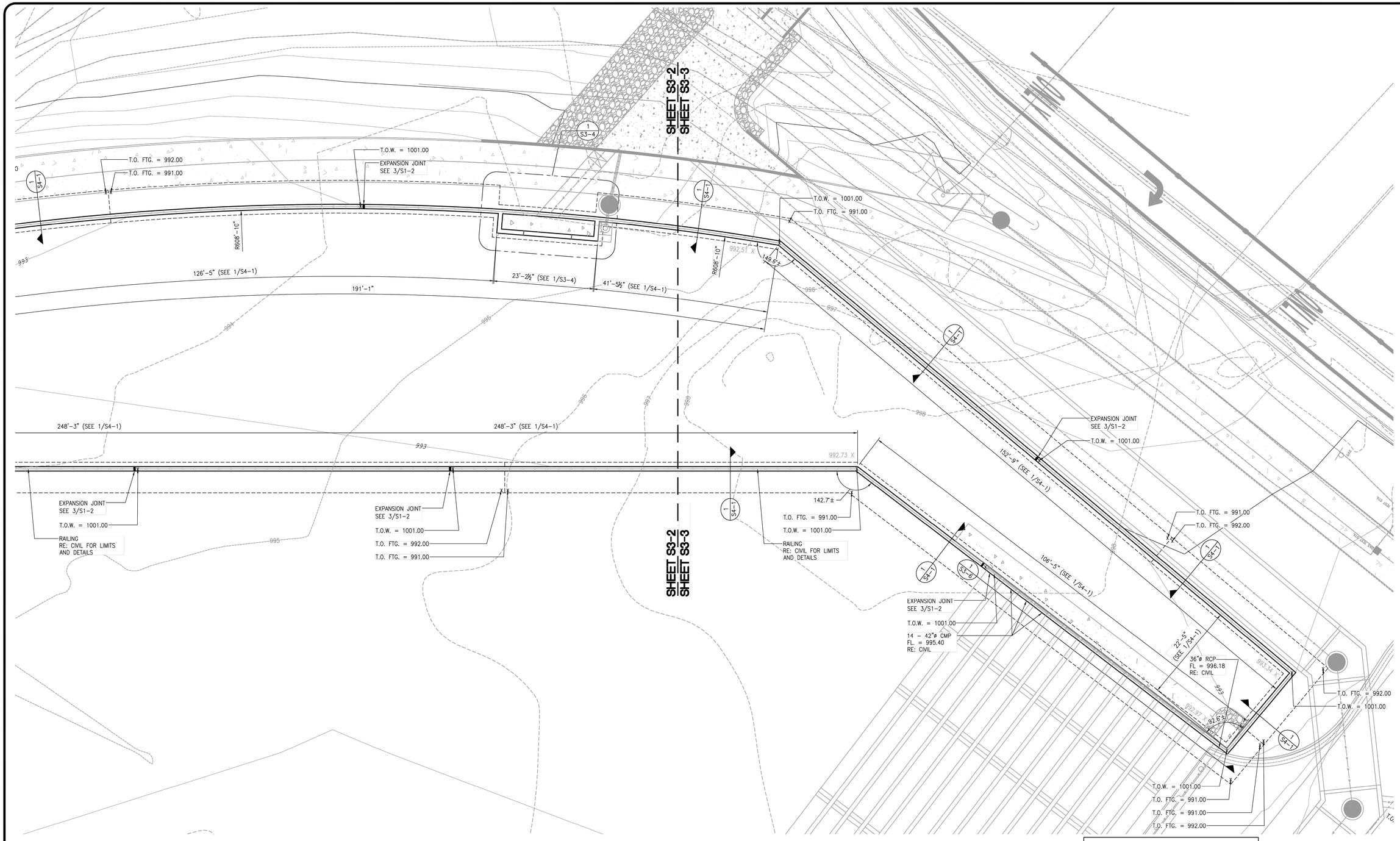
JOB NUMBER:
A633-0401

S-10

SHEET NO.
85
OF 90 SHEETS



1 POND B
PARTIAL PLAN
SCALE: 1" = 10'-0"

NOTES:

1. SEE SHEET S1-2 FOR TYPICAL RETAINING WALL CONSTRUCTION DETAILS.
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CITY OF LEANDER APPROVAL

GATEWAY 29 SHARED IMPROVEMENTS
SITE DEVELOPMENT PLANS
POND B PARTIAL PLAN
LEANDER, WILLIAMSON COUNTY, TEXAS

REVISIONS			
NO.	DESCRIPTION	BY	DATE

DATE: 2/7/2024
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CHECKED BY: AWB
DRAWING NAME: 5957-S3-3.dwg

STATE OF TEXAS
ADDISON R. BARNETT
137437
LICENSED PROFESSIONAL ENGINEER
2/7/2024

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FRN - F-1386

JOB NUMBER: A633-0401

S-11

SHEET NO. 86
OF 90 SHEETS

S3-3

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Texas Registration No. F-1491

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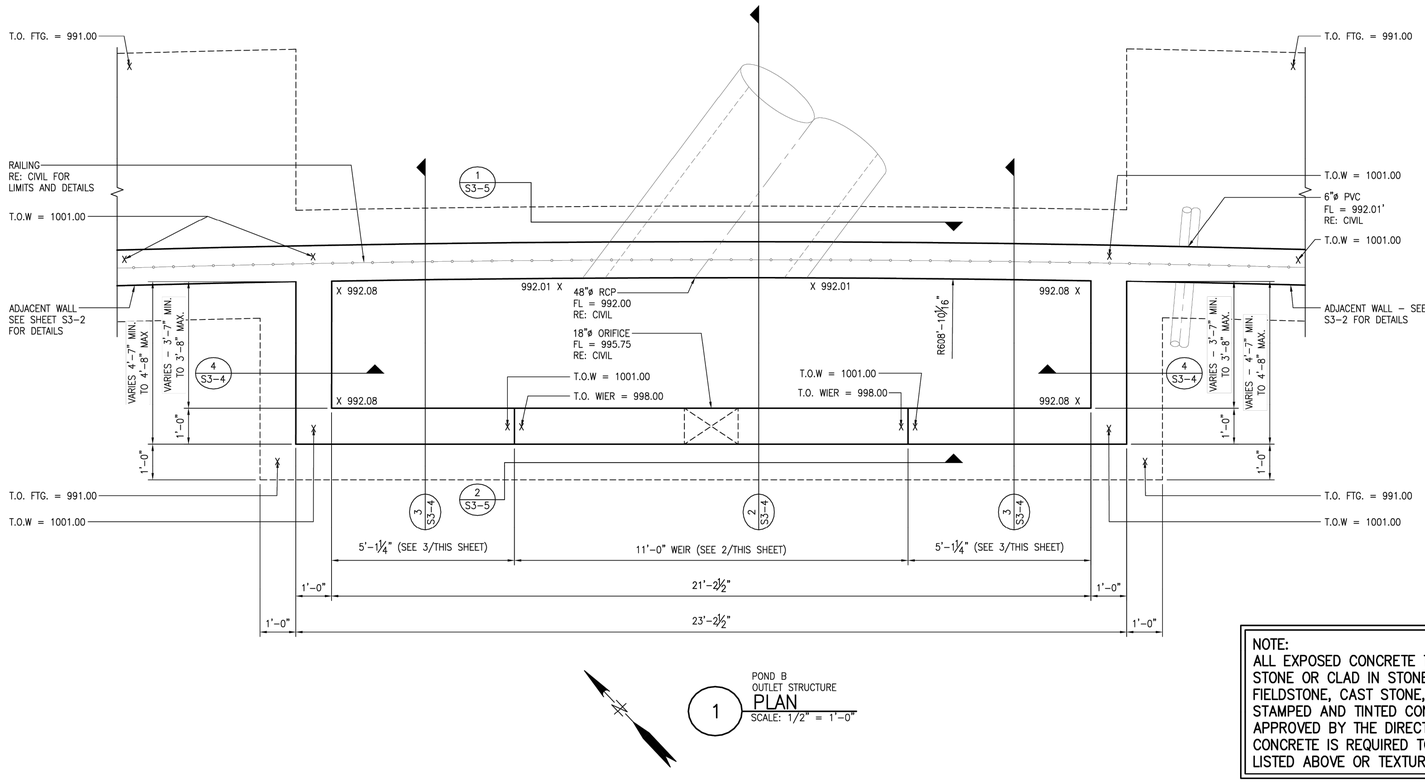
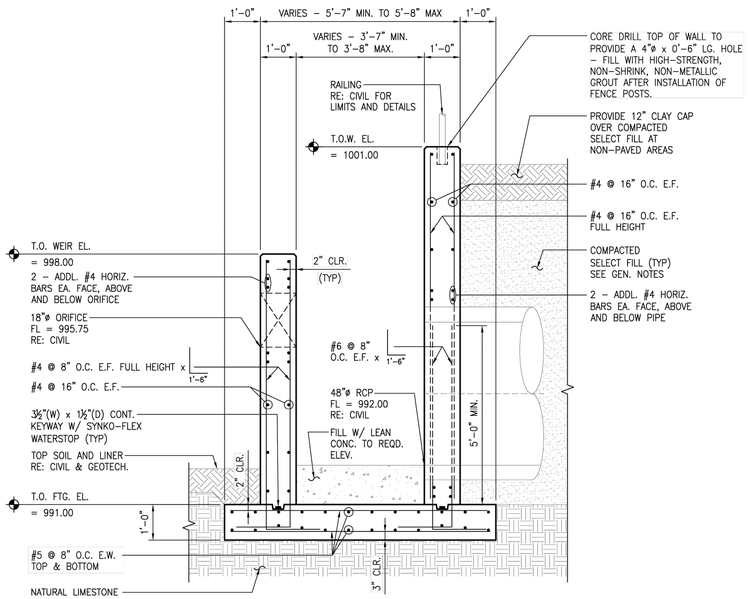


1 POND B OUTLET STRUCTURE PLAN
SCALE: 1/2" = 1'-0"

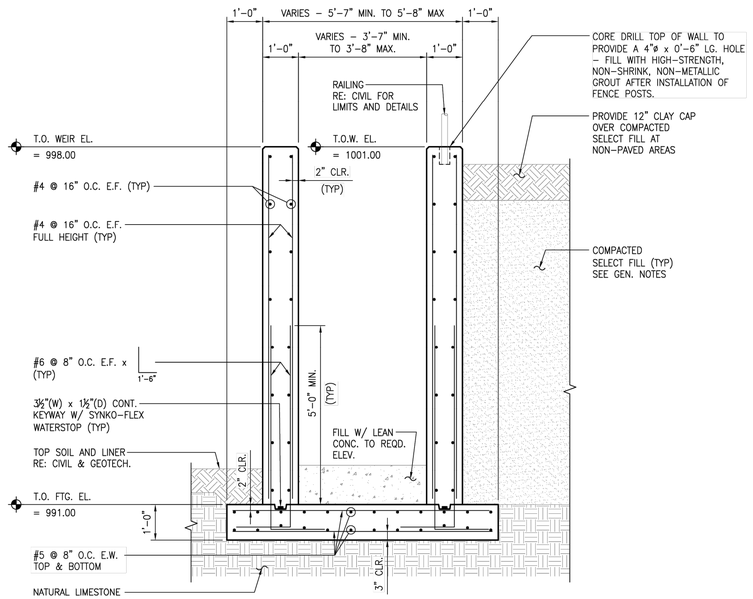
CAUTION!!
CONTRACTOR SHALL ALERT THE ENGINEER IF COMPETENT LIMESTONE SUBGRADE IS NOT ENCOUNTERED

NOTE:
ALL EXPOSED CONCRETE THAT IS VISIBLE IS REQUIRED TO BE MADE OF STONE OR CLAD IN STONE INCLUDING BUT NOT LIMITED TO LEDGESTONE, FIELDSTONE, CAST STONE, OR OTHER DECORATIVE MATERIALS SUCH AS STAMPED AND TINTED CONCRETE THAT RESEMBLES STONE OR BRICK AS APPROVED BY THE DIRECTOR OF PLANNING. ALL OTHER EXPOSED CONCRETE IS REQUIRED TO BE MADE OF STONE OR CLAD IN STONE AS LISTED ABOVE OR TEXTURED AND TINTED IN EARTHERN COLORS.



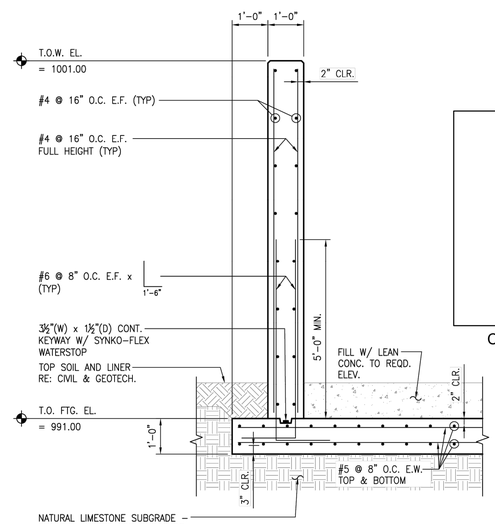
NOTE:
CAST ALL SIDES OF OUTLET STRUCTURE FOOTING DIRECTLY AGAINST LIMESTONE EXCAVATION. DO NOT FORM!!

2 SECTION
SCALE: 1/2" = 1'-0"



NOTE:
CAST ALL SIDES OF OUTLET STRUCTURE FOOTING DIRECTLY AGAINST LIMESTONE EXCAVATION. DO NOT FORM!!

3 SECTION
SCALE: 1/2" = 1'-0"



NOTE:
CAST ALL SIDES OF OUTLET STRUCTURE FOOTING DIRECTLY AGAINST LIMESTONE EXCAVATION. DO NOT FORM!!

4 SECTION
SCALE: 1/2" = 1'-0"

CITY OF LEANDER APPROVAL

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GATEWAY 29 SHARED IMPROVEMENTS
SITE DEVELOPMENT PLANS
POND B OUTLET STRUCTURE PLAN & SECTIONS
LEANDER, WILLIAMSON COUNTY, TEXAS

REVISIONS

NO.	DESCRIPTION	BY	DATE

DATE: 2/7/2024
DESIGNED BY: JJR
DRAWN BY: JJR
CHECKED BY: ARB
DRAWING NAME: 5957-S3-4.dwg

STATE OF TEXAS
ADDISON R. BARNETT
137437
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JOB NUMBER:
A633-0401

S-12

SHEET NO.
87
OF 90 SHEETS

S3-4

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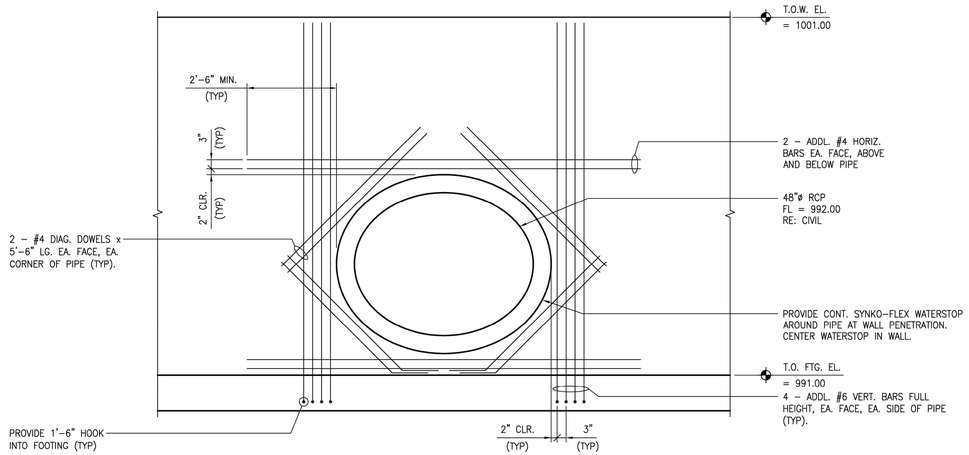
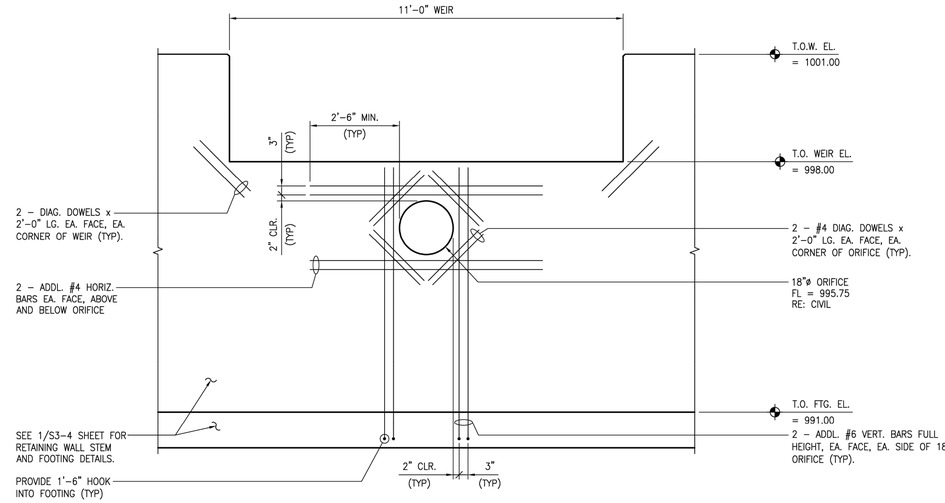


