Chapel Hill Phase II

Water Pollution Abatement Plan
Application

Stantec

Prepared for:
TCEQ
Austin Regional Office

Prepared by:
Paul Hames, P.E.

1/12/2024

TBPE No. F-6324
TBPLS No. 10194230

Project #222012278

January 12, 2024

Sign-off Sheet

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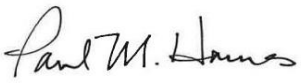
Prepared by  _____
(signature)

Paul Hames, P.E.

Reviewed by  _____
(signature)

Zhongyue Mao, P.E.

CHAPEL HILL PHASE II

January 12, 2024

Water Pollution Abatement Plan
Table of Contents

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: Chapel Hill–Phase II						**2. Regulated Entity No.: 111787560**			
3. Customer Name: AMFP V Chapel Hill II LLC						**4. 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):**		17.425	
9. Application Fee:	$6,500		**10. Permanent BMP(s):**			2 batch detention ponds			
11. SCS (Linear Ft.):	0		**12. AST/UST (No. Tanks):**			0			
13. County:	Williamson		**14. Watershed:**			Brushy Creek			

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.)	___	___	_x_
Region (1 req.)	___	___	_x_
County(ies)	___	___	_x_
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 _x_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. Paul M. Hames, P.E.
Print Name of Customer/Authorized Agent Paul M Hames, PE Digitally signed by Paul M Hames, PE DN: C=US, E=paul.hames@stantec.com, O="Stantec Consulting Services, Inc.", OU=Community Development BC 2220, CN="Paul M Hames, PE" Location: Dallas Reason: I am the author of this document Contact info: 2144732483 Date: 2024.01.12 14:50:44-06'00' 1/12/2024
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):	

Section I

General Information Form (TCEQ-0587)

General Information Form

Texas Commission on Environmental Quality

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

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

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

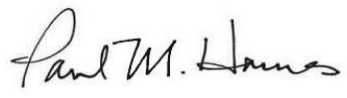
Signature

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

Print Name of Customer/Agent: Paul M. Hames, P.E.

Date: 01/12/2024

Signature of Customer/Agent:



Project Information

1. Regulated Entity Name: Chapel Hill Phase II
2. County: Williamson
3. Stream Basin: Brushy Creek
4. Groundwater Conservation District (If applicable): N/A
5. Edwards Aquifer Zone:

   ☒ Recharge Zone
   ☒ Transition Zone

6. Plan Type:

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

7. Customer (Applicant):

   Contact Person: Erik Boraks
   Entity: AMFP V Chapel Hill II LLC
   Mailing Address: 13740 Midway Road #804
   City, State: Dallas, TX Zip: 75244
   Telephone: 972-385-1676 FAX: _____
   Email Address: Erik.Boraks@dukecompanies.com

8. Agent/Representative (If any):

   Contact Person: Paul M. Hames, P.E.
   Entity: Stantec Consulting Services Inc.
   Mailing Address: 6080 Tennyson Parkway, Suite 200
   City, State: Plano, TX Zip: 75024
   Telephone: 214-538-2483 FAX: _____
   Email Address: Paul.Hames@stantec.com

9. Project Location:

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

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

    North side of Westinghouse Rd, 0.5 miles east of the intersection of Interstate 35 and Westinghouse Rd.

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

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

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

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

☒ Survey staking will be completed by this date: TBD

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

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

15. Existing project site conditions are noted below:

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

Prohibited Activities

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

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

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

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

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

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

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

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

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

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

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

Administrative Information

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

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

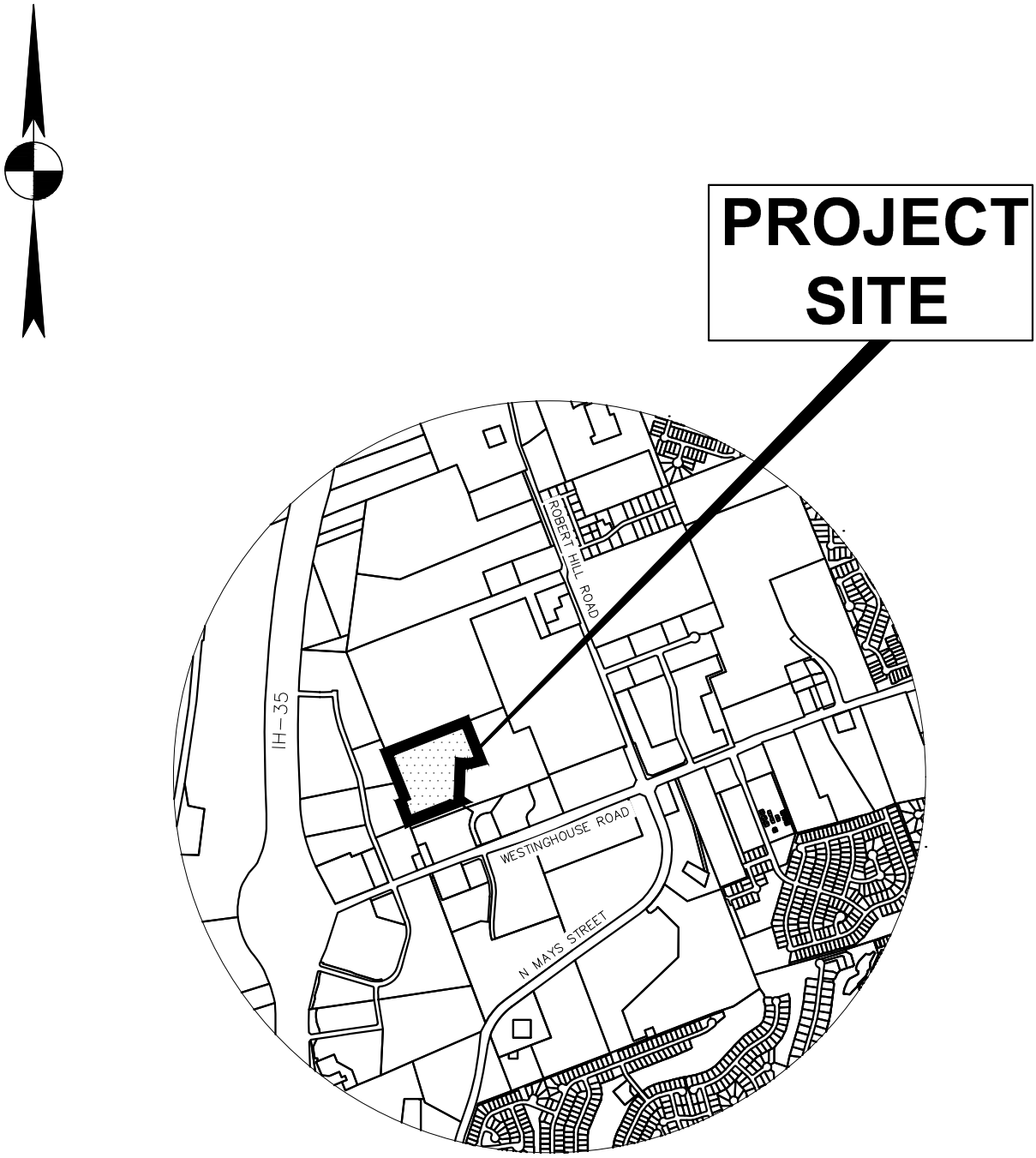
19. ☒ Application fees are due and payable at the time the application is filed. If the correct fee is not submitted, the TCEQ is not required to consider the application until the correct fee is submitted. Both the fee and the Edwards Aquifer Fee Form have been sent to the Commission's:

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

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

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

Attachment A – Road Map



SITE LOCATION MAP

N.T.S.

Stantec
1905 Aldrich Street, Suite 300
Austin, Texas 78723-3544
Tel. (512) 328-0011 Fax (512) 328-0325
TBPE # F-6324 TBPLS # F-10194230

401 WESTINGHOUSE ROAD
GEORGETOWN, TEXAS, 78626

DUKE, INC.

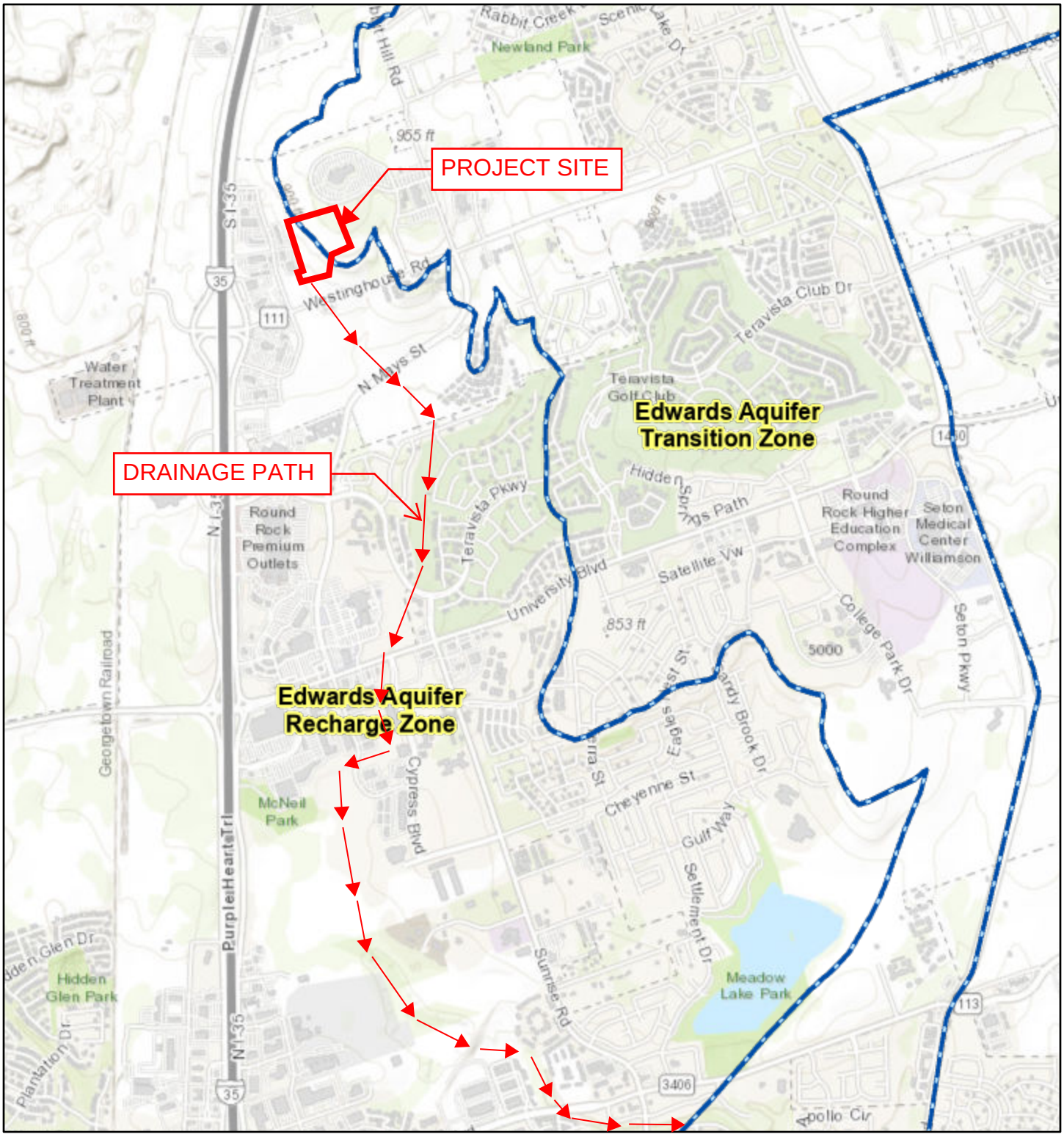
SITE LOCATION MAP

DATE: 10/18/2021	SCALE: N.T.S.	DRAWN BY: ZM	FILE:	PROJECT No. 222012278

V:\2220\active\222012278\civil\phase_01\drawing\exhibit\222012278_location_map.dwg modified by zomao on Jan 10, 24 3:45 PM

Attachment B – USGS/Edwards Recharge Zone Map

Chapel Hill Phase 2



2/15/2022, 9:27:17 AM

1:36,112

0 0.28 0.55 1.1 mi

0 0.42 0.85 1.7 km

- Edwards Aquifer Label
- Edwards Aquifer Boundary
- Edwards Aquifer Boundary central line
- TX Counties
- 7.5 Minute Quad Grid
- TCEQ_EDWARDS_OFFICIAL_MAPS

Attachment C – Project Description

The 17.425-acre site, platted as Lot 1 of the Final Plat of Chapel Hill Subdivision Section 2 is located on the north side of Westinghouse Road, about a half mile east of the intersection of Interstate 35 and Westinghouse Road in Georgetown, Texas. Chapel Hill Apartments Phase 2 will consist of 10 apartment buildings and a club house with associated drives, sidewalks, parking, drainage, water quality and detention pond, and utilities. The offsite area to the south of the development will consist of an access driveway with deceleration lane and an additional water quality and detention pond. The existing condition of the site consists of natural grass land with a stock pond in the southwest corner of the property. Additionally, there is an abandoned residential home and barns enclosed with a fence that are all to be removed and surrounded by brush, weeds, and grass mixture with a tree population. The stock pond will be removed, and stormwater detention will be provided by an onsite proposed detention pond. The site runoff drains to a box culvert under Westinghouse Road and eventually releases into Brushy Creek. The site slopes from northeast to southwest, generally, with slopes ranging from 5%-25%. The project is in the City Limits of Georgetown and is located over both the Edwards Aquifer Recharge and Transition Zones. Development of this project is designed in accordance with the City of Georgetown Unified Development Code (UDC) and the TCEQ RG-348 Technical Guidance Manual.

Temporary water quality controls will be provided during construction of the site improvements and will consist of silt fence, rock berms, inlet protection, a temporary sediment pond, concrete truck washout pits, stabilized construction entrances, and dust control.

Permanent water quality control for the onsite development will be provided by a water quality pond. This water quality/detention pond will be located on Lot 1, replacing the existing stock pond. Offsite water quality control will be provided by another water quality pond south of Lot 1 and north of Westinghouse Road. Both ponds are designed to remove 85% of the increased TSS from the contributing drainage basins, as stipulated by the City of Georgetown UDC, which exceeds the required removal rate of 80% mandated by TCEQ. The water quality ponds have been designed for the future impervious cover associated with Lot 1.

The total limits of construction for this project, including offsite development, is approximately 19.9 acres.

Section II

Geologic Assessment Form (TCEQ-0585)

Narrative Description of Site Specific Geology for the Approximately 54-acre Chapel Hill Tract and Offsite Water and Wastewater Utility Lines, Williamson County, Texas

Prepared for:

Halff Associates, Inc

Prepared by:

Cambrian Environmental

April 22nd, 2020

NARRATIVE DESCRIPTION OF SITE SPECIFIC GEOLOGY FOR THE APPROXIMATELY 54-ACRE CHAPEL HILL TRACT AND OFFSITE WATER AND WASTERWATER UTILITY LINES, WILLIAMSON COUNTY, TEXAS

Prepared for

HALFF ASSOCIATES, INC.
9500 Amberglen Boulevard
Building F, Suite 125
Austin, Texas 78729

Prepared by

Craig Crawford, P.G.

CAMBRIAN ENVIRONMENTAL
4422 Pack Saddle Pass
Suite 204
Austin, Texas 78745

Texas Geoscience Firm Registration # 50484

As a licensed professional geoscientist I attest that the contents of this report are complete and accurate to the best of my knowledge.

April 22nd, 2020

Geologic Assessment

Texas Commission on Environmental Quality

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

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

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

Signature

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

Print Name of Geologist: Craig Crawford, PG Telephone: 512.705.5541

Date: 22 April 2020 Fax: _____

Representing: Cambrian Environmental (Tx Geo Firm # 50484) (Name of Company and TBPG or TBPE registration number)

Signature of Geologist:

Regulated Entity Name: Chapel Hill (54-acre Tract and Offsite Wastewater Line)

Project Information

1. Date(s) Geologic Assessment was performed: 16 May & 21 August 2019, 10 March 2020
2. Type of Project:
   - ☒ WPAP
   - ☒ SCS
   - ☐ AST
   - ☐ UST
3. Location of Project:
   - ☒ Recharge Zone
   - ☒ Transition Zone
   - ☐ Contributing Zone within the Transition Zone

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

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

Table 1 - Soil Units, Infiltration Characteristics and Thickness

Soil Name	Group*	Thickness(feet)
Austin-Whitewright	C	< 4
Ferris-Heiden	D	> 5
Heiden	D	> 5
Houston	D	> 5

** Soil Group Definitions (Abbreviated)*

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

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

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

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

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

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

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

   Applicant's Site Plan Scale: 1" = 40'
   Site Geologic Map Scale: 1" = 40'
   Site Soils Map Scale (if more than 1 soil type): 1" = 1000'

9. Method of collecting positional data:

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

10. ☒ The project site and boundaries are clearly shown and labeled on the Site Geologic Map.

11. ☒ Surface geologic units are shown and labeled on the Site Geologic Map.

12. ☒ Geologic or manmade features were discovered on the project site during the field investigation. They are shown and labeled on the Site Geologic Map and are described in the attached Geologic Assessment Table.

    ☐ Geologic or manmade features were not discovered on the project site during the field investigation.

13. ☒ The Recharge Zone boundary is shown and labeled, if appropriate.

14. All known wells (test holes, water, oil, unplugged, capped and/or abandoned, etc.): If applicable, the information must agree with Item No. 20 of the WPAP Application Section.

    ☒ There are 3 (#) wells present on the project site and the locations are shown and labeled. (Check all of the following that apply.)
    - ☐ The wells are not in use and have been properly abandoned.
    - ☒ The wells are not in use and will be properly abandoned.
    - ☐ The wells are in use and comply with 16 TAC Chapter 76.

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

Administrative Information

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

NARRATIVE DESCRIPTION OF SITE SPECIFIC GEOLOGY FOR THE APPROXIMATELY 54-ACRE CHAPEL HILL TRACT AND OFFSITE WATER AND WASTEWATER UTILITY LINES, WILLIAMSON COUNTY, TEXAS

PROJECT DESCRIPTION

This narrative Geologic Assessment accompanies the Texas Commission on Environmental Quality (TCEQ) Geologic Assessment form TCEQ-0585 completed for the approximately 54-acre Chapel Hill tract. The project site is located on the north side of Westinghouse Road, approximately 0.35 miles east of Interstate Highway (IH) 35. Additionally, this report covers an offsite wastewater line associated with this project. This utility line runs south-southeast from Westinghouse Road, and extends past North Mays Street towards an existing development along Centerbrook Place (see Project Location Map).

METHODOLOGY

Two Cambrian Environmental Registered Professional Geoscientists (License #s 10791 & 1350) and two karst technicians conducted a field survey for a Geologic Assessment on May 16th 2019, and a second site visit to complete the field survey for the wastewater line portion of the project occurred on August 21st 2019. A third site visit and survey were conducted on March 20th 2020 to survey the alignment of the offsite waterline. The pedestrian survey was completed by walking parallel transects spaced approximately 50 feet apart as directed by the TCEQ in the Instructions to Geologists for Geologic Assessments on the Edwards Aquifer Recharge/Transition Zones (Rev. 10-01-04). Closer spacing was used where vegetation inhibited clear observation. All potential karst features, including depressions, holes, and animal burrows, were carefully examined for evidence of subsurface extent. A number of techniques were used for this effort, including probing with a digging implement to determine the thickness and consistency of fill material and feeling for the presence of air flow, which may indicate the presence of a sub-surface void space. Other techniques included making observations of any notable characteristics of the feature site such as the presence of various types of vegetation or a semi-circular burrow mound produced by the activities of small mammals. The locations of any discovered features were recorded with a handheld GPS unit and were also marked on-site with pink flagging tape. Cambrian also conducted due diligence activities as called for under the City of Georgetown Edwards Aquifer Recharge Zone Water Quality Ordinance ("the Ordinance").

