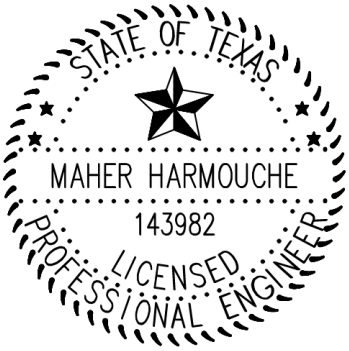
CONTRIBUTING ZONE PLAN

for

ARROWHEAD RANCH SUBDIVISION
POND EXHIBIT
DRIPPING SPRINGS, TEXAS

Prepared For:

Mr. John Brian
TF Arrowhead Ranch, L.P.
6310 Capital Drive, Suite 130
Lakewood Ranch, FL 34202
512-619-5406



CARLSON, BRIGANCE, & DOERING, INC.
ID # F3791

04.30.2024

Prepared By:

Maher Harmouche, P.E.
CARLSON, BRIGANCE & DOERING, INC
5701 West William Cannon Drive
Austin, Texas 78749
(512) 280-5160
Firm #F3791

Carlson, Brigance & Doering, Inc.
Civil Engineering ◆ Surveying

CBD No. 4999
April 2024

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- **Edwards Aquifer Application Cover Page (TCEQ-20705)**

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: **Arrowhead Ranch**						**2. Regulated Entity No.:** **107797524**			
3. Customer Name: **Arrowhead Ranch Master Community Inc.**						5. **Customer No.:**			
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):**			6.689
9. Application Fee:	$3,000		**10. Permanent BMP(s):**			Revegetation, Culvert controls, Others.			
11. SCS (Linear Ft.):	N/A		**12. AST/UST (No. Tanks):**			N/A			
13. County:	Hays		**14. Watershed:**			Onion Creek Watershed			

Application Distribution

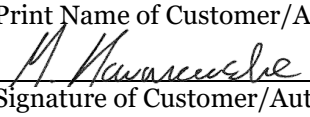
Instructions: Use the table below to determine the number of applications required. One original and one copy of the application, plus additional copies (as needed) for each affected incorporated city, county, and groundwater conservation district are required. Linear projects or large projects, which 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 ___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. TF Arrowhead Ranch, L.P. / Carlson, Brigance, & Doering Inc.
Print Name of Customer/Authorized Agent
 **04.30.2024** 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):	

- **1. Modification of a Previously Approved Contributing Zone Plan Form (TCEQ-10259)**

Modification of a Previously Approved Contributing Zone 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.

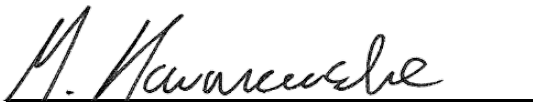
Signature

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 **Modification of a Previously Approved Contributing Zone Plan** is hereby submitted for TCEQ review and executive director approval. The request was prepared by:

Print Name of Customer/Agent: Maher Harmouche

Date: 04/22/2024

Signature of Customer/Agent:



Project Information

1. Current Regulated Entity Name: Arrowhead Ranch
   Original Regulated Entity Name: Arrowhead Ranch
   Assigned Regulated Entity Number(s) (RN): 107797524
   Edwards Aquifer Protection Program ID Number(s): _____
   ☐ The applicant has not changed and the Customer Number (CN) is: _____
   ☐ 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):

☒ Any physical or operational modification of any best management practices or structure(s), including but not limited to temporary or permanent ponds, dams, berms, silt fences, and diversionary structures;
☐ Any change in the nature or character of the regulated activity from that which was originally approved;
☐ A change that would significantly impact the ability to prevent pollution of the Edwards Aquifer and hydrologically connected surface water; or
☐ Any development of land previously identified in a contributing zone plan as undeveloped.

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.

CZP Modification Summary	***Approved Project***	***Proposed Modification***
Acres	27.718	6.689
Type of Development	Residential	Residential
Number of Residential Lots	67	0
Impervious Cover (acres)	7.431	0
Impervious Cover (%)	26.81	0
Permanent BMPs	Water Quality Basin	Water Quality Basin
Other	_____	_____
AST Modification Summary	***Approved Project***	***Proposed Modification***
Number of ASTs	N/A	N/A
Other	_____	_____
UST Modification Summary	***Approved Project***	***Proposed Modification***
Number of USTs	N/A	N/A
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 previous modifications, and how this proposed modification will change the approved plan.

6. ☒ **Attachment C: Current Site Plan of the Approved Projec**t. 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. ☒ Acreage has not been added to or removed from the approved plan.
   ☐ Acreage has been added to or removed from the approved plan and is discussed in *Attachment B: Narrative of Proposed Modification*.

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 – Original Approval Letter and Approved Modification Letters

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

May 7, 2020

Mr. Adib Khoury
TF Arrowhead Ranch, LP
6310 Capital Dr., Ste. 130
Lakewood Ranch, FL 34202

Re: Edwards Aquifer, Hays County

NAME OF PROJECT: Arrowhead Ranch Phase 3; Located south of Arrowhead Ranch Blvd. and US HWY 290; Dripping Springs, Texas

TYPE OF PLAN: Request for Approval of a Contributing Zone Plan (CZP); 30 Texas Administrative Code (TAC) Chapter 213 Subchapter B Edwards Aquifer

Edwards Aquifer Protection Program ID No. 11001966; Regulated Entity No. RN107797524

Dear Mr. Khoury:

The Texas Commission on Environmental Quality (TCEQ) has completed its review of the CZP Application for the above-referenced project submitted to the Austin Regional Office by Carlson, Brigance, & Doering, Inc. on behalf of TF Arrowhead Ranch, LP on March 3, 2020. Final review of the CZP was completed after additional material was received on April 30, 2020 and May 4, 2020. As presented to the TCEQ, the Temporary and Permanent Best Management Practices (BMPs) were selected and construction plans were prepared by a Texas Licensed Professional Engineer to be in general compliance with the requirements of 30 TAC Chapter 213. These planning materials were sealed, signed and dated by a Texas Licensed Professional Engineer. Therefore, based on the engineer's concurrence of compliance, the planning materials for construction of the proposed project and pollution abatement measures are hereby approved subject to applicable state rules and the conditions in 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 no later than 23 days after the date of this approval letter. *This approval expires two (2) 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 requested.*

PROJECT DESCRIPTION

The proposed residential project will have an area of approximately 27.718 acres. It will include 67 single-family lots, drives, sidewalks, roads, utilities, a water quality facility, and associated appurtenances. The impervious cover will be 7.431 acres (26.8 percent). Project

wastewater will be disposed of by conveyance to the existing Arrowhead Ranch wastewater treatment plant.

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 existing batch detention basins (Basin 2: EAPP ID No. 11001219, and Basin 3: EAPP ID No. 11001610) and a new batch detention basin (Basin 1) designed using the TCEQ technical guidance document, Complying with the Edwards Aquifer Rules: Technical Guidance on Best Management Practices (2005), will be used to treat stormwater runoff. The required total suspended solids (TSS) treatment for this project is 6,670 pounds of TSS generated from the 7.431 acres of impervious cover. The approved measures meet the required 80 percent removal of the increased load in TSS caused by the project.

SPECIAL CONDITIONS

I. All permanent pollution abatement measures shall be operational prior to occupancy of the facility.

II. All sediment and/or media removed from the water quality basins during maintenance activities shall be properly disposed of according to 30 TAC 330 or 30 TAC 335, as applicable.

STANDARD CONDITIONS

1. Pursuant to Chapter 7 Subchapter C of the Texas Water Code, any violations of the requirements in 30 TAC Chapter 213 may result in administrative penalties.
2. The holder of the approved Edwards Aquifer protection plan must comply with all provisions of 30 TAC Chapter 213 and all best management practices and measures contained in the approved plan. Additional and separate approvals, permits, registrations and/or authorizations from other TCEQ Programs (i.e., Stormwater, Water Rights, UIC) can be required depending on the specifics of the plan.
3. In addition to the rules of the Commission, the applicant may also be required to comply with state and local ordinances and regulations providing for the protection of water quality.

Prior to Commencement of Construction:

4. All contractors conducting regulated activities at the referenced project location shall be provided a copy of this notice of approval. At least one complete copy of the approved Contributing Zone Plan and this notice of approval shall be maintained at the project location until all regulated activities are completed.
5. Any modification to the activities described in the referenced CZP application following the date of approval may require the submittal of a plan to modify this approval, including the payment of appropriate fees and all information necessary for its review and approval prior to initiating construction of the modifications.
6. The applicant must provide written notification of intent to commence construction, replacement, or rehabilitation of the referenced project. Notification must be submitted to the Austin Regional Office no later than 48 hours prior to commencement of the regulated activity. Written notification must include the name of the approved plan and file number

for the regulated activity, the date on which the regulated activity will commence, and the name of the prime contractor with the name and telephone number of the contact person.

7. Temporary erosion and sedimentation (E&S) controls, i.e., silt fences, rock berms, stabilized construction entrances, or other controls described in the approved Storm Water Pollution Prevention Plan (SWPPP) 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. If a water quality pond is proposed, it shall be used as a sedimentation basin during construction. 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.

<u>During Construction:</u>

8. During the course of regulated activities related to this project, the applicant or his agent shall comply with all applicable provisions of 30 TAC Chapter 213, Edwards Aquifer. The applicant shall remain responsible for the provisions and conditions of this approval until such responsibility is legally transferred to another person or entity.
9. 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 significantly reduced. 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).
10. Intentional discharges of sediment laden water are not allowed. If dewatering becomes necessary, the discharge will be filtered through appropriately selected best management practices. These may include vegetated filter strips, sediment traps, rock berms, silt fence rings, etc.
11. 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.
12. 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.
13. This approval does not authorize the installation of temporary aboveground storage tanks on this project. If the contractor desires to install a temporary aboveground storage tank for use during construction, an application to modify this approval must be submitted and approved prior to installation. The application must include information related to tank location and spill containment. Refer to Standard Condition No. 5, above.

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

14. Owners of permanent BMPs and measures must insure that the 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 Austin Regional Office within 30 days of site completion.
15. 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 (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. A copy of the transfer of responsibility must be filed with the executive director through the Austin Regional Office within 30 days of the transfer. A copy of the transfer form (TCEQ-10263) is enclosed.

16. Upon legal transfer of this property, the new owner(s) is required to comply with all terms of the approved Contributing Zone Plan. If the new owner intends to commence any new regulated activity on the site, a new Contributing Zone Plan that specifically addresses the new activity must be submitted to the executive director. Approval of the plan for the new regulated activity by the executive director is required prior to commencement of the new regulated activity.
17. A Contributing Zone Plan approval or extension will expire and no extension will be granted if more than 50 percent of the total construction has not been completed within ten years from the initial approval of a plan. A new Contributing Zone Plan must be submitted to the Austin Regional Office with the appropriate fees for review and approval by the executive director prior to commencing any additional regulated activities.
18. At project locations where construction is initiated and abandoned, or not completed, the site shall be returned to a condition such that the aquifer is protected from potential contamination.

This action is taken under authority delegated by the Executive Director of the Texas Commission on Environmental Quality. If you have any questions or require additional information, please contact James "Bo" Slone, P.G. of the Edwards Aquifer Protection Program of the Austin Regional Office at (512) 339-2929.

Sincerely,

Robert Sadlier, Section Manager
Edwards Aquifer Protection Program
Texas Commission on Environmental Quality

RCS/jcs

Enclosure: Change in Responsibility for Maintenance of Permanent BMPs, Form TCEQ-10263

Change in Responsibility for Maintenance on Permanent Best Management Practices and Measures

The applicant is no longer responsible for maintaining the permanent best management practice (BMP) and other measures. The project information and the new entity responsible for maintenance is listed below.

Customer: _____

Regulated Entity Name: _____

Site Address: _____

City, Texas, Zip: _____

County: _____

Approval Letter Date: _____

BMPs for the project: _____

New Responsible Party: _____

Name of contact: _____

Mailing Address: _____

City, State: _____ Zip: _____

Telephone: _____ FAX: _____

_____ _____

Signature of New Responsible Party Date

I acknowledge and understand that I am assuming full responsibility for maintaining all permanent best management practices and measures approved by the TCEQ for the site, until another entity assumes such obligations in writing or ownership is transferred.

If you have questions on how to fill out this form or about the Edwards Aquifer protection program, please contact us at 210/490-3096 for projects located in the San Antonio Region or 512/339-2929 for projects located in the Austin Region.

Individuals are entitled to request and review their personal information that the agency gathers on its forms. They may also have any errors in their information corrected. To review such information, contact us at 512/239-3282.

ATTACHMENT B – Narrative of Proposed Modification

The proposed modification will take place in Phase III in the Arrowhead Ranch single family residential development which consists of 67 single family lots. The development is built on 27.718 acres of the total 279.769-acre Arrowhead Ranch Subdivision tract. There is an existing pond within a park and drainage lot which is 6.689 acres of land in the southeast portion of the of Phase III.

The existing pond is to be modified to include three relief trenches. The purpose of each relief trench is to begin with a connection to the existing springs. The trenches will then carry the spring water beneath the pond and to the opposite side of the pond where each trench will daylight, meeting with existing ground. The modifications will include a 1' clay cap beneath the bottom of the pond. Beneath the clay cap will be a 4" perforated PVC or HDPE pipe which will carry the spring water to the location which it will daylight. Encasing this pipe will be a 2' gravel pocket. The existing pond will maintain the same volume after the modifications are completed. These improvements are located within the Edwards Aquifer Contributing Zone. Flows were calculated using the National Resource Conservation hydrologic method.

Within the 27.718-acre development, approximately 7.431 acres of impervious cover was installed (26.81% of total project site). As the majority of the lots are below 10,000 sf in area the development does not comply with the "Low Density" exemption from permanent BMP's typically allowed in developments with <20% impervious cover. The existing batch detention was designed in accordance with the January 20, 2017 Addendum Sheet to RG-348 which establishes Batch Detention Basins as Section 3.2.17 of RG-348.

There are no offsite drainage areas that are not already captured by the Phase II or Phase IV development. While no demolition is proposed, the only modifications will take place within the existing pond.

Attachment C – Current Site Plan of the Approved Project

ARROWHEAD RANCH
DRIPPING SPRINGS, TEXAS
PHASE 3

STREET, DRAINAGE, WATER & SANITARY SEWER IMPROVEMENTS

SUBMITTED BY:

[signature] 11/4/2019

CARLSON, BRIGANCE, AND DOERING INC.
FIRM ID # F3791
5501 W. WILLIAM CANNON
AUSTIN, TX 78749
512-280-5160

CITY OF DRIPPING SPRINGS ADMINISTRATOR CITY OF DRIPPING SPRINGS DEVELOPMENT PERMIT #SUB2019-0030	DATE
CITY OF DRIPPING SPRINGS ENGINEER CITY OF DRIPPING SPRINGS DEVELOPMENT PERMIT #SUB2019-0030	DATE
DRIPPING SPRINGS WATER SUPPLY CORP.	DATE
CITY OF DRIPPING SPRINGS WASTEWATER REVIEW ENGINEER CITY OF DRIPPING SPRINGS DEVELOPMENT PERMIT #SUB2019-0030	DATE
ESD #6 (NORTH HAYS COUNTY FIRE DEPARTMENT)	DATE

WATERSHED STATUS – THIS PROJECT IS LOCATED WITHIN THE ONION CREEK WATERSHED. THIS SITE IS NOT LOCATED OVER THE EDWARDS AQUIFER RECHARGE ZONE, BUT IT IS IN THE CONTRIBUTING ZONE ACCORDING TO TCEQ AND COA MAPS. A CZP WILL BE REQUIRED PRIOR TO COMMENCING CONSTRUCTION ACTIVITIES.

NOTES:

1. NO PORTION OF THIS TRACT IS WITHIN THE BOUNDARIES OF THE CWQZ OR THE 100 YEAR FLOOD PLAIN OF THE FEDERAL FLOOD INSURANCE ADMINISTRATION FIRM PANELS NO. 48209C0085F AND 48209C0105F FOR HAYS COUNTY, TEXAS, BOTH DATED SEPTEMBER 02, 2005.
2. THIS PROJECT IS INCLUDED IN SF-5 ZONING PER CITY OF DRIPPING SPRINGS, TEXAS OFFICIAL ZONING MAP.
3. THERE WILL BE NO INCREASE IN PEAK RATE OF DISCHARGE FROM THE DEVELOPMENT FOR THE DESIGN STORM EVENT AS A RESULT OF THIS PROJECT.

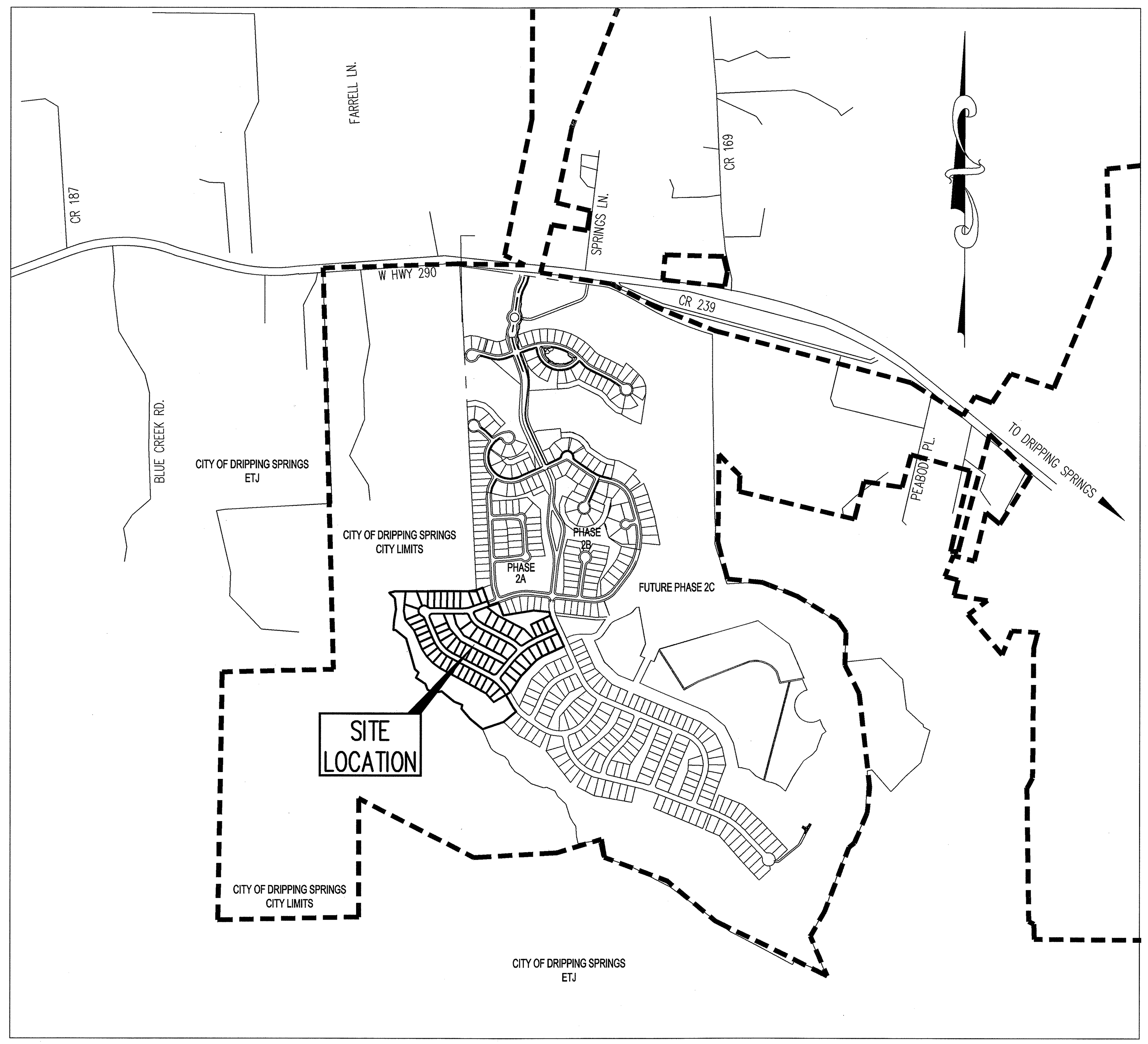
ALL RESPONSIBILITY FOR THE ADEQUACY OF THESE PLANS REMAINS WITH THE ENGINEER WHO PREPARED THEM. IN APPROVING THESE PLANS, THE CITY MUST RELY UPON THE ADEQUACY OF WORK OF THE DESIGN ENGINEER.

THIS DEVELOPMENT IS SUBJECT THE ARROWHEAD RANCH AGREEMENT DATED 02/14/2008 BETWEEN THE CITY OF DRIPPING SPRINGS AND FORESTAR REAL ESTATE GROUP RECORDED IN VOLUME 3330, PAGE 804, PUBLIC RECORDS OF HAYS COUNTY, TEXAS.

A WATER QUALITY BMP MAINTENANCE PLAN HAS BEEN PREPARED FOR THIS DEVELOPMENT AND IS RECORDED IN DOCUMENT # ____, PUBLIC RECORDS OF HAYS COUNTY, TEXAS

STREET TREES SHALL BE PLANTED IN EACH LOT PRIOR TO THE ISSUANCE OF A CERTIFICATE OF OCCUPANCY PER THE QUANTITY, SIZE AND LOCATION REQUIREMENTS OF SUBDIVISION ORDINANCE 28.06.051

NO.	DESCRIPTION	REVISE (R) ADD (A) VOID (V) SHEET NO's	TOTAL # SHEETS IN PLAN SET	CITY OF DRIPPING SPRINGS APPROVAL/DATE	EMERGENCY SERVICES DISTRICT #6 APPROVAL/DATE



LOCATION MAP
N.T.S.

BEING ALL OF THAT CERTAIN 27.758 ACRE TRACT OF LAND OUT OF AND A PART OF THE BENJAMIN F. HANNA SURVEY, ABSTRACT NUMBER 222, SITUATED IN HAYS COUNTY, TEXAS, SAID TRACT OF LAND BEING MORE PARTICULARLY DESCRIBED AS BEING A PORTION OF A CALLED 263.708 ACRE TRACT OF LAND CONVEYED TO TF ARROWHEAD RANCH, L.P., RECORDED IN DOCUMENT NUMBER 18005876 OF THE OFFICIAL PUBLIC RECORDS OF HAYS COUNTY, TEXAS (O.P.R.H.C.TX.)

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

SHEET INDEX

ELECTRICAL PLANS

UTILITY PROVIDERS: WATER – DRIPPING SPRINGS WATER SUPPLY
WASTEWATER – CITY OF DRIPPING SPRINGS

ENGINEER: CARLSON, BRIGANCE & DOERING, INC.
5501 WEST WILLIAM CANNON DRIVE
AUSTIN, TEXAS 78749
PHONE: (512) 280-5160 FAX: (512) 280-5165

OWNER: TF ARROWHEAD, L.P.
STARWOOD LAND VENTURES, LLC
6310 CAPITAL DRIVE, SUITE 130
BRADENTON, FL 34202

STATE OF TEXAS
RYAN WAYNE PERRY
130060
LICENSED
PROFESSIONAL ENGINEER

CARLSON, BRIGANCE, & DOERING, INC.
ID # F3791
[signature] 11/4/2019

DESIGNED BY:	DRAFTED BY:
DRJ	RH/TDC/PO

DATE
REVISION

Carlson, Brigance & Doering, Inc.
Civil Engineering ◆ Surveying
FIRM ID #F3791
Main Office: 5501 West William Cannon Dr. Austin, Texas 78749 Phone No. (512) 280-5160
North Office: 12129 RR 620 N., Ste. 600 Austin, Texas 78750 Fax No. (512) 280-5165

SHEET NAME: COVER
JOB NAME: ARROWHEAD RANCH PHASE 3
PROJECT: STREET, DRAINAGE, WATER, AND WASTEWATER IMPROVEMENTS

DATE: OCTOBER 2019
JOB NUMBER: 4999
SHEET: 1 OF 35
SHEET NO.: 1

SWPPP NOTES:

THIS PROJECT IS SUBJECT TO THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY'S (TCEQ) TEXAS POLLUTION DISCHARGE ELIMINATION SYSTEM (TPDES) GENERAL PERMIT TXR150000 FOR CONSTRUCTION ACTIVITIES. THE GENERAL PERMIT REQUIRES THE PREPARATION OF A STORM WATER POLLUTION PREVENTION PLAN (SWPPP), WHICH HAS BEEN PROVIDED BY THE OWNER FOR USE BY THE CONTRACTOR. THE OWNER SHALL PROVIDE THE OWNERS NOTICE OF INTENT (NOI) AND NOTICE OF TERMINATION (NOT) TO THE TCEQ. THE CONTRACTOR'S RESPONSIBILITIES ARE AS FOLLOWS:

1. MAINTAIN A COPY OF THE SWPPP AND A SET OF CONSTRUCTION PLANS WITH THE TEMPORARY EROSION AND SEDIMENT CONTROL PLAN AT THE WORK SITE AT ALL TIMES.
2. FILE A NOTICE OF INTENT (NOI) AND APPLICABLE PAYMENT TO THE TCEQ AT LEAST 2 DAYS PRIOR TO SITE DISTURBANCE.
3. POST A COPY OF THE OWNER'S AND CONTRACTOR'S NOI FORMS AT THE WORK SITE.
4. SIGN THE CERTIFICATION AND OBTAIN A SIGNED CERTIFICATION STATEMENT FROM ALL SUBCONTRACTORS RESPONSIBLE FOR IMPLEMENTING THE EROSION AND SEDIMENT CONTROL MEASURES WHICH INDICATES THAT THE CONTRACTOR AND SUBCONTRACTOR UNDERSTANDS THE PERMIT REQUIREMENTS (FORMS ARE IN THE SWPPP).
5. FOLLOW AND COMPLY WITH ALL ASPECTS OF THE TPDES GENERAL PERMIT NO. TXR15000. THIS INCLUDES BUT IS NOT LIMITED TO FIELD INSPECTIONS AND EROSION CONTROLS AND UPDATING EROSION CONTROL PLAN SHEETS BASED ON FIELD CHANGES AND MODIFICATIONS.
6. FILE A COPY OF THE CONTRACTOR'S NOT WITH THE TCEQ ONCE THE WORK IS COMPLETED IN ACCORDANCE WITH THE TPDES GENERAL PERMIT NO. TX150000 AND HAS BEEN ACCEPTED BY THE OWNER.

OWNER

TF ARROWHEAD, L.P.
STARWOOD LAND VENTURES, LLC
6310 CAPITAL DRIVE, SUITE 130
BRADENTON, FL 34202

OWNER'S REPRESENTATIVE RESPONSIBLE FOR PLAN ALTERATIONS:

CARLSON, BRIGANCE, & DOERING, INC.
DOUGLAS R. RUMMEL, Jr., P.E.
5501 WEST WILLIAM CANNON
AUSTIN, TEXAS 78749
PHONE#: (512) 280-5160

MAINTENANCE
PERSON OR FIRM RESPONSIBLE FOR
EROSION / SEDIMENTATION CONTROL:

CONTRACTOR:

MAINTENANCE
PERSON OR FIRM RESPONSIBLE FOR
TREE / NATURAL AREA PROTECTION:

CONTRACTOR:

SPOILS MANAGEMENT AND DISPOSAL NOTES:

1. TEMPORARY HOLDING SITES AS NECESSARY TO STOCKPILE EXCAVATED SOILS, EMBEDMENT MATERIAL, AND/OR PIPING AND APPURTENANCES MAY BE LOCATED WITHIN THE LIMITS OF CONSTRUCTION AS SHOWN ON THE PLANS.
2. NO PERMANENT SPOILS DISPOSAL SHALL BE ALLOWED ON-SITE, UNLESS APPROVED BY THE OWNER AND GOVERNING AUTHORITY.
3. ALL SPOILS MATERIALS SHALL BE DISPOSED OF BY THE CONTRACTOR AT TAN APPROVED SPOIL DISPOSAL SITE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING AND SECURING A PERMIT FOR THE SITE; AND SHALL NOTIFY THE OWNER AND/OR ENGINEER AT LEAST FORTY-EIGHT (48) HOURS PRIOR TO DISPOSAL OF ANY SPOILS MATERIAL.

EROSION / SEDIMENTATION CONTROL NOTES:

1. THE CONTRACTOR SHALL INSTALL EROSION / SEDIMENTATION CONTROLS AND TREE/NATURAL AREA PROTECTIVE FENCING PRIOR TO ANY SITE PREPARATION WORK (CLEARING, GRUBBING, OR EXCAVATION.)

2. THE PLACEMENT OF EROSION/SEDIMENTATION CONTROLS SHALL BE IN ACCORDANCE WITH THE EROSION AND SEDIMENTATION CONTROL PLAN, INCLUDING SPECIFICATIONS, SWPPP, AND CONTRIBUTING ZONE PLAN.

3. A PRE-CONSTRUCTION CONFERENCE SHALL BE HELD ON-SITE WITH THE CONTRACTOR, DESIGN ENGINEER, DEVELOPER, TCEQ, DRIPPING SPRINGS WSC, AND CITY INSPECTOR AFTER INSTALLATION OF THE EROSION/SEDIMENTATION CONTROL MEASURES AND PRIOR TO BEGINNING ANY SITE PREPARATION WORK. THE CONTRACTOR SHALL NOTIFY ALL PARTIES, LEAST THREE DAYS PRIOR TO THE MEETING DATE.

4. ANY MAJOR VARIATION IN MATERIALS OR LOCATIONS OF CONTROLS OR FENCES FROM THOSE SHOWN ON THE APPROVED PLANS WILL REQUIRE A REVISION AND MUST BE ADDED TO THE PLAN SHEET IN ACCORDANCE TO TCEQ AND THE SWPPP REQUIREMENTS. MINOR CHANCES TO BE MADE AS FIELD REVISIONS TO THE EROSION AND SEDIMENTATION CONTROL PLAN MAY BE REQUIRED BY AND AUTHORIZED AGENCY DURING THE COURSE OF CONSTRUCTION TO CORRECT CONTROL INADEQUACIES.

5. THE CONTRACTOR IS REQUIRED TO INSPECT THE CONTROLS AND FENCES AT WEEKLY INTERVALS AND AFTER SIGNIFICANT RAINFALL EVENTS TO INSURE THAT THEY ARE FUNCTIONING PROPERLY. THE PERSON(S) RESPONSIBLE FOR MAINTENANCE OF CONTROLS AND FENCES SHALL IMMEDIATELY MAKE ANY NECESSARY REPAIRS, SILT ACCUMULATION AT CONTROLS MUST BE REMOVED WHEN THE DEPTH REACHES A MAXIMUM OF SIX (6) INCHES.

6. PRIOR TO FINAL ACCEPTANCE BY THE CITY, HAUL ROADS AND WATERWAY CROSSINGS CONSTRUCTED FOR TEMPORARY CONTRACTOR ACCESS MUST BE REMOVED, ACCUMULATED SEDIMENT REMOVED FROM THE WATERWAY AND THE AREA RESTORED TO THE ORIGINAL GRADE AND REVEGETATED. ALL LAND CLEARING DEBRIS SHALL BE DISPOSED OF IN APPROVED SPOIL DISPOSAL SITES.

7. PERMANENT EROSION CONTROL:
ALL DISTURBED AREAS SHALL BE RESTORED AS NOTED BELOW:

-A MINIMUM OF FOUR INCHES OF TOPSOIL SHALL BE PLACED IN ALL UNPAVED, DISTURBED AREAS (EXCEPT ROCK).

8. THE SEEDING OF SODDING FOR PERMANENT EROSION CONTROL SHALL BE APPLIED OVER AREAS DISTURBED PER LANDSCAPE PLANS.

AMERICANS WITH DISABILITIES ACT

1.) THE CITY OF DRIPPING SPRINGS HAS REVIEWED THESE PLANS FOR COMPLIANCE WITH CITY DEVELOPMENT REGULATIONS ONLY. THE APPLICANT, PROPERTY OWNER, AND OCCUPANT OF THE PREMISES ARE RESPONSIBLE FOR DETERMINING WHETHER THE PLAN COMPLIES WITH ALL OTHER LAWS, REGULATIONS, AND RESTRICTIONS WHICH MAY BE APPLICABLE TO THE PROPERTY AND ITS USE.

2.) SLOPES ON ACCESSIBLE ROUTES MAY NOT EXCEED 1:20 UNLESS DESIGNED AS A RAMP.

3.) THE MAXIMUM SLOPES OF A RAMP IN NEW CONSTRUCTION IS 1:12. THE MAXIMUM RISE FOR ANY RAMP IS 30 INCHES.

4.) ACCESSIBILITY ROUTE MUST HAVE A CROSS-SLOPE NO GREATER THAN 1:50.

5.) GROUND SURFACES ALONG ACCESSIBLE ROUTES MUST BE STABLE, FIRM, AND SLIP RESISTANT.

6.) THESE PLANS HAVE BEEN DESIGNED WITH THE INTENTIONS TO COMPLY WITH ADA AND TAS STANDARDS, REQUIREMENTS, AND REGULATIONS.

FILE PATH:J:\AC3D\4999\dwg\4999-GENERAL NOTES.dwg - Oct 31, 2019 - 7:41am

DEVELOPER INFORMATION:

TF ARROWHEAD, L.P.
STARWOOD LAND VENTURES, LLC
6310 CAPITAL DRIVE, SUITE 130
BRADENTON, FL 34202

CONSTRUCTION SEQUENCING:

1.) COORDINATE ALL START-UP WORK WITH OWNER AND GOVERNING AGENCIES.

2.) INSTALL TEMPORARY EROSION AND SEDIMENTATION CONTROLS PER APPROVED PLANS, SILT, AND SEDIMENT SHALL BE REMOVED AFTER ANY SIGNIFICANT RAINFALL OR WHEN THE DEPTH OF SILT/SEDIMENT IS 6" MAX AT ANY ROCK BERM, INLET PROTECTION, OR SILT FENCE.

3.) CONTACT THE OWNER, ENGINEER, CITY, TCEQ, AND UTILITY COMPANIES TO ARRANGE A PRE-CONSTRUCTION MEETING AT LEAST 3 DAYS IN ADVANCE OF STARTING CONSTRUCTION.

4.) CONSTRUCT BMP'S.

5.) INSTALL UTILITY IMPROVEMENTS.

6.) HYDROMULCH OR SOD AND STABILIZE ALL DISTURBED AREAS AND CLEAN UP SITE.

7.) SCHEDULE FINAL INSPECTIONS.

8.) COMPLETE PERMANENT EROSION CONTROL AND SITE RESTORATION.

9.) UPON COMPLETION OF SITE IMPROVEMENTS, CONTRACTOR SHALL SCHEDULE FINAL INSPECTION WITH CITY INSPECTOR PRIOR AND DRIPPING SPRINGS WSC TO REMOVAL OF EROSION CONTROLS. THIS WILL THEN BE SUBMITTED TO THE CITY OF DRIPPING SPRINGS FOR APPROVAL BEFORE THE FINAL CERTIFICATE OF OCCUPANCY.

10.) FINAL CLEANING OF EROSION AND SEDIMENTATION CONTROLS. THIS SHALL OCCUR PRIOR TO FINAL PAYMENT.

11.) REMOVE TEMPORARY EROSION AND SEDIMENTATION CONTROLS. RESTORE ANY AREAS DISTURBED DURING REMOVAL OF EROSION/SEDIMENTATION CONTROLS.

12.) DISPOSE OF ALL CONSTRUCTION DEBRIS AND TRASH. HYDROMULCH AND/OR STABILIZE ANDY DISTURBED AREAS FOLLOWING SITE CLEANUP.

GENERAL NOTES:

1.) USE 'ONE CALL' UTILITY SYSTEM: DIAL **1-800-DIG-TESS** 48 HOURS BEFORE YOU DIG. CONTRACTOR WILL ALSO NOTIFY ALL OTHER UTILITY PROVIDERS THAT ARE NOT NOTIFIED BY THE ONE CALL SYSTEM.

2.) ALL STORM SEWER SHALL BE CLASS III RCP, UNLESS NOTED OTHERWISE.

3.) ALL SLOPES SHALL BE SODDED OR SEEDED WITH THE APPROPRIATE GRASS, GRASS MIXTURES, OR GROUND COVER, SUITABLE TO THE AREA AND SEASON TO WHICH THEY ARE APPLIED.

4.) SILT FENCES, ROCK BERMS AND SIMILARLY RECOGNIZED TECHNIQUES AND MATERIALS SHALL BE EMPLOYED DURING CONSTRUCTION TO PREVENT POINT SOURCE SEDIMENTATION LOADING OF DOWNSTREAM FACILITIES. SUCH INSTALLATION SHALL BE REGULARLY INSPECTED FOR EFFECTIVENESS. ADDITIONAL MEASURES MAY BE REQUIRED.

5.) ALL TEMPORARY EROSION CONTROL MEASURES SHALL NOT BE REMOVED UNTIL FINAL INSPECTION AND APPROVAL OF THE PROJECT BY THE ENGINEER.

6.) IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO MAINTAIN ALL TEMPORARY EROSION CONTROL STRUCTURES AND TO REMOVE EACH STRUCTURE AS APPROVED BY THE ENGINEER.

7.) LINE FLUSHING OR ANY ACTIVITY USING LARGE QUANTITIES OF WATER MUST BE SCHEDULED WITH THE WATER AND WASTEWATER SUPERINTENDENT OF THE CITY OF DRIPPING SPRINGS AND DRIPPING SPRINGS WATER SUPPLY CORPORATION. ADDITIONALLY, CONTACT SCOTT MANUEL AT STES.

8.) THE CONTRACTOR SHALL PROVIDE THE OFFICE OF DSWSC, (512) 858-7897, NO LESS THAN 24 HOURS NOTICE PRIOR TO DISINFECTING, PERFORMING STERILIZATION, QUALITY TESTING, OR PRESSURE TESTING.

9.) THE CONTRACTOR SHALL NOT OPEN OR CLOSE ANY VALVES UNLESS AUTHORIZED BY THE DRIPPING SPRINGS WSC.

10.) THE CONTRACTOR SHALL CONTACT DIG TESS CALL SYSTEM AT **1-800-DIG-TESS** FOR EXISTING UTILITY LOCATIONS AND SHALL ALSO NOTIFY ALL OTHER UTILITY PROVIDERS THAT ARE NOT NOTIFIED BY THE ONE CALL SYSTEM. PRIOR TO ANY EXCAVATION ON ADVANCE OF CONSTRUCTION. THE CONTRACTOR SHALL VERIFY THE LOCATIONS AND EXISTING ELEVATIONS OF ALL UTILITIES TO BE EXTENDED, TIED TO, ALTERED, OR SUBJECT TO CHANGE/INCONVENIENCE BY CONSTRUCTION OPERATIONS. THE CITY OF DRIPPING SPRINGS WASTEWATER AND DRIPPING SPRINGS WSC MAINTENANCE RESPONSIBILITY ENDS AT ROW/EASEMENT LINES.

11.) ALL MATERIAL TESTS, INCLUDING SOIL DENSITY TESTS AND RELATED SOIL ANALYSIS, SHALL BE ACCOMPLISHED BY AN INDEPENDENT LABORATORY, IN ADDITION TO INSPECTION BY CITY OF DRIPPING SPRINGS WSC, FUNDED BY THE DEVELOPER IN ACCORDANCE WITH THE SPECIFICATIONS.

12.) AS-BUILT PLANS ARE REQUIRED FROM THE CONTRACTOR AT THE CONCLUSION OF THE SITE WORK SHOWING ALL REVISIONS.

13.) SEE DSWSC GENERAL CONSTRUCTION NOTE 18 FOR CONSTRUCTION OF ELECTRIC DISTRIBUTION LINE UNDER WATER LINES.

UTILITY CONSTRUCTION NOTES:

1.) THE OWNER, CARLSON, BRIGANCE, & DOERING, INC., AND THEIR REPRESENTATIVES, IN PREPARING THESE PLANS HAVE ATTEMPTED TO LOCATE ALL EXISTING UTILITIES IN THE AREAS OF NEW CONSTRUCTION. HOWEVER, THERE MAY BE UTILITIES THAT WERE NOT OR COULD NOT BE LOCATED. UNDERGROUND UTILITIES SHOWN ON THE PLANS ARE IN APPROXIMATE LOCATIONS ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATIONS AND ELEVATIONS OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK. THE CONTRACTOR SHALL CALL ALL APPROPRIATE UTILITY COMPANIES FOR LOCATIONS OF THEIR UTILITIES AT LEAST 2 WORKING DAYS BEFORE COMMENCING EXCAVATION. IN THE EVENT THAT A UTILITY IS SITUATED SUCH THAT CONSTRUCTION CANNOT PROCEED AS SHOWN ON THE PLANS, THE OWNER AND DOUCET & ASSOCIATES, INC. SHALL BE NOTIFIED IMMEDIATELY BY PHONE AND IN WRITING.

2.) THE CONTRACTOR IS RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH OCCUR DUE TO HIS FAILURE TO LOCATE AND PRESERVE ANY AND ALL UTILITIES.

3.) CONTRACTOR SHALL COORDINATE INSPECTION OF UTILITY LINES WITH APPROPRIATE AUTHORITIES PRIOR TO AND AFTER BACKFILLING TRENCHES, AS NECESSARY.

4.) WASTEWATER LINES LOCATED ON-SITE, AND IN PUBLIC EASEMENTS AND 'RIGHT-OF-WAY' SHALL MEET CITY OF DRIPPING SPRINGS REQUIREMENTS. THE PIPE SHALL BE PVC, ASTM SDR-26 WITH INTEGRAL BELL, BELL & SPIGOT TYPE JOINS (WITH RUBBER GASKETS), UNLESS OTHERWISE NOTED. INFILTRATION AND/OR EXFILTRATION AND/OR LOW PRESSURE AIR TESTS AND DEFLECTION TESTS SHALL BE IN ACCORDANCE WITH CITY OF DRIPPING SPRINGS REQUIREMENTS AND TEXAS COMMISSION ON ENVIRONMENTAL QUALITY (TCEQ) RULES AS FOLLOWS:

- SEE TESTING REQUIREMENTS FOR INSTALLATION OF GRAVITY COLLECTION SYSTEM PIPES IN SECTION 217.57 AND 217.58.

- SEE TESTING REQUIREMENTS FOR MANHOLES IN TCEQ CHAPTER 217 SUBCHAPTER "C" FOR CONVENTIONAL COLLECTION SYSTEMS.

5.) LOCATION OF WATERLINES. THE FOLLOWING RULES APPLY TO INSTALLATIONS OF WATERLINES, WASTEWATER MAINS OR LATERALS, AND OTHER CONVEYANCES/APPURTENANCES IDENTIFIED AS POTENTIAL SOURCES OF CONTAMINATION. FURTHERMORE, ALL RATINGS SPECIFIED SHALL BE DEFINED BY ASTM OR AWWA STANDARDS UNLESS STATED OTHERWISE. NEW MAINS, SERVICE LINES, OR LATERALS ARE THOSE THAT ARE INSTALLED WHERE NO MAIN, SERVICE LINE, OR LATERAL PREVIOUSLY EXISTED, OR WHERE EXISTING MAINS, SERVICE LINES, OR LATERALS ARE REPLACED WITH PIPES OF DIFFERENT SIZE OR MATERIAL.

(1) WHEN NEW POTABLE WATER DISTRIBUTION LINES ARE CONSTRUCTED, THEY SHALL BE INSTALLED NO CLOSER THAN NINE FEET IN ALL DIRECTIONS TO WASTEWATER COLLECTION FACILITIES. ALL SEPARATION DISTANCES SHALL BE MEASURED FROM THE OUTSIDE SURFACE OF EACH OF THE RESPECTIVE PIECES.

(2) POTABLE WATER DISTRIBUTION LINES AND WASTEWATER MAINS OR LATERALS THAT FORM PARALLEL UTILITY LINES SHALL BE INSTALLED IN SEPARATE TRENCHES.

(3) NO PHYSICAL CONNECTION SHALL BE MADE BETWEEN A DRINKING WATER SUPPLY AND A SEWER LINE. ANY APPURTENANCE SHALL BE DESIGNED AND CONSTRUCTED SO AS TO PREVENT ANY POSSIBILITY OF SEWAGE ENTERING THE DRINKING WATER SYSTEM.

(4) WHERE THE NINE-FOOT SEPARATION DISTANCE CANNOT BE ACHIEVED, THE FOLLOWING CRITERIA SHALL APPLY.

(A) NEW WATERLINE INSTALLATION - PARALLEL LINES.

(I) WHERE A NEW POTABLE WATERLINE PARALLELS AN EXISTING, NON-PRESSURE OR PRESSURE RATED WASTEWATER MAIN OR LATERAL AND THE LICENSED PROFESSIONAL ENGINEER LICENSED IN THE STATE OF TEXAS IS ABLE TO DETERMINE THAT THE EXISTING WASTEWATER MAIN OR LATERAL IS NOT LEAKING, THE NEW POTABLE WATERLINE SHALL BE LOCATED AT LEAST TWO FEET ABOVE THE EXISTING WASTEWATER MAIN OR LATERAL, MEASURED VERTICALLY, AND AT LEAST FOUR FEET AWAY, MEASURED HORIZONTALLY, FROM THE EXISTING WASTEWATER MAIN OR LATERAL. EVERY EFFORT SHALL BE EXERTED NOT TO DISTURB THE BEDDING AND BACKFILL OF THE EXISTING WASTEWATER MAIN OR LATERAL.

(II) WHERE A NEW POTABLE WATERLINE PARALLELS AN EXISTING PRESSURE-RATED WASTEWATER MAIN OR LATERAL AND IT CANNOT BE DETERMINED BY THE LICENSED PROFESSIONAL ENGINEER IF THE EXISTING LINE IS LEAKING, THE EXISTING WASTEWATER MAIN OR LATERAL SHALL BE REPLACED WITH AT LEAST 150 PSI PRESSURE-RATED PIPE. THE NEW POTABLE WATERLINE SHALL BE LOCATED AT LEAST TWO FEET ABOVE THE NEW WASTEWATER LINE, MEASURED VERTICALLY, AND AT LEAST FOUR FEET AWAY, MEASURED HORIZONTALLY, FROM THE REPLACED WASTEWATER MAIN OR LATERAL.

(III) WHERE A NEW POTABLE WATERLINE PARALLELS A NEW WASTEWATER MAIN, THE WASTEWATER MAIN OR LATERAL SHALL BE CONSTRUCTED OF AT LEAST 150 PSI PRESSURE-RATED PIPE. THE NEW POTABLE WATERLINE SHALL BE LOCATED AT LEAST TWO FEET ABOVE THE WASTEWATER MAIN OR LATERAL, MEASURED VERTICALLY, AND AT LEAST FOUR FEET AWAY, MEASURED HORIZONTALLY, FROM THE WASTEWATER MAIN OR LATERAL.

(B) NEW WATERLINE INSTALLATION - CROSSING LINES.

(I) WHERE A NEW POTABLE WATERLINE CROSSES ABOVE A WASTEWATER MAIN OR LATERAL, THE SEGMENT OF THE WATERLINE PIPE SHALL BE CENTERED OVER AND MUST BE PERPENDICULAR TO THE WASTEWATER MAIN OR LATERAL SUCH THAT THE JOINTS OF THE WATERLINE PIPE ARE EQUIDISTANT AND AT LEAST NINE FEET HORIZONTALLY FROM THE CENTERLINE OF THE WASTEWATER MAIN OR LATERAL. WHEN CROSSING AN EXISTING WASTEWATER MAIN OR LATERAL AND IT IS DISTURBED OR SHOWS SIGNS OF LEAKING, THE WASTEWATER MAIN OR LATERAL SHALL BE REPLACED FOR AT LEAST NINE FEET IN BOTH DIRECTIONS (18 FEET TOTAL) WITH AT LEAST 150 PSI PRESSURE-RATED PIPE EMBEDDED IN CEMENT STABILIZED SAND (SEE CLAUSE (V) OF THIS SUBPARAGRAPH) FOR THE TOTAL LENGTH OF ONE PIPE SEGMENT PLUS 12 INCHES BEYOND THE JOINT ON EACH END.

(I) THE POTABLE WATERLINE SHALL BE AT LEAST TWO FEET ABOVE AN EXISTING, NON-PRESSURE RATED WASTEWATER MAIN OR LATERAL.

(II) THE POTABLE WATERLINE SHALL BE AT LEAST SIX INCHES ABOVE AN EXISTING, PRESSURE-RATED WASTEWATER MAIN OR LATERAL.

(II) WHERE A NEW POTABLE WATERLINE CROSSES A NEW, NON-PRESSURE RATED WASTEWATER MAIN OR LATERAL, THE SEGMENT OF THE WATERLINE PIPE SHALL BE CENTERED OVER AND SHALL BE PERPENDICULAR TO THE WASTEWATER MAIN OR LATERAL SUCH THAT THE JOINTS OF THE WATERLINE PIPE ARE EQUIDISTANT AND AT LEAST NINE FEET HORIZONTALLY FROM THE CENTERLINE OF THE WASTEWATER MAIN OR LATERAL. THE POTABLE WATERLINE SHALL BE AT LEAST TWO FEET ABOVE THE WASTEWATER MAIN OR LATERAL. WHENEVER POSSIBLE, THE CROSSING SHALL BE CENTERED BETWEEN THE JOINTS OF THE WASTEWATER MAIN OR LATERAL. THE WASTEWATER PIPE SHALL HAVE A MINIMUM PIPE STIFFNESS OF 115 PSI AT 5.0% DEFLECTION. THE WASTEWATER MAIN OR LATERAL SHALL BE EMBEDDED IN CEMENT STABILIZED SAND (SEE CLAUSE (V) OF THIS SUBPARAGRAPH) FOR THE TOTAL LENGTH OF ONE PIPE SEGMENT PLUS 12 INCHES BEYOND THE JOINT ON EACH END. THE MATERIALS AND METHOD OF INSTALLATION SHALL CONFORM TO ONE OF THE FOLLOWING OPTIONS:

(I) WITHIN NINE FEET HORIZONTALLY OF EITHER SIDE OF THE WATERLINE, THE WASTEWATER PIPE AND JOINTS SHALL BE CONSTRUCTED WITH PIPE MATERIAL HAVING A MINIMUM PRESSURE RATING OF AT LEAST 150 PSI. AN ABSOLUTE MINIMUM VERTICAL SEPARATION DISTANCE OF TWO FEET SHALL BE PROVIDED. THE WASTEWATER MAIN OR LATERAL SHALL BE LOCATED BELOW THE WATERLINE.

(II) ALL SECTIONS OF WASTEWATER MAIN OR LATERAL WITHIN NINE FEET HORIZONTALLY OF THE WATERLINE SHALL BE ENCASED IN AN 18-FOOT (OR LONGER) SECTION OF PIPE. FLEXIBLE ENCASING PIPE SHALL HAVE A MINIMUM PIPE STIFFNESS OF 115 PSI AT 5.0% DEFLECTION. THE ENCASING PIPE SHALL BE CENTERED ON THE WATERLINE AND SHALL BE AT LEAST TWO NOMINAL PIPE DIAMETERS LARGER THAN THE WASTEWATER MAIN OR LATERAL. THE SPACE AROUND THE CARRIER PIPE SHALL BE SUPPORTED AT FIVE-FOOT (OR LESS) INTERVALS WITH SPACERS OR BE FILLED TO THE SPRINGLINE WITH WASHED SAND. EACH END OF THE CASING SHALL BE SEALED WITH WATERTIGHT NON-SHRINK CEMENT GROUT OR A MANUFACTURED WATERTIGHT SEAL. AN ABSOLUTE MINIMUM SEPARATION DISTANCE OF SIX INCHES BETWEEN THE ENCASEMENT PIPE AND THE WATERLINE SHALL BE PROVIDED. THE WASTEWATER LINE SHALL BE LOCATED BELOW THE WATERLINE.

(III) WHEN A NEW WATERLINE CROSSES UNDER A WASTEWATER MAIN OR LATERAL, THE WATERLINE SHALL BE ENCASED AS DESCRIBED FOR WASTEWATER MAINS OR LATERALS IN CLAUSE (II) OF THIS SUBPARAGRAPH OR CONSTRUCTED OF DUCTILE IRON OR STEEL PIPE WITH MECHANICAL OR WELDED JOINTS AS APPROPRIATE. AN ABSOLUTE MINIMUM SEPARATION DISTANCE OF ONE FOOT BETWEEN THE WATERLINE AND THE WASTEWATER MAIN OR LATERAL SHALL BE PROVIDED. WHEN A NEW WATERLINE CROSSES UNDER A WASTEWATER MAIN, THE **PROCEDURES IN §217.53(D) OF THIS TITLE (RELATING TO PIPE DESIGN) MUST BE** FOLLOWED.

(IV) WHERE A NEW POTABLE WATERLINE CROSSES A NEW, PRESSURE RATED WASTEWATER MAIN OR LATERAL, ONE SEGMENT OF THE WATERLINE PIPE SHALL BE CENTERED OVER AND SHALL BE PERPENDICULAR TO THE WASTEWATER LINE SUCH THAT THE JOINTS OF THE WATERLINE PIPE ARE EQUIDISTANT AND AT LEAST NINE FEET HORIZONTALLY FROM THE CENTER LINE OF THE WASTEWATER MAIN OR LATERAL. THE POTABLE WATERLINE SHALL BE AT LEAST SIX INCHES ABOVE THE WASTEWATER MAIN OR LATERAL. WHENEVER POSSIBLE, THE CROSSING SHALL BE CENTERED BETWEEN THE JOINTS OF THE WASTEWATER MAIN OR LATERAL. THE WASTEWATER PIPE SHALL HAVE A MINIMUM PRESSURE RATING OF AT LEAST 150 PSI. THE WASTEWATER MAIN OR LATERAL SHALL BE EMBEDDED IN CEMENT STABILIZED SAND (SEE CLAUSE (V) OF THIS SUBPARAGRAPH) FOR THE TOTAL LENGTH OF ONE PIPE SEGMENT PLUS 12 INCHES BEYOND THE JOINT ON EACH END.

(V) WHERE CEMENT STABILIZED SAND BEDDING IS REQUIRED, THE CEMENT STABILIZED SAND SHALL HAVE A MINIMUM OF 10% CEMENT PER CUBIC YARD OF CEMENT STABILIZED SAND MIXTURE, BASED ON LOOSE DRY WEIGHT VOLUME (AT LEAST 2.5 BAGS OF CEMENT PER CUBIC YARD OF MIXTURE). THE CEMENT STABILIZED SAND BEDDING SHALL BE A MINIMUM OF SIX INCHES ABOVE AND FOUR INCHES BELOW THE WASTEWATER MAIN OR LATERAL. THE USE OF BROWN COLORING IN CEMENT STABILIZED SAND FOR WASTEWATER MAIN OR LATERAL BEDDING IS RECOMMENDED FOR THE IDENTIFICATION OF PRESSURE RATED WASTEWATER MAINS DURING FUTURE CONSTRUCTION.

(5) WATERLINE AND WASTEWATER MAIN MANHOLE OR LATERAL MANHOLE OR CLEANOUT SEPARATION. THE SEPARATION DISTANCE FROM A POTABLE WATERLINE TO A WASTEWATER MAIN MANHOLE OR LATERAL MANHOLE OR CLEANOUT SHALL BE A MINIMUM OF NINE FEET. WHERE THE NINE-FOOT SEPARATION DISTANCE CANNOT BE ACHIEVED, THE POTABLE WATERLINE SHALL BE ENCASED IN A JOINT OF AT LEAST 150 PSI PRESSURE CLASS PIPE AT LEAST 18 FEET LONG AND TWO NOMINAL SIZES LARGER THAN THE NEW CONVEYANCE. THE SPACE AROUND THE CARRIER PIPE SHALL BE SUPPORTED AT FIVE-FOOT INTERVALS WITH SPACERS OR BE FILLED TO THE SPRINGLINE WITH WASHED SAND. THE ENCASEMENT PIPE SHALL BE CENTERED ON THE CROSSING AND BOTH ENDS SEALED WITH CEMENT GROUT OR MANUFACTURED SEALANT.

(6) LOCATION OF FIRE HYDRANTS. FIRE HYDRANTS SHALL NOT BE INSTALLED WITHIN NINE FEET VERTICALLY OR HORIZONTALLY OF ANY WASTEWATER MAIN, WASTEWATER LATERAL, OR WASTEWATER SERVICE LINE REGARDLESS OF CONSTRUCTION.

(7) LOCATION OF POTABLE OR RAW WATER SUPPLY OR SUCTION LINES. SUCTION MAINS TO PUMPING EQUIPMENT SHALL NOT CROSS WASTEWATER MAINS, WASTEWATER LATERALS, OR WASTEWATER SERVICE LINES. RAW WATER SUPPLY LINES SHALL NOT BE INSTALLED WITHIN FIVE FEET OF ANY TILE OR CONCRETE WASTEWATER MAIN, WASTEWATER LATERAL, OR WASTEWATER SERVICE LINE.

(8) PROXIMITY OF SEPTIC TANK DRAINFIELDS. WATERLINES SHALL NOT BE INSTALLED CLOSER THAN TEN FEET TO SEPTIC TANK DRAINFIELDS

6.) WATER LINE/MANHOLE SEPARATION. UNLESS SANITARY SEWER MANHOLES AND THE CONNECTING SEWER CAN BE MADE WATERTIGHT AND TESTED FOR NO LEAKAGE, THEY MUST BE INSTALLED SO AS TO PROVIDE A MINIMUM OF NINE FEET OF HORIZONTAL CLEARANCE FROM AN EXISTING OR PROPOSED WATERLINE. WHERE THE NINE FOOT SEPARATION DISTANCE CANNOT BE ACHIEVED, A CARRIER PIPE AS DESCRIBED IN 5 (D) MAY BE USED WHERE APPROPRIATE.

7.) WATER LINE SHALL BE PVC AWWA C900 DR14, CLASS 200, OR D.I. PIPE, CLASS 350 UNLESS OTHERWISE NOTED ON PRIVATE LINES. WATER LINES SHALL BE INSTALLED AS PER TCEQ CHAPTER 290.44 WATER DISTRIBUTION REQUIREMENTS.

8.) CONTRACTOR SHALL COMPLY WITH THE LATEST OSHA STANDARDS OR DIRECTIVES OR ANY OTHER AGENCY HAVING JURISDICTION FOR EXCAVATION AND TRENCHING PROCEDURES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DESIGN AND MAINTENANCE OF ALL SUPPORT SYSTEMS, SLOPING, BENCHING, AND OTHER MEANS OF PROTECTION.

9.) THE TOP ELEVATION OF MANHOLES IN PAVED AND UNPAVED AREAS SHALL MATCH FINISHED GRADE.

10.) THRUST BLOCKING AND RESTRAINTS SHALL BE USED AT ALL WATER LINE TEES, BENDS, DEAD ENDS, ETC. ONLY RESTRAINTS SHALL BE USED IN FILL AREAS.

11.) CONTRACTOR SHALL MAINTAIN A MINIMUM OF 36" COVER ON ALL DSWSC WATERLINES.

12.) UNDERGROUND LINES SHALL BE INSTALLED, INSPECTED, AND APPROVED BY APPROPRIATE UTILITY AUTHORITY BEFORE BACKFILLING.

13.) ALL CONCRETE FOR ENCASEMENTS SHALL HAVE A MINIMUM 28 DAY COMPRESSION STRENGTH AT 3,500 PSI.

14.) EXISTING UTILITIES SHALL BE VERIFIED IN FIELD PRIOR TO INSTALLATION OF ANY NEW LINES.

15.) CONTRACTOR SHALL CONTACT THE DRIPPING SPRINGS WATER SUPPLY CORPORATION AND THE CITY OF DRIPPING SPRINGS FOR SPECIFICATIONS AND AN APPROVED PRODUCTS LIST (IF SUCH LIST EXISTS), PARTICULARLY FOR VALVES, VALVE BOXES, FIRE HYDRANTS, AND ALL OTHER WATER LINE AND WASTEWATER LINE APPURTENANCES.

16.) THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES AS SHOWN ON THESE PLANS IS BASED ON RECORDS OF THE VARIOUS UTILITY COMPANIES, AND WHERE POSSIBLE, MEASUREMENTS TAKEN IN THE FIELD. THE INFORMATION IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE. THE CONTRACTOR MUST CALL THE APPROPRIATE UTILITY COMPANIES AT LEAST 2 WORKING DAY BEFORE ANY EXCAVATION TO REQUEST EXACT FIELD LOCATION OF UTILITIES. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES WHICH CONFLICT WITH PROPOSED IMPROVEMENTS SHOWN ON THESE PLANS.

17.) DRAWINGS DO NOT PURPOSE TO SHOW ALL EXISTING UTILITIES.

18.) ALL FILL MATERIAL IS TO BE IN PLACED AND COMPACTED BEFORE INSTALLATION OF PROPOSED UTILITIES, EXCEPT WHERE TRENCH CUT IS 4' BELOW EXISTING GRADE AND FILL AT THIS TYPE LOCATION IS DESIGNED TO BE 2' OR MORE ABOVE EXISTING GRADE.

19.) THE UPPER PORTION OF UTILITY EXCAVATIONS SHOULD BE BACKFILLED WITH PROPERLY COMPACTED CLAYEY SOILS TO MINIMIZE INFILTRATION OF SURFACE WATER. CLAY "PLUG" SHALL BE PROVIDED IN THE TRENCH ON THE EXTERIOR OF THE BUILDING TO PREVENT WATER FROM GAINING ACCESS ALONG THE TRENCH TO THE SUBGRADE BENEATH THE STRUCTURE.

20.) ALL NECESSARY INSPECTIONS AND/OR CERTIFICATIONS REQUIRED BY CODES AND/OR UTILITY SERVICE COMPANIES SHALL BE PERFORMED PRIOR TO BUILDING POSSESSION OR OCCUPANCY AND THE FINAL CONNECTION OF UTILITY SERVICES.

CITY OF DRIPPING SPRINGS
STANDARD WASTEWATER CONSTRUCTION NOTES
(OCT. 2018)

1.) ALL WASTEWATER LINES SHALL BE CONSTRUCTED IN ACCORDANCE WITH CITY OF AUSTIN AND TCEQ 30 TAC, CHAPTER 217 REQUIREMENTS.

2.) CONTRACTOR SHALL GUARANTEE THE WORK AGAINST DEFECTIVE WORKMANSHIP AND MATERIALS FOR A PERIOD OF TWO YEARS FROM THE DATE OF FINAL ACCEPTANCE OF THE WORK BY THE CITY OF DRIPPING SPRINGS.

3.) BEDDING FOR GRAVITY WASTEWATER LINES, FORCE MAINS, AND TREATED EFFLUENT LINES SHALL BE ¾" TO 1" ROCK WITH A 6 OUNCE NON-WOVEN GEOTEXTILE FABRIC, MEETING EITHER TXDOT DMS 6200 OR TYPE 1 COA 620S, PLACED OVER THE BEDDING. CONTRACTOR SHALL PROVIDE A MINIMUM 5 GALLON BUCKET SAMPLE OF THE PROPOSED BEDDING MATERIAL FOR CITY OF DRIPPING SPRINGS APPROVAL.

4.) WHEN GROUNDWATER IS ENCOUNTERED DURING CONSTRUCTION, RECOMMENDATIONS ON BEDDING AND BACKFILL SHALL BE PROVIDED BY A GEOTECHNICAL ENGINEER BEFORE PROCEEDING WITH CONSTRUCTION. ALL RECOMMENDATIONS SHALL BE APPROVED BY THE CITY OF DRIPPING SPRINGS.

5.) CONTRACTOR SHALL ADHERE TO CITY OF AUSTIN STANDARD 1100S-1 FOR WASTEWATER MANHOLE RING ADJUSTMENTS IN PAVED AREAS.

6.) GRAVITY WASTEWATER LINES SHALL BE PVC SDR 26 ASTM D3034 IF LOCATED GREATER THAN 9 FEET FROM A WATERLINE. IF LESS THAN 9 FEET (OUTSIDE OF PIPE TO OUTSIDE OF PIPE) FROM ANY WATER LINE, PIPE SHALL BE PVC SDR 26 ASTM D2241 PRESSURE RATED PIPE.

7.) FORCE MAINS SHALL BE MINIMUM PVC SDR 26 ASTM D2241 PRESSURE RATED PIPE IN BROWN POLY BAG.

8.) TREATED EFFLUENT LINES SHALL BE MINIMUM PVC SDR 21 ASTM D2241 PURPLE PRESSURE RATED PIPE.

9.) ALL WASTEWATER MANHOLES ARE TO BE COATED WITH CEMENTITIOUS LINING (SEWPERCOAT OR APPROVED EQUAL) PER CITY OF AUSTIN REQUIREMENTS. EXISTING MANHOLES WHERE CONNECTIONS ARE MADE TO THE CITY SEWER SYSTEM SHALL BE COATED OR RECOATED AFTER CONNECTIONS ARE MADE.

10.) ENGINEER AND CONTRACTOR SHALL COORDINATE WITH THE DRIPPING SPRINGS WSC REGARDING WATER LINE AND WATER SERVICE LINE CROSSINGS.

11.) CONTRACTOR SHALL INSTALL BOLTED MANHOLE LIDS ON ALL MANHOLES OUTSIDE PAVEMENT.

12.) WASTEWATER MANHOLE LIDS SHALL HAVE "SANITARY SEWER" CAST IN THE LID.

13.) CITY OF DRIPPING SPRINGS INSPECTOR SHALL OBSERVE INSTALLATION OF ALL TAPS ONTO WASTEWATER LINES.

14.) CITY OF DRIPPING SPRINGS INSPECTOR SHALL BE NOTIFIED 48 HOURS PRIOR TO ALL UTILITY LINE TESTING BY CALLING THE CITY **(512) 858-4725** OR THE DESIGNATED INSPECTOR IDENTIFIED AT THE PRECONSTRUCTION MEETING.

15.) CONTRACTOR SHALL PERFORM THE FOLLOWING TESTING ON ALL TYPES OF WASTEWATER IMPROVEMENTS AT HIS EXPENSE:

- A. GRAVITY WASTEWATER LINES AND SERVICES - LOW PRESSURE AIR TEST.
- B. GRAVITY WASTEWATER LINES - MANDREL DEFLECTION TESTING AFTER 30 DAYS OF FINAL BACKFILL.
- C. GRAVITY WASTEWATER LINES - TELEVISED UPON COMPLETION OF CONSTRUCTION AND PRIOR TO PAVING. CONTRACTOR SHALL PROVIDE THE VIDEOS OF THE PIPES TO THE CITY OF DRIPPING SPRINGS PRIOR TO ACCEPTANCE.
- D. WASTEWATER MANHOLES - VACUUM TEST @ 10 PSI FOR 3 MINUTES. NO VACUUM TESTING WILL BE ACCEPTED BY THE CITY OF DRIPPING SPRINGS UNTIL COMPLETION OF MINIMUM FIRST COURSE OF BASE IS INSTALLED.
- E. FORCE MAINS AND TREATED EFFLUENT LINES - HYDROSTATICALLY TEST TO A MINIMUM OF 1.5 TIMES WORKING PRESSURE FOR 24 HOURS.
- F. EXISTING WASTEWATER FACILITIES - PRETEST AND POST TEST EXISTING LINES AND MANHOLES WHEN CONNECTING TO EXISTING FACILITIES.