1 ADDL. REINF. AT 48"ø RCP
DETAIL
SCALE: 1/2" = 1'-0"



2 ADDL. REINF. AT ORIFICE IN WEIR
DETAIL
SCALE: 1/2" = 1'-0"

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S3-5

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GATEWAY 29 SHARED IMPROVEMENTS

SITE DEVELOPMENT PLANS

POND B OUTLET STRUCTURE DETAILS

LEANDER, WILLIAMSON COUNTY, TEXAS

REVISIONS

NO.	DESCRIPTION	BY	DATE

DATE: 2/7/2024
DESIGNED BY: JJR
DRAWN BY: JJR
CHECKED BY: ARB
DRAWING NAME: 5957-S3-5.dwg

STATE OF TEXAS
ADDISON R. BARNETT
137437
LICENSED PROFESSIONAL ENGINEER
2/7/2024

LJA Engineering, Inc.
7500 Rialto Boulevard Building II,
Suite 100
Austin, Texas 78735
Phone 512.439.4700
Fax 512.439.4716
FRN - F-1386

JOB NUMBER: A633-0401

S-13

SHEET NO. 88
OF 90 SHEETS

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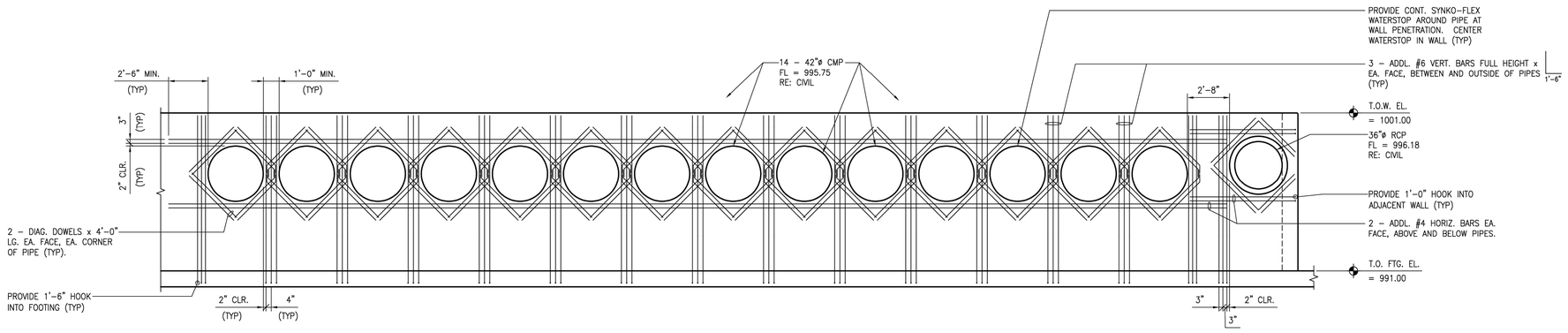

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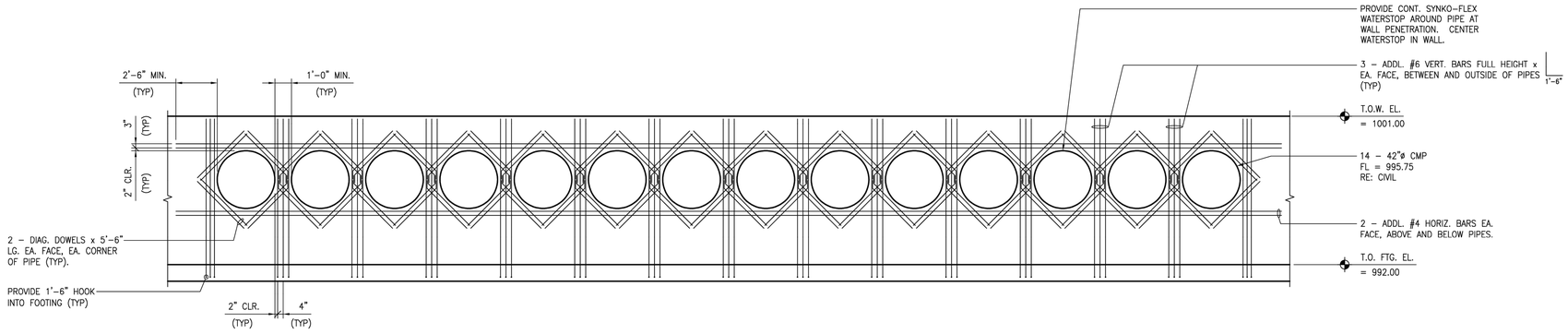
DETAIL
SCALE: 1/4" = 1'-0"



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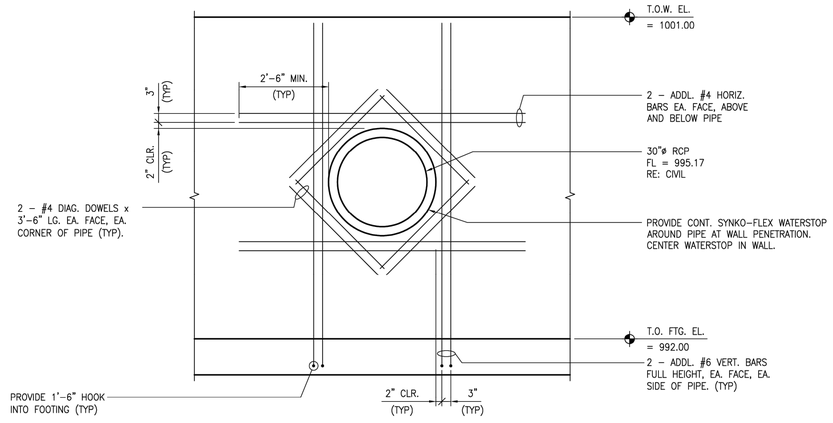

3 ADDL. REINF. AT 30"ø RCP
DETAIL
SCALE: 1/2" = 1'-0"

CITY OF LEANDER APPROVAL

S3-6

PKA PROJECT NO. 011-5957

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Consulting Structural Engineers
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Austin, Texas 78759 • Phone 512-345-5538
Texas Registration No. F-1491

GATEWAY 29 SHARED IMPROVEMENTS
SITE DEVELOPMENT PLANS
POND B DETAILS
LEANDER, WILLIAMSON COUNTY, TEXAS

REVISIONS

NO.	DESCRIPTION	BY	DATE

DATE: 2/7/2024
DESIGNED BY: JIR
DRAWN BY: JIR
CHECKED BY: ARB
DRAWING NAME: 5957-S3-6.dwg

STATE OF TEXAS
ADDISON R. BARNETT
137437
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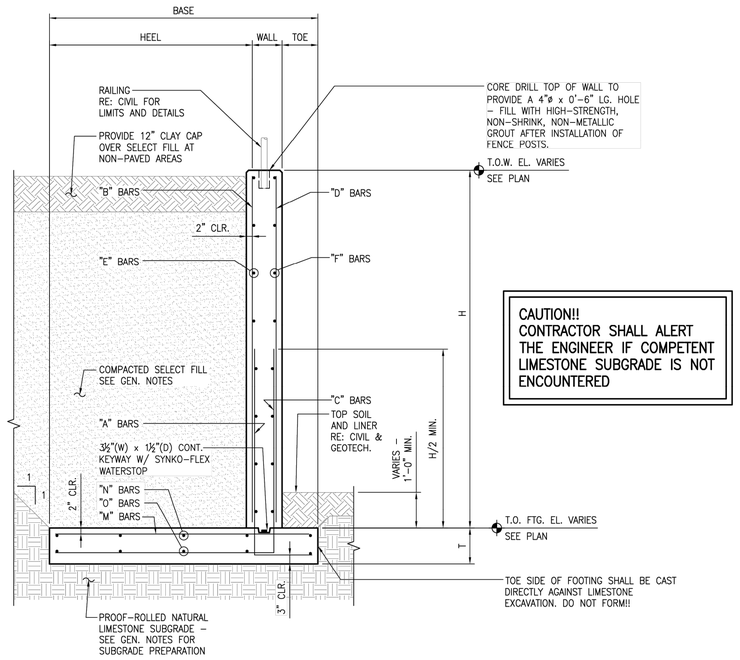
JOB NUMBER: A633-0401

S-14

SHEET NO. 89 OF 90 SHEETS



CONCRETE RETAINING WALL SCHEDULE

CONCRETE DIMENSIONS						REINFORCING STEEL									DESIGN SUMMARY			
MAX H	BASE	TOE	WALL	HEEL	T	"A" BARS *	"B" BARS *	"C" BARS *	"D" BARS *	"E" BARS	"F" BARS	"M" BARS	"N" BARS	"O" BARS	SLIDING FACTOR OF SAFETY	OVERTURNING FACTOR OF SAFETY	BEARING PRESSURE	MAX H
10'	7'-6"	1'-0"	1'-0"	5'-6"	1'-0"	#6@8"	#4@16"	#4@8"	#4@16"	#4@16"	#4@16"	#6@8"	5-#4	5-#4	1.57	2.65	2,725 PSF	10'
8.5'	6'-3"	1'-0"	1'-0"	4'-3"	1'-0"	#5@9"	#4@18"	#4@9"	#4@18"	#4@16"	#4@16"	#5@9"	5-#4	5-#4	1.56	2.46	2,434 PSF	8.5'
6'	4'-4"	1'-0"	1'-0"	2'-4"	1'-0"	#4@12"	–	#4@12"	–	#4@16"	#4@16"	#5@12"	3-#4	3-#4	1.51	1.96	2,037 PSF	6'
4'	3'-0"	1'-0"	1'-0"	1'-0"	1'-0"	#4@12"	–	#4@24"	–	#4@16"	#4@16"	#4@12"	2-#4	2-#4	1.62	1.60	1,704 PSF	4'

*WHERE "B" BARS & "D" BARS ARE OMITTED, EXTEND "A" BARS & "C" BARS TO TOP OF WALL

1 CONCRETE RETAINING WALL
SCALE: 1/2" = 1'-0"

ALL RETAINING WALLS ARE DESIGNED TO MEET THE FOLLOWING CRITERIA (IBC 2021):
MINIMUM SLIDING FACTOR OF SAFETY = 1.5
MINIMUM OVERTURNING FACTOR OF SAFETEY = 1.5
ACTIVE LATERAL EARTH PRESSURE = 45 PCF
SURCHARGE PRESSURE = 250 PSF ON HEEL SIDE OF WALLS
ALLOWABLE BEARING CAPACITY = 3,000 PSF ON PROOF-ROLLED NATURAL LIMESTONE SUBGRADE
CONCRETE STRENGTH, f'c = 3,600 PSI
REINFORCING STEEL = GRADE 60

CAUTION!!
ALL SUBGRADE BELOW RETAINING WALL FOOTINGS SHALL BE PREPARED IN STRICT CONFORMANCE WITH THE PROOF-ROLLING, AND DENSITY TESTING REQUIREMENTS AS STATED ON SHEET S1-1.

NOTE:
ALL EXPOSED CONCRETE THAT IS VISIBLE IS REQUIRED TO BE MADE OF STONE OR CLAD IN STONE INCLUDING BUT NOT LIMITED TO LEDGESTONE, FIELDSTONE, CAST STONE, OR OTHER DECORATIVE MATERIALS SUCH AS STAMPED AND TINTED CONCRETE THAT RESEMBLES STONE OR BRICK AS APPROVED BY THE DIRECTOR OF PLANNING. ALL OTHER EXPOSED CONCRETE IS REQUIRED TO BE MADE OF STONE OR CLAD IN STONE AS LISTED ABOVE OR TEXTURED AND TINTED IN EARTHERN COLORS.

CITY OF LEANDER APPROVAL

S4-1

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Austin, Texas 78759 • Phone 512-345-5538
Texas Registration No. F-1491

GATEWAY 29 SHARED IMPROVEMENTS
SITE DEVELOPMENT PLANS
POND A AND POND B RETAINING WALL SCHEDULE
LEANDER, WILLIAMSON COUNTY, TEXAS

REVISIONS

NO.	DESCRIPTION	BY	DATE

DATE: 2/7/2024
DESIGNED BY: JIR
DRAWN BY: JIR
CHECKED BY: ARB
DRAWING NAME: 5957-S4-1.dwg

STATE OF TEXAS
ADDISON R. BARNETT
137437
LICENSED
PROFESSIONAL ENGINEER
2/7/2024

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FRN - F-1386

JOB NUMBER: A633-0401

S-15

SHEET NO. 90
OF 90 SHEETS

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Plot Date/Time: Tue, 07, 24 - 15:04
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\\X-BlockDwg
\\X-DETAILS-4.dwg

Water Pollution Abatement Plan Application

Texas Commission on Environmental Quality

for Regulated Activities on the Edwards Aquifer Recharge Zone and Relating to 30 TAC §213.5(b), Effective June 1, 1999

To ensure that the application is administratively complete, confirm that all fields in the form are complete, verify that all requested information is provided, consistently reference the same site and contact person in all forms in the application, and ensure forms are signed by the appropriate party.

Note: Including all the information requested in the form and attachments contributes to more streamlined technical reviews.

Signature

To the best of my knowledge, the responses to this form accurately reflect all information requested concerning the proposed regulated activities and methods to protect the Edwards Aquifer. This **Water Pollution Abatement Plan Application Form** is hereby submitted for TCEQ review and Executive Director approval. The form was prepared by:

Print Name of Customer/Agent: Charles R. Hager, P.E.

Date: 3/12/24

Signature of Customer/Agent:



Regulated Entity Name: Gateway 29

Regulated Entity Information

1. The type of project is:

   ☐ Residential: Number of Lots:_____
   ☐ Residential: Number of Living Unit Equivalents:_____
   ☒ Commercial
   ☐ Industrial
   ☐ Other:_____

2. Total site acreage (size of property):32.257

3. Estimated projected population:N/A

4. The amount and type of impervious cover expected after construction are shown below:

Table 1 - Impervious Cover Table

Impervious Cover of Proposed Project	Sq. Ft.	Sq. Ft./Acre	Acres
Structures/Rooftops	37,800	÷ 43,560 =	0.87
Parking	138,010	÷ 43,560 =	3.17
Other paved surfaces	14,542	÷ 43,560 =	4.17
Total Impervious Cover	357,628	÷ 43,560 =	8.21

Total Impervious Cover 8.21 **÷ Total Acreage** 32.26 **X 100 =** 25.45**% Impervious Cover**

5. ☒ **Attachment A - Factors Affecting Surface Water Quality**. A detailed description of all factors that could affect surface water and groundwater quality that addresses ultimate land use is attached.

6. ☒ Only inert materials as defined by 30 TAC §330.2 will be used as fill material.

For Road Projects Only

Complete questions 7 - 12 if this application is exclusively for a road project.

7. Type of project:

   ☐ TXDOT road project.
   ☐ County road or roads built to county specifications.
   ☐ City thoroughfare or roads to be dedicated to a municipality.
   ☐ Street or road providing access to private driveways.

8. Type of pavement or road surface to be used:

   ☐ Concrete
   ☐ Asphaltic concrete pavement
   ☐ Other: _____

9. Length of Right of Way (R.O.W.): _____ feet.

   Width of R.O.W.: _____ feet.
   L x W = _____ Ft^2 ÷ 43,560 Ft^2/Acre = _____ acres.

10. Length of pavement area: _____ feet.

    Width of pavement area: _____ feet.
    L x W = _____ Ft^2 ÷ 43,560 Ft^2/Acre = _____ acres.
    Pavement area _____ acres ÷ R.O.W. area _____ acres x 100 = _____% impervious cover.

11. ☐ A rest stop will be included in this project.

    ☐ A rest stop will not be included in this project.

12. ☐ Maintenance and repair of existing roadways that do not require approval from the TCEQ Executive Director. Modifications to existing roadways such as widening roads/adding shoulders totaling more than one-half (1/2) the width of one (1) existing lane require prior approval from the TCEQ.

Stormwater to be generated by the Proposed Project

13. ☒ **Attachment B - Volume and Character of Stormwater**. A detailed description of the volume (quantity) and character (quality) of the stormwater runoff which is expected to occur from the proposed project is attached. The estimates of stormwater runoff quality and quantity are based on the area and type of impervious cover. Include the runoff coefficient of the site for both pre-construction and post-construction conditions.

Wastewater to be generated by the Proposed Project

14. The character and volume of wastewater is shown below:

100% Domestic	698,400Gallons/day
_____% Industrial	_____Gallons/day
_____% Commingled	_____Gallons/day

TOTAL gallons/day 698,400

15. Wastewater will be disposed of by:

☐ On-Site Sewage Facility (OSSF/Septic Tank):

- ☐ **Attachment C - Suitability Letter from Authorized Agent**. An on-site sewage facility will be used to treat and dispose of the wastewater from this site. The appropriate licensing authority's (authorized agent) written approval is attached. It states that the land is suitable for the use of private sewage facilities and will meet or exceed the requirements for on-site sewage facilities as specified under 30 TAC Chapter 285 relating to On-site Sewage Facilities.
- ☐ Each lot in this project/development is at least one (1) acre (43,560 square feet) in size. The system will be designed by a licensed professional engineer or registered sanitarian and installed by a licensed installer in compliance with 30 TAC Chapter 285.