RESULTS

Soils

Soils mapped within the project area include the Austin-Whitewright complex (AwC2), Ferris-Heiden complex (FhE), Heiden (HeD2, HsE), and Houston (HuB, HuC2) series soils (see Site Soils Map).[1] The Austin-Whitewright series soils are within the "C" classification of the hydrologic soil groups. Type "C" soils have a slow infiltration rate (high runoff potential) when thoroughly wet. The Ferris-Heiden, Heiden, and Houston series soils are within the "D" classification of the hydrologic soil groups. Type "D" soils have a very slow infiltration rate (very high runoff potential) when thoroughly wet.

[1] United States Department of Agriculture, Soil Conservation Service, Soil Survey of Williamson County, Texas, 1983.

Geology

The project site is located partially within the Edwards Aquifer Recharge Zone, and partially within the Edwards Aquifer Transition Zone. Generally, the Recharge Zone is the area where the stratigraphic units constituting the Edwards Aquifer are outcropping at the surface, and where permeable features create the potential for recharge of surface waters into the aquifer. The Transition Zone is where geologic formations outcrop in proximity to the Recharge Zone, and where geologic features may present possible avenues of recharge of surface waters to the aquifer. The Transition Zone includes portions of the Del Rio Clay, Buda Limestone, Eagle Ford Group, and Austin Chalk.

The bedrock lithologies underlying and outcropping in the 54-acre portion of the project area are Cretaceous in age and consist of the Eagle Ford Group, the Buda Limestone, and the Del Rio Clay, which are stratigraphically above the units that comprise the Edwards Aquifer (see Project Geologic Map, Sheet 1 of 3). The bedrock lithologies underlying the wastewater line portion of the project area consist of the Del Rio Clay and the Georgetown Limestone (see Project Geologic Map, Sheets 2 & 3). The geology of this area has been mapped most recently at a useful scale by Collins (2005), and we find his interpretation of the geology to be generally accurate.[2]

Recharge into the aquifer primarily occurs in areas where the Edwards Group and Georgetown Formation are exposed at the surface, and both of these units are absent in outcrop on the property. Most recharge is from direct infiltration via precipitation and streamflow loss. Recharge occurs predominantly along secondary porosity features such as faults, fractures, and karst features (caves, solution cavities, sinkholes, etc.). Karst features are commonly formed along joints, fractures, and bedding plane surfaces in the Edwards Group. No karst features on any type were discovered during the pedestrian survey, and very little outcropping bedrock was observed due to the generally thick soil cover. The alignment of one mapped fault crosses through the wastewater line portion of the project (see Project Geologic Map, Sheet 3 of 3), however no trace of this fault was observable in the field. This portion of the project area has a thick layer of clayey soil (Houston Black clay) over the bedrock, and the location of this fault was not able to be verified.

Three wells were discovered during the pedestrian survey. However, a review of the Texas Water Development Board's online Groundwater Data Viewer[3] did not produce any results or data regarding any documented ground water wells located on this the property.

Site Hydrogeologic Assessment

In the absence of discrete recharge features, the likelihood of surface water infiltrating on this property and contributing to the main body of the aquifer is thought to be very low. This is further supported by the lack of the Edwards Limestone and Georgetown Limestone outcrop on the property. While the likelihood is low, should any karst features be discovered during the construction phase of the project, they should be reported to TCEQ and have appropriate mitigation measures emplaced.

[2] Collins, E.W., 2005, Geologic Map of the West Half of the Taylor 30x60 Quadrangle: Central Texas Urban Corridor, Encompassing Round Rock, Georgetown, Salado, Briggs, Liberty Hill, and Leander. Bureau of Economic Geology, The University of Texas at Austin. Austin, Texas 78713-8924.

[3] https://www2.twdb.texas.gov/apps/waterdatainteractive/groundwaterdataviewer

City of Georgetown Ordinance

No springs were identified on the property during the pedestrian survey, and therefore no occupied site protection, or spring buffer protection measures will be required for this property. One mapped stream occurs in the wastewater line portion of the project area (see Project Geologic Map, sheets 2 & 3), however this channel appears to have been highly modified in the past by the installation two impoundment ponds are present near the headwaters of this draw. This mapped stream consists of a very shallow drainage that was dry and overgrown with vegetation during both site visits, and no flowing water was observed during either site visit in spite of recent rain events. It appears that this drainage may only flow if the two upstream impoundment ponds overflow. Any water that may potentially flow in this short section of this drainage draw, flows to the south into an existing series stormwater control structures and ponds associated with the existing subdivision to the south of this project. In accordance with the Ordinance, the construction of certain improvements may be subject to stated restrictions. This includes wastewater facilities, provided that the wastewater utility shall not be located below the normal highwater elevation within the channel of a stream, except at crossings of the stream.

All regulated activities within the recharge zone must follow water quality best management practices, and development of the property will need to comply with the water quality protection measures as outlined in Section 8 of the Ordinance.

Feature Descriptions

F-1 The feature consists of a water well. It is unknown if the well is still actively in use, or if it will be utilized during the proposed development of the tract. The depth of this well is unknown. If the well is not intended to be utilized, it should be properly abandoned by a licensed well driller prior to the construction phase of the project. (GPS: 30.58142, -97.68533)

F-2 The feature consists of a closed depression that measures approximately 10 feet in diameter by less than 1 foot deep. The feature is lined with limestone cobbles, bricks, and concrete; appears to be a relic of past land clearing, or other activities, associated with the existing homestead on the property. The feature does not appear to be karst in origin. (GPS: 30.58129, -97.68481)

F-3 The feature consists of limestone block cistern, and appears to have been used in the past for livestock or in association with the homestead. (GPS: 30.58184, -97.68411)

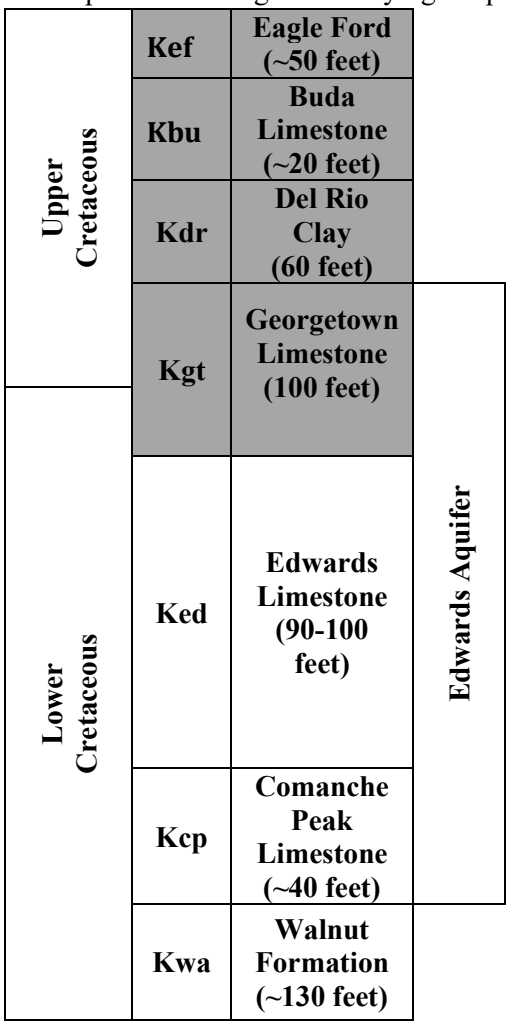
F-4 The feature consists of a water well. It is unknown if the well is still actively in use, or if it will be utilized during the proposed development of the tract. The depth of this well is unknown. If the well is not intended to be utilized, it should be properly abandoned by a licensed well driller prior to the construction phase of the project. (GPS: 30.58169, -97.68427)

F-5 The feature consists of a water well. It is unknown if the well is still actively in use, or if it will be utilized during the proposed development of the tract. The depth of this well is unknown. If the well is not intended to be utilized, it should be properly abandoned by a licensed well driller prior to the construction phase of the project. (GPS: 30.58105, -97.68548)

Fault One fault is mapped as crossing through the wastewater line portion of the project area. No traces of this fault were directly observable in the field, and therefore the location was not verifiable during the survey. This portion of the project area is underlain with thick clayey soils of the Houston Black series. Beneath the thick soil cover, the bedrock geology is mapped as the Del Rio Clay on east (downthrown) side of the fault, and the Georgetown Limestone on the west side of the fault, however no bedrock outcrop was observed in this portion of the project area. (inferred GPS: 30.57435, -97.68161)

Stratigraphic Column for the Approximately 54-acre Chapel Hill Tract

*Shaded areas represent lithologies underlying the project area



GEOLOGIC ASSESSMENT TABLE

PROJECT NAME: 54-acre Chapel Hill Tract

LOCATION			FEATURE CHARACTERISTICS											EVALUATION			PHYSICAL SETTING		
1A	1B *	1C*	2A	2B	3	4			5	5A	6	7	8A	8B	9	10		11	12
FEATURE ID	LATITUDE	LONGITUDE	FEATURE TYPE	POINTS	FORMATION	DIMENSIONS (FEET)			TREND (DEGREES)	DIP	DENSITY (NO/FT)	APERTURE (FEET)	INFILL	RELATIVE INFILTRATION RATE	TOTAL	SENSITIVITY		CATCHMENT AREA (ACRES)	TOPOGRAPHY
						X	Y	Z		10						<40	≥40	<1.6	≥1.6	
F-1	30.58142	-97.68533	MB	30									X	5	35	X		X		Hillside
F-2	30.58129	-97.68481	CD	5		10	10	1					C	10	15	X		X		Hillside
F-3	30.58184	-97.68411	MB	30									X	5	35	X		X		Hillside
F-4	30.58169	-97.68427	MB	30									X	5	35	X		X		Hillside
F-5	30.58105	-97.68548	MB	30									X	5	35	X		X		Hillside
Fault	30.57435	-97.68161	F	20					N20E	10			F,V	5	35	X		X		Hillside

* DATUM: WGS84

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

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

12 TOPOGRAPHY
Cliff, Hilltop, Hillside, Drainage, Floodplain, Streambed

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

Date: 22 April 2020

Sheet 1 of 1

STATE OF TEXAS
CRAIG CRAWFORD
GEOLOGY
NO. 10791
LICENSED
PROFESSIONAL GEOSCIENTIST

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

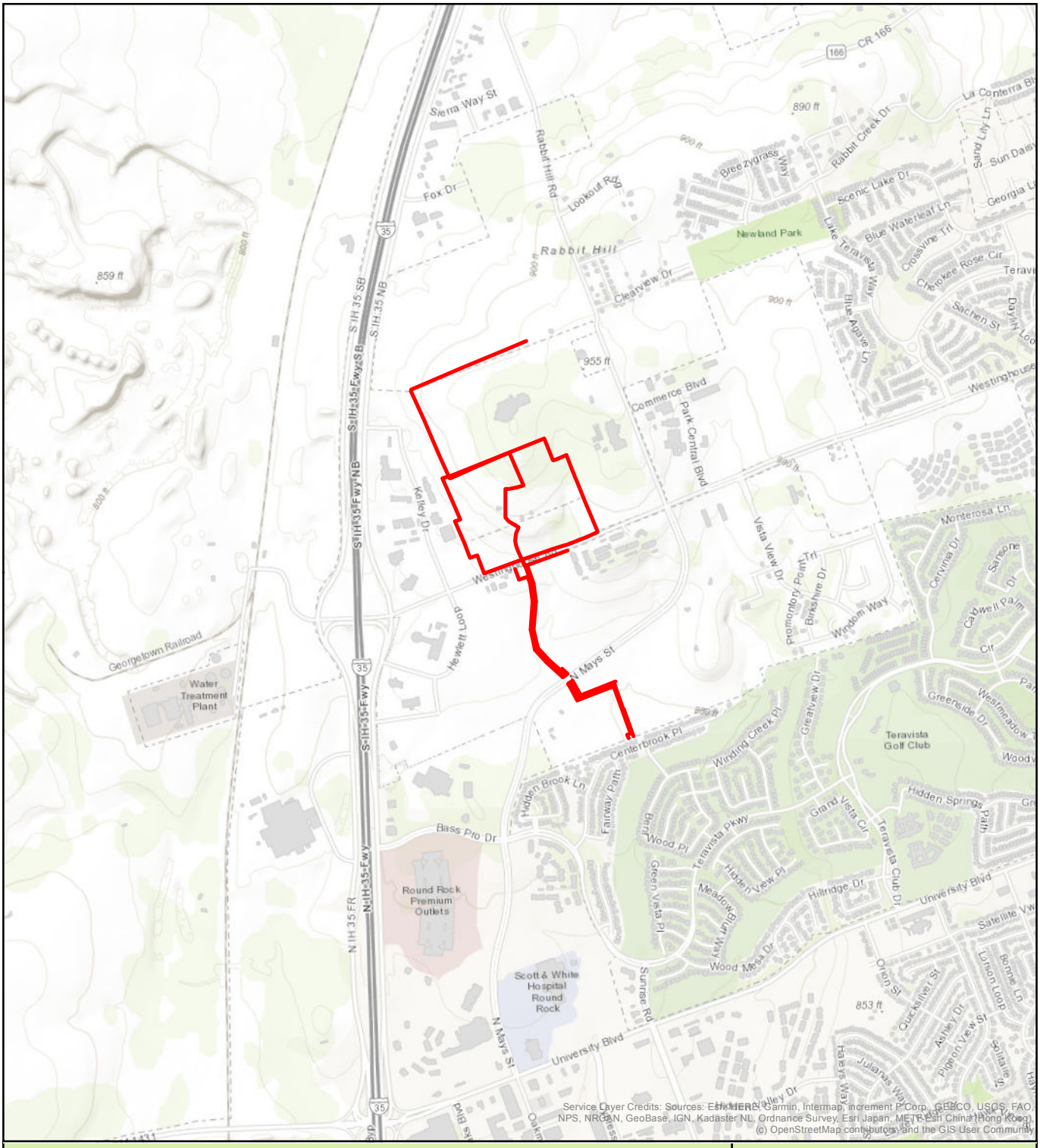
Feature F-1, water well

Feature F-2, non-karst closed depression lined with limestone cobbles.

Feature F-3, cistern

Feature F-4, well and pressure tank

Feature F-5, well (located inside structure)



Project Location Map

Chapel Hill Project
4/09/2020

Cambrian

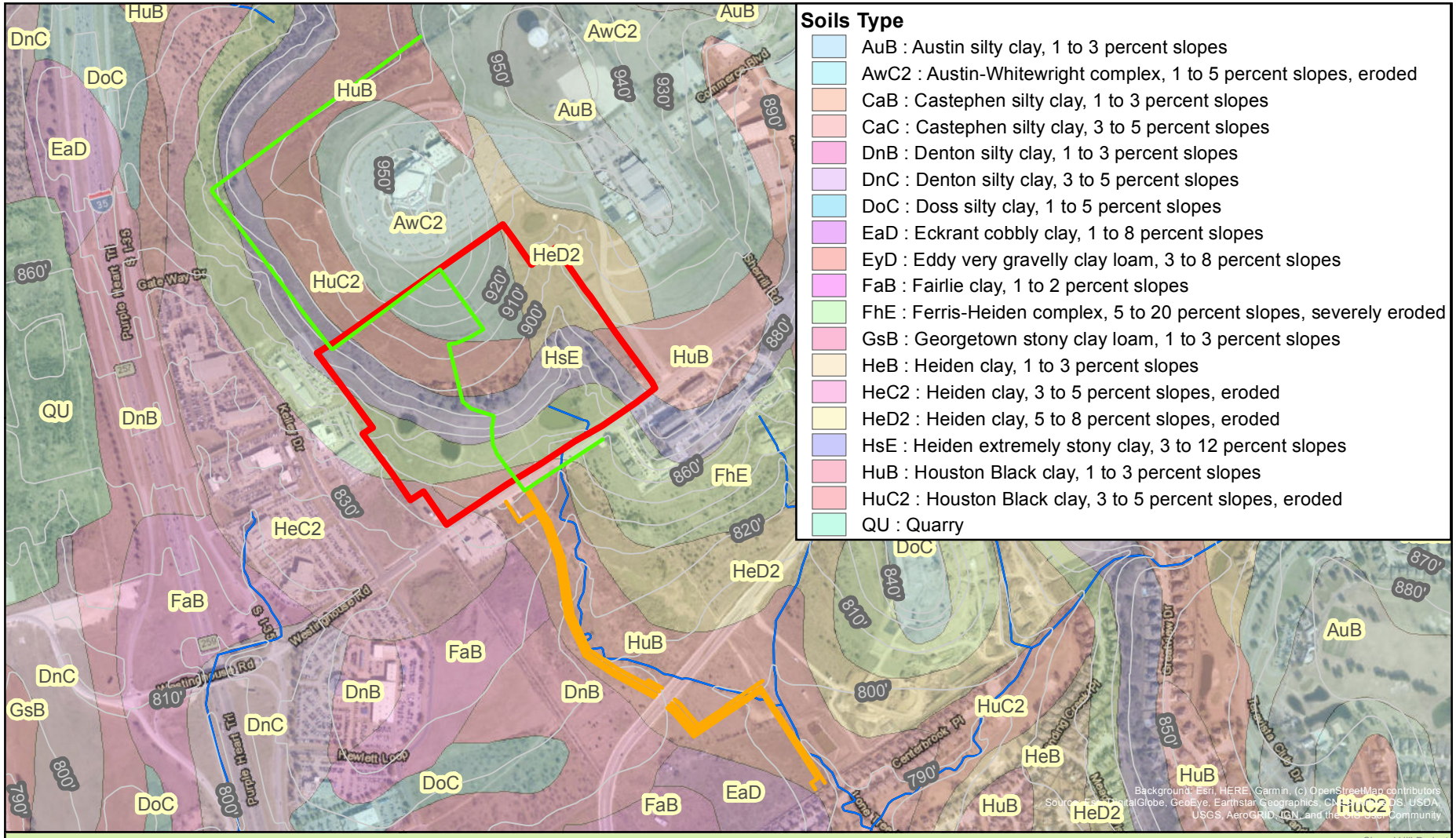
N
W E
S

0 2,400
Feet
0 800
Meters

Map Key

Project Area

Williamson County, Texas



Soils of the Project Area

Cambrian

0 1,000 Feet

0 300 Meters

N W E S

Chapel Hill Project
11/11/2019

Map Key

- Project Area
- Wastewater Alignment
- Waterline
- Stream
- Contour Line

Project Geologic Map

Cambrian

STATE OF TEXAS
CRAIG CRAWFORD
GEOLOGY
NO. 10791
LICENSED
PROFESSIONAL GEOSCIENTIST
22 Apr 1 2020

Map Key
- Project Area
- Waterline
- Geologic or Man-made Feature
- Geologic Unit
- Kef - Eagle Ford Group
- Kdr - Del Rio Clay
- Kbu - Buda Limestone
- 10-Foot Elevation Contour
- Stream

SHEET 1 OF 4

0 40
0 Feet 10
Meters

1 inch = 40 feet

Background Layer Credits: Source: ESRI Aerial Imagery

Kbu

Edwards Aquifer
Transition Zone

Kef

Edwards Aquifer
Transition Zone

F-1

F-2

F-3

F-4

F-5

Edwards Aquifer
Recharge Zone

Kdr

Edwards Aquifer
Recharge Zone

Project Geologic Map

Cambrian

N
W E
S

Map Key

- Project Area
- Wastewater Alignment
- Waterline
- Geologic Unit
  - Kgt - Georgetown Limestone
  - Kdr - Del Rio Clay
- 10-Foot Elevation Contour
- Stream