GENERAL CONSTRUCTION NOTES
CITY OF DRIPPING SPRINGS

1.) AT THE END OF THE JOB, A SET OF AS-BUILTS AND A CONCURRENCE LETTER FROM THE DESIGN ENGINEER ARE REQUIRED TO BE SUBMITTED TO THE CITY OF DRIPPING SPRINGS AND DRIPPING SPRINGS WSC.
2.) ALL REVISIONS TO THE SITE PLAN MUST BE APPROVED BY THE CITY, OR ELSE AT THE CONSTRUCTION OF THE PROJECT, ALL REVISIONS FOUND TO BE OUT OF COMPLIANCE WITH THE APPROVED SET WILL BE ASSESSED. THE REVISION FEE OF $250 PER CHANGE AS REQUIRED IN THE CITY'S FEE SCHEDULE.
3.) ALL PRIVATE WATER AND WASTEWATER LINES SHALL COMPLY WITH THE INTERNATIONAL PLUMBING CODE, 2006.

NOTE:

SHOULD SOLUTION FEATURES OR CONDITIONS BE EXPOSED DURING CONSTRUCTION OPERATIONS THAT INDICATE A POTENTIAL FOR HYDRAULIC INTERCONNECTEDNESS BETWEEN THE SURFACE AND THE EDWARDS AQUIFER, OPERATIONS IN THE VICINITY OF THE FEATURE SHOULD BE HALTED AND THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY (TCEQ) EDWARDS AQUIFER PROTECTION PROGRAM SHOULD BE CONTACTED IMMEDIATELY IN ACCORDANCE WITH THE 30 TAC 13.5(F)(2).

FIRE PREVENTION NOTES:

1.) THE CONTRACTOR SHALL PROVIDE COMPACTED FLEXIBLE BASE PAVEMENT PRIOR TO CONSTRUCTION OF COMBUSTIBLE MATERIALS AS AN "ALL WEATHER DRIVING SURFACE."
2.) FIRE HYDRANTS MUST HAVE A 5" STORZ ADAPTER WITH A BLIND CAP AFFIXED TO THE STEAMER OUTLET. THE 2.5" DISCHARGES MUST NH THREAD. EACH HYDRANT MUST BE IDENTIFIED WITH A BLUE REFLECTOR AFFIXED TO THE ROADWAY IN LINE WITH THE HYDRANT INSTALLATION.
3.) THE SUBDIVISION ENTRANCE GATE MUST COMPLY WITH IFC 2012 REQUIREMENTS INCLUDING THE FOLLOWING:

DIO3.5 FIRE APPARATUS ACCESS ROAD GATES.
GATES SECURING THE FIRE APPARATUS ACCESS ROADS SHALL COMPLY WITH ALL OF THE FOLLOWING CRITERIA:

1. THE MINIMUM GATE WIDTH SHALL BE 20 FEET (6096 MM).
2. GATES SHALL BE OF THE SWINGING OR SLIDING TYPE.
3. CONSTRUCTION OF GATES SHALL BE OF MATERIALS THAT ALLOW MANUAL OPERATION BY ONE PERSON.
4. GATE COMPONENTS SHALL BE MAINTAINED IN AN OPERATIVE CONDITION AT AL TIMES AND REPLACE OR REPAIRED WHEN DEFECTIVE.
5. ELECTRIC GATES SHALL BE EQUIPPED WITH A MEANS OF OPENING THE GATE BY FIRE DEPARTMENT PERSONNEL FOR EMERGENCY ACCESS. EMERGENCY OPENING DEVICES SHALL BE APPROVED BY THE FIRE CODE OFFICIAL.
6. MANUAL OPENING GATES SHALL NOT BE LOCKED WITH A PADLOCK OR CHAIN AND PADLOCK UNLESS THEY ARE CAPABLE OF BEING OPENED BY MEANS OF FORCIBLE ENTRY TOOLS OR WHEN A KEY BOX CONTAINING THE KEY(S) TO THE LOCK IS INSTALLED AT THE GATE LOCATION.
7. LOCKING DEVICE SPECIFICATIONS SHALL BE SUBMITTED FOR APPROVAL BY THE FIRE CODE OFFICIAL.
8. ELECTRIC GATE OPERATORS, WHERE PROVIDED, SHALL BE LISTED IN ACCORDANCE WITH UL 325.
9. GATES INTENDED FOR AUTOMATIC OPERATION SHALL BE DESIGNED, CONSTRUCTED AND INSTALLED TO COMPLY WITH THE REQUIREMENTS OF ASTM F 2200.
10. TO IDENTIFY THE FIRE HYDRANT LOCATION, A BLUE REFLECTIVE MARKER SHALL BE INSTALLED IN THE CENTER OF THE PUBLIC RIGHT OF WAY (ROADWAY) OR THE APPROPRIATE FIRE ACCESS DRIVE LANE PERPENDICULAR TO THE NEAREST FIRE HYDRANT. IN LOCATIONS WHERE HYDRANTS ARE SITUATED ON CORNERS, BLUE REFLECTIVE MARKERS SHALL BE INSTALLED ON BOTH APPROACHES WHICH FRONT THE HYDRANT.
11. "STORZ" ADAPTERS REQUIRED. FIRE HYDRANTS SHALL BE PROVIDED WITH APPROPRIATE FIVE INCH "STORZ" TYPE ADAPTERS FOR THE PUMPER (STEAMER) CONNECTION. THIS ADAPTER MUST BE EQUIPPED WITH A BLIND CAP.
12. THE INSTALLATION OF SECURITY GATES ACROSS A FIRE APPARATUS ROAD SHALL BE APPROVED BY THE FIRE CHIEF.
13. WHERE SECURITY GATES ARE INSTALLED, THEY SHALL HAVE AN APPROVED MEANS OF EMERGENCY OPERATION, INCLUDING A MEANS OF OPERATION WITHOUT POWER AND A MEANS OF OPERATION WITH A KNOX BOX OR A SIREN OPERATED SENSOR. THE SECURITY GATES AND EMERGENCY OPERATIONS SHALL BE MAINTAINED AT ALL TIMES. IF A SIREN OPERATED SENSOR IS UTILIZED, A SIGN WILL BE PLACED ON THE GATE TO NOTIFY EMERGENCY RESPONDERS THAT THE S.O.S. SYSTEM IS IN PLACE.
14. A SINGLE GATE SERVING TWO-WAY TRAFFIC SHALL BE 20 FEET IN CLEAR OPEN WIDTH. WHEN TWO GATES ARE INSTALLED AND EACH ONLY SERVES ONE DIRECTION OF TRAVEL, THEY SHALL BE 15 FEET IN CLEAR OPEN WIDTH EACH.

DRIPPING SPRINGS WSC WATERLINE CONSTRUCTION GUIDELINES 10/18/18

1. WATERLINES SHALL BE DESIGNED TO BE INSTALLED BETWEEN 36 INCHES MINIMUM BURY DEPTH AND 60 INCHES MAXIMUM, ANY WATERLINE DESIGNED TO BE BURIED DEEPER THAN 5 FEET MUST HAVE APPROVAL FROM DRIPPING SPRINGS WSC STAFF AND ITS ENGINEERS.

2. ALL WATERLINES SHOULD CROSS ABOVE STORM SEWER, ANY WATERLINE DESIGNED TO CROSS UNDER STORM SEWER MUST HAVE APPROVAL FROM DRIPPING SPRINGS WSC STAFF AND ITS ENGINEERS.

3. ALL GAS, ELECTRIC, TELECOMMUNICATION AND WASTEWATER LINES MUST CROSS BELOW WATER LINES, ANY LINE THAT CANNOT CROSS UNDER WILL REQUIRE APPROVAL FROM DRIPPING SPRINGS WSC STAFF AND ENGINEERS

4. WATERLINES SHALL BE CONSTRUCTED SO THE DRIPPING SPRINGS WSC CAN PERFORM MAINTENANCE ON THEM WHEN NECESSARY THIS INCLUDES.

a. NO WALLS CONSTRUCTED OVER OR WITHIN SIX FEET OF A WATERLINE WITHOUT PRIOR APPROVAL FROM THE DRIPPING SPRINGS WSC STAFF OR ITS ENGINEERS.

b. NO SIGNS CONSTRUCTED OVER OR WITHIN SIX FEET OF A WATERLINE WITHOUT PRIOR APPROVAL FROM DRIPPING SPRINGS WSC STAFF OR ITS ENGINEERS.

c. NOTHING CAN BE BUILT OR PLACED WITHIN THE DRIPPING SPRINGS WSC EASEMENTS THAT CANNOT BE EASILY MOVED BY WSC STAFF TO PERFORM MAINTENANCE

d. ALL WATERLINES MUST BE CONSTRUCTED OUT OF THE FLOW LINE OF OTHER UTILITY TRENCHES, UNLESS CROSSING AT LEAST A 45 DEGREES ANGLE.

e. NO WATERLINE WILL BE CONSTRUCTED IN THE FLOWLINE OF A DRAINAGE DITCH.

5. ALL WATER DISTRIBUTION LINES SHALL BE C-900 DR-18 OR DR 14 PVC PIPE MANUFACTURED IN THE UNITED STATES

6. ALL WATER SYSTEM MATERIALS SHALL FULLY COMPLY WITH TCEQ AND AWWA STANDARDS. ALL CONSTRUCTION SHALL FULLY COMPLY WITH THE DRIPPING SPRINGS WSC CURRENT CONSTRUCTION STANDARDS.

7. ALL SERVICE LINES SHALL BE SDR-9 P.E. PIPE 250 PSI.

8. ALL FITTINGS SHALL BE DUCTILE IRON MANUFACTURED IN THE UNITED STATES OF AMERICA WITH MECHANICAL JOINTS (MJ) AND HAVE EBBA IRON, INC. RESTRAINT AT EACH MJ. EACH C900 PVC PIPE SHALL HAVE EBBA IRON, INC. SERIES 1500 BELL RESTRAINT HARNESS WHEN LOCATED WITHIN THE DIMENSIONS SPECIFIED ON PLANS FROM D.I. FITTINGS, GATE VALVES, FIRE HYDRANTS, AND DEAD END LINES, AND WRAPPED IN 8 MIL POLYETHYLENE FILM.

9. ALL FIRE HYDRANT LEADS TO BE CONSTRUCTED WITH DUCTILE IRON PIPE MANUFACTURED IN THE UNITED STATES OF AMERICA AND WRAPPED IN 8 MIL POLYETHYLENE FILM.

10. GATE VALVES SHALL CONFORM TO AWWA STANDARD C515 AND SHALL BE AMERICAN FLOW CONTROL, KENNEDY VALVE, EAST JORDAN IRON WORKS OR MUELLER COMPANY.

11. VALVE BOXES SHALL BE CAST IRON WITH ADJUSTABLE BARREL HEIGHT SET PLUMB WITH 24" X 24" X 5" CONCRETE PAD, VALVE BOXES IN ROAD OR SIDEWALK SHALL BE CONSTRUCTED WITH A TRAFFIC BEARING BOOT SIX INCH DUCTILE IRON PIPE AND PAVING RING.

12. BRASS FITTING SHALL BE FORD BRASS UNLESS OTHERWISE APPROVED BY THE DRIPPING SPRINGS WSC STAFF AND ENGINEER.

13. IF CONFLICT BETWEEN PROJECT SPECIFICATIONS AND WATER DISTRIBUTION SYSTEM CONSTRUCTION STANDARDS OF THE DRIPPING SPRINGS WSC, THE WSC CONSTRUCTION STANDARDS SHALL GOVERN, INCLUDING OMITTED ITEMS FROM THE PROJECT SPECIFICATIONS

14. CONTRACTOR SHALL SCHEDULE A PRECONSTRUCTION MEETING PRIOR TO BEGINNING WORK, THE DRIPPING SPRINGS WSC SHALL BE NOTIFIED A MINIMUM OF 2 BUSINESS DAYS IN ADVANCE OF MEETING.

15. CONTRACTOR SHALL PROVIDE SUBMITTAL INFORMATION TO THE DRIPPING SPRINGS WSC ON ALL MATERIALS PROPOSED TO BE INSTALLED FOR REVIEW AND TO DETERMINE CONFORMANCE WITH THE DRIPPING SPRINGS WSC CONSTRUCTION STANDARDS.

16. PIPE EMBEDMENT SHALL BE # 5 TOPPING ROCK FROM EITHER CHANAS AGGREGATE BLANCO LLC (WASHED CRUSHED ROCK) OR WEST HENLEY QUARRY AGGREGATE WITH SAMPLE PROVIDED TO AND APPROVED BY THE DRIPPING SPRINGS WSC STAFF. THERE SHALL BE A MINIMUM OF 12 INCHES EMBEDMENT MATERIAL OVER THE PIPE AND 6 INCHES EMBEDMENT MATERIAL UNDER THE PIPE.

17. FIRE HYDRANTS SHALL CONFORM TO AWWA STANDARD C502 AND SHALL BE **AMERICAN DARLING 5 ¼ " B-84-B, KENNEDY VALVE GUARDIAN K81-D, EAST JORDAN IRON** WORKS MASTER 5CD250 OR MUELLER SUPER CENTURION 250 WITH HOSE OPENINGS AND 5" STORZ QUICK CONNECT PUMPER NOZZLE WITH A CAST PENTAGON OPERATING NUT. **THE 2 ½" DISCHARGE OUTLETS MUST BE NATIONAL HOSE THREAD. A BLUE, DOUBLE SIDED;** REFLECTIVE MARKER MUST BE AFFIXED TO THE ROADWAY DIRECTLY IN LINE WITH THE FIRE HYDRANT. HYDRANTS SHALL HAVE A RED OR SILVER PAINT COATING. HYDRANTS SHALL BE PLACED SO THEY ARE READILY ACCESSIBLE WITH NO OBSTRUCTIONS WITHIN 4 FEET OF HYDRANT. DO NOT PLACE HYDRANT WITHIN OR ADJACENT TO A DRAINAGE STRUCTURE.

18. EACH SERVICE SADDLE SHALL BE SMITH BLAIR EPOXY COATED WITH DUAL STAINLESS STEEL BANDS COMPLETELY WRAPPED WITH 8 MIL POLYETHYLENE FILM.

19. TOP OF THE METER BOX SHALL BE 2 INCHES ABOVE FINISHED GRADE

20. PIPES CROSSING UNDER STREET OR DRIVEWAY PAVEMENT SHALL BE BACKFILLED USING CRUSHED LIMESTONE BASE 6 INCH MAXIMUM LIFTS TO 95% STANDARD PROCTOR ABOVE THE PIPE EMBEDMENT MATERIAL, FLOWABLE FILL OR SUCH OTHER BACKFILL AS MAY BE REQUIRED BY THE CITY OF DRIPPING SPRINGS AND OR HAYS COUNTY.

21. METER BOXES MUST BE PLASTIC. ALL TRAFFIC BEARING BOXES MUST BE MADE OF POLY

22. STATE HIGHWAY BORE SHALL BE IN COMPLIANCE WITH TXDOT PERMIT REQUIREMENTS

23. ALL NEW WATERLINE CONSTRUCTION MUST BE DISINFECTED, PASS A PRESSURE TEST AND PASS BACTERIOLOGICAL SAMPLES.

24. ANY UNDERGROUND ELECTRIC CONDUIT/CONDUCTORS OR GAS LINE CROSSING THE DRIPPING SPRINGS WSC LINE SHALL BE LOCATED A MINIMUM OF 12 INCHES UNDER THE WATERLINE AT NEAR 90 DEGREES AND BE ENCASED WITH A MINIMUM 4 INCH THICK CONCRETE FOR A LENGTH NOT LESS THAN 24 INCHES ON EACH SIDE OF THE O.D. OF THE WATERLINE.

25. ALL FIRE LINES WILL HAVE THE APPROPRIATE BACKFLOW PREVENTER INSTALLED AND BE PLACED INSIDE OF A PRECAST VAULT AT OR NEAR THE PROPERTY LINE UNLESS THERE IS A DEDICATED EASEMENT PROVIDED DRIPPING SPRINGS WSC, THE DRIPPING SPRINGS WSCS MAINTENANCE ENDS AT THE FIRST FLANGE ON THE FIRST GATE VALVE GOING INTO THE BACKFLOW PREVENTER.

26. METERS 3 INCH AND LARGER WILL BE PLACED IN A PRECAST VAULT AT OR NEAR THE PROPERTY LINE UNLESS A DEDICATED EASEMENT IS PROVIDED TO THE DRIPPING SPRINGS WSC.

27. THE DRIPPING SPRINGS WSC MAINTENANCE OR REPAIR RESPONSIBILITY SHALL END AT EACH SERVICE METER WITHIN THE METER BOX.

28. ALL SERVICE CONNECTIONS THAT EXCEED 65 PSI, THE DRIPPING SPRINGS WSC RECOMMENDS A PRESSURE REDUCING VALVE BE INSTALLED AND MAINTAINED BY THE CUSTOMER.

29. PARALLELING WATERLINES MUST BE REVIEWED BY THE DRIPPING SPRINGS WSC STAFF AND ENGINEER PRIOR TO APPROVAL.

30. PRESSURE REDUCING VALVES BUILT IN THE DISTRIBUTION SYSTEMS MUST BE CONSTRUCTED WITH A BYPASS LINE FOR MAINTENANCE.

31. **METERS 1 ½ INCH AND LARGER MUST BE BUILT WITH A BYPASS LINE SO THE METER CAN** BE MAINTAINED WITHOUT THE INTERRUPTION OF SERVICE.

32. VALVES SHALL BE INSTALLED SO TO LIMIT THE NUMBER OF CUSTOMERS WITH INTERRUPTED SERVICE DURING AN OUTAGE, VALVES SHALL BE PLACED AT ALL RUNS OF TEES UNLESS OTHERWISE APPROVED BY THE DRIPPING SPRINGS WSC STAFF AND ENGINEER.

33. ALL CAPPED OR PLUGGED LINES MUST BUSHING DOWN TO A 2" WITH A BLOW OFF VALVE TO RELIEVE PRESSURE.

34. ALL EASEMENTS DEDICATED TO THE DRIPPING SPRINGS WSC MUST BE AT LEAST 15 FEET WIDE UNLESS OTHERWISE APPROVED BY THE DRIPPING SPRINGS WSC STAFF AND ITS ENGINEER.

35. NEW SUBDIVISIONS WILL BE REQUIRED TO CONSTRUCT AT LEAST ONE ADDITIONAL SERVICE CONNECTION FOR THE CORPORATION TO INSTALL A DEDICATED SAMPLE SITE, ADDITIONAL SERVICE CONNECTION MUST BE NOTED ON PLANS AND LOCATION APPROVED BY THE DRIPPING SPRINGS WSC STAFF AND ITS ENGINEER.

36. WATER AND WASTEWATER LINE SEPARATION DISTANCES SHALL MEET THE REQUIREMENTS OF 30 TAC, CHAPTER 290. 44 (E)(4).

37. WHEN GROUNDWATER IS ENCOUNTERED DURING CONSTRUCTION RECOMMENDATIONS ON BEDDING AND BACKFILL SHALL BE PROVIDED BY A GEOTECHNICAL ENGINEER BEFORE PROCEEDING WITH CONSTRUCTION. ALL RECOMMENDATIONS SHALL BE APPROVED BY THE DRIPPING SPRINGS WSC STAFF AND ENGINEER.

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY
CONTRIBUTING ZONE PLAN
GENERAL CONSTRUCTION NOTES

1.) WRITTEN CONSTRUCTION NOTIFICATION SHOULD BE PROVIDED TO THE APPROPRIATE TCEQ REGIONAL OFFICE NO LATER THAN 48 HOURS PRIOR TO COMMENCEMENT OF THE REGULATED ACTIVITY. INFORMATION SHOULD INCLUDE THE DATE ON WHICH THE REGULATED ACTIVITY WILL COMMENCE, THE NAME OF THE APPROVED PLAN FOR THE REGULATED ACTIVITY, AND THE NAME OF THE PRIME CONTRACTOR WITH THE NAME AND TELEPHONE NUMBER OF THE CONTACT PERSON.

2.) ALL CONTRACTORS CONDUCTING REGULATED ACTIVITIES ASSOCIATED WITH THIS PROJECT SHOULD BE PROVIDED WITH COMPLETE COPIES OF THE APPROVED CONTRIBUTING ZONE PLAN AND THE TCEQ LETTER INDICATING THE SPECIFIC CONDITIONS OF ITS APPROVAL. DURING THE COURSE OF THESE REGULATED ACTIVITIES, THE CONTRACTOR(S) SHOULD KEEP COPIES OF THE APPROVED PLAN AND APPROVAL LETTER ON-SITE.

3.) NO TEMPORARY ABOVE GROUND HYDROCARBON AND HAZARDOUS SUBSTANCE STORAGE TANK SYSTEM MAY BE INSTALLED WITHIN 150 FEET IF A DOMESTIC, INDUSTRIAL, IRRIGATION, OR PUBLIC WATER SUPPLY WELL.

4.) PRIOR TO COMMENCING CONSTRUCTION, ALL TEMPORARY EROSION AND SEDIMENTATION (E&S) CONTROL MEASURES MUST BE PROPERLY SELECTED, INSTALLED, AND MAINTAINED IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS AND GOOD ENGINEERING PRACTICES. CONTROLS SPECIFIED IN THE SWPPP SECTION OF THE APPROVED EDWARDS AQUIFER CONTRIBUTING ZONE PLAN ARE REQUIRED DURING CONSTRUCTION. IF INSPECTIONS INDICATE A CONTROL HAS BEEN USED INAPPROPRIATELY, OR INCORRECTLY, THE APPLICANT MUST REPLACE OR MODIFY THE CONTROL FOR SITE SITUATIONS. THE CONTROLS MUST REMAIN IN PLACE UNTIL DISTURBED AREAS ARE REVEGETATED AND THE AREAS HAVE BECOME PERMANENTLY STABILIZED.

5.) 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).

6.) SEDIMENT MUST BE REMOVED FROM SEDIMENT TRAPS OR SEDIMENTATION PONDS NOT LATER THAN WHEN DESIGN CAPACITY HAS BEEN REDUCED BY 50%. A PERMANENT STAKE MUST BE PROVIDED THAT CAN INDICATE WHEN THE SEDIMENT OCCUPIES 50% OF THE BASIN VOLUME.

7.) 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).

8.) ALL SPOILS (EXCAVATED MATERIAL) GENERATED FROM THE PROJECT SITE AND STORED ON-SITE MUST HAVE PROPER E$S CONTROLS INSTALLED.

9.) 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.

10.) THE FOLLOWING RECORDS SHOULD BE MAINTAINED AND MAE AVAILABLE TO THE TCEQ UPON REQUEST: THE DATES WHEN MAJOR GRADING ACTIVITIES OCCUR; THE DATES WHEN CONSTRUCTION ACTIVITIES TEMPORARILY OR PERMANENTLY CEASE ON T PORTION OF THE SITE; AND THE DATES WHEN STABILIZATION MEASURES ARE INITIATED.

11.) THE HOLDER OF ANY APPROVED CONTRIBUTING ZONE PLAN MUST NOTIFY THE APPROPRIATE REGIONAL OFFICE IN WRITING AND OBTAIN APPROVAL FROM THE EXECUTIVE DIRECTOR PRIOR TO INITIATING ANY OF THE FOLLOWING:

- A. ANY PHYSICAL OR OPERATIONAL MODIFICATION OF ANY BEST MANAGEMENT PRACTICES OR STRUCTURE(S), INCLUDING BUT NOT LIMITED TO TEMPORARY OR PERMANENT PONDS, DAMS, BERMS, SILT FENCES, AND DIVERSIONARY STRUCTURES;
- B. ANY CHANGE IN THE NATURE OF CHARACTER OF THE REGULATED ACTIVITY FORM THAT WHICH WAS ORIGINALLY APPROVED;
- C. ANY CHANGE THAT WOULD SIGNIFICANTLY IMPACT THE ABILITY TO PREVENT POLLUTION OF THE EDWARDS AQUIFER AND HYDROLOGICALLY CONNECTED SURFACE WATER; OR
- D. ANY DEVELOPMENT OF LAND PREVIOUSLY IDENTIFIED IN A CONTRIBUTING ZONE PLAN AS UNDEVELOPED.

AUSTIN REGIONAL OFFICE **2800 S. IH-35, SUITE 100** **AUSTIN, TEXAS 78704-5712** **PHONE (512) 339-2929** **FAX (512) 339-3795**	**SAN ANTONIO REGIONAL OFFICE** **14250 JUDSON ROAD** **SAN ANTONIO, TEXAS 78233-4480** **PHONE (210) 490-3096** **FAX (210) 545-4329**

THESE GENERAL CONSTRUCTION NOTES MUST BE INCLUDED ON THE CONSTRUCTION PLANS PROVIDED TO THE CONTRACTOR AND ALL SUBCONTRACTORS.

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY
WATER DISTRIBUTION SYSTEM
GENERAL CONSTRUCTION NOTES

1. THIS WATER DISTRIBUTION SYSTEM MUST BE CONSTRUCTED IN ACCORDANCE WITH THE CURRENT TEXAS COMMISSION ON ENVIRONMENTAL QUALITY (TCEQ) RULES AND REGULATIONS FOR PUBLIC WATER SYSTEMS 30 TEXAS ADMINISTRATIVE CODE (TAC) CHAPTER 290 SUBCHAPTER D.

2. PRIOR TO COMMENCEMENT OF CONSTRUCTION, THE OWNER OF THE SYSTEM OR HIS REPRESENTATIVE MUST NOTIFY THE APPROPRIATE TCEQ REGIONAL OFFICE IN WRITING OF THE DATE ON WHICH CONSTRUCTION WILL BEGIN.

3. 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.

4. PLASTIC PIPE FOR USE IN PUBLIC WATER SYSTEMS MUST BEAR THE NATIONAL SANITATION FOUNDATION SEAL OF APPROVAL (NSF-PW) AND HAVE AN ASTM DESIGN PRESSURE RATING OF AT LEAST 150 PSI OR A STANDARD DIMENSION RATIO OF 26 OR LESS.

5. NO PIPE WHICH HAS BEEN USED FOR ANY PURPOSE OTHER THAN THE CONVEYANCE OF DRINKING WATER SHALL BE ACCEPTED OR RELOCATED FOR USE IN ANY PUBLIC DRINKING WATER SUPPLY.

6. WATER TRANSMISSION AND DISTRIBUTION LINES MUST BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS. HOWEVER, THE TOP OF THE WATER LINE MUST BE LOCATED BELOW THE FROST LINE AND IN NO CASE SHALL THE TOP OF THE WATER LINE BE LESS THAN 24 INCHES BELOW GROUND SURFACE.

7. THE HYDROSTATIC LEAKAGE RATE SHALL NOT EXCEED THE AMOUNT ALLOWED OR RECOMMENDED BY THE MOST CURRENT AWWA FORMULAS FOR PVC PIPE, CAST IRON AND DUCTILE IRON PIPE.

8. THE CONTRACTOR SHALL INSTALL APPROPRIATE AIR RELEASE DEVICES IN THE DISTRIBUTION SYSTEM AT ALL POINTS WHERE TOPOGRAPHY OR OTHER FACTORS MAY CREATE AIR LOCKS IN THE LINES. ALL VENT OPENINGS TO THE ATMOSPHERE SHALL BE COVERED WITH 16-MESH OR FINER, CORROSION RESISTANT SCREENING MATERIAL OR AN ACCEPTABLE EQUIVALENT.

9. THE CONTRACTOR SHALL MAINTAIN A MINIMUM SEPARATION DISTANCE IN ALL DIRECTIONS OF NINE FEET BETWEEN THE PROPOSED WATERLINE AND WASTEWATER COLLECTION FACILITIES INCLUDING MANHOLES AND SEPTIC TANK DRAINFIELDS. IF THIS DISTANCE CANNOT BE MAINTAINED, THE CONTRACTOR MUST IMMEDIATELY NOTIFY THE PROJECT ENGINEER FOR FURTHER DIRECTION. SEPARATION DISTANCES, INSTALLATION METHODS,AND MATERIAL UTILIZED MUST MEET 290.44(E) OF THE CURRENT RULES.

10. THE CONTRACTOR SHALL DISINFECT THE NEW WATER MAINS IN ACCORDANCE WITH AWWA STANDARD C651 AND THEN FLUSH AND SAMPLE THE LINES BEFORE BEING PLACED INTO SERVICE. SAMPLES SHALL BE COLLECTED FOR MICROBIOLOGICAL ANALYSIS TO CHECK THE EFFECTIVENESS OF THE DISINFECTION PROCEDURE WHICH SHALL BE REPEATED IF CONTAMINATION PERSISTS. A MINIMUM OF ONE SAMPLE FOR EACH 1,000 FEET OF COMPLETED WATER LINE WILL BE REQUIRED OR AT THE NEXT AVAILABLE SAMPLING POINT BEYOND 1,000 FEET AS DESIGNATED BY THE DESIGN ENGINEER.

11. THE CONTRACTOR SHALL NOT PLACE THE PIPE IN WATER OR WHERE IT CAN BE FLOODED WITH WATER OR SWAGE DURING ITS STORAGE OR INSTALLATION.

*THE HYDROSTATIC LEAKAGE RATE (Q) IN GALLONS PER HOUR OF MAKEUP WATER SHALL NOT EXCEED THE AMOUNT ALLOWED OR RECOMMENDED BY AWWA FORMULA FOR PVC PIPE: **Q = (L)(D)(P1/2)/148,000**. THE FORMULA FOR DUCTILE IRON PIPE IS:
Q = (L)(D)(P1/2)/133,200. IN FORMULA, Q IS GALLONS PER HOUR OF MAKEUP WATER; L IS LENGTH OF PIPE TESTED IN FEET; D IS NOMINAL DIAMETER OF PIPE IN INCHES; AND P IS AVERAGE TEST PRESSURE IN PSI.

Street Classification	18-kip ESAL	CLBM Thickness (inches)		HMAC Thickness (inches)
		Limestone Derivative Fill Subgrade	Completely Weathered Limestone Subgrade	
Local	20,000	8.0	8.0	1.5
Major Collector	200,000	12.0	14.0	2.0

STATE OF TEXAS
RYAN WAYNE PERRY
130060
LICENSED PROFESSIONAL ENGINEER

CARLSON, BRIGANCE, & DOERING, INC.
ID # F3791

11/1/2019

DESIGNED BY:	DRAFTED BY:
DRJ	RH/TDC/PO

DATE

REVISION

Carlson, Brigance & Doering, Inc.
Civil Engineering ◆ Surveying
FIRM ID #F3791

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5501 West William Cannon Dr.
Austin, Texas 78749
Phone No. (512) 280-5160

North Office
12129 RR 620 N., Ste. 600
Austin, Texas 78750
Fax No. (512) 280-5165

SHEET NAME:
GENERAL NOTES

JOB NAME:
ARROWHEAD RANCH PHASE 3

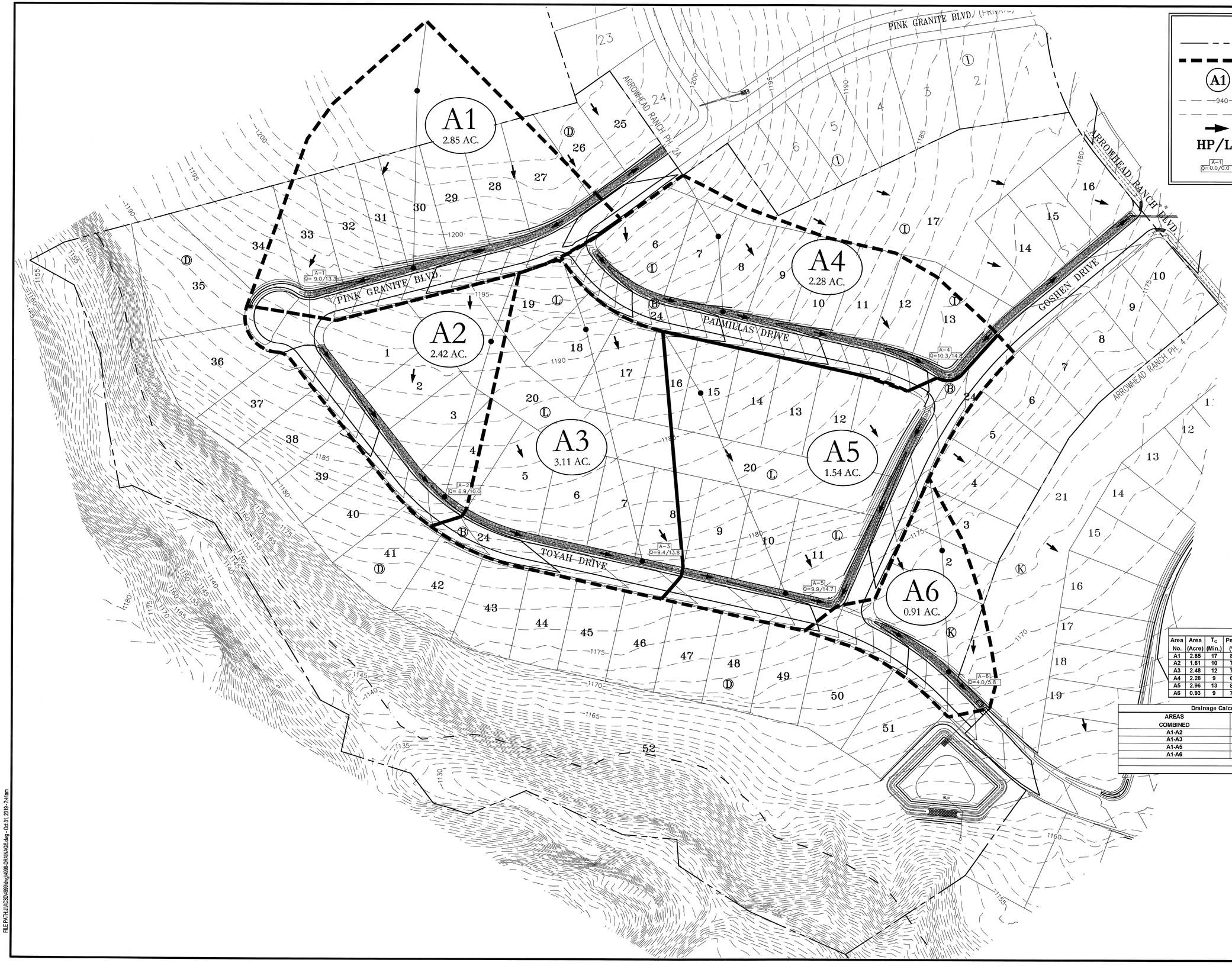
PROJECT:
STREET, DRAINAGE, WATER, AND WASTEWATER IMPROVEMENTS

DATE
OCTOBER 2019

JOB NUMBER
4999

SHEET
2 OF 35

SHEET NO.
2



LEGEND

- PROPERTY BOUNDARY
- DRAINAGE BOUNDARY LINE
- A1 — DRAINAGE AREA LABEL
- 940 — EXISTING CONTOUR MAJOR
- EXISTING CONTOUR MINOR
- FLOW ARROW
- HP/LP — HIGH POINT/LOW POINT
- A-1 Q= 0.0/0.0 — INLET FLOWS 25-YR/100-YR

SCALE: 1" = 60'

Drainage Calculations

Area No.	Area (Acre)	T_C (Min.)	Perv. (%)	Imperv. (%)	C 25	C 100	I_{25} In/Hr	I_{100} In/Hr	Q_{25} CFS	Q_{100} CFS
A1	2.85	17	81	19	0.48	0.55	6.55	8.46	9.0	13.3
A2	1.61	10	72	28	0.52	0.60	8.23	10.44	6.9	10.0
A3	2.48	12	78	22	0.49	0.57	7.71	9.84	9.4	13.8
A4	2.28	9	66	34	0.55	0.63	8.53	10.78	10.7	15.4
A5	2.96	13	88	12	0.45	0.52	7.45	9.54	9.9	14.7
A6	0.93	9	74	26	0.51	0.59	8.36	10.59	4.0	5.8

Drainage Calculations (Combined Areas)

AREAS COMBINED	T_C (Min.)	C_{25}*A	C_{100}*A	I_{25} In/Hr	I_{100} In/Hr	Q_{25} CFS	Q_{100} CFS
A1-A2	17	2.21	2.54	6.56	8.48	14.5	21.5
A1-A3	18	3.43	3.94	6.39	8.27	21.9	32.6
A1-A5	20	4.79	5.51	6.07	7.88	29.0	43.4
A1-A6	21	5.26	6.05	5.92	7.70	31.2	46.6

STATE OF TEXAS
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130060
LICENSED PROFESSIONAL ENGINEER
CARLSON, BRIGANCE, & DOERING, INC.
ID # F3791
11/1/2019

DESIGNED BY:	DRAFTED BY:
DRJ	RH/TDC/PO

DATE / REVISION

Carlson, Brigance & Doering, Inc.
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Main Office: 5501 West William Cannon Dr. Austin, Texas 78749 — Phone No. (512) 280-5160
North Office: 12129 RR 620 N., Ste. 600 Austin, Texas 78750 — Fax No. (512) 280-5165

SHEET NAME: DRAINAGE PLAN

JOB NAME: ARROWHEAD RANCH PHASE 3

PROJECT: STREET, DRAINAGE, WATER, AND WASTEWATER IMPROVEMENTS

DATE: OCTOBER 2019

JOB NUMBER: 4999

SHEET: 5 OF 35

SHEET NO.: 5

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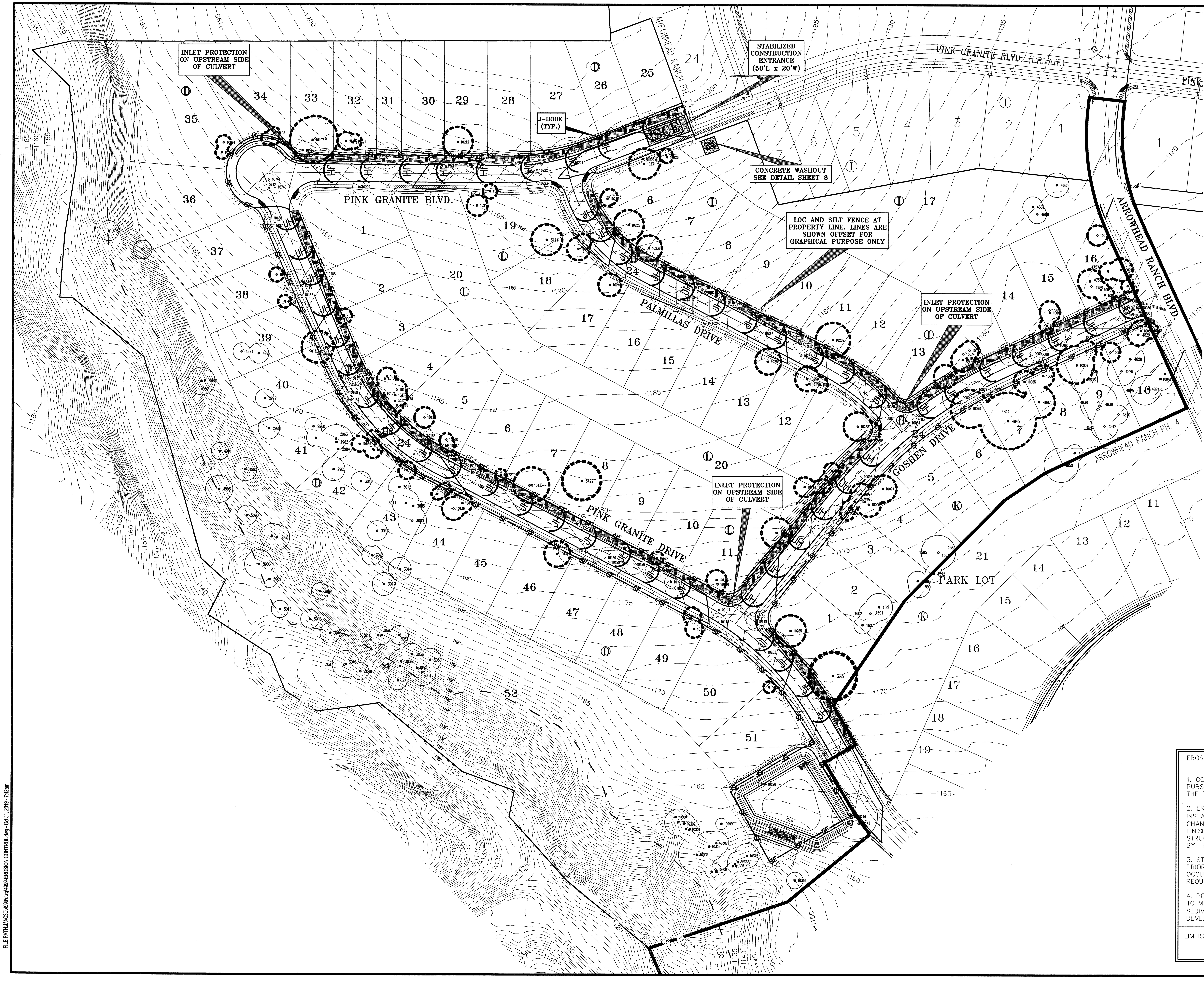

LEGEND	
—SF—	SILT FENCE
— LOC —	LIMITS OF CONSTRUCTION
IP	INLET PROTECTION
SCE	STABILIZED CONSTRUCTION ENTRANCE
	TREE TO BE SAVED
	TREE TO BE REMOVED
	TREE PROTECTION FENCING
CONC WASH	CONCRETE WASHOUT AREA
JH	J-HOOK

SCALE: 1" = 60'

EROSION CONTROL NOTES:

1. CONSTRUCTION ACCESS TO THIS TRACT WILL BE PURSUANT TO THE DEVELOPMENT AGREEMENT BETWEEN THE TF ARROWHEAD L.P., ET AL. AND AMENDMENTS.

2. EROSION CONTROL MATTING OR SOD SHALL BE INSTALLED ON ALL DISTURBED AREAS (INCLUDING OPEN CHANNELS) WITH A FINISHED GRADE OF 3:1. ALL FINISHED GRADES 3:1 AND STEEPER SHALL BE STRUCTURALLY STABILIZED BY TECHNIQUES APPROVED BY THE CITY.

3. STREET TREES SHALL BE PLANTED IN EACH LOT PRIOR TO THE ISSUANCE OF A CERTIFICATE OF OCCUPANCY PER THE QUANTITY, SIZE AND LOCATION REQUIREMENTS OF SUBDIVISION ORDINANCE 28.06.051.

4. PONDS ARE TO BE EXCAVATED AND STABILIZED PRIOR TO MASS GRADING ACTIVITIES TO MEET TEMPORARY SEDIMENTATION/EROSION CONTROLS PER THE DEVELOPMENT OFFICE.

LIMITS OF CONSTRUCTION:	425,503.41 SqFt / 9.77 Ac.
SILT FENCE:	5,350 L.F.

STATE OF TEXAS
RYAN WAYNE PERRY
130060
LICENSED PROFESSIONAL ENGINEER

CARLSON, BRIGANCE, & DOERING, INC.
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11/1/2019

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DRJ	RH/TDC/PO

DATE	REVISION

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SHEET NAME: EROSION CONTROL PLAN

JOB NAME: ARROWHEAD RANCH PHASE 3

PROJECT: STREET, DRAINAGE, WATER, AND WASTEWATER IMPROVEMENTS

DATE: OCTOBER 2019

JOB NUMBER: 4999

SHEET 6 OF 35

SHEET NO. 6

FILE PATH: J:\ACSD\4999\dwg\4999-EROSION CONTROL.dwg - Oct 31, 2019 - 7:42am

GENERAL NOTES

1. USE ONE CALL UTILITY SYSTEM: DIAL 1–800–DIG–TESS 48 HOURS BEFORE YOU DIG. CONTRACTOR WILL ALSO NOTIFY ALL OTHER UTILITY PROVIDERS THAT ARE NOT NOTIFIED BY THE ONE CALL SYSTEM.

2. ALL STORM SEWER SHALL BE CLASS III RCP UNLESS NOTED OTHERWISE.

3. ALL SLOPES SHALL BE SODDED OR SEEDED WITH THE APPROPRIATE GRASS, GRASS MIXTURES, OR GROUND COVER SUITABLE TO THE AREA AND SEASON TO WHICH THEY ARE APPLIED.

4. SILT FENCES, ROCK BERMS AND SIMILARLY RECOGNIZED TECHNIQUES AND MATERIALS SHALL BE EMPLOYED DURING CONSTRUCTION TO PREVENT POINT SOURCE SEDIMENTATION LOADING OF DOWNSTREAM FACILITIES. SUCH INSTALLATION SHALL BE REGULARLY INSPECTED FOR EFFECTIVENESS. ADDITIONAL MEASURES MAY BE REQUIRED.

5. ALL TEMPORARY EROSION CONTROL MEASURES SHALL NOT BE REMOVED UNTIL FINAL INSPECTION AND APPROVAL OF THE PROJECT BY THE ENGINEER.

6. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO MAINTAIN ALL TEMPORARY EROSION CONTROL STRUCTURES AND TO REMOVE EACH STRUCTURE AS APPROVED BY THE ENGINEER.

7. LINE FLUSHING OR ANY ACTIVITY USING LARGE QUANTITIES OF WATER MUST BE SCHEDULED WITH THE WATER AND WASTEWATER SUPERINTENDENT OF THE CITY OF DRIPPING SPRINGS AND DRIPPING SPRINGS WATER SUPPLY CORPORATION. ADDITIONALLY, CONTACT SCOTT MANUEL AT STES.

8. THE CONTRACTOR SHALL PROVIDE THE OFFICE OF DSWSC, (512) 858–7897, NO LESS THAN 24 HOURS NOTICE PRIOR TO DISINFECTING, PERFORMING STERILIZATION, QUALITY TESTING OR PRESSURE TESTING.

9. THE CONTRACTOR SHALL NOT OPEN OR CLOSE ANY VALVES UNLESS AUTHORIZED BY THE DRIPPING SPRINGS WSC.

10. THE CONTRACTOR SHALL CONTACT DIG TESS CALL SYSTEM AT 1–800–DIG–TESS FOR EXISTING UTILITY LOCATIONS AND SHALL ALSO NOTIFY ALL OTHER UTILITY PROVIDERS THAT ARE NOT NOTIFED BY THE ONE CALL SYSTEM. PRIOR TO ANY EXCAVATION IN ADVANCE OF CONSTRUCTION, THE CONTRACTOR SHALL VERIFY THE LOCATIONS AND EXISTING ELEVATIONS OF ALL UTILITIES TO BE EXTENDED, TIED TO, ALTERED, OR SUBJECT TO CHANGE/INCONVENIENCE BY CONSTRUCTION OPERATIONS. THE CITY OF DRIPPING SPRINGS WASTEWATER AND DRIPPING SPRINGS WSC MAINTENANCE RESPONSIBILITY ENDS AT ROW/EASEMENT LINE.

11. ALL MATERIAL TESTS, INCLUDING SOIL DENSITY TESTS AND RELATED SOIL ANALYSIS, SHALL BE ACCOMPLISHED BY AN INDEPENDENT LABORATORY FUNDED BY THE DEVELOPER IN ACCORDANCE WITH THE SPECIFICATIONS.

12. AS–BUILT PLANS ARE REQUIRED FROM THE CONTRACTOR AT THE CONCLUSION OF THE SITE WORK SHOWING ALL REVISIONS.

13. SEE DSWSC GENERAL CONSTRUCTION NOTE 24 FOR CONSTRUCTION OF ELECTRIC DISTRIBUTION LINE UNDER WATER LINES.

EROSION/SEDIMENTATION CONTROL NOTES

1. THE CONTRACTOR SHALL INSTALL EROSION/SEDIMENTATION CONTROLS AND TREE/NATURAL AREA PROTECTIVE FENCING PRIOR TO ANY SITE PREPARATION WORK (CLEARING, GRUBBING, OR EXCAVATION).

2. THE PLACEMENT OF EROSION/SEDIMENTATION CONTROLS SHALL BE IN ACCORDANCE WITH THE EROSION AND SEDIMENTATION CONTROL PLAN, INCLUDING SPECIFICATIONS, SWPPP, AND CONTRIBUTING ZONE PLAN.

3. A PRE–CONSTRUCTION CONFERENCE SHALL BE HELD ON–SITE WITH THE CONTRACTOR, DESIGN ENGINEER, DEVELOPER, TCEQ AND CITY INSPECTOR AFTER INSTALLATION OF THE EROSION/SEDIMENTATION CONTROL MEASURES AND PRIOR TO BEGINNING ANY SITE PREPARATION WORK. THE CONTRACTOR SHALL NOTIFY ALL PARTIES, LEAST THREE DAYS PRIOR TO THE MEETING DATE.

4. ANY MAJOR VARIATION IN MATERIALS OR LOCATIONS OF CONTROLS OR FENCES FROM THOSE SHOWN ON THE APPROVED PLANS WILL REQUIRE A REVISION AND MUST BE ADDED TO THE PLAN SHEET IN ACCORDANCE TO TCEQ AND THE SWPPP REQUIREMENTS. MINOR CHANGES TO BE MADE AS FIELD REVISIONS TO THE EROSION AND SEDIMENTATION CONTROL PLAN MAY BE REQUIRED BY AN AUTHORIZED AGENCY DURING THE COURSE OF CONSTRUCTION TO CORRECT CONTROL INADEQUACIES.

5. THE CONTRACTOR IS REQUIRED TO INSPECT THE CONTROLS AND FENCES AT WEEKLY INTERVALS AND AFTER SIGNIFICANT RAINFALL EVENTS TO INSURE THAT THEY ARE FUNCTIONING PROPERLY. THE PERSON(S) RESPONSIBLE FOR MAINTENANCE OF CONTROLS AND FENCES SHALL IMMEDIATELY MAKE ANY NECESSARY REPAIRS. SILT ACCUMULATION AT CONTROLS MUST BE REMOVED WHEN THE DEPTH REACHES A MAXIMUM OF SIX (6) INCHES.

6. PRIOR TO FINAL ACCEPTANCE BY THE CITY, HAUL ROADS AND WATERWAY CROSSINGS CONSTRUCTED FOR TEMPORARY CONTRACTOR ACCESS MUST BE REMOVED, ACCUMULATED SEDIMENT REMOVED FROM THE WATERWAY AND THE AREA RESTORED TO THE ORIGINAL GRADE AND REVEGETATED. ALL LAND CLEARING DEBRIS SHALL BE DISPOSED OF IN APPROVED SPOIL DISPOSAL SITES.

7. PERMANENT EROSION CONTROL:

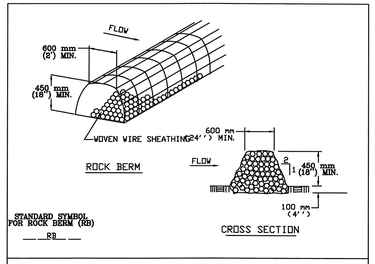
ALL DISTURBED AREAS SHALL BE RESTORED AS NOTED BELOW:

A. A MINIMUM OF FOUR INCHES OF TOPSOIL SHALL BE PLACED IN ALL UNPAVED, DISTURBED AREAS (EXCEPT ROCK).

8. THE SEEDING OR SODDING FOR PERMANENT EROSION CONTROL SHALL BE APPLIED OVER AREAS DISTURBED PER LANDSCAPE PLANS.

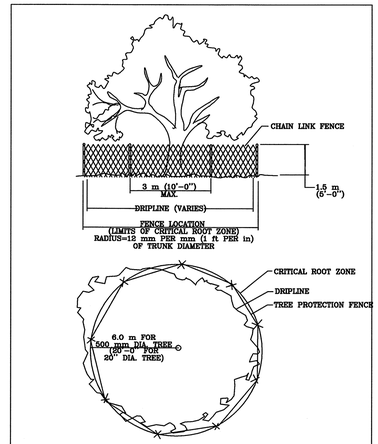
SPOILS MANAGEMENT AND DISPOSAL NOTES

1. TEMPORARY HOLDING SITES AS NECESSARY TO STOCKPILE EXCAVATED SOILS, EMBEDMENT MATERIAL, AND/OR PIPING AND APPURTENANCES MAY BE LOCATED WITHIN THE LIMITS OF CONSTRUCTION AS SHOWN ON THE PLANS.
2. NO PERMANENT SPOILS DISPOSAL SHALL BE ALLOWED ON–SITE, UNLESS APPROVED BY THE OWNER AND GOVERNING AUTHORITY.
3. ALL SPOILS MATERIALS SHALL BE DISPOSED OF BY THE CONTRACTOR AT AN APPROVED SPOIL DISPOSAL SITE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING AND SECURING A PERMIT FOR THE SITE; AND SHALL NOTIFY THE OWNER AND/OR ENGINEER AT LEAST FORTY–EIGHT (48) HOURS PRIOR TO DISPOSAL OF ANY SPOILS MATERIAL.

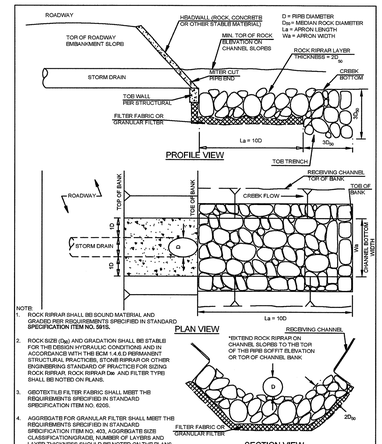


NOTES:
1. USE ONLY OPEN GRADED ROCK 75 to 125 mm (3 to 5") DIAMETER FOR ALL CONDITIONS.
2. THE ROCK BERM SHALL BE SECURED WITH A WOVEN WIRE SHEATHING HAVING MAXIMUM 25 mm (1") OPENING AND MINIMUM WIRE DIAMETER OF 12.9 mm (20 GAUGE).
3. THE ROCK BERM SHALL BE INSPECTED DAILY OR AFTER EACH RAIN, AND THE 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	
RECORD COPY SIGNED BY MORGAN BYARS	8/24/2010 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 639S-1

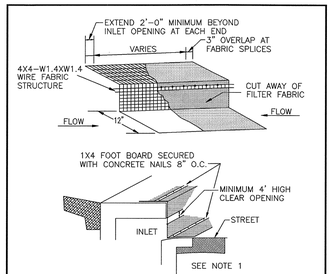


CITY OF AUSTIN WATERSHED PROTECTION DEPARTMENT		TREE PROPTECTION FENCE TYPE A – CHAIN LINK	
RECORD COPY SIGNED BY J. PATRICK MURPHY	11/15/99 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 610S-2



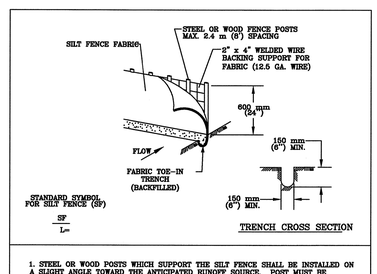
NOTE
1. ROCK RIPRAP SHALL BE SOUND MATERIAL AND GRADED PER REQUIREMENTS SPECIFIED IN STANDARD SPECIFICATION ITEM NO. 5918.
2. ROCK SIZE (D_{50}) AND GRADATION SHALL BE STABLE FOR THE DESIGN HYDRAULIC CONDITIONS AND IN ACCORDANCE WITH THE BCM 1.4.6.D PERMANENT STRUCTURAL PRACTICES, STONE RIPRAP OR OTHER ENGINEERING STANDARD OF PRACTICE FOR SIZING ROCK RIPRAP. ROCK RIPRAP Dm AND FILTER TYPE) SHALL BE NOTED ON PLANS.
3. GEOTEXTILE FILTER FABRIC SHALL MEET THE REQUIREMENTS SPECIFIED IN STANDARD SPECIFICATION ITEM NO. 4205.
4. AGGREGATE FOR GRANULAR FILTER SHALL MEET THE REQUIREMENTS SPECIFIED IN STANDARD SPECIFICATION ITEM NO. 401, AGGREGATE SIZE CLASSIFICATION/GRADE, NUMBER OF LAYERS AND LAYER THICKNESS SHOULD BE NOTED ON THE PLANS.

CITY OF AUSTIN WATERSHED PROTECTION DEPARTMENT		STORMDRAIN OUTFALL PROTECTION CULVERT UNDER ROADWAY/INLINE	
RECORD COPY SIGNED BY MORGAN BYARS	09/01/2011 ADOPTED	THIS ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 508S-20



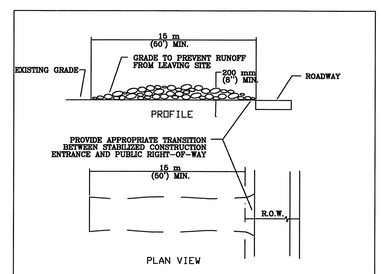
INLET PROTECTION

1. CONTRACTOR TO SECURE FILTER WITH 1X4 FOOT BOARD SET WITH CONCRETE NAILS 8 INCHES OFF–CENTER.
2. REMOVE SECTION OF FILTER FABRIC IF CONCENTRATED FLOW OCCURS AT THIS LOCATION OR AS DIRECTED BY THE ENVIRONMENTAL INSPECTOR. FABRIC MUST BE SECURED TO WIRE BACKING WITH CLIPS OR HOG RINGS AT THIS LOCATION.
3. THE FABRIC MUST CORRESPOND TO STANDARD SPECIFICATION ITEM 642.2, SILT FENCE (1) FABRIC. THE WIRE MESH SUPPORT MUST CORRESPOND TO STANDARD SPECIFICATION ITEM 642.2, SILT FENCE (3) WIRE FENCE.
4. THE FABRIC/WIRE SHOULD COMPLETELY COVER THE OPENING OF THE INLET AND EXTEND BEYOND THE INLET OPENING BY 2' ON EITHER SIDE. THE FABRIC/WIRE SHOULD EXTEND OUTWARD INTO THE GUTTER TWELVE (12) INCHES AND OVER THE TOP OF THE INLET BY TWELVE (12) INCHES. WHERE SECTIONS OF THE FABRIC OVERLAP, THEY SHALL OVERLAP AT LEAST THREE (3) INCHES.
5. THE OPENING SHOULD BE FOUR (4) INCHES IN HEIGHT EXTENDING DOWNWARD FROM THE SOFFIT OF THE INLET OPENING AND EXTEND THE FULL LENGTH OF THE INLET.
6. THE FABRIC SHALL BE SECURELY ATTACHED TO THE WIRE MESH. THE FABRIC/WIRE SHALL BE HELD IN PLACE WITH SAND BAGS FILLED WITH S SAND OR PEA GRAVEL, LOCATED AT THE ENDS AND ACROSS THE LENGTH AT TWO (2) FOOT ON CENTER.
7. ACCUMULATED SILT SHALL BE REMOVED WHEN IT REACHES A DEPTH OF TWO (2) INCHES OR ONE THIRD THE HEIGHT OF THE INLET THROAT, AND DISPOSED OF IN A MANNER WHICH WILL NOT CAUSE ADDITIONAL SILTATION.



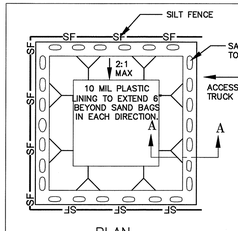
1. STEEL OR WOOD POSTS WHICH SUPPORT THE SILT FENCE SHALL BE INSTALLED ON A SLIGHT ANGLE TOWARD THE ANTICIPATED RUNOFF SOURCE. POST MUST BE EMBEDDED A MINIMUM OF 300 mm (12 INCHES). IF WOOD POSTS CANNOT ACHIEVE 300 mm (12 inches) DEPTH, USE STEEL POSTS.
2. THE TOE OF THE SILT FENCE SHALL BE TRENCHED IN WITH A SPADE OR MECHANICAL TRENCHER, SO THAT THE DOWNSLOPE FACE OF THE TRENCH IS FLAT AND PERPENDICULAR TO THE LINE OF FLOW.
3. THE TRENCH MUST BE A MINIMUM OF 150 mm (6 inches) DEEP AND 150 mm (6 inches) WIDE TO ALLOW FOR THE SILT FENCE FABRIC TO BE LAID IN THE GROUND AND BACKFILLED WITH COMPACTED MATERIAL.
4. SILT FENCE FABRIC SHOULD BE SECURELY FASTENED TO EACH STEEL OR WOOD SUPPORT POST OR TO WOVEN WIRE , WHICH IS IN TURN ATTACHED TO THE STEEL OR WOOD FENCE POST.
5. INSPECTION SHALL BE MADE WEEKLY OR AFTER EACH RAINFALL EVENT AND REPAIR OR REPLACEMENT SHALL BE MADE PROMPTLY AS NEEDED.
6. SILT FENCE SHALL BE REMOVED WHEN THE SITE IS COMPLETELY STABILIZED SO AS NOT TO BLOCK OR IMPEDE STORM FLOW OR DRAINAGE.
7. ACCUMULATED SILT SHALL BE REMOVED WHEN IT REACHES A DEPTH OF 150 mm (6 inches). THE SILT SHALL BE DISPOSED OF ON AN APPROVED SITE AND IN SUCH A MANNER THAT WILL NOT CONTRIBUTE TO ADDITIONAL SILTATION.

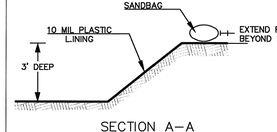
CITY OF AUSTIN WATERSHED PROTECTION DEPARTMENT		SILT FENCE	
RECORD COPY SIGNED BY MORGAN BYARS	09/01/2011 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 642S-1



NOTES:
1. STONE SIZE: 75–125 mm (3–5") OPEN GRADED ROCK.
2. LENGTH: AS EFFECTIVE BUT NOT LESS THAN 15 m (50').
3. THICKNESS: NOT LESS THAN 200 mm (8").
4. WIDTH: NOT LESS THAN FULL WIDTH OF ALL POINTS OF INGRESS/EGRESS.
5. WASHING: WHEN NECESSARY, VEHICLE WHEELS SHALL BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTRANCE ONTO PUBLIC ROADWAY. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE AND DRAINS INTO AN APPROVED TRAP OR SEDIMENT BASIN. ALL SEDIMENT SHALL BE PREVENTED FROM ENTERING ANY STORM DRAIN, DITCH OR WATERCOURSE USING APPROVED METHODS.
6. MAINTENANCE: THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC ROADWAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND, AS WELL AS REPAIR AND CLEAN OUT OF ANY MEASURE DEVICES USED TO TRAP SEDIMENT. ALL SEDIMENTS THAT IS SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC ROADWAY MUST BE REMOVED IMMEDIATELY.
7. DRAINAGE: ENTRANCE MUST BE PROPERLY GRADED OR INCORPORATE A DRAINAGE SWALE TO PREVENT RUNOFF FROM LEAVING THE CONSTRUCTION SITE.

CITY OF AUSTIN WATERSHED PROTECTION DEPARTMENT		STABILIZED CONSTRUCTION ENTRANCE	
RECORD COPY SIGNED BY J. PATRICK MURPHY	6/28/00 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 641S-1





CONCRETE WASHOUT AREA NOTES:

1. WASHOUT SHALL BE INSTALLED PRIOR TO PLACING ANY CONCRETE ON–SITE.
2. INSTALL DIRECTIONAL SIGNS AS NECESSARY TO INDICATE WASHOUT LOCATION TO CONCRETE SUPPLY VEHICLES.
3. WASHOUT SHALL BE INSPECTED WEEKLY AND AFTER RAIN EVENTS IN ACCORDANCE WITH SWPPP.
4. CONTRACTOR TO MAINTAIN, REPAIR, ENLARGE OR RELOCATE WASHOUT AS NECESSARY TO MEET PROJECT REQUIREMENTS.
5. WHEN NECESSARY DURING CONSTRUCTION, OR AT THE COMPLETION OF ALL CONSTRUCTION, CONCRETE SHALL BE REMOVED AND LAWFULLY DISPOSED OF AND THE WASHOUT AREA FILLED WITH COMPACTED SELECT FILL.
6. CONCRETE WASHOUT SHALL NOT BE LOCATED WITHIN 50' OF STORM INLET, DITCH, OR SUBSURFACE DRAINAGE SYSTEM.

NOTE: SIZE VARIES BASED ON ANTICIPATED VOLUME OF CONCRETE TO BE PLACED. MINIMUM SIZE BOTTOM AS PER TABLE BELOW.

NO. CONCRETE TRUCKS	MIN. SIZE BOTTOM
10 OR LESS	4'x4'
10 - 25	6'x6'
25 - 35	8'x8'

1 CONCRETE WASHOUT DETAIL
SCALE: N.T.S.

STATE OF TEXAS
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CARLSON, BRIGANCE, & DOERING, INC.
ID # F3791
1/1/2019

DESIGNED BY:	DRAFTED BY:
DRJ	RH/TDC/PO

DATE
REVISION

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SHEET NAME: EROSION CONTROL DETAILS
JOB NAME: ARROWHEAD RANCH PHASE 3
PROJECT: STREET, DRAINAGE, WATER, AND WASTEWATER IMPROVEMENTS

DATE: OCTOBER 2019
JOB NUMBER: 4999
SHEET: 8 OF 35
SHEET NO.: 8

FILE PATH: J:\ACAD\4999\dwg\4999-EROSION NOTES.dwg - Oct 31, 2019 - 7:42am

SCALE: 1" = 50'

0 50' 100'

12+55.16 SSLN A
5' X 5' AREA INLET A1

12+02.40 SSLN A
PI = 45° RT

PINK GRANITE BLVD.

ARROWHEAD RANCH
PHASE 2B

9+64.62 SSLN A
PT

8+71.78 SSLN A
5' X 5' AREA INLET A2

7+71.23 SSLN A
PC

PALMILLAS DR.

GOSHEN DR.