☒ Sewage Collection System (Sewer Lines):

- ☐ Private service laterals from the wastewater generating facilities will be connected to an existing SCS.
- ☐ Private service laterals from the wastewater generating facilities will be connected to a proposed SCS.
- ☒ The SCS was previously submitted on 12/18/2023.
- ☐ The SCS was submitted with this application.
- ☐ The SCS will be submitted at a later date. The owner is aware that the SCS may not be installed prior to Executive Director approval.

☒ The sewage collection system will convey the wastewater to the Liberty Hill Watewater (name) Treatment Plant. The treatment facility is:

☒ Existing.
☐ Proposed.

16. ☒ All private service laterals will be inspected as required in 30 TAC §213.5.

Site Plan Requirements

Items 17 – 28 must be included on the Site Plan.

17. ☒ The Site Plan must have a minimum scale of 1" = 400'.

Site Plan Scale: 1" = 100'.

18. 100-year floodplain boundaries:

☐ Some part(s) of the project site is located within the 100-year floodplain. The floodplain is shown and labeled.
☒ No part of the project site is located within the 100-year floodplain.
The 100-year floodplain boundaries are based on the following specific (including date of material) sources(s): FEMA Floomap 48491C0275E dated 9/26/2008

19. ☒ The layout of the development is shown with existing and finished contours at appropriate, but not greater than ten-foot contour intervals. Lots, recreation centers, buildings, roads, open space, etc. are shown on the plan.

☐ The layout of the development is shown with existing contours at appropriate, but not greater than ten-foot intervals. Finished topographic contours will not differ from the existing topographic configuration and are not shown. Lots, recreation centers, buildings, roads, open space, etc. are shown on the site plan.

20. All known wells (oil, water, unplugged, capped and/or abandoned, test holes, etc.):

☐ There are _____ (#) wells present on the project site and the locations are shown and labeled. (Check all of the following that apply)

☐ The wells are not in use and have been properly abandoned.
☐ The wells are not in use and will be properly abandoned.
☐ The wells are in use and comply with 16 TAC §76.

☒ There are no wells or test holes of any kind known to exist on the project site.

21. Geologic or manmade features which are on the site:

☐ All sensitive geologic or manmade features identified in the Geologic Assessment are shown and labeled.
☒ No sensitive geologic or manmade features were identified in the Geologic Assessment.
☐ **Attachment D - Exception to the Required Geologic Assessment**. A request and justification for an exception to a portion of the Geologic Assessment is attached.

22. ☒ The drainage patterns and approximate slopes anticipated after major grading activities.

23. ☒ Areas of soil disturbance and areas which will not be disturbed.

24. ☒ Locations of major structural and nonstructural controls. These are the temporary and permanent best management practices.

25. ☒ Locations where soil stabilization practices are expected to occur.

26. ☐ Surface waters (including wetlands).

    ☒ N/A

27. ☐ Locations where stormwater discharges to surface water or sensitive features are to occur.

    ☒ There will be no discharges to surface water or sensitive features.

28. ☒ Legal boundaries of the site are shown.

Administrative Information

29. ☒ Submit one (1) original and one (1) copy of the application, plus additional copies as needed for each affected incorporated city, groundwater conservation district, and county in which the project will be located. The TCEQ will distribute the additional copies to these jurisdictions. The copies must be submitted to the appropriate regional office.

30. ☒ Any modification of this WPAP will require Executive Director approval, prior to construction, and may require submission of a revised application, with appropriate fees.

Temporary Stormwater Section

Texas Commission on Environmental Quality

for Regulated Activities on the Edwards Aquifer Recharge Zone and Relating to 30 TAC §213.5(b)(4)(A), (B), (D)(I) and (G); Effective June 1, 1999

To ensure that the application is administratively complete, confirm that all fields in the form are complete, verify that all requested information is provided, consistently reference the same site and contact person in all forms in the application, and ensure forms are signed by the appropriate party.

Note: Including all the information requested in the form and attachments contributes to more streamlined technical reviews.

Signature

To the best of my knowledge, the responses to this form accurately reflect all information requested concerning the proposed regulated activities and methods to protect the Edwards Aquifer. This **Temporary Stormwater Section** is hereby submitted for TCEQ review and executive director approval. The application was prepared by:

Print Name of Customer/Agent: Charles Hager, V P.E.

Date: 03/13/2024

Signature of Customer/Agent:



Regulated Entity Name: Gateway 29

Project Information

Potential Sources of Contamination

Examples: Fuel storage and use, chemical storage and use, use of asphaltic products, construction vehicles tracking onto public roads, and existing solid waste.

1. Fuels for construction equipment and hazardous substances which will be used during construction:

   ☐ The following fuels and/or hazardous substances will be stored on the site: _____

   These fuels and/or hazardous substances will be stored in:

   ☐ Aboveground storage tanks with a cumulative storage capacity of less than 250 gallons will be stored on the site for less than one (1) year.

☐ Aboveground storage tanks with a cumulative storage capacity between 250 gallons and 499 gallons will be stored on the site for less than one (1) year.

☐ Aboveground storage tanks with a cumulative storage capacity of 500 gallons or more will be stored on the site. An Aboveground Storage Tank Facility Plan application must be submitted to the appropriate regional office of the TCEQ prior to moving the tanks onto the project.

☒ Fuels and hazardous substances will not be stored on the site.

2. ☒ **Attachment A - Spill Response Actions**. A site specific description of the measures to be taken to contain any spill of hydrocarbons or hazardous substances is attached.

3. ☐ Temporary aboveground storage tank systems of 250 gallons or more cumulative storage capacity must be located a minimum horizontal distance of 150 feet from any domestic, industrial, irrigation, or public water supply well, or other sensitive feature.

4. ☒ **Attachment B - Potential Sources of Contamination**. A description of any activities or processes which may be a potential source of contamination affecting surface water quality is attached.

Sequence of Construction

5. ☒ **Attachment C - Sequence of Major Activities**. A description of the sequence of major activities which will disturb soils for major portions of the site (grubbing, excavation, grading, utilities, and infrastructure installation) is attached.

☒ For each activity described, an estimate (in acres) of the total area of the site to be disturbed by each activity is given.

☒ For each activity described, include a description of appropriate temporary control measures and the general timing (or sequence) during the construction process that the measures will be implemented.

6. ☒ Name the receiving water(s) at or near the site which will be disturbed or which will receive discharges from disturbed areas of the project: South Fork San Gabriel River

Temporary Best Management Practices (TBMPs)

Erosion control examples: tree protection, interceptor swales, level spreaders, outlet stabilization, blankets or matting, mulch, and sod. Sediment control examples: stabilized construction exit, silt fence, filter dikes, rock berms, buffer strips, sediment traps, and sediment basins. Please refer to the Technical Guidance Manual for guidelines and specifications. All structural BMPs must be shown on the site plan.

7. ☒ **Attachment D – Temporary Best Management Practices and Measures**. TBMPs and measures will prevent pollution of surface water, groundwater, and stormwater. The construction-phase BMPs for erosion and sediment controls have been designed to retain sediment on site to the extent practicable. The following information is attached:

☒ A description of how BMPs and measures will prevent pollution of surface water, groundwater or stormwater that originates upgradient from the site and flows across the site.

☒ A description of how BMPs and measures will prevent pollution of surface water or groundwater that originates on-site or flows off site, including pollution caused by contaminated stormwater runoff from the site.

☒ A description of how BMPs and measures will prevent pollutants from entering surface streams, sensitive features, or the aquifer.

☒ A description of how, to the maximum extent practicable, BMPs and measures will maintain flow to naturally-occurring sensitive features identified in either the geologic assessment, TCEQ inspections, or during excavation, blasting, or construction.

8. ☒ The temporary sealing of a naturally-occurring sensitive feature which accepts recharge to the Edwards Aquifer as a temporary pollution abatement measure during active construction should be avoided.

☐ **Attachment E - Request to Temporarily Seal a Feature**. A request to temporarily seal a feature is attached. The request includes justification as to why no reasonable and practicable alternative exists for each feature.

☒ There will be no temporary sealing of naturally-occurring sensitive features on the site.

9. ☒ **Attachment F - Structural Practices**. A description of the structural practices that will be used to divert flows away from exposed soils, to store flows, or to otherwise limit runoff discharge of pollutants from exposed areas of the site is attached. Placement of structural practices in floodplains has been avoided.

10. ☒ **Attachment G - Drainage Area Map**. A drainage area map supporting the following requirements is attached:

☒ For areas that will have more than 10 acres within a common drainage area disturbed at one time, a sediment basin will be provided.

☐ For areas that will have more than 10 acres within a common drainage area disturbed at one time, a smaller sediment basin and/or sediment trap(s) will be used.

☐ For areas that will have more than 10 acres within a common drainage area disturbed at one time, a sediment basin or other equivalent controls are not attainable, but other TBMPs and measures will be used in combination to protect down slope and side slope boundaries of the construction area.

☐ There are no areas greater than 10 acres within a common drainage area that will be disturbed at one time. A smaller sediment basin and/or sediment trap(s) will be used in combination with other erosion and sediment controls within each disturbed drainage area.

☐ There are no areas greater than 10 acres within a common drainage area that will be disturbed at one time. Erosion and sediment controls other than sediment basins or sediment traps within each disturbed drainage area will be used.

11. ☒ **Attachment H - Temporary Sediment Pond(s) Plans and Calculations**. Temporary sediment pond or basin construction plans and design calculations for a proposed temporary BMP or measure have been prepared by or under the direct supervision of a Texas Licensed Professional Engineer. All construction plans and design information must be signed, sealed, and dated by the Texas Licensed Professional Engineer. Construction plans for the proposed temporary BMPs and measures are attached.

☐ N/A

12. ☒ **Attachment I - Inspection and Maintenance for BMPs.** A plan for the inspection of each temporary BMP(s) and measure(s) and for their timely maintenance, repairs, and, if necessary, retrofit is attached. A description of the documentation procedures, recordkeeping practices, and inspection frequency are included in the plan and are specific to the site and/or BMP.

13. ☒ All control measures must be properly selected, installed, and maintained in accordance with the manufacturer's specifications and good engineering practices. If periodic inspections by the applicant or the executive director, or other information indicate a control has been used inappropriately, or incorrectly, the applicant must replace or modify the control for site situations.

14. ☒ If sediment escapes the construction site, off-site accumulations of sediment must be removed at a frequency sufficient to minimize offsite impacts to water quality (e.g., fugitive sediment in street being washed into surface streams or sensitive features by the next rain).

15. ☒ Sediment must be removed from sediment traps or sedimentation ponds not later than when design capacity has been reduced by 50%. A permanent stake will be provided that can indicate when the sediment occupies 50% of the basin volume.

16. ☒ Litter, construction debris, and construction chemicals exposed to stormwater shall be prevented from becoming a pollutant source for stormwater discharges (e.g., screening outfalls, picked up daily).

Soil Stabilization Practices

Examples: establishment of temporary vegetation, establishment of permanent vegetation, mulching, geotextiles, sod stabilization, vegetative buffer strips, protection of trees, or preservation of mature vegetation.

17. ☒ **Attachment J - Schedule of Interim and Permanent Soil Stabilization Practices**. A schedule of the interim and permanent soil stabilization practices for the site is attached.

18. ☒ Records must be kept at the site of the dates when major grading activities occur, the dates when construction activities temporarily or permanently cease on a portion of the site, and the dates when stabilization measures are initiated.

19. ☒ Stabilization practices must be initiated as soon as practicable where construction activities have temporarily or permanently ceased.

Administrative Information

20. ☒ All structural controls will be inspected and maintained according to the submitted and approved operation and maintenance plan for the project.

21. ☒ If any geologic or manmade features, such as caves, faults, sinkholes, etc., are discovered, all regulated activities near the feature will be immediately suspended. The appropriate TCEQ Regional Office shall be immediately notified. Regulated activities must cease and not continue until the TCEQ has reviewed and approved the methods proposed to protect the aquifer from any adverse impacts.

22. ☒ Silt fences, diversion berms, and other temporary erosion and sediment controls will be constructed and maintained as appropriate to prevent pollutants from entering sensitive features discovered during construction.

ATTACHMENT A - Spill Response Actions

The only possible source of a hydrocarbon or other hazardous substance spill would be from a construction vehicle leaking fuel, lubricants, coolants, etc. Any potential leakage is not likely to be significant and any soil that appears to be contaminated will be removed using a shovel stored onsite and disposed of in a TCEQ certified landfill. Onsite personnel will be trained in spill prevention and spill cleanup.

If it is determined that a reportable spill has occurred as defined in 30 TAC Chapter 327, the TCEQ shall be notified by phone at the regional office (512) 339-2929 or at the State Emergency Response Center (800) 832-8224 as soon as possible. Requirements under 30 TAC Chapter 327 will be followed to ensure that the spill is contained and disposed of in an expedient and thorough manner and that proper authorities are kept informed throughout the process.

ATTACHMENT B – Potential Sources of Contamination

Potential sources of sediment to stormwater runoff:

- Clearing and grubbing operations
- Grading and site excavation operations
- Vehicle tracking
- Topsoil stripping and stockpiling
- Landscaping operations

Potential sources other than sediment:

- Small fueling activities
- Minor equipment maintenance
- Sanitary facilities
- Solvents, adhesives, paints, etc.
- Paving materials, concrete, mortar

ATTACHMENT C – Sequence of Major Activities

The sequencing of construction will generally take place in the following manner:

1. The area of disturbance for the construction of the shared infrastructure of the site is approximately 15.1 acres of the 32 acres subdivision.

2. Temporary erosion and sedimentation controls are to be installed as indicated on the approved site plan or subdivision construction plan and in accordance with the Stormwater Pollution Prevention Plan (SWPPP) that is required to be posted on the site. Install tree protection and initiate tree mitigation measures. (15.1 acres)

3. The environmental project manager or site supervisor must contact the Watershed Protection department, environmental inspection, at 512-974-2278, 72 hours prior to the scheduled date of the required on-site preconstruction meeting.

4. The environmental project manager, and/or site supervisor, and/or designated responsible party, and the general contractor will follow the Storm Water Pollution Prevention Plan (SWPPP) posted on the site. Temporary erosion and sedimentation controls will be revised, if needed, to comply with city inspectors' directives, and revised construction schedule relative to the water quality plan requirements and the erosion plan.

5. Rough grade the pond(s) at 100% proposed capacity. Either the permanent outlet structure or a temporary outlet must be constructed prior to development of embankment or excavation that leads to ponding conditions. The outlet system must consist of a sump pit outlet and an emergency spillway meeting the requirements of the drainage criteria manual and/or the environmental criteria manual, as required. The outlet system shall be protected from erosion and shall be maintained throughout the course of construction until installation of the permanent water quality pond(s). (1.25 acres)

6. Temporary erosion and sedimentation controls will be inspected and maintained in accordance with the Storm Water pollution Prevention Plan (SWPPP) posted on the site. (15.1 acres)

7. Begin site clearing/construction (or demolition) activities. (15.1 acres)

8. In the Barton Springs Zone, the environmental project manager or site supervisor will schedule a mid-construction conference to coordinate changes in the construction schedule and evaluate effectiveness of the erosion control plan after possible construction alterations to the site. Participants shall include the city inspector, project engineer, general contractor and environmental project manager or site supervisor. The anticipated completion date and final construction sequence and inspection schedule will be coordinated with the appropriate city inspector.

9. Permanent water quality ponds or controls will be cleaned out and filter media will be Installed prior to/concurrently with revegetation of site.(1.25 acres)

10. Complete construction and start revegetation of the site and installation of landscaping. (15.1 acres)

11. Upon completion of the site construction and revegetation of a project site, the design engineer shall submit an engineer's letter of concurrence to the Watershed Protection and Development Review Department indicating that construction, including revegetation, is complete and in substantial conformity with the approved plans. After receiving this letter, a final inspection will be scheduled by the appropriate city inspector. (15.1 acres)

12. Upon completion of landscape installation of a project site, the landscape architect shall submit a letter of concurrence to the Watershed Protection and Development Review Department indicating that the required landscaping is complete and in substantial conformity with the approved plans. After receiving this letter, a final inspection will be scheduled by the appropriate city inspector. (15.1 acres)

13. After a final inspection has been conducted by the city inspector and with approval from the city inspector, remove the temporary erosion and sedimentation controls and complete any necessary final revegetation resulting from removal of the controls. Conduct any maintenance and rehabilitation of the water quality ponds or controls. (15.1 acres)

ATTACHMENT D – Temporary Best Management Practices and Measures

1. Silt fence is used throughout the project to prevent pollution of runoff. Silt fence is used for areas with sheet flow. Before construction begins, all silt fence and tree protection will be in place. The principal potential pollutant on site is sediment caused by disturbance during

construction. The controls installed will be monitored on a regular basis and after any significant rainfall to ensure effective operation. Throughout construction, inspection forms will be used to record the condition of the controls after rainfall events.