SHEET 2 OF4

0 40
0 Feet 10
Meters

1 inch = 40 feet

Background Layer Credits: Source: ESRI Aerial Imagery

STATE OF TEXAS
CRAIG CRAWFORD
GEOLOGY
NO. 10791
LICENSED
PROFESSIONAL GEOSCIENTIST

22 April 2020

Project Geologic Map

Cambrian

N
W E
S

Map Key

- Wastewater Alignment
- Geologic Unit
  - Kgt - Georgetown Limestone
  - Kdr - Del Rio Clay
- Fault
- 10-Foot Elevation Contour
- Stream

SHEET 3 OF4

0 40
0 Feet 10
Meters

1 inch = 40 feet

Background Layer Credits: Source: ESRI Aerial Imagery

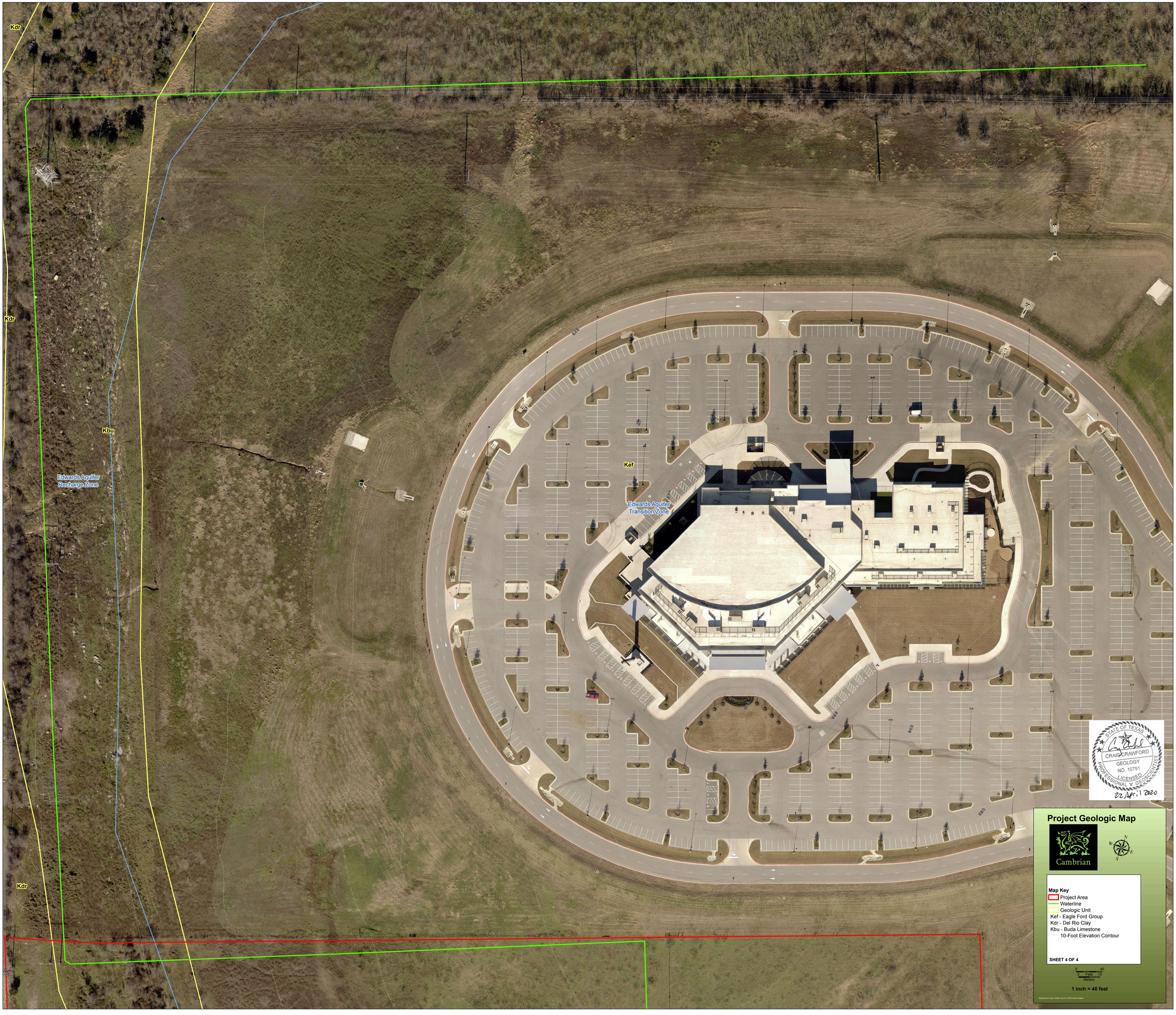
STATE OF TEXAS
CRAIG CRAWFORD
GEOLOGY
NO. 10791
LICENSED
PROFESSIONAL GEOSCIENTIST
22 April 2020

Kdr

Edwards Aquifer
Recharge Zone

Kgt

810
800
790
780


Kdr
Kdr
Kbu
Edwards Aquifer
Recharge Zone
Kef
Edwards Aquifer
Transition Zone
Kdr
STATE OF TEXAS
CRAIG CRAWFORD
GEOLOGY
NO. 10791
LICENSED
PROFESSIONAL GEOSCIENTIST
22 April 2020
Project Geologic Map
Cambrian
Map Key
Project Area
Waterline
Geologic Unit
Kef - Eagle Ford Group
Kdr - Del Rio Clay
Kbu - Buda Limestone
10-Foot Elevation Contour
SHEET 4 OF 4
0 Feet 10
0 Meters 40
1 inch = 40 feet
Background Layer Credits: Source: ESRI Aerial Imagery

Section III

Water Pollution Abatement Plan Application Form (TCEQ-0584)

Water Pollution Abatement Plan Application

Texas Commission on Environmental Quality

for Regulated Activities on the Edwards Aquifer Recharge Zone and Relating to 30 TAC §213.5(b), Effective June 1, 1999

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

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

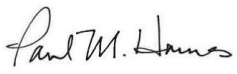
Signature

To the best of my knowledge, the responses to this form accurately reflect all information requested concerning the proposed regulated activities and methods to protect the Edwards Aquifer. This **Water Pollution Abatement Plan Application Form** is hereby submitted for TCEQ review and Executive Director approval. The form was prepared by:

Print Name of Customer/Agent: Paul Hames, P.E.

Date: 1/12/2024

Signature of Customer/Agent:



Paul M Hames, PE

Digitally signed by Paul M Hames, PE
DN: C=US, E=paul.hames@stantec.com, O="Stantec Consulting Services, Inc.", OU=Community Development BC 2220, CN="Paul M Hames, PE"
Location: Dallas
Reason: I am the author of this document
Contact Info: 2144732483
Date: 2024.01.12 15:12:04-06'00'

Regulated Entity Name: Chapel Hill Phase II

Regulated Entity Information

1. The type of project is:

   ☐ Residential: Number of Lots:_____
   ☒ Residential: Number of Living Unit Equivalents:138 (276 mutifmaily units using a LUE factor of 0.5 for Condo or Apartment Unit (24+ Units/Acre)
   ☒ Commercial
   ☐ Industrial
   ☐ Other:_____

2. Total site acreage (size of property):17.425

3. Estimated projected population:408 (156 1BR, 108 - 2BR, and 12 3-BR)

4. The amount and type of impervious cover expected after construction are shown below:

Table 1 - Impervious Cover Table

Impervious Cover of Proposed Project	Sq. Ft.	Sq. Ft./Acre	Acres
Structures/Rooftops	109,088	÷ 43,560 =	2.50
Parking	780,37	÷ 43,560 =	1.79
Other paved surfaces	139479	÷ 43,560 =	3.2
Total Impervious Cover	326,604	÷ 43,560 =	7.49

Total Impervious Cover 7.49 **÷ Total Acreage** 17.425 **X 100 =** 42.98**% Impervious Cover**

5. ☒ **Attachment A - Factors Affecting Surface Water Quality**. A detailed description of all factors that could affect surface water and groundwater quality that addresses ultimate land use is attached.

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

For Road Projects Only

Complete questions 7 - 12 if this application is exclusively for a road project.

7. Type of project:

   ☐ TXDOT road project.
   ☐ County road or roads built to county specifications.
   ☐ City thoroughfare or roads to be dedicated to a municipality.
   ☐ Street or road providing access to private driveways.

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

   ☐ Concrete
   ☐ Asphaltic concrete pavement
   ☐ Other: _____

9. Length of Right of Way (R.O.W.): _____ feet.

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

10. Length of pavement area: _____ feet.

    Width of pavement area: _____ feet.
    L x W = _____ Ft^2 ÷ 43,560 Ft^2/Acre = _____ acres.
    Pavement area _____ acres ÷ R.O.W. area _____ acres x 100 = _____% impervious cover.

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

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

12. ☐ Maintenance and repair of existing roadways that do not require approval from the TCEQ Executive Director. Modifications to existing roadways such as widening roads/adding shoulders totaling more than one-half (1/2) the width of one (1) existing lane require prior approval from the TCEQ.

Stormwater to be generated by the Proposed Project

13. ☒ **Attachment B - Volume and Character of Stormwater**. A detailed description of the volume (quantity) and character (quality) of the stormwater runoff which is expected to occur from the proposed project is attached. The estimates of stormwater runoff quality and quantity are based on the area and type of impervious cover. Include the runoff coefficient of the site for both pre-construction and post-construction conditions.

Wastewater to be generated by the Proposed Project

14. The character and volume of wastewater is shown below:

100% Domestic	90,694 Gallons/day
_____% Industrial	_____ Gallons/day
_____% Commingled	_____ Gallons/day
TOTAL gallons/day 90,694	

15. Wastewater will be disposed of by:

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

☐ **Attachment C - Suitability Letter from Authorized Agent**. An on-site sewage facility will be used to treat and dispose of the wastewater from this site. The appropriate licensing authority's (authorized agent) written approval is attached. It states that the land is suitable for the use of private sewage facilities and will meet or exceed the requirements for on-site sewage facilities as specified under 30 TAC Chapter 285 relating to On-site Sewage Facilities.

☐ Each lot in this project/development is at least one (1) acre (43,560 square feet) in size. The system will be designed by a licensed professional engineer or registered sanitarian and installed by a licensed installer in compliance with 30 TAC Chapter 285.

☒ Sewage Collection System (Sewer Lines):

☒ Private service laterals from the wastewater generating facilities will be connected to an existing SCS.

☐ Private service laterals from the wastewater generating facilities will be connected to a proposed SCS.

☒ The SCS was previously submitted on June 2020.

☐ The SCS was submitted with this application.

☒ The SCS will be submitted at a later date. The owner is aware that the SCS may not be installed prior to Executive Director approval.

☒ The sewage collection system will convey the wastewater to the San Gabriel (name) Treatment Plant. The treatment facility is:

☒ Existing.
☐ Proposed.

16. ☐ All private service laterals will be inspected as required in 30 TAC §213.5.

Site Plan Requirements

Items 17 – 28 must be included on the Site Plan.

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

Site Plan Scale: 1" = 50'.

18. 100-year floodplain boundaries:

☐ Some part(s) of the project site is located within the 100-year floodplain. The floodplain is shown and labeled.
☒ No part of the project site is located within the 100-year floodplain.
The 100-year floodplain boundaries are based on the following specific (including date of material) sources(s): 48491C0485F - 12/20/2019

19. ☒ The layout of the development is shown with existing and finished contours at appropriate, but not greater than ten-foot contour intervals. Lots, recreation centers, buildings, roads, open space, etc. are shown on the plan.

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

20. All known wells (oil, water, unplugged, capped and/or abandoned, test holes, etc.):

☒ There are 1 (#) wells present on the project site and the locations are shown and labeled. (Check all of the following that apply)

☒ The wells are not in use and have been properly abandoned.
☐ The wells are not in use and will be properly abandoned.
☐ The wells are in use and comply with 16 TAC §76.

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

21. Geologic or manmade features which are on the site:

☒ All sensitive geologic or manmade features identified in the Geologic Assessment are shown and labeled.
☐ No sensitive geologic or manmade features were identified in the Geologic Assessment.
☐ **Attachment D - Exception to the Required Geologic Assessment**. A request and justification for an exception to a portion of the Geologic Assessment is attached.

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

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

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

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

26. ☒ Surface waters (including wetlands).

☐ N/A

27. ☐ Locations where stormwater discharges to surface water or sensitive features are to occur.

☒ There will be no discharges to surface water or sensitive features.

28. ☒ Legal boundaries of the site are shown.

Administrative Information

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

30. ☒ Any modification of this WPAP will require Executive Director approval, prior to construction, and may require submission of a revised application, with appropriate fees.

Attachment 3A – Factors Affecting Water Quality

The factors affecting water quality as a result of proposed site improvement areas are as follows:

The site will be developed into residential apartment buildings and club with associated roads, drainage, utilities, deceleration lane, and a water quality/detention pond. The increase in impervious cover will cause an increase in Total Suspended Solids (TSS) from rainfall events which is typical of an increase to impervious cover. Possible factors that could affect surface water and ground water quality are:

- Vehicle oils, greases, detergents, waxes, and brake linings
- Petroleum drippings from vehicle movement
- Fuel spills
- Trash and leaves
- Dirt and silt from planted areas, fertilizers

There is no discharge from an industrial activity associated with this project.

Attachment 3B – Volume and Character of Stormwater

The existing and proposed Drainage Area Map sheets and calculations are included in the Chapel Hill Phase II Construction Set documents. SCS method calculation have been utilized to quantify the 2-, 10-, 25-, and 100-year peak flows for on-site runoff and the subsequent requited developed condition detention volumes. Water quality calculations have been performed according to the methods presented required by TCEQ. The City of Georgetown requires 85% pollutant load removal, so the desired load removal has been increased from 80% to 85% in the spreadsheets. Copied of the water quality tables are included in the construction plans.

The on-site existing drainage conditions consists of two drainage areas. The first drainage area consists of 15.53 acres of land consisting of brush, weed, grass mixture and trees. This drainage area drains towards south and exits at POI 1. Please refer to Onsite Existing Drainage Area Map for the location of point of interest 1. The 100-year peak discharge at POI 1 is 57.54 cfs. The second drainage area is a small portion of 1.42 acres that drains into Chapel Hill Phase I from POI 2. Please refer to Onsite Existing Drainage Area Map for the location of point of interest 2 the 100-year peak discharge at POI 2 is 7.26 cfs. The quality of runoff from the site can be characterized as mostly clean water because the majority of runoff from the impervious cover will be either infiltrated into the soils or filtered through a long run of pervious area. The runoff coefficient at the study point for the existing conditions of the entire 16.94 acres if approximated to be 0.34. Rational method has been used to calculate existing flow.

The off-site existing drainage conditions consist of one drainage area. The area locates on the southwest of the property and the north side of the Westinghouse Road. The drainage area is 3.54 acres of land consisting of brush, weed, grass mixture and trees. The existing offsite drainage area drains into POI 3 at the existing curb inlet on Westinghouse Road. Please refer to Offsite Existing Drainage Area Map for the location of point of interest 3. The 100-year peak discharge at POI 3 is 24.19 cfs. It will then be discharged to the curb inlet along Westinghouse Road at POI 3 which will be routed along the storm line and ultimately conveyed to Brushy Creek.

The site will be developed as a multi-family apartment complex, which will increase the impervious cover to 50.34% at full building out on Lot 1. The impervious cover for Lot 1 will be a maximum of 75% via zoning with the City of Georgetown, which will mostly consist of a detention pond and a water quality pond on the south portion of the lot 1. The permanent water quality BMP will remove 85% of the increase in total suspended solids, as mandated by the City of Georgetown UDC. The quality of runoff leaving the site after the permanent water quality BMP is expected to be mostly clean and clear water. The runoff coefficient for the proposed development will increase significantly to an estimated value of 0.75, assuming all proposed development in the future. The C-value for the site based upon the apartments development only is estimated at 0.50 due to several acres of pervious ground within the drainage area.

Attachment 3C – Suitability Letter from Authorized Agent

No onsite sewage facility is proposed; therefore, this attachment has been omitted.

Section not applicable to this project.

Attachment 3D – Exception to the Required Geologic Assessment

A Geologic Assessment has been included with this application; therefore, this attachment has been omitted.

Section not applicable to this project.

Section IV

Temporary Stormwater Section (TECQ-0602)

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.

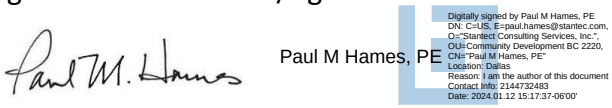
Signature

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: Paul M. Hames, P.E.

Date: 1/12/2024

Signature of Customer/Agent:



Regulated Entity Name: Chapel Hill Phase II

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: Potential for diesel fuel, gasoline, lubricants, and paint.

   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: Brushy 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.

ATTACHMENT A – SPILL RESPONSE ACTIONS

Good Housekeeping and Material Management Practices shall include, but are not limited to the following:

- Neat and orderly storage of any chemicals, pesticides, fertilizers, fuels, etc., that are being stored on site. All storage tanks will be above ground, have a maximum storage capacity of 250 gallons and be stored on site for less than one (1) year. Aboveground storage tanks (ASTs) shall comply with Title 30 TAC, Chapter 334, Subchapter F and will be located within the respective phase's Stockpiling Area as illustrated on the Erosion and Sedimentation Control Plans included with this submittal.

- Regular garbage, rubbish, construction waste and sanitary waste disposal.

- Prompt cleanup of any spills that have occurred of liquid or dry materials.

- Cleanup of sediments that have been tracked by vehicles or have been transported by wind or storm water about the site or onto nearby roadways.

In addition to the Good Housekeeping and Material Management Practices, discussed in the previous sections of this plan, the following practices will be followed for spill prevention and clean up.

- Manufacturer's recommended methods of spill cleanup will be clearly posted, and site personnel will be made aware of the procedures and the location of the information and the cleanup supplies.

- Materials and equipment necessary for spill cleanup will be kept in the materials storage area onsite. Equipment and materials will include but are not limited to brooms, dust pans, mops, rags, gloves, goggles, kitty litter, sand, sawdust, plastic, and metal trash containers specifically for this purpose.

- All spills will be cleaned up immediately after discovery.

- The spill area will be kept well ventilated, and personnel will wear appropriate clothing to prevent injury from contact with a hazardous substance.

- Spills of toxic or hazardous material will be reported to the appropriate State or Local government agency, regardless of the size.

- The spill prevention plan will be adjusted to include measures to prevent this type of spill from recurring and how to clean up the spill if there is another one. A description of the spill, what caused it, and the cleanup measures will also be included.

- The site superintendent responsible for the day-to-day site operations will be the spill prevention and cleanup coordinator. He will designate at least three (3) other site personnel who will receive spill prevention and cleanup training. These individuals will each become responsible for a particular phase of prevention and cleanup. The names of responsible spill personnel will be posted in the material storage area and in the office trailer onsite.

- Any hydrocarbon or hazardous material spill should be reported to the TCEQ at the following 24-hour toll free number 1-800-832-8224.

The Contractor shall notify the agency as soon as possible whenever necessary to provide information that would trigger a change in the response to the spill or discharge. If the discharge or spill creates an imminent health threat, the Contractor shall immediately notify and cooperate with local emergency authorities.

The Contractor will cooperate with the local emergency authority in providing support to implement appropriate notification and response actions. The local emergency authority, as necessary, will implement its emergency management plan, which may include notifying and evacuating affected personnel. In the absence of a local emergency authority, the Contractor shall take reasonable measure to notify potentially affected persons of the imminent health threat.