3+62.18 SSLN B
5' X 5' AREA INLET A4

3+00.00 SSLN B
PC

2+16.89 SSLN B
PT

ARROWHEAD RANCH
PHASE 4

5+50.76 SSLN A
5' X 5' AREA INLET A3

3+21.16 SSLN A
5' X 5' AREA INLET A5

3+52.30 SSLN A
PT

0+06.46 SSLN B
PI = 45° RT

3+33.18 SSLN A
PC

2+57.65 SSLN A
PT

3+12.72 SSLN A
PI = 45° RT

2+46.00 SSLN A
PT

PARK LOT
6.68 ACRES

PARK LOT
1.47 ACRES

1+65.07 SSLN A
GRADE BREAK

0+63.41 SSLN A
5' X 5' AREA INLET A6

1+15.33 SSLN A
PC

0+00.00 SSLN A
BEGIN 36" RCP
HEADWALL

50.0' R.O.W.
20.0' B-B
5.0'

WMN A
WMN B
WMN C
WMN D

Curve Table					
Curve #	Radius	Tangent	Delta	Chord	Arc Length
C1	280.00'	100.74'	039°34'28"	189.58'	193.40'
C2	620.00'	144.93'	026°18'53"	282.26'	284.75'
C3	420.00'	11.07'	003°01'07"	22.13'	22.13'
C4	420.00'	65.86'	017°49'30"	130.14'	130.66'

STATE OF TEXAS
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11/1/2019

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SHEET NAME: STORM OVERALL
JOB NAME: ARROWHEAD RANCH PHASE 3
PROJECT: STREET, DRAINAGE, WATER, AND WASTEWATER IMPROVEMENTS

DATE: OCTOBER 2019
JOB NUMBER: 4999
SHEET: 19 OF 35
SHEET NO.: 19

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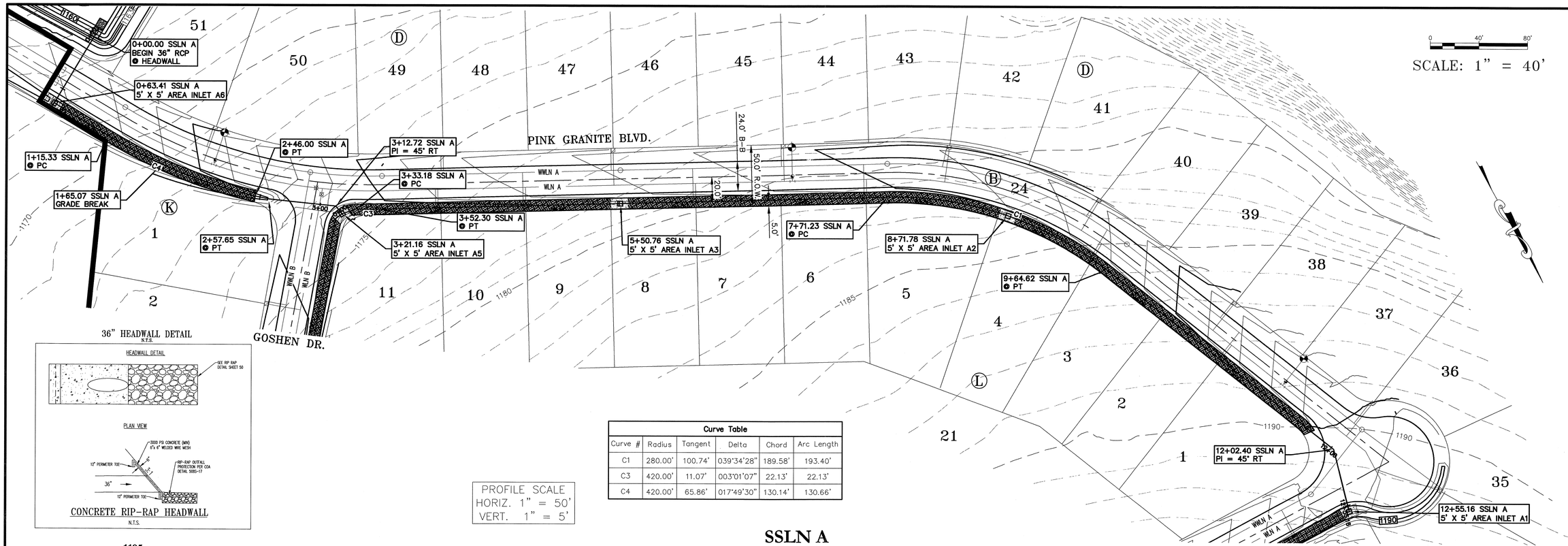
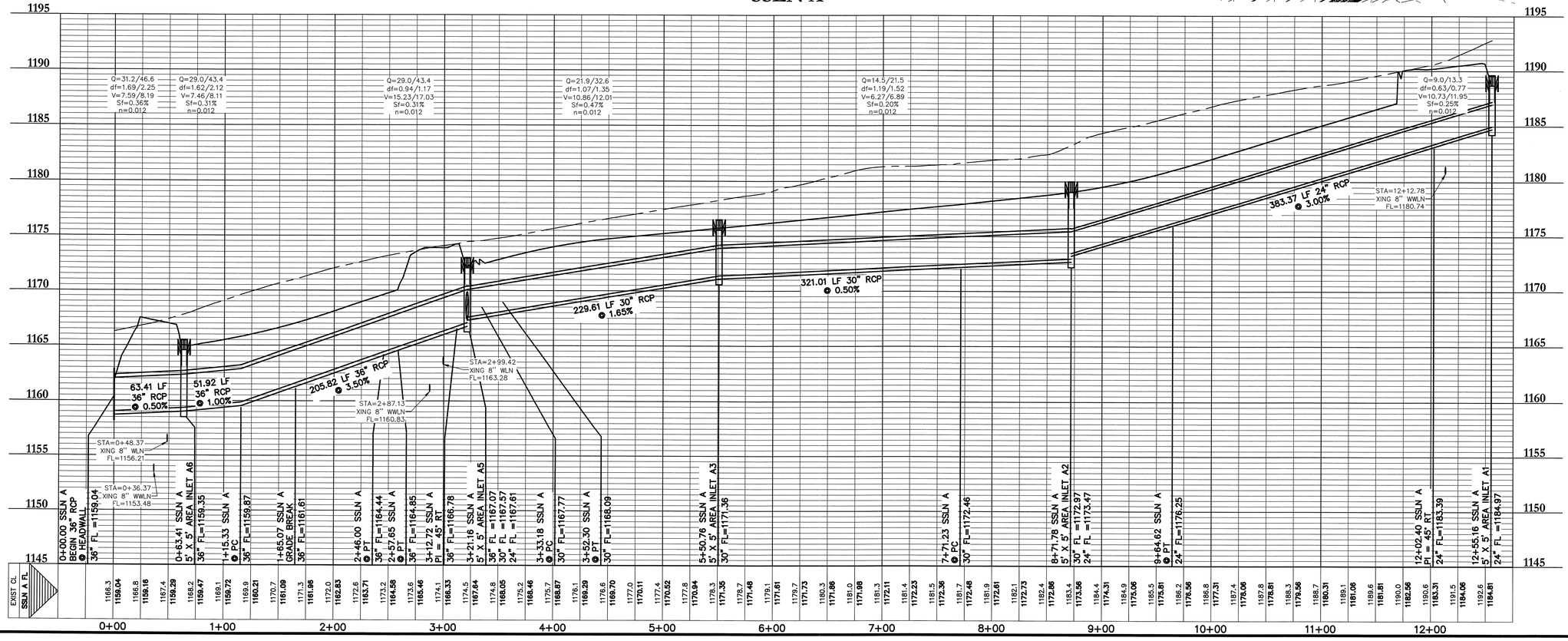


36" HEADWALL DETAIL
N.T.S.

PROFILE SCALE
HORIZ. 1" = 50'
VERT. 1" = 5'

Curve Table					
Curve #	Radius	Tangent	Delta	Chord	Arc Length
C1	280.00'	100.74'	039°34'28"	189.58'	193.40'
C3	420.00'	11.07'	003°01'07"	22.13'	22.13'
C4	420.00'	65.86'	017°49'30"	130.14'	130.66'

SSLN A



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Fax No. (512) 280-5165

SHEET NAME: SSLN A

JOB NAME: ARROWHEAD RANCH PHASE 3

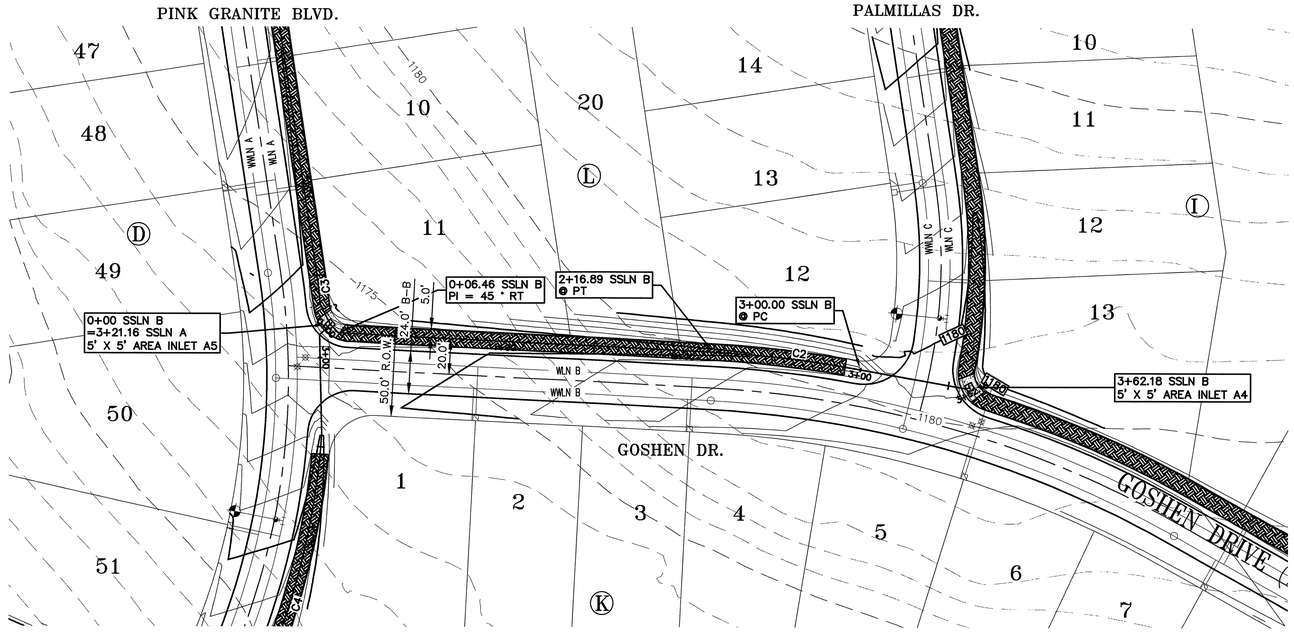
PROJECT: STREET, DRAINAGE, WATER, AND WASTEWATER IMPROVEMENTS

DATE: OCTOBER 2019

JOB NUMBER: 4999

SHEET: 20 OF 35

SHEET NO.: 20

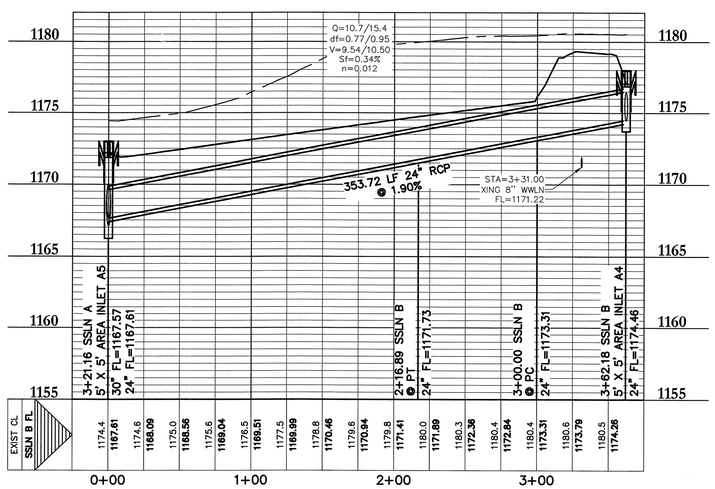


SCALE: 1" = 40'

Curve Table					
Curve #	Radius	Tangent	Delta	Chord	Arc Length
C2	620.00'	144.93'	026°18'53"	282.26'	284.75'

PROFILE SCALE
HORIZ. 1" = 50'
VERT. 1" = 5'

SSLN B



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REVISION / DATE

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SHEET NAME: SSLN B

JOB NAME: ARROWHEAD RANCH PHASE 3

PROJECT: STREET, DRAINAGE, WATER, AND WASTEWATER IMPROVEMENTS

DATE: OCTOBER 2019

JOB NUMBER: 4999

SHEET: 21 OF 35

SHEET NO.: 21

AREA INLET A3

WEIR EQUATION

$$\left(\frac{Q}{C*L}\right)^{2/3} = H$$

$$\left(\frac{13.8}{3*20}\right)^{2/3} = 0.38'$$

$H_{REQ.} = 0.38'$

$H_{AVAIL.} = 1.25'$

ORIFICE EQUATION

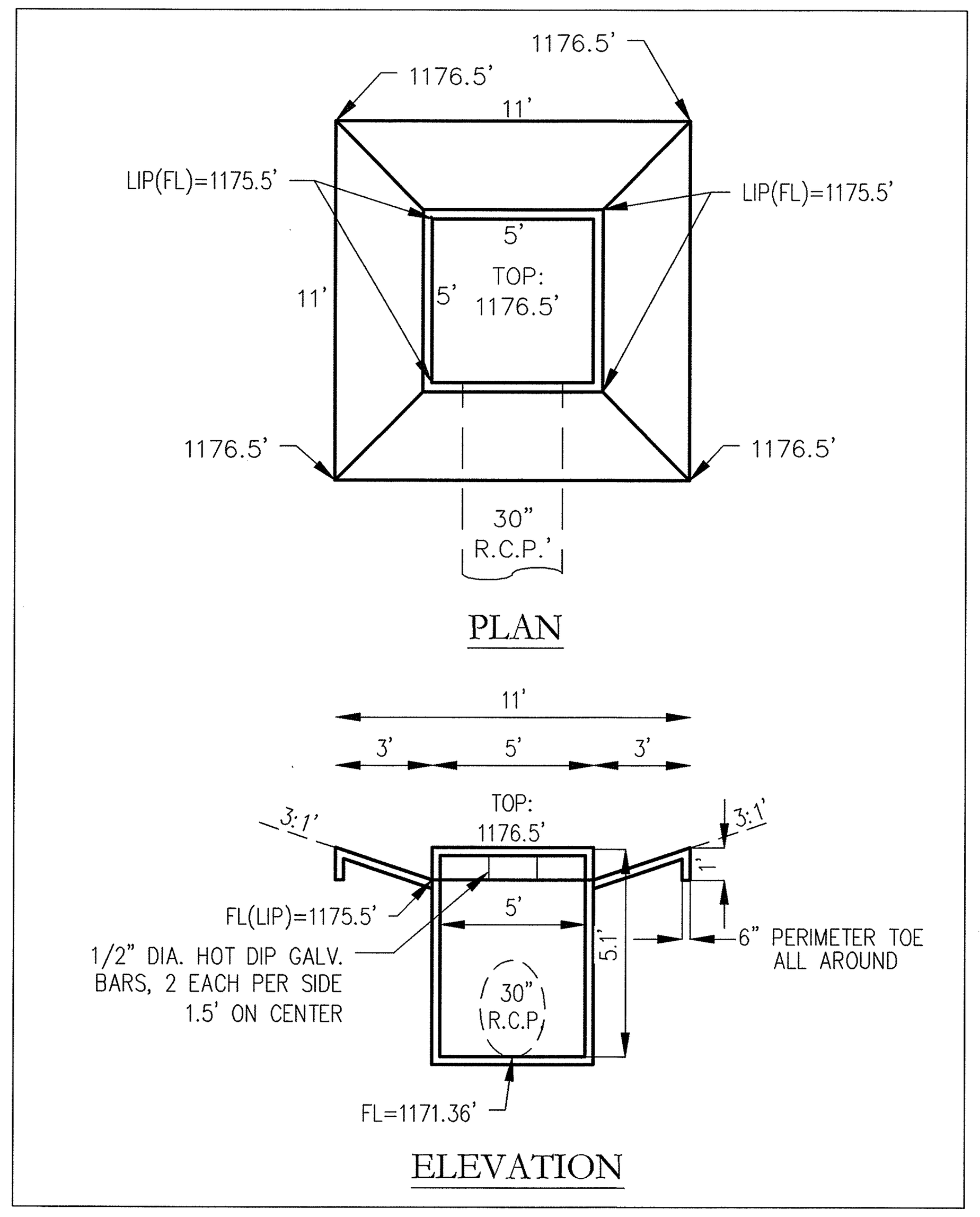
$$\frac{\left(\frac{Q}{CoA}\right)^2}{2g} = H$$

$$\frac{\left(\frac{13.8}{0.6*4.91}\right)^2}{64.4} = 0.18'$$

$H = 1.25' + 0.18' = 1.43'$

$H_{REQ.} = 1.43'$

$H_{AVAIL.} = 5.14'$



5'x5' AREA INLET DETAIL

AREA INLET A2

WEIR EQUATION

$$\left(\frac{Q}{C*L}\right)^{2/3} = H$$

$$\left(\frac{10.0}{3*20}\right)^{2/3} = 0.30'$$

$H_{REQ.} = 0.30'$

$H_{AVAIL.} = 1.25'$

ORIFICE EQUATION

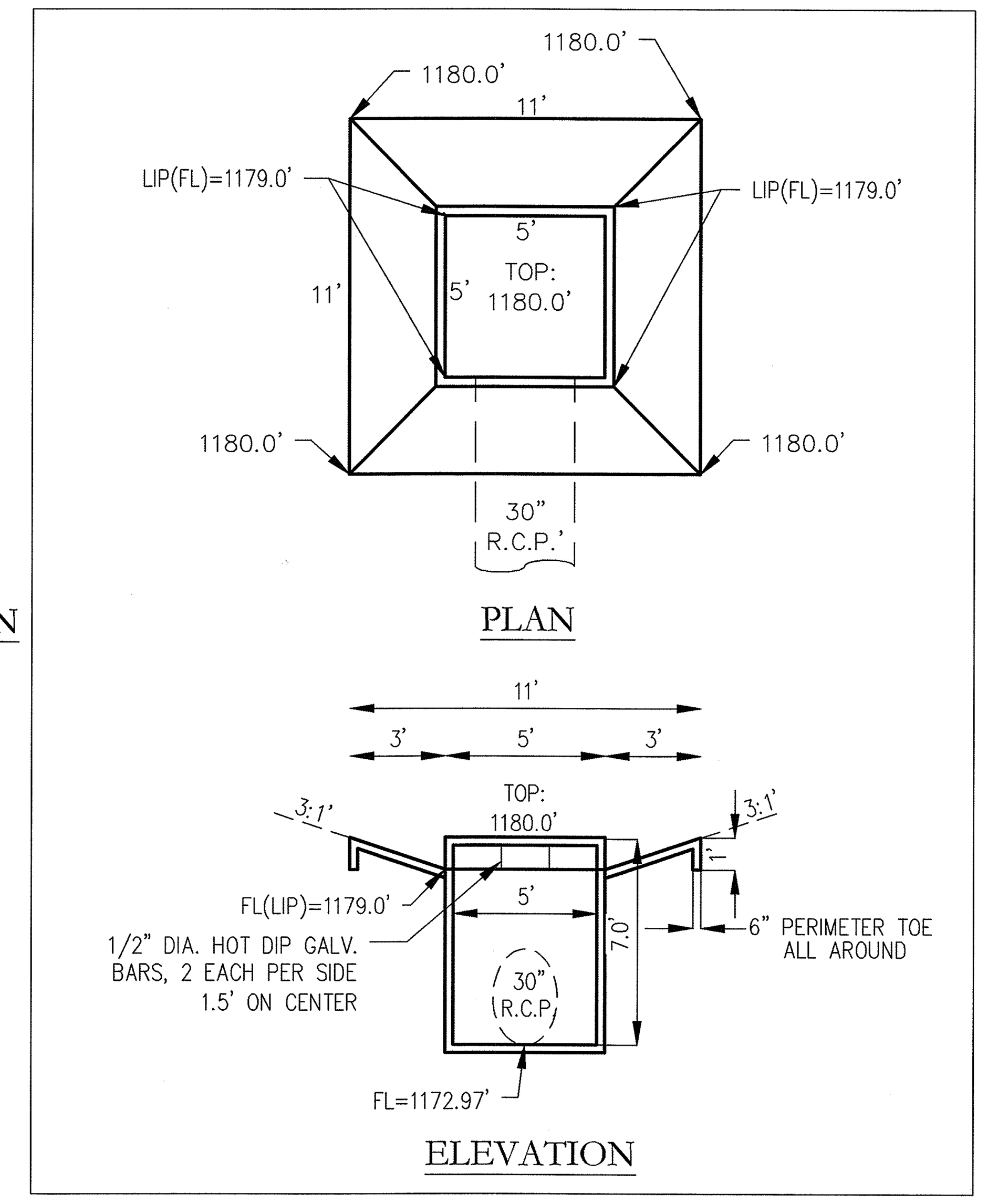
$$\frac{\left(\frac{Q}{CoA}\right)^2}{2g} = H$$

$$\frac{\left(\frac{10.0}{0.6*4.91}\right)^2}{64.4} = 0.18'$$

$H = 1.25' + 0.18' = 1.43'$

$H_{REQ.} = 1.43'$

$H_{AVAIL.} = 7.00'$



5'x5' AREA INLET DETAIL

AREA INLET A1

WEIR EQUATION

$$\left(\frac{Q}{C*L}\right)^{2/3} = H$$

$$\left(\frac{13.3}{3*20}\right)^{2/3} = 2.12'$$

$H_{REQ.} = 0.37'$

$H_{AVAIL.} = 1.00'$

ORIFICE EQUATION

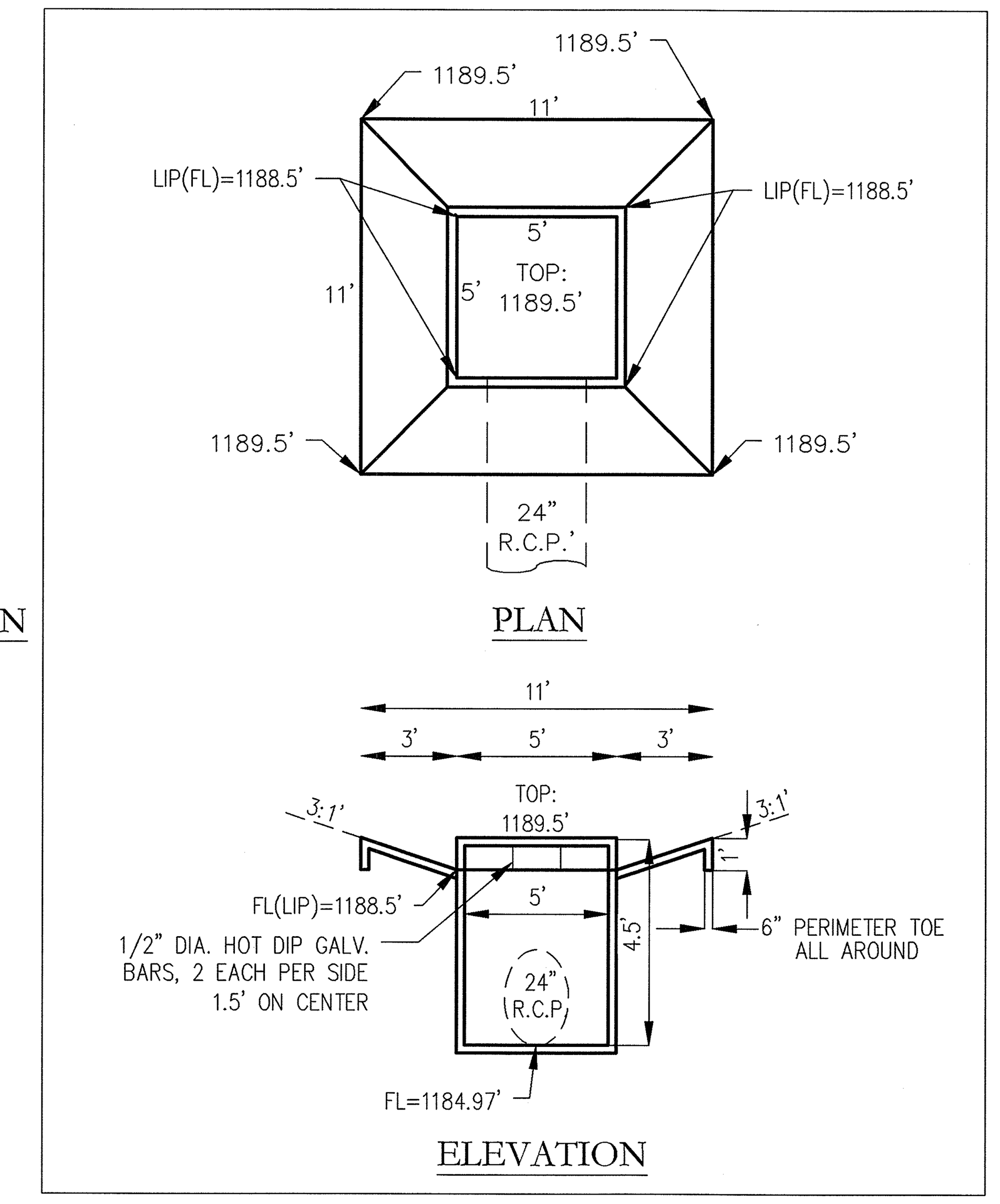
$$\frac{\left(\frac{Q}{CoA}\right)^2}{2g} = H$$

$$\frac{\left(\frac{13.3}{0.6*3.14}\right)^2}{64.4} = 0.77'$$

$H = 1.00' + 0.77' = 1.77'$

$H_{REQ.} = 1.77'$

$H_{AVAIL.} = 4.50'$



5'x5' AREA INLET DETAIL

AREA INLET A6

WEIR EQUATION

$$\left(\frac{Q}{C*L}\right)^{2/3} = H$$

$$\left(\frac{5.8}{3*20}\right)^{2/3} = 0.21'$$

$H_{REQ.} = 0.21'$

$H_{AVAIL.} = 1.50'$

ORIFICE EQUATION

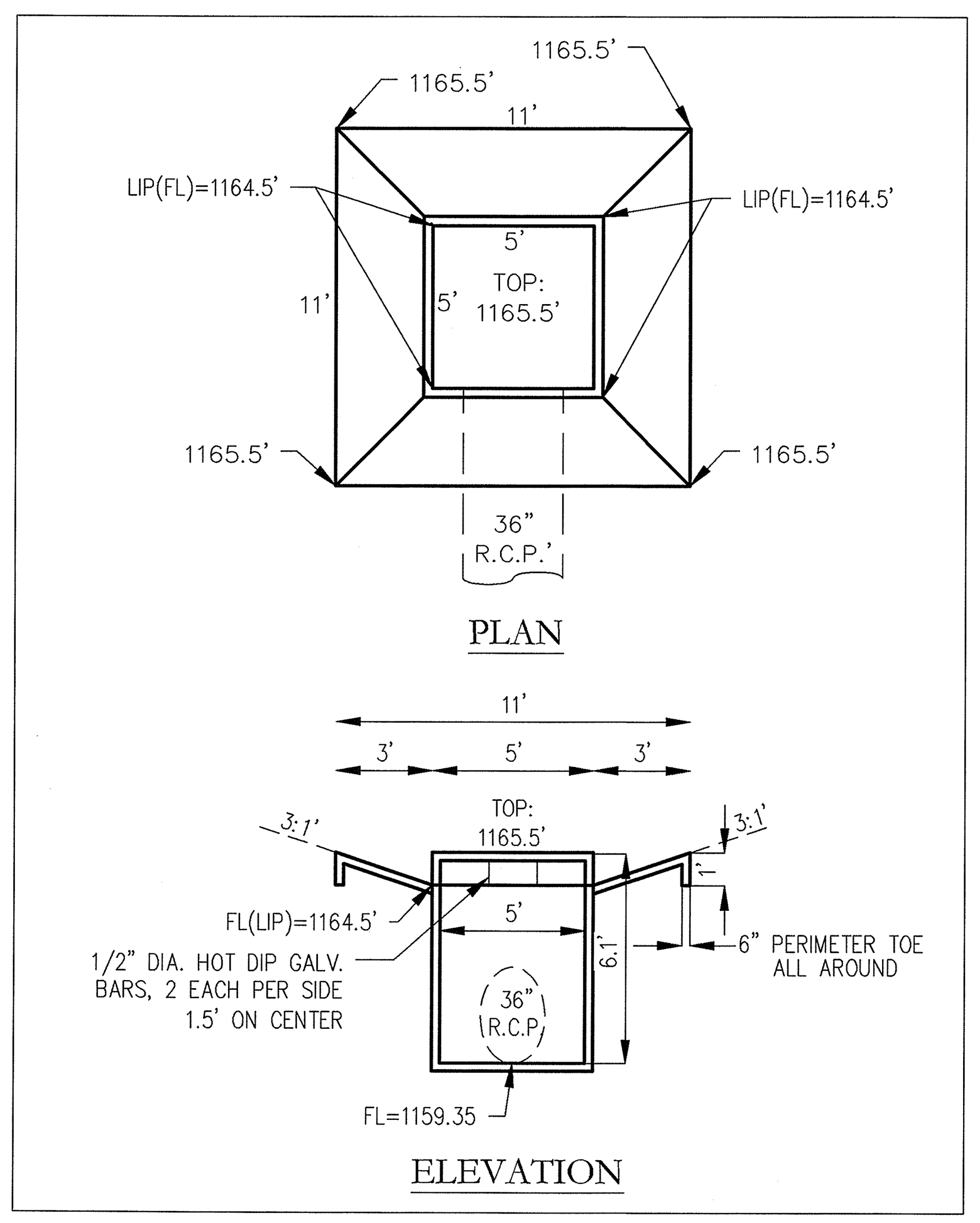
$$\frac{\left(\frac{Q}{CoA}\right)^2}{2g} = H$$

$$\frac{\left(\frac{5.8}{0.6*7.07}\right)^2}{64.4} = 0.03'$$

$H = 1.50' + 0.03' = 1.53'$

$H_{REQ.} = 1.53'$

$H_{AVAIL.} = 6.15'$



5'x5' AREA INLET DETAIL

AREA INLET A5

WEIR EQUATION

$$\left(\frac{Q}{C*L}\right)^{2/3} = H$$

$$\left(\frac{14.7}{3*20}\right)^{2/3} = 0.39'$$

$H_{REQ.} = 0.39'$

$H_{AVAIL.} = 1.50'$

ORIFICE EQUATION

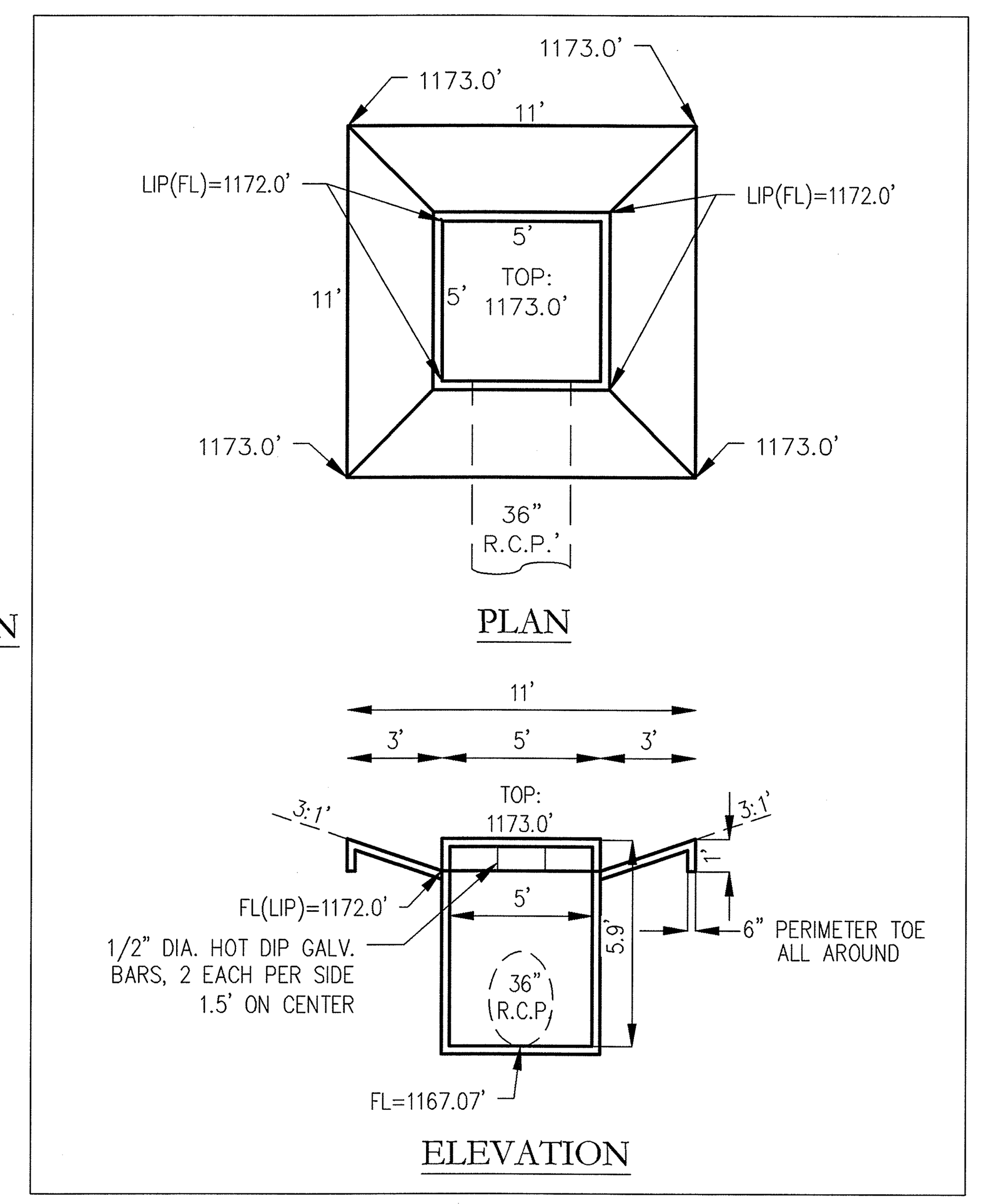
$$\frac{\left(\frac{Q}{CoA}\right)^2}{2g} = H$$

$$\frac{\left(\frac{14.7}{0.6*7.07}\right)^2}{64.4} = 0.19'$$

$H = 1.50' + 0.19' = 1.69'$

$H_{REQ.} = 1.69'$

$H_{AVAIL.} = 5.93'$



5'x5' AREA INLET R3 DETAIL

AREA INLET A4

WEIR EQUATION

$$\left(\frac{Q}{C*L}\right)^{2/3} = H$$

$$\left(\frac{15.4}{3*20}\right)^{2/3} = 0.40'$$

$H_{REQ.} = 0.40'$

$H_{AVAIL.} = 1.00'$

ORIFICE EQUATION

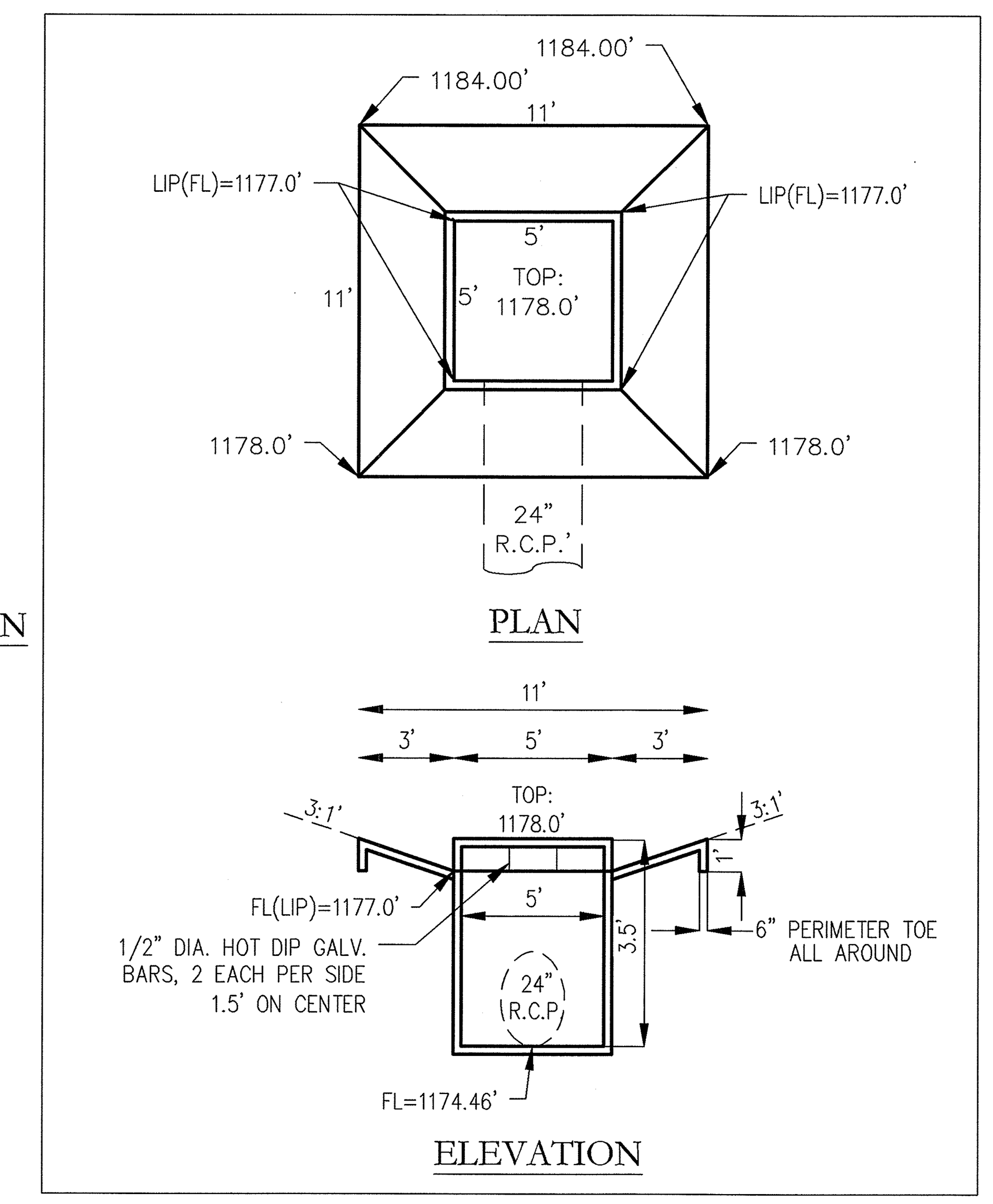
$$\frac{\left(\frac{Q}{CoA}\right)^2}{2g} = H$$

$$\frac{\left(\frac{15.4}{0.6*3.14}\right)^2}{64.4} = 1.04'$$

$H = 1.00' + 1.04' = 2.04'$

$H_{REQ.} = 2.04'$

$H_{AVAIL.} = 3.54'$



5'x5' AREA INLET DETAIL

STATE OF TEXAS
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11/1/2019

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SHEET NAME: AREA INLET DETAILS
JOB NAME: ARROWHEAD RANCH PHASE 3
PROJECT: STREET, DRAINAGE, WATER, AND WASTEWATER IMPROVEMENTS

DATE: OCTOBER 2019
JOB NUMBER: 4999
SHEET: 22 OF 35
SHEET NO.: 22

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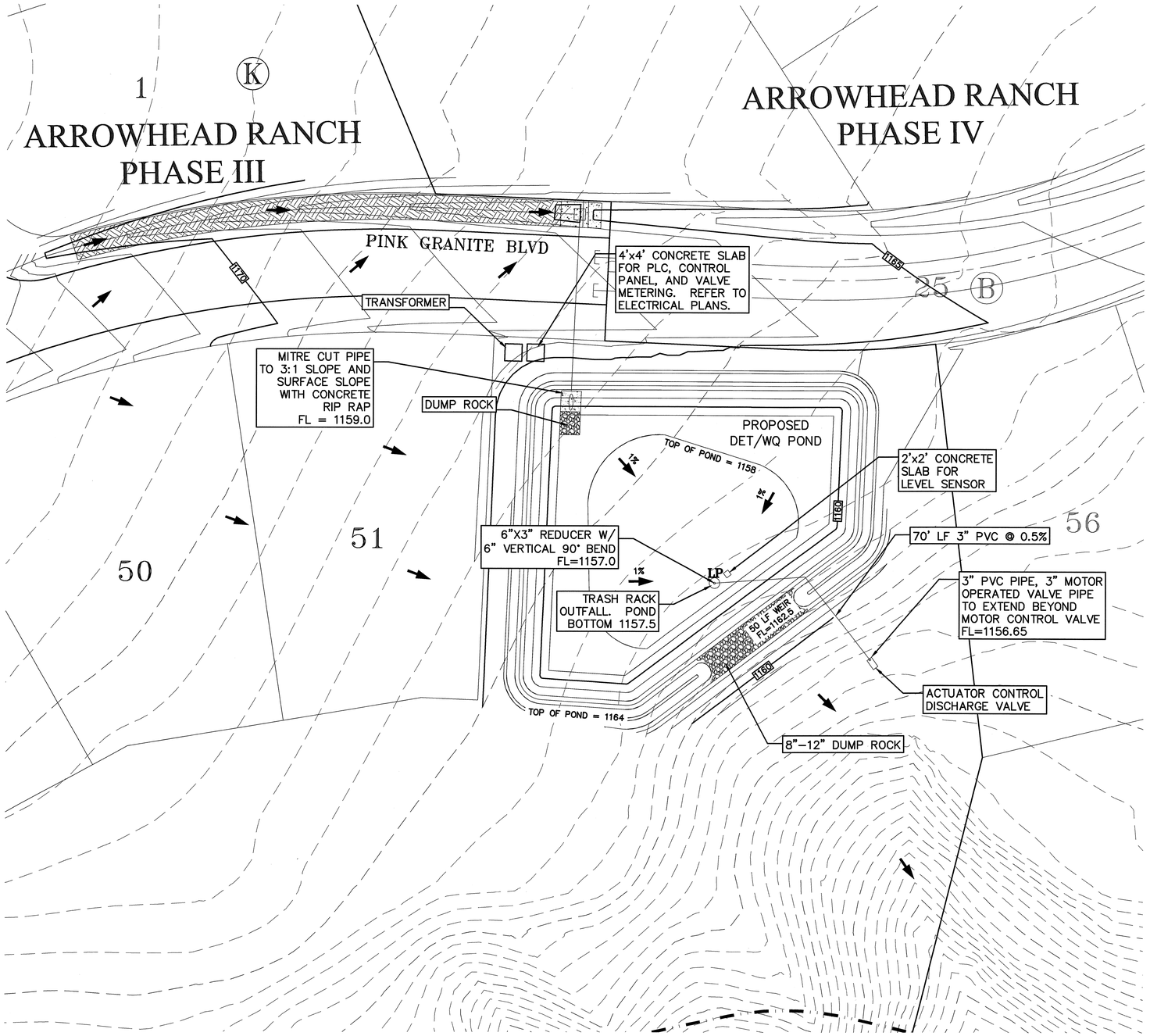

0 20' 40'

SCALE: 1" = 20'

PROPOSED CONDITIONS								
HEC-HMS Input							HEC-HMS Results	
Basin	Area (ac)	Area (sf)	Area (sq mi)	Impervious Cover (sf)	Impervious Cover (%)	Lag Time (min)	25 YR Event (cfs)	100 YR Event (cfs)
P1	13.11	570961	0.02048	153074	26.81%	16.08	49.0	69.1
POND A							48.7	68.8
POND A OUTFLOW							**48.7**	**68.8**

DETENTION STAGE STORAGE TABLE - POND A						
Elevation (ft)	Area (Sq. ft.)	Area (Acres)	Avg. Area (Acres)	Delta Volume (Acre-Feet)	Total Volume (Acre-Feet)	Storage (cf)
1158.0	4026	0.0924	0.0000	0.0000	0.0000	0
1159.0	7159	0.1643	0.1284	0.1284	0.1284	5,593
1160.0	8231	0.1890	0.1767	0.1767	0.3050	13,288
1161.0	9362	0.2149	0.2019	0.2019	0.5070	22,084
1162.0	10550	0.2422	0.2286	0.2286	0.7355	32,040
1163.0	11794	0.2708	0.2565	0.2565	0.9920	43,212
1164.0	13095	0.3006	0.2857	0.2857	1.2777	55,657

POND-A SUMMARY			
STORM	Q_{IN} (cfs)	Q_{OUT} (cfs)	W.S.E. (ft)
25-YR	49.0	48.7	1163.0
100-YR	69.1	68.8	1163.1

WQV= 34,963 Cu./Ft.
Pipe Diameter= 2.25 in.
Q= 0.274 cfs
Draw-Down Time= 127,478.7 Sec.
Draw-Down Time= 35.41 Hr.

STATE OF TEXAS
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11/1/2019

DESIGNED BY:	DRAFTED BY:
DSJ	RH/TDC/PO

DATE
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SHEET NAME: POND A (1 OF 2)
JOB NAME: ARROWHEAD RANCH PHASE 3
PROJECT: STREET, DRAINAGE, WATER, AND WASTEWATER IMPROVEMENTS

DATE: OCTOBER 2019
JOB NUMBER: 4999
SHEET: 23 OF 35
SHEET NO.: 23

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Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Project Name: ARROWHEAD RANCH
Date Prepared: 10/10/2019

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 spread:

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 lc
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 =	Hays	
Total project area included in plan * =	27.72	acres
Predevelopment impervious area within the limits of the plan * =	0.00	acres
Total post-development impervious area within the limits of the plan* =	7.43	acres
Total post-development impervious cover fraction * =	0.27	
P =	33	inches
$L_{M\ TOTAL\ PROJECT}$ =	6670	lbs.

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

Number of drainage basins / outfalls areas leaving the plan area = 1

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

Drainage Basin/Outfall Area No. = 1

Total drainage basin/outfall area =	27.72	acres
Predevelopment impervious area within drainage basin/outfall area =	0.00	acres
Post-development impervious area within drainage basin/outfall area =	7.43	acres
Post-development impervious fraction within drainage basin/outfall area =	0.27	
$L_{M\ THIS\ BASIN}$ =	6670	lbs.

3. Indicate the proposed BMP Code for this basin.

Proposed BMP = **Wet Basin**
Removal efficiency = **91** percent
BATCH DETENTION

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_I 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_R = TSS Load removed from this catchment area by the proposed BMP

A_C =	27.72	acres
A_I =	7.43	acres
A_P =	20.29	acres
L_R =	8050	lbs

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

Desired $L_{M\ THIS\ BASIN}$ = 6670 lbs.

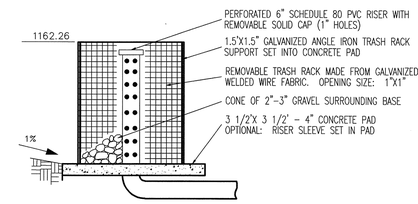
F = 0.83

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

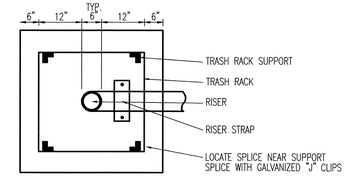
Rainfall Depth =	1.20	inches
Post Development Runoff Coefficient =	0.24	
On-site Water Quality Volume =	29136	cubic feet

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 =	5827	
Total Capture Volume (required water quality volume(s) x 1.20) =	34963	cubic feet



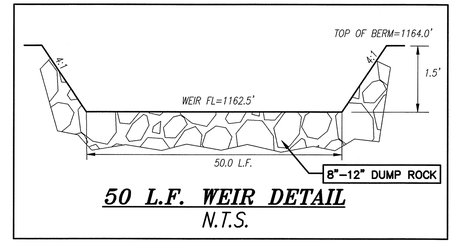
SIDE VIEW OF RISER



TOP VIEW OF RISER (SQUARE DESIGN)
TYPICAL RISER DESIGN FOR PONDS WITH EARTHEN BERMS

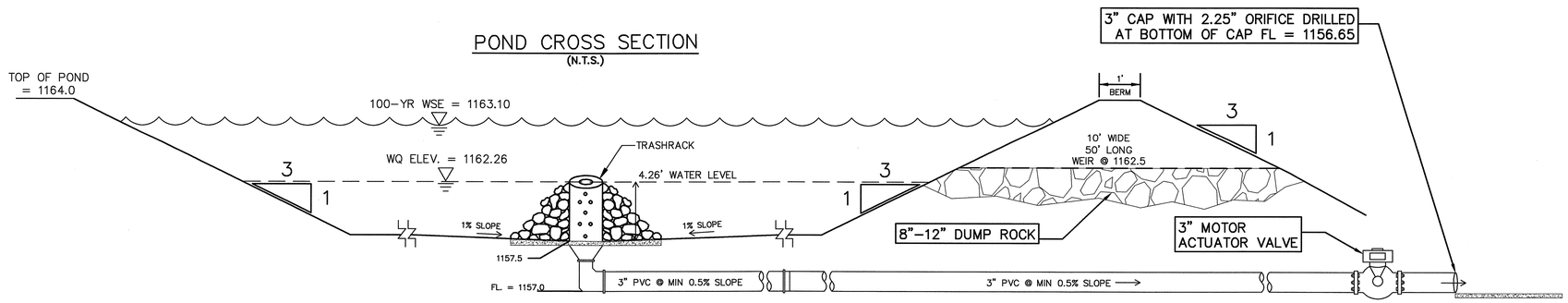
OUTFLOW RISER DETAIL

N.T.S.



50 L.F. WEIR DETAIL
N.T.S.

POND CROSS SECTION
(N.T.S.)



STATE OF TEXAS
RYAN WAYNE PERRY
130060
LICENSED
PROFESSIONAL ENGINEER
CARLSON, BRIGANCE, & DOERING, INC.
ID # F3791
11/1/2019

DESIGNED BY:	DRAFTED BY:
DRJ	RH/TDC/PO

DATE
REVISION

Carlson, Brigance & Doering, Inc.
Civil Engineering ◆ Surveying
FIRM ID #F3791
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Austin, Texas 78749
Phone No. (512) 280-5160
North Office
12129 Rivera Rd., Ste. 690
Austin, Texas 78750
Fax No. (512) 280-5165

SHEET NAME: POND A (2 OF 2)
JOB NAME: ARROWHEAD RANCH PHASE 3
PROJECT: STREET, DRAINAGE, WATER, AND WASTEWATER IMPROVEMENTS

DATE: OCTOBER 2019
JOB NUMBER: 4999
SHEET: 24 OF 35
SHEET NO.: 24

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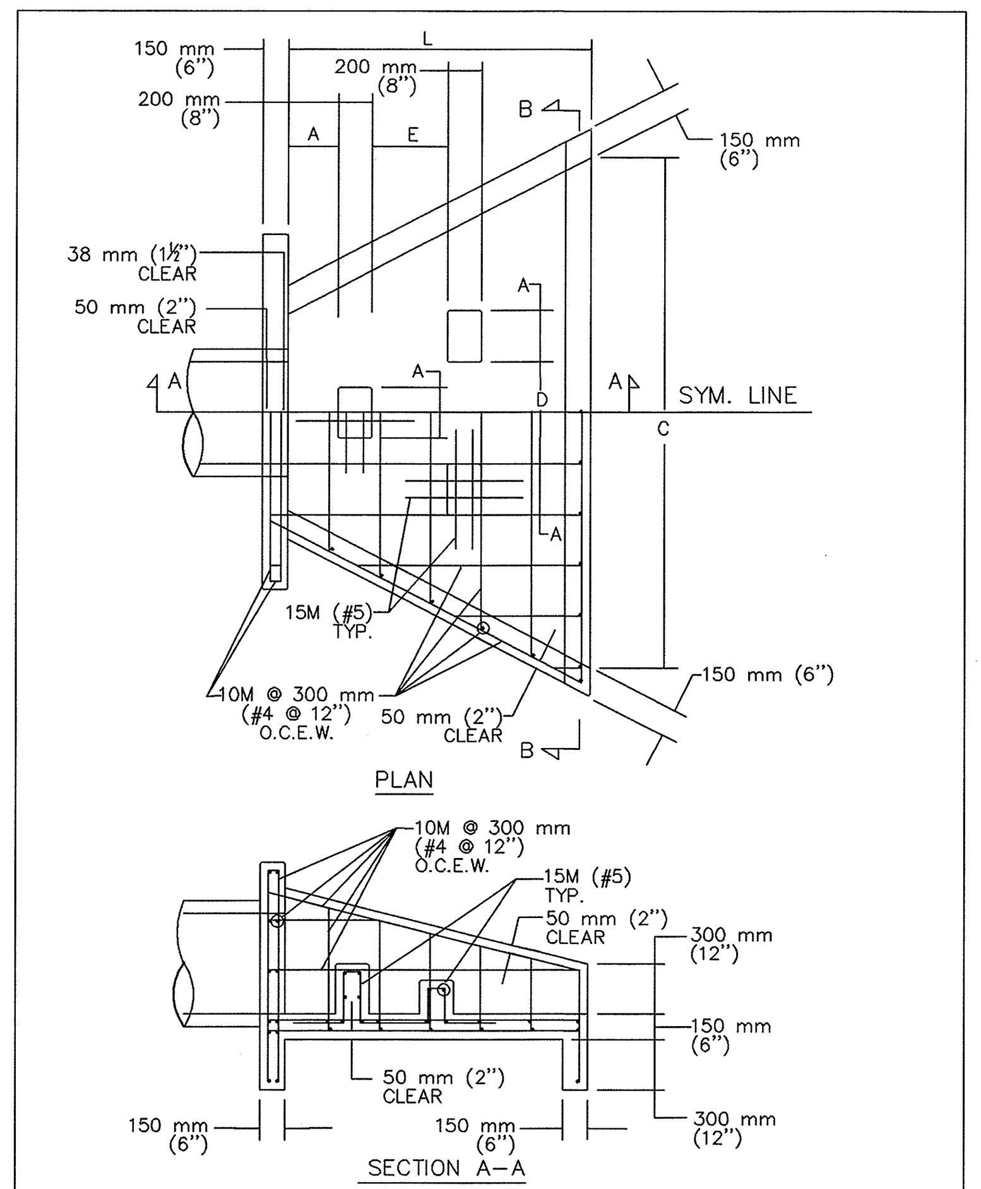
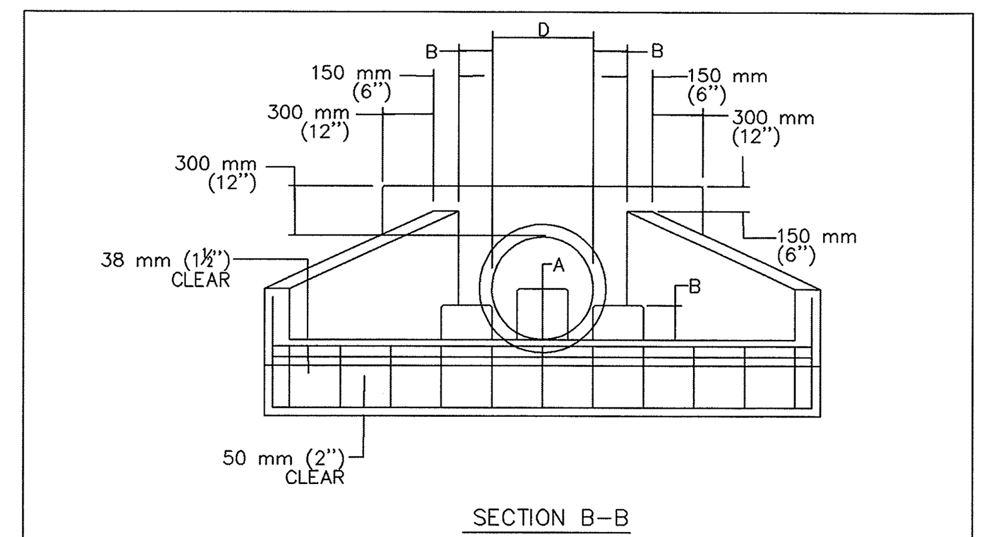


CITY OF AUSTIN DEPARTMENT OF WATERSHED PROTECTION AND DEVELOPMENT REVIEW	STANDARD HEADWALL AND ENERGY DISSIPATORS	
RECORD COPY SIGNED BY BILL GARDNER — 08/20/07 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 508S-13 1 OF 2



SECTION B-B

NOTES:

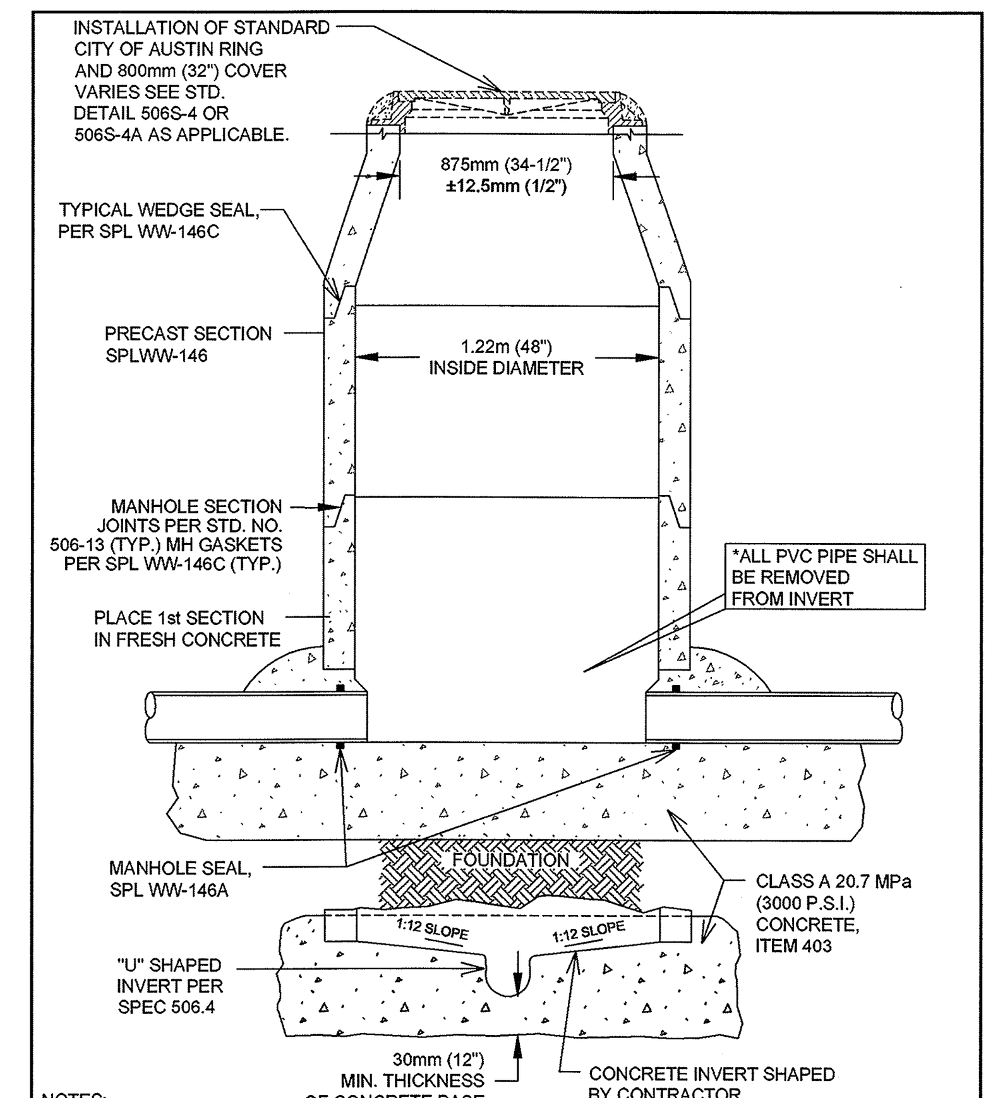
1. ALL CONCRETE SHALL BE TYPE "C" AS PER SPEC. 403S, CONCRETE FOR STURCTURES.
2. CHAMFER ALL EXTERNAL VISIBLE CORNERS.
3. DISSIPATOR BLOCKS REQUIRED ON DISCHARGE HEADWALLS ONLY.

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).

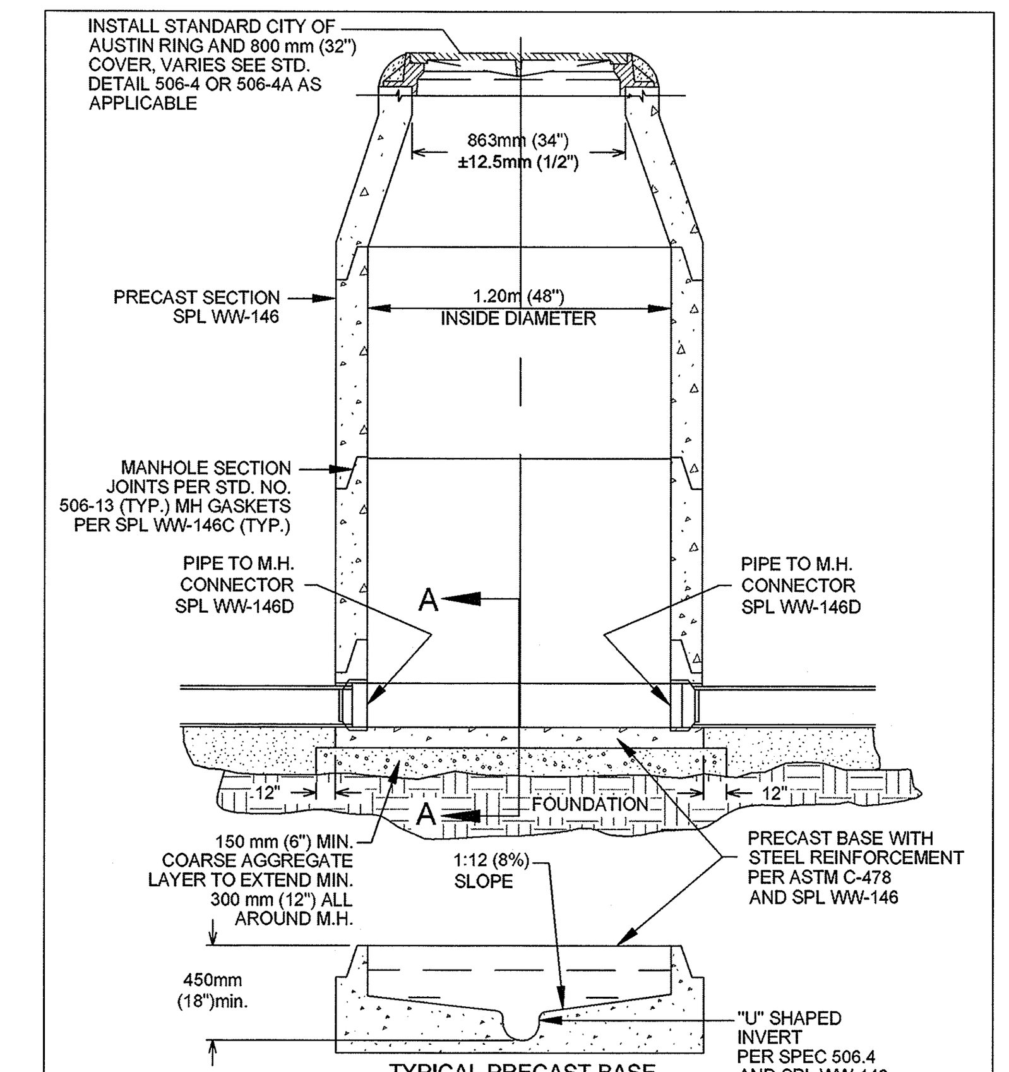
DISCHARGE VELOCITIES GREATER THAN 3 METERS/SECOND (10 fps) REQUIRE ROCK OUTLET PROTECTION.

CITY OF AUSTIN DEPARTMENT OF WATERSHED PROTECTION AND DEVELOPMENT REVIEW	STANDARD HEADWALL AND ENERGY DISSIPATORS	
RECORD COPY SIGNED BY BILL GARDNER — 08/20/07 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 508S-13 2 OF 2



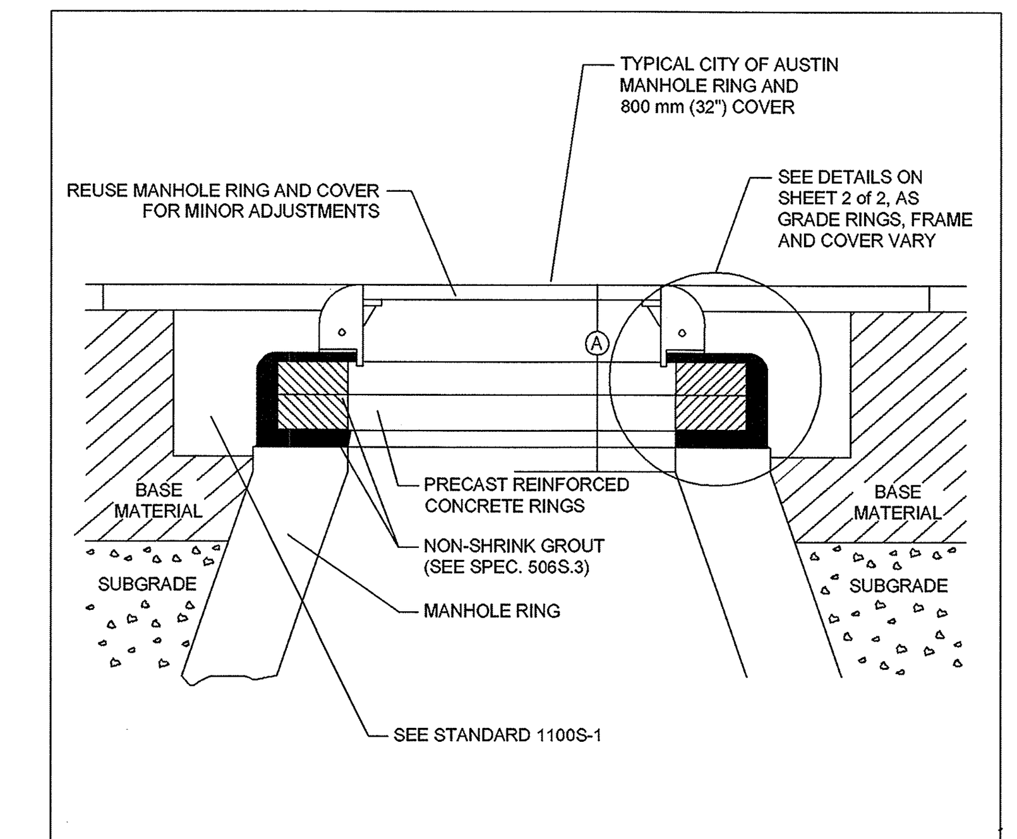
NOTES:
1. FOR EXISTING WW LINES ONLY.
2. MANHOLE FOUNDATION SHALL MEET OR EXCEED STD. SPEC 506.5B
3. FIRST RISER SECTION SHALL BE PLACED PLUMB & LEVEL PRIOR TO SETTING ANY ADDITIONAL SECTIONS.

CITY OF AUSTIN AUSTIN WATER UTILITY	PRECAST MANHOLE ON. CAST IN PLACE BASE	
RECORD COPY SIGNED BY KATHI L FLOWERS 08/31/2011	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 506S-9



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.