2. The runoff leaving the site to enter creeks will have been treated through silt fence.

ATTACHMENT E – Request to Temporarily Seal a Feature

No request is anticipated for this project.

ATTACHMENT F – Structural Practices

Contractor will construct and maintain silt fence, inlet protection, concrete washout area, rock berms, a stabilized construction entrance, and other temporary and permanent erosion and sedimentation controls, including silt fence upstream of the Sensitive Feature, as appropriate to prevent pollutants from exiting the site during construction.

ATTACHMENT G – Drainage Area Map

The drainage area maps are included in the attached plan set.

ATTACHMENT H – Temporary Sediment Pond(s) Plans and Calculations

The proposed detention/WQ ponds will be fully constructed at the beginning of the construction sequence in order to accommodate and treat drainage during construction. Once these ponds are rough graded in and a permanent or temporary outlet structure has been installed, all designed site drainage will be conveyed to either detention / WQ Pond A or detention / WQ Pond B based on site location.

Detention / WQ Pond A is designed to hold a volume of 79,270 cf at the 100-yr storm elevation of 1000.10’. During construction, the drainage area which will drain to Pond A is approximately 5.80-AC. The area Detention WQ / Pond A is designed to hold a volume of 135,500 cf at the 100-yr storm elevation of 1000.10’. During construction, the drainage area which will drain to Pond B is approximately 11.70-AC.

Please see Detention / WQ Pond A and Detention / WQ Pond B calculations below.

DETENTION POND SUMMARY - A

STORM EVENT	INFLOW (CFS)	Time to Peak (hrs)	OUTFLOW (CFS)	Time to Peak (hrs)	WS ELEV.
2YR	30.50	12.04	8.80	12.17	998.80
10YR	46.80	12.04	19.20	12.12	999.40
25YR	58.20	12.04	31.00	12.10	999.70
100YR	77.90	12.04	53.10	12.08	1,000.10

Detention Pond - Stage Storage Table

Elevation (FT)	Area (AC)	A1+A2+SQR (A1*A2) (AC)	Incremental Volume (AC-FT)	Cumulative Volume (AC-FT)
993.2	0.000	0.000	0.000	0.000
994	0.064	0.064	0.017	0.017
995	0.153	0.315	0.105	0.122
996	0.241	0.586	0.195	0.317
997	0.329	0.852	0.284	0.602
998	0.417	1.117	0.372	0.974
999	0.424	1.261	0.420	1.394
1000	0.428	1.277	0.426	1.820
1000.5	0.429	1.284	0.214	2.034

Outlet Structure - Stage Discharge Table

Stage / Elevation	1.5' DIA. CIR. OR. @ 997.0 Q (cfs)	12' Weir @ 999.0 Q (cfs)	TOTAL Q (cfs)
997.00	0.00	0.00	0.00
998.00	7.70	0.00	7.70
999.00	11.47	16.56	28.03
1000.00	14.28	70.92	85.20
1000.50	15.50	105.72	121.22

DETENTION POND SUMMARY - B

STORM EVENT	INFLOW (CFS)	Time to Peak (hrs)	OUTFLOW (CFS)	Time to Peak (hrs)	WS ELEV.
2YR	61.50	12.04	12.10	12.21	998.10
10YR	94.80	12.04	37.60	12.12	998.80
25YR	118.00	12.04	63.30	12.10	999.30
100YR	158.10	12.04	113.10	12.08	1,000.10

Detention Pond - Total Stage Storage Table

Total Storage		Dry Chamber				Under-ground
Elevation (FT)	Cumulative Volume (AC-FT)	Area (AC)	A1+A2+SQR (A1*A2) (AC)	Incremental Volume (AC-FT)	Cumulative Volume (AC-FT)	Cumulative Volume (AC-FT)
992.00	0.000	0.000	0.000	0.000	0.000	0.000
993.00	0.066	0.198	0.198	0.066	0.066	0.000
994.00	0.350	0.381	0.853	0.284	0.350	0.000
995.00	0.753	0.424	1.207	0.402	0.753	0.000
995.75	1.083	0.457	1.322	0.330	1.083	0.000
996.00	1.222	0.468	1.388	0.116	1.199	0.024
997.00	1.912	0.478	1.419	0.473	1.672	0.240
998.00	2.659	0.480	1.437	0.479	2.151	0.508
999.00	3.355	0.481	1.441	0.480	2.631	0.724
999.25	3.499	0.481	1.444	0.120	2.751	0.748
1000.00	3.861	0.483	1.446	0.361	3.113	0.000
1001.00	4.344	0.485	1.451	0.484	3.596	0.000

Outlet Structure-Stage Discharge Table

Stage / Elevation	1.5' Dia. Cir. Or. @ 995.75 Q (cfs)	11' Weir @ 998.00 Q (cfs)	TOTAL Q (cfs)
994.5	0.00	0.00	0.00
995.00	0.00	0.00	0.00
996.00	5.83	0.00	5.83
997.00	10.31	0.00	10.31
998.00	13.37	0.00	13.37
999.00	15.84	32.40	48.24
1000.00	17.98	89.94	107.92
1001.00	19.89	162.12	182.01

ATTACHMENT I – Inspection and Maintenance for BMPs.

Inspection and maintenance for Best Management Practices is taken from the TCEQ Manual, "Complying with the Edwards Aquifer Rules: Technical Guidance on Best Management Practices", dated July 2005.

Silt Fence:

1. Inspect all fencing weekly, and after any rainfall.

2. Remove sediment when buildup reaches 6 inches.

3. Replace any torn fabric or install a second line of fencing parallel to the torn section.

4. Replace or repair any section crushed or collapsed in the course of construction activity. If a section of fence is obstructing vehicular access, consider relocating it to a spot where it will provide equal protection, but will not obstruct vehicles. A triangular filter dike may be preferable to a silt fence at common vehicular access points.

5. When construction is complete, the sediment should be disposed of in a manner that will not cause additional siltation and the prior location of the silt fence should be revegetated. The fence itself should be disposed of in an approved landfill.

Rock Berms:

1. Inspection should be made weekly and after each rainfall by the responsible party. For installations in streambeds, additional daily inspections should be made.

2. Remove sediment and other debris when buildup reaches 6 inches and dispose of the accumulated silt in an approved manner that will not cause any additional siltation.

3. Repair any loose wire sheathing.

4. The berm should be reshaped as needed during inspection.

5. The berm should be replaced when the structure ceases to function as intended due to silt accumulation among the rocks, washout, construction traffic damage, etc.

6. The rock berm should be left in place until all upstream areas are stabilized and accumulated silt is removed.

Stabilized Construction Entrance:

1. The entrance should be maintained in a condition, which will prevent tracking or flowing of sediment onto public rights-of-way. This may require periodic top dressing with additional stone as conditions demand and repair and/or cleanout of any measures used to trap sediment.

2. All sediment spilled, dropped, washed or tracked onto public rights-of-way should be removed immediately by contractor.

3. When necessary, wheels should be cleaned to remove sediment prior to entrance onto public right-of-way.

4. When washing is required, it should be done on an area stabilized with crushed stone that drains into an approved sediment trap or sediment basin.

5. All sediment should be prevented from entering any storm drain, ditch or water course by using approved methods.

Concrete Washout Area:

1. Routine inspection in accordance with section 1.4.18 of TCEQ Manual: RG-348 of the area to insure that sufficient quantity and volume remain to contain all liquid and concrete waste generated by washout operations.

2. Locate washout area at least 50 feet from sensitive features, storm drains, open ditches, or water bodies. Do not allow runoff from this area by constructing a temporary pit or bermed area large enough for liquid and solid waste.

3. Plastic lining material should be a minimum of 10 mil in polyethylene sheeting and should be free of holes, tears, or other defects that compromise the impermeability of the material.

4. When temporary concrete washout facilities are no longer required for the work, the hardened concrete should be removed and disposed of. Materials used to construct temporary concrete washout facilities should be removed from the site of the work and disposed of. Holes, depressions, or other ground disturbance caused by the removal of the temporary concrete washout facilities should be backfilled and repaired.

Inlet Protection:

1. Inspect all inlet protection weekly, and after any rainfall.

2. Remove sediment when buildup reaches 3 inches. Deposit removed sediment in suitable area in such a manner that it will not erode.

3. Check placement of device to prevent gaps between device and curb.

4. Inspect filter fabric and patch or replace if torn or missing.

5. Structures should be removed and the area stabilized only after the remaining drainage area has been properly stabilized.

ATTACHMENT J – Schedule of Interim and Permanent Soil Stabilization Practices

The following are the proposed stabilization (temporary and permanent) practices:

Temporary Vegetative Stabilization:

1. From September 15 to March 1, seeding shall be with cool season cover crops (Wheat at 0.5 pounds per 1000 SF, Oats at 0.5 pounds per 1000 SF, Cereal Rye Grain at 0.5 pounds per 1000 SF) with a total rate of 1.5 pounds per 1000 SF. Cool season cover crops are not permanent erosion control.
2. From March 2 through September 14, seeding shall be with hulled Bermuda at a rate of 1 pound per 1000 SF.

    A. Fertilizer shall be water soluble with an analysis of 15-15-15 to be applied once at planting and once during the period of establishment at a rate of 1/2 pound per 1000 SF.

    B. Hydromulch shall comply with Table 1, below.

    C. Temporary erosion control shall be acceptable when the grass has grown at least 1-1/2 inches high with 95% coverage, provided no bare spots larger than 16 square feet exist.

    D. When required, native grass seeding shall comply with requirements of the City of Austin Environmental Criteria Manual.

Material	Description	Longevity	Typical Applications	Application Rates
100 % or any blend of wood, cellulose, straw, and/or cotton plant material (except no mulch shall exceed 30% paper)	70% or greater Wood/Straw 30% or less Paper or Natural Fibers	0-3 months	Moderate slopes; from flat to 3:1	1500 to 2000 lbs per acre

Permanent Vegetative Stabilization:

1. From September 15 to March 1, seeding is considered to be temporary stabilization only. If cool season cover crops exist where permanent vegetative stabilization is desired, the grasses shall be mowed to a height of less than one-half (1/2) inch and the area shall be re-seeded in accordance with 2, below.

2. From March 2 to September 14, seeding shall be with hulled Bermuda at a rate of 1 pound per 1,000 square feet with a purity of 95% with 85% germination. Bermuda grass is a warm season grass and is considered permanent erosion control.

    A. Fertilizer shall be water soluble with an analysis of 15-15-15 to be applied once at planting and once during the period of establishment at a rate of 1/2 pound per 1000 SF.

    B. Hydromulch shall comply with Table 2, below.

    C. The planted area shall be irrigated or sprinkled in a manner that will not erode the topsoil, but will sufficiently soak the soil to a depth of six inches. The irrigation shall occur at daily intervals (minimum) during the first two months. Rainfall occurrences of 1/2 inch or more shall postpone the watering schedule for one week.

    D. Permanent erosion control shall be acceptable when the grass has grown at least 1-1/2 inches high with 95% coverage, provided no bare spots larger than 16 square feet exist.

    E. When required, native grass seeding shall comply with requirements of the City of Austin Environmental Criteria Manual.

Material	Description	Longevity	Typical Applications	Application Rates
Bonded Fiber Matrix (BFM)	80% Organic defibrated fibers 10% Tackifier	6 months	On slopes up to 2:1 and erosive soil conditions	2500 to 4000 lbs per acre (see manufacturers recommendations)
Fiber Reinforced Matrix (FRM)	65% Organic defibrated fibers 25% Reinforcing Fibers or less 10% Tackifier	Up to 12 months	On slopes up to 1:1 and erosive soil conditions	3000 to 4500 lbs per acre (see manufacturers recommendations)

3. Stabilization measures shall be initiated as soon as practicable in portions of the site where construction activities have temporarily or permanently ceased, but in no case more than 14 days after the construction activity in that portion of the site has temporarily or permanently ceased. Where the initiation of stabilization measures by the 14th day after construction activity temporarily or permanently cease is precluded by weather conditions, stabilization measures shall be initiated as soon as practicable. Where construction activity on a portion of the site is temporarily ceased, and earth disturbing activities will be resumed within 21 days, temporary stabilization measures do not have to be initiated on that portion of the site. In areas experiencing droughts where the initiation of stabilization measures by the 14th day after construction activity has temporarily or permanently cease is precluded by seasonal arid conditions, stabilization measures shall be initiated as soon as practicable.

ATTACHMENT G – Drainage Area Map

RATIONAL METHOD - City of Leander Drainage Criteria and Design Standards

Drainage Area Calculations

City of Leander Park ATLAS 14 Intensity-Duration-Frequency Curves				
	2 Yr	10 Yr	25 Yr	100 Yr
a	58	77	89	106.00
b	11.27	10.53	10.16	9.46
c	0.805	0.775	0.759	0.732

Coefficients for Composite Analysis		
	25-YR	100-YR
DEVELOPE		
Asphaltic	0.86	0.95
Concrete	0.88	0.97
GRASS,		
Avg, 2-7%	0.39	0.46

Q = CiA

Where:

Q = peak runoff in cubic feet per second.
C = the coefficient of runoff
A = the area in acres contributing runoff to the point of design.
i = the average intensity of rainfall in inches per hour

$i = a/(t+b)^c$

Where,
t = Time of concentration for the entire drainage area of interest

T(sht flow) = Ln/(42s$^{0.5}$) T(shallow concentrated flow) = Ln/(60

where,
L = Length of the reach in ft.
n = Manning's n
s = Slope of the ground in ft/ft

Developed Conditions Drainage Calculations (Site Calculations)

DRAINAGE AREA	AREA (AC)	PERV. (AC)	IMP. (AC)	C25	C100	ToC (min.)	I25	I100	Q25 (cfs)	Q100 (cfs)
OS-1	2.262	0.226	2.036	0.813	0.901	5	11.30	15.00	20.79	30.57
OS-2	0.725	0.072	0.652	0.813	0.901	5	11.30	15.00	6.66	9.79
OS-3	8.449	8.396	0.054	0.393	0.463	21	6.58	8.75	21.86	34.23
JUNC. 1	SEE JUNCTION 1 - SHEET DM02								433.90	589.10
LOT 2	2.257	0.207	2.051	0.817	0.905	5	11.30	15.00	20.85	30.65
A1-B	0.734	0.734	0.000	0.390	0.460	5	11.30	15.00	3.23	5.06
A2	0.135	0.013	0.123	0.816	0.904	5	11.30	15.00	1.25	1.83
A3	1.284	0.612	0.672	0.636	0.716	5	11.30	15.00	9.23	13.79
A4	0.595	0.235	0.360	0.675	0.757	5	11.30	15.00	4.54	6.76
A5	0.392	0.112	0.279	0.725	0.809	5	11.30	15.00	3.21	4.76
A (POND)	0.494	0.494	0.000	0.390	0.460	5	11.30	15.00	2.18	3.41
OS-A*	0.895	0.272	0.623	0.717	0.801	5	11.30	15.00	7.26	10.75
B1-A	0.445	0.206	0.238	0.642	0.723	5	11.30	15.00	3.23	4.82
B1-B	0.669	0.251	0.418	0.684	0.766	5	11.30	15.00	5.17	7.68
LOT 5	1.499	0.148	1.351	0.814	0.902	5	11.30	15.00	13.78	20.27
B1-C	0.716	0.716	0.000	0.390	0.460	5	11.30	15.00	3.15	4.94
B2	0.631	0.218	0.413	0.697	0.780	5	11.30	15.00	4.97	7.39
B3	0.577	0.370	0.207	0.558	0.635	5	11.30	15.00	3.64	5.50
B4-A	0.145	0.145	0.000	0.390	0.460	5	11.30	15.00	0.64	1.00
B4-B	0.379	0.379	0.000	0.390	0.460	5	11.30	15.00	1.67	2.62
LOT 3	1.548	0.125	1.423	0.822	0.910	5	11.30	15.00	14.39	21.14
B6	0.469	0.373	0.096	0.486	0.560	5	11.30	15.00	2.58	3.94
B7	1.720	1.027	0.693	0.579	0.657	5	11.30	15.00	11.26	16.96
B (POND)	0.594	0.533	0.060	0.438	0.510	5	11.30	15.00	2.94	4.54
OS-B**	1.130	0.941	0.189	0.469	0.542	5	11.30	15.00	5.99	9.19

NOTE:
1. *DRAINAGE AREA OS-A DOES NOT DRAIN TO WQ/DET. BASIN A & THEREFORE COMPENSITORY WATER QUALITY TREATMENT IS PROVIDED IN BASIN A.

2. **DRAINAGE AREA OS-B DOES NOT DRAIN TO WQ/DET. BASIN B & THEREFORE COMPENSITORY WATER QUALITY TREATMENT IS PROVIDED IN BASIN B.