As soon as possible, but no later than two (2) weeks after discovery of the spill or discharge, the Contractor shall reasonably attempt to notify the Owner (if identifiable) or Occupant of the property upon which the discharge or spill occurred as well as the occupants of any property that the Contractor believes is adversely affected.

ATTACHMENT B -- POTENTIAL SOURCES OF CONTAMINATION

Asphalt products will be used on this project. After placement of asphalt, emulsion, or coatings, the applicant will be responsible for immediate cleanup should an unexpected rain occur. For the duration of the asphalt curing time, the applicant should maintain standby personnel and equipment to contain any asphalt wash-off should an unexpected rain occur.

Sediment and soil from disturbed areas are another potential source of contamination. During activities causing soil disturbance, temporary best management practices outlined in ***Attachment D***, shall be followed to prevent discharge of sediment to North Fork San Gabriel River.

Other potential sources of contamination include hydraulic fluid and diesel fuel from mechanical equipment, as well as paints and chemicals used on site. Any spills shall be handled according to the Spill Response Actions in ***Attachment A***.

ATTACHMENT C – SEQUENCE OF MAJOR ACTIVITIES

The project includes 17.425 acres of areas to be disturbed for the development. The location of the temporary erosion control measures are shown on the Erosion & Sedimentation Control sheets.

1) Install erosion controls as indicated on approved plan. (17.425 acres)

2) Prior to beginning construction, the owner or his authorized representative shall convene a Pre-Construction Conference between the TCEQ, City of Georgetown, consulting engineer, contractor, and any other affected parties. Notify the TCEQ at least 48 hours prior to the time of the conference and 48 hours prior to the beginning of construction. On-site Pre-Construction meeting should be held with Contractor, TCEQ, Engineer, and Owner.

3) Install tree protection and initiate tree mitigation measures. (1072 LF)

4) Contact the City of Georgetown Planning Department to schedule the on-site preconstruction coordination meeting.

5) Evaluate temporary erosion control installation. Review construction schedule with the water quality plan requirements and the erosion control plan.

6) Begin Site Cleaning. (17.425 acres)

7) Rough grade batch detention ponds and construct structural detention pond walls & outlet structures. (0.81 acres)

8) Rough grade site. Inspect and maintain all controls as per general notes. (17 acres)

9) Construct site utilities. (10075 LF)

10) Schedule and attend mid-construction on-site meeting to coordinate changes in construction schedule and evaluate effectiveness of erosion control plan (city inspector, project engineer, general contractor, environmental project manager). Identify anticipated completion date and coordinate final construction sequence and inspection schedule with environmental inspector.

11) Construct paving, parking, and buildings. (10.08 acres)

12) Final construction of batch detention ponds. (0.81 acre)

13) Complete construction and install landscaping.

14) Revegetate disturbed areas and clean out permanent controls and install filter media or complete a developer's contract for the revegetation along with the engineer's concurrence letter.

15) Project engineer inspects job and writes concurrence letter to the city. Final Inspection is scheduled upon receipt of letter.

16) Upon revegetation per City of Georgetown requirements, remove temporary erosion/sedimentation controls.

ATTACHMENT D -- TEMPORARY BEST MANAGEMENT PRACTICES AND MEASURES

Temporary Best Management Practices (BMPs) and measures will be used during construction to prevent pollution of groundwater, surface water and naturally occurring environmental features. Silt fence, inlet protection, stabilized construction entrance and construction stockpiling areas will be installed prior to beginning construction and prior to commencement of any of the activities defined in the sequence of construction as ***Attachment C***. Inspection and maintenance of the on-site controls shall be performed during the site clearing and rough grading process. The perimeter fence shall be regularly monitored to ensure that the buffers remain no-construction zones until the site work has been completed and authorization has been granted by the engineer. Please reference attached copy of the Erosion and Sedimentation Control Plans for specific controls and details.

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 run-off from the site, through the use of silt fences placed immediately downstream of disturbed areas. To minimize destruction to any portion of the Recharge Zone, on-site perimeter silt fence will also be implemented for pertinent areas throughout the entirety of construction. The Contractor is expected to inspect the controls weekly and after significant rainfalls to ensure proper function. When silt accumulates six (6) inches in depth the Contractor shall promptly remove the silt from the controls. As noted earlier, the proposed water quality pond will be used to treat storm water from the construction of the site. The water quality facility shall be properly inspected throughout construction and restored upon completion of the respective phase.

BMPs and measures will prevent pollutants from entering surface streams or the aquifer by intercepting stormwater potentially carrying sediment and other pollutants. BMPs and measures will implement one (1) stabilized construction entrance and a construction stockpiling/staging area to help minimize pollutant run-off and erosion generated during construction. Paved streets and driveways adjacent to these sites will be cleaned regularly to remove excess mud, dirt or rock tracked from the site. Sedimentation will be concentrated only in these areas for efficient maintenance. Water trucks will be on-site as necessary to aid in controlling dust. No setbacks were proposed for the site; however, BMPs will be implemented to limit/prevent contaminated inflow from entering surface streams or the aquifer. These practices are to include the following measures: the use of silt fence, triangular filter dikes and vegetative buffer zones. The fabricated silt fence barricade, triangular filter dikes and natural living filter vegetative buffer will provide help to reduce the likelihood of contaminated runoff from entering the aquifer. If any sensitive features are identified by TCEQ inspections, or during excavation or construction, measures appropriate to the sensitivity of the discovered feature will be enacted. No blasting is proposed.

Temporary Erosion and Sedimentation Notes:

1. The Contractor shall maintain, install erosion/sedimentation controls and tree/natural protective fencing prior to any site preparation work (clearing, grubbing or excavation).

2. The placement of erosion/sedimentation controls and tree/natural area protective fencing shall be in accordance with the City of Georgetown's current Code of Ordinances and the approved Erosion and Sedimentation Control Plan. No erosion controls shall be placed beyond the property lines of the site unless written permission has been obtained from adjacent property Owners.

3. A pre-construction conference shall be held on-site with the Contractor, design engineer/permit applicant and Environmental Inspector after installation of the erosion/sedimentation and tree/natural area protection measures and prior to beginning any site preparation work. The Contractor shall notify the Environmental Inspector at least three (3) 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 approved by the reviewing engineer, environmental specialist, or city arborist as appropriate. Minor changes to be made as field revisions to the Erosion and Sedimentation Control Plan may be required by the Environmental Inspector during the course of construction to correct control inadequacies.

5. The Contractor is required to inspect the controls at weekly intervals and after significant rainfall events to ensure that they are functioning properly. The person(s) responsible for maintenance of controls shall immediately make any necessary repairs to damaged areas. Silt accumulation at controls must be removed when the depth reaches six (6) inches.

6. Prior to final acceptance by the City of Georgetown, haul roads and waterway crossing 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. All work must stop if a void in the rock substrate is discovered, which is one (1) square foot in total area, blows air from within the substrate, and/or consistently received water during any rain event. At this time, it is the responsibility of the project manager to immediately contact an Environmental Inspector for further investigation.

8. Erosion control measures, site work and restoration work shall be in accordance with the City of Georgetown Erosion and Sedimentation Control Ordinance.

9. All slopes shall be sodded or seeded with approved grass, grass mixtures or ground cover suitable to the area and season in which they are applied.

10. Silt fences, rock berms, sedimentation basins 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 by the City of Georgetown for effectiveness. Additional measures may be required if, in the opinion of the City Engineer, they are warranted.

11. All temporary erosion control measures shall not be removed until final inspection and approval of the project by the engineer. 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.

12. Any dirt, mud, rocks, debris, etc., that is spilled, tracked, or otherwise deposited on any existing paved street shall by cleaned up immediately.

ATTACHMENT E – REQUEST TO SEAL FEATURES

No environmental features are being temporarily sealed. Therefore, this section is not applicable.

ATTACHMENT F – STRUCTURAL PRACTICES

Silt fencing will be placed on the down gradient side of any exposed soils to limit the discharge of silt and pollutant form exposed areas of the site. Additionally, triangular filter dikes will be placed down gradient of areas that may require dewatering. Dewatering shall be directed toward the water quality pond and/or filter dikes to limit the discharge of silt and pollutants from exposed areas of the site. Also included are stabilized construction entrances to reduce the amount of mud tracked onto surrounding streets by construction vehicles. Inspection and maintenance of the onsite controls shall be performed during the site clearing and rough grading process.

Additionally, the use of the pond will also protect against contaminated runoff leaving the site. The Contractor will be responsible for proper inlet protection in addition to cleaning out all structures adversely affected by sediment after heavy rainfalls.

ATTACHMENT G – DRAINAGE AREA MAPS

The drainage area maps are provided in the Chapel Hill Phase 2 plan set.

ATTACHMENT H – TEMPORARY SEDIMENT POND PLANS AND CALCULATIONS

Temporary sediment pond plans and calculations were prepared in acceptance with TCEQ and TPDES requirements. Please see the TCEQ Water Quality Calculations Sheet in the plan set for reference.

ATTACHMENT I – INSPECTION AND MAINTENANCE FOR BEST MANAGEMENT PRACTICES

The following sections address inspection and maintenance taken from the TNRCC Manual, "Complying with Edward Aquifer Rules: Technical Guidance on Best Management Practices."

Silt Fence:

1. Inspection shall be made weekly and after each rainfall event, in accordance with Section 1.4.3 of RG-348.

2. Torn fabric shall be replaced or a second line of fencing parallel to the torn section shall be implemented as needed.

3. Accumulated silt shall be removed when it reaches a depth of six (6) inches. The silt shall be disposed of on an approved site and in such a manner that will not contribute to additional siltation.

4. Silt fence shall be removed when the site is completely stabilized so as not to block or impede storm flow or drainage.

Inlet Protection:

1. Daily inspection shall be made by the Contractor and silt accumulation must be removed when depth reaches 50 mm (two (2) inches).

2. Contractor shall monitor the performance of inlet protection during each rainfall event and immediately remove the inlet protections if the stormwater begins to overtop the curb.

3. Inlet protections shall be removed as soon as the source of sediment is stabilized.

Stabilized Construction Entrance:

1. 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 device used to trap sediment. All sediments that are spilled, dropped, washed, or tracked onto public roadway must be removed immediately.

2. Entrance shall be properly graded to prevent run-off from leaving the construction site.

Concrete Washout Area:

1. Routine inspection in accordance with Section 1.4.18 of RG-348 of the area to ensure that sufficient quantity and volume remain to contain all liquid and concrete waste generated by washout operations.

2. Plastic lining material should be a minimum of 10 mil in polyethylene sheeting and should be free of holes, tears, or other defects that compromise the impermeability of the material.

3. When temporary concrete washout facilities are no longer required for the work, the hardened concrete should be removed and disposed of. Materials used to construct temporary concrete washout facilities should be removed from the site of the work and disposed of. Holes, depressions, or other ground disturbance caused by the removal of the temporary concrete washout facilities should be backfilled and repaired.

ATTACHMENT J – SCHEDULE OF INTERIM AND PERMANENT SOIL STABILIZATION PRACTICES

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. *

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. *

Please see the Erosion & Sedimentation Control Plan Notes and Details Sheet of the attached construction plans for more details.

(*see General Notes for Edwards Aquifer Recharge Zone Plan)

Section V

Permanent Stormwater Section (TCEQ -0600)

Permanent Stormwater Section

Texas Commission on Environmental Quality

for Regulated Activities on the Edwards Aquifer Recharge Zone and Relating to 30 TAC §213.5(b)(4)(C), (D)(Ii), (E), and (5), Effective June 1, 1999

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

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

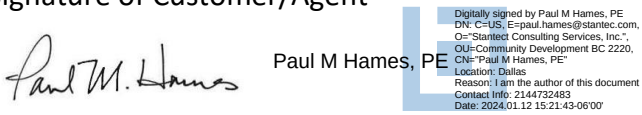
Signature

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

Print Name of Customer/Agent: Paul M. Hames, P.E.

Date: 1/12/2024

Signature of Customer/Agent



Regulated Entity Name: Chapel Hill Phase II

Permanent Best Management Practices (BMPs)

Permanent best management practices and measures that will be used during and after construction is completed.

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

   ☐ N/A

2. ☒ These practices and measures have been designed, and will be constructed, operated, and maintained to insure that 80% of the incremental increase in the annual mass loading of total suspended solids (TSS) from the site caused by the regulated activity is removed. These quantities have been calculated in accordance with technical guidance prepared or accepted by the executive director.

   ☒ The TCEQ Technical Guidance Manual (TGM) was used to design permanent BMPs and measures for this site.

☐ A technical guidance other than the TCEQ TGM was used to design permanent BMPs and measures for this site. The complete citation for the technical guidance that was used is: _____

☐ N/A

3. ☒ Owners must insure that permanent BMPs and measures are constructed and function as designed. A Texas Licensed Professional Engineer must certify in writing that the permanent BMPs or measures were constructed as designed. The certification letter must be submitted to the appropriate regional office within 30 days of site completion.

   ☐ N/A

4. Where a site is used for low density single-family residential development and has 20 % or less impervious cover, other permanent BMPs are not required. This exemption from permanent BMPs must be recorded in the county deed records, with a notice that if the percent impervious cover increases above 20% or land use changes, the exemption for the whole site as described in the property boundaries required by 30 TAC §213.4(g) (relating to Application Processing and Approval), may no longer apply and the property owner must notify the appropriate regional office of these changes.

   ☐ The site will be used for low density single-family residential development and has 20% or less impervious cover.
   ☐ The site will be used for low density single-family residential development but has more than 20% impervious cover.
   ☒ The site will not be used for low density single-family residential development.

5. The executive director may waive the requirement for other permanent BMPs for multi-family residential developments, schools, or small business sites where 20% or less impervious cover is used at the site. This exemption from permanent BMPs must be recorded in the county deed records, with a notice that if the percent impervious cover increases above 20% or land use changes, the exemption for the whole site as described in the property boundaries required by 30 TAC §213.4(g) (relating to Application Processing and Approval), may no longer apply and the property owner must notify the appropriate regional office of these changes.

   ☐ **Attachment A - 20% or Less Impervious Cover Waiver**. The site will be used for multi-family residential developments, schools, or small business sites and has 20% or less impervious cover. A request to waive the requirements for other permanent BMPs and measures is attached.
   ☒ The site will be used for multi-family residential developments, schools, or small business sites but has more than 20% impervious cover.
   ☐ The site will not be used for multi-family residential developments, schools, or small business sites.

6. ☒ **Attachment B - BMPs for Upgradient Stormwater**.

☒ A description of the BMPs and measures that will be used to prevent pollution of surface water, groundwater, or stormwater that originates upgradient from the site and flows across the site is attached.

☐ No surface water, groundwater or stormwater originates upgradient from the site and flows across the site, and an explanation is attached.

☐ Permanent BMPs or measures are not required to prevent pollution of surface water, groundwater, or stormwater that originates upgradient from the site and flows across the site, and an explanation is attached.

7. ☒ **Attachment C - BMPs for On-site Stormwater**.

☒ A description of the BMPs and measures that will be used to prevent pollution of surface water or groundwater that originates on-site or flows off the site, including pollution caused by contaminated stormwater runoff from the site is attached.

☐ Permanent BMPs or measures are not required to prevent pollution of surface water or groundwater that originates on-site or flows off the site, including pollution caused by contaminated stormwater runoff, and an explanation is attached.

8. ☒ **Attachment D - BMPs for Surface Streams**. A description of the BMPs and measures that prevent pollutants from entering surface streams, sensitive features, or the aquifer is attached. Each feature identified in the Geologic Assessment as sensitive has been addressed.

☐ N/A

9. ☒ The applicant understands that to the extent practicable, BMPs and measures must maintain flow to naturally occurring sensitive features identified in either the geologic assessment, executive director review, or during excavation, blasting, or construction.

☒ The permanent sealing of or diversion of flow from a naturally-occurring sensitive feature that accepts recharge to the Edwards Aquifer as a permanent pollution abatement measure has not been proposed.

☐ **Attachment E - Request to Seal Features**. A request to seal a naturally-occurring sensitive feature, that includes, for each feature, a justification as to why no reasonable and practicable alternative exists, is attached.

10. ☒ **Attachment F - Construction Plans**. All construction plans and design calculations for the proposed permanent BMP(s) and measures have been prepared by or under the direct supervision of a Texas Licensed Professional Engineer, and are signed, sealed, and dated. The plans are attached and, if applicable include:

☒ Design calculations (TSS removal calculations)
☒ TCEQ construction notes
☒ All geologic features
☒ All proposed structural BMP(s) plans and specifications

☐ N/A

11. ☒ **Attachment G - Inspection, Maintenance, Repair and Retrofit Plan**. A plan for the inspection, maintenance, repairs, and, if necessary, retrofit of the permanent BMPs and measures is attached. The plan includes all of the following:

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

    ☐ N/A

12. ☐ **Attachment H - Pilot-Scale Field Testing Plan**. Pilot studies for BMPs that are not recognized by the Executive Director require prior approval from the TCEQ. A plan for pilot-scale field testing is attached.

    ☒ N/A

13. ☒ **Attachment I -Measures for Minimizing Surface Stream Contamination**. A description of the measures that will be used to avoid or minimize surface stream contamination and changes in the way in which water enters a stream as a result of the construction and development is attached. The measures address increased stream flashing, the creation of stronger flows and in-stream velocities, and other in-stream effects caused by the regulated activity, which increase erosion that results in water quality degradation.

    ☒ N/A

Responsibility for Maintenance of Permanent BMP(s)

Responsibility for maintenance of best management practices and measures after construction is complete.

14. ☒ The applicant is responsible for maintaining the permanent BMPs after construction until such time as the maintenance obligation is either assumed in writing by another entity having ownership or control of the property (such as without limitation, an owner's association, a new property owner or lessee, a district, or municipality) or the ownership of the property is transferred to the entity. Such entity shall then be responsible for maintenance until another entity assumes such obligations in writing or ownership is transferred.

    ☐ N/A

15. ☒ A copy of the transfer of responsibility must be filed with the executive director at the appropriate regional office within 30 days of the transfer if the site is for use as a multiple single-family residential development, a multi-family residential development, or a non-residential development such as commercial, industrial, institutional, schools, and other sites where regulated activities occur.

    ☐ N/A

ATTACHMENT A

20% or Less Impervious Cover Waiver

Improvements proposed for the subject property will increase impervious cover in excess of twenty percent of existing impervious cover.

Section not applicable to this project.

ATTACHMENT B

BMPs for Upgradient Stormwater

Impervious cover upgradient of the project limits are treated at the on-site BMP at the Celebration Church project.

Section not applicable to this project.

ATTACHMENT C

BMPs for On-Site Stormwater

The Chapel Hill Phase II commercial development will treat stormwater runoff with two Batch Detention Ponds. The North Water Quality Pond is proposed to treat 13.28 acres, 7.43 acres being impervious cover. South Water Quality Pond B proposed to treat 6.02 acres, 0.34 acres being impervious cover.

In addition, temporary BMP's will include silt fence, rock berms, inlet protection, and stabilized construction entrances. All calculations and design procedures for these BMPs were presented on the TCEQ Water Quality Calculations Sheet (see Sheet 28 of the Chapel Hill Phase II plan set), Complying with the Edwards Aquifer Rules Technical Guidance on Best Management Practices RG-348 (Revised July 2005).

ATTACHMENT D

BMPs for Surface Streams and Geologic Features

Temporary and permanent BMPs are used to prevent pollutants from ultimately entering the San Gabriel River surface stream and sensitive geologic features on and adjacent to the site. Temporary BMPs include silt fence, rock berms, inlet protection, and a stabilized construction entrance. The permanent BMPs consist of two on-site batch detention ponds and a rain garden which are designed to treat stormwater runoff before it leaves the project site.