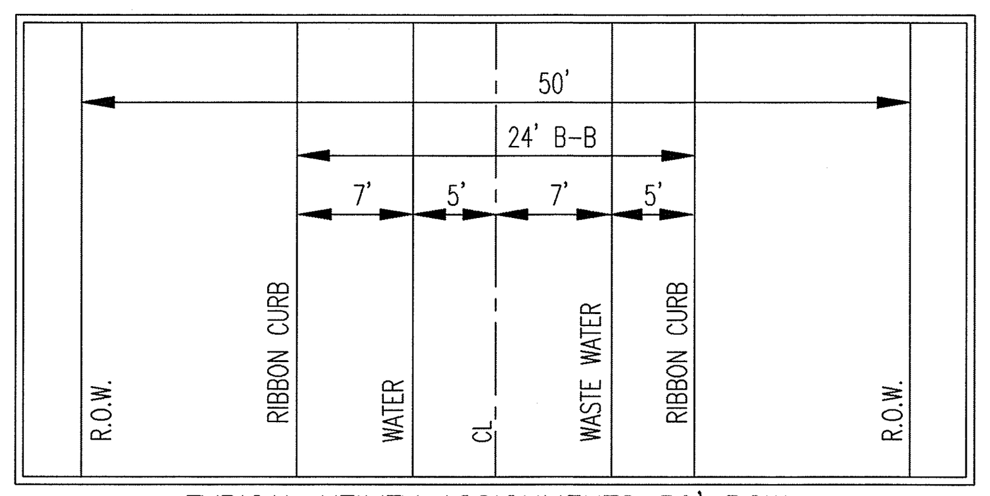
CITY OF AUSTIN AUSTIN WATER UTILITY	WASTEWATER MANHOLE ON PRECAST BASE	
RECORD COPY SIGNED BY KATHI L FLOWERS 08/31/2011	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD	STANDARD NO. 506S-10



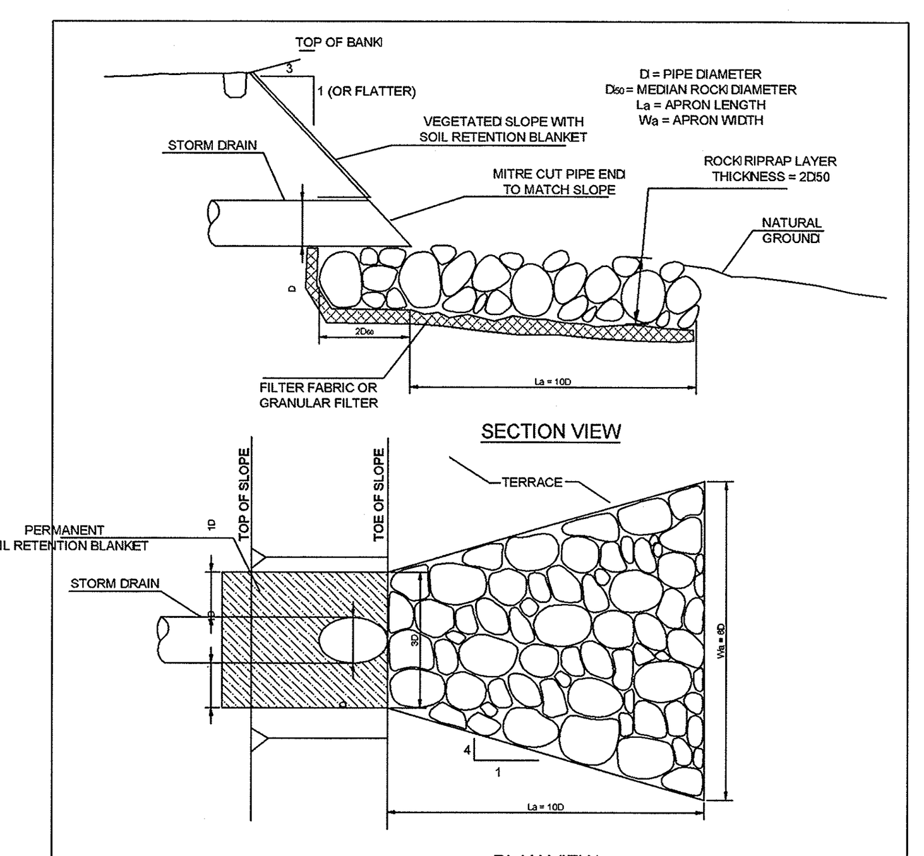
(A) VERTICAL FACE = ALLOWABLE THROAT OR CHIMNEY HEIGHT
= NEW CONSTRUCTION = 525mm = (21") Max.
= EXISTING CONSTRUCTION = 675mm (27") Max.

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	
RECORD COPY SIGNED BY KATHI L FLOWERS 08/31/2011	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 506S-4 1 OF 2



TYPICAL UTILITY ASSIGNMENTS 50' ROW
N.T.S.

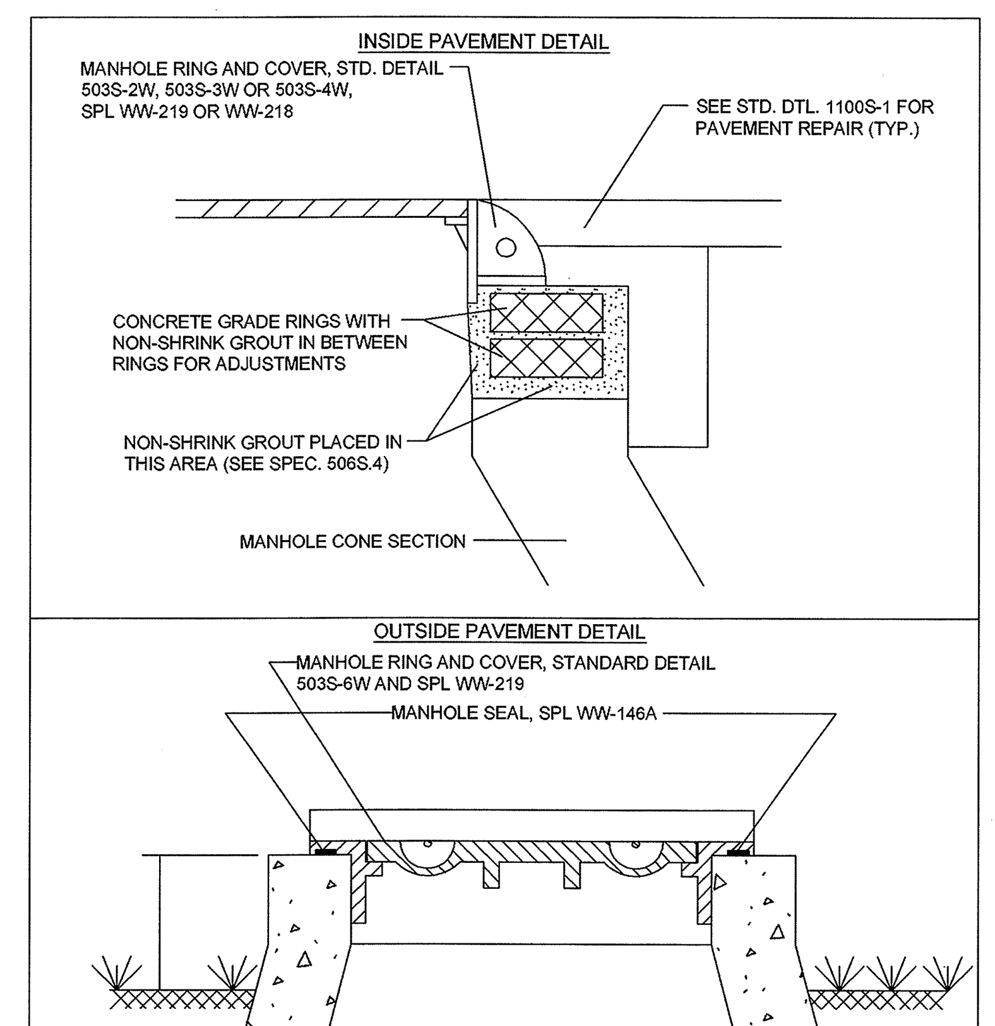


PLAN VIEW

NOTE:
1. ROCK RIPRAP SHALL BE SOUND MATERIAL AND GRADED PER REQUIREMENTS SPECIFIED IN STANDARD SPECIFICATION ITEM NO. 591S.

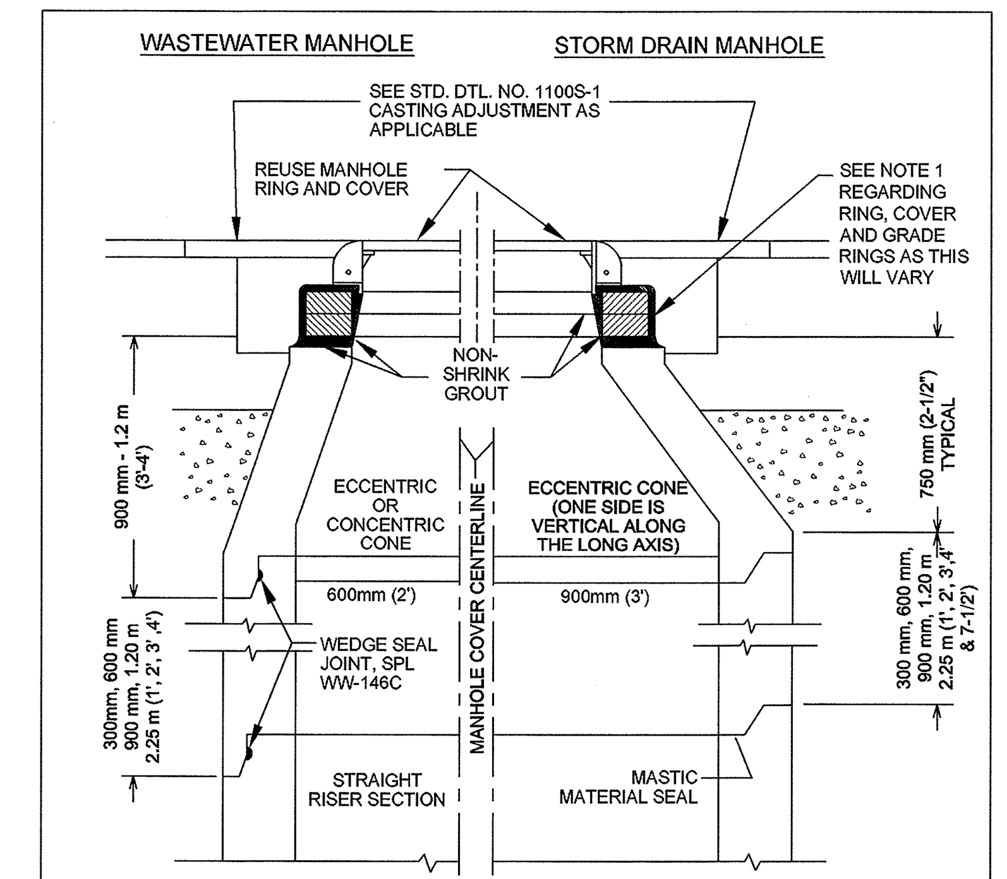
2. ROCK SIZE (D_{50}) AND GRADATION SHALL BE STABLE FOR THE DESIGN HYDRAULIC CONDITIONS AND IN ACCORDANCE WITH THE ECM 1.4.6.D PERMANENT STRUCTURAL PRACTICES, STONE RIPRAP OR OTHERENGINEERING STANDARD OF PRACTICE FOR SIZING ROCK RIPRAP. ROCK RIPRAP D_{50} AND FILTER TYPESHALL BE NOTED ON PLANS.3.GEOTEXTILE FILTER FABRIC SHALL MEET THE REQUIREMENTS SPECIFIED IN STANDARD SPECIFICATIONITEM NO. 620S.4.AGGREGATE FOR GRANULAR FILTER SHALL MEET THE REQUIREMENTS SPECIFIED IN STANDARDSPECIFICATION ITEM NO. 403, AGGREGATE SIZE CLASSIFICATION/GRADE, NUMBER OF LAYERS AND LAYERTHICKNESS SHOULD BE NOTED ON THE PLANS.

CITY OF AUSTIN WATERSHED PROTECTION DEPARTMENT	STORMDRAIN OUTFALL PROTECTION PIPE DISCHARGE ON TERRACE/UPLANDS	
RECORD COPY SIGNED BY MORGAN BYARS 09/01/2011 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 508S-17



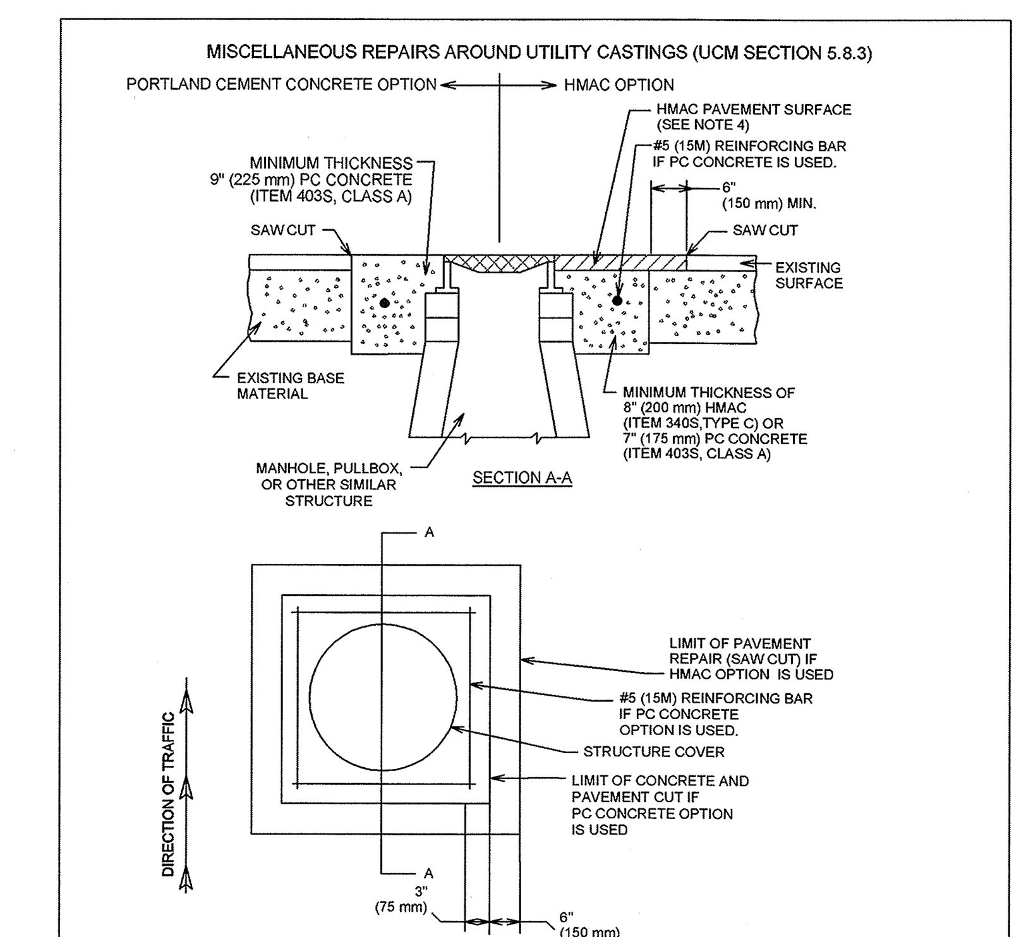
NOTES:
1. FOR USE IN UNPAVED AREAS ONLY
2. WHEN USED WITHIN 100-YEAR FLOODPLAIN, SEE DTL. 506S-6 FOR ADDITIONAL M.H. REQUIREMENTS.
3. DIMENSION B=150-300 mm (6"-12") FOR M.H. LOCATED IN 100-YR FLOOD PLAN. =50-300 mm (2"-12") FOR M.H. OUTSIDE 100-YR FLOOD PLAN.

CITY OF AUSTIN AUSTIN WATER UTILITY	MINOR MANHOLE ADJUSTMENT & NEW MANHOLE CONSTRUCTION	
RECORD COPY SIGNED BY KATHI L FLOWERS 08/31/2011	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 506S-4 2 OF 2



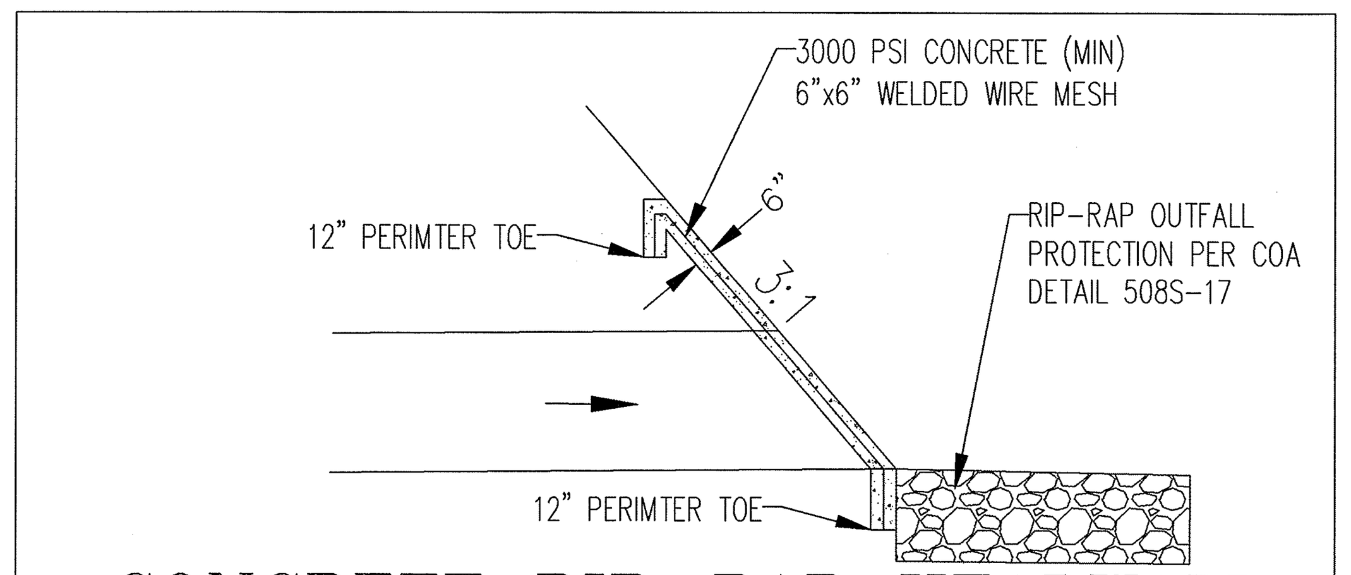
1. SEE "MINOR MANHOLE HEIGHT ADJUSTMENT" STANDARDS 506S-4 AND 506S-4A FOR ADDITIONAL INFORMATION.
2. MANHOLE SECTIONS TEMPORARILY REMOVED FOR ROADWAY CONSTRUCTION MAY BE REUSED ONLY WITH WRITTEN APPROVAL OF THE INSPECTOR. WEDGE SEALS SHALL NOT BE REUSED.
3. ANY COMBINATION OF REMOVING THE GRADE RINGS, 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	
RECORD COPY SIGNED BY KATHI L FLOWERS 08/31/2011	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 506S-2

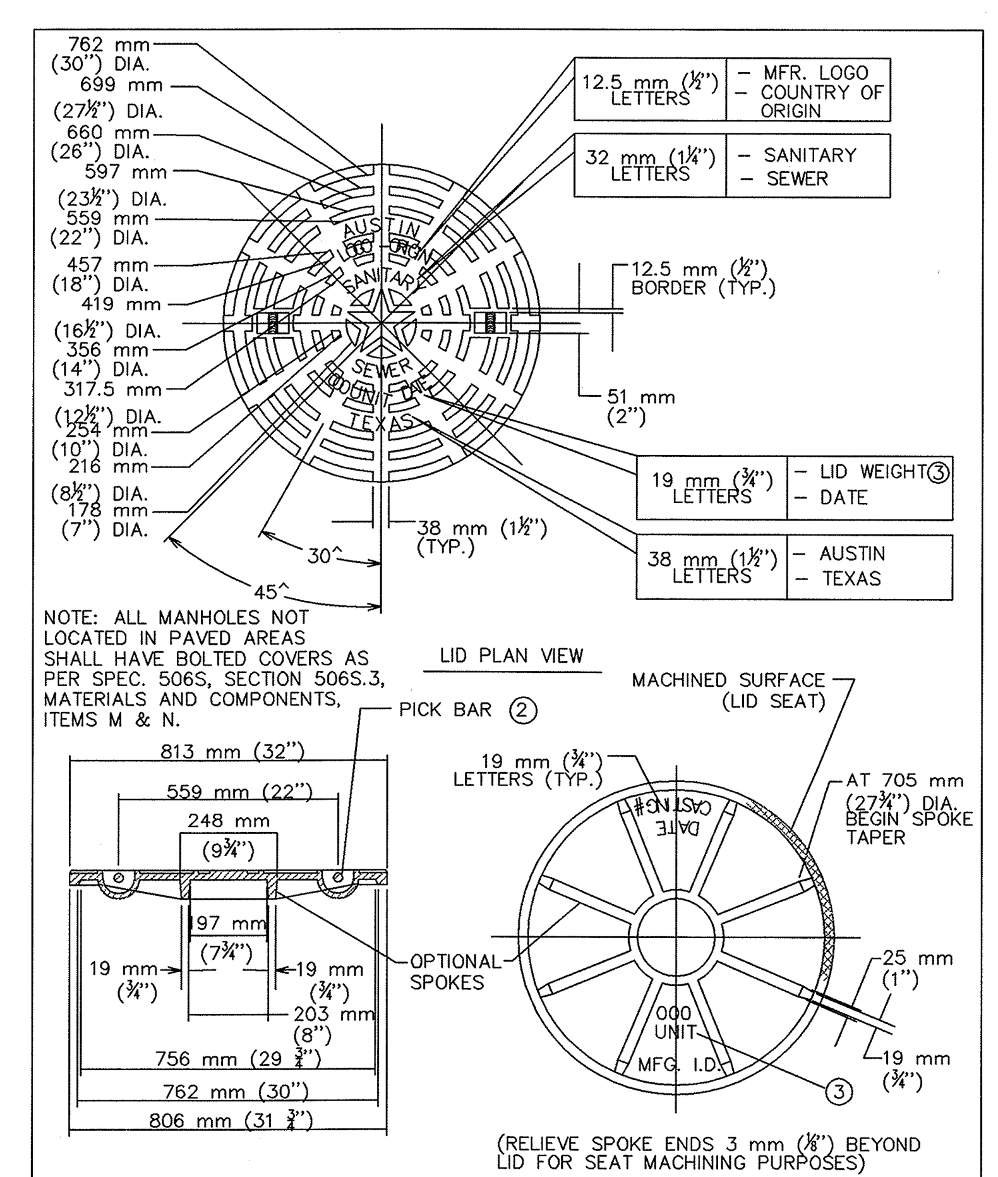


NOTES:
1. IF PC CONCRETE IS USED AROUND THE MANHOLE, THE CONCRETE SHALL BE REINFORCED WITH #5 (15M) BARS AS SHOWN. THE CONCRETE SHALL EXTEND TO EDGE OF SAW CUT PAVEMENT EDGE.
2. REQUIREMENTS FOR NEW MANHOLE CONSTRUCTION AND MINOR MANHOLE ADJUSTMENTS IN NEW, RECONSTRUCTION AND REPAVING PROJECTS ARE INCLUDED 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.

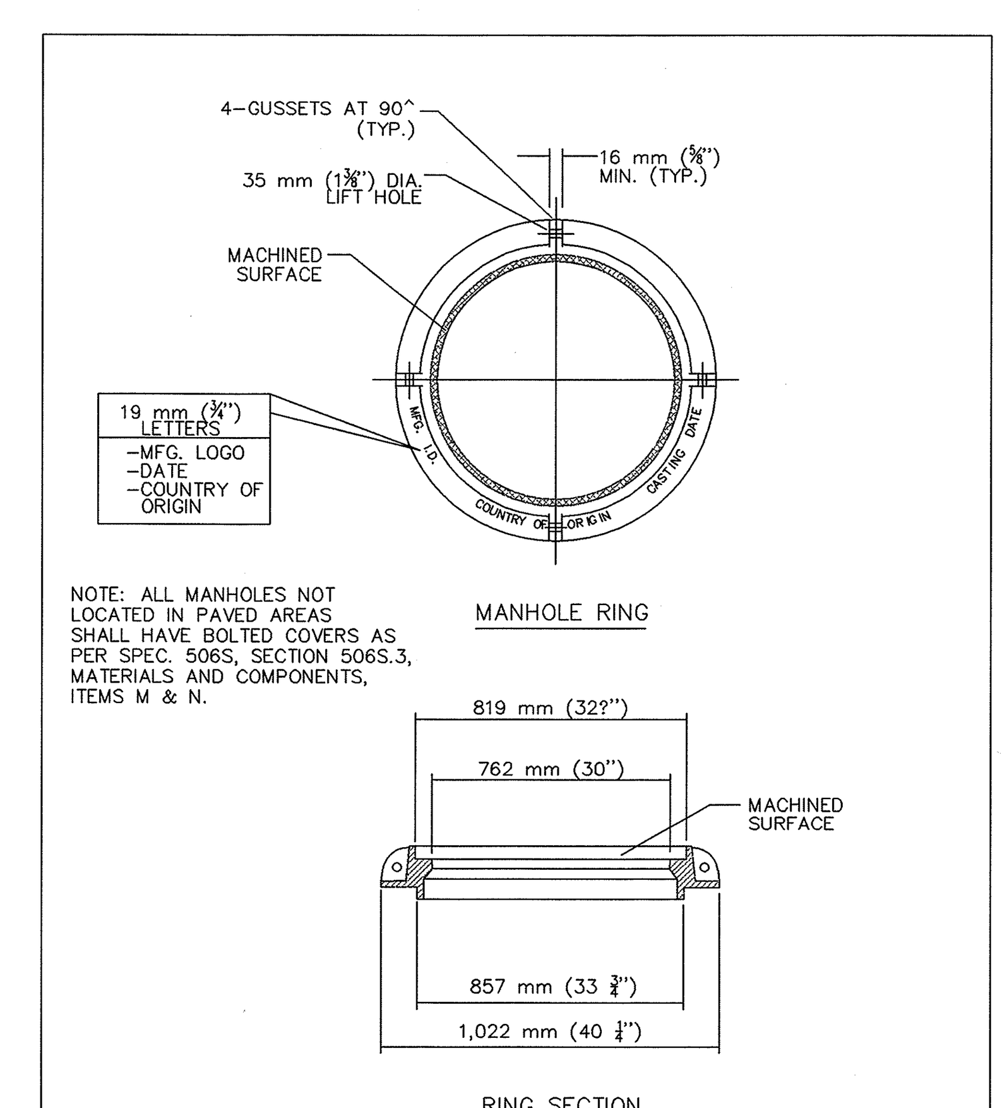
CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS	CASTING ADJUSTMENT	
RECORD COPY SIGNED BY SAM ANGOORI 01/04/10 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 1100S-1



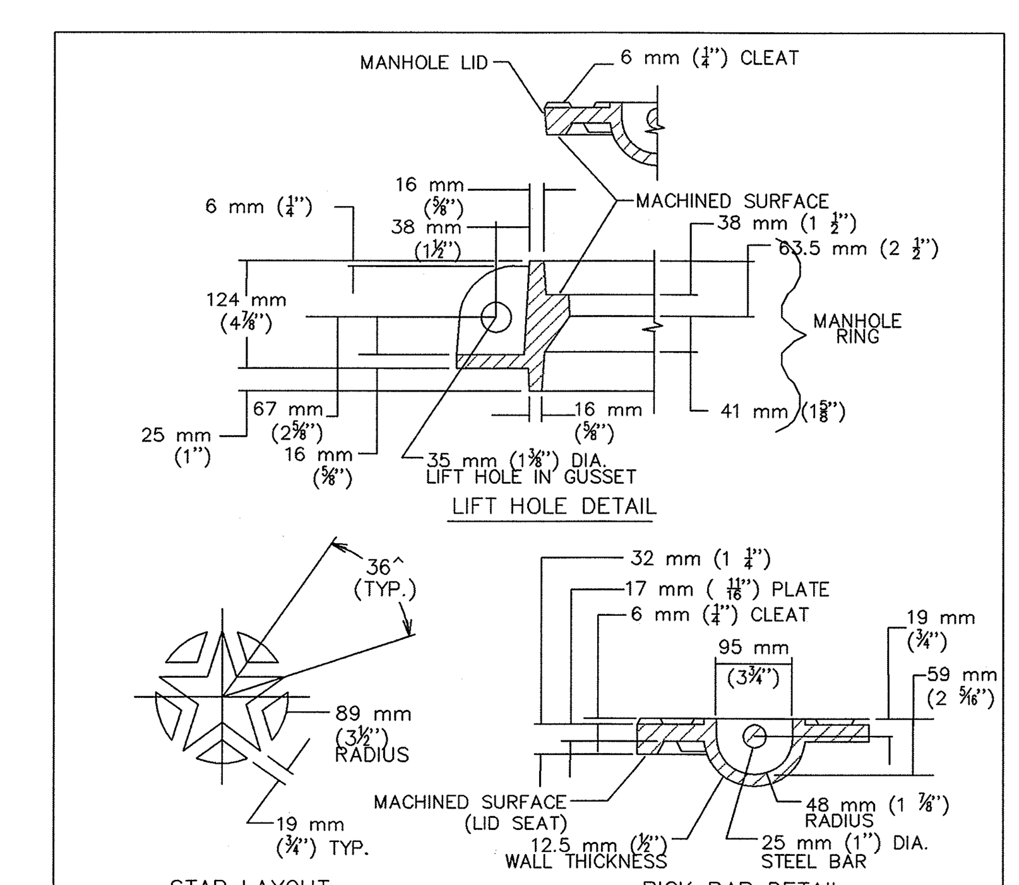
CONCRETE RIP-RAP HEADWALL
N.T.S.



CITY OF AUSTIN AUSTIN WATER UTILITY	SANITARY SEWER MANHOLE RING AND 813 mm (32") COVER	
RECORD COPY SIGNED BY KATHI L. FLOWERS 3/9/04 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 503S-4W 1 OF 3



CITY OF AUSTIN AUSTIN WATER UTILITY	SANITARY SEWER MANHOLE RING AND 813 mm (32") COVER	
RECORD COPY SIGNED BY KATHI L. FLOWERS 3/9/04 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 503S-4W 2 OF 3



NOTES:
① ALL CORNERS AND EDGES SHALL HAVE A 1.5 mm (?") MINIMUM RADIUS.
② LIDS SHALL BE CAST WITH TWO 25 mm (1") DIA. STEEL PICK BARS.
③ LID WEIGHTS SHALL BE 935 N (210 LBS.) FOR CAST IRON OR 779 N (175 LBS.) FOR DUCTILE IRON. WEIGHT SHALL BE CAST ON BOTH TOP AND BOTTOM OF LID.
④ MANUFACTURER SHALL PROVIDE INDEPENDENT TESTING LABORATORY REPORT ON 40,000 POUND PROOF LOAD TEST CONDUCTED ACCORDING TO AASHTO M-306.
⑤ FILLETS SHALL BE 6 mm (?") RADIUS UNLESS OTHERWISE SPECIFIED.
⑥ MANUFACTURER SHALL REMOVE EXCESS IRON AND MACHINE FINISH SEATING SURFACES TO NOTED DIMENSIONS.

NOTE: ALL MANHOLES NOT LOCATED IN PAVED AREAS SHALL HAVE BOLTED COVERS AS PER SPEC. 506S, SECTION 506S.3, MATERIALS AND COMPONENTS, ITEMS M & N.

CITY OF AUSTIN AUSTIN WATER UTILITY	SANITARY SEWER MANHOLE RING AND 813 mm (32") COVER	
RECORD COPY SIGNED BY KATHI L. FLOWERS 3/9/04 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 503S-4W 3 OF 3

NOTE: NO MANHOLE SHALL REFERENCE CITY OF AUSTIN

STATE OF TEXAS — RYAN WAYNE PERRY — 130060 — LICENSED PROFESSIONAL ENGINEER

CARLSON, BRIGANCE, & DOERING, INC. ID # F3791

4/1/2019

DESIGNED BY: DRJ | DRAFTED BY: RH/TDC/PO

DATE | REVISION

Carlson, Brigance & Doering, Inc.
Civil Engineering ◆ Surveying
FIRM ID #F3791
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North Office: 12129 RR 620 N., Ste. 600, Austin, Texas 78750
Phone No. (512) 280-5160 Fax No. (512) 280-5165

SHEET NAME: DETAILS (2 OF 4)

JOB NAME: ARROWHEAD RANCH PHASE 3

PROJECT: STREET, DRAINAGE, WATER, AND WASTEWATER IMPROVEMENTS

DATE: OCTOBER 2019

JOB NUMBER: 4999

SHEET: 33 OF 35

SHEET NO. 33

FILE PATH: I:\ACAD\4999\dwg\4999 - CONSTRUCTION DETAILS.dwg - Oct 31, 2019 - 7:47am

- **2. Contributing Zone Plan Application (TCEQ-10257)**

Contributing Zone Plan Application

Texas Commission on Environmental Quality

for Regulated Activities on the Contributing Zone to the Edwards Aquifer and Relating to 30 TAC §213.24(1), 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 **Contributing Zone Plan Application** is hereby submitted for TCEQ review and Executive Director approval. The application was prepared by:

Print Name of Customer/Agent: Maher Harmouche

Date: **04.30.2024**

Signature of Customer/Agent:

Regulated Entity Name: 107797524

Project Information

1. County: Hays
2. Stream Basin: Onion Creek
3. Groundwater Conservation District (if applicable): Hays Trinity
4. Customer (Applicant):

   Contact Person: John Brian
   Entity: TF Arrowhead Ranch
   Mailing Address: 6310 Capital Drive, Suite 130
   City, State: Lakewood Ranch, FL Zip: 34202
   Telephone: 512-619-5406 Fax: _____
   Email Address: jbrian@starwoodland.com

5. Agent/Representative (If any):

   Contact Person: Maher Harmouche
   Entity: Engineer
   Mailing Address: 5701 West William Cannon
   City, State: Austin, TX Zip: 78749
   Telephone: 512-280-5160 Fax: 5122805165
   Email Address: maher@cbdeng.com

6. Project Location:

   ☒ The project site is located inside the city limits of Dripping Springs.
   ☐ 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.

7. ☒ The location of the project site is described below. Sufficient detail and clarity has been provided so that the TCEQ's Regional staff can easily locate the project and site boundaries for a field investigation.

   Arrowhead Ranch BLVD, Drippings Springs, TX 78620
   Phase III is south of the existing Amenity Center and accessed from the existing Arrowhead Ranch Subdivision which is clearly marked.

8. ☒ **Attachment A - Road Map**. A road map showing directions to and the location of the project site is attached. The map clearly shows the boundary of the project site.

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

   ☒ Project site boundaries.
   ☒ USGS Quadrangle Name(s).

10. ☒ **Attachment C - Project Narrative**. A detailed narrative description of the proposed project is attached. 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

11. 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/Not cleared)
☐ Other: _____

12. The type of project is:

☒ Residential: # of Lots: 0
☐ Residential: # of Living Unit Equivalents: _____
☐ Commercial
☐ Industrial
☐ Other: _____

13. Total project area (size of site): 6.689 Acres

    Total disturbed area: 0.223 Acres

14. Estimated projected population: 0

15. The amount and type of impervious cover expected after construction is complete is shown below:

Table 1 - Impervious Cover

Impervious Cover of Proposed Project	*Sq. Ft.*	*Sq. Ft./Acre*	*Acres*
Structures/Rooftops	-	÷ 43,560 =	-
Parking	-	÷ 43,560 =	-
Other paved surfaces	-	÷ 43,560 =	-
Total Impervious Cover	-	÷ 43,560 =	-

Total Impervious Cover 0 **÷ Total Acreage** 6.689 **X 100 =** 0**% Impervious Cover**

16. ☒ **Attachment D - Factors Affecting Surface Water Quality**. A detailed description of all factors that could affect surface water quality is attached. If applicable, this includes the location and description of any discharge associated with industrial activity other than construction.

17. ☒ Only inert materials as defined by 30 TAC 330.2 will be used as fill material.

For Road Projects Only

Complete questions 18 - 23 if this application is exclusively for a road project.

☒ N/A

18. 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.

19. Type of pavement or road surface to be used:

☐ Concrete
☐ Asphaltic concrete pavement
☐ Other: _____

20. Right of Way (R.O.W.):

Length of R.O.W.: _____ feet.
Width of R.O.W.: _____ feet.
L x W = _____Ft^2 ÷ 43,560 Ft^2/Acre = _____ acres.

21. Pavement Area:

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.

22. ☐ A rest stop will be included in this project.

☐ A rest stop will not be included in this project.

23. ☐ 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

24. ☒ **Attachment E - 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 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

25. ☒ Wastewater is to be discharged in the contributing zone. Requirements under 30 TAC §213.6(c) relating to Wastewater Treatment and Disposal Systems have been satisfied.

☐ N/A

26. Wastewater will be disposed of by:

☐ On-Site Sewage Facility (OSSF/Septic Tank):

☐ **Attachment F - 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):

The sewage collection system will convey the wastewater to the Arrowhead Ranch (name) Treatment Plant. The treatment facility is:

☐ Existing.
☒ Proposed.

☐ N/A

Permanent Aboveground Storage Tanks(ASTs) ≥ 500 Gallons

Complete questions 27 - 33 if this project includes the installation of AST(s) with volume(s) greater than or equal to 500 gallons.

☒N/A

27. Tanks and substance stored:

Table 2 - Tanks and Substance Storage

AST Number	*Size (Gallons)*	*Substance to be Stored*	*Tank Material*
1			
2			
3			
4			
5			

Total x 1.5 = _____ Gallons

28. ☐ The AST will be placed within a containment structure that is sized to capture one and one-half (1 1/2) times the storage capacity of the system. For facilities with more than one tank system, the containment structure is sized to capture one and one-half (1 1/2) times the cumulative storage capacity of all systems.

☐ **Attachment G - Alternative Secondary Containment Methods**. Alternative methods for providing secondary containment are proposed. Specifications showing equivalent protection for the Edwards Aquifer are attached.

29. Inside dimensions and capacity of containment structure(s):

Table 3 - Secondary Containment

Length (L)(Ft.)	*Width(W)(Ft.)*	*Height (H)(Ft.)*	*L x W x H = (Ft3)*	*Gallons*

Total: _____ Gallons

30. Piping:

☐ All piping, hoses, and dispensers will be located inside the containment structure.
☐ Some of the piping to dispensers or equipment will extend outside the containment structure.
☐ The piping will be aboveground
☐ The piping will be underground

31. ☐ The containment area must be constructed of and in a material impervious to the substance(s) being stored. The proposed containment structure will be constructed of: _____.

32. ☐ **Attachment H - AST Containment Structure Drawings**. A scaled drawing of the containment structure is attached that shows the following:

☐ Interior dimensions (length, width, depth and wall and floor thickness).
☐ Internal drainage to a point convenient for the collection of any spillage.
☐ Tanks clearly labeled
☐ Piping clearly labeled
☐ Dispenser clearly labeled

33. ☐ Any spills must be directed to a point convenient for collection and recovery. Spills from storage tank facilities must be removed from the controlled drainage area for disposal within 24 hours of the spill.

☐ In the event of a spill, any spillage will be removed from the containment structure within 24 hours of the spill and disposed of properly.

☐ In the event of a spill, any spillage will be drained from the containment structure through a drain and valve within 24 hours of the spill and disposed of properly. The drain and valve system are shown in detail on the scaled drawing.

Site Plan Requirements

Items 34 - 46 must be included on the Site Plan.

34. ☒ The Site Plan must have a minimum scale of 1" = 400'.

    Site Plan Scale: 1" = 60'.

35. 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 - FIRM Panel # 48209C0105F; Effective Date: September 2, 2005.

36. ☒ 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, etc. are shown on the site plan.

    ☐ The layout of the development is shown with existing contours at appropriate, but not greater than ten-foot contour intervals. Finished topographic contours will not differ from the existing topographic configuration and are not shown. Lots, recreation centers, buildings, roads, etc. are shown on the site plan.

37. ☒ A drainage plan showing all paths of drainage from the site to surface streams.

38. ☒ The drainage patterns and approximate slopes anticipated after major grading activities.

39. ☒ Areas of soil disturbance and areas which will not be disturbed.

40. ☒ Locations of major structural and nonstructural controls. These are the temporary and permanent best management practices.

41. ☒ Locations where soil stabilization practices are expected to occur.

42. ☒ Surface waters (including wetlands).

    ☐ N/A

43. ☒ Locations where stormwater discharges to surface water.

    ☐ There will be no discharges to surface water.

44. ☐ Temporary aboveground storage tank facilities.

☒ Temporary aboveground storage tank facilities will not be located on this site.

45. ☐ Permanent aboveground storage tank facilities.

☒ Permanent aboveground storage tank facilities will not be located on this site.

46. ☒ Legal boundaries of the site are shown.

Permanent Best Management Practices (BMPs)

Practices and measures that will be used during and after construction is completed.

47. ☒ Permanent BMPs and measures must be implemented to control the discharge of pollution from regulated activities after the completion of construction.

☐ N/A

48. ☒ 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

49. ☒ 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

50. 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.

51. 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 I - 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.

52. ☒ **Attachment J - 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.

53. ☒ **Attachment K - 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.

54. ☒ **Attachment L - BMPs for Surface Streams**. A description of the BMPs and measures that prevent pollutants from entering surface streams is attached.

☐ N/A

55. ☒ **Attachment M - Construction Plans**. Construction plans and design calculations for the proposed permanent BMPs and measures have been prepared by or under the direct supervision of a Texas Licensed Professional Engineer, and are signed, sealed, and

dated. Construction plans for the proposed permanent BMPs and measures are attached and include: Design calculations, TCEQ Construction Notes, all proposed structural plans and specifications, and appropriate details.

☐ N/A

56. ☒ **Attachment N - Inspection, Maintenance, Repair and Retrofit Plan**. A site and BMP specific plan for the inspection, maintenance, repair, and, if necessary, retrofit of the permanent BMPs and measures is attached. The plan fulfills all of the following:

    ☒ Prepared and certified by the engineer designing the permanent BMPs and measures
    ☒ Signed by the owner or responsible party
    ☒ Outlines specific procedures for documenting inspections, maintenance, repairs, and, if necessary, retrofit.
    ☒ Contains a discussion of record keeping procedures

    ☐ N/A

57. ☐ **Attachment O - 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

58. ☐ **Attachment P - 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 result in water quality degradation.

    ☒ N/A

Responsibility for Maintenance of Permanent BMPs and Measures after Construction is Complete.

59. ☒ 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.

60. ☒ 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.

Administrative Information

61. ☒ 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.

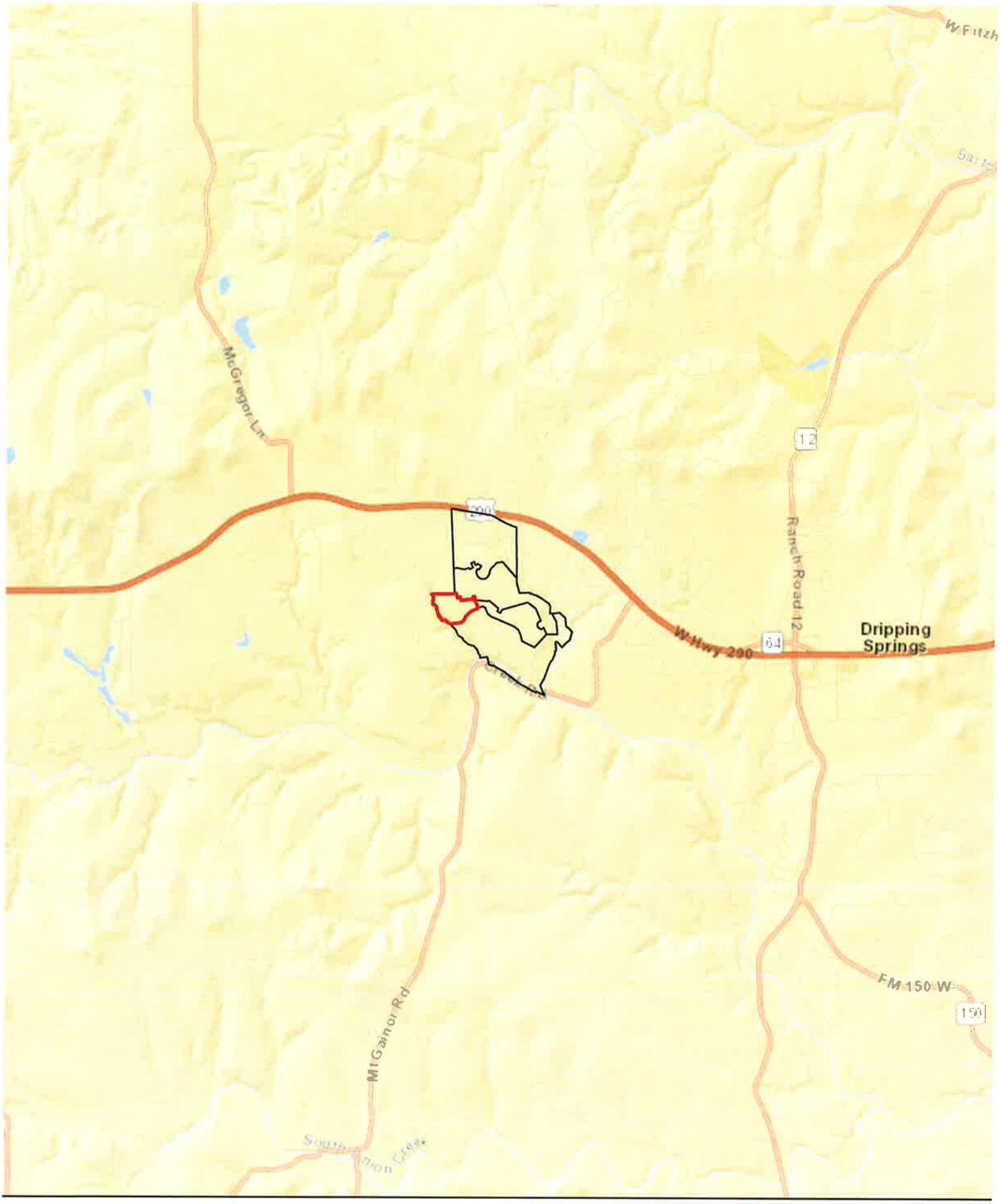
62. ☒ Any modification of this Contributing Zone Plan may require TCEQ review and Executive Director approval prior to construction, and may require submission of a revised application, with appropriate fees.

63. ☒ The site description, controls, maintenance, and inspection requirements for the storm water pollution prevention plan (SWPPP) developed under the EPA NPDES general permits for stormwater discharges have been submitted to fulfill paragraphs 30 TAC §213.24(1-5) of the technical report. All requirements of 30 TAC §213.24(1-5) have been met by the SWPPP document.

☒ The Temporary Stormwater Section (TCEQ-0602) is included with the application.

ATTACHMENT A – Road Map

See Attached Location Map



Arrowhead Ranch Phase 3

Hays County, TX

Phase 3

0 0.5 1 2 Miles

Carlson, Brigance & Doering, Inc.
Civil Engineering ✧ Surveying

ATTACHMENT B – USGS Quarangle Map

See Attached Quadrangle Map

EX-B USGS QUADRANGLE

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

DRIPPING SPRINGS QUADRANGLE
TEXAS
7.5 MINUTE SERIES (TOPOGRAPHIC)

SITE

ARROWHEAD RANCH

Mapped, edited, and published by the Geological Survey
Revised in cooperation with the Texas Water Development Board

Control by USGS and NOS/NOAA

Topography by photogrammetric methods from aerial photographs taken 1962. Field checked 1963. Revised from aerial photographs taken 1985. Field checked 1986. Map edited 1986

Projection: Texas coordinate system, south central zone (Lambert conformal conic)
10,000-foot grid ticks based on Texas coordinate system, south central and central zones
1000-meter Universal Transverse Mercator grid, zone 14
1927 North American Datum
To place on the predicted North American Datum 1983 move the projection lines 18 meters south and 28 meters east as shown by dashed corner ticks

Fine red dashed lines indicate selected fence lines

UTM GRID AND 1986 MAGNETIC NORTH DECLINATION AT CENTER OF MAP DIAGRAM IS APPROXIMATE

SCALE 1:24 000

CONTOUR INTERVAL 20 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U. S. GEOLOGICAL SURVEY, DENVER, COLORADO 80225, OR RESTON, VIRGINIA 22092
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

ROAD CLASSIFICATION
Primary highway, hard surface
Secondary highway, hard surface
Light-duty road, hard or improved surface
Unimproved road
Interstate Route U. S. Route State Route

TEXAS
QUADRANGLE LOCATION

3098–114

DRIPPING SPRINGS, TEX.
30098–B1–TF–024

1986

DMA 6344 II NE–SERIES V882

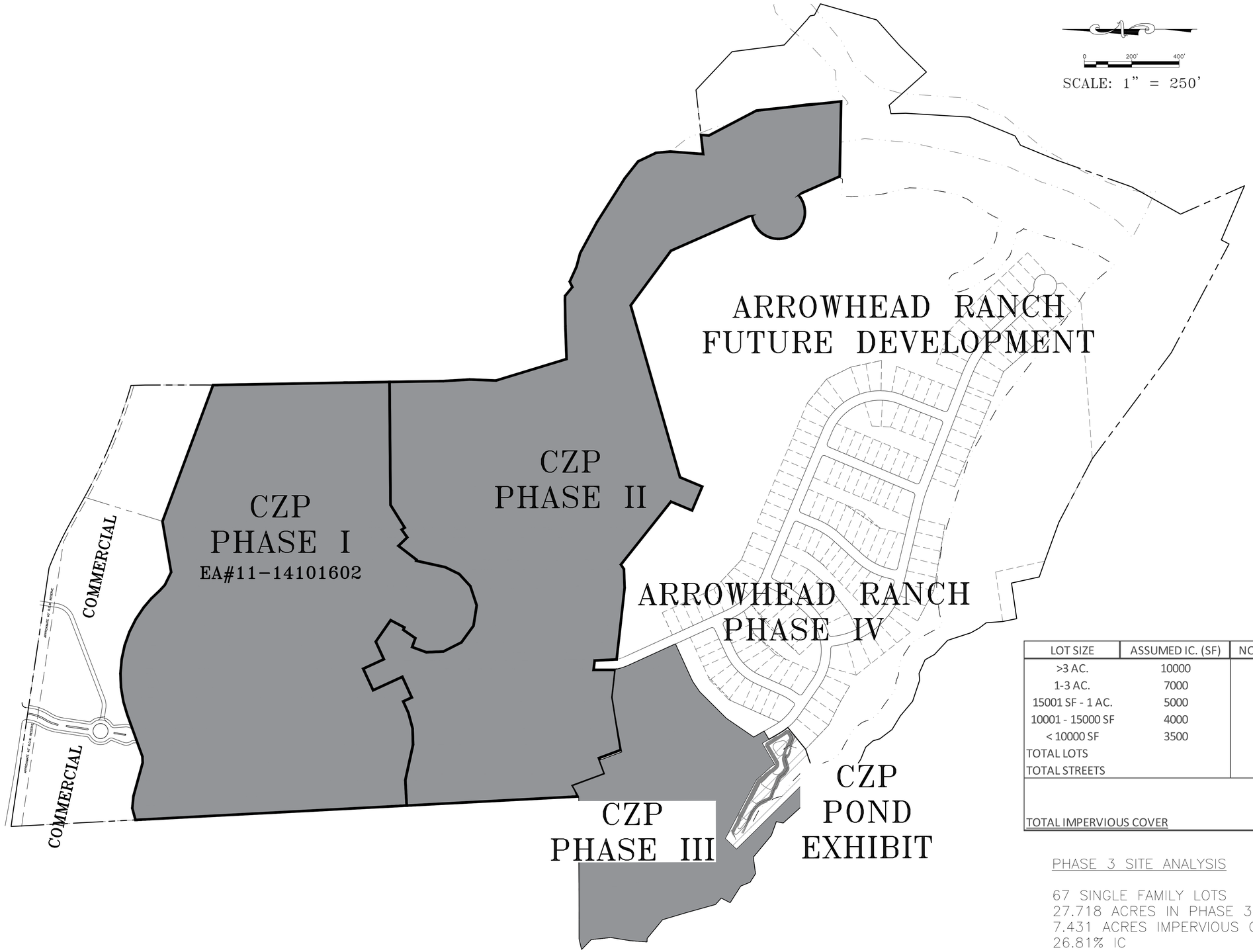
ATTACHMENT C - Project Narrative

The applicant constructed Phase III in the Arrowhead Ranch single family residential development which consists of 67 single family lots. The project includes impervious cover consisting of asphalt access roads, concrete driveways, concrete sidewalks, impervious cover associated with single family residential lot improvements. The development is built on 27.718 acres of the total 279.769-acre Arrowhead Ranch Subdivision tract.

Modifications will take place within the existing pond, which will include three relief trenches. The purpose of each relief trench is to begin with a connection to the existing springs. The trenches will then carry the spring water beneath the pond and to the opposite side of the pond where each trench will daylight, meeting with existing ground. The modifications will include a 1' clay cap beneath the bottom of the pond. Beneath the clay cap will be a 4" perforated PVC or HDPE pipe which will carry the spring water to the location which it will daylight. Encasing this pipe will be a 2' gravel pocket. The existing pond will maintain the same volume after the modifications are completed. The modifications will take place within Block D, containing the Park Lot, which is made up of 6.689 acres. These improvements are located within the Edwards Aquifer Contributing Zone. Flows were calculated using the National Resource Conservation hydrologic method.

Within the 27.718-acre development, approximately 7.431 acres of impervious cover was installed (26.81% of total project site). As the majority of the lots are below 10,000 sf in area the development does not comply with the "Low Density" exemption from permanent BMP's typically allowed in developments with <20% impervious cover. The existing batch detention was designed in accordance with the January 20, 2017 Addendum Sheet to RG-348 which establishes Batch Detention Basins as Section 3.2.17 of RG-348.

There are no offsite drainage areas that are not already captured by the Phase II or Phase IV development. While no demolition is proposed, the only modifications will take place within the existing pond.



LOT SIZE	ASSUMED IC. (SF)	NO. LOTS	CUM. IC (SF)	CUM. IC (AC)
>3 AC.	10000	0	0	0.000
1-3 AC.	7000	0	0	0.000
15001 SF - 1 AC.	5000	1	5000	0.115
10001 - 15000 SF	4000	18	72000	1.653
< 10000 SF	3500	48	168000	3.857
TOTAL LOTS		67	245000	5.624
TOTAL STREETS			78712.92	1.807
TOTAL IMPERVIOUS COVER			323712.92	7.431

PHASE 3 SITE ANALYSIS

67 SINGLE FAMILY LOTS
27.718 ACRES IN PHASE 3
7.431 ACRES IMPERVIOUS COVER
26.81% IC

STATE OF TEXAS
MAHER HARMOUCHE
143982
LICENSED
PROFESSIONAL ENGINEER

CARLSON, BRIGANCE, & DOERING, INC.
ID # F3791

04.02.2024

DESIGNED BY: DRJ
DRAFTED BY: RH/TDC/PO

DATE
REVISION

Carlson, Brigance & Doering, Inc.
Civil Engineering ◆ Surveying
FIRM ID #F3791
Main Office
5501 West William Cannon Dr. Austin, Texas 78749
Phone No. (512) 280-5160
North Office
12129 RR 620 N., Ste. 600 Austin, Texas 78750
Fax No. (512) 280-5165

SHEET NAME: CZP EXHIBIT
JOB NAME: ARROWHEAD RANCH PHASE 3
PROJECT: STREET, DRAINAGE, WATER, AND WASTEWATER IMPROVEMENTS

DATE: MARCH 2024
JOB NUMBER: 4999
SHEET 1 OF 4
SHEET NO. 1

FILE PATH:J:\ACAD\4999\Eng\Drainage\4999 - OVERALL DRAINAGE_POND EXHIBIT.dwg - Mar 28, 2024 - 2:11pm

ATTACHMENT D – Factors Affecting Surface Water Quality

Two primary factors affect surface water quality. This first involves construction disturbance activities. The second involves the roadway, increased traffic, and future maintenance and use of the proposed area will affect surface water quality.

Based on the existing uses of the project, stormwater runoff is coming from the rooftops of the existing single-family homes, from concrete driveways and sidewalks, the asphalt access roads, and the Amenity Center. An open ditch storm drainage system, coupled with a direct connection from the streets, collects the stormwater from the site and directs it to the modified batch detention water quality pond which outfalls to a tributary of Onion Creek. Temporary erosion and sedimentation control facilities, in addition to the permanent batch detention, are included to mitigate changes to the surface water quality during soil disturbance activities and after development.

ATTACHMENT E – Volume and Character of Stormwater

The character of stormwater includes runoff from the proposed single-family home rooftops, amenity center, concrete driveways and sidewalks, and the asphalt access roads. No exterior storage is proposed of potential pollutants. Solid waste will be collected. Based on the HEC-HMS 4.2.1 modeling submitting with the Engineering report below is a summary of the post development flow rates from the site. The site was modeled using SCS methods with type "D" soils and an SCS type 3 storm. Impervious cover for Existing Conditions is 26.81%.

POND - A OUTFLOW

EXISTING CONDITIONS					
HEC-HMS Input				HEC-HMS Results	
Basin	Area (ac)	Impervious Cover (%)	Lag Time (min)	25 YR Event (cfs)	100 YR Event (cfs)
P1	13.11	26.81%	16.08	49.0	69.1
POND A				48.7	68.8
POND - A OUTFLOW				**48.7**	**68.8**

POND-A SUMMARY			
STORM	**Q-IN** (cfs)	**Q-OUT** (cfs)	**W.S.E.** (ft)
25-YR	49.0	48.7	1163.0
100-YR	69.1	68.8	1163.1

Batch Detention Pond Summary

Basin Bottom Elevation:	1158.00'
Basin WQ Elevation:	1162.26'
Maximum WQ Depth:	5.0'
Confining Elevation:	1164.00
Required WQV:	34,963 cf
Provided WQV:	34,963 cf
Basin 25-yr WSE:	1163.00'
25-YR Freeboard:	1.0'
Basin 100-yr WSE:	1163.10'
100-yr Freeboard:	0.9'

ATTACHMENT J - BMPs for Upgradient Stormwater

The existing on-site and off-site drainage areas are shown on the drainage area map included within the project Engineering Report. Stormwater flows are conveyed in surface ditches from the property to the modified batch detention pond at the southwest corner of Phase III. Upon modifications, stormwater will then discharge to the creek to the southwest of this development.

There are no permanent BMPs proposed for upgradient stormwater as flows will be routed to maintain their existing flow paths.

ATTACHMENT K - BMPs for On-site Stormwater

The existing permanent BMP for on-site stormwater is a Batch Detention basin. The modified Batch Detention basin has been designed in conformance with the January 20, 2017 Addendum to the Technical Guidance Manual on Best Management Practices, RG-348. Stormwater detention is not required for the site so the batch detention has been constructed with an overflow structure adequately sized to convey the 25-yr and 100-yr storm events. Minimum required WQV has been calculated using the TCEQ TSS spreadsheet, modified for 91% removal rates. TSS calculations are on the following sheets.

Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Project Name: ARROWHEAD RANCH
Date Prepared: 10/10/2019

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 lo
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 =	Hays	
Total project area included in plan * =	27.72	acres
Predevelopment impervious area within the limits of the plan * =	0.00	acres
Total post-development impervious area within the limits of the plan* =	7.43	acres
Total post-development impervious cover fraction * =	0.27	
P =	33	inches
$L_{M\ TOTAL\ PROJECT}$ =	6670	lbs.

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

Number of drainage basins / outfalls areas leaving the plan area = 1

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

Drainage Basin/Outfall Area No. = 1

Total drainage basin/outfall area =	27.72	acres
Predevelopment impervious area within drainage basin/outfall area =	0.00	acres
Post-development impervious area within drainage basin/outfall area =	7.43	acres
Post-development impervious fraction within drainage basin/outfall area =	0.27	
$L_{M\ THIS\ BASIN}$ =	6670	lbs.

3. Indicate the proposed BMP Code for this basin.

Proposed BMP = Wet Basin
Removal efficiency = 91 percent
BATCH DETENTION

STATE OF TEXAS
MAHER HARMOUCHE
143982
LICENSED
PROFESSIONAL ENGINEER

CARLSON, BRIGANCE, & DOERING, INC.
ID # F3791

04.30.2024

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_I 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_R = TSS Load removed from this catchment area by the proposed BMP

A_C =	27.72	acres
A_I =	7.43	acres
A_P =	20.29	acres
L_R =	8050	lbs

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

Desired $L_{M\ THIS\ BASIN}$ =	6670	lbs.
F =	0.83	

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 =	1.20	inches
Post Development Runoff Coefficient =	0.24	
On-site Water Quality Volume =	29136	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 =	5827	
Total Capture Volume (required water quality volume(s) x 1.20) =	34963	cubic feet

ATTACHMENT L - BMPs for Surface Streams

Permanent BMPs to protect existing surface streams for on-site stormwater is an existing Batch Detention basin that will be modified. The existing Batch Detention basin has been designed in conformance with the January 20, 2017 Addendum to the Technical Guidance Manual on Best Management Practices, RG-348. Stormwater detention is not required for the site so the batch detention was constructed with an overflow structure adequately sized to convey the 25-yr and 100-yr storm events. Minimum required WQV is calculated using the TCEQ TSS spreadsheet, modified for 91% removal rates. TSS calculations are included with Attachment K.

.

ATTACHMENT M – Pond Exhibit & Construction Plans

See Attached Pond Exhibit & Original Construction Plans

SUBMITTED BY:

M. Harmouche 04.02.2024

CARLSON, BRIGANCE, AND DOERING INC.
FIRM ID # F3791
5501 W. WILLIAM CANNON
AUSTIN, TX 78749
512-280-5160

CITY OF DRIPPING SPRINGS ADMINISTRATOR — DATE

CITY OF DRIPPING SPRINGS ENGINEER — DATE

DRIPPING SPRINGS WATER SUPPLY CORP. — DATE

CITY OF DRIPPING SPRINGS WASTEWATER REVIEW ENGINEER — DATE

ESD #6 (NORTH HAYS COUNTY FIRE DEPARTMENT) — DATE

NOTE:
CITY OF DRIPPING SPRINGS DEVELOPMENT PERMIT #SUB2020-0003

WATERSHED STATUS – THIS PROJECT IS LOCATED WITHIN THE ONION CREEK WATERSHED. THIS SITE IS NOT LOCATED OVER THE EDWARDS AQUIFER RECHARGE ZONE, BUT IT IS IN THE CONTRIBUTING ZONE ACCORDING TO TCEQ AND COA MAPS. A CZP WILL BE REQUIRED PRIOR TO COMMENCING CONSTRUCTION ACTIVITIES.

NOTES:

1. NO PORTION OF THIS TRACT IS WITHIN THE BOUNDARIES OF THE CWQZ OR THE 100 YEAR FLOOD PLAIN OF THE FEDERAL FLOOD INSURANCE ADMINISTRATION FIRM PANELS NO. 48209C0085F AND 48209C0105F FOR HAYS COUNTY, TEXAS, BOTH DATED SEPTEMBER 02, 2005.
2. THIS PROJECT IS INCLUDED IN SF-5 ZONING PER CITY OF DRIPPING SPRINGS, TEXAS OFFICIAL ZONING MAP.
3. THERE WILL BE NO INCREASE IN PEAK RATE OF DISCHARGE FROM THE DEVELOPMENT FOR THE DESIGN STORM EVENT AS A RESULT OF THIS PROJECT.

ALL RESPONSIBILITY FOR THE ADEQUACY OF THESE PLANS REMAINS WITH THE ENGINEER WHO PREPARED THEM. IN APPROVING THESE PLANS, THE CITY MUST RELY UPON THE ADEQUACY OF WORK OF THE DESIGN ENGINEER.

THIS DEVELOPMENT IS SUBJECT THE ARROWHEAD RANCH AGREEMENT DATED 02/14/2008 BETWEEN THE CITY OF DRIPPING SPRINGS AND FORESTAR REAL ESTATE GROUP RECORDED IN VOLUME 3330, PAGE 804, PUBLIC RECORDS OF HAYS COUNTY, TEXAS.

A WATER QUALITY BMP MAINTENANCE PLAN HAS BEEN PREPARED FOR THIS DEVELOPMENT AND IS RECORDED IN DOCUMENT # 20013452, PUBLIC RECORDS OF HAYS COUNTY, TEXAS

STREET TREES SHALL BE PLANTED IN EACH LOT PRIOR TO THE ISSUANCE OF A CERTIFICATE OF OCCUPANCY PER THE QUANTITY, SIZE AND LOCATION REQUIREMENTS OF SUBDIVISION ORDINANCE 28.06.051

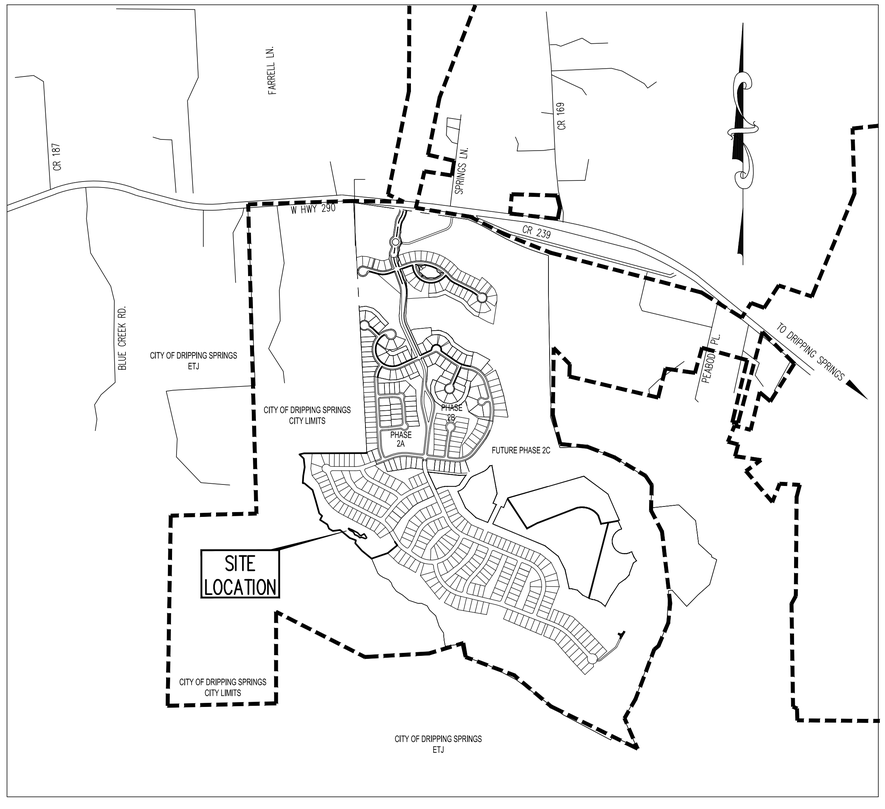
NOTE:
STORMWATER UTILITIES AND PONDS WILL BE MAINTAINED BY HOME OWNER'S ASSOCIATION.

NO.	DESCRIPTION	REVISE (R) ADD (A) VOID (V) SHEET NO's	TOTAL # SHEETS IN PLAN SET	CITY OF DRIPPING SPRINGS APPROVAL/DATE	EMERGENCY SERVICES DISTRICT #6 APPROVAL/DATE

FILE PATH:J:\ACD\4999\dwg\4999-COVER POND PLAN EXHIBIT.dwg - Apr 02, 2024 - 8:50am

ARROWHEAD RANCH
DRIPPING SPRINGS, TEXAS
POND PLAN EXHIBIT

SHEET INDEX



LOCATION MAP
N.T.S.

BEING ALL OF THAT CERTAIN 27.758 ACRE TRACT OF LAND OUT OF AND A PART OF THE BENJAMIN F. HANNA SURVEY, ABSTRACT NUMBER 222, SITUATED IN HAYS COUNTY, TEXAS, SAID TRACT OF LAND BEING MORE PARTICULARLY DESCRIBED AS BEING A PORTION OF A CALLED 263.708 ACRE TRACT OF LAND CONVEYED TO TF ARROWHEAD RANCH, L.P., RECORDED IN DOCUMENT NUMBER 18005876 OF THE OFFICIAL PUBLIC RECORDS OF HAYS COUNTY, TEXAS (O.P.R.H.C.TX.)