GRATE INLET CALCULATIONS FOR 100 YR STORM (WITH 50% REDUCTION)

MODELED AS AN ORIFICE $Q=C_O A_G (2\ g\ d)^{.5}$, C_O =0.67 MODELED AS A WEIR $Q=C_w P\ d^{1.5}$, Cw =3.0

AREA #	Q100 (CFS)	Flow Area (Sq. In.)	Inlet Size	A (SF)	A x 50% (SF)	P (FT)	$d_{ORIFICE}$ (FT)	d_{WEIR} (FT)	d_{allow} (FT)	Is $d_{orifice}$ and/or $d_{weir} > d_{allow}$?
OS-3	34.23	1728	48"x48"	12.00	6.00	16.00	1.13	0.80	2.50	NO
B1-A	4.82	1728	48"x48"	12.00	6.00	16.00	0.02	0.22	0.50	NO
B1-B	7.68	1728	48"x48"	12.00	6.00	16.00	0.06	0.29	0.50	NO
B1-C	4.94	1728	48"x48"	12.00	6.00	16.00	0.02	0.22	0.50	NO

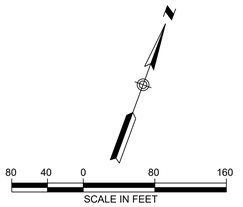
SUMP INLET CALCULATIONS FOR 100YR STORM

Weir Equation $Q = C_w h^{1.5} L$
C_w = 3.0
If $h_{water} > 0.5$, use orifice equation
$Q=C_O A_G (2\ g\ d)^{.5}$, C_O =0.67, A_G = Lx6"/12

Note: Per Standard Curb Inlet Detail, Curb Inlets have 6" depression from the curb gutter with a distance of 11.75" from the lip to top of curb (h_{allow}). The inlet opening has a height of 6". The centroid of the inlet opening is 3" above the inlet lip.

INLET NO.	FLOW (CFS)	Q_{BYPASS} (CFS)	Q_{TOTAL} (CFS)	L (FT)	WEIR CALC Q/L or A (CFS/LF)	WEIR CALC h_{weir}(FT) (a+Yo)	ORIFICE CALC A_g (SF)	ORIFICE CALC $h_{orifice}$ (FT)	h_{allow} (FT)	INLET TYPE
A3	13.8	0.0	13.8	9.0	1.53	0.64	4.50	0.58	0.98	10' Curb Inlet
A4	6.8	0.0	6.8	9.0	0.75	0.40	4.50	0.33	0.98	10' Curb Inlet
A5	4.8	0.0	4.8	9.0	0.53	0.31	4.50	0.29	0.98	10' Curb Inlet
B3	5.5	0.0	5.5	9.0	0.61	0.35	4.50	0.30	0.98	10' Curb Inlet
B6	3.9	0.0	3.9	9.0	0.44	0.28	4.50	0.28	0.98	10' Curb Inlet
B7	17.0	0.0	17.0	9.0	1.88	0.73	4.50	0.74	0.98	10' Curb Inlet
OS-A*	10.8	0.0	10.8	9.0	1.19	0.54	4.50	0.45	0.98	10' Curb Inlet





LEGEND

- OS-A* / 7.082 / 0.65% IC — DRAINAGE AREA NUMBER AND ACREAGE
- DRAINAGE AREA
- PROPERTY LINE
- TC AND/OR REACH PATH
- XXX' LF SF @ X.XX% — SHEET FLOW
- XXX' LF SCF @ X.XX% — SHALLOW CONCENTRATED FLOW
- Q100: 7.05 CFS — 100 YEAR FLOW RATE
- FLOW DIRECTION ARROW

NOTES
1. PROJECT LOCATED IN THE EDWARDS AQUIFER RECHARGE ZONE PER TCEQ MAPS.
2. THERE IS NO FLOODPLAIN PRESENT ON THE SITE. THE AREA LIES IN ZONE "X" (AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN), AS IDENTIFIED BY THE FEDERAL EMERGENCY AGENCY, NATIONAL FLOOD INSURANCE PROGRAM, AS SHOWN ON MAP NO., 48491C0275E, EFFECTIVE SEPTEMBER 25, 2008.
3. THIS SUBDIVISION MUST COMPLY WITH THE STANDARDS SET FORTH IN THE SH 29 & RONALD REAGAN BLVD PUD 20-Z-021, ORD. 05-018-00.
4. EXISTING OFFSITE CONTOURS TAKEN FROM CITY OF LEANDER LIDAR.
5. EXISTING ONSITE CONTOURS TAKEN FROM DIAMOND SURVEYING & LJA SURVEY FIELD TOPOGRAPHIC SURVEYS.

CITY OF LEANDER APPROVAL

LOCATION OF EXISTING UNDERGROUND AND OVERHEAD UTILITIES ARE APPROXIMATE LOCATIONS ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES PRIOR TO BEGINNING WORK AND SHALL BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT OCCUR.

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

GATEWAY 29 WPAP / SCS
OVERALL SUBDIVISION IMPROVEMENTS
ONSITE DRAINAGE AREA MAP
LEANDER, WILLIAMSON COUNTY, TEXAS

NO.	DESCRIPTION	BY	DATE
	REVISIONS		

DATE: 02/27/2024
DESIGNED BY: CRH
DRAWN BY: LJA
CHECKED BY: CRH
DRAWING NAME: A633-0401-P-DM03_WPAP.dwg

02/27/2024
STATE OF TEXAS
CHARLES R. HAGER
127034
LICENSED PROFESSIONAL ENGINEER

LJA Engineering, Inc.
7500 Rialto Boulevard
Building II, Suite 100
Austin, Texas 78735
Phone 512.439.4700
Fax 512.439.4716
FRN-F-1386

JOB NUMBER: A633-0401

DM03

SHEET NO. 20 OF 99 SHEETS

CITY OF LEANDER PROJECT No. SD-23-0140

I:\A633-Gateway\Civil\Submittal Sheets\WPAP\a633-0401-p-dm03_WPAP.dwg
User: ogfringer
Last Modified: Mon, 12, 24 - 11:04
Plot Date/Time: Mon, 12, 24 - 11:11:04

LOT 5 ONSITE DRAINAGE AREA CALCULATIONS

RATIONAL METHOD - City of Leander Drainage Criteria and Design Standards

Drainage Area Calculations

City of Leander Park ATLAS 14 Intensity-Duration-Frequency Curves

	2 Yr	10 Yr	25 Yr	100 Yr
a	58	77	89	106.00
b	11.27	10.53	10.16	9.46
c	0.805	0.775	0.759	0.732

Rational Method Runoff Coefficients for Composite Analysis

	25-YR	100-YR
DEVELOPED		
Asphaltic	0.86	0.95
Concrete	0.88	0.97
GRASS, Good Cond.		
Avg. 2-7%	0.39	0.46

$Q = CiA$

Where:

Q = peak runoff in cubic feet per second.
C = the coefficient of runoff
A = the area in acres contributing runoff to the point of design.
i = the average intensity of rainfall in inches per hour

$i = a/(t+b)^c$

Where,

t = Time of concentration for the entire drainage area of interest

T(sht flow) = $Ln/(42s^{0.5})$ T(shallow concentrated flow) = $Ln/(60s^{0.5})$

where,

L = Length of the reach in ft.
n = Manning's n
s = Slope of the ground in ft/ft

Developed Conditions Drainage Calculations (Site Calculations)

DRAINAGE AREA	AREA (AC)	PERV. (AC)	IMP. (AC)	C25	C100	ToC (min.)	I25	I100	Q25 (cfs)	Q100 (cfs)
A1	0.219	0.049	0.170	0.755	0.841	5	11.30	15.00	1.87	2.76
A2	0.276	0.011	0.265	0.841	0.930	5	11.30	15.00	2.62	3.85
A3	0.285	0.027	0.259	0.816	0.904	5	11.30	15.00	2.63	3.87
A4	0.254	0.009	0.245	0.844	0.933	5	11.30	15.00	2.42	3.56
B1	0.069	0.012	0.057	0.778	0.865	5	11.30	15.00	0.61	0.89
B2	0.396	0.041	0.355	0.812	0.900	5	11.30	15.00	3.63	5.34

GRATE INLET CALCULATIONS FOR 100 YR STORM (WITH 50% REDUCTION)

MODELED AS AN ORIFICE $Q=C_O A_G (2\ g\ d)^{.5}$, $C_O = 0.67$ **MODELED AS A WEIR** $Q=C_w P\ d^{1.5}$, $Cw = 3.0$

AREA #	Q100 (CFS)	Flow Area (Sq. In.)	Inlet Size	A (SF)	A x 50% (SF)	P (FT)	$d_{ORIFICE}$ (FT)	d_{WEIR} (FT)	d_{allow} (FT)	Is $d_{orifice}$ and/or $d_{weir} > d_{allow}$?
A1	2.76	432	**24"x24"**	3.00	1.50	16.00	0.12	0.15	0.50	NO
A2	3.85	432	**24"x24"**	3.00	1.50	16.00	0.23	0.19	0.50	NO
A3	3.87	972	**36"x36"**	6.75	3.38	16.00	0.05	0.19	0.50	NO
A4	3.56	1728	**48"x48"**	12.00	6.00	16.00	0.01	0.18	0.50	NO
B2	5.34	432	**24"x24"**	3.00	1.50	16.00	0.44	0.23	1.50	NO

SUMP INLET CALCULATIONS FOR 100YR STORM

Weir Equation $Q = C_w h^{1.5} L$

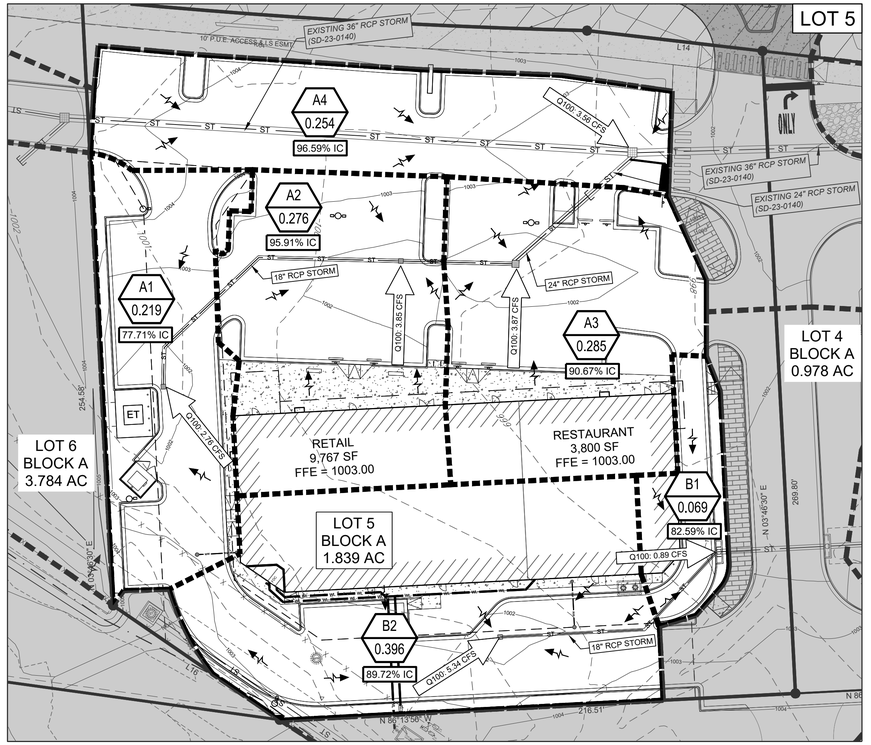
$C_w = 3.0$

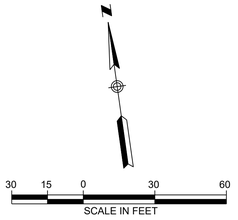
If $h_{WATER} > 0.5$, use orifice equation

$Q=C_O A_G (2\ g\ d)^{.5}$, $C_O = 0.67$, $A_G = Lx6"/12$

Note: Per Standard Curb Inlet Detail, Curb Inlets have 6" depression from the curb gutter with a distance of 11.75" from the lip to top of curb (h_{allow}). The inlet opening has a height of 6". The centroid of the inlet opening is 3" above the inlet lip.

INLET NO.	FLOW (CFS)	Q_{BYPASS} (CFS)	Q_{TOTAL} (CFS)	L (FT)	WEIR CALC Q/L or A (CFS/LF)	WEIR CALC h_{weir}(FT) (a+Yo)	ORIFICE CALC A_E (SF)	ORIFICE CALC $h_{orifice}$ (FT)	h_{allow} (FT)	INLET TYPE
B1	1.76	0.0	1.8	9.0	0.20	0.16	4.50	0.26	0.98	10' Curb Inlet





LEGEND

- A5-A / 7.082 / 7.65% IC — DRAINAGE AREA NUMBER AND ACREAGE
- DRAINAGE AREA
- PROPERTY LINE
- TC AND/OR REACH PATH
- XXX' LF SF @ X.XX% — SHEET FLOW
- XXX' LF SCF @ X.XX% — SHALLOW CONCENTRATED FLOW
- Q100: 7.05 CFS — 100 YEAR FLOW RATE
- FLOW DIRECTION ARROW

NOTES

1. PROJECT LOCATED IN THE EDWARDS AQUIFER RECHARGE ZONE PER TCEQ MAPS.
2. THERE IS NO FLOODPLAIN PRESENT ON THE SITE. THE AREA LIES IN ZONE "X" (AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN), AS IDENTIFIED BY THE FEDERAL EMERGENCY AGENCY, NATIONAL FLOOD INSURANCE PROGRAM, AS SHOWN ON MAP NO., 48491C0275E, EFFECTIVE SEPTEMBER 25, 2008.
3. THIS SUBDIVISION MUST COMPLY WITH THE STANDARDS SET FORTH IN THE SH 29 & RONALD REAGAN BLVD PUD 20-Z-021, ORD. 05-018-00.
4. EXISTING OFFSITE CONTOURS TAKEN FROM CITY OF LEANDER LIDAR.
5. EXISTING ONSITE CONTOURS TAKEN FROM DIAMOND SURVEYING & LJA SURVEY FIELD TOPOGRAPHIC SURVEYS.

LOT 3 ONSITE DRAINAGE AREA CALCULATIONS

RATIONAL METHOD - City of Leander Drainage Criteria and Design Standards

Drainage Area Calculations

City of Leander Park ATLAS 14 Intensity-Duration-Frequency Curves

	2 Yr	10 Yr	25 Yr	100 Yr
a	58	77	89	106.00
b	11.27	10.53	10.16	9.46
c	0.805	0.775	0.759	0.732

Rational Method Runoff Coefficients for Composite Analysis

	25-YR	100-YR
DEVELOPED		
Asphaltic	0.86	0.95
Concrete	0.88	0.97
GRASS, Good Cond.		
Avg. 2-7%	0.39	0.46

$Q = CiA$

Where:

Q = peak runoff in cubic feet per second.
C = the coefficient of runoff
A = the area in acres contributing runoff to the point of design.
i = the average intensity of rainfall in inches per hour

$i = a/(t+b)^c$

Where,

t = Time of concentration for the entire drainage area of interest

T(sht flow) = $Ln/(42s^{0.5})$ T(shallow concentrated flow) = $Ln/(60s^{0.5})$

where,

L = Length of the reach in ft.
n = Manning's n
s = Slope of the ground in ft/ft

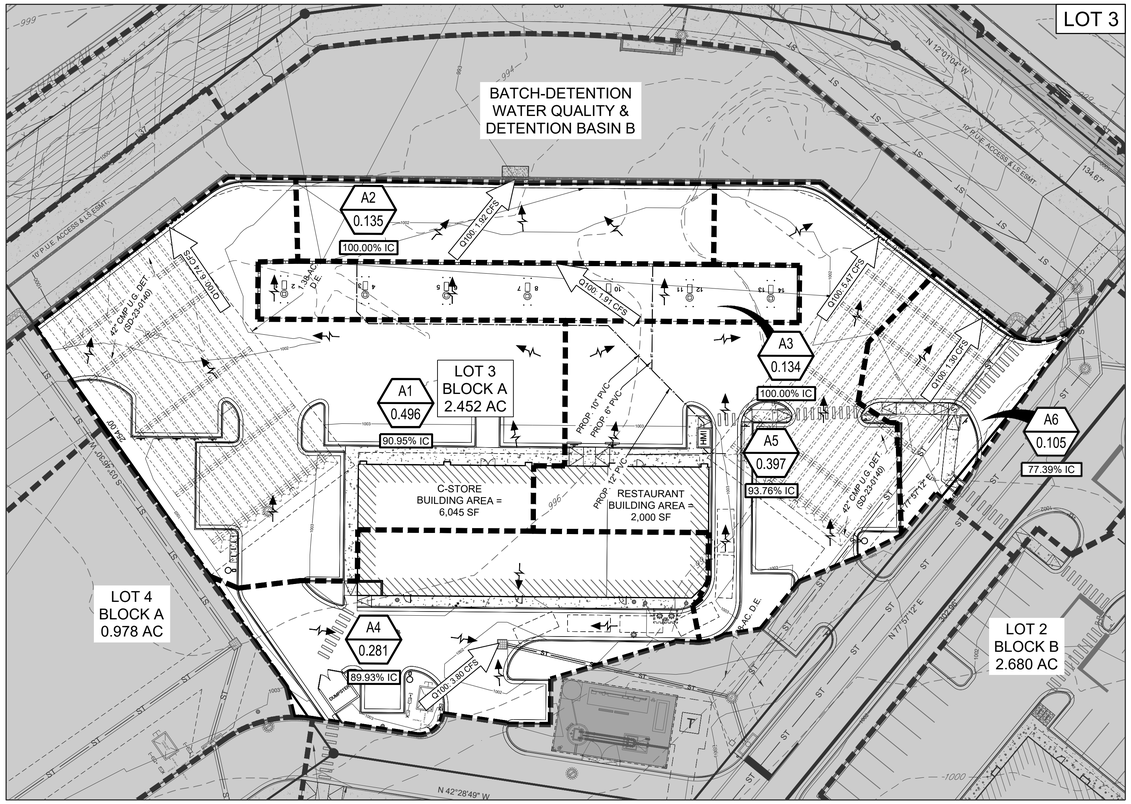
Developed Conditions Drainage Calculations (Site Calculations)