Additionally, velocity dissipation measures are incorporated into the proposed stormwater detention pond's outfall structures to further protect down gradient surface streams from erosion damage. The San Gabriel River will be protected from increased pollutant loading by the proposed water quality ponds, which will remove a minimum 85% of the TSS loading.

There are no sensitive geologic features identified on the Chapel Hill Phase 2 project.

ATTACHMENT E

Request to seal Features

The permanent sealing of or diversion of flow from a naturally occurring “sensitive” or “possibly sensitive” feature that accepts recharge to the Edwards Aquifer as a permanent pollution abatement measure has not been proposed for any naturally occurring “sensitive” or “possibly sensitive” features on this site.

Section not applicable to this project.

ATTACHMENT F

Construction Plans for BMPs

Construction plans and design calculations for the proposed permanent BMPs and measures have been prepared under the direct supervision of a Texas Licensed Professional Engineer. All construction plans and design information have been signed, sealed, and dated by the Professional Engineer. All calculations and design procedures were performed pursuant to the Texas Commission on Environmental Quality (TCEQ), Technical Design Manual, Complying with The Edwards Aquifer Rules: Technical Guidance on Best Management Practices, RG–348, 2000, (TSS Removal and BMP Sizing Calculations, Section 3.3). The City of Georgetown's Water Quality Ordinance specifies a minimum TSS removal of 85%. Therefore, the Desired Load Removal has been increased from 80% to 85% of the total loading within the calculation spreadsheets. Design calculations, TCEQ Construction Notes, all proposed structural measures and appropriate details are found in the selected plan sheets submitted with this report. The TSS Removal Calculations for the ponds are included on the TCEQ Water Quality Calculations sheet.

Attachment G

Inspection, Maintenance, Repair and Retrofit

Project Name:	Chapel Hill Phase II
Project Address:	403 Westinghouse Road
City, State and Zip:	Georgetown, TX 78626
BMP System Installed:	Batch Detention Ponds
Inspection:	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 orifice and outlets. During each inspection, erosion areas inside and downstream of this BMP should be identified and repaired/revegetated immediately.

Other maintenance guidelines:

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. More frequent mowing to maintain aesthetic appeal may be necessary in landscaped areas.

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. Care should be taken not to compromise the basin lining during maintenance.

Weir Controller

The Weir Controller should be inspected as part of the twice-yearly investigations. Verify that the external indicators (active, cycle in progress) are operating properly by turning the controller off and on, and by initiating a cycle. 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:

Records of all inspections and maintenance for the facility shall be recorded and maintained for the water quality beginning at startup of the facility. Record keeping shall be detailed to provide type of maintenance or repair made, date of the service, and details of the extent of maintenance or repair. The Owner or Responsible Party of the facility is responsible for maintaining the facility as outlined in this plan until such time as another entity assumes responsibility in writing or ownership of the property is transferred. A copy of the transfer of ownership or responsibility must be filed with the Executive Director of TCEQ within 30-days of the transfer.

Owner: AMFP V Chapel Hill II LLC

Print Name of Responsible Party: Robert J. Stone III

Signature: Robert J. Stone III

Date: 1/12/24

Attachment H

Measures for Minimizing Surface Stream Contamination

The TCEQ Technical Guidance Manual (TGM) was used to design permanent BMPs and measures for this site.

Section not applicable to this project.

Attachment I

Measures for Minimizing Surface Stream Contamination

Measures used to minimize surface stream contamination during construction on the Chapel Hill Phase 2 site will include silt fence, rock berms, inlet protection, and a stabilized construction entrance. These temporary BMPs will be used judiciously to maintain high water quality standards of the surface runoff during construction and endeavor to prevent erosion of soils. They will remain in place until contributing disturbed areas are restored.

The batch detention ponds for Chapel Hill Phase 2 were designed according to the TCEQ Technical Guidance Manual and the City of Georgetown's Water Quality Ordinance. The batch detention ponds are designed to minimize pollutants that might otherwise enter any nearby surface streams. Please refer to the provided plan sheets for the Water Quality and Detention Ponds for more information regarding the batch detention ponds.

The City of Georgetown guidelines provide particularly conservative and applicable design practices. The batch detention ponds and the outfalls for the two proposed detention pons are designed pursuant to the City of Georgetown Drainage Control Manual, and the City of Georgetown Unified Development Code, specifically Section 11.5: Environmental Protection.

The proposed ponds will detain storm water runoff so that the flow from the site is not increased in the 2, 10, 25, or 100-year storm events. As a result, the development will not increase stream flashing, create stronger flows, or increase in stream velocities in receiving water bodies from the drainage path of the site. The supporting calculations for the 2,10, 25, and 100-year storm runoff in the existing and proposed conditions are included on the Existing and Proposed Drainage Area Maps included in the site plan set.

Dissipation structures will be located directly downstream of the outfall points of the conveyance system which will decrease the effects of stream flashing and address potential increases in intensity and velocity of runoff.

Section VI

A gent Authorization Form (TCEQ-0599)

Agent Authorization Form
For Required Signature
Edwards Aquifer Protection Program
Relating to 30 TAC Chapter 213
Effective June 1, 1999

I Robert J. Stone III,
Print Name

Other (Authorized Agent),
Title - Owner/President/Other

of AMFP V Chapel Hill II LLC,
Corporation/Partnership/Entity Name

have authorized Paul M. Hames, P.E.
Print Name of Agent/Engineer

of Stantec Consulting Services
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:

Robert J. Stone III
Applicant's Signature

1/12/24
Date

THE STATE OF Texas §

County of Dallas §

BEFORE ME, the undersigned authority, on this day personally appeared Robert J. Stone III 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 12th day of January, 2024

BEN M. DAVID
Notary Public, State of Texas
Comm. Expires 07-15-2025
Notary ID 129489196

NOTARY PUBLIC

Ben M. David
Typed or Printed Name of Notary

MY COMMISSION EXPIRES: 7-15-25

Section VII

Application Fee Form (TCEQ-0574)

Application Fee Form

Texas Commission on Environmental Quality
Name of Proposed Regulated Entity: Chapel Hill Phase II
Regulated Entity Location: 403 Westinghouse Road, Georgetown, Texas 78626
Name of Customer: AMFP V Chapel Hill II LLC
Contact Person: Erik Boraks Phone: (972) 385-1676
Customer Reference Number (if issued):CN _____
Regulated Entity Reference Number (if issued):RN 111787560
Austin Regional Office (3373)

☐ Hays ☐ Travis ☒ Williamson

San Antonio Regional Office (3362)

☐ Bexar ☐ Medina ☐ Uvalde
☐ Comal ☐ Kinney

Application fees must be paid by check, certified check, or money order, payable to the **Texas Commission on Environmental Quality**. Your canceled check will serve as your receipt. **This form must be submitted with your fee payment**. This payment is being submitted to:

☒ Austin Regional Office
☐ Mailed to: TCEQ - Cashier
Revenues Section
Mail Code 214
P.O. Box 13088
Austin, TX 78711-3088

☐ San Antonio Regional Office
☐ Overnight Delivery to: TCEQ - Cashier
12100 Park 35 Circle
Building A, 3rd Floor
Austin, TX 78753
(512)239-0357

Site Location (Check All That Apply):

☒ Recharge Zone ☐ Contributing Zone ☒ Transition Zone

Type of Plan	***Size***	***Fee Due***
Water Pollution Abatement Plan, Contributing Zone Plan: One Single Family Residential Dwelling	Acres	$
Water Pollution Abatement Plan, Contributing Zone Plan: Multiple Single Family Residential and Parks	Acres	$
Water Pollution Abatement Plan, Contributing Zone Plan: Non-residential	17.425 Acres	$ 6,500
Sewage Collection System	L.F.	$
Lift Stations without sewer lines	Acres	$
Underground or Aboveground Storage Tank Facility	Tanks	$
Piping System(s)(only)	Each	$
Exception	Each	$
Extension of Time	Each	$

Signature: Paul M Hames, PE Digitally signed by Paul M Hames, PE DN: C=US, E=paul.hames@stantec.com, O="Stantec Consulting Services, Inc.", OU=Community Development BC 2220, CN="Paul M Hames, PE" Location: Dallas Reason: I am the author of this document Contact Info: 2144732483 Date: 2024.01.12 15:31:15-06'00' Date: 1/12/2024

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

SectionVIII

Core Data Form (TCEQ-10400)

TCEQ Core Data Form

TCEQ Use Only

For detailed instructions regarding completion of 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 111787560

SECTION II: Customer Information

4. General Customer Information | **5. Effective Date for Customer Information Updates** (mm/dd/yyyy)

☒ New Customer ☐ Update to Customer Information ☐ Change in Regulated Entity Ownership

☐ Change in Legal Name (Verifiable with the Texas Secretary of State or Texas Comptroller of Public Accounts)

The Customer Name submitted here may be updated automatically based on what is current and active with the Texas Secretary of State (SOS) or Texas Comptroller of Public Accounts (CPA).

6. Customer Legal Name (*If an individual, print last name first: eg: Doe, John*) *If new Customer, enter previous Customer below:*

AMFP V Chapel Hill II LLC

7. TX SOS/CPA Filing Number	8. TX State Tax ID (11 digits)	9. Federal Tax ID (9 digits)	10. DUNS Number *(if applicable)*
0804094898	32079527084	88-2779187	

11. Type of Customer: ☐ Corporation ☐ Individual Partnership: ☐ General ☐ Limited

Government: ☐ City ☐ County ☐ Federal ☐ State ☐ Other ☐ Sole Proprietorship ☒ Other: LLC

12. Number of Employees
☐ 0-20 ☐ 21-100 ☐ 101-250 ☐ 251-500 ☐ 501 and higher

13. Independently Owned and Operated?
☒ **Yes** ☐ **No**

14. Customer Role (Proposed or Actual) – *as it relates to the Regulated Entity listed on this form. Please check one of the following*

☒ Owner ☐ Operator ☐ Owner & Operator
☐ Occupational Licensee ☐ Responsible Party ☐ Voluntary Cleanup Applicant ☐ Other:

15. Mailing Address:

3610-2 N. Josey
Suite 223

City	Carrollton	State	TX	ZIP	75007	ZIP + 4	

16. Country Mailing Information (*if outside USA*)

17. E-Mail Address (*if applicable*)
Erik.Boraks@dukecompanies.com

18. Telephone Number	19. Extension or Code	20. Fax Number (*if applicable*)
(972) 385-1676		( ) -

SECTION III: Regulated Entity Information

21. General Regulated Entity Information (*If 'New Regulated Entity" is selected below this form should be accompanied by a permit application*)

☒ 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 Agency 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.*)

Chapel Hill Phase 2

23. Street Address of the Regulated Entity: ***(No PO Boxes)***	403 Westinghouse Road						
	City	Georgetown	**State**	TX	**ZIP**	78626	**ZIP + 4**
24. County	Williamson						

Enter Physical Location Description if no street address is provided.

25. Description to Physical Location:			
26. Nearest City		**State**	**Nearest ZIP Code**

27. Latitude (N) In Decimal:			**28. Longitude (W) In Decimal:**		
Degrees	Minutes	Seconds	Degrees	Minutes	Seconds
30	34	55.54	97	41	10.62

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)
6513	6531	531311	531110

33. What is the Primary Business of this entity? *(Do not repeat the SIC or NAICS description.)*

Multifamily apartment development

34. Mailing Address:	**13740 Midway Road**						
	Suite 804						
	City	**Dallas**	**State**	**TX**	**ZIP**	**75244**	**ZIP + 4**
35. E-Mail Address:							

36. Telephone Number	**37. Extension or Code**	**38. Fax Number *(if applicable)***
(972) 385-1687		**( ) -**

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	☐ Waste Water	☐ Wastewater Agriculture	☐ Water Rights	☐ Other:

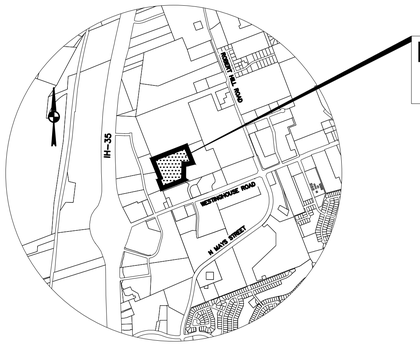
SECTION IV: Preparer Information

40. Name:	Paul Hames, P.E.	**41. Title:**	Principal
42. Telephone Number	**43. Ext./Code**	**44. Fax Number**	**45. E-Mail Address**
(469 **)** 329-3613		**( )** -	Paul.Hames@stantec.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:	Stantec Consulting Services	**Job Title:**	Principal
Name *(In Print)*:	Paul M. Hames, P.E.	**Phone:**	(214) 473- **2483**
Signature:	Paul M Hames, PE Digitally signed by Paul M Hames, PE DN: C=US, E=paul.hames@stantec.com, O="Stantect Consulting Services, Inc.", OU=Community Development BC 2220, CN="Paul M Hames, PE" Location: Dallas Reason: I am the author of this document Contact Info: 2144732483 Date: 2024.01.12 11:35:09-06'00'	**Date:**	1/12/2024



VICINITY MAP
SCALE 1:2000

CONSTRUCTION DOCUMENTS

FOR

CHAPEL HILL PHASE 2
403 WESTINGHOUSE ROAD
GEORGETOWN, TEXAS 78626

DEVELOPER: DUKE, INC.
13740 MIDWAY RD #804
DALLAS, TX 75244
ERIK BORAKS
(972) 385-1676

ENGINEER/SURVEYOR: STANTEC
6080 TENNYSON PARKWAY, SUITE 200
PLANO, TEXAS 75024
BRAIN CARRINGTON, P.E.
(469) 329-3613

LANDSCAPE ARCHITECT: LEE & ASSOCIATES, INC.
8601 RANCH ROAD 2222,
BLDG. 1, SUITE 290
AUSTIN, TX 78730
ANDREW TRIMBLE, RLA
(512) 645-8477

ARCHITECT: MEEKS PARTNERS
16000 MEMORIAL DRIVE, SUITE 100
HOUSTON, TX 77079
DANIEL SENNING, RA
(281) 558-8787

UTILITIES: WATER, WASTEWATER, ELECTRIC:
GEORGETOWN UTILITY SYSTEMS
300 INDUSTRIAL AVENUE
GEORGETOWN, TX 78626
(512) 930-3640

PROPOSED IMPERVIOUS COVER

PROPOSED IMPERVIOUS COVER 7.43 ACRES (323,778 SQUARE FEET) = 46.17%
MAXIMUM ALLOWABLE IMPERVIOUS COVER DETENTION POND AND PRESERVATION OF NATIVE TREE STANDS BONUSES PER CHAPEL HILL PUD 11.730 ACRES = 62%

LEGAL DESCRIPTION

A **35.898 ACRE** TRACT OF LAND OUT OF SECTION 1, FRANCIS A. HUDSON SURVEY, ABSTRACT NO. 295, THE JOHN POWELL SURVEY, ABSTRACT NO. 491 AND THE JAMES S. PATTERSON SURVEY ABSTRACT NO. 502, SITUATED IN THE CITY OF GEORGETOWN, WILLIAMSON COUNTY, TEXAS BEING THAT CERTAIN 16.944 ACRE TRACT OF LAND CONVEYED TO AMFP V CHAPEL HILL II LLC BY DEED OF RECORD IN DOCUMENT NO. 2021100572 OF THE OFFICIAL PUBLIC RECORDS OF WILLIAMSON COUNTY, TEXAS, AND BEING THAT CERTAIN 0.482 ACRE TRACT OF LAND CONVEYED TO AMFP V CHAPEL HILL II LLC BY DEED OF RECORD IN DOCUMENT NO. 2022064290 OF SAID OFFICIAL PUBLIC RECORDS, AND LOT 1, BLOCK A, FINAL PLAT OF CHAPEL HILL SUBDIVISION SECTION ONE, A SUBDIVISION OF RECORD IN DOCUMENT NO. 2020145589 OF THE OFFICIAL PUBLIC RECORDS OF WILLIAMSON COUNTY, TEXAS; SAID LOT 1 CONVEYED TO AMFP IV CHAPEL HILL LLC BY DEED OF RECORD IN DOCUMENT NO. 2020010911, 2020010912 AND 2020011100 OF SAID OFFICIAL PUBLIC RECORDS.

BENCHMARK DATA:

BM501, SET MAG NAIL IN SIDEWALK
N: 10185240.30
E: 3130736.44
ELEVATION: 870.51

BM504, SET MAG NAIL IN CURB INLET
N: 10185621.44
E: 3130171.37
ELEVATION: 851.77

BM512, SET COTTON SPINDLE
N: 10185621.44
E: 3130171.37
ELEVATION: 851.77

ENGINEER'S STATEMENT:

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

Stantec
1905 ALDRICH STREET, SUITE 300
AUSTIN, TX 78723
TBPE # F-6324 TBPLS # 10194230
www.stantec.com

ZONING:
1. P.U.D. ORD NO 2020-46 (MF-2 AND C-1 BASE ZONING)

RECORDED PLAT:
CHAPEL HILL SUBDIVISION SECTION 2, DOC# 2023022114

PROPOSED USE:
MULTI-FAMILY. ATTACHED 276 DWELLING UNITS (1,524 AVERAGE DAILY TRIPS)

ACREAGE:
17.425 ACRES

GENERAL SITE DEVELOPMENT PLAN NOTES:

1. IT IS THE RESPONSIBILITY OF THE PROPERTY OWNER, AND SUCCESSORS TO THE CURRENT PROPERTY OWNER, TO ENSURE THE SUBJECT PROPERTY AND ANY IMPROVEMENTS ARE MAINTAINED IN CONFORMANCE WITH THIS SITE DEVELOPMENT PLAN.
2. THIS DEVELOPMENT SHALL COMPLY WITH ALL STANDARDS OF THE UNIFIED DEVELOPMENT CODE (UDC), THE CITY OF GEORGETOWN CONSTRUCTION STANDARDS AND SPECIFICATIONS MANUAL, THE DEVELOPMENT MANUAL AND ALL OTHER APPLICABLE CITY STANDARDS.
3. THIS SITE DEVELOPMENT PLAN SHALL MEET THE UDC STORMWATER REQUIREMENTS.
4. ALL SIGNAGE REQUIRES A SEPARATE APPLICATION AND APPROVAL FROM THE INSPECTION SERVICES DEPARTMENT. NO SIGNAGE IS APPROVED WITH THE SITE DEVELOPMENT PLAN.
5. SIDEWALKS SHALL BE PROVIDED IN ACCORDANCE WITH THE UDC.
6. DRIVEWAYS WILL REQUIRE APPROVAL BY THE DEVELOPMENT ENGINEER OF THE CITY OF GEORGETOWN.
7. OUTDOOR LIGHTING SHALL COMPLY WITH SECTION 7.04 OF THE UDC.
8. SCREENING OF MECHANICAL EQUIPMENT, DUMPSTERS AND PARKING SHALL COMPLY WITH CHAPTER 8 OF THE UDC. THE SCREENING IS SHOWN ON THE LANDSCAPE AND ARCHITECTURAL PLANS, AS APPLICABLE.
9. THE COMPANION LANDSCAPE PLAN HAS BEEN DESIGNED AND PLANT MATERIALS SHALL BE INSTALLED TO MEET ALL REQUIREMENTS OF THE UDC.
10. ALL MAINTENANCE OF REQUIRED LANDSCAPE SHALL COMPLY WITH THE MAINTENANCE STANDARDS OF CHAPTER 8 OF THE UDC.
11. A SEPARATE IRRIGATION PLAN SHALL BE REQUIRED AT THE TIME OF BUILDING PERMIT APPLICATION.
12. FIRE FLOW REQUIREMENTS OF 1,500 GPM ARE BEING MET BY THIS PLAN.
13. ANY HERITAGE TREE NOTED ON THIS SITE DEVELOPMENT PLAN IS SUBJECT, IN PERPETUITY, TO THE MAINTENANCE, CARE, PRUNING AND REMOVAL REQUIREMENTS OF THE UNIFIED DEVELOPMENT CODE.
14. THE CONSTRUCTION PORTION OF THESE PLANS WERE PREPARED, SEALED, SIGNED AND DATED BY A TEXAS LICENSED PROFESSIONAL ENGINEER. THEREFORE, BASED ON THE ENGINEER'S CONCURRENCE OF COMPLIANCE, THE CONSTRUCTION PLANS FOR CONSTRUCTION OF THE PROPOSED PROJECT ARE HEREBY APPROVED SUBJECT TO THE STANDARD CONSTRUCTION SPECIFICATIONS AND DETAILS MANUAL AND ALL OTHER APPLICABLE CITY, STATE AND FEDERAL REQUIREMENTS AND CODES.
15. THIS PROJECT IS SUBJECT TO ALL CITY STANDARD CONSTRUCTION SPECIFICATIONS AND DETAILS IN EFFECT AT THE TIME OF SUBMITTAL OF THE PROJECT TO THE CITY.
16. WHERE NO EXISTING OVERHEAD INFRASTRUCTURE EXISTS, UNDERGROUND ELECTRIC UTILITY LINES SHALL BE LOCATED ALONG THE STREET AND WITHIN THE SITE. WHERE EXISTING OVERHEAD INFRASTRUCTURE IS TO BE RELOCATED, IT SHALL BE RE-INSTALLED UNDERGROUND AND THE EXISTING FACILITIES SHALL BE REMOVED AT THE DISCRETION OF THE DEVELOPMENT ENGINEER.
17. ALL ELECTRIC AND COMMUNICATION INFRASTRUCTURE SHALL COMPLY WITH UDC SECTION 13.06.
18. THE PROPERTY SUBJECT TO THIS APPLICATION IS SUBJECT TO THE WATER QUALITY REGULATIONS OF THE CITY OF GEORGETOWN. (FOR PROPERTIES LOCATED OVER THE EDWARDS AQUIFER RECHARGE ZONE)
19. A GEOLOGIC ASSESSMENT, IN ACCORDANCE WITH THE CIT OF GEORGETOWN WATER QUALITY REGULATIONS, WAS COMPLETED ON (01/22/2020). ANY SPRINGS AND STREAMS AS IDENTIFIED IN THE GEOLOGIC ASSESSMENT ARE SHOWN HEREIN.