UTILITY PROVIDERS: WATER – DRIPPING SPRINGS WATER SUPPLY
WASTEWATER – CITY OF DRIPPING SPRINGS

ENGINEER: CARLSON, BRIGANCE & DOERING, INC.
5501 WEST WILLIAM CANNON DRIVE
AUSTIN, TEXAS 78749
PHONE: (512) 280-5160 FAX: (512) 280-5165

OWNER: TF ARROWHEAD, L.P.
STARWOOD LAND VENTURES, LLC
6310 CAPITAL DRIVE, SUITE 130
BRADENTON, FL 34202

M. Harmouche
STATE OF TEXAS
MAHER HARMOUCHE
143982
LICENSED PROFESSIONAL ENGINEER
CARLSON, BRIGANCE, & DOERING, INC.
ID # F3791
04.02.2024

DESIGNED BY:	DRAFTED BY:
DRI	RH/TDC/PO

REVISION	DATE

Carlson, Brigance & Doering, Inc.
Civil Engineering ◆ Surveying
FIRM ID #F3791
Main Office: 5501 West William Cannon Dr. Austin, Texas 78749
North Office: 1212F RR 620 N., Ste. 600 Austin, Texas 78750
Phone No. (512) 280-5160 Fax No. (512) 280-5165

SHEET NAME: COVER
JOB NAME: ARROWHEAD RANCH PHASE 3
PROJECT: POND PLAN EXHIBIT

DATE: APRIL 2024
JOB NUMBER: 4999
SHEET: 1 OF 5
SHEET NO.: 1

ARROWHEAD RANCH
PHASE III

ARROWHEAD RANCH
PHASE IV

PINK GRANITE BLVD

SCALE: 1" = 20'

1' CLAY CAP AND
2' GRAVEL POCKET

SPRING

RELIEF TRENCH
TOP = 1159.00

PROPOSED
WQ POND

4" PERFORATED
PVC OR HDPE
FL = 1157.96

1' CLAY CAP AND
2' GRAVEL POCKET

SPRING

RELIEF TRENCH
TOP = 1160.00

4" PERFORATED
PVC OR HDPE
FL = 1158.95

50 LF WIER
FL=1162.0

HWE 1162.6'

TOP OF POND = 1164

RELIEF TRENCH
BOTTOM = 1154.56

4" PERFORATED
PVC OR HDPE
FL = 1155.44

1' CLAY CAP AND
2' GRAVEL POCKET

SPRING

4" PERFORATED
PVC OR HDPE
FL = 1161.95

RELIEF TRENCH
TOP = 1163.00

RELIEF TRENCH
BOTTOM = 1155.63

4" PERFORATED
PVC OR HDPE
FL = 1156.48

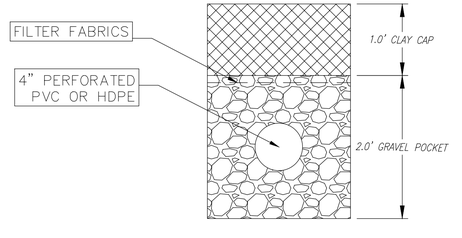
TOP OF POND = 1164

WQBZ

4" PERFORATED
PVC OR HDPE
FL = 1159.54

RELIEF TRENCH
BOTTOM = 1158.68

RELIEF TRENCH DETAIL



M. Harmouche
STATE OF TEXAS
MAHER HARMOUCHE
143982
LICENSED
PROFESSIONAL ENGINEER
CARLSON, BRIGANCE, & DOERING, INC.
ID # F3791

04.02.2024

DESIGNED BY:	DRAFTED BY:
DRJ	RH/TDC/PO

REVISION | DATE

Carlson, Brigance & Doering, Inc.
Civil Engineering ◆ Surveying
FIRM ID #F3791
Main Office
3501 West William Cannon Dr. 78749
Austin, Texas
12129 RR 620 N., Ste. 600
Austin, Texas 78750
Fax No. (512) 280-5165
Phone No. (512) 280-5160

SHEET NAME: RELIEF TRENCH EXHIBIT

JOB NAME: ARROWHEAD RANCH PHASE 3

PROJECT: POND PLAN EXHIBIT

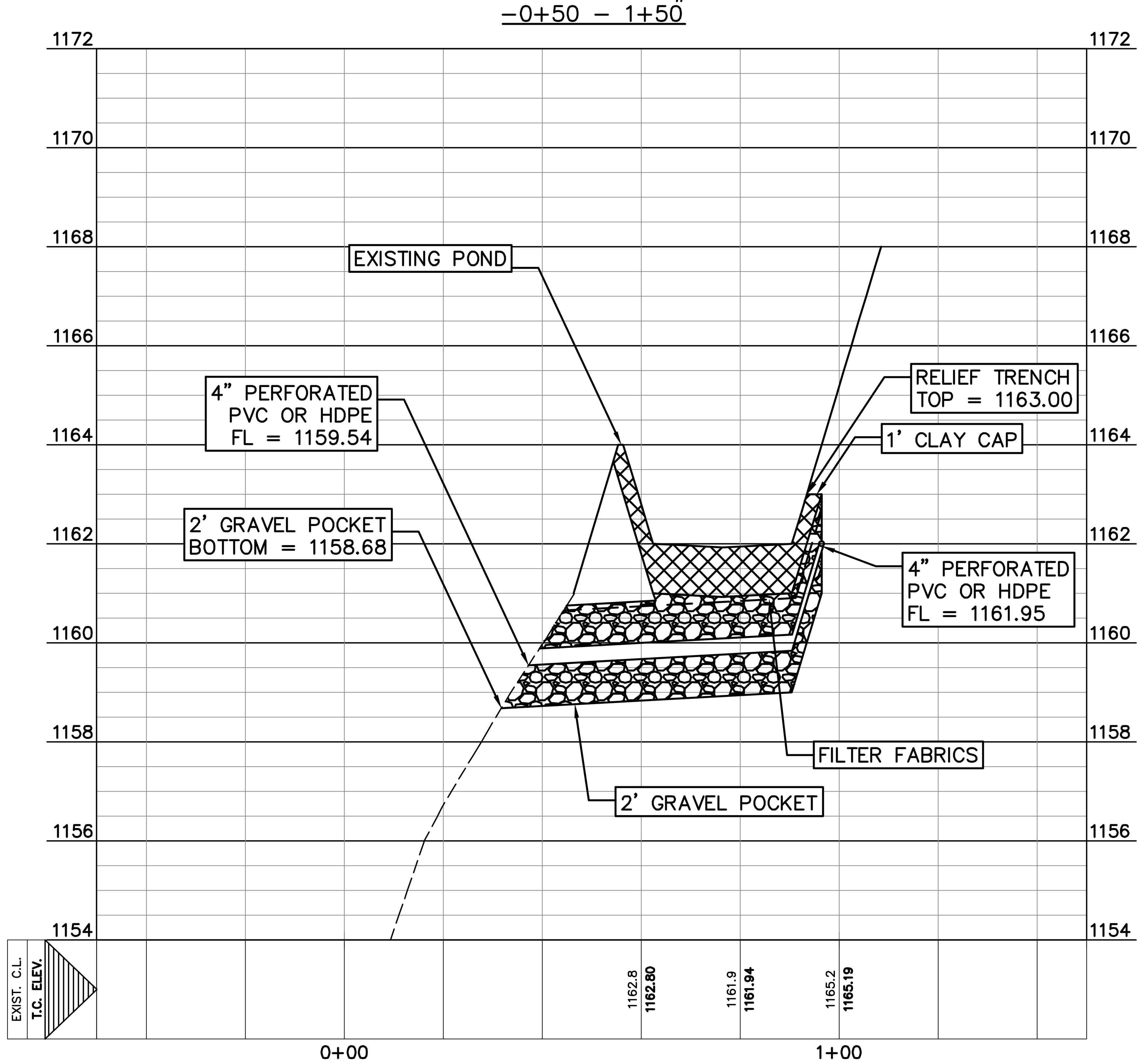
DATE: APRIL 2024

JOB NUMBER 4999

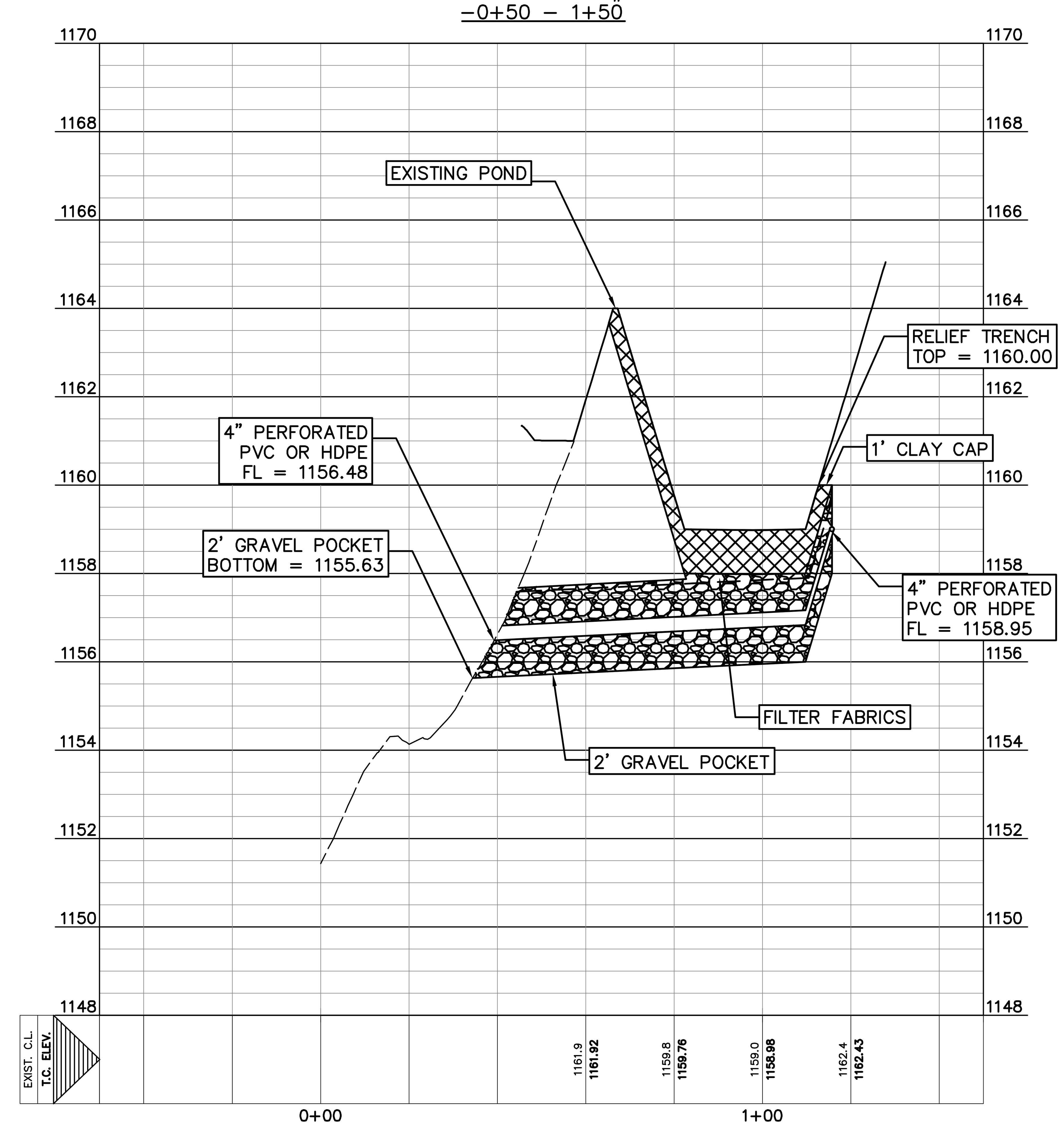
SHEET 2 OF 5

SHEET NO. 2

RELIEF TRENCH #1
-0+50 – 1+50



RELIEF TRENCH #2
-0+50 – 1+50



M. Harmouche
STATE OF TEXAS
MAHER HARMOUCHE
143982
LICENSED PROFESSIONAL ENGINEER
CARLSON, BRIGANCE, & DOERING, INC. ID # F3791
04.02.2024

DESIGNED BY: DRJ	DRAFTED BY: RH/TDC/PO

DATE
REVISION

Carlson, Brigance & Doering, Inc.
Civil Engineering ◆ Surveying
FIRM ID #F3791
Main Office: 5501 West William Cannon Dr. Austin, Texas 78749 Phone No. (512) 280-5160
North Office: 12129 RR 620 N., Ste. 600 Austin, Texas 78750 Fax No. (512) 280-5165
CBD

SHEET NAME: RELIEF TRENCH #1 & #2 PROFILES
JOB NAME: ARROWHEAD RANCH PHASE 3
PROJECT: POND PLAN EXHIBIT

DATE: APRIL 2024
JOB NUMBER: 4999
SHEET: 3 OF 5
SHEET NO.: 3

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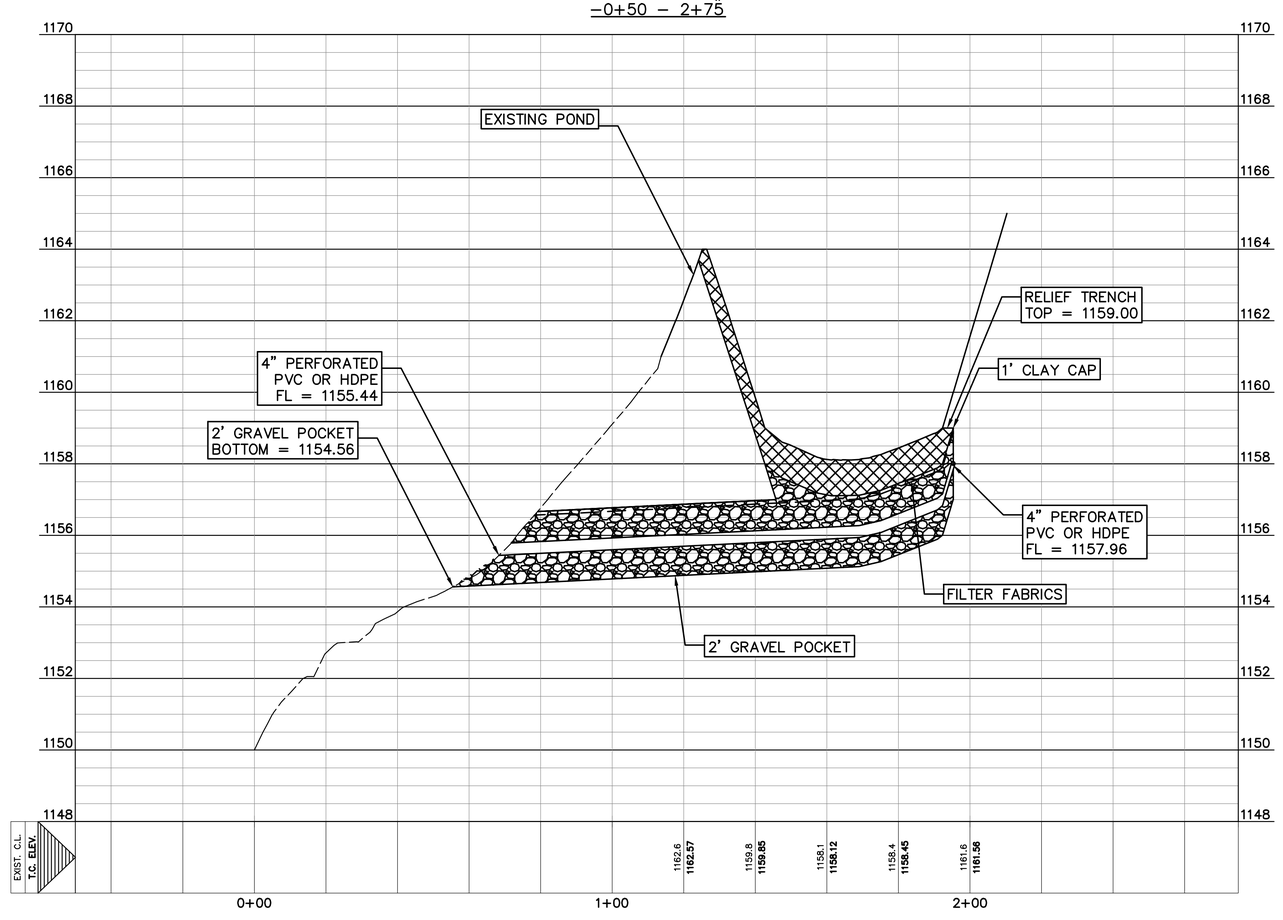
RELIEF TRENCH #3
0+50 – 2+75



MAHER HARMOUCHE
143982
LICENSED PROFESSIONAL ENGINEER
STATE OF TEXAS
CARLSON, BRIGANCE, & DOERING, INC.
ID # F3791

04.02.2024

DESIGNED BY:	DRAFTED BY:
DRJ	RH/TDC/PO

DATE	REVISION

Carlson, Brigance & Doering, Inc.
Civil Engineering ◆ Surveying
FIRM ID #F3791
Main Office
3501 West William Cannon Dr. Austin, Texas 78749
Phone No. (512) 280-5160
North Office
12129 RR 620 N., Ste. 600 Austin, Texas 78750
Fax No. (512) 280-5165

SHEET NAME: RELIEF TRENCH #3 PROFILE

JOB NAME: ARROWHEAD RANCH PHASE 3

PROJECT: POND PLAN EXHIBIT

DATE: APRIL 2024

JOB NUMBER: 4999

SHEET: 4 OF 5

SHEET NO.: 4

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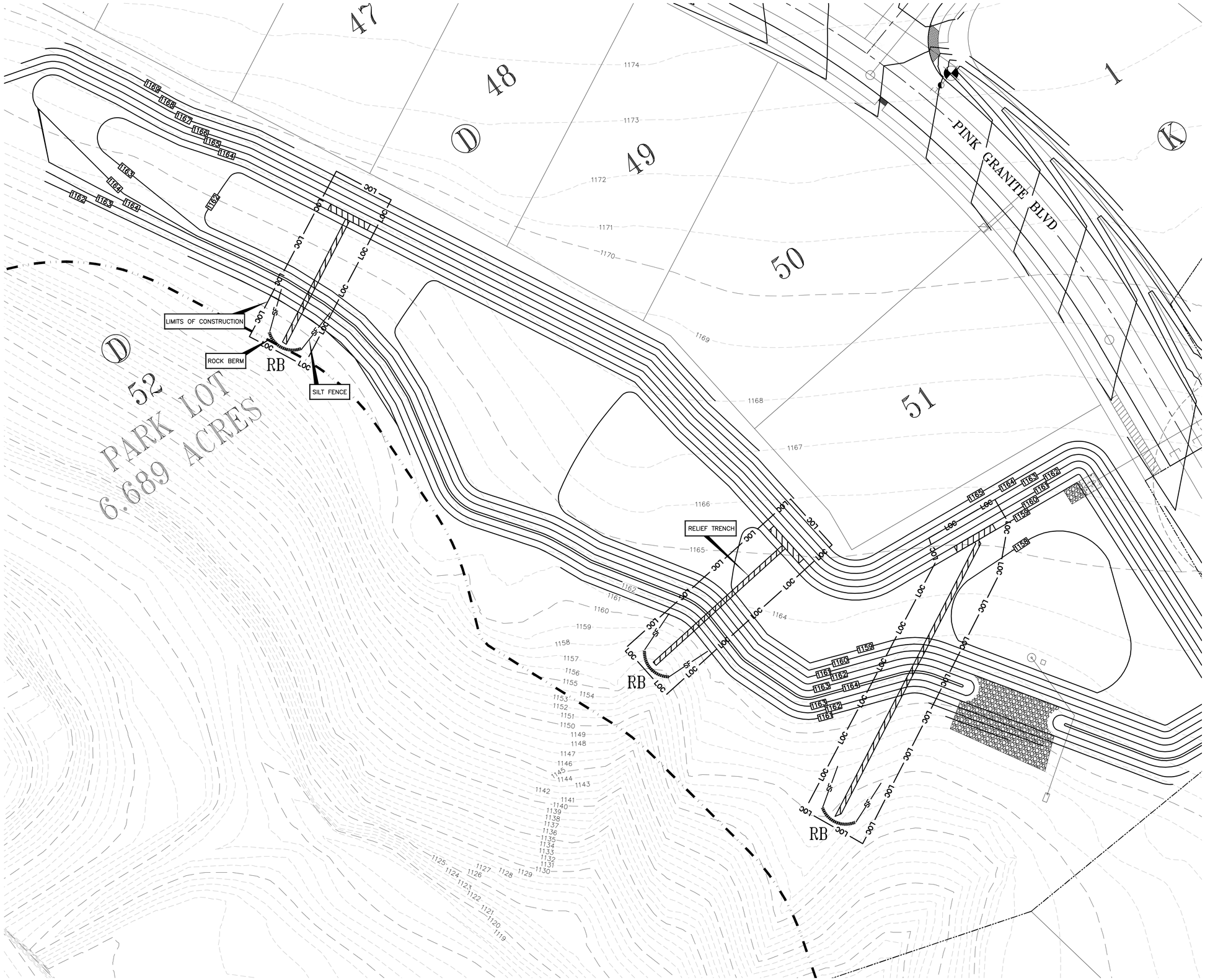

LEGEND

- SF — SILT FENCE
- LOC — LIMITS OF CONSTRUCTION
- JH — J HOOK
- IP — INLET PROTECTION
- SCE — STABILIZED CONSTRUCTION ENTRANCE
- STAGING AND SPOILS AREA
- CONCRETE WASH AREA
- EXIST. MINOR CONTOUR
- 570 — EXIST. MAJOR CONTOUR
- 570 — PROPOSED GRADING
- RB — ROCK BERM
- RB — DOUBLE DUTY ROCK BERM
- BERM

0 20' 40'

SCALE: 1" = 20'

STATE OF TEXAS
MAHER HARMOUCHE
143982
LICENSED PROFESSIONAL ENGINEER

CARLSON, BRIGANCE, & DOERING, INC.
ID # F3791

04.02.2024

DESIGNED BY:	DRAFTED BY:
DRJ	RH/TDC/PO

DATE	REVISION

Carlson, Brigance & Doering, Inc.
Civil Engineering ◆ Surveying
FIRM ID #F3791
Main Office
5501 West William Cannon Dr. 78749
Austin, Texas
12129 North Office
FM 620 N., Suite 600
Austin, Texas 78750
Phone No. (512) 280-5160 Fax No. (512) 280-5165

SHEET NAME: EROSION CONTROL PLAN
JOB NAME: ARROWHEAD RANCH PHASE 3
PROJECT: POND PLAN EXHIBIT

DATE: APRIL 2024
JOB NUMBER: 4999
SHEET: 5 OF 5
SHEET NO.: 5

OCE-ENGINEERING.CTB

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ARROWHEAD RANCH
DRIPPING SPRINGS, TEXAS
PHASE 3

STREET, DRAINAGE, WATER & SANITARY SEWER IMPROVEMENTS

SUBMITTED BY:

11/4/2019

CARLSON, BRIGANCE, AND DOERING INC.
FIRM ID # F3791
5501 W. WILLIAM CANNON
AUSTIN, TX 78749
512-280-5160

CITY OF DRIPPING SPRINGS — DATE
ADMINISTRATOR
CITY OF DRIPPING SPRINGS DEVELOPMENT PERMIT #SUB2019-0030

CITY OF DRIPPING SPRINGS — DATE
ENGINEER
CITY OF DRIPPING SPRINGS DEVELOPMENT PERMIT #SUB2019-0030

DRIPPING SPRINGS WATER SUPPLY CORP. — DATE

CITY OF DRIPPING SPRINGS — DATE
WASTEWATER REVIEW ENGINEER
CITY OF DRIPPING SPRINGS DEVELOPMENT PERMIT #SUB2019-0030

ESD #6 — DATE
(NORTH HAYS COUNTY FIRE DEPARTMENT)

WATERSHED STATUS - THIS PROJECT IS LOCATED WITHIN THE ONION CREEK WATERSHED. THIS SITE IS NOT LOCATED OVER THE EDWARDS AQUIFER RECHARGE ZONE, BUT IT IS IN THE CONTRIBUTING ZONE ACCORDING TO TCEQ AND COA MAPS. A CZP WILL BE REQUIRED PRIOR TO COMMENCING CONSTRUCTION ACTIVITIES.

NOTES:

1. NO PORTION OF THIS TRACT IS WITHIN THE BOUNDARIES OF THE CWQZ OR THE 100 YEAR FLOOD PLAIN OF THE FEDERAL FLOOD INSURANCE ADMINISTRATION FIRM PANELS NO. 48209C0085F AND 48209C0105F FOR HAYS COUNTY, TEXAS, BOTH DATED SEPTEMBER 02, 2005.
2. THIS PROJECT IS INCLUDED IN SF-5 ZONING PER CITY OF DRIPPING SPRINGS, TEXAS OFFICIAL ZONING MAP.
3. THERE WILL BE NO INCREASE IN PEAK RATE OF DISCHARGE FROM THE DEVELOPMENT FOR THE DESIGN STORM EVENT AS A RESULT OF THIS PROJECT.

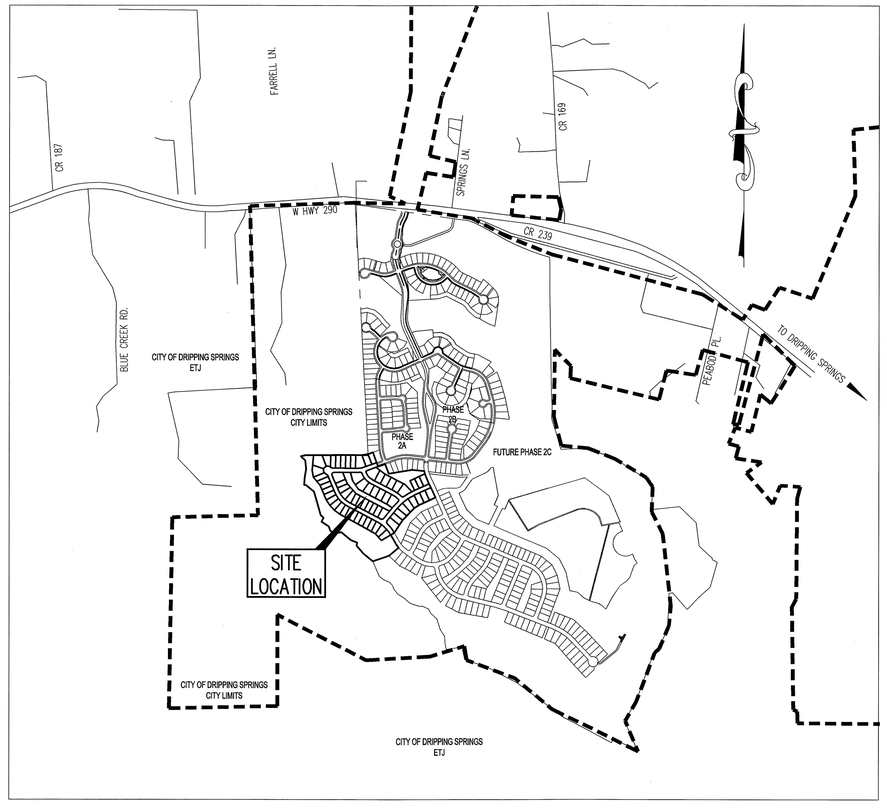
ALL RESPONSIBILITY FOR THE ADEQUACY OF THESE PLANS REMAINS WITH THE ENGINEER WHO PREPARED THEM. IN APPROVING THESE PLANS, THE CITY MUST RELY UPON THE ADEQUACY OF WORK OF THE DESIGN ENGINEER.

THIS DEVELOPMENT IS SUBJECT THE ARROWHEAD RANCH AGREEMENT DATED 02/14/2008 BETWEEN THE CITY OF DRIPPING SPRINGS AND FORESTAR REAL ESTATE GROUP RECORDED IN VOLUME 3330 , PAGE 809 ", PUBLIC RECORDS OF HAYS COUNTY, TEXAS.

A WATER QUALITY BMP MAINTENANCE PLAN HAS BEEN PREPARED FOR THIS DEVELOPMENT AND IS RECORDED IN DOCUMENT # ____, PUBLIC RECORDS OF HAYS COUNTY, TEXAS

STREET TREES SHALL BE PLANTED IN EACH LOT PRIOR TO THE ISSUANCE OF A CERTIFICATE OF OCCUPANCY PER THE QUANTITY, SIZE AND LOCATION REQUIREMENTS OF SUBDIVISION ORDINANCE 28.06.051

NO.	DESCRIPTION	REVISE (R) ADD (A) VOID (V) SHEET NO's	TOTAL # SHEETS IN PLAN SET	CITY OF DRIPPING SPRINGS APPROVAL/DATE	EMERGENCY SERVICES DISTRICT #6 APPROVAL/DATE



LOCATION MAP
N.T.S.

BEING ALL OF THAT CERTAIN 27.758 ACRE TRACT OF LAND OUT OF AND A PART OF THE BENJAMIN F. HANNA SURVEY, ABSTRACT NUMBER 222, SITUATED IN HAYS COUNTY, TEXAS, SAID TRACT OF LAND BEING MORE PARTICULARLY DESCRIBED AS BEING A PORTION OF A CALLED 263.708 ACRE TRACT OF LAND CONVEYED TO TF ARROWHEAD RANCH, L.P., RECORDED IN DOCUMENT NUMBER 18005876 OF THE OFFICIAL PUBLIC RECORDS OF HAYS COUNTY, TEXAS (O.P.R.H.C.TX.)

Know what's below. Call before you dig.

SHEET INDEX

ELECTRICAL PLANS

UTILITY PROVIDERS: WATER - DRIPPING SPRINGS WATER SUPPLY
WASTEWATER - CITY OF DRIPPING SPRINGS

ENGINEER: CARLSON, BRIGANCE & DOERING, INC.
5501 WEST WILLIAM CANNON DRIVE
AUSTIN, TEXAS 78749
PHONE: (512) 280-5160 FAX: (512) 280-5165

OWNER: TF ARROWHEAD, L.P.
STARWOOD LAND VENTURES, LLC
6310 CAPITAL DRIVE, SUITE 130
BRADENTON, FL 34202

STATE OF TEXAS
RYAN WAYNE PERRY
130060
LICENSED PROFESSIONAL ENGINEER
CARLSON, BRIGANCE, & DOERING, INC.
ID # F3791
11/4/2019

DESIGNED BY:	DRAFTED BY:
DRJ	RH/TDC/PO

DATE	REVISION

Carlson, Brigance & Doering, Inc.
Civil Engineering ◆ Surveying
FIRM ID #F3791
Main Office
5501 West William Cannon Dr. 78749
Austin, Texas
Phone No. (512) 280-5160
North Office
12129 RR 620 N. Ste. 600
Austin, Texas 78750
Fax No. (512) 280-5165

SHEET NAME: COVER
JOB NAME: ARROWHEAD RANCH PHASE 3
PROJECT: STREET, DRAINAGE, WATER, AND WASTEWATER IMPROVEMENTS

DATE: OCTOBER 2019
JOB NUMBER: 4999
SHEET: 1 OF 35
SHEET NO.: 1

FILE PATH:J:\JAC3D\4999\dwg\4999-COVER.dwg - Nov 04, 2019 - 10:18am

SWPPP NOTES:

THIS PROJECT IS SUBJECT TO THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY'S (TCEQ) TEXAS POLLUTION DISCHARGE ELIMINATION SYSTEM (TPDES) GENERAL PERMIT TXR150000 FOR CONSTRUCTION ACTIVITIES. THE GENERAL PERMIT REQUIRES THE PREPARATION OF A STORM WATER POLLUTION PREVENTION PLAN (SWPPP), WHICH HAS BEEN PROVIDED BY THE OWNER FOR USE BY THE CONTRACTOR. THE OWNER SHALL PROVIDE THE OWNERS NOTICE OF INTENT (NOI) AND NOTICE OF TERMINATION (NOT) TO THE TCEQ. THE CONTRACTOR'S RESPONSIBILITIES ARE AS FOLLOWS:

1. MAINTAIN A COPY OF THE SWPPP AND A SET OF CONSTRUCTION PLANS WITH THE TEMPORARY EROSION AND SEDIMENT CONTROL PLAN AT THE WORK SITE AT ALL TIMES.
2. FILE A NOTICE OF INTENT (NOI) AND APPLICABLE PAYMENT TO THE TCEQ AT LEAST 2 DAYS PRIOR TO SITE DISTURBANCE.
3. POST A COPY OF THE OWNER'S AND CONTRACTOR'S NOI FORMS AT THE WORK SITE.
4. SIGN THE CERTIFICATION AND OBTAIN A SIGNED CERTIFICATION STATEMENT FROM ALL SUBCONTRACTORS RESPONSIBLE FOR IMPLEMENTING THE EROSION AND SEDIMENT CONTROL MEASURES WHICH INDICATES THAT THE CONTRACTOR AND SUBCONTRACTOR UNDERSTANDS THE PERMIT REQUIREMENTS (FORMS ARE IN THE SWPPP).
5. FOLLOW AND COMPLY WITH ALL ASPECTS OF THE TPDES GENERAL PERMIT NO. TXR15000. THIS INCLUDES BUT IS NOT LIMITED TO FIELD INSPECTIONS AND EROSION CONTROLS AND UPDATING EROSION CONTROL PLAN SHEETS BASED ON FIELD CHANGES AND MODIFICATIONS.
6. FILE A COPY OF THE CONTRACTOR'S NOT WITH THE TCEQ ONCE THE WORK IS COMPLETED IN ACCORDANCE WITH THE TPDES GENERAL PERMIT NO. TX150000 AND HAS BEEN ACCEPTED BY THE OWNER.

OWNER

TF ARROWHEAD, L.P.
STARWOOD LAND VENTURES, LLC
6310 CAPITAL DRIVE, SUITE 130
BRADENTON, FL 34202

OWNER'S REPRESENTATIVE RESPONSIBLE FOR PLAN ALTERATIONS:

CARLSON, BRIGANCE, & DOERING, INC.
DOUGLAS R. RUMMEL, Jr., P.E.
5501 WEST WILLIAM CANNON
AUSTIN, TEXAS 78749
PHONE#: (512) 280-5160

MAINTENANCE
PERSON OR FIRM RESPONSIBLE FOR
EROSION / SEDIMENTATION CONTROL:

CONTRACTOR:

MAINTENANCE
PERSON OR FIRM RESPONSIBLE FOR
TREE / NATURAL AREA PROTECTION:

CONTRACTOR:

SPOILS MANAGEMENT AND DISPOSAL NOTES:

1. TEMPORARY HOLDING SITES AS NECESSARY TO STOCKPILE EXCAVATED SOILS, EMBEDMENT MATERIAL, AND/OR PIPING AND APPURTENANCES MAY BE LOCATED WITHIN THE LIMITS OF CONSTRUCTION AS SHOWN ON THE PLANS.
2. NO PERMANENT SPOILS DISPOSAL SHALL BE ALLOWED ON-SITE, UNLESS APPROVED BY THE OWNER AND GOVERNING AUTHORITY.
3. ALL SPOILS MATERIALS SHALL BE DISPOSED OF BY THE CONTRACTOR AT TAN APPROVED SPOIL DISPOSAL SITE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING AND SECURING A PERMIT FOR THE SITE; AND SHALL NOTIFY THE OWNER AND/OR ENGINEER AT LEAST FORTY-EIGHT (48) HOURS PRIOR TO DISPOSAL OF ANY SPOILS MATERIAL.

EROSION / SEDIMENTATION CONTROL NOTES:

1. THE CONTRACTOR SHALL INSTALL EROSION / SEDIMENTATION CONTROLS AND TREE/NATURAL AREA PROTECTIVE FENCING PRIOR TO ANY SITE PREPARATION WORK (CLEARING, GRUBBING, OR EXCAVATION.)

2. THE PLACEMENT OF EROSION/SEDIMENTATION CONTROLS SHALL BE IN ACCORDANCE WITH THE EROSION AND SEDIMENTATION CONTROL PLAN, INCLUDING SPECIFICATIONS, SWPPP, AND CONTRIBUTING ZONE PLAN.

3. A PRE-CONSTRUCTION CONFERENCE SHALL BE HELD ON-SITE WITH THE CONTRACTOR, DESIGN ENGINEER, DEVELOPER, TCEQ, DRIPPING SPRINGS WSC, AND CITY INSPECTOR AFTER INSTALLATION OF THE EROSION/SEDIMENTATION CONTROL MEASURES AND PRIOR TO BEGINNING ANY SITE PREPARATION WORK. THE CONTRACTOR SHALL NOTIFY ALL PARTIES, LEAST THREE DAYS PRIOR TO THE MEETING DATE.

4. ANY MAJOR VARIATION IN MATERIALS OR LOCATIONS OF CONTROLS OR FENCES FROM THOSE SHOWN ON THE APPROVED PLANS WILL REQUIRE A REVISION AND MUST BE ADDED TO THE PLAN SHEET IN ACCORDANCE TO TCEQ AND THE SWPPP REQUIREMENTS. MINOR CHANCES TO BE MADE AS FIELD REVISIONS TO THE EROSION AND SEDIMENTATION CONTROL PLAN MAY BE REQUIRED BY AND AUTHORIZED AGENCY DURING THE COURSE OF CONSTRUCTION TO CORRECT CONTROL INADEQUACIES.

5. THE CONTRACTOR IS REQUIRED TO INSPECT THE CONTROLS AND FENCES AT WEEKLY INTERVALS AND AFTER SIGNIFICANT RAINFALL EVENTS TO INSURE THAT THEY ARE FUNCTIONING PROPERLY. THE PERSON(S) RESPONSIBLE FOR MAINTENANCE OF CONTROLS AND FENCES SHALL IMMEDIATELY MAKE ANY NECESSARY REPAIRS, SILT ACCUMULATION AT CONTROLS MUST BE REMOVED WHEN THE DEPTH REACHES A MAXIMUM OF SIX (6) INCHES.

6. PRIOR TO FINAL ACCEPTANCE BY THE CITY, HAUL ROADS AND WATERWAY CROSSINGS CONSTRUCTED FOR TEMPORARY CONTRACTOR ACCESS MUST BE REMOVED, ACCUMULATED SEDIMENT REMOVED FROM THE WATERWAY AND THE AREA RESTORED TO THE ORIGINAL GRADE AND REVEGETATED. ALL LAND CLEARING DEBRIS SHALL BE DISPOSED OF IN APPROVED SPOIL DISPOSAL SITES.

7. PERMANENT EROSION CONTROL:
ALL DISTURBED AREAS SHALL BE RESTORED AS NOTED BELOW:

-A MINIMUM OF FOUR INCHES OF TOPSOIL SHALL BE PLACED IN ALL UNPAVED, DISTURBED AREAS (EXCEPT ROCK).

8. THE SEEDING OF SODDING FOR PERMANENT EROSION CONTROL SHALL BE APPLIED OVER AREAS DISTURBED PER LANDSCAPE PLANS.

AMERICANS WITH DISABILITIES ACT

1.) THE CITY OF DRIPPING SPRINGS HAS REVIEWED THESE PLANS FOR COMPLIANCE WITH CITY DEVELOPMENT REGULATIONS ONLY. THE APPLICANT, PROPERTY OWNER, AND OCCUPANT OF THE PREMISES ARE RESPONSIBLE FOR DETERMINING WHETHER THE PLAN COMPLIES WITH ALL OTHER LAWS, REGULATIONS, AND RESTRICTIONS WHICH MAY BE APPLICABLE TO THE PROPERTY AND ITS USE.

2.) SLOPES ON ACCESSIBLE ROUTES MAY NOT EXCEED 1:20 UNLESS DESIGNED AS A RAMP.

3.) THE MAXIMUM SLOPES OF A RAMP IN NEW CONSTRUCTION IS 1:12. THE MAXIMUM RISE FOR ANY RAMP IS 30 INCHES.

4.) ACCESSIBILITY ROUTE MUST HAVE A CROSS-SLOPE NO GREATER THAN 1:50.

5.) GROUND SURFACES ALONG ACCESSIBLE ROUTES MUST BE STABLE, FIRM, AND SLIP RESISTANT.

6.) THESE PLANS HAVE BEEN DESIGNED WITH THE INTENTIONS TO COMPLY WITH ADA AND TAS STANDARDS, REQUIREMENTS, AND REGULATIONS.

FILE PATH:J:\AC3D\4999\dwg\4999-GENERAL NOTES.dwg - Oct 31, 2019 - 7:41am

DEVELOPER INFORMATION:

TF ARROWHEAD, L.P.
STARWOOD LAND VENTURES, LLC
6310 CAPITAL DRIVE, SUITE 130
BRADENTON, FL 34202

CONSTRUCTION SEQUENCING:

1.) COORDINATE ALL START-UP WORK WITH OWNER AND GOVERNING AGENCIES.

2.) INSTALL TEMPORARY EROSION AND SEDIMENTATION CONTROLS PER APPROVED PLANS, SILT, AND SEDIMENT SHALL BE REMOVED AFTER ANY SIGNIFICANT RAINFALL OR WHEN THE DEPTH OF SILT/SEDIMENT IS 6" MAX AT ANY ROCK BERM, INLET PROTECTION, OR SILT FENCE.

3.) CONTACT THE OWNER, ENGINEER, CITY, TCEQ, AND UTILITY COMPANIES TO ARRANGE A PRE-CONSTRUCTION MEETING AT LEAST 3 DAYS IN ADVANCE OF STARTING CONSTRUCTION.

4.) CONSTRUCT BMP'S.

5.) INSTALL UTILITY IMPROVEMENTS.

6.) HYDROMULCH OR SOD AND STABILIZE ALL DISTURBED AREAS AND CLEAN UP SITE.

7.) SCHEDULE FINAL INSPECTIONS.

8.) COMPLETE PERMANENT EROSION CONTROL AND SITE RESTORATION.

9.) UPON COMPLETION OF SITE IMPROVEMENTS, CONTRACTOR SHALL SCHEDULE FINAL INSPECTION WITH CITY INSPECTOR PRIOR AND DRIPPING SPRINGS WSC TO REMOVAL OF EROSION CONTROLS. THIS WILL THEN BE SUBMITTED TO THE CITY OF DRIPPING SPRINGS FOR APPROVAL BEFORE THE FINAL CERTIFICATE OF OCCUPANCY.

10.) FINAL CLEANING OF EROSION AND SEDIMENTATION CONTROLS. THIS SHALL OCCUR PRIOR TO FINAL PAYMENT.

11.) REMOVE TEMPORARY EROSION AND SEDIMENTATION CONTROLS. RESTORE ANY AREAS DISTURBED DURING REMOVAL OF EROSION/SEDIMENTATION CONTROLS.

12.) DISPOSE OF ALL CONSTRUCTION DEBRIS AND TRASH. HYDROMULCH AND/OR STABILIZE ANDY DISTURBED AREAS FOLLOWING SITE CLEANUP.

GENERAL NOTES:

1.) USE 'ONE CALL' UTILITY SYSTEM: DIAL **1-800-DIG-TESS** 48 HOURS BEFORE YOU DIG. CONTRACTOR WILL ALSO NOTIFY ALL OTHER UTILITY PROVIDERS THAT ARE NOT NOTIFIED BY THE ONE CALL SYSTEM.

2.) ALL STORM SEWER SHALL BE CLASS III RCP, UNLESS NOTED OTHERWISE.

3.) ALL SLOPES SHALL BE SODDED OR SEEDED WITH THE APPROPRIATE GRASS, GRASS MIXTURES, OR GROUND COVER, SUITABLE TO THE AREA AND SEASON TO WHICH THEY ARE APPLIED.

4.) SILT FENCES, ROCK BERMS AND SIMILARLY RECOGNIZED TECHNIQUES AND MATERIALS SHALL BE EMPLOYED DURING CONSTRUCTION TO PREVENT POINT SOURCE SEDIMENTATION LOADING OF DOWNSTREAM FACILITIES. SUCH INSTALLATION SHALL BE REGULARLY INSPECTED FOR EFFECTIVENESS. ADDITIONAL MEASURES MAY BE REQUIRED.

5.) ALL TEMPORARY EROSION CONTROL MEASURES SHALL NOT BE REMOVED UNTIL FINAL INSPECTION AND APPROVAL OF THE PROJECT BY THE ENGINEER.

6.) IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO MAINTAIN ALL TEMPORARY EROSION CONTROL STRUCTURES AND TO REMOVE EACH STRUCTURE AS APPROVED BY THE ENGINEER.

7.) LINE FLUSHING OR ANY ACTIVITY USING LARGE QUANTITIES OF WATER MUST BE SCHEDULED WITH THE WATER AND WASTEWATER SUPERINTENDENT OF THE CITY OF DRIPPING SPRINGS AND DRIPPING SPRINGS WATER SUPPLY CORPORATION. ADDITIONALLY, CONTACT SCOTT MANUEL AT STES.

8.) THE CONTRACTOR SHALL PROVIDE THE OFFICE OF DSWSC, (512) 858-7897, NO LESS THAN 24 HOURS NOTICE PRIOR TO DISINFECTING, PERFORMING STERILIZATION, QUALITY TESTING, OR PRESSURE TESTING.

9.) THE CONTRACTOR SHALL NOT OPEN OR CLOSE ANY VALVES UNLESS AUTHORIZED BY THE DRIPPING SPRINGS WSC.

10.) THE CONTRACTOR SHALL CONTACT DIG TESS CALL SYSTEM AT **1-800-DIG-TESS** FOR EXISTING UTILITY LOCATIONS AND SHALL ALSO NOTIFY ALL OTHER UTILITY PROVIDERS THAT ARE NOT NOTIFIED BY THE ONE CALL SYSTEM. PRIOR TO ANY EXCAVATION ON ADVANCE OF CONSTRUCTION. THE CONTRACTOR SHALL VERIFY THE LOCATIONS AND EXISTING ELEVATIONS OF ALL UTILITIES TO BE EXTENDED, TIED TO, ALTERED, OR SUBJECT TO CHANGE/INCONVENIENCE BY CONSTRUCTION OPERATIONS. THE CITY OF DRIPPING SPRINGS WASTEWATER AND DRIPPING SPRINGS WSC MAINTENANCE RESPONSIBILITY ENDS AT ROW/EASEMENT LINES.

11.) ALL MATERIAL TESTS, INCLUDING SOIL DENSITY TESTS AND RELATED SOIL ANALYSIS, SHALL BE ACCOMPLISHED BY AN INDEPENDENT LABORATORY, IN ADDITION TO INSPECTION BY CITY OF DRIPPING SPRINGS WSC, FUNDED BY THE DEVELOPER IN ACCORDANCE WITH THE SPECIFICATIONS.

12.) AS-BUILT PLANS ARE REQUIRED FROM THE CONTRACTOR AT THE CONCLUSION OF THE SITE WORK SHOWING ALL REVISIONS.

13.) SEE DSWSC GENERAL CONSTRUCTION NOTE 18 FOR CONSTRUCTION OF ELECTRIC DISTRIBUTION LINE UNDER WATER LINES.

UTILITY CONSTRUCTION NOTES:

1.) THE OWNER, CARLSON, BRIGANCE, & DOERING, INC., AND THEIR REPRESENTATIVES, IN PREPARING THESE PLANS HAVE ATTEMPTED TO LOCATE ALL EXISTING UTILITIES IN THE AREAS OF NEW CONSTRUCTION. HOWEVER, THERE MAY BE UTILITIES THAT WERE NOT OR COULD NOT BE LOCATED. UNDERGROUND UTILITIES SHOWN ON THE PLANS ARE IN APPROXIMATE LOCATIONS ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATIONS AND ELEVATIONS OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK. THE CONTRACTOR SHALL CALL ALL APPROPRIATE UTILITY COMPANIES FOR LOCATIONS OF THEIR UTILITIES AT LEAST 2 WORKING DAYS BEFORE COMMENCING EXCAVATION. IN THE EVENT THAT A UTILITY IS SITUATED SUCH THAT CONSTRUCTION CANNOT PROCEED AS SHOWN ON THE PLANS, THE OWNER AND DOUCET & ASSOCIATES, INC. SHALL BE NOTIFIED IMMEDIATELY BY PHONE AND IN WRITING.

2.) THE CONTRACTOR IS RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH OCCUR DUE TO HIS FAILURE TO LOCATE AND PRESERVE ANY AND ALL UTILITIES.

3.) CONTRACTOR SHALL COORDINATE INSPECTION OF UTILITY LINES WITH APPROPRIATE AUTHORITIES PRIOR TO AND AFTER BACKFILLING TRENCHES, AS NECESSARY.

4.) WASTEWATER LINES LOCATED ON-SITE, AND IN PUBLIC EASEMENTS AND 'RIGHT-OF-WAY' SHALL MEET CITY OF DRIPPING SPRINGS REQUIREMENTS. THE PIPE SHALL BE PVC, ASTM SDR-26 WITH INTEGRAL BELL, BELL & SPIGOT TYPE JOINS (WITH RUBBER GASKETS), UNLESS OTHERWISE NOTED. INFILTRATION AND/OR EXFILTRATION AND/OR LOW PRESSURE AIR TESTS AND DEFLECTION TESTS SHALL BE IN ACCORDANCE WITH CITY OF DRIPPING SPRINGS REQUIREMENTS AND TEXAS COMMISSION ON ENVIRONMENTAL QUALITY (TCEQ) RULES AS FOLLOWS:

- SEE TESTING REQUIREMENTS FOR INSTALLATION OF GRAVITY COLLECTION SYSTEM PIPES IN SECTION 217.57 AND 217.58.

- SEE TESTING REQUIREMENTS FOR MANHOLES IN TCEQ CHAPTER 217 SUBCHAPTER "C" FOR CONVENTIONAL COLLECTION SYSTEMS.

5.) LOCATION OF WATERLINES. THE FOLLOWING RULES APPLY TO INSTALLATIONS OF WATERLINES, WASTEWATER MAINS OR LATERALS, AND OTHER CONVEYANCES/APPURTENANCES IDENTIFIED AS POTENTIAL SOURCES OF CONTAMINATION. FURTHERMORE, ALL RATINGS SPECIFIED SHALL BE DEFINED BY ASTM OR AWWA STANDARDS UNLESS STATED OTHERWISE. NEW MAINS, SERVICE LINES, OR LATERALS ARE THOSE THAT ARE INSTALLED WHERE NO MAIN, SERVICE LINE, OR LATERAL PREVIOUSLY EXISTED, OR WHERE EXISTING MAINS, SERVICE LINES, OR LATERALS ARE REPLACED WITH PIPES OF DIFFERENT SIZE OR MATERIAL.

(1) WHEN NEW POTABLE WATER DISTRIBUTION LINES ARE CONSTRUCTED, THEY SHALL BE INSTALLED NO CLOSER THAN NINE FEET IN ALL DIRECTIONS TO WASTEWATER COLLECTION FACILITIES. ALL SEPARATION DISTANCES SHALL BE MEASURED FROM THE OUTSIDE SURFACE OF EACH OF THE RESPECTIVE PIECES.

(2) POTABLE WATER DISTRIBUTION LINES AND WASTEWATER MAINS OR LATERALS THAT FORM PARALLEL UTILITY LINES SHALL BE INSTALLED IN SEPARATE TRENCHES.

(3) NO PHYSICAL CONNECTION SHALL BE MADE BETWEEN A DRINKING WATER SUPPLY AND A SEWER LINE. ANY APPURTENANCE SHALL BE DESIGNED AND CONSTRUCTED SO AS TO PREVENT ANY POSSIBILITY OF SEWAGE ENTERING THE DRINKING WATER SYSTEM.

(4) WHERE THE NINE-FOOT SEPARATION DISTANCE CANNOT BE ACHIEVED, THE FOLLOWING CRITERIA SHALL APPLY.

(A) NEW WATERLINE INSTALLATION - PARALLEL LINES.

(I) WHERE A NEW POTABLE WATERLINE PARALLELS AN EXISTING, NON-PRESSURE OR PRESSURE RATED WASTEWATER MAIN OR LATERAL AND THE LICENSED PROFESSIONAL ENGINEER LICENSED IN THE STATE OF TEXAS IS ABLE TO DETERMINE THAT THE EXISTING WASTEWATER MAIN OR LATERAL IS NOT LEAKING, THE NEW POTABLE WATERLINE SHALL BE LOCATED AT LEAST TWO FEET ABOVE THE EXISTING WASTEWATER MAIN OR LATERAL, MEASURED VERTICALLY, AND AT LEAST FOUR FEET AWAY, MEASURED HORIZONTALLY, FROM THE EXISTING WASTEWATER MAIN OR LATERAL. EVERY EFFORT SHALL BE EXERTED NOT TO DISTURB THE BEDDING AND BACKFILL OF THE EXISTING WASTEWATER MAIN OR LATERAL.

(II) WHERE A NEW POTABLE WATERLINE PARALLELS AN EXISTING PRESSURE-RATED WASTEWATER MAIN OR LATERAL AND IT CANNOT BE DETERMINED BY THE LICENSED PROFESSIONAL ENGINEER IF THE EXISTING LINE IS LEAKING, THE EXISTING WASTEWATER MAIN OR LATERAL SHALL BE REPLACED WITH AT LEAST 150 PSI PRESSURE-RATED PIPE. THE NEW POTABLE WATERLINE SHALL BE LOCATED AT LEAST TWO FEET ABOVE THE NEW WASTEWATER LINE, MEASURED VERTICALLY, AND AT LEAST FOUR FEET AWAY, MEASURED HORIZONTALLY, FROM THE REPLACED WASTEWATER MAIN OR LATERAL.

(III) WHERE A NEW POTABLE WATERLINE PARALLELS A NEW WASTEWATER MAIN, THE WASTEWATER MAIN OR LATERAL SHALL BE CONSTRUCTED OF AT LEAST 150 PSI PRESSURE-RATED PIPE. THE NEW POTABLE WATERLINE SHALL BE LOCATED AT LEAST TWO FEET ABOVE THE WASTEWATER MAIN OR LATERAL, MEASURED VERTICALLY, AND AT LEAST FOUR FEET AWAY, MEASURED HORIZONTALLY, FROM THE WASTEWATER MAIN OR LATERAL.

(B) NEW WATERLINE INSTALLATION - CROSSING LINES.

(I) WHERE A NEW POTABLE WATERLINE CROSSES ABOVE A WASTEWATER MAIN OR LATERAL, THE SEGMENT OF THE WATERLINE PIPE SHALL BE CENTERED OVER AND MUST BE PERPENDICULAR TO THE WASTEWATER MAIN OR LATERAL SUCH THAT THE JOINTS OF THE WATERLINE PIPE ARE EQUIDISTANT AND AT LEAST NINE FEET HORIZONTALLY FROM THE CENTERLINE OF THE WASTEWATER MAIN OR LATERAL. WHEN CROSSING AN EXISTING WASTEWATER MAIN OR LATERAL AND IT IS DISTURBED OR SHOWS SIGNS OF LEAKING, THE WASTEWATER MAIN OR LATERAL SHALL BE REPLACED FOR AT LEAST NINE FEET IN BOTH DIRECTIONS (18 FEET TOTAL) WITH AT LEAST 150 PSI PRESSURE-RATED PIPE EMBEDDED IN CEMENT STABILIZED SAND (SEE CLAUSE (V) OF THIS SUBPARAGRAPH) FOR THE TOTAL LENGTH OF ONE PIPE SEGMENT PLUS 12 INCHES BEYOND THE JOINT ON EACH END.

(I) THE POTABLE WATERLINE SHALL BE AT LEAST TWO FEET ABOVE AN EXISTING, NON-PRESSURE RATED WASTEWATER MAIN OR LATERAL.

(II) THE POTABLE WATERLINE SHALL BE AT LEAST SIX INCHES ABOVE AN EXISTING, PRESSURE-RATED WASTEWATER MAIN OR LATERAL.

(II) WHERE A NEW POTABLE WATERLINE CROSSES A NEW, NON-PRESSURE RATED WASTEWATER MAIN OR LATERAL, THE SEGMENT OF THE WATERLINE PIPE SHALL BE CENTERED OVER AND SHALL BE PERPENDICULAR TO THE WASTEWATER MAIN OR LATERAL SUCH THAT THE JOINTS OF THE WATERLINE PIPE ARE EQUIDISTANT AND AT LEAST NINE FEET HORIZONTALLY FROM THE CENTERLINE OF THE WASTEWATER MAIN OR LATERAL. THE POTABLE WATERLINE SHALL BE AT LEAST TWO FEET ABOVE THE WASTEWATER MAIN OR LATERAL. WHENEVER POSSIBLE, THE CROSSING SHALL BE CENTERED BETWEEN THE JOINTS OF THE WASTEWATER MAIN OR LATERAL. THE WASTEWATER PIPE SHALL HAVE A MINIMUM PIPE STIFFNESS OF 115 PSI AT 5.0% DEFLECTION. THE WASTEWATER MAIN OR LATERAL SHALL BE EMBEDDED IN CEMENT STABILIZED SAND (SEE CLAUSE (V) OF THIS SUBPARAGRAPH) FOR THE TOTAL LENGTH OF ONE PIPE SEGMENT PLUS 12 INCHES BEYOND THE JOINT ON EACH END. THE MATERIALS AND METHOD OF INSTALLATION SHALL CONFORM TO ONE OF THE FOLLOWING OPTIONS:

(I) WITHIN NINE FEET HORIZONTALLY OF EITHER SIDE OF THE WATERLINE, THE WASTEWATER PIPE AND JOINTS SHALL BE CONSTRUCTED WITH PIPE MATERIAL HAVING A MINIMUM PRESSURE RATING OF AT LEAST 150 PSI. AN ABSOLUTE MINIMUM VERTICAL SEPARATION DISTANCE OF TWO FEET SHALL BE PROVIDED. THE WASTEWATER MAIN OR LATERAL SHALL BE LOCATED BELOW THE WATERLINE.

(II) ALL SECTIONS OF WASTEWATER MAIN OR LATERAL WITHIN NINE FEET HORIZONTALLY OF THE WATERLINE SHALL BE ENCASED IN AN 18-FOOT (OR LONGER) SECTION OF PIPE. FLEXIBLE ENCASING PIPE SHALL HAVE A MINIMUM PIPE STIFFNESS OF 115 PSI AT 5.0% DEFLECTION. THE ENCASING PIPE SHALL BE CENTERED ON THE WATERLINE AND SHALL BE AT LEAST TWO NOMINAL PIPE DIAMETERS LARGER THAN THE WASTEWATER MAIN OR LATERAL. THE SPACE AROUND THE CARRIER PIPE SHALL BE SUPPORTED AT FIVE-FOOT (OR LESS) INTERVALS WITH SPACERS OR BE FILLED TO THE SPRINGLINE WITH WASHED SAND. EACH END OF THE CASING SHALL BE SEALED WITH WATERTIGHT NON-SHRINK CEMENT GROUT OR A MANUFACTURED WATERTIGHT SEAL. AN ABSOLUTE MINIMUM SEPARATION DISTANCE OF SIX INCHES BETWEEN THE ENCASEMENT PIPE AND THE WATERLINE SHALL BE PROVIDED. THE WASTEWATER LINE SHALL BE LOCATED BELOW THE WATERLINE.

(III) WHEN A NEW WATERLINE CROSSES UNDER A WASTEWATER MAIN OR LATERAL, THE WATERLINE SHALL BE ENCASED AS DESCRIBED FOR WASTEWATER MAINS OR LATERALS IN CLAUSE (II) OF THIS SUBPARAGRAPH OR CONSTRUCTED OF DUCTILE IRON OR STEEL PIPE WITH MECHANICAL OR WELDED JOINTS AS APPROPRIATE. AN ABSOLUTE MINIMUM SEPARATION DISTANCE OF ONE FOOT BETWEEN THE WATERLINE AND THE WASTEWATER MAIN OR LATERAL SHALL BE PROVIDED. WHEN A NEW WATERLINE CROSSES UNDER A WASTEWATER MAIN, THE **PROCEDURES IN §217.53(D) OF THIS TITLE (RELATING TO PIPE DESIGN) MUST BE** FOLLOWED.

(IV) WHERE A NEW POTABLE WATERLINE CROSSES A NEW, PRESSURE RATED WASTEWATER MAIN OR LATERAL, ONE SEGMENT OF THE WATERLINE PIPE SHALL BE CENTERED OVER AND SHALL BE PERPENDICULAR TO THE WASTEWATER LINE SUCH THAT THE JOINTS OF THE WATERLINE PIPE ARE EQUIDISTANT AND AT LEAST NINE FEET HORIZONTALLY FROM THE CENTER LINE OF THE WASTEWATER MAIN OR LATERAL. THE POTABLE WATERLINE SHALL BE AT LEAST SIX INCHES ABOVE THE WASTEWATER MAIN OR LATERAL. WHENEVER POSSIBLE, THE CROSSING SHALL BE CENTERED BETWEEN THE JOINTS OF THE WASTEWATER MAIN OR LATERAL. THE WASTEWATER PIPE SHALL HAVE A MINIMUM PRESSURE RATING OF AT LEAST 150 PSI. THE WASTEWATER MAIN OR LATERAL SHALL BE EMBEDDED IN CEMENT STABILIZED SAND (SEE CLAUSE (V) OF THIS SUBPARAGRAPH) FOR THE TOTAL LENGTH OF ONE PIPE SEGMENT PLUS 12 INCHES BEYOND THE JOINT ON EACH END.

(V) WHERE CEMENT STABILIZED SAND BEDDING IS REQUIRED, THE CEMENT STABILIZED SAND SHALL HAVE A MINIMUM OF 10% CEMENT PER CUBIC YARD OF CEMENT STABILIZED SAND MIXTURE, BASED ON LOOSE DRY WEIGHT VOLUME (AT LEAST 2.5 BAGS OF CEMENT PER CUBIC YARD OF MIXTURE). THE CEMENT STABILIZED SAND BEDDING SHALL BE A MINIMUM OF SIX INCHES ABOVE AND FOUR INCHES BELOW THE WASTEWATER MAIN OR LATERAL. THE USE OF BROWN COLORING IN CEMENT STABILIZED SAND FOR WASTEWATER MAIN OR LATERAL BEDDING IS RECOMMENDED FOR THE IDENTIFICATION OF PRESSURE RATED WASTEWATER MAINS DURING FUTURE CONSTRUCTION.

(5) WATERLINE AND WASTEWATER MAIN MANHOLE OR LATERAL MANHOLE OR CLEANOUT SEPARATION. THE SEPARATION DISTANCE FROM A POTABLE WATERLINE TO A WASTEWATER MAIN MANHOLE OR LATERAL MANHOLE OR CLEANOUT SHALL BE A MINIMUM OF NINE FEET. WHERE THE NINE-FOOT SEPARATION DISTANCE CANNOT BE ACHIEVED, THE POTABLE WATERLINE SHALL BE ENCASED IN A JOINT OF AT LEAST 150 PSI PRESSURE CLASS PIPE AT LEAST 18 FEET LONG AND TWO NOMINAL SIZES LARGER THAN THE NEW CONVEYANCE. THE SPACE AROUND THE CARRIER PIPE SHALL BE SUPPORTED AT FIVE-FOOT INTERVALS WITH SPACERS OR BE FILLED TO THE SPRINGLINE WITH WASHED SAND. THE ENCASEMENT PIPE SHALL BE CENTERED ON THE CROSSING AND BOTH ENDS SEALED WITH CEMENT GROUT OR MANUFACTURED SEALANT.

(6) LOCATION OF FIRE HYDRANTS. FIRE HYDRANTS SHALL NOT BE INSTALLED WITHIN NINE FEET VERTICALLY OR HORIZONTALLY OF ANY WASTEWATER MAIN, WASTEWATER LATERAL, OR WASTEWATER SERVICE LINE REGARDLESS OF CONSTRUCTION.

(7) LOCATION OF POTABLE OR RAW WATER SUPPLY OR SUCTION LINES. SUCTION MAINS TO PUMPING EQUIPMENT SHALL NOT CROSS WASTEWATER MAINS, WASTEWATER LATERALS, OR WASTEWATER SERVICE LINES. RAW WATER SUPPLY LINES SHALL NOT BE INSTALLED WITHIN FIVE FEET OF ANY TILE OR CONCRETE WASTEWATER MAIN, WASTEWATER LATERAL, OR WASTEWATER SERVICE LINE.

(8) PROXIMITY OF SEPTIC TANK DRAINFIELDS. WATERLINES SHALL NOT BE INSTALLED CLOSER THAN TEN FEET TO SEPTIC TANK DRAINFIELDS

6.) WATER LINE/MANHOLE SEPARATION. UNLESS SANITARY SEWER MANHOLES AND THE CONNECTING SEWER CAN BE MADE WATERTIGHT AND TESTED FOR NO LEAKAGE, THEY MUST BE INSTALLED SO AS TO PROVIDE A MINIMUM OF NINE FEET OF HORIZONTAL CLEARANCE FROM AN EXISTING OR PROPOSED WATERLINE. WHERE THE NINE FOOT SEPARATION DISTANCE CANNOT BE ACHIEVED, A CARRIER PIPE AS DESCRIBED IN 5 (D) MAY BE USED WHERE APPROPRIATE.

7.) WATER LINE SHALL BE PVC AWWA C900 DR14, CLASS 200, OR D.I. PIPE, CLASS 350 UNLESS OTHERWISE NOTED ON PRIVATE LINES. WATER LINES SHALL BE INSTALLED AS PER TCEQ CHAPTER 290.44 WATER DISTRIBUTION REQUIREMENTS.

8.) CONTRACTOR SHALL COMPLY WITH THE LATEST OSHA STANDARDS OR DIRECTIVES OR ANY OTHER AGENCY HAVING JURISDICTION FOR EXCAVATION AND TRENCHING PROCEDURES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DESIGN AND MAINTENANCE OF ALL SUPPORT SYSTEMS, SLOPING, BENCHING, AND OTHER MEANS OF PROTECTION.

9.) THE TOP ELEVATION OF MANHOLES IN PAVED AND UNPAVED AREAS SHALL MATCH FINISHED GRADE.

10.) THRUST BLOCKING AND RESTRAINTS SHALL BE USED AT ALL WATER LINE TEES, BENDS, DEAD ENDS, ETC. ONLY RESTRAINTS SHALL BE USED IN FILL AREAS.

11.) CONTRACTOR SHALL MAINTAIN A MINIMUM OF 36" COVER ON ALL DSWSC WATERLINES.

12.) UNDERGROUND LINES SHALL BE INSTALLED, INSPECTED, AND APPROVED BY APPROPRIATE UTILITY AUTHORITY BEFORE BACKFILLING.

13.) ALL CONCRETE FOR ENCASEMENTS SHALL HAVE A MINIMUM 28 DAY COMPRESSION STRENGTH AT 3,500 PSI.

14.) EXISTING UTILITIES SHALL BE VERIFIED IN FIELD PRIOR TO INSTALLATION OF ANY NEW LINES.

15.) CONTRACTOR SHALL CONTACT THE DRIPPING SPRINGS WATER SUPPLY CORPORATION AND THE CITY OF DRIPPING SPRINGS FOR SPECIFICATIONS AND AN APPROVED PRODUCTS LIST (IF SUCH LIST EXISTS), PARTICULARLY FOR VALVES, VALVE BOXES, FIRE HYDRANTS, AND ALL OTHER WATER LINE AND WASTEWATER LINE APPURTENANCES.

16.) THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES AS SHOWN ON THESE PLANS IS BASED ON RECORDS OF THE VARIOUS UTILITY COMPANIES, AND WHERE POSSIBLE, MEASUREMENTS TAKEN IN THE FIELD. THE INFORMATION IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE. THE CONTRACTOR MUST CALL THE APPROPRIATE UTILITY COMPANIES AT LEAST 2 WORKING DAY BEFORE ANY EXCAVATION TO REQUEST EXACT FIELD LOCATION OF UTILITIES. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES WHICH CONFLICT WITH PROPOSED IMPROVEMENTS SHOWN ON THESE PLANS.

17.) DRAWINGS DO NOT PURPOSE TO SHOW ALL EXISTING UTILITIES.

18.) ALL FILL MATERIAL IS TO BE IN PLACED AND COMPACTED BEFORE INSTALLATION OF PROPOSED UTILITIES, EXCEPT WHERE TRENCH CUT IS 4' BELOW EXISTING GRADE AND FILL AT THIS TYPE LOCATION IS DESIGNED TO BE 2' OR MORE ABOVE EXISTING GRADE.