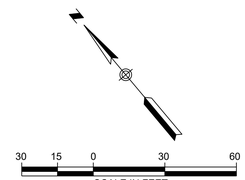
DRAINAGE AREA	AREA (AC)	PERV. (AC)	IMP. (AC)	C25	C100	ToC (min.)	I25	I100	Q25 (cfs)	Q100 (cfs)
A1	0.496	0.045	0.451	0.817	0.906	5	11.30	15.00	4.59	6.74
A2	0.135	0.000	0.135	0.860	0.950	5	11.30	15.00	1.31	1.92
A3	0.134	0.000	0.134	0.860	0.950	5	11.30	15.00	1.30	1.91
A4	0.281	0.028	0.253	0.813	0.901	5	11.30	15.00	2.58	3.80
A5	0.397	0.025	0.372	0.831	0.919	5	11.30	15.00	3.73	5.47
A6	0.105	0.027	0.078	0.737	0.822	5	11.30	15.00	0.88	1.30

GRATE INLET CALCULATIONS FOR 100 YR STORM (WITH 50% REDUCTION)

MODELED AS AN ORIFICE $Q=C_O A_G (2\ g\ d)^{.5}$, $C_O = 0.67$ **MODELED AS A WEIR** $Q=C_w P\ d^{1.5}$, $Cw = 3.0$

AREA #	Q100 (CFS)	Flow Area (Sq. In.)	Inlet Size	A (SF)	A x 50% (SF)	P (FT)	$d_{ORIFICE}$ (FT)	d_{WEIR} (FT)	d_{allow} (FT)	Is $d_{orifice}$ and/or $d_{weir} > d_{allow}$?
A4	3.80	1728	**48"x48"**	12.00	6.00	16.00	0.01	0.18	0.50	NO
A2	1.92	44496	**VARIABLE**	309.00	154.50	24.00	0.00	0.09	0.50	NO





CITY OF LEANDER APPROVAL

LOCATION OF EXISTING UNDERGROUND AND OVERHEAD UTILITIES ARE APPROXIMATE LOCATIONS ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES PRIOR TO BEGINNING WORK AND SHALL BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT OCCUR.

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

CITY OF LEANDER PROJECT No. SD-23-0140

GATEWAY 29 WPAP / SCS
OVERALL SUBDIVISION IMPROVEMENTS
ONSITE DRAINAGE AREA MAP LOTS 3 & 5

LEANDER, WILLIAMSON COUNTY, TEXAS

NO.	REVISIONS DESCRIPTION	BY	DATE

DATE: 02/27/2024
DESIGNED BY: CRH
DRAWN BY: LJA
CHECKED BY: CRH
DRAWING NAME: A633-0401-P-DM03_WPAP.DWG

02/27/2024

STATE OF TEXAS — CHARLES R. HAGER — 127034 — LICENSED PROFESSIONAL ENGINEER

LJA Engineering, Inc.
7500 Rialto Boulevard
Building II, Suite 100
Austin, Texas 78735
Phone 512.439.4700
Fax 512.439.4716
FRN-F-1386

JOB NUMBER: A633-0401

DM03-A

SHEET NO. 21 OF 99 SHEETS

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Last Modified: Mon 12, 24 - 11:04
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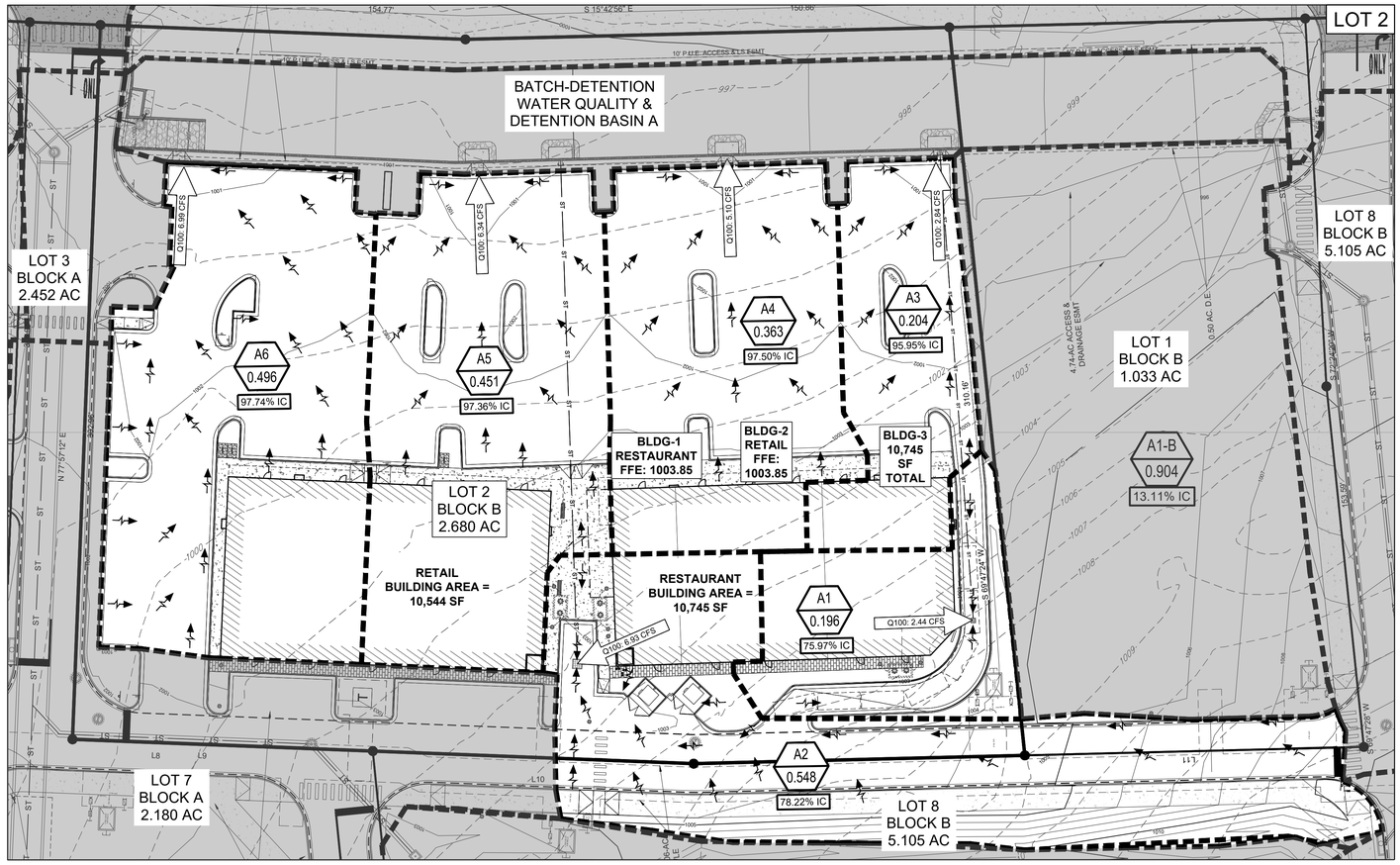


LOT 2 ONSITE DRAINAGE AREA CALCULATIONS

RATIONAL METHOD - City of Leander Drainage Criteria and Design Standards

Drainage Area Calculations

City of Leander Park ATLAS 14 Intensity-Duration-Frequency Curves

	2 Yr	10 Yr	25 Yr	100 Yr
a	58	77	89	106.00
b	11.27	10.53	10.16	9.46
c	0.805	0.775	0.759	0.732

Rational Method Runoff Coefficients for Composite Analysis

	25-YR	100-YR
DEVELOPED		
Asphaltic	0.86	0.95
Concrete	0.88	0.97
GRASS, Good Cond.		
Avg, 2-7%	0.39	0.46

$Q = CiA$

Where:

Q = peak runoff in cubic feet per second.
C = the coefficient of runoff
A = the area in acres contributing runoff to the point of design.
i = the average intensity of rainfall in inches per hour

$i = a/(t+b)^c$

Where,

t = Time of concentration for the entire drainage area of interest

T(sht flow) = $Ln/(42s^{0.5})$ T(shallow concentrated flow) = $Ln/(60s^{0.5})$

where,

L = Length of the reach in ft.
n = Manning's n
s = Slope of the ground in ft/ft

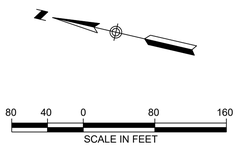
Developed Conditions Drainage Calculations (Site Calculations)

DRAINAGE AREA	AREA (AC)	PERV. (AC)	IMP. (AC)	C25	C100	ToC (min.)	I25	I100	Q25 (cfs)	Q100 (cfs)
A1	0.196	0.047	0.149	0.747	0.832	5	11.30	15.00	1.65	2.44
A2	0.548	0.119	0.429	0.758	0.843	5	11.30	15.00	4.69	6.93
A3	0.204	0.008	0.195	0.841	0.930	5	11.30	15.00	1.93	2.84
A4	0.363	0.009	0.354	0.848	0.938	5	11.30	15.00	3.48	5.10
A5	0.451	0.012	0.439	0.848	0.937	5	11.30	15.00	4.32	6.34
A6	0.511	0.011	0.500	0.850	0.939	5	11.30	15.00	4.91	7.21

GRATE INLET CALCULATIONS FOR 100 YR STORM (WITH 50% REDUCTION)

MODELED AS AN ORIFICE $Q=C_Q A_G (2\ g\ d)^{.5}$, C_Q=0.67 MODELED AS A WEIR $Q=C_w\ P\ d^{1.5}$, Cw=3.0

AREA #	Q100 (CFS)	Flow Area (Sq. In.)	Inlet Size	A (SF)	A x 50% (SF)	P (FT)	$d_{ORIFICE}$ (FT)	d_{WEIR} (FT)	d_{allow} (FT)	Is $d_{orifice}$ and/or $d_{weir} > d_{allow}$?
A1	2.44	432	**24"x24"**	3.00	1.50	8.00	0.09	0.22	0.50	NO
A2	6.93	1728	**48"x48"**	12.00	6.00	16.00	0.05	0.28	0.50	NO



LEGEND

- A6 0.496 97.74% IC — DRAINAGE AREA NUMBER AND ACREAGE
- DRAINAGE AREA
- PROPERTY LINE
- TC AND/OR REACH PATH
- XXX' LF SF @ X.XX% — SHEET FLOW
- XXX' LF SCF @ X.XX% — SHALLOW CONCENTRATED FLOW
- Q100: 7.05 CFS — 100 YEAR FLOW RATE
- FLOW DIRECTION ARROW

NOTES

1. PROJECT LOCATED IN THE EDWARDS AQUIFER RECHARGE ZONE PER TCEQ MAPS.
2. THERE IS NO FLOODPLAIN PRESENT ON THE SITE. THE AREA LIES IN ZONE "X" (AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN), AS IDENTIFIED BY THE FEDERAL EMERGENCY AGENCY, NATIONAL FLOOD INSURANCE PROGRAM, AS SHOWN ON MAP NO., 48491C0275E, EFFECTIVE SEPTEMBER 25, 2008.
3. THIS SUBDIVISION MUST COMPLY WITH THE STANDARDS SET FORTH IN THE SH 29 & RONALD REAGAN BLVD PUD 20-Z-021, ORD. 05-018-00.
4. EXISTING OFFSITE CONTOURS TAKEN FROM CITY OF LEANDER LIDAR.
5. EXISTING ONSITE CONTOURS TAKEN FROM DIAMOND SURVEYING & LJA SURVEY FIELD TOPOGRAPHIC SURVEYS.

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

GATEWAY 29 WPAP / SCS
OVERALL SUBDIVISION IMPROVEMENTS
ONSITE DRAINAGE AREA MAP LOT 2

LEANDER, WILLIAMSON COUNTY, TEXAS

REVISIONS

NO.	DESCRIPTION	BY	DATE

DATE: 02/27/2024
DESIGNED BY: CRH
DRAWN BY: LJA
CHECKED BY: CRH
DRAWING NAME: A633-0401-P-DM03_WPAP.dwg

02/27/2024

STATE OF TEXAS — CHARLES R. HAGER V — 127034 — LICENSED PROFESSIONAL ENGINEER

LJA Engineering, Inc.
7500 Rialto Boulevard
Building II, Suite 100
Austin, Texas 78735
Phone 512.439.4700
Fax 512.439.4716
FRN-F-1386

JOB NUMBER: A633-0401

DM03-B

SHEET NO. 22 OF 99 SHEETS

CITY OF LEANDER PROJECT No. SD-23-0140

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Last Modified: Mar. 12, 24 - 11:04
Plot Date/Time: Mar. 12, 24 - 11:15:46

Permanent Stormwater Section

Texas Commission on Environmental Quality

for Regulated Activities on the Edwards Aquifer Recharge Zone and Relating to 30 TAC §213.5(b)(4)(C), (D)(Ii), (E), and (5), Effective June 1, 1999

To ensure that the application is administratively complete, confirm that all fields in the form are complete, verify that all requested information is provided, consistently reference the same site and contact person in all forms in the application, and ensure forms are signed by the appropriate party.

Note: Including all the information requested in the form and attachments contributes to more streamlined technical reviews.

Signature

To the best of my knowledge, the responses to this form accurately reflect all information requested concerning the proposed regulated activities and methods to protect the Edwards Aquifer. This **Permanent Stormwater Section** is hereby submitted for TCEQ review and executive director approval. The application was prepared by:

Print Name of Customer/Agent: Charles Hager, V P.E.

Date: 03/13/2024

Signature of Customer/Agent



Regulated Entity Name: Gateway 29

Permanent Best Management Practices (BMPs)

Permanent best management practices and measures that will be used during and after construction is completed.

1. ☒ Permanent BMPs and measures must be implemented to control the discharge of pollution from regulated activities after the completion of construction.

   ☐ N/A

2. ☒ These practices and measures have been designed, and will be constructed, operated, and maintained to insure that 80% of the incremental increase in the annual mass loading of total suspended solids (TSS) from the site caused by the regulated activity is removed. These quantities have been calculated in accordance with technical guidance prepared or accepted by the executive director.

   ☒ The TCEQ Technical Guidance Manual (TGM) was used to design permanent BMPs and measures for this site.

☐ A technical guidance other than the TCEQ TGM was used to design permanent BMPs and measures for this site. The complete citation for the technical guidance that was used is: _____

☐ N/A

3. ☒ Owners must insure that permanent BMPs and measures are constructed and function as designed. A Texas Licensed Professional Engineer must certify in writing that the permanent BMPs or measures were constructed as designed. The certification letter must be submitted to the appropriate regional office within 30 days of site completion.

   ☐ N/A

4. Where a site is used for low density single-family residential development and has 20 % or less impervious cover, other permanent BMPs are not required. This exemption from permanent BMPs must be recorded in the county deed records, with a notice that if the percent impervious cover increases above 20% or land use changes, the exemption for the whole site as described in the property boundaries required by 30 TAC §213.4(g) (relating to Application Processing and Approval), may no longer apply and the property owner must notify the appropriate regional office of these changes.

   ☐ The site will be used for low density single-family residential development and has 20% or less impervious cover.
   ☐ The site will be used for low density single-family residential development but has more than 20% impervious cover.
   ☒ The site will not be used for low density single-family residential development.

5. The executive director may waive the requirement for other permanent BMPs for multi-family residential developments, schools, or small business sites where 20% or less impervious cover is used at the site. This exemption from permanent BMPs must be recorded in the county deed records, with a notice that if the percent impervious cover increases above 20% or land use changes, the exemption for the whole site as described in the property boundaries required by 30 TAC §213.4(g) (relating to Application Processing and Approval), may no longer apply and the property owner must notify the appropriate regional office of these changes.

   ☐ **Attachment A - 20% or Less Impervious Cover Waiver**. The site will be used for multi-family residential developments, schools, or small business sites and has 20% or less impervious cover. A request to waive the requirements for other permanent BMPs and measures is attached.
   ☐ The site will be used for multi-family residential developments, schools, or small business sites but has more than 20% impervious cover.
   ☒ The site will not be used for multi-family residential developments, schools, or small business sites.

6. ☒ **Attachment B - BMPs for Upgradient Stormwater**.

☒ A description of the BMPs and measures that will be used to prevent pollution of surface water, groundwater, or stormwater that originates upgradient from the site and flows across the site is attached.

☐ No surface water, groundwater or stormwater originates upgradient from the site and flows across the site, and an explanation is attached.

☐ Permanent BMPs or measures are not required to prevent pollution of surface water, groundwater, or stormwater that originates upgradient from the site and flows across the site, and an explanation is attached.