GEORGETOWN TEXAS

Approved for construction by the City of Georgetown Planning & Zoning Commission on:
June 6, 2023
This SDP will expire 24 months from the date of approval if the applicable conditions of UDC Section 3.09.090 are not met.

STATE OF TEXAS
BRIAN E. CARRINGTON
123263
LICENSED
PROFESSIONAL ENGINEER
4/28/2023

STATE OF TEXAS
PAUL M. HAMES
66791
REGISTERED
PROFESSIONAL
LANDSCAPE ARCHITECT
04-12-2023
THIS SEAL APPLIES ONLY TO CURRENT REVISIONS TO RELOCATED STORM SYSTEM ON WESTINGHOUSE AND REVISIONS 2 - 4.

4

ADDRESS : 403 WESTINGHOUSE ROAD
GEORGETOWN, TEXAS 78626

1ST SUBMITTAL DATE : 10/18/2021
2ND SUBMITTAL DATE : 12/06/2021
3RD SUBMITTAL DATE : 08/22/2022
4TH SUBMITTAL DATE : 10/03/2022
5TH SUBMITTAL DATE : 05/01/2023

SUBMITTED BY :

BRAIN CARRINGTON, P.E. DATE
STANTEC
6080 TENNYSON PARKWAY, SUITE 200
PLANO, TEXAS 75024
(469)329-3613

I, ALYSSA N. CAMPBELL, P.E., CERTIFY THAT THESE ENGINEERING DOCUMENTS ARE COMPLETE, ACCURATE AND ADEQUATE FOR THE INTENDED PURPOSES, INCLUDING CONSTRUCTION, BUT ARE NOT AUTHORIZED FOR CONSTRUCTION PRIOR TO FORMAL CITY APPROVAL.

REVISION LOG:

NO.	DATE	COMMENTS

FILE : V:\2220\active\222012278\civil\phase_01\drawing\sheets\222012278crv01.dwg

SHEET INDEX

SHEET NO.	DESCRIPTION

CIVIL ENGINEERING

CIVIL SITE PLAN SET

DECELERATION CONSTRUCTION SET

APPROVED FOR ACCEPTANCE

CITY OF GEORGETOWN DATE

WILLIAMSON COUNTY EMERGENCY SERVICE DISTRICT #3 DATE

DATE

THE LOCATION OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK. HE AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY HIS FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

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2021-65-SDP

GENERAL SITE DEVELOPMENT PLAN NOTES:

1. IT IS THE RESPONSIBILITY OF THE PROPERTY OWNER, AND SUCCESSORS TO THE CURRENT PROPERTY OWNER, TO ENSURE THE SUBJECT PROPERTY AND ANY IMPROVEMENTS ARE MAINTAINED IN CONFORMANCE WITH THIS SITE DEVELOPMENT PLAN.
2. THIS DEVELOPMENT SHALL COMPLY WITH ALL STANDARDS OF THE UNIFIED DEVELOPMENT CODE (UDC), THE CITY OF GEORGETOWN CONSTRUCTION STANDARDS AND SPECIFICATIONS MANUAL, THE DEVELOPMENT MANUAL AND ALL OTHER APPLICABLE CITY STANDARDS.
3. THIS SITE DEVELOPMENT PLAN SHALL MEET THE UDC STORMWATER REQUIREMENTS.
4. ALL SIGNAGE REQUIRES A SEPARATE APPLICATION AND APPROVAL FROM THE INSPECTION SERVICES DEPARTMENT. NO SIGNAGE IS APPROVED WITH THE SITE DEVELOPMENT PLAN.
5. SIDEWALKS SHALL BE PROVIDED IN ACCORDANCE WITH THE UDC.
6. DRIVEWAYS WILL REQUIRE APPROVAL BY THE DEVELOPMENT ENGINEER OF THE CITY OF GEORGETOWN.
7. OUTDOOR LIGHTING SHALL COMPLY WITH SECTION 7.04 OF THE UDC.
8. SCREENING OF MECHANICAL EQUIPMENT, DUMPSTERS AND PARKING SHALL COMPLY WITH CHAPTER 8 OF THE UDC. THE SCREENING IS SHOWN ON THE LANDSCAPE AND ARCHITECTURAL PLANS, AS APPLICABLE.
9. THE COMPANION LANDSCAPE PLAN HAS BEEN DESIGNED AND PLANT MATERIALS SHALL BE INSTALLED TO MEET ALL REQUIREMENTS OF THE UDC.
10. ALL MAINTENANCE OF REQUIRED LANDSCAPE SHALL COMPLY WITH THE MAINTENANCE STANDARDS OF CHAPTER 8 OF THE UDC.
11. A SEPARATE IRRIGATION PLAN SHALL BE REQUIRED AT THE TIME OF BUILDING PERMIT APPLICATION.
12. FIRE FLOW REQUIREMENTS OF_PER MINUTE (INCLUDE AMOUNT) ARE BEING MET BY THIS PLAN.
13. ANY HERITAGE TREE NOTED ON THIS SITE DEVELOPMENT PLAN IS SUBJECT, IN PERPETUITY, TO THE MAINTENANCE, CARE, PRUNING AND REMOVAL REQUIREMENTS OF THE UNIFIED DEVELOPMENT CODE.
14. THE CONSTRUCTION PORTION OF THESE PLANS WERE PREPARED, SEALED, SIGNED AND DATED BY A TEXAS LICENSED PROFESSIONAL ENGINEER. THEREFORE, BASED ON THE ENGINEER'S CONCURRENCE OF COMPLIANCE, THE CONSTRUCTION PLANS FOR CONSTRUCTION OF THE PROPOSED PROJECT ARE HEREBY APPROVED SUBJECT TO THE STANDARD CONSTRUCTION SPECIFICATIONS AND DETAILS MANUAL AND ALL OTHER APPLICABLE CITY, STATE AND FEDERAL REQUIREMENTS AND CODES.
15. THIS PROJECT IS SUBJECT TO ALL CITY STANDARD CONSTRUCTION SPECIFICATIONS AND DETAILS IN EFFECT AT THE TIME OFSUBMITTAL OF THE PROJECT TO THE CITY.
16. WHERE NO EXISTING OVERHEAD INFRASTRUCTURE EXISTS, UNDERGROUND ELECTRIC UTILITY LINES SHALL BE LOCATED ALONG THE STREET AND WITHIN THE SITE. WHERE EXISTING OVERHEAD INFRASTRUCTURE IS TO BE RELOCATED, IT SHALL BE RE-INSTALLED UNDERGROUND AND THE EXISTING FACILITIES SHALL BE REMOVED AT THE DISCRETION OF THE DEVELOPMENT ENGINEER.
17. ALL ELECTRIC AND COMMUNICATION INFRASTRUCTURE SHALL COMPLY WITH UDC SECTION 13.06.

GENERAL NOTES – SIDEWALKS

1. SIDEWALKS SHALL BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENT OF THE T.A.S. AS ADMINSTERED BY THE TDLR ("TDLR COMPLIANT")
2. SIDEWALKS SHALL BE INSTALLED IN ACCORANCE WITH THE REQUIREMENTS FOR THE REQUIREMENTS OF THE UDC, SECTION 12.02.020.

GEOMETRIC AND DESIGN STANDARDS FOR SIDEWALKS

DESIGN AND CONSTRUCTION OF SIDEWALKS SHALL OCCUR IN COMPLIANCE WITH THE FOLLOWING STANDARDS:

A. IN ORDER TO PROVIDE SADE AND ADEQUATE ACCESS ON CITY SIDEWALKS, ALL SIDEWALKS SHALL MEET MINIMUM CLEAR WIDTH REQUIREMENTS AROUND ALL OBSTRUCTIONS, NATURAL OF MANMADE, AS DESCRIBED HEREIN. CLEAR WIDTH SHALL MEAN THE DISTANCE AS MEASURED FROM THE OUTSIDE EDGE OF THE OBSTRUCTION TO THE OUTSIDE EDGE OF THE SIDEWALK OR FROM THE INSIDE EDGE OF THE OBSTRUCTION TO THE INSIDE EDGE OF THE SIDEWALK. IF THE CLEAR WIDTH IS TO BE OBTAINED BETWEEN THE INSIDE EDGE OF THE SIDEWALK AND OBSTRUCTION, GIVEN THAT THE SIDEWALK IS PLACED AGAINST THE BACK OF THE CURB, THE CLEAR WIDTH SHALL BE A MINIMUM OF FIVE FEET. IN ALL OTHER CASES, THE MINIMUM CLEAR WIDTH SHALL BE FOUR FEET.

B. ALL SIDEWALKS SHALL MEET CITY STANDARDS AND SPECIFICATIONS. SIDEWALKS MAY BE PLACED SO THAT THEY VARY THE DISTANCE FROM BACK OF CURB, PROVIDED THAT THE MINIMUM WIDTH AND DISTANCE FROM BACK OF CURB IS NOT REDUCED.

C. GIVEN THAT A COMBINATION OF VARIATION FROM THE TWO PLACEMENT METHODS IS NECESSARY OR DESIRED OR THAT AN OBSTRUCTION IS LOCATED WITHIN THE PAVED AREA, THE FOLLOWING CRITERIA SHALL BE SATISFIED.

1.ALL RADII IN THE TRANSITION SECTION SHALL BE A MINIMUM OF TEN FEET.

ATTENTON

1. A SEPARATE PERMIT IS REQUIRED FOR THE INSTALLATION OF PRIVATE DIRE SERVICE MAINS AND THEIR APPURTENANCES, AND UNDERGROUND FIRE LINE SUPPLY.

TRAFFIC CONTROL AND PAVEMENT MARKING NOTES:

1. ALL TRAFFIC CONTROL DEVICES SHALL CONFORM TO THE STANDARDS OF THE TEXAS DEPARTMENT OF TRANSPORTATION AND THE TEXAS MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.

FIRE PROTECTION NOTES:

1. APPROVAL OF THIS SITE PLAN DOES NOT IMPLY APPROVAL TO INSTALL UNDERGROUND FIRE LINES. PRIOR TO INSTALLATION OF UNDERGROUND FIRE LINES, A SEPARATE PERMIT SHALL BE SUBMITTED, UNDER GROUND FIRE LINE SUPPLY.
2. BACKFLOW PROTECTION WILL BE PROVIDED IN ACCORDANCE WITH THE CITY OF GEORGETOWN REQUIREMENTS WHEN REQUIRED. BACK FLOW PROTECTION WILL BE INSTALLED IN ACCORDANCE WITH THE DETAIL PROVIDED IN THE UTILITY DRAWINGS.
3. ALL PRIVATE FIRE LINES AND WHAT THEY PROVIDE SERVICE TO WILL BE INSTALLED IN ACCORDANCE WITH NFPA 24 INSTALLATION OF PRIVATE SERVICE MAINS AND THEIR APPURTENANCES.
4. ALL TEES, PLUGS, CAPS, BENDS, REDUCERS, VALVES SHALL BE RESTRAINED AGAINST MOVEMENT. THRUST BLOCKING AND JOINT RESTRAINED WILL BE INSTALLED IN ACCORDANCE WITH NFPA 24.
5. ALL UNDERGROUND SHALL REMAIN UNCOVERED UNTIL A VISUAL INSPECTION IS CONDUCTED BY THE GEORGETOWN FIRE MARSHAL'S OFFICE (FMO). ALL JOINT RESTRAINTS AND THRUST BLOCKING SHALL BE UNCOVERED FOR VISUAL INSPECTION.
6. ALL UNDERGROUND SHALL BE FLUSHED PER THE REQUIREMENTS OF NFPA STANDARD 24 AND WITNESSED BY GEORGETOWN FMO.
7. ALL UNDERGROUND SHALL PASS A HYDROSTATIC TEST WITNESSED BY GEORGETOWN FMO. ALL JOINTS SHALL BE UNCOVERED FOR HYDROSTATIC TESTING. ALL PIPING AND ATTACHMENTS SUBJECTED TO SYSTEM WORKING PRESSURE SHALL BE TESTED AT 200 PSI. OR 50 PSI. IN EXCESS OF THE SYSTEM WORKING PRESSURE, WHICHEVER IS GREATER., AND SHALL MAINTAIN THAT PRESSURE + OR – 5 PSI FOR 2 HOURS.
8. FENCES, LANDSCAPING AND OTHER ITEMS WILL NOT BE INSTALLED WITHIN 3 FT, AND WHERE THEY WILL OBSTRUCT THE VISIBILITY OF ACCESS TO HYDRANTS, OR REMOTE FDCS.
9. LICENSE REQUIREMENTS OF EITHER RME-U OR G. WHEN CONNECTING BY UNDERGROUND TO THE WATER PURVEYOR'S MAIN FROM THE POINT OF CONNECTION OR VALVE WHERE THE PRIMARY PURPOSE OF WATER IS FRO FIRE PROTECTION SPRINKLER SYSTEM.

STREET AND DRAINAGE CONSTRUCTION NOTES

1. ROADWAY EXCAVATION, EMBANKMENT, AND SUBGRADE PREPARATION SHALL BE DONE IN ACCORDANCE WITH CITY OF GEORGETOWN SPECIFICATIONS SD-2, ROADWAY EXCAVATION, AND SD-3 EMBANKMENT AND SUBGRADE.
2. CONTRACTOR TO FILL BEHIND CURBS AND WALKS AND SHAPE TO INSURE PROPER DRAINAGE.
3. CONSTRUCTION JOINTS TO EXISTING PAVEMENT SHALL BE MADE BY EITHER CUTTING BACK EXISTING TO PRODUCE A SLIGHTLY BEVELED EDGE FOR THE FULL THICKNESS OF THE WEARING COURSE OR A SUITABLE LAP JOINT SHALL BE MADE. SAW CUTTING REQUIRED.
4. NO TRAFFIC SHALL BE ALLOWED ON THE FINISHED WEARING SURFACE UNTIL AT LEAST 12 HOURS AFTER COMPLETION OF ROLLING.
5. HOT MIX CONCRETE TRANSPORT TRUCKS TO BE EQUIPPED WITH CANVAS COVERS TO BE UTILIZED DURING MATERIAL HAULING. MATERIAL DELIVERED TO SITE AT IMPROPER TEMPERATURE SHALL BE REJECTED. HOT MIX SHALL BE LAID AT A MINIMUM TEMPERATURE OF 225°F.
6. ANY SETTLEMENT UNDER PAVEMENT DUE TO INADEQUATE COMPACTION OF UTILITY LINE BACK FILL SHALL BE CAUSE FOR RECOMPACTION OF TRENCH AND REPLACEMENT OF PAVEMENT SECTION.
7. ALL STORM DRAIN PIPING SHALL MEET CITY OF GEORGETOWN SPECIFICATION C-8, REINFORCED CONCRETE PIPE AND SHALL BE CLASS III RCP UNLESS NOTED OTHERWISE IN THE PLANS.
8. ALL PROPOSED STORM SEWER MANHOLES SHALL MEET CITY OF GEORGETOWN STANDARD SPECIFICATION SD-6, STORM SEWER MANHOLES.
9. PIPE EXCAVATION, TRENCHING, EMBEDMENT, ENCASEMENT AND BACKFILLING SHALL BE DONE IN ACCORDANCE WITH CITY OF GEORGETOWN STANDARD SPECIFICATION G-4 AND G-5 UNLESS OTHERWISE SPECIFIED.
10. TRENCH EXCAVATION SAFETY SYSTEMS SHALL BE IN ACCORDANCE WITH CITY OF GEORGETOWN SPECIFICATION CIP-11.
11. CONTRACTOR SHALL REFERENCE THE GEOTECHNICAL REPORT NO. A211032-R1 "GEOTECHNICAL ENGINEERING REPORT CHAPEL HILL APARTMENTS WESTINGHOUSE ROAD GEORGETOWN, TEXAS" CONDUCTED BY TERRADYNE ENGINEERING, DATED JULY 7, 2021 FOR SOILS AND PAVEMENT INFORMATION. ANY DISCREPANCY BETWEEN THESE CONSTRUCTION PLANS AND THE GEOTECHNICAL REPORT SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER OF RECORD PRIOR TO CONSTRUCTION. THE PROPOSED PAVEMENT SECTION IS:

PORTLAND CEMENT CONCRETE DESIGN

LAYER	THICKNESS (INCHES)		
	LIGHT DUTY	MEDIUM DUTY	DUMPSTERS
REINFORCED CONCRETE (PCC)	6.0	7.0	7.0
MOISTURE CONDITIONED SUBGRADE	8.0	8.0	8.0

12. ALL EMBANKMENT, SUBGRADE, TRENCH BACKFILL, BASE, ASPHALT, AND TESTING SHALL MEET THE CITY OF GEORGETOWN SPECIFICATIONS AND STANDARDS.
13. THESE PAVEMENT THICKNESS DESIGNS ARE INTENDED TO TRANSFER THE LOAD FROM THE ANTICIPATED TRAFFIC CONDITIONS.

EROSION AND SEDIMENTATION CONTROL NOTES

1. PRIOR TO ANY SITE PREPARATION WORK, THE CONTRACTOR SHALL INSTALL EROSION CONTROLS IN ACCORDANCE WITH THE EROSION & SEDIMENTATION CONTROL PLAN.
2. SEDIMENTATION AND TEMPORARY EROSION CONTROLS SHALL BE PROVIDED IN ACCORDANCE WITH CITY OF GEORGETOWN SPECIFICATION G-6.
3. REVEGETATION SHALL BE PERFORMED IN ACCORDANCE WITH CITY OF GEORGETOWN SPECIFICATION G-7 AND AS FURTHER SHOWN ON THIS SET OF PLANS.