19.) THE UPPER PORTION OF UTILITY EXCAVATIONS SHOULD BE BACKFILLED WITH PROPERLY COMPACTED CLAYEY SOILS TO MINIMIZE INFILTRATION OF SURFACE WATER. CLAY "PLUG" SHALL BE PROVIDED IN THE TRENCH ON THE EXTERIOR OF THE BUILDING TO PREVENT WATER FROM GAINING ACCESS ALONG THE TRENCH TO THE SUBGRADE BENEATH THE STRUCTURE.

20.) ALL NECESSARY INSPECTIONS AND/OR CERTIFICATIONS REQUIRED BY CODES AND/OR UTILITY SERVICE COMPANIES SHALL BE PERFORMED PRIOR TO BUILDING POSSESSION OR OCCUPANCY AND THE FINAL CONNECTION OF UTILITY SERVICES.

CITY OF DRIPPING SPRINGS
STANDARD WASTEWATER CONSTRUCTION NOTES
(OCT. 2018)

1.) ALL WASTEWATER LINES SHALL BE CONSTRUCTED IN ACCORDANCE WITH CITY OF AUSTIN AND TCEQ 30 TAC, CHAPTER 217 REQUIREMENTS.

2.) CONTRACTOR SHALL GUARANTEE THE WORK AGAINST DEFECTIVE WORKMANSHIP AND MATERIALS FOR A PERIOD OF TWO YEARS FROM THE DATE OF FINAL ACCEPTANCE OF THE WORK BY THE CITY OF DRIPPING SPRINGS.

3.) BEDDING FOR GRAVITY WASTEWATER LINES, FORCE MAINS, AND TREATED EFFLUENT LINES SHALL BE ¾" TO 1" ROCK WITH A 6 OUNCE NON-WOVEN GEOTEXTILE FABRIC, MEETING EITHER TXDOT DMS 6200 OR TYPE 1 COA 620S, PLACED OVER THE BEDDING. CONTRACTOR SHALL PROVIDE A MINIMUM 5 GALLON BUCKET SAMPLE OF THE PROPOSED BEDDING MATERIAL FOR CITY OF DRIPPING SPRINGS APPROVAL.

4.) WHEN GROUNDWATER IS ENCOUNTERED DURING CONSTRUCTION, RECOMMENDATIONS ON BEDDING AND BACKFILL SHALL BE PROVIDED BY A GEOTECHNICAL ENGINEER BEFORE PROCEEDING WITH CONSTRUCTION. ALL RECOMMENDATIONS SHALL BE APPROVED BY THE CITY OF DRIPPING SPRINGS.

5.) CONTRACTOR SHALL ADHERE TO CITY OF AUSTIN STANDARD 1100S-1 FOR WASTEWATER MANHOLE RING ADJUSTMENTS IN PAVED AREAS.

6.) GRAVITY WASTEWATER LINES SHALL BE PVC SDR 26 ASTM D3034 IF LOCATED GREATER THAN 9 FEET FROM A WATERLINE. IF LESS THAN 9 FEET (OUTSIDE OF PIPE TO OUTSIDE OF PIPE) FROM ANY WATER LINE, PIPE SHALL BE PVC SDR 26 ASTM D2241 PRESSURE RATED PIPE.

7.) FORCE MAINS SHALL BE MINIMUM PVC SDR 26 ASTM D2241 PRESSURE RATED PIPE IN BROWN POLY BAG.

8.) TREATED EFFLUENT LINES SHALL BE MINIMUM PVC SDR 21 ASTM D2241 PURPLE PRESSURE RATED PIPE.

9.) ALL WASTEWATER MANHOLES ARE TO BE COATED WITH CEMENTITIOUS LINING (SEWPERCOAT OR APPROVED EQUAL) PER CITY OF AUSTIN REQUIREMENTS. EXISTING MANHOLES WHERE CONNECTIONS ARE MADE TO THE CITY SEWER SYSTEM SHALL BE COATED OR RECOATED AFTER CONNECTIONS ARE MADE.

10.) ENGINEER AND CONTRACTOR SHALL COORDINATE WITH THE DRIPPING SPRINGS WSC REGARDING WATER LINE AND WATER SERVICE LINE CROSSINGS.

11.) CONTRACTOR SHALL INSTALL BOLTED MANHOLE LIDS ON ALL MANHOLES OUTSIDE PAVEMENT.

12.) WASTEWATER MANHOLE LIDS SHALL HAVE "SANITARY SEWER" CAST IN THE LID.

13.) CITY OF DRIPPING SPRINGS INSPECTOR SHALL OBSERVE INSTALLATION OF ALL TAPS ONTO WASTEWATER LINES.

14.) CITY OF DRIPPING SPRINGS INSPECTOR SHALL BE NOTIFIED 48 HOURS PRIOR TO ALL UTILITY LINE TESTING BY CALLING THE CITY **(512) 858-4725** OR THE DESIGNATED INSPECTOR IDENTIFIED AT THE PRECONSTRUCTION MEETING.

15.) CONTRACTOR SHALL PERFORM THE FOLLOWING TESTING ON ALL TYPES OF WASTEWATER IMPROVEMENTS AT HIS EXPENSE:

- A. GRAVITY WASTEWATER LINES AND SERVICES - LOW PRESSURE AIR TEST.
- B. GRAVITY WASTEWATER LINES - MANDREL DEFLECTION TESTING AFTER 30 DAYS OF FINAL BACKFILL.
- C. GRAVITY WASTEWATER LINES - TELEVISED UPON COMPLETION OF CONSTRUCTION AND PRIOR TO PAVING. CONTRACTOR SHALL PROVIDE THE VIDEOS OF THE PIPES TO THE CITY OF DRIPPING SPRINGS PRIOR TO ACCEPTANCE.
- D. WASTEWATER MANHOLES - VACUUM TEST @ 10 PSI FOR 3 MINUTES. NO VACUUM TESTING WILL BE ACCEPTED BY THE CITY OF DRIPPING SPRINGS UNTIL COMPLETION OF MINIMUM FIRST COURSE OF BASE IS INSTALLED.
- E. FORCE MAINS AND TREATED EFFLUENT LINES - HYDROSTATICALLY TEST TO A MINIMUM OF 1.5 TIMES WORKING PRESSURE FOR 24 HOURS.
- F. EXISTING WASTEWATER FACILITIES - PRETEST AND POST TEST EXISTING LINES AND MANHOLES WHEN CONNECTING TO EXISTING FACILITIES.

GENERAL CONSTRUCTION NOTES
CITY OF DRIPPING SPRINGS

1.) AT THE END OF THE JOB, A SET OF AS-BUILTS AND A CONCURRENCE LETTER FROM THE DESIGN ENGINEER ARE REQUIRED TO BE SUBMITTED TO THE CITY OF DRIPPING SPRINGS AND DRIPPING SPRINGS WSC.
2.) ALL REVISIONS TO THE SITE PLAN MUST BE APPROVED BY THE CITY, OR ELSE AT THE CONSTRUCTION OF THE PROJECT, ALL REVISIONS FOUND TO BE OUT OF COMPLIANCE WITH THE APPROVED SET WILL BE ASSESSED. THE REVISION FEE OF $250 PER CHANGE AS REQUIRED IN THE CITY'S FEE SCHEDULE.
3.) ALL PRIVATE WATER AND WASTEWATER LINES SHALL COMPLY WITH THE INTERNATIONAL PLUMBING CODE, 2006.

NOTE:

SHOULD SOLUTION FEATURES OR CONDITIONS BE EXPOSED DURING CONSTRUCTION OPERATIONS THAT INDICATE A POTENTIAL FOR HYDRAULIC INTERCONNECTEDNESS BETWEEN THE SURFACE AND THE EDWARDS AQUIFER, OPERATIONS IN THE VICINITY OF THE FEATURE SHOULD BE HALTED AND THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY (TCEQ) EDWARDS AQUIFER PROTECTION PROGRAM SHOULD BE CONTACTED IMMEDIATELY IN ACCORDANCE WITH THE 30 TAC 13.5(F)(2).

FIRE PREVENTION NOTES:

1.) THE CONTRACTOR SHALL PROVIDE COMPACTED FLEXIBLE BASE PAVEMENT PRIOR TO CONSTRUCTION OF COMBUSTIBLE MATERIALS AS AN "ALL WEATHER DRIVING SURFACE."
2.) FIRE HYDRANTS MUST HAVE A 5" STORZ ADAPTER WITH A BLIND CAP AFFIXED TO THE STEAMER OUTLET. THE 2.5" DISCHARGES MUST NH THREAD. EACH HYDRANT MUST BE IDENTIFIED WITH A BLUE REFLECTOR AFFIXED TO THE ROADWAY IN LINE WITH THE HYDRANT INSTALLATION.
3.) THE SUBDIVISION ENTRANCE GATE MUST COMPLY WITH IFC 2012 REQUIREMENTS INCLUDING THE FOLLOWING:

DIO3.5 FIRE APPARATUS ACCESS ROAD GATES.
GATES SECURING THE FIRE APPARATUS ACCESS ROADS SHALL COMPLY WITH ALL OF THE FOLLOWING CRITERIA:

1. THE MINIMUM GATE WIDTH SHALL BE 20 FEET (6096 MM).
2. GATES SHALL BE OF THE SWINGING OR SLIDING TYPE.
3. CONSTRUCTION OF GATES SHALL BE OF MATERIALS THAT ALLOW MANUAL OPERATION BY ONE PERSON.
4. GATE COMPONENTS SHALL BE MAINTAINED IN AN OPERATIVE CONDITION AT AL TIMES AND REPLACE OR REPAIRED WHEN DEFECTIVE.
5. ELECTRIC GATES SHALL BE EQUIPPED WITH A MEANS OF OPENING THE GATE BY FIRE DEPARTMENT PERSONNEL FOR EMERGENCY ACCESS. EMERGENCY OPENING DEVICES SHALL BE APPROVED BY THE FIRE CODE OFFICIAL.
6. MANUAL OPENING GATES SHALL NOT BE LOCKED WITH A PADLOCK OR CHAIN AND PADLOCK UNLESS THEY ARE CAPABLE OF BEING OPENED BY MEANS OF FORCIBLE ENTRY TOOLS OR WHEN A KEY BOX CONTAINING THE KEY(S) TO THE LOCK IS INSTALLED AT THE GATE LOCATION.
7. LOCKING DEVICE SPECIFICATIONS SHALL BE SUBMITTED FOR APPROVAL BY THE FIRE CODE OFFICIAL.
8. ELECTRIC GATE OPERATORS, WHERE PROVIDED, SHALL BE LISTED IN ACCORDANCE WITH UL 325.
9. GATES INTENDED FOR AUTOMATIC OPERATION SHALL BE DESIGNED, CONSTRUCTED AND INSTALLED TO COMPLY WITH THE REQUIREMENTS OF ASTM F 2200.
10. TO IDENTIFY THE FIRE HYDRANT LOCATION, A BLUE REFLECTIVE MARKER SHALL BE INSTALLED IN THE CENTER OF THE PUBLIC RIGHT OF WAY (ROADWAY) OR THE APPROPRIATE FIRE ACCESS DRIVE LANE PERPENDICULAR TO THE NEAREST FIRE HYDRANT. IN LOCATIONS WHERE HYDRANTS ARE SITUATED ON CORNERS, BLUE REFLECTIVE MARKERS SHALL BE INSTALLED ON BOTH APPROACHES WHICH FRONT THE HYDRANT.
11. "STORZ" ADAPTERS REQUIRED. FIRE HYDRANTS SHALL BE PROVIDED WITH APPROPRIATE FIVE INCH "STORZ" TYPE ADAPTERS FOR THE PUMPER (STEAMER) CONNECTION. THIS ADAPTER MUST BE EQUIPPED WITH A BLIND CAP.
12. THE INSTALLATION OF SECURITY GATES ACROSS A FIRE APPARATUS ROAD SHALL BE APPROVED BY THE FIRE CHIEF.
13. WHERE SECURITY GATES ARE INSTALLED, THEY SHALL HAVE AN APPROVED MEANS OF EMERGENCY OPERATION, INCLUDING A MEANS OF OPERATION WITHOUT POWER AND A MEANS OF OPERATION WITH A KNOX BOX OR A SIREN OPERATED SENSOR. THE SECURITY GATES AND EMERGENCY OPERATIONS SHALL BE MAINTAINED AT ALL TIMES. IF A SIREN OPERATED SENSOR IS UTILIZED, A SIGN WILL BE PLACED ON THE GATE TO NOTIFY EMERGENCY RESPONDERS THAT THE S.O.S. SYSTEM IS IN PLACE.
14. A SINGLE GATE SERVING TWO-WAY TRAFFIC SHALL BE 20 FEET IN CLEAR OPEN WIDTH. WHEN TWO GATES ARE INSTALLED AND EACH ONLY SERVES ONE DIRECTION OF TRAVEL, THEY SHALL BE 15 FEET IN CLEAR OPEN WIDTH EACH.

DRIPPING SPRINGS WSC WATERLINE CONSTRUCTION GUIDELINES 10/18/18

1. WATERLINES SHALL BE DESIGNED TO BE INSTALLED BETWEEN 36 INCHES MINIMUM BURY DEPTH AND 60 INCHES MAXIMUM, ANY WATERLINE DESIGNED TO BE BURIED DEEPER THAN 5 FEET MUST HAVE APPROVAL FROM DRIPPING SPRINGS WSC STAFF AND ITS ENGINEERS.

2. ALL WATERLINES SHOULD CROSS ABOVE STORM SEWER, ANY WATERLINE DESIGNED TO CROSS UNDER STORM SEWER MUST HAVE APPROVAL FROM DRIPPING SPRINGS WSC STAFF AND ITS ENGINEERS.

3. ALL GAS, ELECTRIC, TELECOMMUNICATION AND WASTEWATER LINES MUST CROSS BELOW WATER LINES, ANY LINE THAT CANNOT CROSS UNDER WILL REQUIRE APPROVAL FROM DRIPPING SPRINGS WSC STAFF AND ENGINEERS

4. WATERLINES SHALL BE CONSTRUCTED SO THE DRIPPING SPRINGS WSC CAN PERFORM MAINTENANCE ON THEM WHEN NECESSARY THIS INCLUDES.

a. NO WALLS CONSTRUCTED OVER OR WITHIN SIX FEET OF A WATERLINE WITHOUT PRIOR APPROVAL FROM THE DRIPPING SPRINGS WSC STAFF OR ITS ENGINEERS.

b. NO SIGNS CONSTRUCTED OVER OR WITHIN SIX FEET OF A WATERLINE WITHOUT PRIOR APPROVAL FROM DRIPPING SPRINGS WSC STAFF OR ITS ENGINEERS.

c. NOTHING CAN BE BUILT OR PLACED WITHIN THE DRIPPING SPRINGS WSC EASEMENTS THAT CANNOT BE EASILY MOVED BY WSC STAFF TO PERFORM MAINTENANCE

d. ALL WATERLINES MUST BE CONSTRUCTED OUT OF THE FLOW LINE OF OTHER UTILITY TRENCHES, UNLESS CROSSING AT LEAST A 45 DEGREES ANGLE.

e. NO WATERLINE WILL BE CONSTRUCTED IN THE FLOWLINE OF A DRAINAGE DITCH.

5. ALL WATER DISTRIBUTION LINES SHALL BE C-900 DR-18 OR DR 14 PVC PIPE MANUFACTURED IN THE UNITED STATES

6. ALL WATER SYSTEM MATERIALS SHALL FULLY COMPLY WITH TCEQ AND AWWA STANDARDS. ALL CONSTRUCTION SHALL FULLY COMPLY WITH THE DRIPPING SPRINGS WSC CURRENT CONSTRUCTION STANDARDS.

7. ALL SERVICE LINES SHALL BE SDR-9 P.E. PIPE 250 PSI.

8. ALL FITTINGS SHALL BE DUCTILE IRON MANUFACTURED IN THE UNITED STATES OF AMERICA WITH MECHANICAL JOINTS (MJ) AND HAVE EBBA IRON, INC. RESTRAINT AT EACH MJ. EACH C900 PVC PIPE SHALL HAVE EBBA IRON, INC. SERIES 1500 BELL RESTRAINT HARNESS WHEN LOCATED WITHIN THE DIMENSIONS SPECIFIED ON PLANS FROM D.I. FITTINGS, GATE VALVES, FIRE HYDRANTS, AND DEAD END LINES, AND WRAPPED IN 8 MIL POLYETHYLENE FILM.

9. ALL FIRE HYDRANT LEADS TO BE CONSTRUCTED WITH DUCTILE IRON PIPE MANUFACTURED IN THE UNITED STATES OF AMERICA AND WRAPPED IN 8 MIL POLYETHYLENE FILM.

10. GATE VALVES SHALL CONFORM TO AWWA STANDARD C515 AND SHALL BE AMERICAN FLOW CONTROL, KENNEDY VALVE, EAST JORDAN IRON WORKS OR MUELLER COMPANY.

11. VALVE BOXES SHALL BE CAST IRON WITH ADJUSTABLE BARREL HEIGHT SET PLUMB WITH 24" X 24" X 5" CONCRETE PAD, VALVE BOXES IN ROAD OR SIDEWALK SHALL BE CONSTRUCTED WITH A TRAFFIC BEARING BOOT SIX INCH DUCTILE IRON PIPE AND PAVING RING.

12. BRASS FITTING SHALL BE FORD BRASS UNLESS OTHERWISE APPROVED BY THE DRIPPING SPRINGS WSC STAFF AND ENGINEER.

13. IF CONFLICT BETWEEN PROJECT SPECIFICATIONS AND WATER DISTRIBUTION SYSTEM CONSTRUCTION STANDARDS OF THE DRIPPING SPRINGS WSC, THE WSC CONSTRUCTION STANDARDS SHALL GOVERN, INCLUDING OMITTED ITEMS FROM THE PROJECT SPECIFICATIONS

14. CONTRACTOR SHALL SCHEDULE A PRECONSTRUCTION MEETING PRIOR TO BEGINNING WORK, THE DRIPPING SPRINGS WSC SHALL BE NOTIFIED A MINIMUM OF 2 BUSINESS DAYS IN ADVANCE OF MEETING.

15. CONTRACTOR SHALL PROVIDE SUBMITTAL INFORMATION TO THE DRIPPING SPRINGS WSC ON ALL MATERIALS PROPOSED TO BE INSTALLED FOR REVIEW AND TO DETERMINE CONFORMANCE WITH THE DRIPPING SPRINGS WSC CONSTRUCTION STANDARDS.

16. PIPE EMBEDMENT SHALL BE # 5 TOPPING ROCK FROM EITHER CHANAS AGGREGATE BLANCO LLC (WASHED CRUSHED ROCK) OR WEST HENLEY QUARRY AGGREGATE WITH SAMPLE PROVIDED TO AND APPROVED BY THE DRIPPING SPRINGS WSC STAFF. THERE SHALL BE A MINIMUM OF 12 INCHES EMBEDMENT MATERIAL OVER THE PIPE AND 6 INCHES EMBEDMENT MATERIAL UNDER THE PIPE.

17. FIRE HYDRANTS SHALL CONFORM TO AWWA STANDARD C502 AND SHALL BE **AMERICAN DARLING 5 ¼ " B-84-B, KENNEDY VALVE GUARDIAN K81-D, EAST JORDAN IRON WORKS** MASTER 5CD250 OR MUELLER SUPER CENTURION 250 WITH HOSE OPENINGS AND 5" STORZ QUICK CONNECT PUMPER NOZZLE WITH A CAST PENTAGON OPERATING NUT. **THE 2 ½" DISCHARGE OUTLETS MUST BE NATIONAL HOSE THREAD. A BLUE, DOUBLE SIDED;** REFLECTIVE MARKER MUST BE AFFIXED TO THE ROADWAY DIRECTLY IN LINE WITH THE FIRE HYDRANT. HYDRANTS SHALL HAVE A RED OR SILVER PAINT COATING. HYDRANTS SHALL BE PLACED SO THEY ARE READILY ACCESSIBLE WITH NO OBSTRUCTIONS WITHIN 4 FEET OF HYDRANT. DO NOT PLACE HYDRANT WITHIN OR ADJACENT TO A DRAINAGE STRUCTURE.

18. EACH SERVICE SADDLE SHALL BE SMITH BLAIR EPOXY COATED WITH DUAL STAINLESS STEEL BANDS COMPLETELY WRAPPED WITH 8 MIL POLYETHYLENE FILM.

19. TOP OF THE METER BOX SHALL BE 2 INCHES ABOVE FINISHED GRADE

20. PIPES CROSSING UNDER STREET OR DRIVEWAY PAVEMENT SHALL BE BACKFILLED USING CRUSHED LIMESTONE BASE 6 INCH MAXIMUM LIFTS TO 95% STANDARD PROCTOR ABOVE THE PIPE EMBEDMENT MATERIAL, FLOWABLE FILL OR SUCH OTHER BACKFILL AS MAY BE REQUIRED BY THE CITY OF DRIPPING SPRINGS AND OR HAYS COUNTY.

21. METER BOXES MUST BE PLASTIC. ALL TRAFFIC BEARING BOXES MUST BE MADE OF POLY

22. STATE HIGHWAY BORE SHALL BE IN COMPLIANCE WITH TXDOT PERMIT REQUIREMENTS

23. ALL NEW WATERLINE CONSTRUCTION MUST BE DISINFECTED, PASS A PRESSURE TEST AND PASS BACTERIOLOGICAL SAMPLES.

24. ANY UNDERGROUND ELECTRIC CONDUIT/CONDUCTORS OR GAS LINE CROSSING THE DRIPPING SPRINGS WSC LINE SHALL BE LOCATED A MINIMUM OF 12 INCHES UNDER THE WATERLINE AT NEAR 90 DEGREES AND BE ENCASED WITH A MINIMUM 4 INCH THICK CONCRETE FOR A LENGTH NOT LESS THAN 24 INCHES ON EACH SIDE OF THE O.D. OF THE WATERLINE.

25. ALL FIRE LINES WILL HAVE THE APPROPRIATE BACKFLOW PREVENTER INSTALLED AND BE PLACED INSIDE OF A PRECAST VAULT AT OR NEAR THE PROPERTY LINE UNLESS THERE IS A DEDICATED EASEMENT PROVIDED DRIPPING SPRINGS WSC, THE DRIPPING SPRINGS WSCS MAINTENANCE ENDS AT THE FIRST FLANGE ON THE FIRST GATE VALVE GOING INTO THE BACKFLOW PREVENTER.

26. METERS 3 INCH AND LARGER WILL BE PLACED IN A PRECAST VAULT AT OR NEAR THE PROPERTY LINE UNLESS A DEDICATED EASEMENT IS PROVIDED TO THE DRIPPING SPRINGS WSC.

27. THE DRIPPING SPRINGS WSC MAINTENANCE OR REPAIR RESPONSIBILITY SHALL END AT EACH SERVICE METER WITHIN THE METER BOX.

28. ALL SERVICE CONNECTIONS THAT EXCEED 65 PSI, THE DRIPPING SPRINGS WSC RECOMMENDS A PRESSURE REDUCING VALVE BE INSTALLED AND MAINTAINED BY THE CUSTOMER.

29. PARALLELING WATERLINES MUST BE REVIEWED BY THE DRIPPING SPRINGS WSC STAFF AND ENGINEER PRIOR TO APPROVAL.

30. PRESSURE REDUCING VALVES BUILT IN THE DISTRIBUTION SYSTEMS MUST BE CONSTRUCTED WITH A BYPASS LINE FOR MAINTENANCE.

31. **METERS 1 ½ INCH AND LARGER MUST BE BUILT WITH A BYPASS LINE SO THE METER CAN** BE MAINTAINED WITHOUT THE INTERRUPTION OF SERVICE.

32. VALVES SHALL BE INSTALLED SO TO LIMIT THE NUMBER OF CUSTOMERS WITH INTERRUPTED SERVICE DURING AN OUTAGE, VALVES SHALL BE PLACED AT ALL RUNS OF TEES UNLESS OTHERWISE APPROVED BY THE DRIPPING SPRINGS WSC STAFF AND ENGINEER.

33. ALL CAPPED OR PLUGGED LINES MUST BUSHING DOWN TO A 2" WITH A BLOW OFF VALVE TO RELIEVE PRESSURE.

34. ALL EASEMENTS DEDICATED TO THE DRIPPING SPRINGS WSC MUST BE AT LEAST 15 FEET WIDE UNLESS OTHERWISE APPROVED BY THE DRIPPING SPRINGS WSC STAFF AND ITS ENGINEER.

35. NEW SUBDIVISIONS WILL BE REQUIRED TO CONSTRUCT AT LEAST ONE ADDITIONAL SERVICE CONNECTION FOR THE CORPORATION TO INSTALL A DEDICATED SAMPLE SITE, ADDITIONAL SERVICE CONNECTION MUST BE NOTED ON PLANS AND LOCATION APPROVED BY THE DRIPPING SPRINGS WSC STAFF AND ITS ENGINEER.

36. WATER AND WASTEWATER LINE SEPARATION DISTANCES SHALL MEET THE REQUIREMENTS OF 30 TAC, CHAPTER 290. 44 (E)(4).

37. WHEN GROUNDWATER IS ENCOUNTERED DURING CONSTRUCTION RECOMMENDATIONS ON BEDDING AND BACKFILL SHALL BE PROVIDED BY A GEOTECHNICAL ENGINEER BEFORE PROCEEDING WITH CONSTRUCTION. ALL RECOMMENDATIONS SHALL BE APPROVED BY THE DRIPPING SPRINGS WSC STAFF AND ENGINEER.

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY
CONTRIBUTING ZONE PLAN
GENERAL CONSTRUCTION NOTES

1.) WRITTEN CONSTRUCTION NOTIFICATION SHOULD BE PROVIDED TO THE APPROPRIATE TCEQ REGIONAL OFFICE NO LATER THAN 48 HOURS PRIOR TO COMMENCEMENT OF THE REGULATED ACTIVITY. INFORMATION SHOULD INCLUDE THE DATE ON WHICH THE REGULATED ACTIVITY WILL COMMENCE, THE NAME OF THE APPROVED PLAN FOR THE REGULATED ACTIVITY, AND THE NAME OF THE PRIME CONTRACTOR WITH THE NAME AND TELEPHONE NUMBER OF THE CONTACT PERSON.

2.) ALL CONTRACTORS CONDUCTING REGULATED ACTIVITIES ASSOCIATED WITH THIS PROJECT SHOULD BE PROVIDED WITH COMPLETE COPIES OF THE APPROVED CONTRIBUTING ZONE PLAN AND THE TCEQ LETTER INDICATING THE SPECIFIC CONDITIONS OF ITS APPROVAL. DURING THE COURSE OF THESE REGULATED ACTIVITIES, THE CONTRACTOR(S) SHOULD KEEP COPIES OF THE APPROVED PLAN AND APPROVAL LETTER ON-SITE.

3.) NO TEMPORARY ABOVE GROUND HYDROCARBON AND HAZARDOUS SUBSTANCE STORAGE TANK SYSTEM MAY BE INSTALLED WITHIN 150 FEET IF A DOMESTIC, INDUSTRIAL, IRRIGATION, OR PUBLIC WATER SUPPLY WELL.

4.) PRIOR TO COMMENCING CONSTRUCTION, ALL TEMPORARY EROSION AND SEDIMENTATION (E&S) CONTROL MEASURES MUST BE PROPERLY SELECTED, INSTALLED, AND MAINTAINED IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS AND GOOD ENGINEERING PRACTICES. CONTROLS SPECIFIED IN THE SWPPP SECTION OF THE APPROVED EDWARDS AQUIFER CONTRIBUTING ZONE PLAN ARE REQUIRED DURING CONSTRUCTION. IF INSPECTIONS INDICATE A CONTROL HAS BEEN USED INAPPROPRIATELY, OR INCORRECTLY, THE APPLICANT MUST REPLACE OR MODIFY THE CONTROL FOR SITE SITUATIONS. THE CONTROLS MUST REMAIN IN PLACE UNTIL DISTURBED AREAS ARE REVEGETATED AND THE AREAS HAVE BECOME PERMANENTLY STABILIZED.

5.) 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).

6.) SEDIMENT MUST BE REMOVED FROM SEDIMENT TRAPS OR SEDIMENTATION PONDS NOT LATER THAN WHEN DESIGN CAPACITY HAS BEEN REDUCED BY 50%. A PERMANENT STAKE MUST BE PROVIDED THAT CAN INDICATE WHEN THE SEDIMENT OCCUPIES 50% OF THE BASIN VOLUME.

7.) 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).

8.) ALL SPOILS (EXCAVATED MATERIAL) GENERATED FROM THE PROJECT SITE AND STORED ON-SITE MUST HAVE PROPER E$S CONTROLS INSTALLED.

9.) 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.

10.) THE FOLLOWING RECORDS SHOULD BE MAINTAINED AND MAE AVAILABLE TO THE TCEQ UPON REQUEST: THE DATES WHEN MAJOR GRADING ACTIVITIES OCCUR; THE DATES WHEN CONSTRUCTION ACTIVITIES TEMPORARILY OR PERMANENTLY CEASE ON T PORTION OF THE SITE; AND THE DATES WHEN STABILIZATION MEASURES ARE INITIATED.

11.) THE HOLDER OF ANY APPROVED CONTRIBUTING ZONE PLAN MUST NOTIFY THE APPROPRIATE REGIONAL OFFICE IN WRITING AND OBTAIN APPROVAL FROM THE EXECUTIVE DIRECTOR PRIOR TO INITIATING ANY OF THE FOLLOWING:

- A. ANY PHYSICAL OR OPERATIONAL MODIFICATION OF ANY BEST MANAGEMENT PRACTICES OR STRUCTURE(S), INCLUDING BUT NOT LIMITED TO TEMPORARY OR PERMANENT PONDS, DAMS, BERMS, SILT FENCES, AND DIVERSIONARY STRUCTURES;
- B. ANY CHANGE IN THE NATURE OF CHARACTER OF THE REGULATED ACTIVITY FORM THAT WHICH WAS ORIGINALLY APPROVED;
- C. ANY CHANGE THAT WOULD SIGNIFICANTLY IMPACT THE ABILITY TO PREVENT POLLUTION OF THE EDWARDS AQUIFER AND HYDROLOGICALLY CONNECTED SURFACE WATER; OR
- D. ANY DEVELOPMENT OF LAND PREVIOUSLY IDENTIFIED IN A CONTRIBUTING ZONE PLAN AS UNDEVELOPED.

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SAN ANTONIO REGIONAL OFFICE
14250 JUDSON ROAD
SAN ANTONIO, TEXAS 78233-4480
PHONE (210) 490-3096
FAX (210) 545-4329

THESE GENERAL CONSTRUCTION NOTES MUST BE INCLUDED ON THE CONSTRUCTION PLANS PROVIDED TO THE CONTRACTOR AND ALL SUBCONTRACTORS.

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY
WATER DISTRIBUTION SYSTEM
GENERAL CONSTRUCTION NOTES

1. THIS WATER DISTRIBUTION SYSTEM MUST BE CONSTRUCTED IN ACCORDANCE WITH THE CURRENT TEXAS COMMISSION ON ENVIRONMENTAL QUALITY (TCEQ) RULES AND REGULATIONS FOR PUBLIC WATER SYSTEMS 30 TEXAS ADMINISTRATIVE CODE (TAC) CHAPTER 290 SUBCHAPTER D.

2. PRIOR TO COMMENCEMENT OF CONSTRUCTION, THE OWNER OF THE SYSTEM OR HIS REPRESENTATIVE MUST NOTIFY THE APPROPRIATE TCEQ REGIONAL OFFICE IN WRITING OF THE DATE ON WHICH CONSTRUCTION WILL BEGIN.

3. 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.

4. PLASTIC PIPE FOR USE IN PUBLIC WATER SYSTEMS MUST BEAR THE NATIONAL SANITATION FOUNDATION SEAL OF APPROVAL (NSF-PW) AND HAVE AN ASTM DESIGN PRESSURE RATING OF AT LEAST 150 PSI OR A STANDARD DIMENSION RATIO OF 26 OR LESS.

5. NO PIPE WHICH HAS BEEN USED FOR ANY PURPOSE OTHER THAN THE CONVEYANCE OF DRINKING WATER SHALL BE ACCEPTED OR RELOCATED FOR USE IN ANY PUBLIC DRINKING WATER SUPPLY.

6. WATER TRANSMISSION AND DISTRIBUTION LINES MUST BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS. HOWEVER, THE TOP OF THE WATER LINE MUST BE LOCATED BELOW THE FROST LINE AND IN NO CASE SHALL THE TOP OF THE WATER LINE BE LESS THAN 24 INCHES BELOW GROUND SURFACE.

7. THE HYDROSTATIC LEAKAGE RATE SHALL NOT EXCEED THE AMOUNT ALLOWED OR RECOMMENDED BY THE MOST CURRENT AWWA FORMULAS FOR PVC PIPE, CAST IRON AND DUCTILE IRON PIPE.

8. THE CONTRACTOR SHALL INSTALL APPROPRIATE AIR RELEASE DEVICES IN THE DISTRIBUTION SYSTEM AT ALL POINTS WHERE TOPOGRAPHY OR OTHER FACTORS MAY CREATE AIR LOCKS IN THE LINES. ALL VENT OPENINGS TO THE ATMOSPHERE SHALL BE COVERED WITH 16-MESH OR FINER, CORROSION RESISTANT SCREENING MATERIAL OR AN ACCEPTABLE EQUIVALENT.

9. THE CONTRACTOR SHALL MAINTAIN A MINIMUM SEPARATION DISTANCE IN ALL DIRECTIONS OF NINE FEET BETWEEN THE PROPOSED WATERLINE AND WASTEWATER COLLECTION FACILITIES INCLUDING MANHOLES AND SEPTIC TANK DRAINFIELDS. IF THIS DISTANCE CANNOT BE MAINTAINED, THE CONTRACTOR MUST IMMEDIATELY NOTIFY THE PROJECT ENGINEER FOR FURTHER DIRECTION. SEPARATION DISTANCES, INSTALLATION METHODS,AND MATERIAL UTILIZED MUST MEET 290.44(E) OF THE CURRENT RULES.

10. THE CONTRACTOR SHALL DISINFECT THE NEW WATER MAINS IN ACCORDANCE WITH AWWA STANDARD C651 AND THEN FLUSH AND SAMPLE THE LINES BEFORE BEING PLACED INTO SERVICE. SAMPLES SHALL BE COLLECTED FOR MICROBIOLOGICAL ANALYSIS TO CHECK THE EFFECTIVENESS OF THE DISINFECTION PROCEDURE WHICH SHALL BE REPEATED IF CONTAMINATION PERSISTS. A MINIMUM OF ONE SAMPLE FOR EACH 1,000 FEET OF COMPLETED WATER LINE WILL BE REQUIRED OR AT THE NEXT AVAILABLE SAMPLING POINT BEYOND 1,000 FEET AS DESIGNATED BY THE DESIGN ENGINEER.

11. THE CONTRACTOR SHALL NOT PLACE THE PIPE IN WATER OR WHERE IT CAN BE FLOODED WITH WATER OR SWAGE DURING ITS STORAGE OR INSTALLATION.

*THE HYDROSTATIC LEAKAGE RATE (Q) IN GALLONS PER HOUR OF MAKEUP WATER SHALL NOT EXCEED THE AMOUNT ALLOWED OR RECOMMENDED BY AWWA FORMULA FOR PVC PIPE: **Q = (L)(D)(P1/2)/148,000**. THE FORMULA FOR DUCTILE IRON PIPE IS:
Q = (L)(D)(P1/2)/133,200. IN FORMULA, Q IS GALLONS PER HOUR OF MAKEUP WATER; L IS LENGTH OF PIPE TESTED IN FEET; D IS NOMINAL DIAMETER OF PIPE IN INCHES; AND P IS AVERAGE TEST PRESSURE IN PSI.

Street Classification	18-kip ESAL	CLBM Thickness (inches)		HMAC Thickness (inches)
		Limestone Derivative Fill Subgrade	Completely Weathered Limestone Subgrade	
Local	20,000	8.0	8.0	1.5
Major Collector	200,000	12.0	14.0	2.0

STATE OF TEXAS
RYAN WAYNE PERRY
130060
LICENSED PROFESSIONAL ENGINEER
CARLSON, BRIGANCE, & DOERING, INC.
ID # F3791
11/1/2019

DESIGNED BY:	DRAFTED BY:
DRJ	RH/TDC/PO

DATE

REVISION

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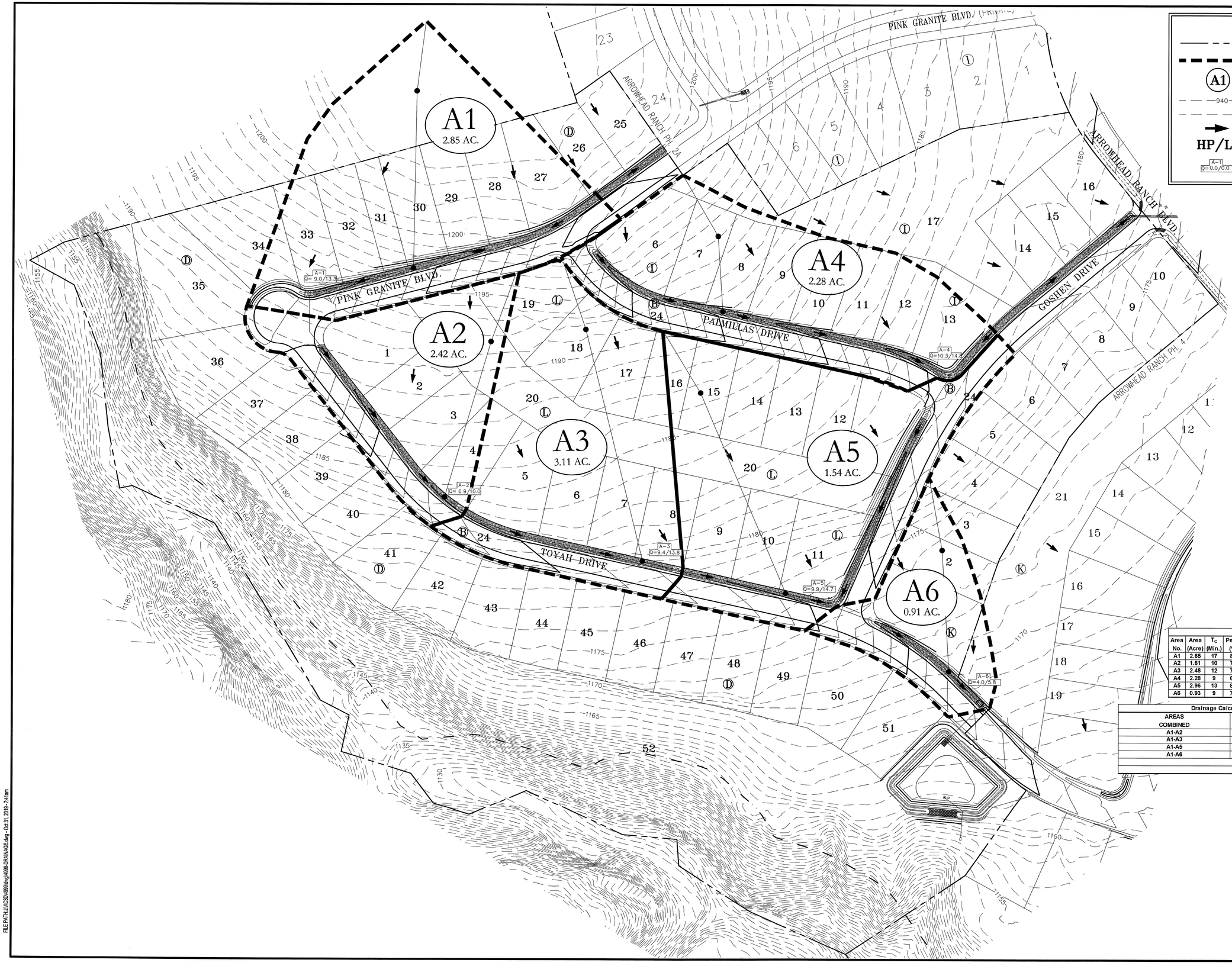
SHEET NAME: GENERAL NOTES
JOB NAME: ARROWHEAD RANCH PHASE 3
PROJECT: STREET, DRAINAGE, WATER, AND WASTEWATER IMPROVEMENTS

DATE
OCTOBER 2019
JOB NUMBER
4999
SHEET
2 OF 35
SHEET NO.
2



LEGEND

- PROPERTY BOUNDARY
- DRAINAGE BOUNDARY LINE
- A1 — DRAINAGE AREA LABEL
- 940 — EXISTING CONTOUR MAJOR
- EXISTING CONTOUR MINOR
- FLOW ARROW
- HP/LP — HIGH POINT/LOW POINT
- A-1 Q= 0.0/0.0 — INLET FLOWS 25-YR/100-YR

SCALE: 1" = 60'

Drainage Calculations

Area No.	Area (Acre)	T_C (Min.)	Perv. (%)	Imperv. (%)	C 25	C 100	I_{25} In/Hr	I_{100} In/Hr	Q_{25} CFS	Q_{100} CFS
A1	2.85	17	81	19	0.48	0.55	6.55	8.46	9.0	13.3
A2	1.61	10	72	28	0.52	0.60	8.23	10.44	6.9	10.0
A3	2.48	12	78	22	0.49	0.57	7.71	9.84	9.4	13.8
A4	2.28	9	66	34	0.55	0.63	8.53	10.78	10.7	15.4
A5	2.96	13	88	12	0.45	0.52	7.45	9.54	9.9	14.7
A6	0.93	9	74	26	0.51	0.59	8.36	10.59	4.0	5.8

Drainage Calculations (Combined Areas)

AREAS COMBINED	T_C (Min.)	C_{25}*A	C_{100}*A	I_{25} In/Hr	I_{100} In/Hr	Q_{25} CFS	Q_{100} CFS
A1-A2	17	2.21	2.54	6.56	8.48	14.5	21.5
A1-A3	18	3.43	3.94	6.39	8.27	21.9	32.6
A1-A5	20	4.79	5.51	6.07	7.88	29.0	43.4
A1-A6	21	5.26	6.05	5.92	7.70	31.2	46.6

STATE OF TEXAS
RYAN WAYNE PERRY
130060
LICENSED PROFESSIONAL ENGINEER
CARLSON, BRIGANCE, & DOERING, INC.
ID # F3791
11/1/2019

DESIGNED BY:	DRAFTED BY:
DRJ	RH/TDC/PO

DATE / REVISION

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SHEET NAME: DRAINAGE PLAN

JOB NAME: ARROWHEAD RANCH PHASE 3

PROJECT: STREET, DRAINAGE, WATER, AND WASTEWATER IMPROVEMENTS

DATE: OCTOBER 2019

JOB NUMBER: 4999

SHEET: 5 OF 35

SHEET NO.: 5

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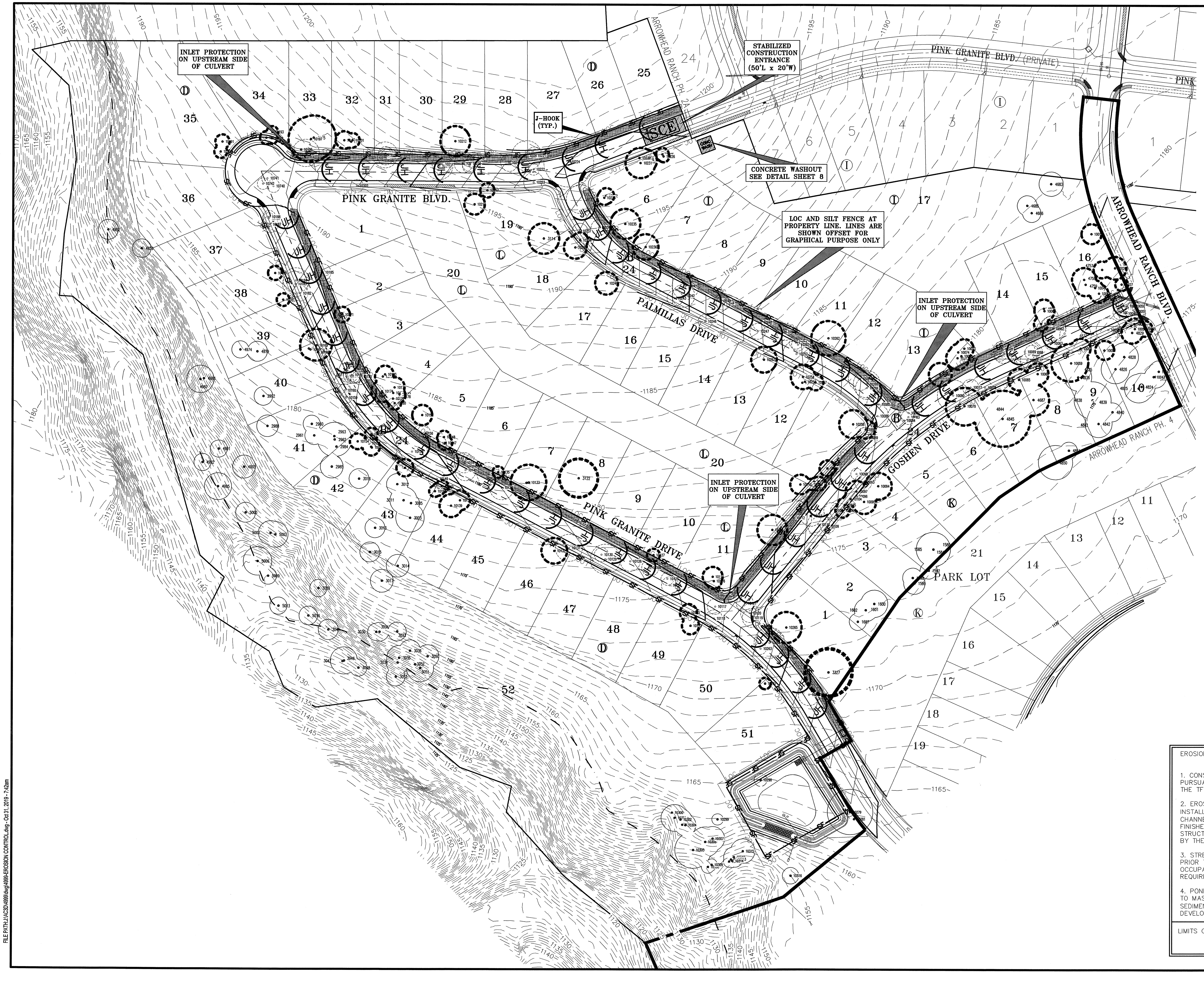

LEGEND

Symbol	Description
—SF—	SILT FENCE
— LOC —	LIMITS OF CONSTRUCTION
IP	INLET PROTECTION
SCE	STABILIZED CONSTRUCTION ENTRANCE
	TREE TO BE SAVED
	TREE TO BE REMOVED
	TREE PROTECTION FENCING
CONC WASH	CONCRETE WASHOUT AREA
JH	J-HOOK

0 60' 120'

SCALE: 1" = 60'

ERROSION CONTROL NOTES:

1. CONSTRUCTION ACCESS TO THIS TRACT WILL BE PURSUANT TO THE DEVELOPMENT AGREEMENT BETWEEN THE TF ARROWHEAD L.P., ET AL. AND AMENDMENTS.

2. EROSION CONTROL MATTING OR SOD SHALL BE INSTALLED ON ALL DISTURBED AREAS (INCLUDING OPEN CHANNELS) WITH A FINISHED GRADE OF 3:1. ALL FINISHED GRADES 3:1 AND STEEPER SHALL BE STRUCTURALLY STABILIZED BY TECHNIQUES APPROVED BY THE CITY.

3. STREET TREES SHALL BE PLANTED IN EACH LOT PRIOR TO THE ISSUANCE OF A CERTIFICATE OF OCCUPANCY PER THE QUANTITY, SIZE AND LOCATION REQUIREMENTS OF SUBDIVISION ORDINANCE 28.06.051.

4. PONDS ARE TO EXCAVATED AND STABILIZED PRIOR TO MASS GRADING ACTIVITIES TO MEET TEMPORARY SEDIMENTATION/EROSION CONTROLS PER THE DEVELOPMENT OFFICE.

LIMITS OF CONSTRUCTION:	425,503.41 SqFt / 9.77 Ac.
SILT FENCE:	5,350 L.F.

STATE OF TEXAS
RYAN WAYNE PERRY
130060
LICENSED PROFESSIONAL ENGINEER

CARLSON, BRIGANCE, & DOERING, INC.
ID # F3791

Ryan Perry
11/1/2019

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SHEET NAME: EROSION CONTROL PLAN

JOB NAME: ARROWHEAD RANCH PHASE 3

PROJECT: STREET, DRAINAGE, WATER, AND WASTEWATER IMPROVEMENTS

DATE: OCTOBER 2019

JOB NUMBER: 4999

SHEET: 6 OF 35

SHEET NO.: 6

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GENERAL NOTES

1. USE ONE CALL UTILITY SYSTEM: DIAL 1–800–DIG–TESS 48 HOURS BEFORE YOU DIG. CONTRACTOR WILL ALSO NOTIFY ALL OTHER UTILITY PROVIDERS THAT ARE NOT NOTIFIED BY THE ONE CALL SYSTEM.

2. ALL STORM SEWER SHALL BE CLASS III RCP UNLESS NOTED OTHERWISE.

3. ALL SLOPES SHALL BE SODDED OR SEEDED WITH THE APPROPRIATE GRASS, GRASS MIXTURES, OR GROUND COVER SUITABLE TO THE AREA AND SEASON TO WHICH THEY ARE APPLIED.

4. SILT FENCES, ROCK BERMS AND SIMILARLY RECOGNIZED TECHNIQUES AND MATERIALS SHALL BE EMPLOYED DURING CONSTRUCTION TO PREVENT POINT SOURCE SEDIMENTATION LOADING OF DOWNSTREAM FACILITIES. SUCH INSTALLATION SHALL BE REGULARLY INSPECTED FOR EFFECTIVENESS. ADDITIONAL MEASURES MAY BE REQUIRED.

5. ALL TEMPORARY EROSION CONTROL MEASURES SHALL NOT BE REMOVED UNTIL FINAL INSPECTION AND APPROVAL OF THE PROJECT BY THE ENGINEER.

6. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO MAINTAIN ALL TEMPORARY EROSION CONTROL STRUCTURES AND TO REMOVE EACH STRUCTURE AS APPROVED BY THE ENGINEER.

7. LINE FLUSHING OR ANY ACTIVITY USING LARGE QUANTITIES OF WATER MUST BE SCHEDULED WITH THE WATER AND WASTEWATER SUPERINTENDENT OF THE CITY OF DRIPPING SPRINGS AND DRIPPING SPRINGS WATER SUPPLY CORPORATION. ADDITIONALLY, CONTACT SCOTT MANUEL AT STES.

8. THE CONTRACTOR SHALL PROVIDE THE OFFICE OF DSWSC, (512) 858–7897, NO LESS THAN 24 HOURS NOTICE PRIOR TO DISINFECTING, PERFORMING STERILIZATION, QUALITY TESTING OR PRESSURE TESTING.

9. THE CONTRACTOR SHALL NOT OPEN OR CLOSE ANY VALVES UNLESS AUTHORIZED BY THE DRIPPING SPRINGS WSC.

10. THE CONTRACTOR SHALL CONTACT DIG TESS CALL SYSTEM AT 1–800–DIG–TESS FOR EXISTING UTILITY LOCATIONS AND SHALL ALSO NOTIFY ALL OTHER UTILITY PROVIDERS THAT ARE NOT NOTIFED BY THE ONE CALL SYSTEM. PRIOR TO ANY EXCAVATION IN ADVANCE OF CONSTRUCTION, THE CONTRACTOR SHALL VERIFY THE LOCATIONS AND EXISTING ELEVATIONS OF ALL UTILITIES TO BE EXTENDED, TIED TO, ALTERED, OR SUBJECT TO CHANGE/INCONVENIENCE BY CONSTRUCTION OPERATIONS. THE CITY OF DRIPPING SPRINGS WASTEWATER AND DRIPPING SPRINGS WSC MAINTENANCE RESPONSIBILITY ENDS AT ROW/EASEMENT LINE.

11. ALL MATERIAL TESTS, INCLUDING SOIL DENSITY TESTS AND RELATED SOIL ANALYSIS, SHALL BE ACCOMPLISHED BY AN INDEPENDENT LABORATORY FUNDED BY THE DEVELOPER IN ACCORDANCE WITH THE SPECIFICATIONS.

12. AS–BUILT PLANS ARE REQUIRED FROM THE CONTRACTOR AT THE CONCLUSION OF THE SITE WORK SHOWING ALL REVISIONS.

13. SEE DSWSC GENERAL CONSTRUCTION NOTE 24 FOR CONSTRUCTION OF ELECTRIC DISTRIBUTION LINE UNDER WATER LINES.

EROSION/SEDIMENTATION CONTROL NOTES

1. THE CONTRACTOR SHALL INSTALL EROSION/SEDIMENTATION CONTROLS AND TREE/NATURAL AREA PROTECTIVE FENCING PRIOR TO ANY SITE PREPARATION WORK (CLEARING, GRUBBING, OR EXCAVATION).

2. THE PLACEMENT OF EROSION/SEDIMENTATION CONTROLS SHALL BE IN ACCORDANCE WITH THE EROSION AND SEDIMENTATION CONTROL PLAN, INCLUDING SPECIFICATIONS, SWPPP, AND CONTRIBUTING ZONE PLAN.

3. A PRE–CONSTRUCTION CONFERENCE SHALL BE HELD ON–SITE WITH THE CONTRACTOR, DESIGN ENGINEER, DEVELOPER, TCEQ AND CITY INSPECTOR AFTER INSTALLATION OF THE EROSION/SEDIMENTATION CONTROL MEASURES AND PRIOR TO BEGINNING ANY SITE PREPARATION WORK. THE CONTRACTOR SHALL NOTIFY ALL PARTIES, LEAST THREE DAYS PRIOR TO THE MEETING DATE.

4. ANY MAJOR VARIATION IN MATERIALS OR LOCATIONS OF CONTROLS OR FENCES FROM THOSE SHOWN ON THE APPROVED PLANS WILL REQUIRE A REVISION AND MUST BE ADDED TO THE PLAN SHEET IN ACCORDANCE TO TCEQ AND THE SWPPP REQUIREMENTS. MINOR CHANGES TO BE MADE AS FIELD REVISIONS TO THE EROSION AND SEDIMENTATION CONTROL PLAN MAY BE REQUIRED BY AN AUTHORIZED AGENCY DURING THE COURSE OF CONSTRUCTION TO CORRECT CONTROL INADEQUACIES.

5. THE CONTRACTOR IS REQUIRED TO INSPECT THE CONTROLS AND FENCES AT WEEKLY INTERVALS AND AFTER SIGNIFICANT RAINFALL EVENTS TO INSURE THAT THEY ARE FUNCTIONING PROPERLY. THE PERSON(S) RESPONSIBLE FOR MAINTENANCE OF CONTROLS AND FENCES SHALL IMMEDIATELY MAKE ANY NECESSARY REPAIRS. SILT ACCUMULATION AT CONTROLS MUST BE REMOVED WHEN THE DEPTH REACHES A MAXIMUM OF SIX (6) INCHES.

6. PRIOR TO FINAL ACCEPTANCE BY THE CITY, HAUL ROADS AND WATERWAY CROSSINGS CONSTRUCTED FOR TEMPORARY CONTRACTOR ACCESS MUST BE REMOVED, ACCUMULATED SEDIMENT REMOVED FROM THE WATERWAY AND THE AREA RESTORED TO THE ORIGINAL GRADE AND REVEGETATED. ALL LAND CLEARING DEBRIS SHALL BE DISPOSED OF IN APPROVED SPOIL DISPOSAL SITES.

7. PERMANENT EROSION CONTROL:

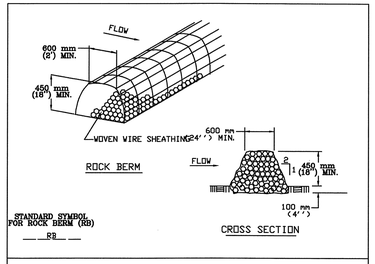
ALL DISTURBED AREAS SHALL BE RESTORED AS NOTED BELOW:

A. A MINIMUM OF FOUR INCHES OF TOPSOIL SHALL BE PLACED IN ALL UNPAVED, DISTURBED AREAS (EXCEPT ROCK).

8. THE SEEDING OR SODDING FOR PERMANENT EROSION CONTROL SHALL BE APPLIED OVER AREAS DISTURBED PER LANDSCAPE PLANS.

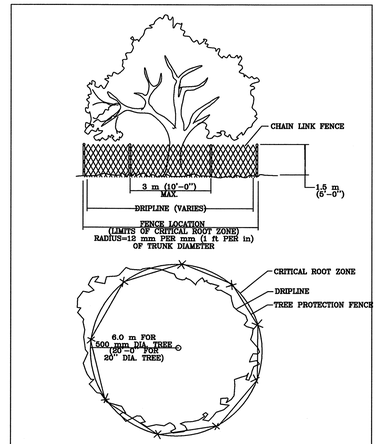
SPOILS MANAGEMENT AND DISPOSAL NOTES

1. TEMPORARY HOLDING SITES AS NECESSARY TO STOCKPILE EXCAVATED SOILS, EMBEDMENT MATERIAL, AND/OR PIPING AND APPURTENANCES MAY BE LOCATED WITHIN THE LIMITS OF CONSTRUCTION AS SHOWN ON THE PLANS.
2. NO PERMANENT SPOILS DISPOSAL SHALL BE ALLOWED ON–SITE, UNLESS APPROVED BY THE OWNER AND GOVERNING AUTHORITY.
3. ALL SPOILS MATERIALS SHALL BE DISPOSED OF BY THE CONTRACTOR AT AN APPROVED SPOIL DISPOSAL SITE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING AND SECURING A PERMIT FOR THE SITE; AND SHALL NOTIFY THE OWNER AND/OR ENGINEER AT LEAST FORTY–EIGHT (48) HOURS PRIOR TO DISPOSAL OF ANY SPOILS MATERIAL.

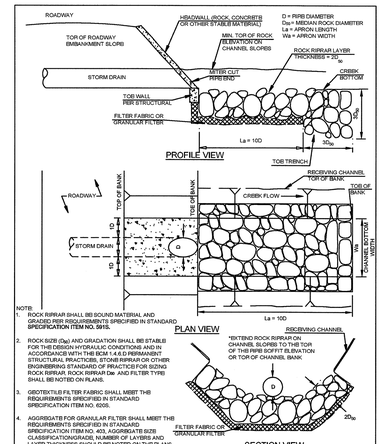


NOTES:
1. USE ONLY OPEN GRADED ROCK 75 to 125 mm (3 to 5") DIAMETER FOR ALL CONDITIONS.
2. THE ROCK BERM SHALL BE SECURED WITH A WOVEN WIRE SHEATHING HAVING MAXIMUM 25 mm (1") OPENING AND MINIMUM WIRE DIAMETER OF 12.9 mm (20 GAUGE).
3. THE ROCK BERM SHALL BE INSPECTED DAILY OR AFTER EACH RAIN, AND THE 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	
RECORD COPY SIGNED BY MORGAN BYARS	8/24/2010 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 639S-1

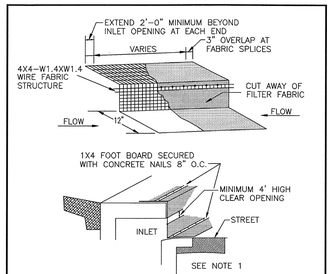


CITY OF AUSTIN WATERSHED PROTECTION DEPARTMENT		TREE PROPTECTION FENCE TYPE A – CHAIN LINK	
RECORD COPY SIGNED BY J. PATRICK MURPHY	11/15/99 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 610S-2



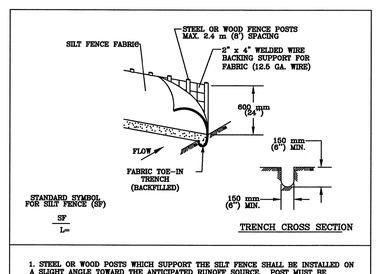
NOTE
1. ROCK RIPRAP SHALL BE SOUND MATERIAL AND GRADED PER REQUIREMENTS SPECIFIED IN STANDARD SPECIFICATION ITEM NO. 5918.
2. ROCK SIZE (D_{50}) AND GRADATION SHALL BE STABLE FOR THE DESIGN HYDRAULIC CONDITIONS AND IN ACCORDANCE WITH THE BCM 1.4.6.D PERMANENT STRUCTURAL PRACTICES, STONE RIPRAP OR OTHER ENGINEERING STANDARD OF PRACTICE FOR SIZING ROCK RIPRAP. ROCK RIPRAP Dm AND FILTER TYPE) SHALL BE NOTED ON PLANS.
3. GEOTEXTILE FILTER FABRIC SHALL MEET THE REQUIREMENTS SPECIFIED IN STANDARD SPECIFICATION ITEM NO. 4205.
4. AGGREGATE FOR GRANULAR FILTER SHALL MEET THE REQUIREMENTS SPECIFIED IN STANDARD SPECIFICATION ITEM NO. 401, AGGREGATE SIZE CLASSIFICATION/GRADE, NUMBER OF LAYERS AND LAYER THICKNESS SHOULD BE NOTED ON THE PLANS.

CITY OF AUSTIN WATERSHED PROTECTION DEPARTMENT		STORMDRAIN OUTFALL PROTECTION CULVERT UNDER ROADWAY/INLINE	
RECORD COPY SIGNED BY MORGAN BYARS	09/01/2011 ADOPTED	THIS ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 508S-20



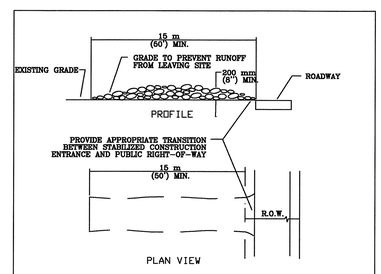
INLET PROTECTION

1. CONTRACTOR TO SECURE FILTER WITH 1X4 FOOT BOARD SET WITH CONCRETE NAILS 8 INCHES OFF–CENTER.
2. REMOVE SECTION OF FILTER FABRIC IF CONCENTRATED FLOW OCCURS AT THIS LOCATION OR AS DIRECTED BY THE ENVIRONMENTAL INSPECTOR. FABRIC MUST BE SECURED TO WIRE BACKING WITH CLIPS OR HOG RINGS AT THIS LOCATION.
3. THE FABRIC MUST CORRESPOND TO STANDARD SPECIFICATION ITEM 642.2, SILT FENCE (1) FABRIC. THE WIRE MESH SUPPORT MUST CORRESPOND TO STANDARD SPECIFICATION ITEM 642.2, SILT FENCE (3) WIRE FENCE.
4. THE FABRIC/WIRE SHOULD COMPLETELY COVER THE OPENING OF THE INLET AND EXTEND BEYOND THE INLET OPENING BY 2' ON EITHER SIDE. THE FABRIC/WIRE SHOULD EXTEND OUTWARD INTO THE GUTTER TWELVE (12) INCHES AND OVER THE TOP OF THE INLET BY TWELVE (12) INCHES. WHERE SECTIONS OF THE FABRIC OVERLAP, THEY SHALL OVERLAP AT LEAST THREE (3) INCHES.
5. THE OPENING SHOULD BE FOUR (4) INCHES IN HEIGHT EXTENDING DOWNWARD FROM THE SOFFIT OF THE INLET OPENING AND EXTEND THE FULL LENGTH OF THE INLET.
6. THE FABRIC SHALL BE SECURELY ATTACHED TO THE WIRE MESH. THE FABRIC/WIRE SHALL BE HELD IN PLACE WITH SAND BAGS FILLED WITH S SAND OR PEA GRAVEL, LOCATED AT THE ENDS AND ACROSS THE LENGTH AT TWO (2) FOOT ON CENTER.
7. ACCUMULATED SILT SHALL BE REMOVED WHEN IT REACHES A DEPTH OF TWO (2) INCHES OR ONE THIRD THE HEIGHT OF THE INLET THROAT, AND DISPOSED OF IN A MANNER WHICH WILL NOT CAUSE ADDITIONAL SILTATION.



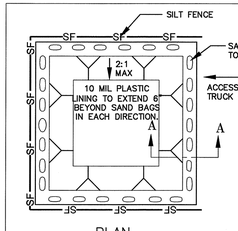
1. STEEL OR WOOD POSTS WHICH SUPPORT THE SILT FENCE SHALL BE INSTALLED ON A SLIGHT ANGLE TOWARD THE ANTICIPATED RUNOFF SOURCE. POST MUST BE EMBEDDED A MINIMUM OF 300 mm (12 INCHES). IF WOOD POSTS CANNOT ACHIEVE 300 mm (12 inches) DEPTH, USE STEEL POSTS.
2. THE TOE OF THE SILT FENCE SHALL BE TRENCHED IN WITH A SPADE OR MECHANICAL TRENCHER, SO THAT THE DOWNSLOPE FACE OF THE TRENCH IS FLAT AND PERPENDICULAR TO THE LINE OF FLOW.
3. THE TRENCH MUST BE A MINIMUM OF 150 mm (6 inches) DEEP AND 150 mm (6 inches) WIDE TO ALLOW FOR THE SILT FENCE FABRIC TO BE LAID IN THE GROUND AND BACKFILLED WITH COMPACTED MATERIAL.
4. SILT FENCE FABRIC SHOULD BE SECURELY FASTENED TO EACH STEEL OR WOOD SUPPORT POST OR TO WOVEN WIRE , WHICH IS IN TURN ATTACHED TO THE STEEL OR WOOD FENCE POST.
5. INSPECTION SHALL BE MADE WEEKLY OR AFTER EACH RAINFALL EVENT AND REPAIR OR REPLACEMENT SHALL BE MADE PROMPTLY AS NEEDED.
6. SILT FENCE SHALL BE REMOVED WHEN THE SITE IS COMPLETELY STABILIZED SO AS NOT TO BLOCK OR IMPEDE STORM FLOW OR DRAINAGE.
7. ACCUMULATED SILT SHALL BE REMOVED WHEN IT REACHES A DEPTH OF 150 mm (6 inches). THE SILT SHALL BE DISPOSED OF ON AN APPROVED SITE AND IN SUCH A MANNER THAT WILL NOT CONTRIBUTE TO ADDITIONAL SILTATION.

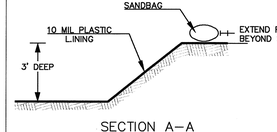
CITY OF AUSTIN WATERSHED PROTECTION DEPARTMENT		SILT FENCE	
RECORD COPY SIGNED BY MORGAN BYARS	09/01/2011 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 642S-1



NOTES:
1. STONE SIZE: 75–125 mm (3–5") OPEN GRADED ROCK.
2. LENGTH: AS EFFECTIVE BUT NOT LESS THAN 15 m (50').
3. THICKNESS: NOT LESS THAN 200 mm (8").
4. WIDTH: NOT LESS THAN FULL WIDTH OF ALL POINTS OF INGRESS/EGRESS.
5. WASHING: WHEN NECESSARY, VEHICLE WHEELS SHALL BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTRANCE ONTO PUBLIC ROADWAY. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE AND DRAINS INTO AN APPROVED TRAP OR SEDIMENT BASIN. ALL SEDIMENT SHALL BE PREVENTED FROM ENTERING ANY STORM DRAIN, DITCH OR WATERCOURSE USING APPROVED METHODS.
6. MAINTENANCE: THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC ROADWAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND, AS WELL AS REPAIR AND CLEAN OUT OF ANY MEASURE DEVICES USED TO TRAP SEDIMENT. ALL SEDIMENTS THAT IS SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC ROADWAY MUST BE REMOVED IMMEDIATELY.
7. DRAINAGE: ENTRANCE MUST BE PROPERLY GRADED OR INCORPORATE A DRAINAGE SWALE TO PREVENT RUNOFF FROM LEAVING THE CONSTRUCTION SITE.