7. ☒ **Attachment C - BMPs for On-site Stormwater**.

☒ A description of the BMPs and measures that will be used to prevent pollution of surface water or groundwater that originates on-site or flows off the site, including pollution caused by contaminated stormwater runoff from the site is attached.

☐ Permanent BMPs or measures are not required to prevent pollution of surface water or groundwater that originates on-site or flows off the site, including pollution caused by contaminated stormwater runoff, and an explanation is attached.

8. ☒ **Attachment D - BMPs for Surface Streams**. A description of the BMPs and measures that prevent pollutants from entering surface streams, sensitive features, or the aquifer is attached. Each feature identified in the Geologic Assessment as sensitive has been addressed.

☐ N/A

9. ☒ The applicant understands that to the extent practicable, BMPs and measures must maintain flow to naturally occurring sensitive features identified in either the geologic assessment, executive director review, or during excavation, blasting, or construction.

☒ The permanent sealing of or diversion of flow from a naturally-occurring sensitive feature that accepts recharge to the Edwards Aquifer as a permanent pollution abatement measure has not been proposed.

☐ **Attachment E - Request to Seal Features**. A request to seal a naturally-occurring sensitive feature, that includes, for each feature, a justification as to why no reasonable and practicable alternative exists, is attached.

10. ☒ **Attachment F - Construction Plans**. All construction plans and design calculations for the proposed permanent BMP(s) and measures have been prepared by or under the direct supervision of a Texas Licensed Professional Engineer, and are signed, sealed, and dated. The plans are attached and, if applicable include:

☒ Design calculations (TSS removal calculations)
☒ TCEQ construction notes
☒ All geologic features
☒ All proposed structural BMP(s) plans and specifications

☐ N/A

11. ☒ **Attachment G - Inspection, Maintenance, Repair and Retrofit Plan**. A plan for the inspection, maintenance, repairs, and, if necessary, retrofit of the permanent BMPs and measures is attached. The plan includes all of the following:

    ☒ Prepared and certified by the engineer designing the permanent BMPs and measures
    ☒ Signed by the owner or responsible party
    ☒ Procedures for documenting inspections, maintenance, repairs, and, if necessary retrofit
    ☒ A discussion of record keeping procedures

    ☐ N/A

12. ☐ **Attachment H - Pilot-Scale Field Testing Plan**. Pilot studies for BMPs that are not recognized by the Executive Director require prior approval from the TCEQ. A plan for pilot-scale field testing is attached.

    ☒ N/A

13. ☒ **Attachment I -Measures for Minimizing Surface Stream Contamination**. A description of the measures that will be used to avoid or minimize surface stream contamination and changes in the way in which water enters a stream as a result of the construction and development is attached. The measures address increased stream flashing, the creation of stronger flows and in-stream velocities, and other in-stream effects caused by the regulated activity, which increase erosion that results in water quality degradation.

    ☐ N/A

Responsibility for Maintenance of Permanent BMP(s)

Responsibility for maintenance of best management practices and measures after construction is complete.

14. ☒ The applicant is responsible for maintaining the permanent BMPs after construction until such time as the maintenance obligation is either assumed in writing by another entity having ownership or control of the property (such as without limitation, an owner's association, a new property owner or lessee, a district, or municipality) or the ownership of the property is transferred to the entity. Such entity shall then be responsible for maintenance until another entity assumes such obligations in writing or ownership is transferred.

    ☐ N/A

15. ☒ A copy of the transfer of responsibility must be filed with the executive director at the appropriate regional office within 30 days of the transfer if the site is for use as a multiple single-family residential development, a multi-family residential development, or a non-residential development such as commercial, industrial, institutional, schools, and other sites where regulated activities occur.

    ☐ N/A

ATTACHMENT A – 20% or Less Impervious Cover Waiver

Not applicable.

ATTACHMENT B – BMPs for Upgradient Stormwater

The proposed development is located in the South Fork San Gabriel River watershed. There is approximately 75 acres of upgradient storm water originating offsite. Proposed drainage improvements will collect and convey the offsite runoff through the site to mitigate the impacts of the offsite drainage area.

ATTACHMENT C – BMPs for On-Site Stormwater

Temporary Controls: Prior to site clearing, grading and excavation, the stabilized construction entrance will be installed, tree protection/limit of construction fencing will be installed, and silt fencing will be installed at the downstream edge of disturbed areas where shallow sheet runoff occurs. The water quality basins will act as a sediment trap for the project. During all aspects of construction, the contractor shall maintain these controls. The contractor will be responsible for stabilization practices (revegetation). The contractor will be responsible for removing the temporary controls once the revegetation is established.

Permanent Controls: After construction there will be runoff from building surfaces, paved areas and managed lawn/landscape areas. These areas will be mitigated by permanent revegetation of disturbed areas and through use of four batch detention water quality ponds. The storm water runoff from impervious areas and landscaped areas will be collected in storm drain inlets and storm drain pipes and conveyed to proposed batch detention water quality ponds.

ATTACHMENT D – BMPs for Surface Streams

Temporary Controls: Prior to site clearing, grading and excavation, the stabilized construction entrance will be installed, tree protection/limit of construction fencing will be installed, and silt fencing will be installed at the downstream edge of disturbed areas where shallow sheet runoff occurs. The water quality basins will act as a sediment trap for the project. A dewatering skimmer will be used to collect and discharge the highest quality water, allowing the sediment to settle. During all aspects of construction, the contractor shall maintain these controls. The contractor will be responsible for stabilization practices (revegetation). The contractor will be responsible for removing the temporary controls once the revegetation is established.

Permanent Controls: After construction there will be runoff from building surfaces, paved areas and managed lawn/landscape areas. These areas will be mitigated by permanent revegetation of disturbed areas and through use of four batch detention water quality ponds. The storm water runoff from impervious areas and landscaped areas will be collected in storm drain inlets and storm drain pipes and conveyed to four proposed batch detention water quality ponds.

ATTACHMENT E– Request to Seal Features

Not Applicable.

ATTACHMENT F – Construction Plans

Construction plans for the proposed Gateway 29 project are submitted in conjunction with this Water Pollution Abatement Plan (WPAP) application. TSS Removal Calculations are attached to this section.

ATTACHMENT G – Inspection, Maintenance, Repair, and Retrofit Plan

See attached document labeled "Maintenance Plan for Permanent Best Management Practices for Gateway 29."

ATTACHMENT H – Pilot Scale Field Testing Plan

Not Applicable.

ATTACHMENT I – Measures for Minimizing Surface Stream Contamination

The subdivision is located in the South Fork San Gabriel River watershed. The batch detention water quality ponds will provide approximately 94 cfs of stormwater runoff that will be released through two existing 3'x6' reinforced concrete box culverts to an existing offsite pond.

As a result of these measures, the volume and character of the stormwater runoff from the site will be effectively unchanged from predevelopment levels. Consequently there will not be increased stream flashing, in-stream velocities and flow strength will remain similar, and stream erosion will not increase.

ATTACHMENT F – TSS Removal Calculations

Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Project Name: **Gateway 29 - POND A (ACTUAL DESIGN)**
Date Prepared: **3/12/2024**

Additional information is provided for cells with a red triangle in the upper right corner. Place the cursor over the cell.
Text shown in blue indicate location of instructions in the Technical Guidance Manual - RG-348.
Characters shown in red are data entry fields.
Characters shown in black (Bold) are calculated fields. Changes to these fields will remove the equations used in the spreadsheet.

1. The Required Load Reduction for the total project: Calculations from RG-348 Pages 3-27 to 3-30

Page 3-29 Equation 3.3: $L_M = 27.2(A_N \times P)$

where:
$L_{M\ TOTAL\ PROJECT}$ = Required TSS removal resulting from the proposed development = 80% of increased load
A_N = Net increase in impervious area for the project
P = Average annual precipitation, inches

Site Data: Determine Required Load Removal Based on the Entire Project

County =	**Williamson**		
Total project area included in plan * =	**32.26**	acres	<--TOTAL SITE AREA
Predevelopment impervious area within the limits of the plan * =	**0.00**	acres	
Total post-development impervious area within the limits of the plan * =	**8.21**	acres	
Total post-development impervious cover fraction * =	**0.25**		
P =	**32**	inches	
$L_{M\ TOTAL\ PROJECT}$ =	**7143**	lbs.	

*** The values entered in these fields should be for the total project area.**

Number of drainage basins / outfalls areas leaving the plan area = **2**

2. Drainage Basin Parameters (This information should be provided for each basin):

Drainage Basin/Outfall Area No. = **BASIN 'A'**

Total drainage basin/outfall area =	**5.89**	acres	<--TOTAL AREA CONTRIBUTING TO WQ BASIN 'A'
Predevelopment impervious area within drainage basin/outfall area =	**0.00**	acres	(SEE SHEET DM03, DRAINAGE AREAS A-A5)
Post-development impervious area within drainage basin/outfall area =	**3.31**	acres	
Post-development impervious fraction within drainage basin/outfall area =	**0.56**		
$L_{M\ THIS\ BASIN}$ =	**2881**	lbs.	

Compesitory Drainage Provided by Basin 'A' Water Quality Pond Summary

Total drainage basin/outfall area =	**0.895**	acres	<--AREA ADJACENT TO BASIN 'A' NOT CAPTURED BY POND A
Predevelopment impervious area within drainage basin/outfall area =	**0.37**	acres	(SEE SHEET DM03, DRAINAGE AREA OS-A)
Post-development impervious area within drainage basin/outfall area =	**0.62**	acres	
Post-development impervious fraction within drainage basin/outfall area =	**0.70**		
$L_{M\ (Compensitory)}$ =	**220**	lbs.	
$L_{M\ (TOTAL)}$ =	**3101**	lbs.	

3. Indicate the proposed BMP Code for this basin.

Proposed BMP = **Extended Detention** (Batch Detention Basin)
Removal efficiency = **91** percent

4. Calculate Maximum TSS Load Removed (L_R) for this Drainage Basin by the selected BMP Type.

RG-348 Page 3-33 Equation 3.7: $L_R = (\text{BMP efficiency}) \times P \times (A_I \times 34.6 + A_P \times 0.54)$

where:
A_C = Total On-Site drainage area in the BMP catchment area
A_I = Impervious area proposed in the BMP catchment area
A_P = Pervious area remaining in the BMP catchment area
L_R = TSS Load removed from this catchment area by the proposed BMP

A_C =	**5.892**	acres
A_I =	**3.310**	acres
A_P =	**2.58**	acres
L_R =	**3376**	lbs

5. Calculate Fraction of Annual Runoff to Treat the drainage basin / outfall area

Desired $L_{M\ THIS\ BASIN}$ = **3101** lbs.

F = **0.92**

6. Calculate Capture Volume required by the BMP Type for this drainage basin / outfall area. Calculations from RG-348 Pages 3-34 to 3-36

Rainfall Depth =	**2.00**	inches
Post Development Runoff Coefficient =	**0.39**	
On-site Water Quality Volume =	**16863**	cubic feet

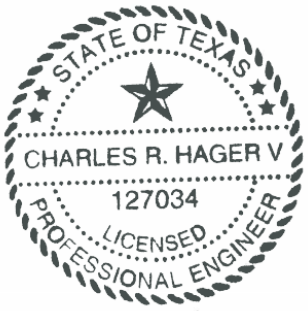
Calculations from RG-348 Pages 3-36 to 3-37

Off-site area draining to BMP =	**0.00**	acres
Off-site Impervious cover draining to BMP =	**0.00**	acres
Impervious fraction of off-site area =	**0**	
Off-site Runoff Coefficient =	**0.00**	
Off-site Water Quality Volume =	**0**	cubic feet
Storage for Sediment =	**3373**	
Total Capture Volume (required water quality volume(s) x 1.20) =	**20235**	cubic feet

The following sections are used to calculate the required water quality volume(s) for the selected BMP.
The values for BMP Types not selected in cell C45 will show NA.

8. Extended Detention Basin System Designed as Required in RG-348 Pages 3-46 to 3-51

Required Water Quality Volume for extended detention basin =	**20,235**	cubic feet
PROVIDED WATER QUALITY VOLUME=	**26,203**	cubic feet



03/13/2024

Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Project Name: **Gateway 29 - POND B (ACTUAL DESIGN)**
Date Prepared: **3/12/2024**

Additional information is provided for cells with a red triangle in the upper right corner. Place the cursor over the cell.
Text shown in blue indicate location of instructions in the Technical Guidance Manual - RG-348.
Characters shown in red are data entry fields.
Characters shown in black (Bold) are calculated fields. Changes to these fields will remove the equations used in the spreadsheet.

1. The Required Load Reduction for the total project: Calculations from RG-348 Pages 3-27 to 3-30

Page 3-29 Equation 3.3: $L_M = 27.2(A_N \times P)$

where:
$L_{M\ TOTAL\ PROJECT}$ = Required TSS removal resulting from the proposed development = 80% of increased load
A_N = Net increase in impervious area for the project
P = Average annual precipitation, inches

Site Data: Determine Required Load Removal Based on the Entire Project

County =	**Williamson**		
Total project area included in plan * =	**32.26**	acres	<--TOTAL SITE AREA
Predevelopment impervious area within the limits of the plan * =	**0.00**	acres	
Total post-development impervious area within the limits of the plan * =	**8.21**	acres	
Total post-development impervious cover fraction * =	**0.25**		
P =	**32**	inches	
$L_{M\ TOTAL\ PROJECT}$ =	**7143**	lbs.	

*** The values entered in these fields should be for the total project area.**

Number of drainage basins / outfalls areas leaving the plan area = **2**

2. Drainage Basin Parameters (This information should be provided for each basin):

Drainage Basin/Outfall Area No. = **BASIN 'B'**

Total drainage basin/outfall area =	**9.39**	acres	<--TOTAL AREA CONTRIBUTING TO WQ BASIN 'B'
Predevelopment impervious area within drainage basin/outfall area =	**0.00**	acres	(SEE SHEET DM03, DRAINAGE AREAS B-B7)
Post-development impervious area within drainage basin/outfall area =	**4.90**	acres	
Post-development impervious fraction within drainage basin/outfall area =	**0.52**		
$L_{M\ THIS\ BASIN}$ =	**4260**	lbs.	

Compesitory Drainage Provided by Basin 'B' Water Quality Pond Summary

Total drainage basin/outfall area =	**1.130**	acres	<--AREA ADJACENT TO BASIN 'B' NOT CAPTURED BY POND B
Predevelopment impervious area within drainage basin/outfall area =	**0.00**	acres	(SEE SHEET DM03, DRAINAGE AREA OS-B)
Post-development impervious area within drainage basin/outfall area =	**0.19**	acres	
Post-development impervious fraction within drainage basin/outfall area =	**0.17**		
$L_{M\ (Compensitory)}$ =	**165**	lbs.	
$L_{M\ (TOTAL)}$ =	**4425**	lbs.	

3. Indicate the proposed BMP Code for this basin.

Proposed BMP = **Extended Detention** (Batch Detention Basin)
Removal efficiency = **91** percent

4. Calculate Maximum TSS Load Removed (L_R) for this Drainage Basin by the selected BMP Type.

RG-348 Page 3-33 Equation 3.7: $L_R = (\text{BMP efficiency}) \times P \times (A_I \times 34.6 + A_P \times 0.54)$

where:
A_C = Total On-Site drainage area in the BMP catchment area
A_I = Impervious area proposed in the BMP catchment area
A_P = Pervious area remaining in the BMP catchment area
L_R = TSS Load removed from this catchment area by the proposed BMP

A_C =	**9.391**	acres
A_I =	**4.898**	acres
A_P =	**4.49**	acres
L_R =	**5006**	lbs

5. Calculate Fraction of Annual Runoff to Treat the drainage basin / outfall area

Desired $L_{M\ THIS\ BASIN}$ = **4425** lbs.

F = **0.88**

6. Calculate Capture Volume required by the BMP Type for this drainage basin / outfall area. Calculations from RG-348 Pages 3-34 to 3-36

Rainfall Depth =	**1.50**	inches
Post Development Runoff Coefficient =	**0.37**	
On-site Water Quality Volume =	**18902**	cubic feet

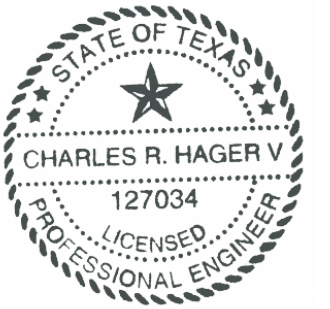
Calculations from RG-348 Pages 3-36 to 3-37

Off-site area draining to BMP =	**0.00**	acres
Off-site Impervious cover draining to BMP =	**0.00**	acres
Impervious fraction of off-site area =	**0**	
Off-site Runoff Coefficient =	**0.00**	
Off-site Water Quality Volume =	**0**	cubic feet
Storage for Sediment =	**3780**	
Total Capture Volume (required water quality volume(s) x 1.20) =	**22683**	cubic feet

The following sections are used to calculate the required water quality volume(s) for the selected BMP.
The values for BMP Types not selected in cell C45 will show NA.