WATERLINE CONSTRUCTION NOTES

1. ALL WATER & WASTEWATER COLLECTION LINE CROSSINGS TO BE CONSTRUCTED IN ACCORDANCE WITH TCEQ REGULATION, CHAPTER 290 & 217.
2. ALL WATERLINE CONSTRUCTION AND MATERIALS SHALL BE IN ACCORDANCE WITH CITY OF GEORGETOWN SPECIFICATIONS W1 THRU W4. ALL WATERLINE TESTING SHALL BE DONE IN ACCORDANCE WITH CITY OF GEORGETOWN SPECIFICATION CIP-12, TESTING OF PIPELINES AND MANHOLES.
3. PIPE EXCAVATION, TRENCHING, EMBEDMENT, ENCASEMENT AND BACKFILLILNG SHALL BE DONE IN ACCORDANCE WITH CITY OF GEORGETOWN STANDARD SPECIFICATIONS G-4 AND G-5.
4. TRENCH EXCAVATION SAFETY SYSTEMS SHALL BE IN ACCORDANCE WITH CITY OF GEORGETOWN SPECIFICATION CIP-11.
5. CONTRACTOR TO INFORM BOTH CITY AND PROPERTY OWNER A MIN OF 48 HOURS PRIOR TO INTERRUPTION OF WATER SERVICE. ANY INTERRUPTION SHALL NOT BE DURING PEAK USAGE TIME OR FOR MORE THAN 4 HOURS.
6. ALL PROPOSED PVC PIPE SHALL BE C900-DR18 AND MEET MANUFACTURER'S RECOMMENDATIONS FOR PIPE DEFLECTION. ALL PROPOSED FITTINGS, TEES, AND BENDS SHALL BE DOMESTICALLY MANUFACTURED DUCTILE IRON.
7. ALL GATE VALVES SHALL BE RESILIENT SEATED MEETING CITY OF GEORGETOWN SPECIFICATION W-3, VALVES, HYDRANTS, AND APPURTENANCES.
8. CONTRACTOR TO INSTALL TRACER WIRE PER STANDARD DETAILS FOR ALL PROPOSED WATER MAINS.
9. ALL PROPOSED WATER LINES SHALL BE THRUST BLOCKED PER STANDARD DETAILS AND SPECIFICATIONS.
10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING ANY DAMAGE CAUSED BY THE CONTRACTOR OUTSIDE OF THE DESIGNATED WORK AREA WITH EQUAL OR BETTER QUALITY MATERIAL AT THE CONTRACTOR'S EXPENSE.
11. WET CONNECTIONS 4" DIAMETER AND LARGER SHALL INCLUDE AN APPROPRIATELY SIZED DUCTILE IRON SLEEVE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS. DUCTILE IRON SLEEVE SHALL BE SUBSIDIARY TO WET CONNECTION.
12. CONTRACTOR TO MARK CURBS AS DETAILED FOR WATER SERVICES AND VALVES.

WASTEWATER COLLECTION LINE CONSTRUCTION NOTES

1. ALL CROSSING OF WASTEWATER COLLECTION LINES AND WATERLINES SHALL BE CONSTRUCTED IN ACCORDANCE WITH TCEQ REGULATIONS CHAPTER 290 AND 217.
2. ALL PROPOSED WASTEWATER LINES SHALL BE SDR 26 PIPE MATERIAL (UNLESS OTHERWISE NOTED), IN ACCORDANCE WITH CITY OF GEORGETOWN SPECIFICATION WW-2.
3. PROPOSED WASTEWATER MANHOLES SHALL BE INSTALLED IN ACCORDANCE WITH CITY OF GEORGETOWN SPECIFICATION WW-1.
4. CONNECTIONS TO THE EXISTING WASTEWATER SYSTEM SHALL BE DONE IN ACCORDANCE WITH CITY OF GEORGETOWN SPECIFICATION WW-3.
5. TESTING OF WASTEWATER LINES SHALL BE DONE IN ACCORDANCE WITH CITY OF GEORGETOWN SPECIFICATION CIP-12, TESTING OF PIPELINES AND MANHOLES.
6. CONTRACTOR TO PROVIDE DEFLECTION TEST IN ACCORDANCE WITH TCEQ CHAPTER 217.57 (B.) MANDREL TO BE PULLED IN BOTH DIRECTIONS.
7. CONTRACTOR TO PROVIDE LOW PRESSURE AIR TEST IN ACCORDANCE WITH TCEQ CHAPTER 271.57 (A), (1). 30 DAYS AFTER INSTALLATION. NO WATER TEST ALLOWED.
8. CONTRACTOR TO PROVIDE LEAKAGE TEST FOR MANHOLE IN ACCORDANCE WITH TCEQ CHAPTER 217.57 (A) OF THE STATE WASTEWATER CODE. NO WATER TEST ALLOWED.
9. PIPE EXCAVATION, TRENCHING, EMBEDMENT, ENCASEMENT AND BACKFILLING SHALL BE DONE IN ACCORDANCE WITH CITY OF GEORGETOWN STANDARD SPECIFICATIONS G-4 AND G-5.
10. TRENCH EXCAVATION SAFETY SYSTEMS SHALL BE IN ACCORDANCE WITH CITY OF GEORGETOWN SPECIFICATION CIP-11.
11. CONTRACTOR TO MARK CURBS AS DETAILED FOR WASTEWATER SERVICES.
12. NO WATER JETTING ALLOWED, MECHANICAL COMPACTION REQUIRED.

FIRE PROTECTION NOTES

1. APPROVAL OF THIS SITE PLAN DOES NOT IMPLY APPROVAL TO INSTALL UNDERGROUND FIRE LINES. PRIOR TO INSTALLATION OF UNDERGROUND FIRE LINES, A SEPARATE PERMIT SHALL BE SUBMITTED, UNDERGROUND FIRE LINE SUPPLY.
2. BACKFLOW PROTECTION WILL BE PROVIDED IN ACCORDANCE WITH THE CITY OF GEORGETOWN REQUIREMENTS WHEN REQUIRED. BACKFLOW PROTECTION WILL BE INSTALLED IN ACCORDANCE WITH THE DETAIL PROVIDED IN THE UTILITY DRAWINGS.
3. ALL PRIVATE FIRE LINES AND WHAT THEY PROVIDE SERVICE TO WILL BE INSTALLED IN ACCORDANCE WITH NFPA 24 INSTALLATION OF PRIVATE SERVICE MAINS AND THEIR APPURTENANCES.
4. ALL TEES, PLUGS, CAPS, BENDS, REDUCERS, VALVES SHALL BE RESTRAINED AGAINST MOVEMENT. THRUST BLOCKING AND JOINT RESTRAINED WILL BE INSTALLED IN ACCORDANCE WITH NFPA 24.
5. ALL UNDERGROUND SHALL REMAIN UNCOVERED UNTIL A VISUAL INSPECTION IS CONDUCTED BY THE GEORGETOWN FIRE MARSHAL'S OFFICE (FMO), ALL JOINT RESTRAINTS AND THRUST BLOCKING SHALL BE UNCOVERED FOR VISUAL INSPECTION.
6. ALL UNDERGROUND SHALL BE FLUSHED PER THE REQUIREMENTS OF NFPA STANDARD 24 AND WITNESSED BY GEORGETOWN FMO.
7. ALL UNDERGROUND SHALL PASS A HYDROSTATIC TEST WITNESSED BY GEORGETOWN FMO. ALL JOINTS SHALL BE UNCOVERED FOR HYDROSTATIC TESTING. ALL PIPING AND ATTACHMENTS SUBJECTED TO SYSTEM WORKING PRESSURE SHALL BE TESTED AT 200 PSI, OR 50 PSI MORE THAN THE SYSTEM WORKING PRESSURE, WHICHEVER IS GREATER, AND SHALL MAINTAIN THAT PRESSURE ±5 PSI FOR 2 HOURS.
8. FENCES, LANDSCAPING, AND OTHER ITEMS WILL NOT BE INSTALLED WITHIN 3 FT, AND WHERE THEY WILL OBSTRUCT THE VISIBILITY OR ACCESS TO HYDRANTS, OR REMOTE FDCs.
9. LICENSE REQUIREMENTS OF EITHER RME-U OR G. WHEN CONNECTING BY UNDERGROUND TO THE WATER PURVEYOR'S MAIN FROM THE POINT OF CONNECTION OR VALVE WHERE THE PRIMARY PURPOSE OF WATER IS FOR FIRE PROTECTION SPRINKLER SYSTEM.

DEVELOPER'S CONSTRUCTION NOTES:

1. ALL CONSTRUCTION SHALL BE PERFORMED IN ACCORDANCE WITH THE CITY OF GEORGETOWN'S STANDARD SPECIFICATIONS AND DETAILS, UNLESS SPECIFICALLY DIRECTED OTHERWISE WITHIN THIS SET OF CONSTRUCTION DOCUMENTS. IN THE EVENT OF A DISCREPANCY, ENGINEER SHALL BE NOTIFIED VIA REQUEST FOR INFORMATION (RFI) TO PROVIDE CLARITY.
2. IN THE EVENT THAT DISCREPANCIES ARE FOUND IN THE FIELD CONTRADICTORY TO THESE CONSTRUCTION PLANS WITH REGARD TO EXISTING UTILITIES, EXISTING TOPOGRAPHY, EXISTING IMPROVEMENTS, TREES, OR ANY OTHER FEATURE AFFECTING CONSTRUCTION, THE ENGINEER OF RECORD SHALL BE NOTIFIED IMMEDIATELY AND DISCREPANCY SHALL BE DOCUMENTED VIA A REQUEST FOR INFORMATION (RFI).
3. ALL DISTURBED AREAS SHALL BE COMPLETELY REVEGETATED BY THE CONTRACTOR. IN DISTURBED AREAS NOT DESIGNATED ON LANDSCAPE PLANS AND WITHIN THE PRIVATE MULTI-FAMILY PROJECT SITE, CONTRACTOR SHALL REVEGETATE WITH A MINIMUM OF 6 INCHES OF QUALITY LOAMY MATERIAL OR CLEAN ONSITE TOPSOIL AND HYDROMULCH, BERMUDA SEED, OR SOD, DEPENDING UPON SLOPE CONDITIONS. CONTRACTOR IS RESPONSIBLE FOR TEMPORARY IRRIGATION AND ESTABLISHING 100% VEGETATIVE COVER OVER THE SITE PRIOR TO ENGINEER'S FINAL CONCURRENCE. CONTRACTOR MAY ELECT TO UTILIZE EROSION CONTROL MATTING ON SLOPES TO OBTAIN REVEGETATION. NO PORTIONS OF SLOPES OR DISTURBED AREAS SHALL REMAIN UNVEGETATED FOR MORE THAN 14 DAYS. SUBMIT EROSION CONTROL MATTING TO ENGINEER OF RECORD FOR REVIEW PRIOR TO CONSTRUCTION.
4. ALL EXISTING UTILITIES SHALL BE LOCATED BY CONTRACTOR PRIOR TO COMMENCEMENT OF WORK. ANY DISCREPANCIES FOUND FROM THE PLAN SET SHALL BE SENT TO ENGINEER OF RECORD PRIOR TO CONSTRUCTION. PER GEOTECHNICAL ENGINEERING REPORT, ANY UTILITIES SLATED TO BE ABANDONED SHALL BE COMPLETELY REMOVED FROM ALL PROPOSED CONSTRUCTION AREAS. IF THIS IS NOT FEASIBLE, THEN THE ABANDONED UTILITY PIPING SHALL BE FILLED WITH FLOWABLE FILL (CITY OF AUSTIN SPECIFICATIONS ITEM NO. 402S OR TXDOT ITEM NO. 401) AND PLUGGED SUCH THAT IS DOES NOT BECOME A CONDUIT FOR WATER FLOW.
5. ALL REMNANTS OF EXISTING FOUNDATIONS SHALL BE COMPLETELY EXCAVATED AND REMOVED TO AT LEAST 2 FEET BELOW FINISHED GRADES. IF ANY UNUSUAL ITEMS ARE UNEARTHED DURING OR AFTER DEMOLITION, THE GEOTECHNICAL ENGINEER AND THE CIVIL ENGINEER OF RECORD SHALL BE CONTACTED IMMEDIATELY.
6. CONTRACTOR IS RESPONSIBLE FOR TRAFFIC CONTROL. TRAFFIC CONTROL SHALL BE IN ACCORDANCE WITH CITY OF GEORGETOWN REQUIREMENTS. IN THE CASE OF NO GUIDANCE OR APPLICABLE TRAFFIC CONTROL DETAILS FROM THE CITY OF GEORGETOWN, TXDOT STANDARD TRAFFIC CONTROL METHODS AND DETAILS SHALL BE UTILIZED.
7. ALL CONSTRUCTION SHALL BE PERFORMED IN ACCORDANCE WITH OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION LAWS AND REGULATIONS.
8. ALL SUBMITTALS SHALL BE REVIEWED BY THE ENGINEER OF RECORD OR DESIGNATED REPRESENTATIVE PRIOR TO CONSTRUCTION. THIS INCLUDES, BUT IS NOT LIMITED TO, WATER, STORM, AND SANITARY SEWER PIPES AND APPURTENANCES, EARTHWORK MATERIALS, TRENCH MATERIALS, PAVEMENTS, AND SIGNAGE. ALL PAVEMENT MIX DESIGNS SHALL BE SIGNED AND SEALED BY A LICENSED PROFESSIONAL ENGINEER IN THE STATE OF TEXAS. ALL SUBMITTALS NECESSARY FOR PUBLIC PROJECTS IN THE CITY OF GEORGETOWN SHALL BE APPLICABLE SUBMITTALS FOR THIS PROJECT.
9. ALL EARTHWORK OPERATIONS, MATERIALS, AND PAVING OPERATIONS OUTSIDE OF BUILDING ENVELOPES, INCLUDING BUT NOT LIMITED TO, DEMOLITION, CLEARING, GRUBBING, SCARIFYING, EXCAVATION, FILL, COMPACTION, SUBGRADE PREPARATION, BASE MATERIALS, AND CONCRETE PLACEMENT SHALL BE PERFORMED AND PROVIDED IN ACCORDANCE WITH THE TERRADYNE GEOTECHNICAL ENGINEERING REPORT NO. A211032-R1 FOR CHAPEL HILL APARTMENTS DATED JULY 7, 2021, WET POND QA/QC PLAN FOR CLAY LINER DATED APRIL 30, 2020, AND SUPPLEMENTAL LETTER NO. 2 DATED MAY 7, 2020. SPECIAL ATTENTION SHOULD BE GIVEN TO THE FILL COMPACTION REQUIREMENTS. FOR FILLS GREATER THAN 5 FEET IN DEPTH, THE COMPACTION SHALL BE INCREASED TO AT LEAST 100 PERCENT OF THE ASTM D698 MAXIMUM DRY UNIT WEIGHT. ALL EARTHWORK OPERATIONS WITHIN BUILDING ENVELOPE LIMITS SHALL BE CHECKED/VERIFIED WITH DEVELOPER/OWNER PRIOR TO CONSTRUCTION. THESE CIVIL ENGINEERING PLANS DO NOT ADDRESS EARTHWORK WITHIN THE BUILDING ENVELOPES. OTHER GEOTECHNICAL ENGINEERING REPORT(S) APPLY FOR BUILDING ENVELOPES.
10. PER THE RECOMMENDATIONS WITHIN THE TERRADYNE GEOTECHNICAL ENGINEERING REPORT NO. A211032-R1 FOR CHAPEL HILL APARTMENTS DATED JULY 7, 2021, AREAS IMMEDIATELY ADJACENT TO EACH BUILDING THAT ARE NOT PAVED SHALL HAVE 5 FEET BEYOND THE BUILDING LIMIT EXCAVATED OF THE SELECT FILL OVERBUILD AND REPLACED WITH MOISTURE CONDITIONED AND COMPACTED ON-SITE FAT CLAY SOILS FOR A MINIMUM DEPTH OF 2 FEET. REFERENCE THE "GRADING AND DRAINAGE" SECTION OF THE GEOTECHNICAL ENGINEERING REPORT FOR FURTHER INFORMATION AND SPECIFICATIONS. CONTRACTOR SHALL CONFIRM WITH DEVELOPER/OWNER PRIOR TO CONSTRUCTION AS OTHER GEOTECHNICAL ENGINEERING REPORTS MAY APPLY FOR BUILDING ENVELOPES.
11. PER THE RECOMMENDATIONS WITHIN THE TERRADYNE GEOTECHNICAL ENGINEERING REPORT NO. A211032-R1 FOR CHAPEL HILL APARTMENTS DATED JULY 7, 2021, UTILITY LINES THAT PENETRATE INTO THE BUILDING ENVELOPE SHALL HAVE AN EFFECTIVE CLAY OR FLOWABLE FILL "TRENCH PLUG" THAT EXTENDS AT LEAST 2 FEET OUT FROM THE FACE OF THE BUILDING EXTERIOR. THE CLAY FILL/FLOWABLE FILL SHALL BE PLACED TO COMPLETELY SURROUND THE UTILITY LINE AND IT SHALL FILL THE UTILITY TRENCH COMPLETELY IN WIDTH AND HEIGHT, WITH THE EXCEPTION OF THE TOPSOIL AT THE SURFACE. REFER TO "UTILITY TRENCH BACKFILL" SECTION OF THE GEOTECHNICAL ENGINEERING REPORT FOR FURTHER INFORMATION AND SPECIFICATIONS. CONTRACTOR SHALL SHALL CONFIRM/VERIFY WITH DEVELOPER/OWNER PRIOR TO CONSTRUCTION AS OTHER GEOTECHNICAL ENGINEERING REPORTS MAY APPLY FOR BUILDING ENVELOPES.
12. ALL EARTHWORK, MATERIALS, AND PAVEMENT TESTING SHALL BE PERFORMED BY A QUALIFIED PROFESSIONAL GEOTECHNICAL ENGINEER LICENSED IN THE STATE OF TEXAS. ALL TESTING METHODS AND FREQUENCY/SCHEDULE SHALL BE PERFORMED IN ACCORDANCE WITH THE TERRADYNE GEOTECHNICAL ENGINEERING REPORT NO. A211032-R1 FOR CHAPEL HILL APARTMENTS DATED JULY 7, 2021 AND SUBSEQUENT ADDENDUM LETTERS TO THIS REPORT, AND AS AGREED UPON BETWEEN DEVELOPER AND GEOTECHNICAL ENGINEER. TESTING SHALL BE PERFORMED IN ACCORDANCE WITH CITY OF GEORGETOWN SPECIFICATIONS AT A MINIMUM AND SHALL INCLUDE PROCTORS, MOISTURE AND DENSITY TESTING, GRADATIONS, CONCRETE CYLINDERS, SLUMP TESTS, AND OTHER TESTS RECOMMENDED BY GEOTECHNICAL ENGINEER. ALL TEST RESULTS AND REPORTS SHALL BE SUBMITTED TO THE ENGINEER OF RECORD.
13. ALL UTILITIES SHALL BE TESTED IN ACCORDANCE WITH CITY OF GEORGETOWN TESTING REQUIREMENTS WHETHER THEY ARE PRIVATE UTILITIES OR PUBLIC. ALL TEXAS COMMISSION ON ENVIRONMENTAL QUALITY (TCEQ) RULES AND REGULATIONS APPLY TO THIS PROJECT. ALL TEST RESULTS AND REPORTS SHALL BE SUBMITTED TO THE ENGINEER OF RECORD.
14. THE CONTRACTOR SHALL HIRE AN INDEPENDENT THIRD PARTY TO CONDUCT NECESSARY INSPECTIONS FOR TEMPORARY BEST MANAGEMENT PRACTICES. CONTRACTOR IS RESPONSIBLE FOR PREPARING THE STORM WATER POLLUTION PREVENTION PLAN (SWPPP) AND SUBMITTING NOTICE OF INTENT AND NOTICE OF TERMINATION.
15. ALL STANDARD CITY OF GEORGETOWN NOTES AND DETAILS APPLY FOR THE WORK ASSOCIATED WITH THIS PLAN SET, UNLESS SPECIFICALLY WRITTEN OTHERWISE BY ENGINEER OF RECORD IN THIS PLAN SET OR DURING CONSTRUCTION PHASE.