CITY OF AUSTIN WATERSHED PROTECTION DEPARTMENT		STABILIZED CONSTRUCTION ENTRANCE	
RECORD COPY SIGNED BY J. PATRICK MURPHY	6/28/00 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 641S-1





CONCRETE WASHOUT AREA NOTES:

1. WASHOUT SHALL BE INSTALLED PRIOR TO PLACING ANY CONCRETE ON–SITE.
2. INSTALL DIRECTIONAL SIGNS AS NECESSARY TO INDICATE WASHOUT LOCATION TO CONCRETE SUPPLY VEHICLES.
3. WASHOUT SHALL BE INSPECTED WEEKLY AND AFTER RAIN EVENTS IN ACCORDANCE WITH SWPPP.
4. CONTRACTOR TO MAINTAIN, REPAIR, ENLARGE OR RELOCATE WASHOUT AS NECESSARY TO MEET PROJECT REQUIREMENTS.
5. WHEN NECESSARY DURING CONSTRUCTION, OR AT THE COMPLETION OF ALL CONSTRUCTION, CONCRETE SHALL BE REMOVED AND LAWFULLY DISPOSED OF AND THE WASHOUT AREA FILLED WITH COMPACTED SELECT FILL.
6. CONCRETE WASHOUT SHALL NOT BE LOCATED WITHIN 50' OF STORM INLET, DITCH, OR SUBSURFACE DRAINAGE SYSTEM.

NOTE: SIZE VARIES BASED ON ANTICIPATED VOLUME OF CONCRETE TO BE PLACED. MINIMUM SIZE BOTTOM AS PER TABLE BELOW.

NO. CONCRETE TRUCKS	MIN. SIZE BOTTOM
10 OR LESS	4'x4'
10 - 25	6'x6'
25 - 35	8'x8'

1 CONCRETE WASHOUT DETAIL
SCALE: N.T.S.

STATE OF TEXAS
RYAN WAYNE PERRY
130060
LICENSED PROFESSIONAL ENGINEER
CARLSON, BRIGANCE, & DOERING, INC.
ID # F3791
1/1/2019

DESIGNED BY:	DRAFTED BY:
DRJ	RH/TDC/PO

DATE
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SHEET NAME: EROSION CONTROL DETAILS
JOB NAME: ARROWHEAD RANCH PHASE 3
PROJECT: STREET, DRAINAGE, WATER, AND WASTEWATER IMPROVEMENTS

DATE: OCTOBER 2019
JOB NUMBER: 4999
SHEET: 8 OF 35
SHEET NO.: 8

FILE PATH: J:\ACAD\4999\dwg\4999-EROSION NOTES.dwg - Oct 31, 2019 - 7:42am

SCALE: 1" = 50'

0 50' 100'

12+55.16 SSLN A
5' X 5' AREA INLET A1

12+02.40 SSLN A
PI = 45° RT

PINK GRANITE BLVD.

ARROWHEAD RANCH
PHASE 2B

9+64.62 SSLN A
PT

8+71.78 SSLN A
5' X 5' AREA INLET A2

7+71.23 SSLN A
PC

PALMILLAS DR.

GOSHEN DR.

3+62.18 SSLN B
5' X 5' AREA INLET A4

3+00.00 SSLN B
PC

2+16.89 SSLN B
PT

ARROWHEAD RANCH
PHASE 4

5+50.76 SSLN A
5' X 5' AREA INLET A3

3+21.16 SSLN A
5' X 5' AREA INLET A5

3+52.30 SSLN A
PT

0+06.46 SSLN B
PI = 45° RT

3+33.18 SSLN A
PC

2+57.65 SSLN A
PT

3+12.72 SSLN A
PI = 45° RT

2+46.00 SSLN A
PT

PARK LOT
6.68 ACRES

PARK LOT
1.47 ACRES

1+65.07 SSLN A
GRADE BREAK

0+63.41 SSLN A
5' X 5' AREA INLET A6

1+15.33 SSLN A
PC

0+00.00 SSLN A
BEGIN 36" RCP
HEADWALL

50.0' R.O.W.
20.0' B-B
5.0'

WMN A
WMN B
WMN C
WMN D

Curve Table					
Curve #	Radius	Tangent	Delta	Chord	Arc Length
C1	280.00'	100.74'	039°34'28"	189.58'	193.40'
C2	620.00'	144.93'	026°18'53"	282.26'	284.75'
C3	420.00'	11.07'	003°01'07"	22.13'	22.13'
C4	420.00'	65.86'	017°49'30"	130.14'	130.66'

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130060
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11/1/2019

DESIGNED BY: DRJ
DRAFTED BY: RH/TDC/PO

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SHEET NAME: STORM OVERALL
JOB NAME: ARROWHEAD RANCH PHASE 3
PROJECT: STREET, DRAINAGE, WATER, AND WASTEWATER IMPROVEMENTS

DATE: OCTOBER 2019
JOB NUMBER: 4999
SHEET: 19 OF 35
SHEET NO.: 19

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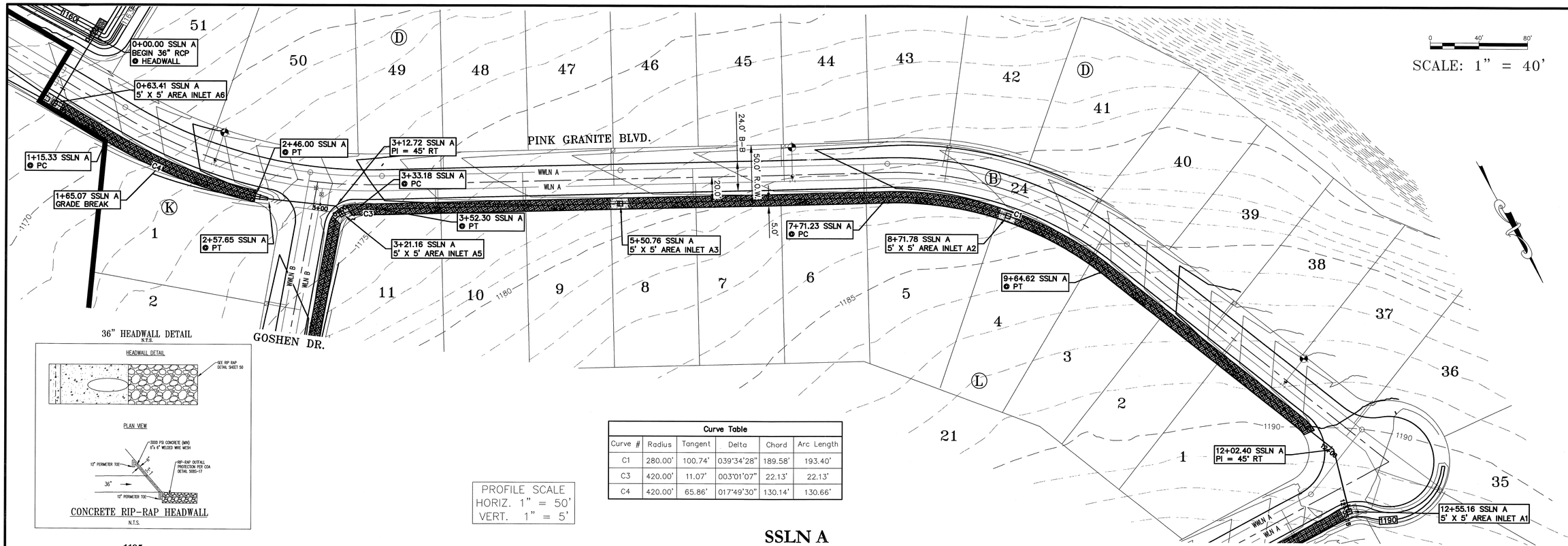
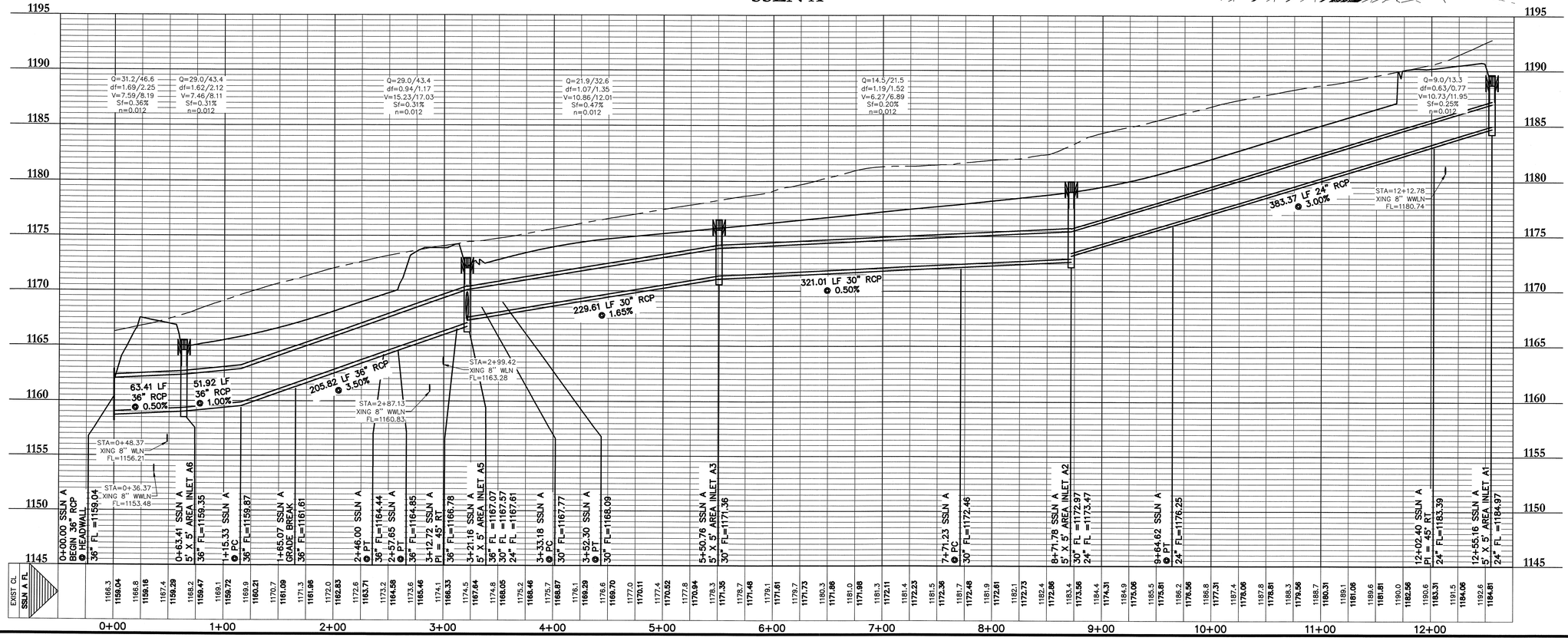


36" HEADWALL DETAIL
N.T.S.

PROFILE SCALE
HORIZ. 1" = 50'
VERT. 1" = 5'

Curve Table					
Curve #	Radius	Tangent	Delta	Chord	Arc Length
C1	280.00'	100.74'	039°34'28"	189.58'	193.40'
C3	420.00'	11.07'	003°01'07"	22.13'	22.13'
C4	420.00'	65.86'	017°49'30"	130.14'	130.66'

SSLN A



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SHEET NAME: SSLN A

JOB NAME: ARROWHEAD RANCH PHASE 3

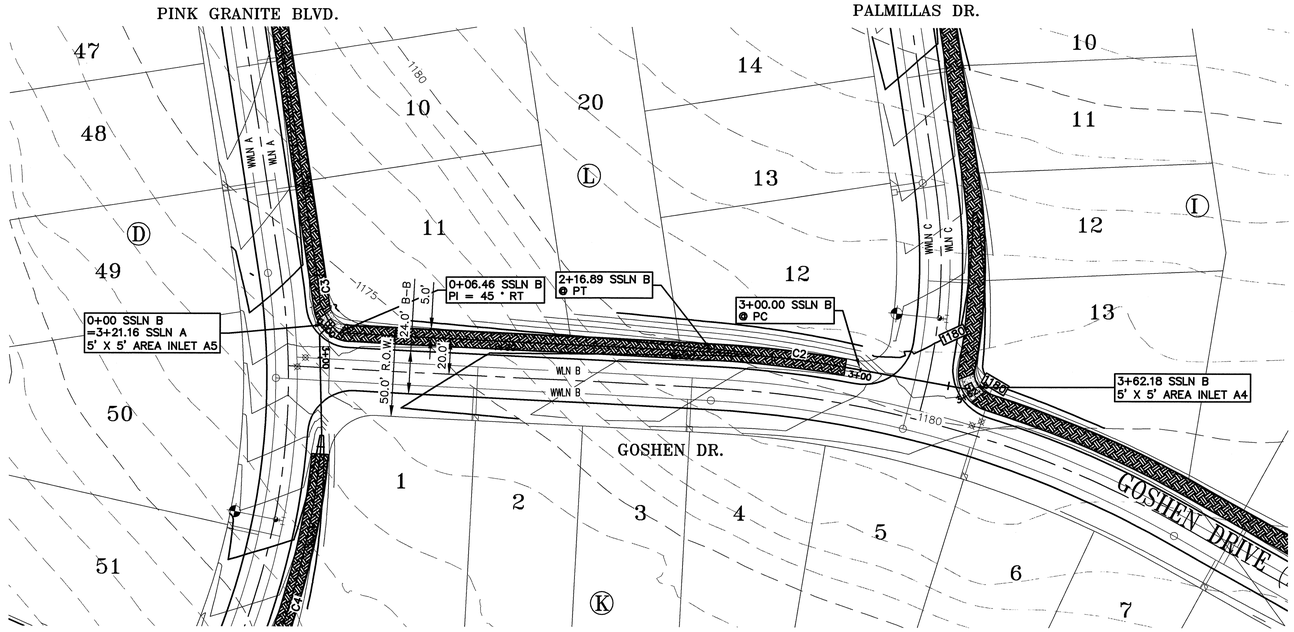
PROJECT: STREET, DRAINAGE, WATER, AND WASTEWATER IMPROVEMENTS

DATE: OCTOBER 2019

JOB NUMBER: 4999

SHEET: 20 OF 35

SHEET NO.: 20

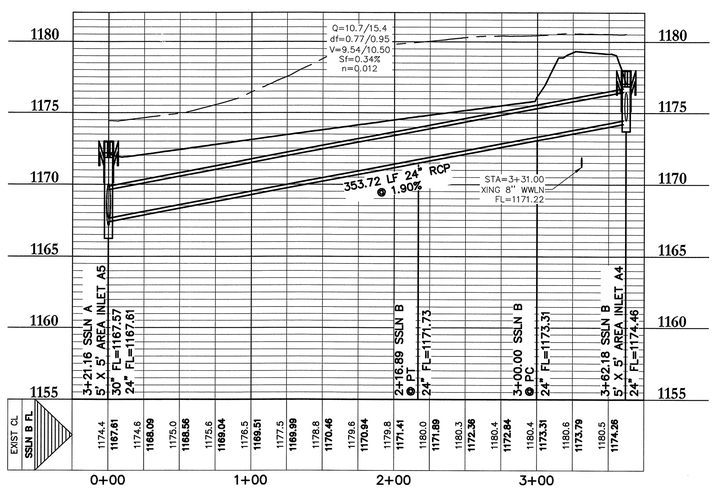


SCALE: 1" = 40'

Curve Table					
Curve #	Radius	Tangent	Delta	Chord	Arc Length
C2	620.00'	144.93'	026°18'53"	282.26'	284.75'

PROFILE SCALE
HORIZ. 1" = 50'
VERT. 1" = 5'

SSLN B



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SHEET NAME: SSLN B

JOB NAME: ARROWHEAD RANCH PHASE 3

PROJECT: STREET, DRAINAGE, WATER, AND WASTEWATER IMPROVEMENTS

DATE: OCTOBER 2019

JOB NUMBER: 4999

SHEET: 21 OF 35

SHEET NO.: 21

AREA INLET A3

WEIR EQUATION

$$\left(\frac{Q}{C*L}\right)^{2/3} = H$$

$$\left(\frac{13.8}{3*20}\right)^{2/3} = 0.38'$$

$H_{REQ.} = 0.38'$

$H_{AVAIL.} = 1.25'$

ORIFICE EQUATION

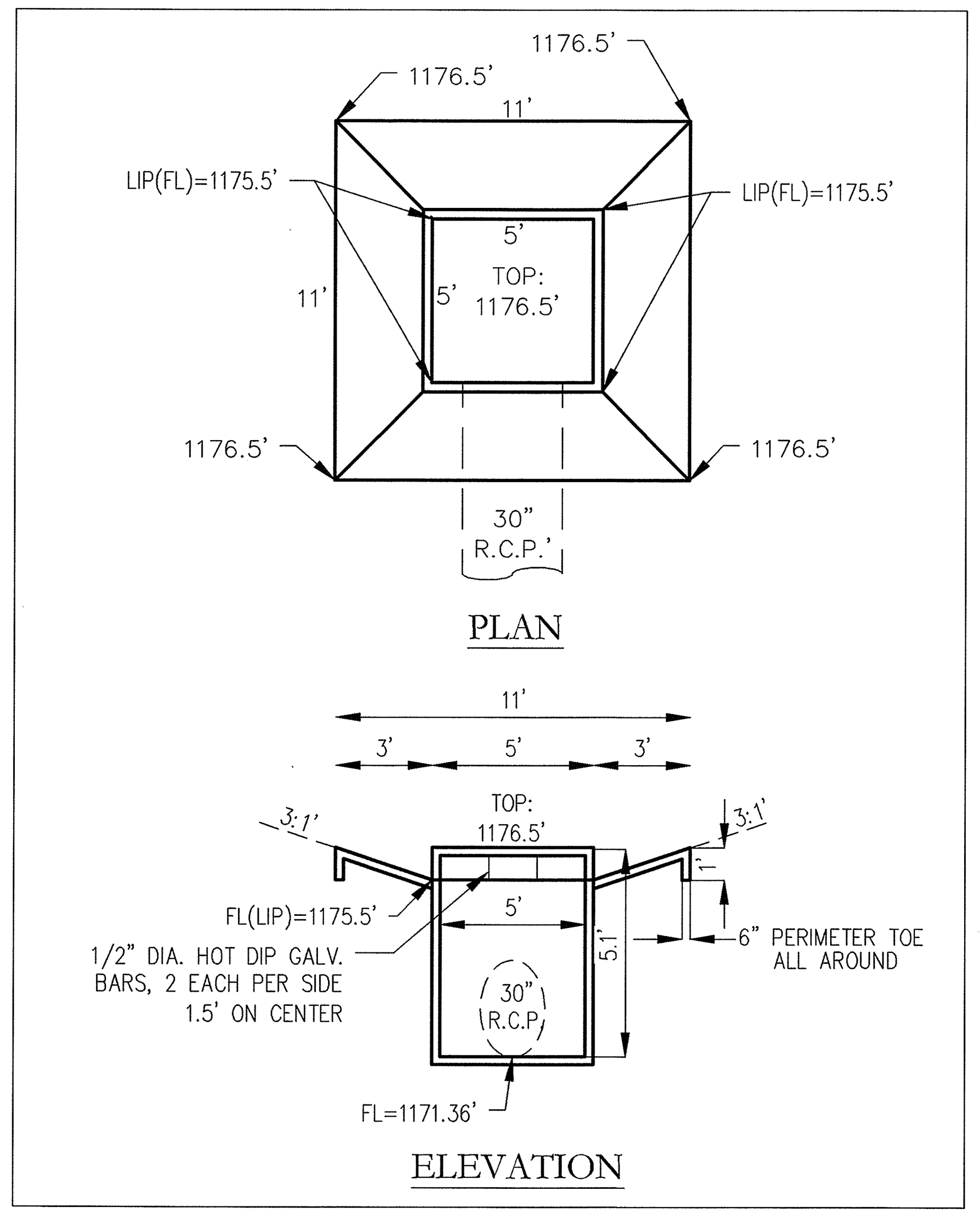
$$\frac{\left(\frac{Q}{CoA}\right)^2}{2g} = H$$

$$\frac{\left(\frac{13.8}{0.6*4.91}\right)^2}{64.4} = 0.18'$$

$H = 1.25' + 0.18' = 1.43'$

$H_{REQ.} = 1.43'$

$H_{AVAIL.} = 5.14'$



5'x5' AREA INLET DETAIL

AREA INLET A2

WEIR EQUATION

$$\left(\frac{Q}{C*L}\right)^{2/3} = H$$

$$\left(\frac{10.0}{3*20}\right)^{2/3} = 0.30'$$

$H_{REQ.} = 0.30'$

$H_{AVAIL.} = 1.25'$

ORIFICE EQUATION

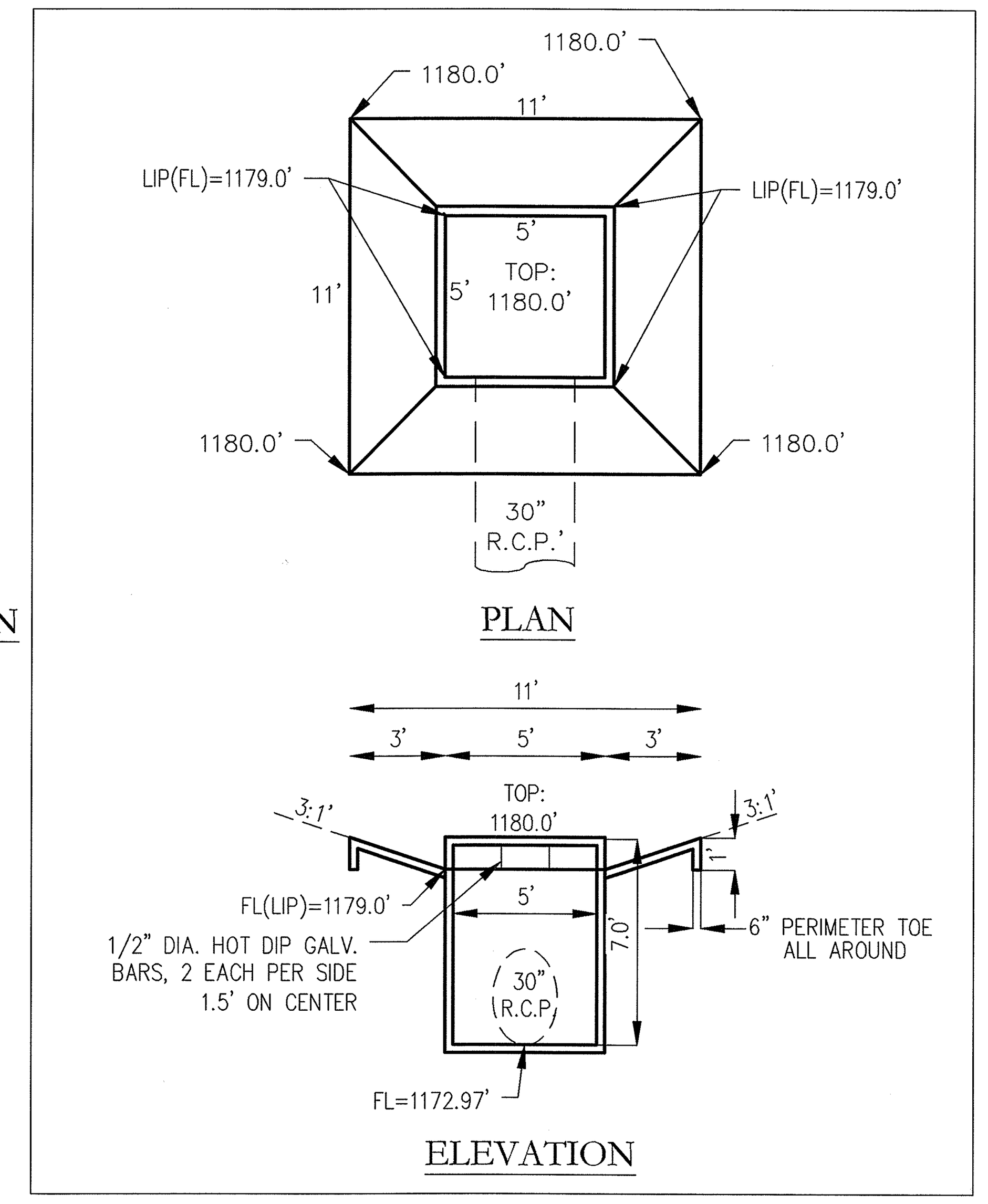
$$\frac{\left(\frac{Q}{CoA}\right)^2}{2g} = H$$

$$\frac{\left(\frac{10.0}{0.6*4.91}\right)^2}{64.4} = 0.18'$$

$H = 1.25' + 0.18' = 1.43'$

$H_{REQ.} = 1.43'$

$H_{AVAIL.} = 7.00'$



5'x5' AREA INLET DETAIL

AREA INLET A1

WEIR EQUATION

$$\left(\frac{Q}{C*L}\right)^{2/3} = H$$

$$\left(\frac{13.3}{3*20}\right)^{2/3} = 2.12'$$

$H_{REQ.} = 0.37'$

$H_{AVAIL.} = 1.00'$

ORIFICE EQUATION

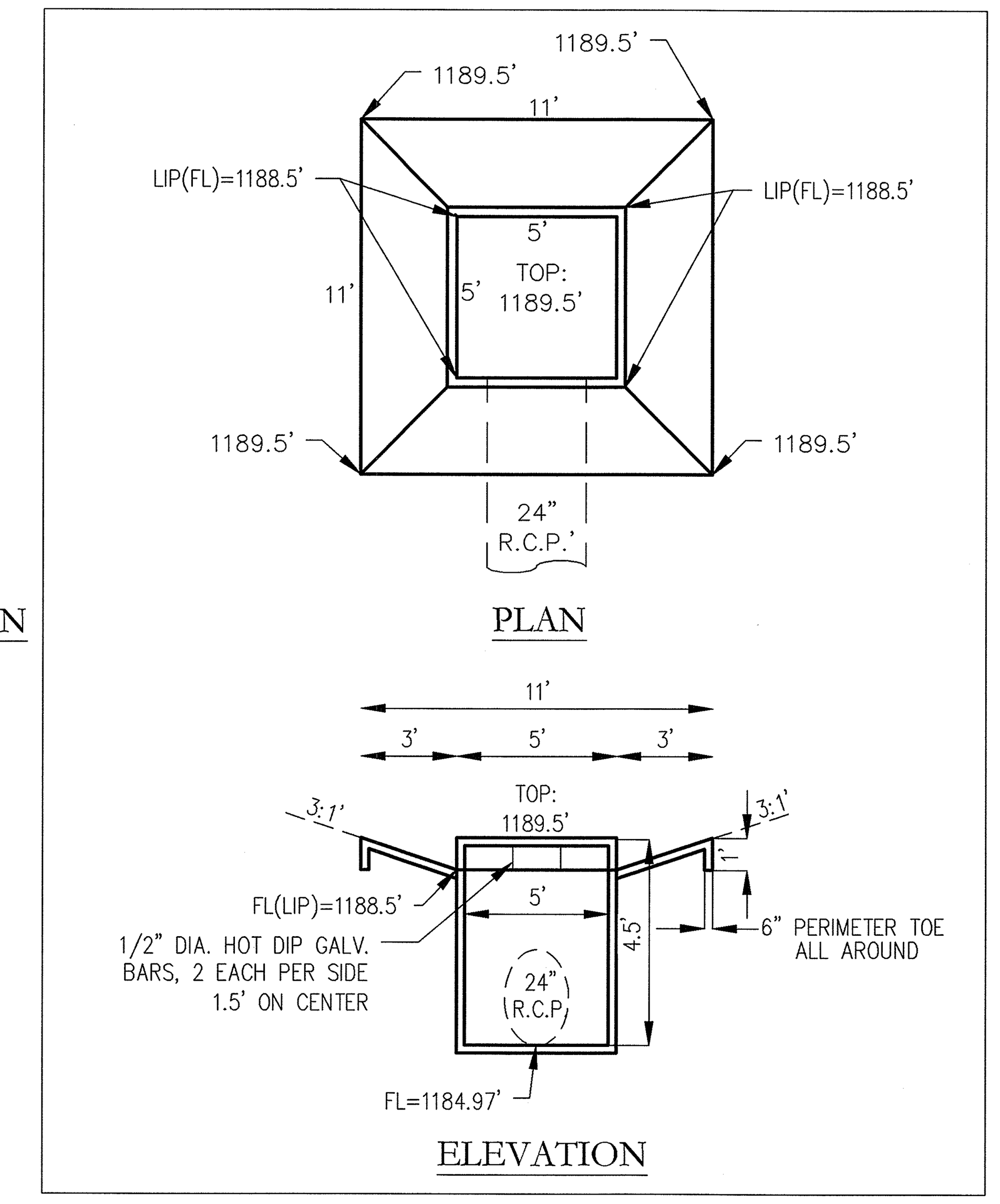
$$\frac{\left(\frac{Q}{CoA}\right)^2}{2g} = H$$

$$\frac{\left(\frac{13.3}{0.6*3.14}\right)^2}{64.4} = 0.77'$$

$H = 1.00' + 0.77' = 1.77'$

$H_{REQ.} = 1.77'$

$H_{AVAIL.} = 4.50'$



5'x5' AREA INLET DETAIL

AREA INLET A6

WEIR EQUATION

$$\left(\frac{Q}{C*L}\right)^{2/3} = H$$

$$\left(\frac{5.8}{3*20}\right)^{2/3} = 0.21'$$

$H_{REQ.} = 0.21'$

$H_{AVAIL.} = 1.50'$

ORIFICE EQUATION

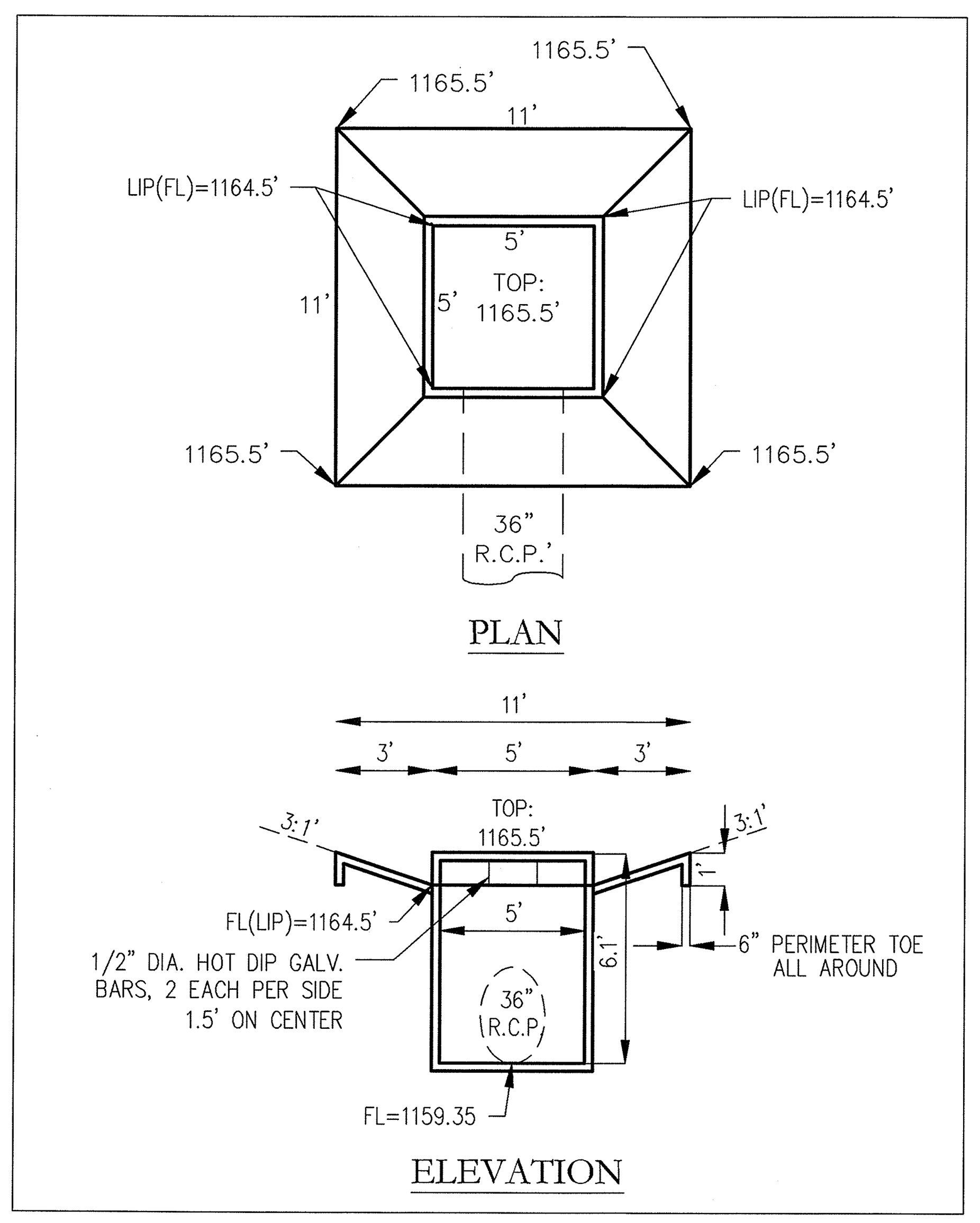
$$\frac{\left(\frac{Q}{CoA}\right)^2}{2g} = H$$

$$\frac{\left(\frac{5.8}{0.6*7.07}\right)^2}{64.4} = 0.03'$$

$H = 1.50' + 0.03' = 1.53'$

$H_{REQ.} = 1.53'$

$H_{AVAIL.} = 6.15'$



5'x5' AREA INLET DETAIL

AREA INLET A5

WEIR EQUATION

$$\left(\frac{Q}{C*L}\right)^{2/3} = H$$

$$\left(\frac{14.7}{3*20}\right)^{2/3} = 0.39'$$

$H_{REQ.} = 0.39'$

$H_{AVAIL.} = 1.50'$

ORIFICE EQUATION

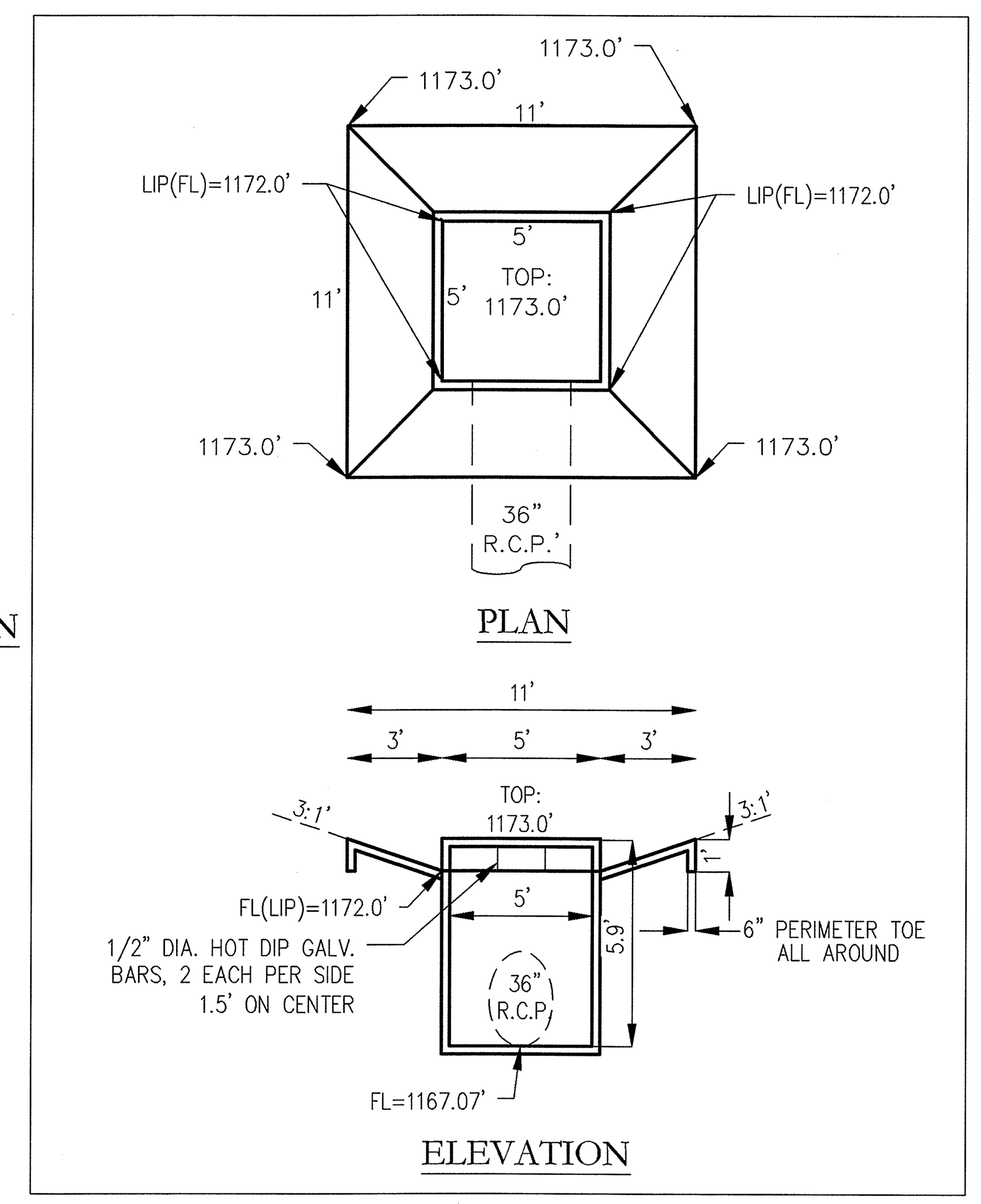
$$\frac{\left(\frac{Q}{CoA}\right)^2}{2g} = H$$

$$\frac{\left(\frac{14.7}{0.6*7.07}\right)^2}{64.4} = 0.19'$$

$H = 1.50' + 0.19' = 1.69'$

$H_{REQ.} = 1.69'$

$H_{AVAIL.} = 5.93'$



5'x5' AREA INLET R3 DETAIL

AREA INLET A4

WEIR EQUATION

$$\left(\frac{Q}{C*L}\right)^{2/3} = H$$

$$\left(\frac{15.4}{3*20}\right)^{2/3} = 0.40'$$

$H_{REQ.} = 0.40'$

$H_{AVAIL.} = 1.00'$

ORIFICE EQUATION

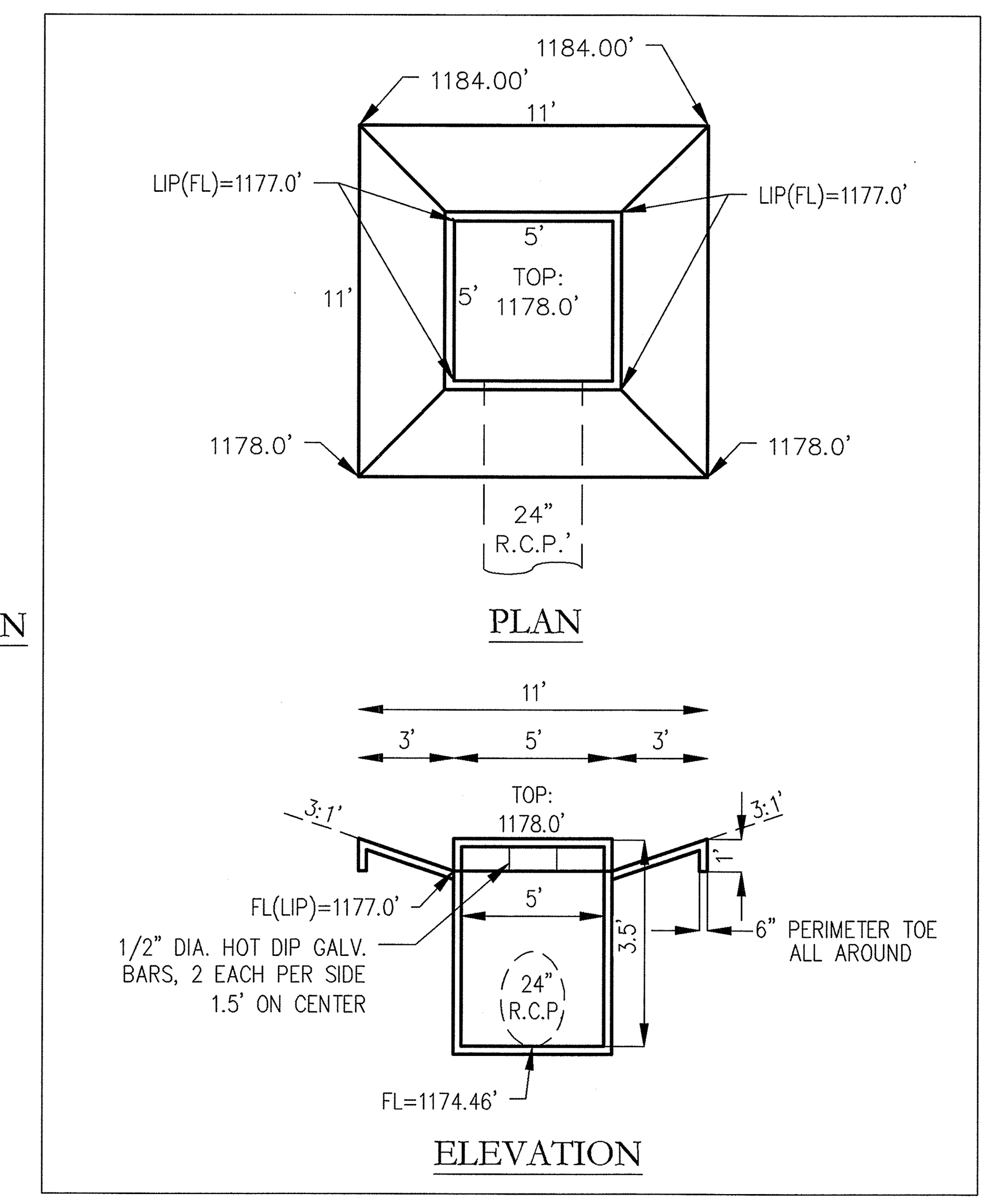
$$\frac{\left(\frac{Q}{CoA}\right)^2}{2g} = H$$

$$\frac{\left(\frac{15.4}{0.6*3.14}\right)^2}{64.4} = 1.04'$$

$H = 1.00' + 1.04' = 2.04'$

$H_{REQ.} = 2.04'$

$H_{AVAIL.} = 3.54'$



5'x5' AREA INLET DETAIL

STATE OF TEXAS
RYAN WAYNE PERRY
130060
LICENSED PROFESSIONAL ENGINEER
CARLSON, BRIGANCE, & DOERING, INC. ID # F3791
11/1/2019

DESIGNED BY:	DRAFTED BY:
DRJ	RH/TDC/PO

DATE | REVISION

Carlson, Brigance & Doering, Inc.
Civil Engineering ◆ Surveying
FIRM ID #F3791
Main Office: 5501 West William Cannon Dr., Austin, Texas 78749, Phone No. (512) 280-5160
North Office: 12129 RR 620 N., Ste. 600, Austin, Texas 78750, Fax No. (512) 280-5165

SHEET NAME: AREA INLET DETAILS
JOB NAME: ARROWHEAD RANCH PHASE 3
PROJECT: STREET, DRAINAGE, WATER, AND WASTEWATER IMPROVEMENTS

DATE: OCTOBER 2019
JOB NUMBER: 4999
SHEET: 22 OF 35
SHEET NO.: 22

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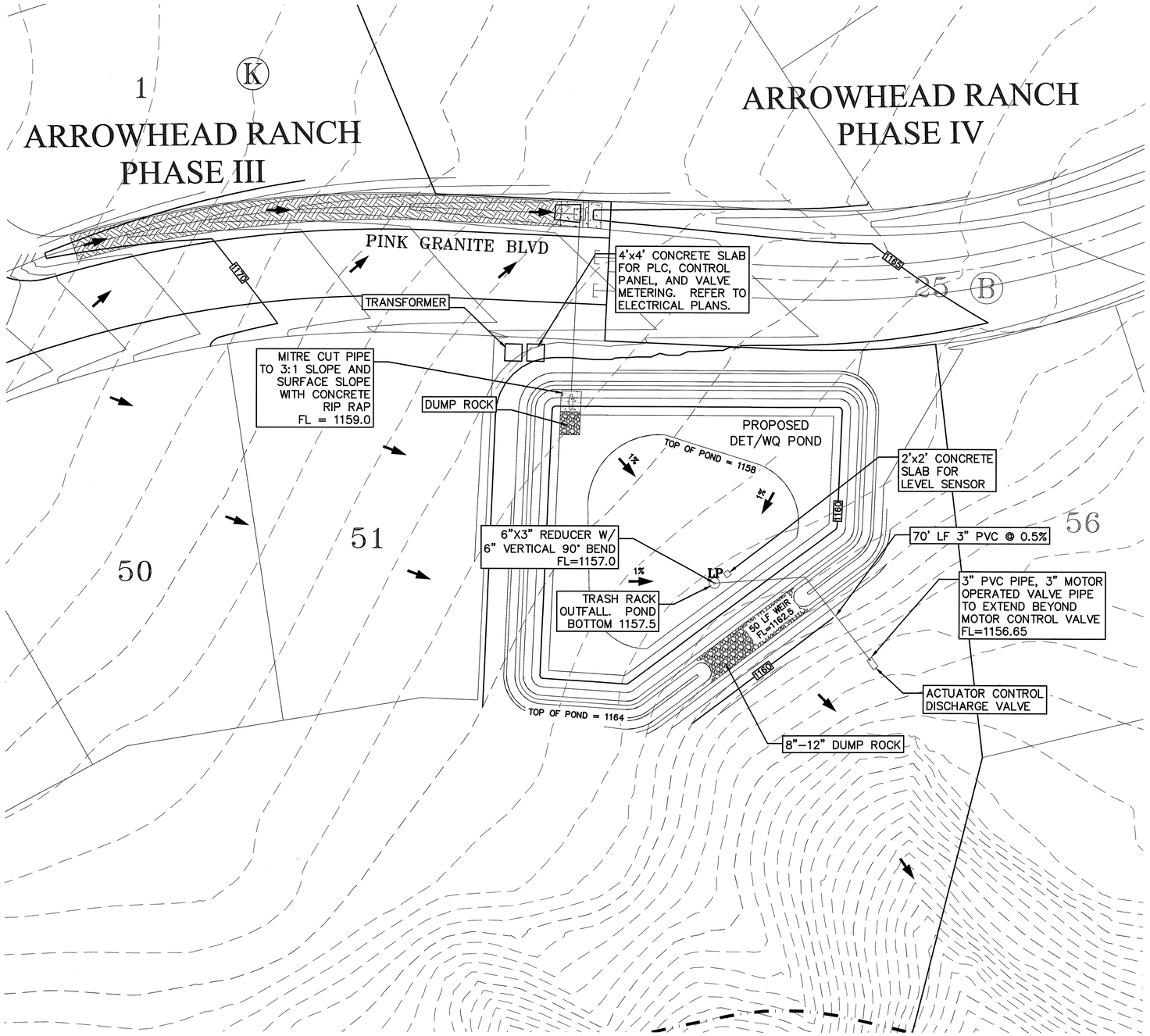

0 20' 40'

SCALE: 1" = 20'

PROPOSED CONDITIONS								
HEC-HMS Input							HEC-HMS Results	
Basin	Area (ac)	Area (sf)	Area (sq mi)	Impervious Cover (sf)	Impervious Cover (%)	Lag Time (min)	25 YR Event (cfs)	100 YR Event (cfs)
P1	13.11	570961	0.02048	153074	26.81%	16.08	49.0	69.1
POND A							48.7	68.8
POND A OUTFLOW							**48.7**	**68.8**

DETENTION STAGE STORAGE TABLE - POND A						
Elevation (ft)	Area (Sq. ft.)	Area (Acres)	Avg. Area (Acres)	Delta Volume (Acre-Feet)	Total Volume (Acre-Feet)	Storage (cf)
1158.0	4026	0.0924	0.0000	0.0000	0.0000	0
1159.0	7159	0.1643	0.1284	0.1284	0.1284	5,593
1160.0	8231	0.1890	0.1767	0.1767	0.3050	13,288
1161.0	9362	0.2149	0.2019	0.2019	0.5070	22,084
1162.0	10550	0.2422	0.2286	0.2286	0.7355	32,040
1163.0	11794	0.2708	0.2565	0.2565	0.9920	43,212
1164.0	13095	0.3006	0.2857	0.2857	1.2777	55,657

POND-A SUMMARY			
STORM	Q_{IN} (cfs)	Q_{OUT} (cfs)	W.S.E. (ft)
25-YR	49.0	48.7	1163.0
100-YR	69.1	68.8	1163.1

WQV= 34,963 Cu./Ft.
Pipe Diameter= 2.25 in.
Q= 0.274 cfs
Draw-Down Time= 127,478.7 Sec.
Draw-Down Time= 35.41 Hr.

STATE OF TEXAS
RYAN WAYNE PERRY
130060
LICENSED PROFESSIONAL ENGINEER
CARLSON, BRIGANCE, & DOERING, INC.
© F-3791
11/1/2019

DESIGNED BY:	DRAFTED BY:
DSJ	RH/TDC/PO

DATE
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Fax No. (512) 280-5165

SHEET NAME: POND A (1 OF 2)
JOB NAME: ARROWHEAD RANCH PHASE 3
PROJECT: STREET, DRAINAGE, WATER, AND WASTEWATER IMPROVEMENTS

DATE: OCTOBER 2019
JOB NUMBER: 4999
SHEET: 23 OF 35
SHEET NO.: 23

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Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Project Name: ARROWHEAD RANCH
Date Prepared: 10/10/2019

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 spread:

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 lc
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 =	Hays	
Total project area included in plan * =	27.72	acres
Predevelopment impervious area within the limits of the plan * =	0.00	acres
Total post-development impervious area within the limits of the plan* =	7.43	acres
Total post-development impervious cover fraction * =	0.27	
P =	33	inches
$L_{M\ TOTAL\ PROJECT}$ =	6670	lbs.

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

Number of drainage basins / outfalls areas leaving the plan area = 1

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

Drainage Basin/Outfall Area No. = 1

Total drainage basin/outfall area =	27.72	acres
Predevelopment impervious area within drainage basin/outfall area =	0.00	acres
Post-development impervious area within drainage basin/outfall area =	7.43	acres
Post-development impervious fraction within drainage basin/outfall area =	0.27	
$L_{M\ THIS\ BASIN}$ =	6670	lbs.

3. Indicate the proposed BMP Code for this basin.

Proposed BMP = **Wet Basin**
Removal efficiency = **91** percent
BATCH DETENTION

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_I 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_R = TSS Load removed from this catchment area by the proposed BMP

A_C =	27.72	acres
A_I =	7.43	acres
A_P =	20.29	acres
L_R =	8050	lbs

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

Desired $L_{M\ THIS\ BASIN}$ = 6670 lbs.

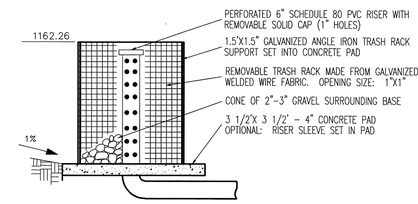
F = 0.83

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

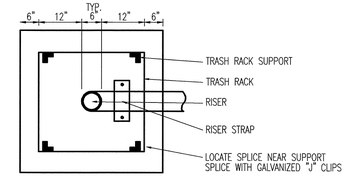
Rainfall Depth =	1.20	inches
Post Development Runoff Coefficient =	0.24	
On-site Water Quality Volume =	29136	cubic feet

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 =	5827	
Total Capture Volume (required water quality volume(s) x 1.20) =	34963	cubic feet



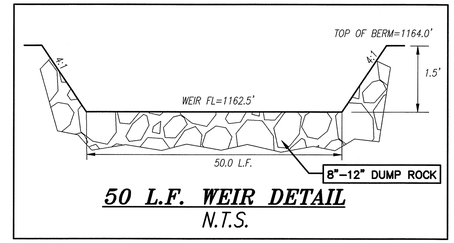
SIDE VIEW OF RISER



TOP VIEW OF RISER (SQUARE DESIGN)
TYPICAL RISER DESIGN FOR PONDS WITH EARTHEN BERMS

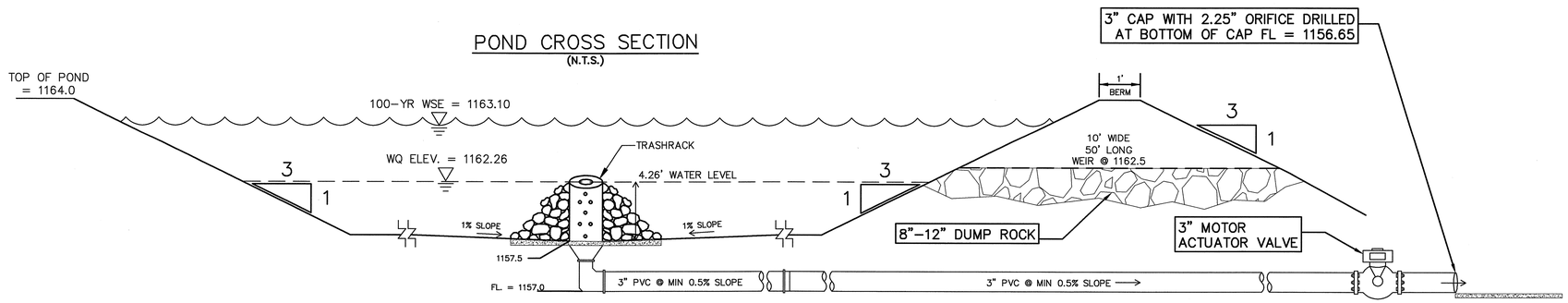
OUTFLOW RISER DETAIL

N.T.S.



50 L.F. WEIR DETAIL
N.T.S.

POND CROSS SECTION
(N.T.S.)



STATE OF TEXAS
RYAN WAYNE PERRY
130060
LICENSED
PROFESSIONAL ENGINEER
CARLSON, BRIGANCE, & DOERING, INC.
ID # F3791
11/1/2019

DESIGNED BY:	DRAFTED BY:
DRJ	RH/TDC/PO

DATE
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SHEET NAME: POND A (2 OF 2)
JOB NAME: ARROWHEAD RANCH PHASE 3
PROJECT: STREET, DRAINAGE, WATER, AND WASTEWATER IMPROVEMENTS

DATE: OCTOBER 2019
JOB NUMBER: 4999
SHEET: 24 OF 35
SHEET NO.: 24

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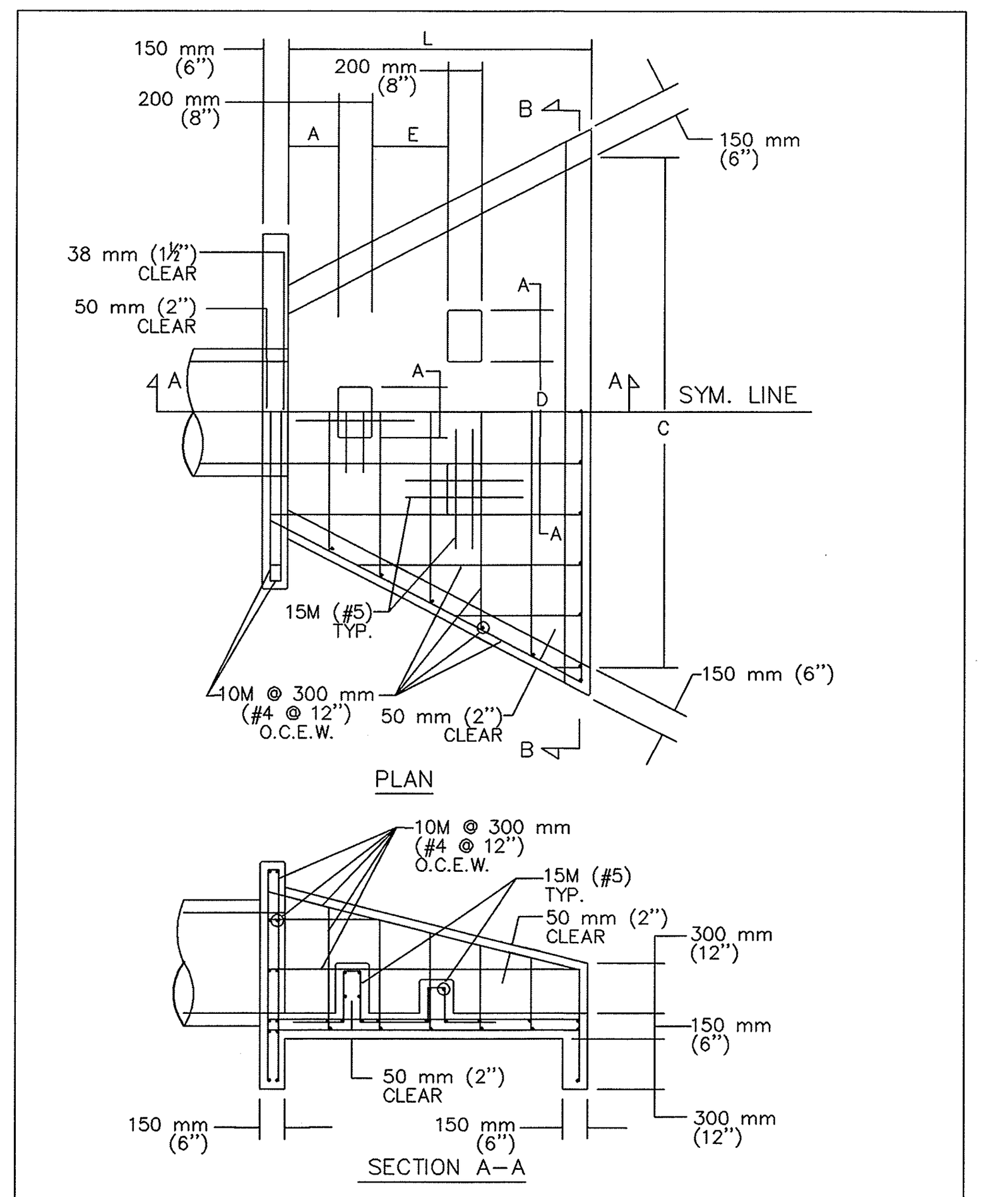
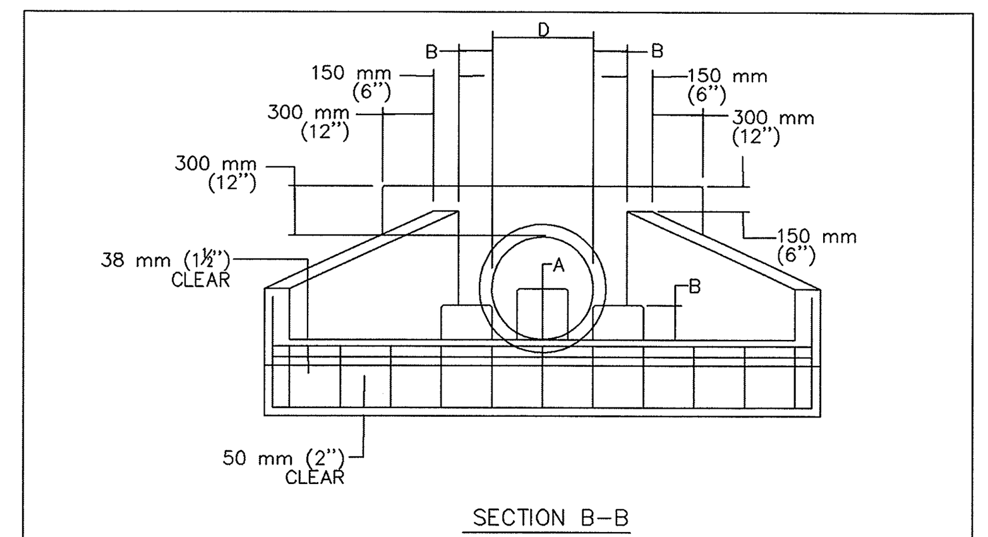


CITY OF AUSTIN
DEPARTMENT OF WATERSHED PROTECTION AND DEVELOPMENT REVIEW
STANDARD HEADWALL AND ENERGY DISSIPATORS
RECORD COPY SIGNED BY BILL GARDNER 08/20/07 ADOPTED
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.
STANDARD NO. 508S-13 1 OF 2



SECTION B-B

NOTES:

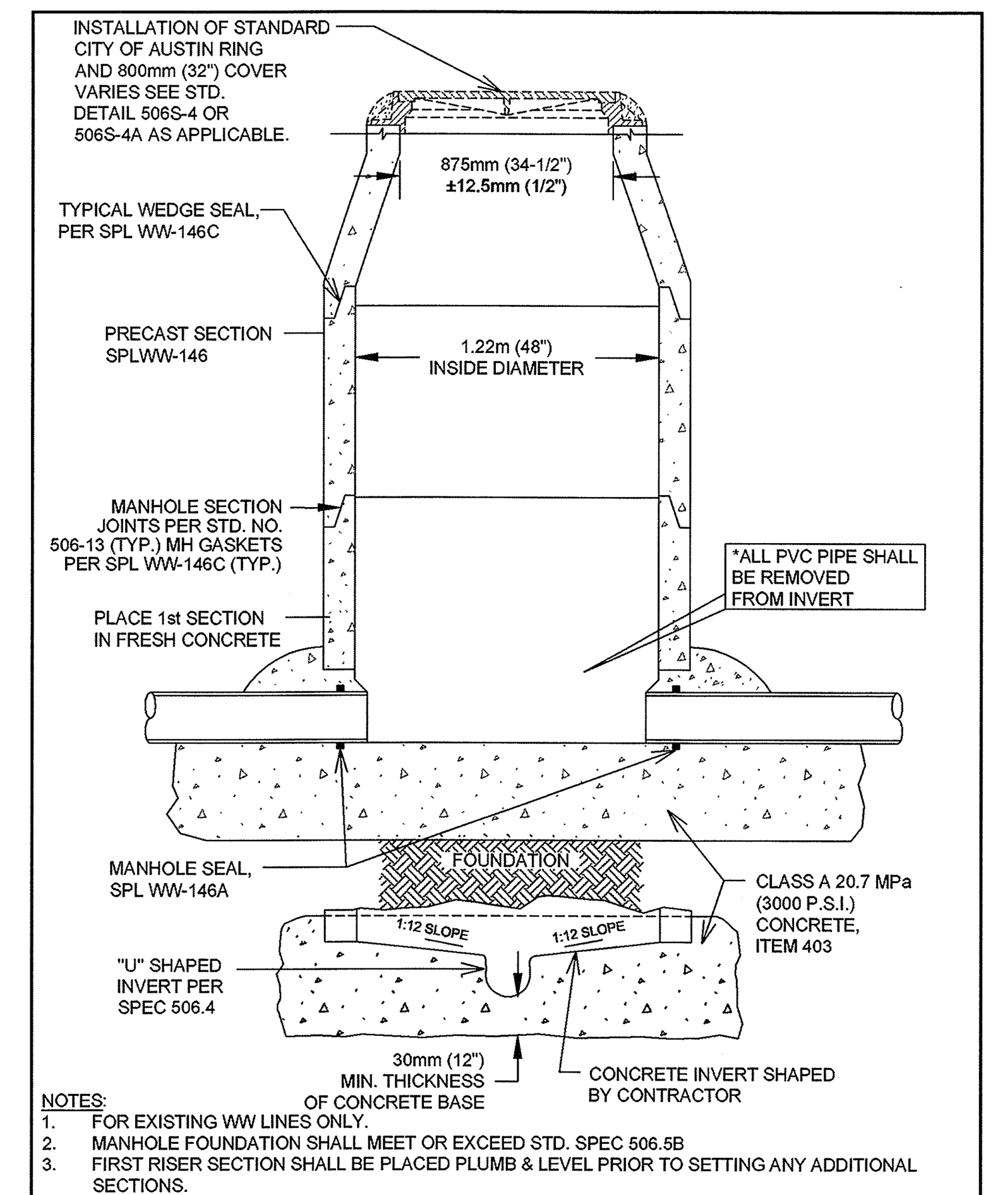
1. ALL CONCRETE SHALL BE TYPE "C" AS PER SPEC. 403S, CONCRETE FOR STURCTURES.
2. CHAMFER ALL EXTERNAL VISIBLE CORNERS.
3. DISSIPATOR BLOCKS REQUIRED ON DISCHARGE HEADWALLS ONLY.

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")	343 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")

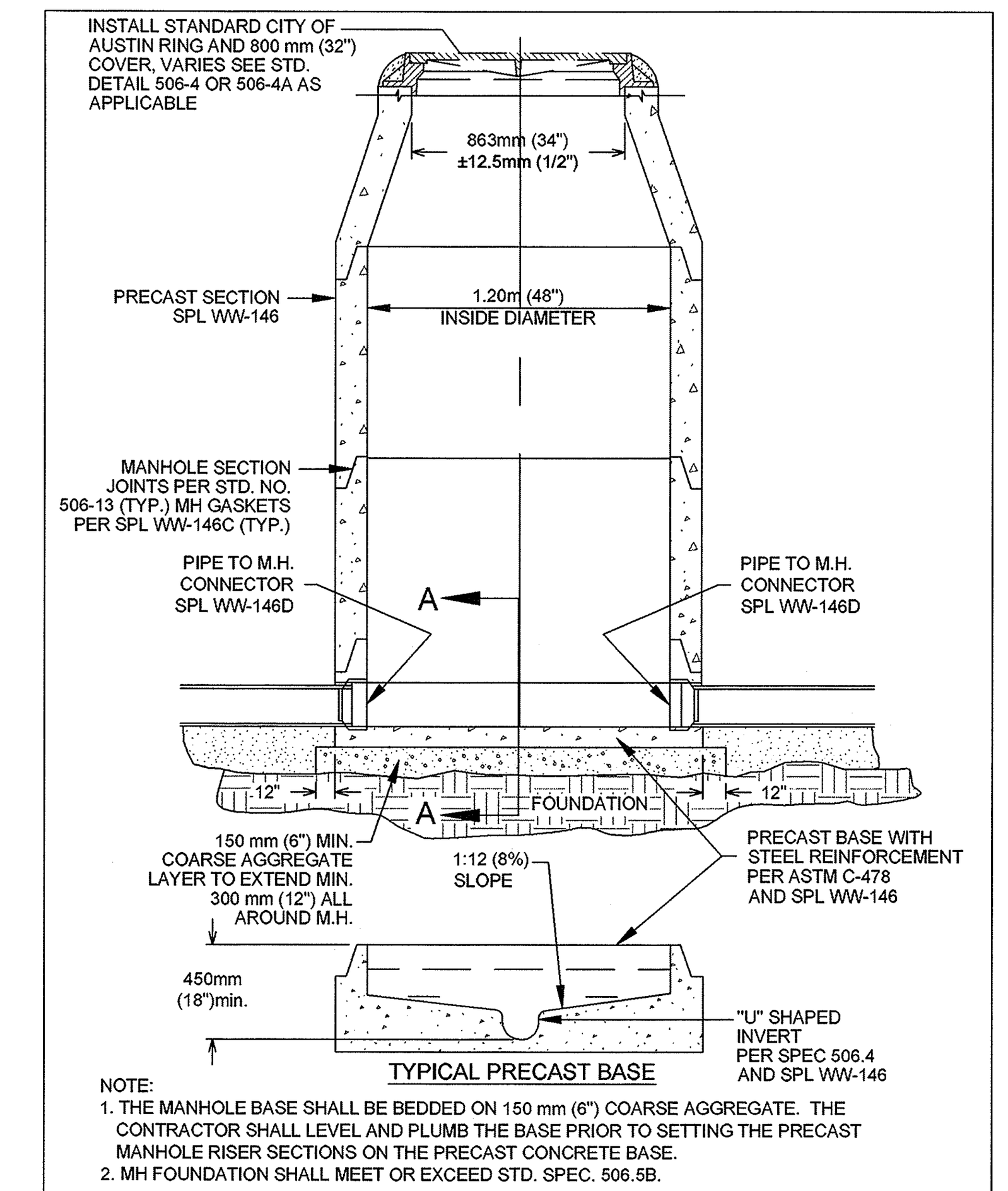
DIMENSIONS IN MILLIMETERS, METERS AND (INCHES).