8. Extended Detention Basin System Designed as Required in RG-348 Pages 3-46 to 3-51

Required Water Quality Volume for extended detention basin =	**22,683**	cubic feet
PROVIDED WATER QUALITY VOLUME=	**47,178**	cubic feet



03/13/2024

ATTACHMENT G
Maintenance Plan For Permanent Best Management Practices for Gateway 29

PROJECT NAME *Gateway 29*
ADDRESS *W State Hwy 29 & Ronald Reagan Blvd*
CITY, STATE, ZIP *Leander, Texas 78628*
RESPONSIBLE PARTY FOR MAINTENANCE: Gateway 29 Real Estate, LLC

A) PROJECT DESCRIPTION

The proposed Gateway 29 Subdivision project is a 32.257-acre development consisting of 10 lots and 0.667 acres of proposed Right Of Way (R.O.W.) along State Highway 29 (SH 29). The project is located at the southwest corner of SH 29 and Ronald Reagan Boulevard and is east of Kauffman Loop. The project lies within the full-purpose jurisdiction of the City of Leander, Williamson County, and the South Fork San Gabriel River watershed. The site is currently undeveloped and consists of natural grasses, trees, brush, and underbrush.

The site is located in the Edwards Aquifer Recharge Zone and is therefore required to meet TCEQ requirements for water quality treatment. Runoff resulting from the development of the proposed subdivision will be treated onsite with two batch detention water quality ponds with stacked detention. Additionally, one batch detention water quality pond with no detention and one batch detention water quality pond with stacked detention are proposed to treat runoff from the future development of Lot 10 and Lot 8, respectively, and are to be constructed in the future (not part of this application). The ponds are designed to provide adequate water quality to meet TCEQ requirements for the maximum allowable impervious cover for the site.

No portion of the proposed development is located within the 100-year floodplain based on FEMA FIRM Panel 484910275E, effective September 26, 2008.

B) MAINTENANCE SCHEDULE AND DETAILS

The Best Management Practices (BMP) associated with Water Quality for this project includes the use of four BMPs: two (2) Batch Detention Water Quality Ponds.

BMP facilities must be inspected at least twice a year (once during or immediately following wet weather) to evaluate facility operation.

The inspection should include a review of the structural elements for cracks / voids, the inlet and outlet fir clogging, the adequacy of both upstream and downstream erosion protection measures, and the embankment for subsidence or erosion / damage.

C) INSPECTION / MAINTENANCE FOR STRUCTURAL ELEMENTS

Routine Maintenance for All Structural Systems

Water quality ponds of all types have similar routine maintenance requirements, although most ponds have some unique maintenance need, as detailed in this section. The following general maintenance requirements apply to all pond BMPs.

During each inspection, erosion areas inside and downstream of the BMP must be identified and repaired pr revegetated immediately.

Grass areas in and around earthen ponds must be mowed at least twice annually to limit vegetation height to 18 inches. More frequent mowing to maintain aesthetic appeal may be necessary in landscaped areas. When mowing of grass is performed, a mulching mower must be used, or grass clippings must be caught and removed, as with all water quality BMPs.

Debris and litter accumulated in the facility must be removed during each inspection.

Excessive sediment must be removed and properly disposed of in an approved offsite disposal area. Excessive sediment is when accumulations reach 6 inches in depth.

Design drawdown times must not exceed by more than 24 hours. The design drawdown time is 72 hours from the first accumulation of stormwater or when the pond reaches full capacity. If drawdown times are excessive, repairs should occur immediately.

With each inspection, any damage to the structural elements of the system (pipes, concrete drainage structures, gabions, retaining walls, etc.) must be identified and repaired immediately

A maintenance access route shall extend to the pond from the parking lot. The maintenance access shall have a slope of no greater than 4:1.

Inlet and outlet structures should be inspected and cleaned out of any debris or sediment. If there is major damage to either the unlet or outlet, the damaged areas should be repaired.

Structural integrity of basins shall be maintained at all times. Woody vegetation should be controlled / removed to prevent basin leakage.

D) OPERATING GUIDELINES – MAINTENANCE REQUIREMENTS FOR SPECIFIC BMPS

Extended Detention Basins

Standing water (not desired in an extended detention basin) or soggy conditions within the lower stage of the basin can create nuisance conditions for nearby residents. Odors, mosquitoes, weeds, and litter are all occasionally perceived to be problems. Most of these problems are generally a sign that regular inspections and maintenance are not being performed. Rake the sand bed area to break up any crust that has formed. Remove all grass from the sand bed area. If sand bed area has any accumulation of sediment on surface, the sediment must be removed. This procedure is performed by hand operations. No mechanized machinery should be allowed on top of the sand bed area. Remove sediment from under-drains at least every 5 years.

RECORD KEEPING INSPECTIONS, MAINTENANCE, AND REPAIRS SHALL BE MAINTAINED BY THE REPONSIBLE PARTY

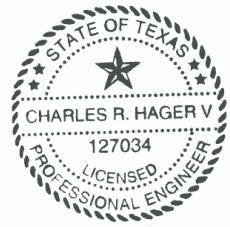
An amended copy of this document will be provided to the Texas Commission of Environmental Quality within thirty (30) days of any changes in the following information.

Engineer's Certification

I certify that the BMP described by this Maintenance Plan has been designed in compliance with the regulations of Title 30 Texas Administrative Code Chapter 213.

By: _____ 12-08-2023

Charles Hager V, P.E.



Responsible Party for Maintenance: Gateway 29 Investments, LLC

Address: 5522 Jenolan Ridge Ln

City, State, Address: Sugarland, Texas 77479

Telephone Number: (832) 713-4985

_____ 07/31/2023

Signature of Responsible Party Date

Agent Authorization Form
For Required Signature
Edwards Aquifer Protection Program
Relating to 30 TAC Chapter 213
Effective June 1, 1999

I Samir Maredia,
Print Name

Owner,
Title - Owner/President/Other

of Gateway 29 Real Estate, LLC,
Corporation/Partnership/Entity Name

have authorized Charles R. Hager, P.E.
Print Name of Agent/Engineer

of LJA Engineering
Print Name of Firm

to represent and act on the behalf of the above named Corporation, Partnership, or Entity for the purpose of preparing and submitting this plan application to the Texas Commission on Environmental Quality (TCEQ) for the review and approval consideration of regulated activities.

I also understand that:

1. The applicant is responsible for compliance with 30 Texas Administrative Code Chapter 213 and any condition of the TCEQ's approval letter. The TCEQ is authorized to assess administrative penalties of up to $10,000 per day per violation.

2. For those submitting an application who are not the property owner, but who have the right to control and possess the property, additional authorization is required from the owner.

3. Application fees are due and payable at the time the application is submitted. The application fee must be sent to the TCEQ cashier or to the appropriate regional office. The application will not be considered until the correct fee is received by the commission.

4. A notarized copy of the Agent Authorization Form must be provided for the person preparing the application, and this form must accompany the completed application.

5. No person shall commence any regulated activity on the Edwards Aquifer Recharge Zone, Contributing Zone or Transition Zone until the appropriate application for the activity has been filed with and approved by the Executive Director.

SIGNATURE PAGE:

Applicant's Signature

02/29/2024
Date

THE STATE OF TEXAS §

County of FORT BEND §

BEFORE ME, the undersigned authority, on this day personally appeared SAMIR MAREDIA known to me to be the person whose name is subscribed to the foregoing instrument, and acknowledged to me that (s)he executed same for the purpose and consideration therein expressed.

GIVEN under my hand and seal of office on this 29th day of FEB, 2024

FARHAN WALI
Notary Public
STATE OF TEXAS
My Comm. Exp. 06-23-25
Notary ID # 13116168-7

NOTARY PUBLIC

FARHAN WALI
Typed or Printed Name of Notary

MY COMMISSION EXPIRES: 06/23/2025

Application Fee Form

Texas Commission on Environmental Quality
Name of Proposed Regulated Entity: Gateway 29 Real Estate, LLC
Regulated Entity Location: SW of SH 29 and Ronald Reagon
Name of Customer: Samir Maredia
Contact Person: Charles R. Hagen, P.E. Phone: 512-439-4700
Customer Reference Number (if issued):CN 606180297
Regulated Entity Reference Number (if issued):RN 111807152

Austin Regional Office (3373)

☐ Hays ☐ Travis ☒ Williamson

San Antonio Regional Office (3362)

☐ Bexar ☐ Medina ☐ Uvalde
☐ Comal ☐ Kinney

Application fees must be paid by check, certified check, or money order, payable to the **Texas Commission on Environmental Quality**. Your canceled check will serve as your receipt. **This form must be submitted with your fee payment**. This payment is being submitted to:

☐ Austin Regional Office
☐ Mailed to: TCEQ - Cashier
Revenues Section
Mail Code 214
P.O. Box 13088
Austin, TX 78711-3088

☐ San Antonio Regional Office
☐ Overnight Delivery to: TCEQ - Cashier
12100 Park 35 Circle
Building A, 3rd Floor
Austin, TX 78753
(512)239-0357

Site Location (Check All That Apply):

☒ Recharge Zone ☐ Contributing Zone ☐ Transition Zone

Type of Plan	***Size***	***Fee Due***
Water Pollution Abatement Plan, Contributing Zone Plan: One Single Family Residential Dwelling	Acres	$
Water Pollution Abatement Plan, Contributing Zone Plan: Multiple Single Family Residential and Parks	Acres	$
Water Pollution Abatement Plan, Contributing Zone Plan: Non-residential	32.26 Acres	$ 6,500
Sewage Collection System	L.F.	$
Lift Stations without sewer lines	Acres	$
Underground or Aboveground Storage Tank Facility	Tanks	$
Piping System(s)(only)	Each	$
Exception	Each	$
Extension of Time	Each	$

Signature: C R Hagen

Date: 03/13/24

Application Fee Schedule

Texas Commission on Environmental Quality
Edwards Aquifer Protection Program 30 TAC Chapter 213 (effective 05/01/2008)

Water Pollution Abatement Plans and Modifications

Contributing Zone Plans and Modifications

Project	*Project Area in Acres*	*Fee*
One Single Family Residential Dwelling	< 5	$650
Multiple Single Family Residential and Parks	< 5 5 < 10 10 < 40 40 < 100 100 < 500 ≥ 500	$1,500 $3,000 $4,000 $6,500 $8,000 $10,000
Non-residential (Commercial, industrial, institutional, multi-family residential, schools, and other sites where regulated activities will occur)	< 1 1 < 5 5 < 10 10 < 40 40 < 100 ≥ 100	$3,000 $4,000 $5,000 $6,500 $8,000 $10,000

Organized Sewage Collection Systems and Modifications

Project	*Cost per Linear Foot*	*Minimum Fee-Maximum Fee*
Sewage Collection Systems	$0.50	$650 - $6,500

Underground and Aboveground Storage Tank System Facility Plans and Modifications

Project	*Cost per Tank or Piping System*	*Minimum Fee-Maximum Fee*
Underground and Aboveground Storage Tank Facility	$650	$650 - $6,500

Exception Requests

Project	*Fee*
Exception Request	$500

Extension of Time Requests

Project	***Fee***
Extension of Time Request	$150

TCEQ Use Only

TCEQ Core Data Form

For detailed instructions on completing this form, please read the Core Data Form Instructions or call 512-239-5175.

SECTION I: General Information

1. Reason for Submission (*If other is checked please describe in space provided.*)

☐ New Permit, Registration or Authorization (*Core Data Form should be submitted with the program application.*)

☒ Renewal *(Core Data Form should be submitted with the renewal form)* ☐ Other

2. Customer Reference Number *(if issued)*	Follow this link to search for CN or RN numbers in Central Registry**	**3. Regulated Entity Reference Number** *(if issued)*
CN 606180297		**RN 111807152**

SECTION II: Customer Information

4. General Customer Information | **5. Effective Date for Customer Information Updates** (mm/dd/yyyy)

☐ New Customer ☐ Update to Customer Information ☐ Change in Regulated Entity Ownership
☐ Change in Legal Name (Verifiable with the Texas Secretary of State or Texas Comptroller of Public Accounts)

The Customer Name submitted here may be updated automatically based on what is current and active with the Texas Secretary of State (SOS) or Texas Comptroller of Public Accounts (CPA).

6. Customer Legal Name *(If an individual, print last name first: eg: Doe, John)* — *If new Customer, enter previous Customer below:*

Gateway 29 Real Estate, LLC

7. TX SOS/CPA Filing Number	**8. TX State Tax ID** (11 digits)	**9. Federal Tax ID** (9 digits)	**10. DUNS Number** *(if applicable)*
0803899486	32077415787		

11. Type of Customer: ☐ Corporation ☐ Individual Partnership: ☐ General ☐ Limited
Government: ☐ City ☐ County ☐ Federal ☐ Local ☐ State ☐ Other ☐ Sole Proprietorship ☒ Other: LLC

12. Number of Employees
☒ 0-20 ☐ 21-100 ☐ 101-250 ☐ 251-500 ☐ 501 and higher

13. Independently Owned and Operated?
☒ **Yes** ☐ **No**

14. Customer Role (Proposed or Actual) – *as it relates to the Regulated Entity listed on this form. Please check one of the following*

☐ Owner ☐ Operator ☒ Owner & Operator
☐ Occupational Licensee ☐ Responsible Party ☐ VCP/BSA Applicant ☐ Other:

15. Mailing Address: 5522 Jenolan Ridge Lane

City	Sugarland	**State**	TX	**ZIP**	77479	**ZIP + 4**	

16. Country Mailing Information *(if outside USA)*	**17. E-Mail Address** *(if applicable)*
	samirsmaredia@gmail.com

18. Telephone Number	**19. Extension or Code**	**20. Fax Number** *(if applicable)*

(832) 713-4985		( ) -

SECTION III: Regulated Entity Information

21. General Regulated Entity Information *(If 'New Regulated Entity" is selected, a new permit application is also required.)*

☐ New Regulated Entity ☐ Update to Regulated Entity Name ☒ Update to Regulated Entity Information

The Regulated Entity Name submitted may be updated, in order to meet TCEQ Core Data Standards (removal of organizational endings such as Inc, LP, or LLC).

22. Regulated Entity Name *(Enter name of the site where the regulated action is taking place.)*

Gateway 29

23. Street Address of the Regulated Entity: ***(No PO Boxes)***	W. State Highway 29 and Ronald W. Reagan Blvd							
	City	Leander	**State**	TX	**ZIP**	78628	**ZIP + 4**	
24. County	Williamson							

If no Street Address is provided, fields 25-28 are required.

25. Description to Physical Location:	Site is located southwest of the intersection of W. State Highway 29 and Ronald W. Reagan Blvd and east of Kauffman Loop				
26. Nearest City			**State**	**Nearest ZIP Code**	
and is east of KLauffman Leander			TX	78628	

Latitude/Longitude are required and may be added/updated to meet TCEQ Core Data Standards. (Geocoding of the Physical Address may be used to supply coordinates where none have been provided or to gain accuracy).

27. Latitude (N) In Decimal:	30.635719		**28. Longitude (W) In Decimal:**	-97.829763	
Degrees	Minutes	Seconds	Degrees	Minutes	Seconds

29. Primary SIC Code (4 digits)	**30. Secondary SIC Code** (4 digits)	**31. Primary NAICS Code** (5 or 6 digits)	**32. Secondary NAICS Code** (5 or 6 digits)
1542		236220	

33. What is the Primary Business of this entity? *(Do not repeat the SIC or NAICS description.)*

34. Mailing Address:	**5522 Jenolan Ridge Lane**							
	City	**Sugarland**	**State**	**TX**	**ZIP**	**77479**	**ZIP + 4**	
35. E-Mail Address:	**samirsmaredia@gmail.com**							

36. Telephone Number	**37. Extension or Code**	**38. Fax Number** *(if applicable)*
(832) 713-4985		( ) -

39. TCEQ Programs and ID Numbers Check all Programs and write in the permits/registration numbers that will be affected by the updates submitted on this form. See the Core Data Form instructions for additional guidance.

☐ Dam Safety	☐ Districts	☒ Edwards Aquifer	☐ Emissions Inventory Air	☐ Industrial Hazardous Waste
☐ Municipal Solid Waste	☐ New Source Review Air	☐ OSSF	☐ Petroleum Storage Tank	☐ PWS
☐ Sludge	☐ Storm Water	☐ Title V Air	☐ Tires	☐ Used Oil
☐ Voluntary Cleanup	☐ Wastewater	☐ Wastewater Agriculture	☐ Water Rights	☐ Other:

SECTION IV: Preparer Information

40. Name:	Charles Hager, V P.E.	**41. Title:**	Sr. Project Manager

42. Telephone Number	**43. Ext./Code**	**44. Fax Number**	**45. E-Mail Address**
(843 **)** 507-8402		**( ) -**	chager@lja.com

SECTION V: Authorized Signature

46. By my signature below, I certify, to the best of my knowledge, that the information provided in this form is true and complete, and that I have signature authority to submit this form on behalf of the entity specified in Section II, Field 6 and/or as required for the updates to the ID numbers identified in field 39.

Company:	LJA ENgineering, Inc.	**Job Title:**	Sr. Project Manager
Name *(In Print):*	Charles Hager, V	**Phone:**	**(** 843 **)** 507- **8402**
Signature:		**Date:**	03/13/2023