DISCHARGE VELOCITIES GREATER THAN 3 METERS/SECOND (10 fps) REQUIRE ROCK OUTLET PROTECTION.

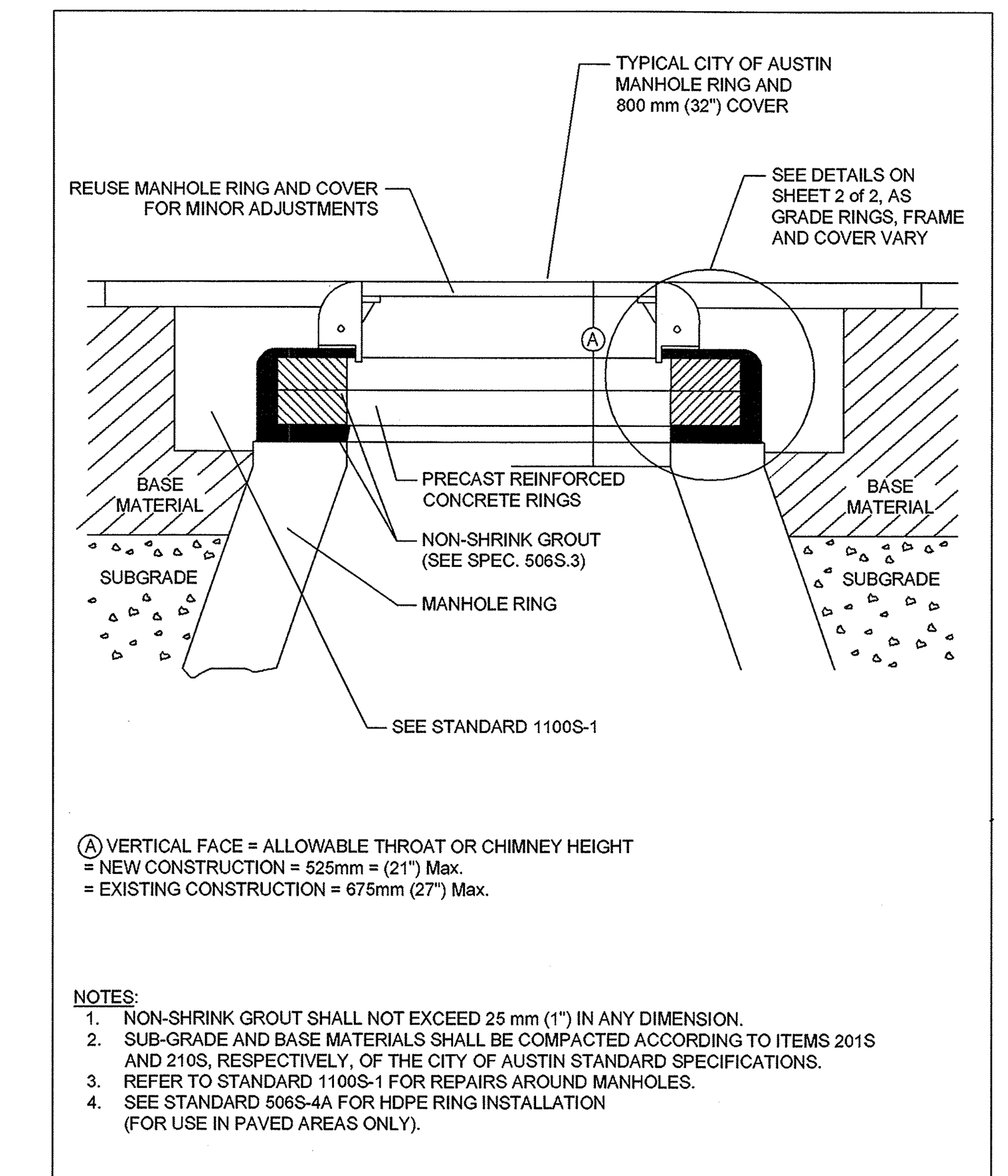
CITY OF AUSTIN
DEPARTMENT OF WATERSHED PROTECTION AND DEVELOPMENT REVIEW
STANDARD HEADWALL AND ENERGY DISSIPATORS
RECORD COPY SIGNED BY BILL GARDNER 08/20/07 ADOPTED
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.
STANDARD NO. 508S-13 2 OF 2



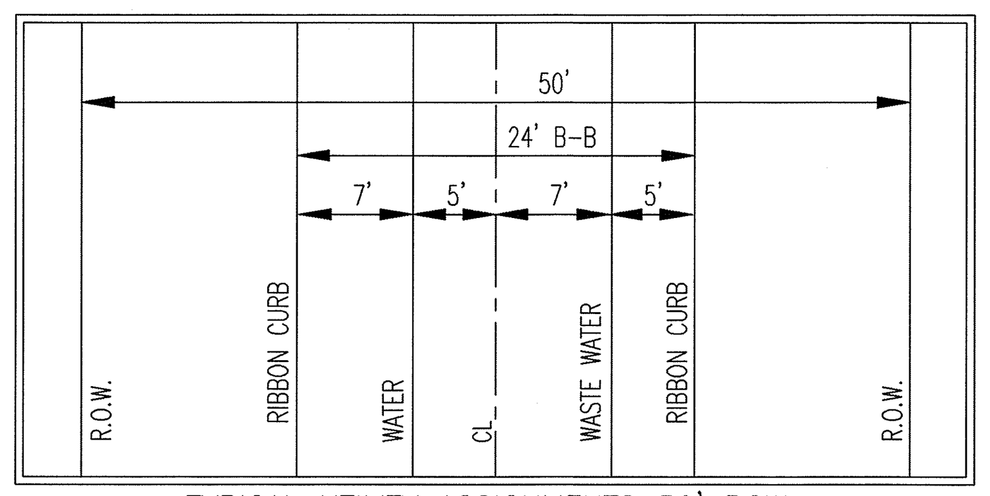
CITY OF AUSTIN
AUSTIN WATER UTILITY
PRECAST MANHOLE ON CAST IN PLACE BASE
RECORD COPY SIGNED BY KATHI L FLOWERS 08/31/2011
STANDARD NO. 506S-9



CITY OF AUSTIN
AUSTIN WATER UTILITY
WASTEWATER MANHOLE ON PRECAST BASE
RECORD COPY SIGNED BY KATHI L FLOWERS 08/31/2011
STANDARD NO. 506S-10

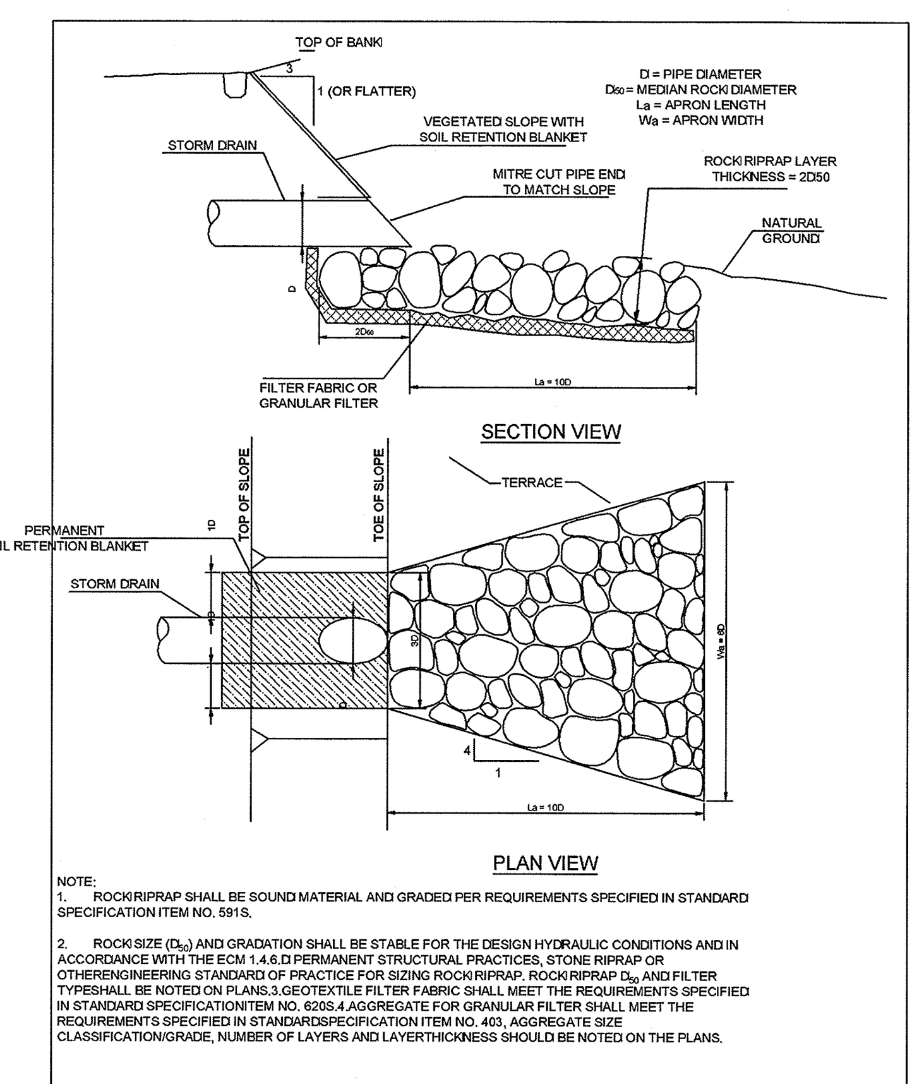


CITY OF AUSTIN
AUSTIN WATER UTILITY
MINOR MANHOLE ADJUSTMENT & NEW MANHOLE CONSTRUCTION
RECORD COPY SIGNED BY KATHI L FLOWERS 08/31/2011
STANDARD NO. 506S-4 1 OF 2

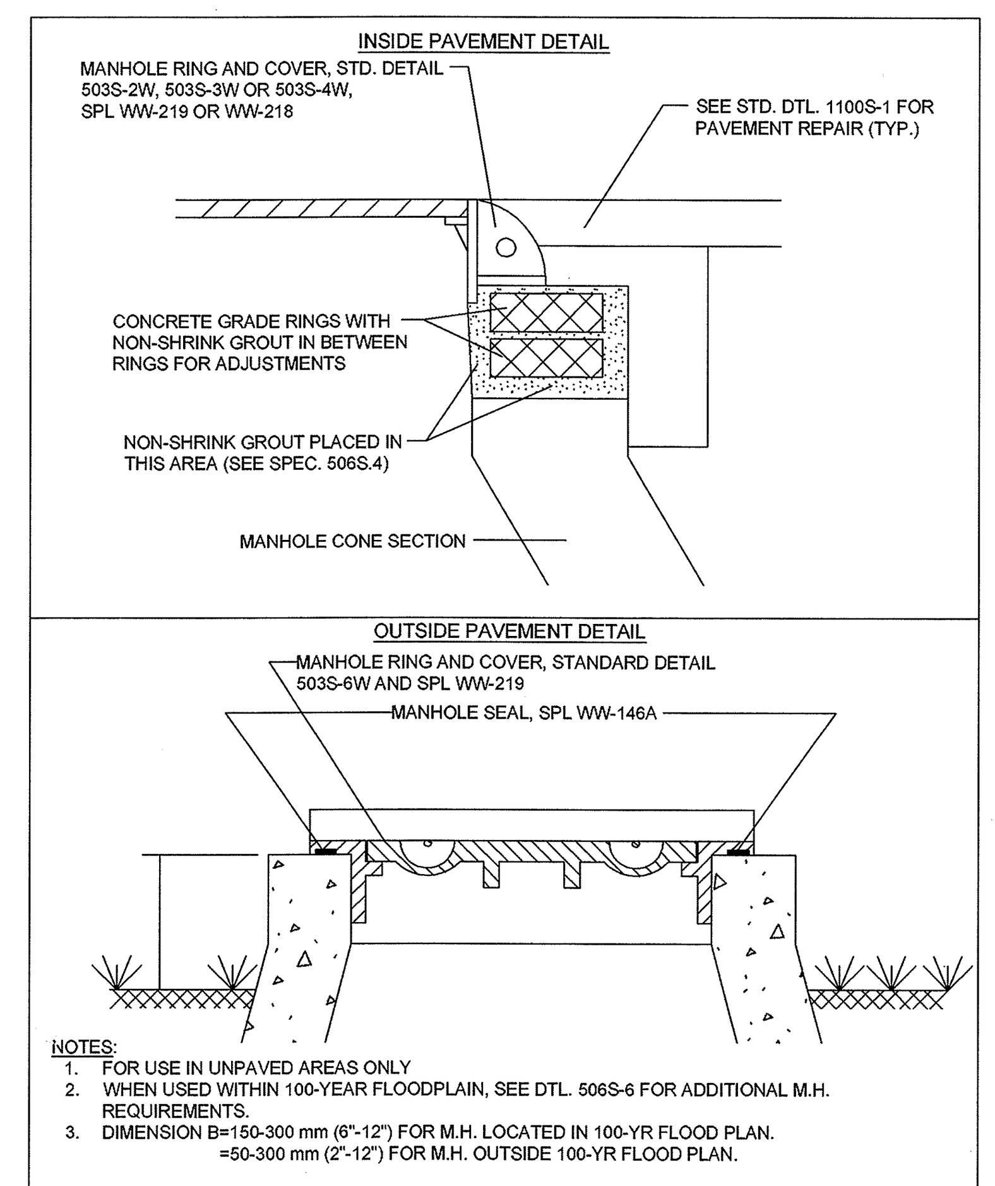


TYPICAL UTILITY ASSIGNMENTS 50' ROW

N.T.S.



CITY OF AUSTIN
WATERSHED PROTECTION DEPARTMENT
STORMDRAIN OUTFALL PROTECTION PIPE DISCHARGE ON TERRACE/UPLANDS
RECORD COPY SIGNED BY MORGAN BYARS 09/01/2011 ADOPTED
STANDARD NO. 508S-17



CITY OF AUSTIN
AUSTIN WATER UTILITY
MINOR MANHOLE ADJUSTMENT & NEW MANHOLE CONSTRUCTION
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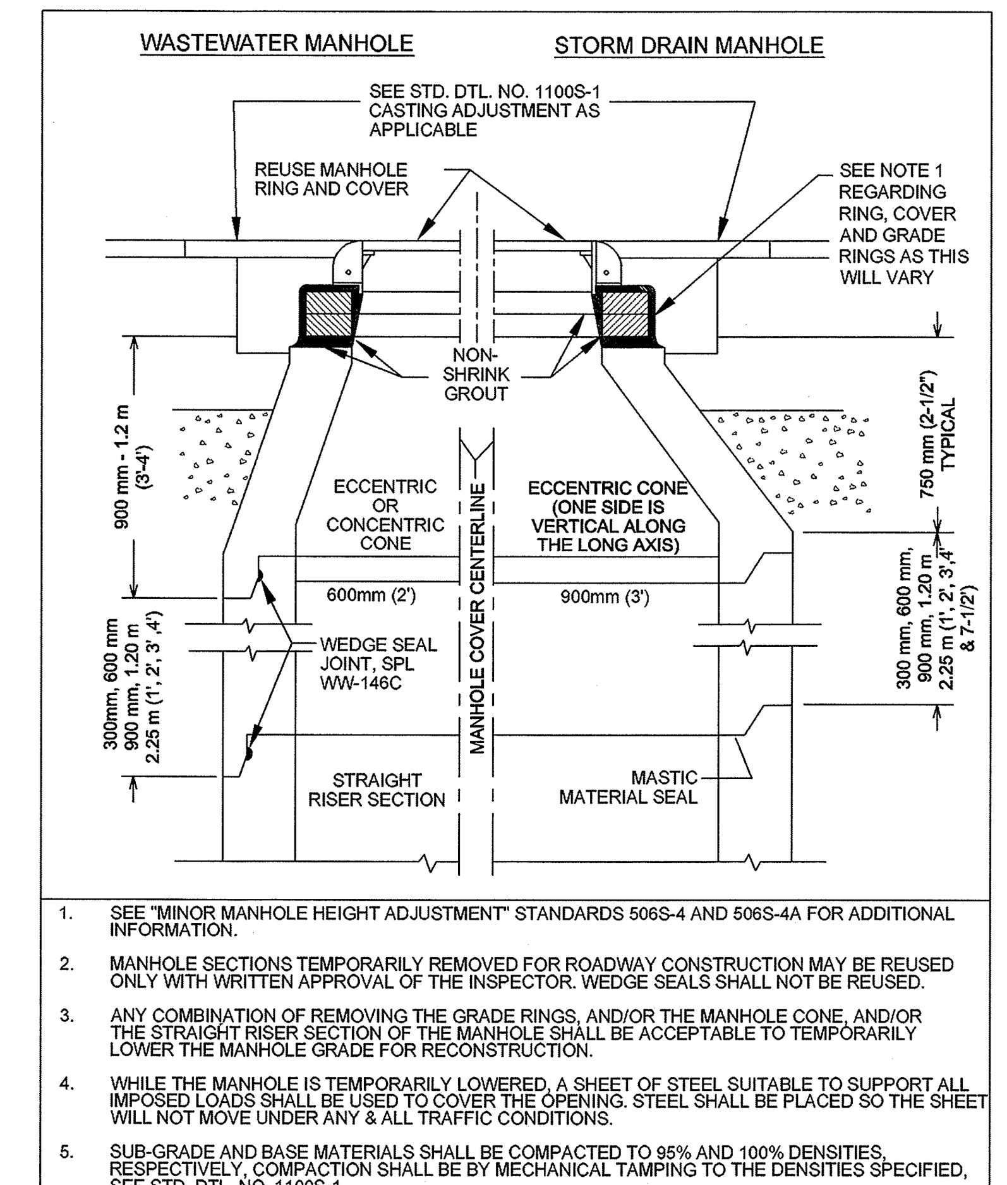
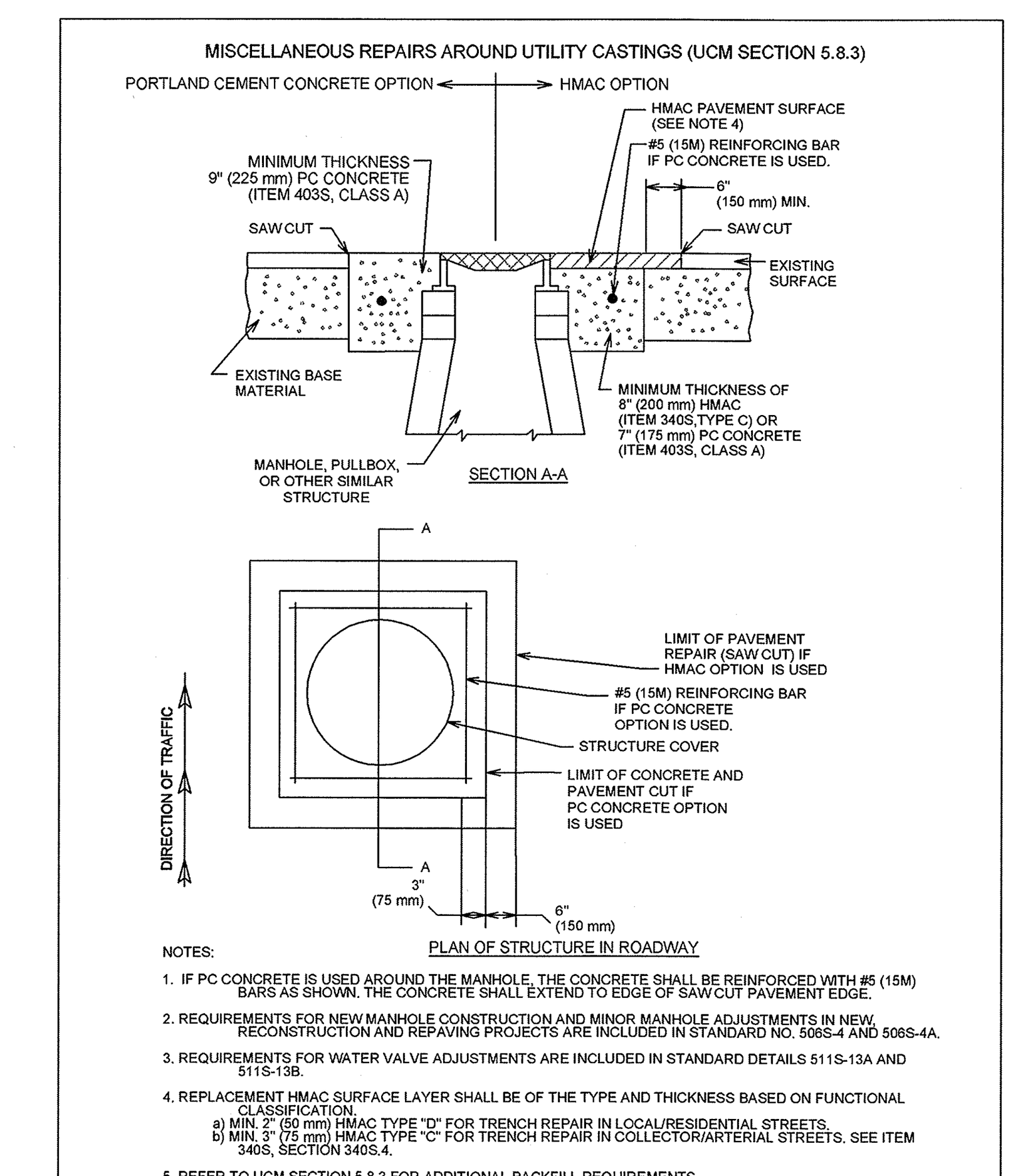
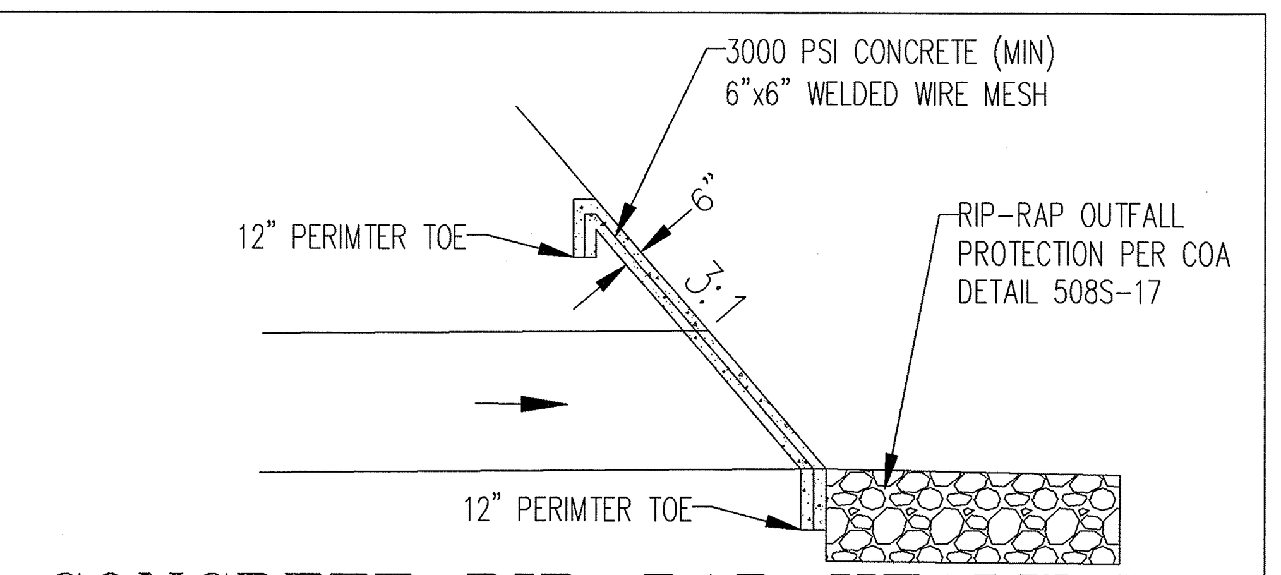
STANDARD NO. 506S-4 2 OF 2



CITY OF AUSTIN
AUSTIN WATER UTILITY
MAJOR MANHOLE ADJUSTMENT
RECORD COPY SIGNED BY KATHI L FLOWERS 08/31/2011
STANDARD NO. 506S-2

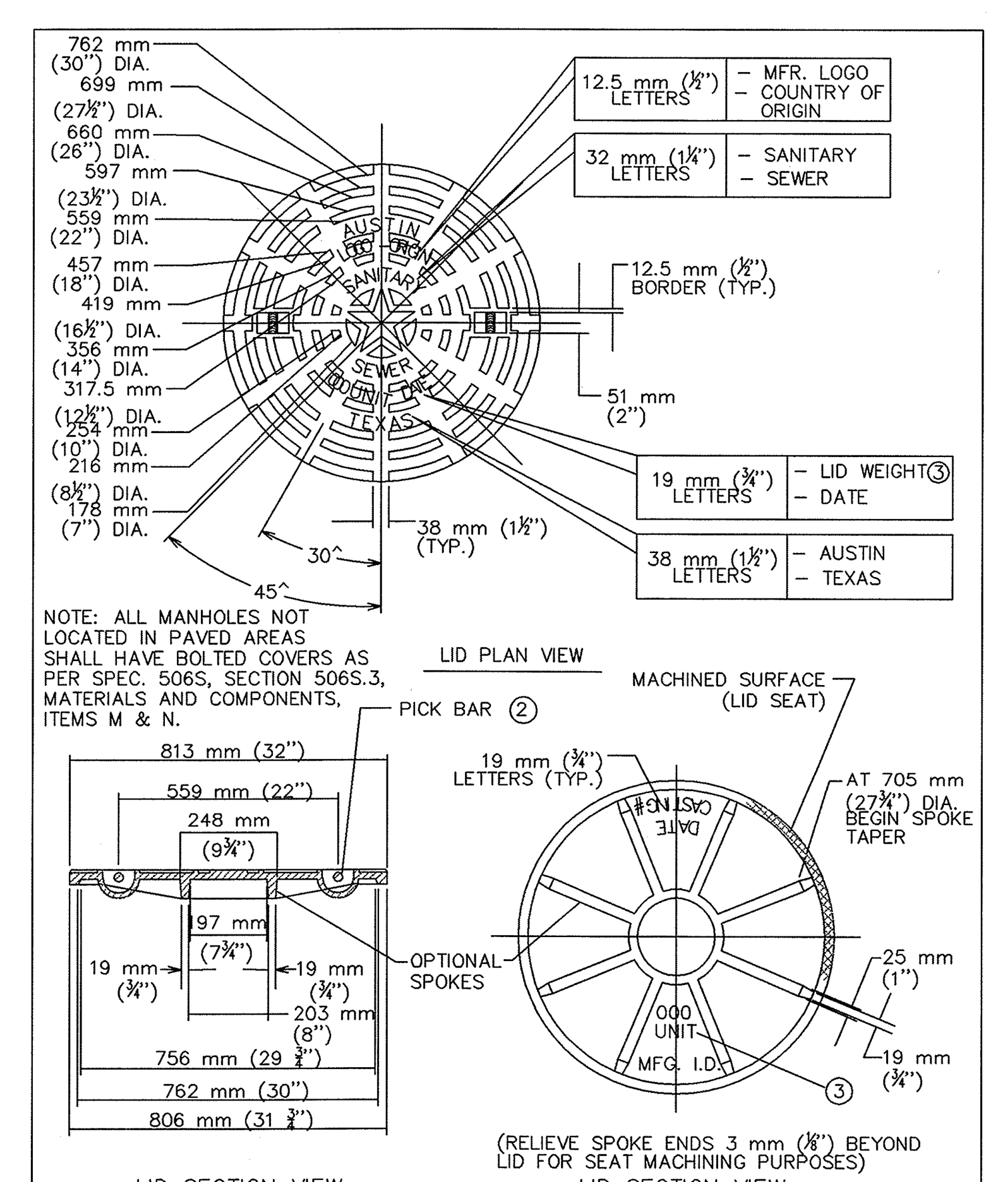


CITY OF AUSTIN
DEPARTMENT OF PUBLIC WORKS
CASTING ADJUSTMENT
RECORD COPY SIGNED BY SAM ANGOORI 01/04/10 ADOPTED
STANDARD NO. 1100S-1

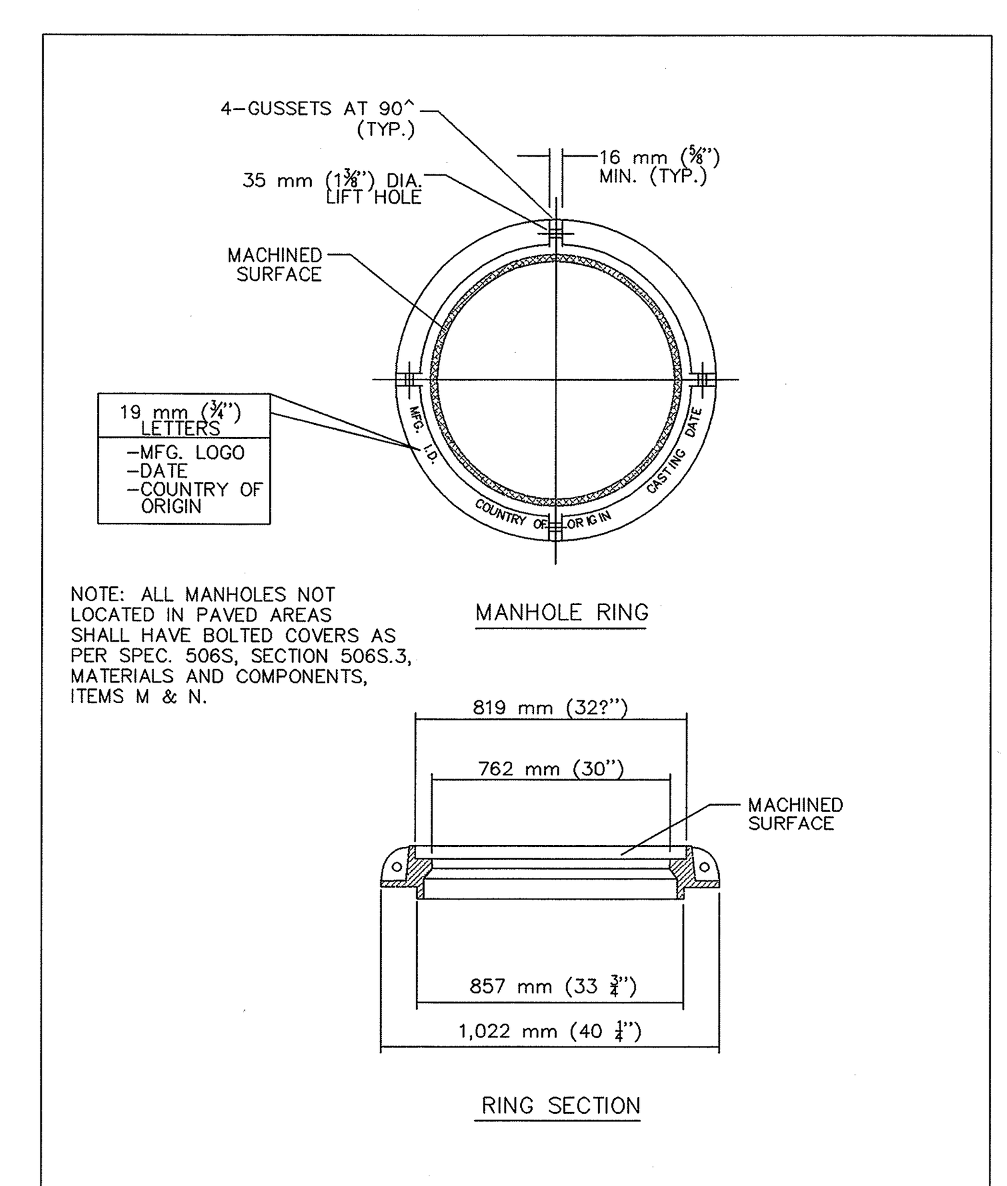


CONCRETE RIP-RAP HEADWALL

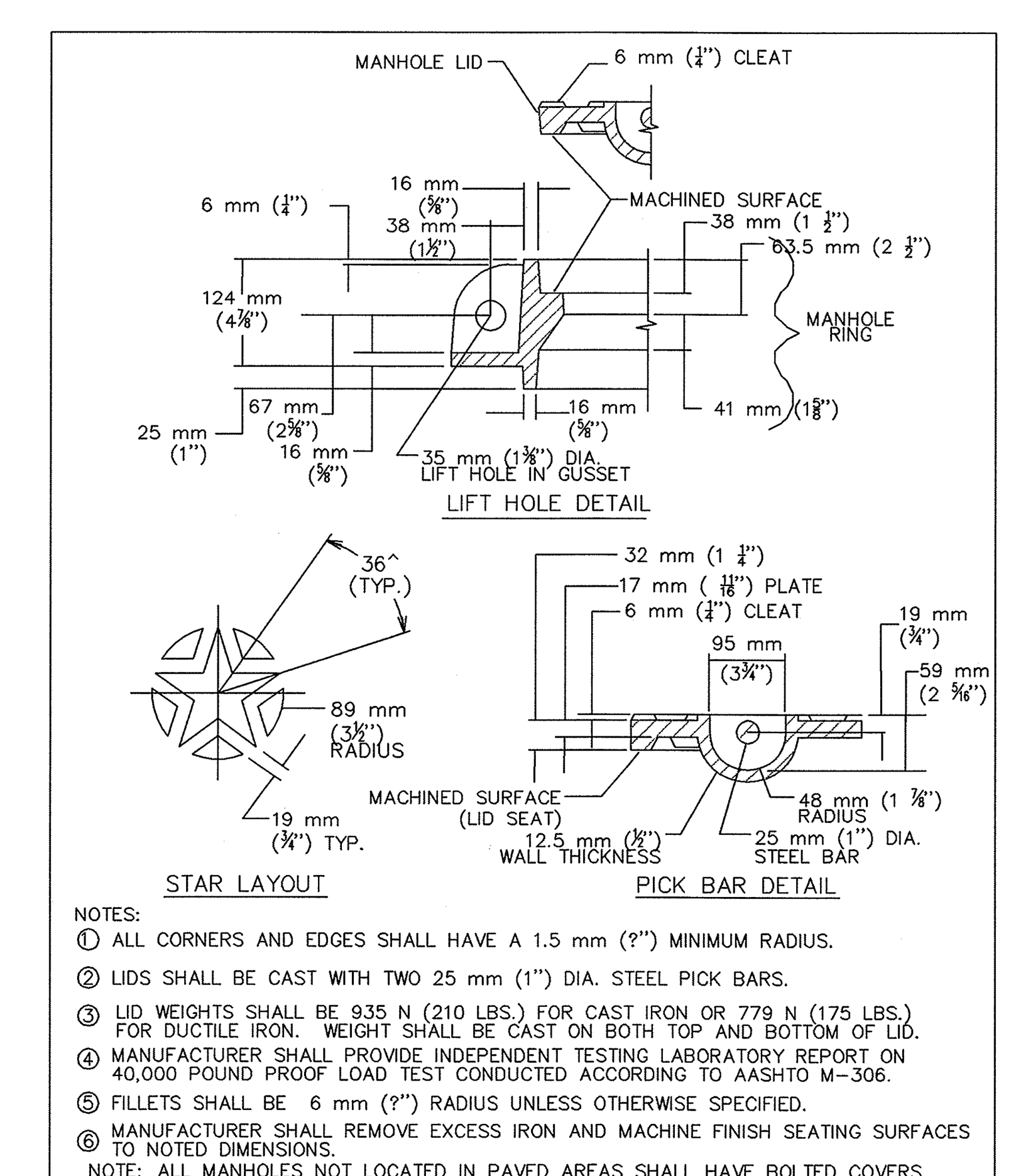
N.T.S.



CITY OF AUSTIN
AUSTIN WATER UTILITY
SANITARY SEWER MANHOLE RING AND 813 mm (32") COVER
RECORD COPY SIGNED BY KATHI L. FLOWERS 3/9/04 ADOPTED
STANDARD NO. 503S-4W 1 OF 3



CITY OF AUSTIN
AUSTIN WATER UTILITY
SANITARY SEWER MANHOLE RING AND 813 mm (32") COVER
RECORD COPY SIGNED BY KATHI L. FLOWERS 3/9/04 ADOPTED
STANDARD NO. 503S-4W 2 OF 3



CITY OF AUSTIN
AUSTIN WATER UTILITY
SANITARY SEWER MANHOLE RING AND 813 mm (32") COVER
RECORD COPY SIGNED BY KATHI L. FLOWERS 3/9/04 ADOPTED
STANDARD NO. 503S-4W 3 OF 3

NOTE: NO MANHOLE SHALL REFERENCE CITY OF AUSTIN

STATE OF TEXAS
RYAN WAYNE PERRY
130060
LICENSED PROFESSIONAL ENGINEER
CARLSON, BRIGANCE, & DOERING, INC. ID # F3791
4/1/2019

DESIGNED BY: DRJ
DRAFTED BY: RH/TDC/PO

DATE
REVISION

Carlson, Brigance & Doering, Inc.
Civil Engineering ◆ Surveying
FIRM ID #F3791
Main Office
5501 West William Cannon Dr.
Austin, Texas 78749
Phone No. (512) 280-5160
North Office
12129 RR 620 N., Ste. 600
Austin, Texas 78750
Fax No. (512) 280-5165

SHEET NAME: DETAILS (2 OF 4)

JOB NAME: ARROWHEAD RANCH PHASE 3

PROJECT: STREET, DRAINAGE, WATER, AND WASTEWATER IMPROVEMENTS

DATE OCTOBER 2019

JOB NUMBER 4999

SHEET 33 OF 35

SHEET NO. 33

ATTACHMENT N – Inspection, Maintenance, Repair and Retrofit Plan

PROJECT DESCRIPTION

Arrowhead Subdivision Phase III incorporated a batch detention basin pond for permanent water quality control. This batch detention basin will be modified to include relief trenches.

BATCH DETENTION BASIN

A clear requirement for batch detention basins is that a firm commitment be made to carry out both routine and non-routine maintenance tasks. The nature of the maintenance requirements are outlined below:

Inspections. Inspections should take place a minimum of twice a year. One inspection should take place during wet weather to determine if the basin is meeting the target detention time of 12 hours and a drawdown time of no more than 48 hours. The remaining inspections should occur between storm events so that manual operation of the valve and controller can be verified. The level sensor in the basin should be inspected and any debris or sediment in the area should be removed. The outlet structure and the trash screen should be inspected for signs of clogging. Debris and sediment should be removed from the outlet. Debris obstructing the valve should be removed. During each inspection, erosion areas inside and downstream of this BMP should be identified and repaired/revegetated immediately.

Mowing. The basin, basin side-slopes, and embankment of the basin must be mowed to prevent woody growth and control weeds. A mulching mower should be used, or the grass clippings should be caught and removed. Mowing should take place at least twice a year, or more frequently if vegetation exceeds 18 inches in height.

Litter and Debris Removal. Litter and debris removal should take place at least twice a year, as part of the periodic mowing operations and inspections. Debris and litter should be removed from the surface of the basin. Particular attention should be paid to floatable debris around the outlet structure. The outlet should be checked for possible clogging or obstructions and any debris removed.

Erosion control. The basin side slopes and embankment all may periodically suffer from slumping and erosion. To correct these problems, corrective action, such as regrading and revegetation, may be necessary. Correction of erosion control should take place whenever required based on the periodic inspections.

Nuisance Control. Standing water or soggy conditions may occur in the basin. Some standing water may occur after a storm event since the valve may close with 2 to 3 inches of water in the basin. Some flow into the basin may also occur between storms due to spring flow and residential water use that enters the storm sewer system. Twice a year,

the facility should be evaluated in terms of nuisance control (insects, weeds, odors, algae, etc.).

Structural Repairs and Replacement. With each inspection, any damage to structural elements of the basin (pipes, concrete drainage structures, retaining walls, etc.) should be identified and repaired immediately. An example of this type of repair can include patching of cracked concrete, sealing of voids, removal of vegetation from cracks and joints. The various inlet/outlet structures in a basin will eventually deteriorate and must be replaced.

Sediment Removal. A properly designed batch detention basin will accumulate quantities of sediment over time. The accumulated sediment can detract from the appearance of the facility and reduce the pollutant removal performance of the facility. The sediment also tends to accumulate near the outlet structure and can interfere with the level sensor operation. Sediment shall be removed from the basin at least every 5 years, when sediment depth exceeds 6 inches, when the sediment interferes with the level sensor or when the basin does not drain within 48 hours.

Logic Controller. The Logic Controller should be inspected as part of the twice yearly inspections. Verify that the external indicators (active, cycle in progress) are operating properly by turning the controller off and on, and by initiating a cycle by triggering the level sensor in the basin. The valve should be manually opened and closed using the open/close switch to verify valve operation and to assist in inspecting the valve for debris. The solar panel should be inspected and any dust or debris on the panel should be carefully removed. The controller and all other circuitry and wiring should be inspected for signs of corrosion, damage from insects, water leaks, or other damage. At the end of the inspection, the controller should be reset.

Record Keeping. The responsible party shall maintain written copies of inspection reports indicating, at a minimum: date of inspection, weather during inspection, items noted during inspection, documentation of repairs made, and other inspection items discussed above. The responsible party shall maintain all records for a minimum of two (2) years following the date of inspections.

BMP DESIGN FIRM INFORMATION

Carlson, Brigance and Doering, Inc.
Maher Harmouche, P.E.
Phone: (512) 280-5160
5501 West William Cannon
Austin, TX 78749

The above Inspection, Maintenance, Repair and Retrofit Plan has been prepared by the undersigned Engineer, and I hereby certify that the above Plan conforms with the minimum requirements of the TCEQ Technical Guidance on Best Management Practices, RG-348.

M. Harmouche **04.02.2024**

Maher Harmouche, P.E. Date Seal

CARLSON, BRIGANCE, & DOERING, INC.
ID # F3791

OWNER CONTACT INFORMATION

TF Arrowhead Ranch, L.P.
Mr. John Brian
Phone: (512) 619-5406
6310 Capital Drive, Suite 130
Lakewood Ranch, FL 34202

The Owner certifies that the requirements within the Inspection, Maintenance, Repair and Retrofit Plan above will be adhered to in conformance with the approved Contributing Zone Plan until such time as the maintenance obligations are assumed by another entity and appropriate transfer of responsibility documents filed with TCEQ.

4/2/2024

Owner Signature Date

John Brian Authorized Signatory

Printed Name Title

3. **Temporary Stormwater Section**

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: Maher Harmouche

Date: **04.30.2024**

Signature of Customer/Agent:

M. Harmouche

Regulated Entity Name: 107797524 ARROWHEAD RANCH

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: Onion Creek

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.

TEMPORARY STORMWATER SECTION

ATTACHMENT "A"
Spill Response Actions

Spill response actions will be in accordance with Texas Administrative Code (TAC) 30.327. If the amount of material spilled or discharged within any 24-hour period is equal to or greater than the reportable quantities as listed within TAC 30.327.4 or as indicated in Table 1, the responsible person shall notify the SERC and TCEQ Regional Office within 24-hours. All spills coincide with the Spill Rule which requires the party responsible for causing a spill that by its nature and size presents the threat of contaminating groundwater or surface water to:

- Control and contain the spill (or see that this is done)
- Clean up the results of the spill (or see that this is done)
- Notify the appropriate authorities, which may range from the local fire department to TCEQ, depending on the threat posed by the spill
- Make follow-up reports to TCEQ about the continuing progress of completion of the cleanup

In order to report an environmental emergency, discharge, spill, or air release, contact the State of Texas Spill-Reporting Hotline and the SERC at 1-800-832-8224, available 24 hours a day. Also, contact the TCEQ Regional Office, open Monday-Friday, 8:00 a.m.-5:00 p.m.

Table 1: Reportable Quantities (RQs) According to the Spill Rule

	Site of Spill	
Type of Spill	**On Land**	**In Water**
Hazardous substance		
If CERCLA RQ = 1-100 lb	CERCLA RQ	CERCLA RQ
If CERCLA RQ > 100 lb	CERCLA RQ	100 lb
Crude oil	210 gal	Enough to form a sheen
Used oil or petroleum product		
At a PST exempt facility*	210 gal	Enough to form a sheen
All others	25 gal	Enough to form a sheen
Oil other than crude oil, used		

oil, or petroleum product	210 gal	Enough to form a sheen
Other substances	No RQ	100 lb
Industrial solid waste	No RQ	100 lb

Note: This table applies only to the reporting to spills and discharges according to the Spill Rule, 30 TAC §§327.1-327.5. To find values of CERCLA RQs for hazardous substances, please refer to 40 CFR Table 302.4.

*The term "PST exempt facility" refers to facilities that are exempt from the Aboveground Storage Tank Program. Petrochemical plants, petroleum refineries, and electricity generation, transmission, and distribution facilities are some examples of PST exempt facilities.

-CERCLA (Comprehensive Emergency Response, Compensation, and Liability Act)

TEMPORARY STORMWATER SECTION

ATTACHMENT "B"

Potential sources of contamination include the leaking of fluids from construction equipment, trash generated by workers and material, sediment transport onto roadways from construction equipment, and the use of asphaltic products on the roadways.

TEMPORARY STORMWATER SECTION

ATTACHMENT "C"

All temporary BMPs will be in place prior to the start of any construction. All work within the contributing zone will be protected with silt fence to prevent water migrating into the site and trap any sediment leaving the site. Upon completion of construction, the site will be re-vegetated and restored, and all temporary BMP's will be removed.

The major activities of this project that will result in large areas of soil disturbance are:

Sequence of Construction

Rough Grading:	0.223 acres
ROW (Paving, Ditch, Sidewalk)	0 acres
Total Disturbed Area	0.223 acres

TEMPORARY STORMWATER SECTION

ATTACHMENT "D"

All temporary BMP's will be installed prior to the beginning of construction and remain in place until revegetation has been completed. These temporary measures will include silt fences, rock berms, inlet dykes, and stabilized construction entrances. Additionally, the batch detention pond (permanent BMP) can function as a temporary sediment pond during construction. These erosion control devices will prevent the transport of generated debris from this site. The erosion control devices proposed with this project allow for the passing of water while retaining any sediment or trash. This will allow for the flow to maintain its natural course.

TEMPORARY STORMWATER SECTION

ATTACHMENT "F"

Practices of diverting runoff around exposed soils will consist of temporary interceptor ditches and berms as well as silt fence and rock berms, which will be utilized to divert surface flows off exposed soils and to mitigate pollutants from leaving the site. The only runoff aimed at exposed soils will be from the site itself. Filter dykes will prevent the sediment from entering constructed inlets.

TEMPORARY STORMWATER SECTION

ATTACHMENT "G"

See construction plans for proposed hydrology plans indicating drainage areas to proposed erosion and sediment controls. Areas that have 10 acres or more within a common drainage area disturbed will utilize batch detention basins as a temporary sediment pond.

TEMPORARY STORMWATER SECTION

ATTACHMENT "H"

Temporary BMPs will be used and the placement, details, and design calculations for these temporary BMPs are shown in the attached construction plans, see sheet "Erosion/Sedimentation Control Plan". Silt fence, rock berms, inlet protection, temporary sediment basin and concrete washouts will be utilized to help protect all downstream features during silt disturbance. All BMPs are designed to the TCEQ standards and specifications. Minimum temporary sediment storage shall be provided based on 3,600 cubic feet of storage per acre disturbed.

TEMPORARY STORMWATER SECTION

ATTACHMENT "I"

The Temporary BMP's will be inspected on a weekly basis for their compliance with TCEQ criteria. Inspection of silt fence will occur weekly, and after any rainfall. Sediment shall be removed from silt fence when buildup reaches 6-inches and torn fabric must be replaced or a second line of fencing parallel to the torn section shall be provided. The sediment ponds shall be inspected weekly with all debris removed and sediment shall be removed once it accumulates to more than 50% of capacity (a sediment stake shall be installed and painted to indicate 50% level). The contractor will be responsible for maintenance of these items. If cited by TCEQ or the City of Dripping Springs, the contractor will have 24 hours to bring the delinquent items up to standard. The contractor will keep a record of these items on site in the construction trailer. A Stormwater Pollution Prevention Plan will be filed prior to commencement of construction. The written SWPPP will include additional requirements regarding BMP monitoring, inspection, and maintenance.

TEMPORARY STORMWATER SECTION

ATTACHMENT "J"

The project's limits of construction are primarily confined to the existing right-of-ways, easements, and project site. The project will begin with rough grading of WQ ponds, the streets and drainage conveyance. The utilities will be installed. The final installation of curbs and paving will be completed per phase of construction. The backfill behind the curbs and embankments will be revegetated with hydro-mulch mix. No structural soil stabilization will be required for this project.

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 on that portion has temporarily or permanently ceased. Where the initiation of stabilization measures by the 14th day after construction activity temporary or permanently cease is precluded by weather conditions, stabilization measures shall be initiated as soon as practicable.

Current anticipated schedule for construction is as follows:

Site Construction (temporary BMP's required)	7 months
Final Site Stabilization (final BMP's installed)	1 month

4. Copy of Notice of Intent (NOI)

TCEQ Office Use Only
Permit No.:
RN:
CN:
Region:

RESET FORM

Notice of Intent (NOI) for Stormwater Discharges Associated with Construction Activity under TPDES General Permit (TXR150000)

IMPORTANT:

- Use the INSTRUCTIONS to fill out each question in this form.
- Use the CHECKLIST to make certain you filled out all required information. Incomplete applications **WILL** delay approval or result in denial.
- Once processed your permit can be viewed at: http://www.tceq.texas.gov/goto/wq-dpa

ePERMITS: Sign up now for online NOI: https://www3.tceq.texas.gov/steers/
Pay a $225 reduced application fee by using ePermits.

APPLICATION FEE:

- You must pay the **$325** Application Fee to TCEQ for the paper application to be complete.
- Payment and NOI must be mailed to separate addresses.
- Did you know you can pay on line?
  - Go to http://www.tceq.texas.gov/goto/epay
  - Select Fee Type: GENERAL PERMIT CONSTRUCTION STORM WATER DISCHARGE NOI APPLICATION
- **Provide your payment information below, for verification of payment:**

☐ Mailed Check/Money Order Number: _____
Name Printed on Check: _____
Copy of check enclosed? ☐ Yes

☐ EPAY Voucher Number: _____
Is the Payment Voucher copy attached? ☐ Yes

RENEWAL: Is this NOI a Renewal of an existing General Permit Authorization? (Note: A permit cannot be renewed after June 3, 2013.)

☐ Yes The Permit number is: TXR15_____
(If a permit number is not provided, a new number will be assigned.)
☑ No

1) OPERATOR (Applicant)

a) If the applicant is currently a customer with TCEQ, what is the Customer Number (CN) issued to this entity? You may search for your CN at: http://www.tceq.texas.gov/goto/cr-customer

CN_____

b) What is the Legal Name of the entity (applicant) applying for this permit?
TF Arrowhead Ranch, L.P.
(The legal name must be spelled exactly as filed with the Texas Secretary of State, County, or in the legal document forming the entity.)

c) What is the contact information for the Operator (Responsible Authority)? The mailing address must be recognized by the US Postal Service (USPS). You may verify the address at: https://tools.usps.com/go/ZipLookupAction!input.action
Prefix (Mr. Ms. Miss): Mr.
First/Last Name: John Brian Suffix:
Title: Credential:
Phone Number: (512) 619-5406 Ext: Fax Number:
E-mail: jbrian@starwoodland.com
Mailing Address: 6310 Capital Drive, Suite 130
Internal Routing (Mail Code, Etc.):
City: Lakewood Ranch State: FL ZIP Code: 34202
If outside USA:
Territory: Country Code: Postal Code:

d) Indicate the type of Customer (The instructions will help determine your customer type):

☐ Individual	☐ Limited Partnership	☐ Sole Proprietorship-DBA
☐ Joint Venture	☐ General Partnership	☑ Corporation
☐ Trust	☐ Estate	☐ Federal Government
☐ State Government	☐ County Government	☐ City Government
☐ Other Government		

e) Independent Operator? (If governmental entity, subsidiary, or part of a larger corporation, check "No".)
☑ Yes ☐ No

f) Number of Employees:
☐ 0-20; ☐ 21-100; ☑ 101-250; ☐ 251-500; or ☐ 501 or higher

g) Customer Business Tax and Filing Numbers:
(REQUIRED for Corporations and Limited Partnerships. Not Required for Individuals, Government, or Sole Proprietors)
State Franchise Tax ID Number: 20180330283
Federal Tax ID: 824120377
Texas Secretary of State Charter (filing) Number:
DUNS Number (if known):

2) APPLICATION CONTACT

If TCEQ needs additional information regarding this application, who should be contacted?

Is the application contact the same as the applicant identified above?

☐ Yes, go to Section 3).

☑ No, complete section below

Prefix (Mr. Ms. Miss): Mr.
First/Last Name: Maher Harmouche Suffix:
Title: Engineer Credential: P.E.
Organization Name: Carlson, Brigance and Doering, Inc.
Phone Number: (512) 280-5160 Ext: Fax Number:
E-mail: maher@cbdeng.com
Mailing Address: 5701 W William Cannon
Internal Routing (Mail Code, Etc.):
City: Austin State: TX ZIP Code: 78749
Mailing Information if outside USA:
Territory: Country Code: Postal Code:

3) REGULATED ENTITY (RE) INFORMATION ON PROJECT OR SITE

If the site of your business is part of a larger business site or if other businesses were located at this site before yours, a Regulated Entity Number (RN) may already be assigned for the larger site. Use the RN assigned for the larger site. Search TCEQ's Central Registry to see if the larger site may already be registered as a regulated site at:
http://www.tceq.texas.gov/goto/cr-searchrn

If the site is found, provide the assigned Regulated Entity Reference Number and provide the information for the site to be authorized through this application below. The site information for this authorization may vary from the larger site information.

a) TCEQ issued RE Reference Number (RN): RN 107797524

b) Name of project or site (the name known by the community where located):
Arrowhead Ranch

c) In your own words, briefly describe the primary business of the Regulated Entity: (Do not repeat the SIC and NAICS code):
Residential Land Development

d) County (or counties if > 1)
Hays

e) Latitude: 30.200213 Longitude: -98.123628

f) Does the site have a physical address?

☐ Yes, complete Section A for a physical address.

☑ No, complete section B for site location information.

Section A: Enter the physical address for the site.
Verify the address with USPS. If the address is not recognized as a delivery address, provide the address as identified for overnight mail delivery, 911 emergency or other online map tools to confirm an address.

Physical Address of Project or Site:
Street Number: Street Name:
City: State: ZIP Code:

Section B: Enter the site location information.

If no physical address (Street Number & Street Name), provide a written location access description to the site. (Example: located 2 miles west from intersection of Hwy 290 & IH35 accessible on Hwy 290 South)

Located on Arrowhead Ranch BLVD of W. Hwy 290, approximately 2.5 miles west of the City of Dripping Springs. Phase III

City where the site is located or, if not in a city, what is the nearest city:
Dripping Springs

State: Texas ZIP Code where the site is located: 78620

4) GENERAL CHARACTERISTICS

a) Is the project/site located on Indian Country Lands?

☐ Yes - If the answer is Yes, you must obtain authorization through EPA, Region 6.

☑ No

b) Is your construction activity associated with a facility that, when completed, would be associated with the exploration, development, or production of oil or gas or geothermal resources?

☐ Yes - If the answer is Yes, you may be under jurisdiction of the Railroad Commission of Texas and may need to obtain authorization through EPA, Region 6.

☑ No

c) What is the Primary Standard Industrial Classification (SIC) Code that best describes the construction activity being conducted at the site?
Primary SIC Code: 1521

d) If applicable, what is the Secondary SIC Code(s):

e) What is the total number of acres disturbed? 15.38

f) Is the project site part of a larger common plan of development or sale?

☑ Yes - If the answer is Yes, the total number of acres disturbed can be less than 5 acres.

☐ No - If the answer is No, the total number of acres disturbed must be 5 or more. If the total number of acres disturbed is less than 5 then the project site does not qualify for coverage through this Notice of Intent. Coverage will be denied. See the requirements in the general permit for small construction sites.

g) What is the name of the first water body(s) to receive the stormwater runoff or potential runoff from the site?

Onion Creek

h) What is the segment number(s) of the classified water body(s) that the discharge will eventually reach?

Colorado River

i) Is the discharge into an MS4?

☐ Yes - If the answer is Yes, provide the name of the MS4 operator below.

_____

Note: The general permit requires you to send a copy of the NOI to the MS4 operator.

☑ No

j) Are any of the surface water bodies receiving discharges from the construction site on the latest EPA-approved CWA 303(d) List of impaired waters?

☑ Yes - If the answer is Yes, provide the name(s) of the impaired water body(s) below.

_____

☐ No

k) Is the discharge or potential discharge within the Recharge Zone, Contributing Zone, or Contributing Zone within the Transition Zone of the Edwards Aquifer as defined in 30 TAC Chapter 213?

☑ Yes - If the answer is Yes, complete certification below by checking "Yes."

☐ No

I certify that a copy of the TCEQ approved Plan required by the Edwards Aquifer Rule (30 TAC Chapter 213) is either included or referenced in the Stormwater Pollution Prevention Plan.

☑ Yes

5) CERTIFICATION

Check Yes to the certifications below. Failure to indicate Yes to ***ALL*** items may result in denial of coverage under the general permit.

a) I certify that I have obtained a copy and understand the terms and conditions of the Construction General Permit (TXR150000). ☑ Yes

b) I certify that the full legal name of the entity applying for this permit has been provided and is legally authorized to do business in Texas. ☑ Yes

c) I understand that a Notice of Termination (NOT) must be submitted when this authorization is no longer needed. ☑ Yes

d) I certify that a Stormwater Pollution Prevention Plan has been developed, will be implemented prior to construction and to the best of my knowledge and belief is compliant with any applicable local sediment and erosion control plans, as required in the general permit TXR150000. Note: For multiple operators who operate under a shared SWP3, the confirmation of an operator may be limited to its obligations under the SWP3 provided all obligations are confirmed by at least one operator. ☑ Yes

Operator Certification:

I, John Brian (Typed or printed name) Owner (Title)

certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

I further certify that I am authorized under **30 Texas Administrative Code §305.44** to sign and submit this document, and can provide documentation in proof of such authorization upon request.

Signature: _____ Date: _____

(Use blue ink)

5. Agent Authorization Form (TCEQ-0599)

Owner Authorization Form

Texas Commission on Environmental Quality
for Required Signature
Edwards Aquifer Protection Program
Relating to 30 TAC Chapter 213
Effective June 1, 1999

Land Owner Authorization

I, Bill Kouwenhoven of Arrowhead Ranch Master Community, Inc.
Land Owner Signatory Name — Land Owner Name (Legal Entity or Individual)

am the owner of the property located at

Arrowhead Ranch Phase 3, Blk D, Lot 52

Legal description of the property referenced in the application

and am duly authorized in accordance with §213.4(c)(2) and §213.4(d)(1) or §213.23(c)(2) and §213.23(d) relating to the right to submit an application, signatory authority, and proof of authorized signatory.

I do hereby authorize TF Arrowhead Ranch, LP.
Applicant Name (Legal Entity or Individual)

to conduct Contributing Zone Plan Modification
Description of the proposed regulated activities

at Arrowhead Ranch Phase 3, Blk D, Lot 52.
Precise location of the authorized regulated activities

Land Owner Acknowledgement

I understand that Arrowhead Ranch Master Community, Inc.
Land Owner Name (Legal Entity or Individual)

Is ultimately responsible for compliance with the approved or conditionally approved Edwards Aquifer protection plan and any special conditions of the approved plan through all phases of plan implementation even if the responsibility for compliance and the right to possess and control the property referenced in the application has been contractually assumed by another legal entity. I further understand that any failure to comply with any condition of the executive director's approval is a violation is subject to administrative rule or orders and penalties as provided under §213.10 (relating to Enforcement). Such violation may also be subject to civil penalties and injunction.

Land Owner Signature

Bill Kouwenhoven — 4/24/24

Land Owner Signature — Date

THE STATE OF § Florida

County of § Manatee

BEFORE ME, the undersigned authority, on this day personally appeared Bill Kouwenhoven 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 24 day of April 2024

NOTARY PUBLIC

LORI E. JOYCE
MY COMMISSION # HH 400872
EXPIRES: September 19, 2027

Lori E. Joyce

Typed or Printed Name of Notary

MY COMMISSION EXPIRES: 9/19/27

Attached: (Mark all that apply)

- ☐ Lease Agreement
- ☐ Signed Contract
- ☐ Deed Recorded Easement
- ☐ Other legally binding document

Applicant Acknowledgement

I, John Brian of TF Arrowhead Ranch, LP.

Applicant Signatory Name — Applicant Name (Legal Entity or Individual)

acknowledge that Arrowhead Ranch Master Community, Inc.

Land Owner Name (Legal Entity or Individual)

has provided TF Arrowhead Ranch, LP.

Applicant Name (Legal Entity or Individual)

with the right to possess and control the property referenced in the Edwards Aquifer protection plan.

I understand that TF Arrowhead Ranch, LP.

Applicant Name (Legal Entity or Individual)

is contractually responsible for compliance with the approved or conditionally approved Edwards Aquifer protection plan and any special conditions of the approved plan through all phases of plan implementation. I further understand that failure to comply with any condition of the executive director's approval is a violation is subject to administrative rule or orders and penalties as provided under §213.10 (relating to Enforcement). Such violation may also be subject to civil penalties and injunction.

Applicant Signature

Applicant Signature — Date: 4/25/24

THE STATE OF § Florida

County of § Manatee

BEFORE ME, the undersigned authority, on this day personally appeared John Brian 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 25 day of April

NOTARY PUBLIC

Lori E. Joyce

Typed or Printed Name of Notary

MY COMMISSION EXPIRES: 9/19/27

NOTARY PUBLIC STATE OF FLORIDA
LORI E. JOYCE
MY COMMISSION # HH 400872
EXPIRES: September 19, 2027

Agent Authorization Form
For Required Signature
Edwards Aquifer Protection Program
Relating to 30 TAC Chapter 213
Effective June 1, 1999

I John Brian,
Print Name

Authorized Signatory,
Title - Owner/President/Other

of TF Arrowhead Ranch, L.P.,
Corporation/Partnership/Entity Name

have authorized Maher Harmouche
Print Name of Agent/Engineer

of Carlson, Brigance and Doering, Inc.
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

4/2/2024
Date

THE STATE OF Florida §

County of Manatee §

BEFORE ME, the undersigned authority, on this day personally appeared John Brian 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 2 day of April, ____.

NOTARY PUBLIC

Lori E. Joyce
Typed or Printed Name of Notary

MY COMMISSION EXPIRES: 9/19/27

NOTARY PUBLIC STATE OF FLORIDA
LORI E. JOYCE
MY COMMISSION # HH 400872
EXPIRES: September 19, 2027

5. Application Fee Form (TCEQ-0574)

Application Fee Form

Texas Commission on Environmental Quality
Name of Proposed Regulated Entity: Arrowhead Ranch
Regulated Entity Location: 2303 W Hwy 290, Dripping Spring, TX 78620
Name of Customer: TF Arrowhead Ranch, L.P.
Contact Person: John Brian Phone: 512-619-5406
Customer Reference Number (if issued):CN _____
Regulated Entity Reference Number (if issued):RN 107797524
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	6.689 Acres	$ 3,000
Water Pollution Abatement Plan, Contributing Zone Plan: Non-residential	Acres	$
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: _____

Date: 03/28/2024

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

7. Core Data Form (TCEQ-10400)

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		**RN 107797524**

SECTION II: Customer Information

4. General Customer Information | **5. Effective Date for Customer Information Updates** (mm/dd/yyyy) 3/28/2024

☐ 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:*

TF Arrowhead Ranch, L.P.

7. TX SOS/CPA Filing Number	**8. TX State Tax ID** (11 digits)	**9. Federal Tax ID** (9 digits)	**10. DUNS Number** *(if applicable)*
	20180330283	824120377	

11. Type of Customer: ☒ Corporation ☐ Individual Partnership: ☐ General ☐ Limited
Government: ☐ City ☐ County ☐ Federal ☐ Local ☐ State ☐ Other ☐ Sole Proprietorship ☐ Other:

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:

6310 Capital Drive, Suite #130

City	Lakewood Ranch	**State**	FL	**ZIP**	34202	**ZIP + 4**	

16. Country Mailing Information *(if outside USA)*	**17. E-Mail Address** *(if applicable)*

18. Telephone Number	**19. Extension or Code**	**20. Fax Number** *(if applicable)*

(512) 619-5406		( ) -

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.)*

Arrowhead Ranch

23. Street Address of the Regulated Entity: ***(No PO Boxes)***								
	City		**State**		**ZIP**		**ZIP + 4**	
24. County								

If no Street Address is provided, fields 25-28 are required.

25. Description to Physical Location:	Located on Arrowhead Ranch Blvd. off W. Hwy 290, approx. 2.5 miles West of the City of Dripping Springs				
26. Nearest City			**State**	**Nearest ZIP Code**	
Dripping Springs			TX	78746	

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:	30.200213		**28. Longitude (W) In Decimal:**	-98.123628	
Degrees	Minutes	Seconds	Degrees	Minutes	Seconds
30	12	19N	98	07	27W

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)
1521			

33. What is the Primary Business of this entity? *(Do not repeat the SIC or NAICS description.)*

Single Family Residential Development

34. Mailing Address:	**TF Arrowhead Ranch, L.P.**							
	6310 Capital Drive, Suite #130							
	City	**Lakewood Ranch**	**State**	**FL**	**ZIP**	**34202**	**ZIP + 4**	
35. E-Mail Address:	**jbrian@starwoodland.com**							

36. Telephone Number	**37. Extension or Code**	**38. Fax Number** *(if applicable)*
(512) 619-5406		( ) -

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:	Maher Harmouche	**41. Title:**	Engineer

42. Telephone Number	**43. Ext./Code**	**44. Fax Number**	**45. E-Mail Address**
(512 **)** 280-5160		**( )** -	maher@cbdeng.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:	Carlson, Brigance and Doering, Inc.	**Job Title:**	Engineer	
Name *(In Print):*	Maher Harmouche		**Phone:**	**(** 512 **)** 280- **5160**
Signature:	M. Harmouche		**Date:**	**04.30.2024**