GENERAL NOTES:

1. THESE CONSTRUCTION PLANS WERE PREPARED, SEALED AND DATED BY A TEXAS LICENSED PROFESSIONAL ENGINEER. THEREFORE BASED ON THE ENGINEER'S CONCURRENCE OF COMPLIANCE, THE CONSTRUCTION PLANS FOR CONSTRUCTION OF THE PROPOSED PROJECT ARE HEREBY APPROVED SUBJECT TO THE STANDARD CONSTRUCTION SPECIFICATIONS AND DETAILS MANUAL AND ALL OTHER APPLICABLE CITY, STATE AND FEDERAL REQUIREMENTS AND CODES.
2. THIS PROJECT IS SUBJECT TO ALL CITY STANDARD SPECIFICATIONS AND DETAILS IN EFFECT AT THE TIME OF SUBMITTAL OF THE PROJECT OF THE CITY.
3. THE SITE CONSTRUCTION PLANS SHALL MEET ALL REQUIREMENTS OF THE APPROVED SITE PLAN.
4. WASTEWATER MAINS AND SERVICE LINES SHALL BE SDR 26 PVC
5. WASTEWATER MAINS SHALL BE INSTALLED WITHOUT HORIZONTAL OR VERTICAL BENDS.
6. MAXIMUM DISTANCE BETWEEN WASTEWATER MANHOLES IN 500 FEET.
7. WASTEWATER MAINS SHALL BE LOW PRESSURE AIR TESTED AND MANDREL TESTED BY THE CONTRACTOR ACCORDING TO CITY OF GEORGETOWN AND TCEQ REQUIREMENTS.
8. WASTEWATER MANHOLES SHALL BE VACUUM TESTED AND COATED BY THE CONTRACTOR ACCORDING TO CITY OF GEORGETOWN AND TCEQ REQUIREMENTS.
9. WASTEWATER MAINS SHALL BE CAMERA TESTED BY THE CONTRACTOR AND SUBMITTED TO THE CITY ON DVD FORMAT PRIOR TO PAVING THE STREETS.
10. PRIVATE WATER SYSTEM FIRE LINES SHALL BE TESTED BY THE CONTRACTOR TO 200 PSI FOR 2 HOURS.
11. PRIVATE WATER SYSTEM FIRE LINES SHALL BE DUCTILE IRON PIPING FROM THE WATER MAIN TO THE BUILDING SPRINKLER SYSTEM, AND 200 PSI C900 PVC FOR ALL OTHERS.
12. PRIVATE WATER SYSTEM MAINS SHALL BE 150 PSI C900 PVC AND TESTED BY CONTRACTOR AT 150 PSI FOR 4 HOURS.
13. ALL BENDS AND CHANGES IN DIRECTION ON WATER MAINS SHALL BE RESTRAINED AND THRUST BLOCKED.
14. LONG FIRE HYDRANT LEADS SHALL BE RESTRAINED.
15. ALL WATER LINES ARE TO BACTERIA TESTED BY THE CONTRACTOR ACCORDING TO THE CITY STANDARDS AND SPECIFICATIONS.
16. WATER AND SEWER MAIN CROSSING SHALL MEET ALL REQUIREMENTS OF THE TCEQ AND THE CITY.
17. FLEXIBLE BASE MATERIAL FOR PUBLIC STREETS SHALL BE TXDOT TYPE A GRADE 1.
18. HOT MIX ASPHALTIC CONCRETE PAVEMENT SHALL BE TYPE D UNLESS OTHERWISE SPECIFIED AND SHALL BE A MINIMUM OF 2 INCHES THICK ON PUBLIC STREETS AND ROADWAYS.
19. ALL SIDEWALK RAMPS ARE TO BE INSTALLED WITH THE PUBLIC INFRASTRUCTURE.
20. A MAINTENANCE BOND IS REQUIRED TO BE SUBMITTED TO THE CITY PRIOR TO ACCEPTANCE OF PUBLIC IMPROVEMENTS. THIS BOND SHALL BE ESTABLISHED FOR 1 YEAR IN THE AMOUNT OF 25% OF THE COST OF THE PUBLIC IMPROVEMENTS AND SHALL FOLLOW THE CITY FORMAT.
21. RECORD DRAWINGS OF THE PUBLIC IMPROVEMENTS SHALL BE SUBMITTED TO THE CITY BY THE DESIGN ENGINEER PRIOR TO ACCEPTANCE OF THE PROJECT. THESE DRAWINGS SHALL BE MYLAR OR ON TIFF OR PDF (300P DPI). IF A DISK IS SUBMITTED, A BOND SET SHALL E INCLUDED WITH THE DISK.

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

THE LOCATION OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK. HE AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY HIS FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

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TBPE # F-6324
TBPLS # 10194230
Stantec Consulting Services Inc.
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Austin TX 78723-3544
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Consultant

Revision	By	Appd	YYYY.MM.DD

Issued	By	Appd	YYYY.MM.DD

Permit/Seal
BRIAN E. CARRINGTON
123263
4/28/2023

Client/Project
DUKE, INC.
CHAPEL HILL PHASE 2
403 WESTINGHOUSE ROAD,
GEORGETOWN, TEXAS 78626

Project No.: 222012278
File Name: 222012278GNS01
Scale:

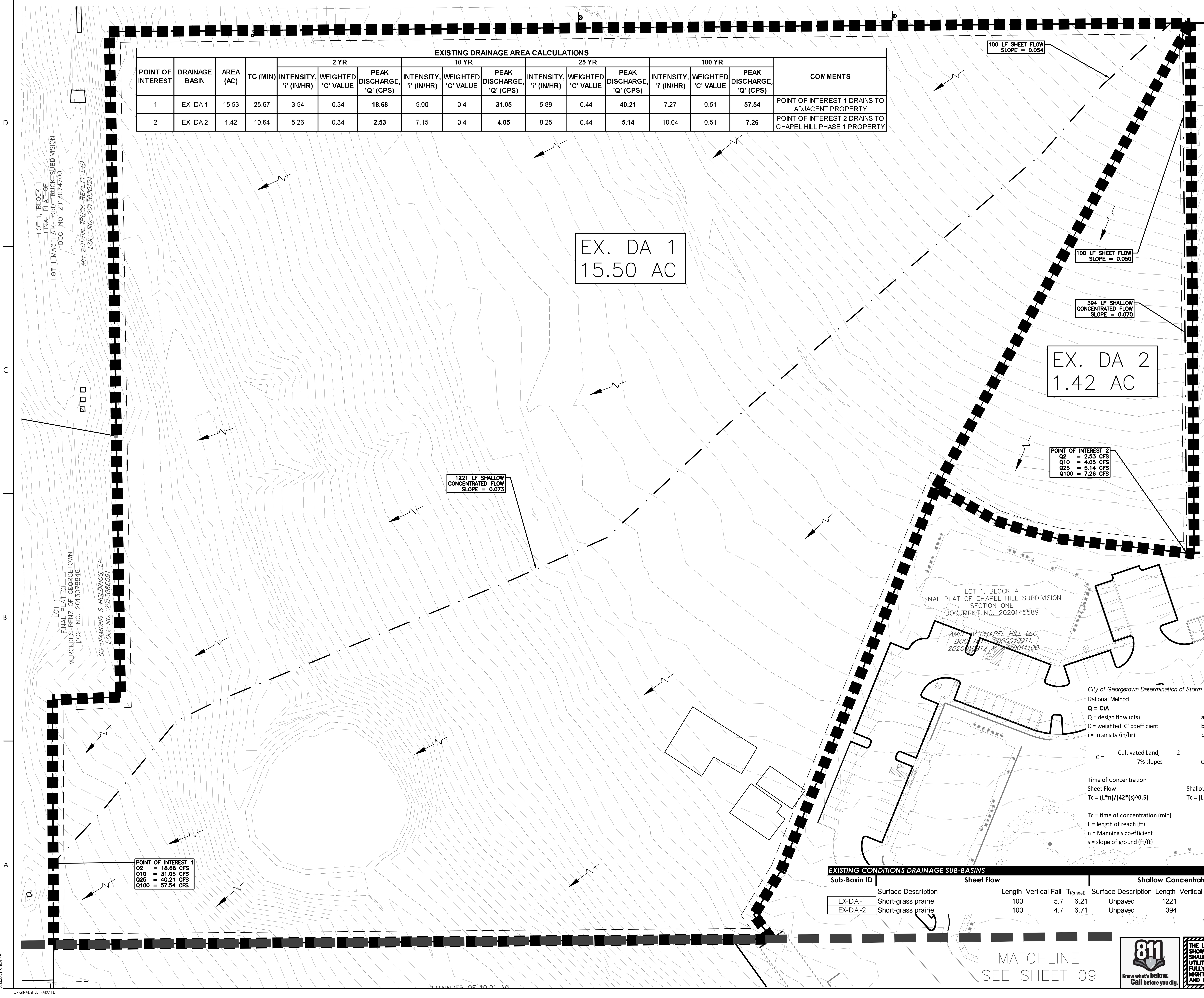
Dwn.	Dsgn.	Chkd.	YYYY.MM.DD
			5.21.2023

Title
GENERAL NOTES

Revision:0 Sheet: 02 of 38
Drawing No.
02

EXISTING DRAINAGE AREA CALCULATIONS

POINT OF INTEREST	DRAINAGE BASIN	AREA (AC)	TC (MIN)	2 YR			10 YR			25 YR			100 YR			COMMENTS
				INTENSITY, 'i' (IN/HR)	WEIGHTED 'C' VALUE	PEAK DISCHARGE, 'Q' (CPS)	INTENSITY, 'i' (IN/HR)	WEIGHTED 'C' VALUE	PEAK DISCHARGE, 'Q' (CPS)	INTENSITY, 'i' (IN/HR)	WEIGHTED 'C' VALUE	PEAK DISCHARGE, 'Q' (CPS)	INTENSITY, 'i' (IN/HR)	WEIGHTED 'C' VALUE	PEAK DISCHARGE, 'Q' (CPS)	
1	EX. DA 1	15.53	25.67	3.54	0.34	**18.68**	5.00	0.4	**31.05**	5.89	0.44	**40.21**	7.27	0.51	**57.54**	POINT OF INTEREST 1 DRAINS TO ADJACENT PROPERTY
2	EX. DA 2	1.42	10.64	5.26	0.34	**2.53**	7.15	0.4	**4.05**	8.25	0.44	**5.14**	10.04	0.51	**7.26**	POINT OF INTEREST 2 DRAINS TO CHAPEL HILL PHASE 1 PROPERTY



LEGEND

EXISTING	DESCRIPTION
	PROPERTY (R.O.W.) LINE
	DIRECTION OF FLOW
678	CONTOUR
EX. DA 1 1.03 AC	DRAINAGE AREA NUMBER AND ACREAGE
	TIME OF CONCENTRATION
	DRAINAGE DIVIDE

NOTE

1. EXISTING DRAINAGE CONDITIONS DETERMINED BY USING CITY OF AUSTIN GIS CONTOURS (2017 DATA).

City of Georgetown Determination of Storm Runoff

Rational Method

Q = CiA

Q = design flow (cfs)

C = weighted 'C' coefficient

i = Intensity (in/hr)

Intensity (in/hr) **i = a / ((Tc+b)^c)**

	2-year	10-year	25-year	100-year
a=	106.29	96.84	111.07	129.03
b=	16.81	15.88	17.23	17.83
c=	0.9076	0.7952	0.7815	0.7625

C = Cultivated Land, 2-7% slopes

	2-year	10-year	25-year	100-year
C=	0.34	0.40	0.44	0.51

Time of Concentration

Sheet Flow

Tc = (L*n)/(42*(s)^0.5)

Shallow Concentrated Flow

Tc = (L*n)/(60*(s)^0.5)

Tc = time of concentration (min)

L = length of reach (ft)

n = Manning's coefficient

s = slope of ground (ft/ft)

EXISTING CONDITIONS DRAINAGE SUB-BASINS

Sub-Basin ID	Sheet Flow				Shallow Concentrated Flow				Channel Flow		T_t
	Surface Description	Length	Vertical Fall	$T_{t(sheet)}$	Surface Description	Length	Vertical Fall	$T_{t(shallow\ concentrated)}$	Length	$T_{t(channel)}$	
EX-DA-1	Short-grass prairie	100	5.7	6.21	Unpaved	1221	88.8	4.67	0	0	10.88
EX-DA-2	Short-grass prairie	100	4.7	6.71	Unpaved	394	27.3	1.54	21	0.05	8.3

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TBPLS # 10194230

Consultant

Revision

Issued

Permit/Seal

BRIAN E. CARRINGTON 123263 LICENSED PROFESSIONAL ENGINEER

4/28/2023

Client/Project
DUKE, INC.
CHAPEL HILL PHASE 2
403 WESTINGHOUSE ROAD, GEORGETOWN, TEXAS 78626

Project No.: 222012278

File Name: 222012278DAM01

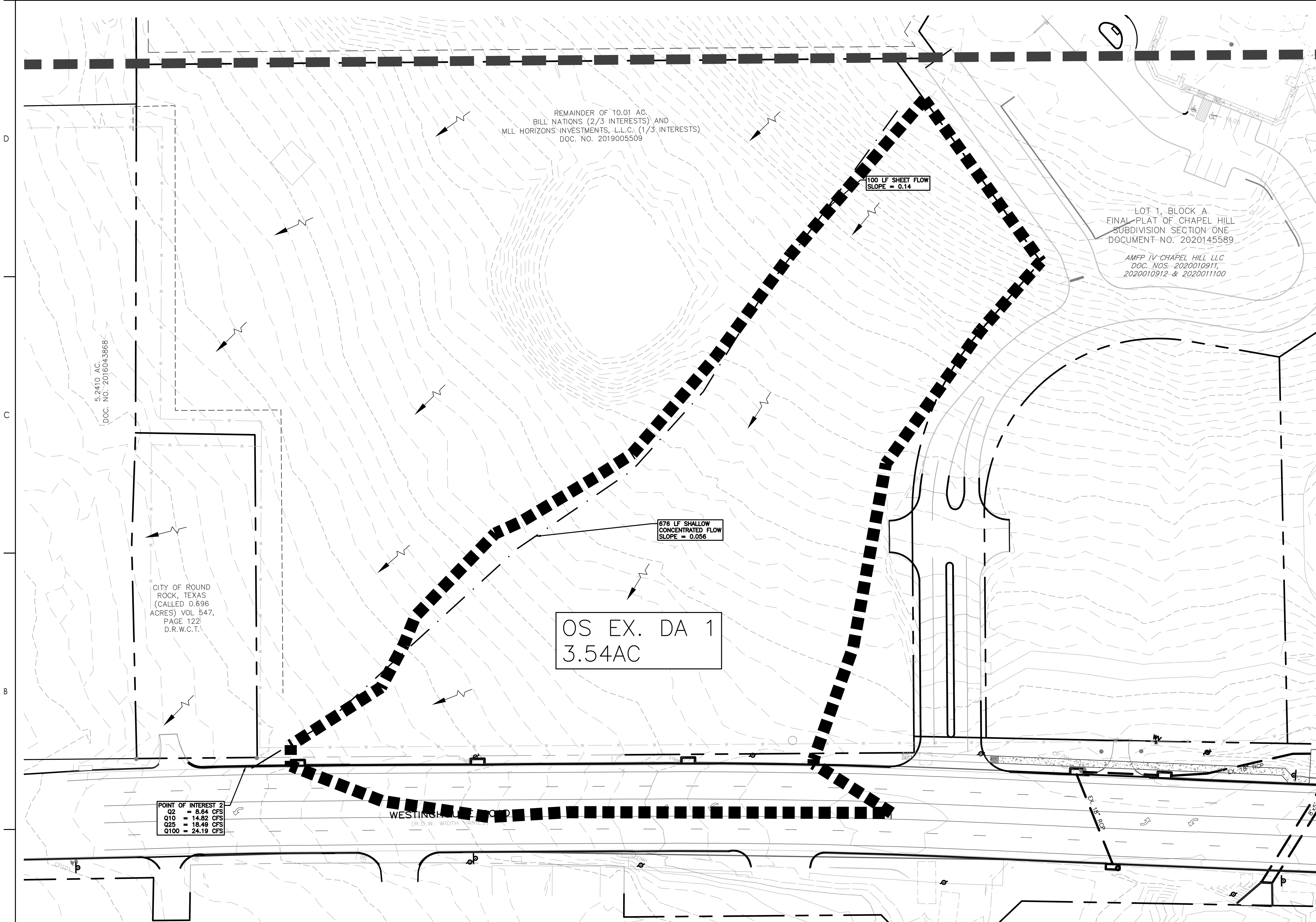
Scale:

Dwn. Dsgn. Chkd. 5.21.2023 YYYY.MM.DD

Title
ON-SITE EXISTING DRAINAGE AREA MAP

Revision:0 Sheet: 08 of 38

Drawing No.
08



N
0 40' 80'

LEGEND

EXISTING	DESCRIPTION
	PROPERTY (R.O.W.) LINE
	DIRECTION OF FLOW
678	CONTOUR
EX. DA 1 1.03 AC	DRAINAGE AREA NUMBER AND ACREAGE
	TIME OF CONCENTRATION
	DRAINAGE DIVIDE

NOTE

1. EXISTING DRAINAGE CONDITIONS DETERMINED BY USING CITY OF AUSTIN GIS CONTOURS (2017 DATA).

STATE OF TEXAS
PAUL M. HAMES
66791
LICENSED
PROFESSIONAL ENGINEER
01-26-2021

THIS SEAL APPLIES ONLY TO CURRENT REVISIONS TO RELOCATED STORM SYSTEM ON WESTINGHOUSE ROAD

STATE OF TEXAS
BRIAN E. CARRINGTON
123263
LICENSED
PROFESSIONAL ENGINEER
4/28/2023

EXISTING CONDITIONS DRAINAGE SUB-BASINS

Sub-Basin ID	Sheet Flow				Shallow Concentrated Flow				Channel Flow		T_t
	Surface Description	Length	Vertical Fall	$T_{t(sheet)}$	Surface Description	Length	Vertical Fall	$T_{t(shallow\ concentrated)}$	Length	$T_{t(channel)}$	
EX-DA-1	Short-grass prairie	100	14	4.33	Unpaved	676	37	2.98	0	0	7.31

EXISTING CONDITIONS DRAINAGE SUB-BASINS - OFFSITE

Sub-Basin ID	Subbasin Area (ac)	Impervious Area (ac)	Impervious Area (sf)	Pervious Area (ac)	% Impervious	Weighted 'CN"	Tc (min)	Flow: Q2 (cfs)	Flow: Q10 (cfs)	Flow: Q25 (cfs)	Flow: Q100 (cfs)
ES1	3.54	0.39	16988	3.15	11.00	85	7.3	8.64	14.82	18.49	24.19

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Permit/Seal

Client/Project
DUKE, INC.
CHAPEL HILL PHASE 2
403 WESTINGHOUSE ROAD,
GEORGETOWN, TEXAS 78626

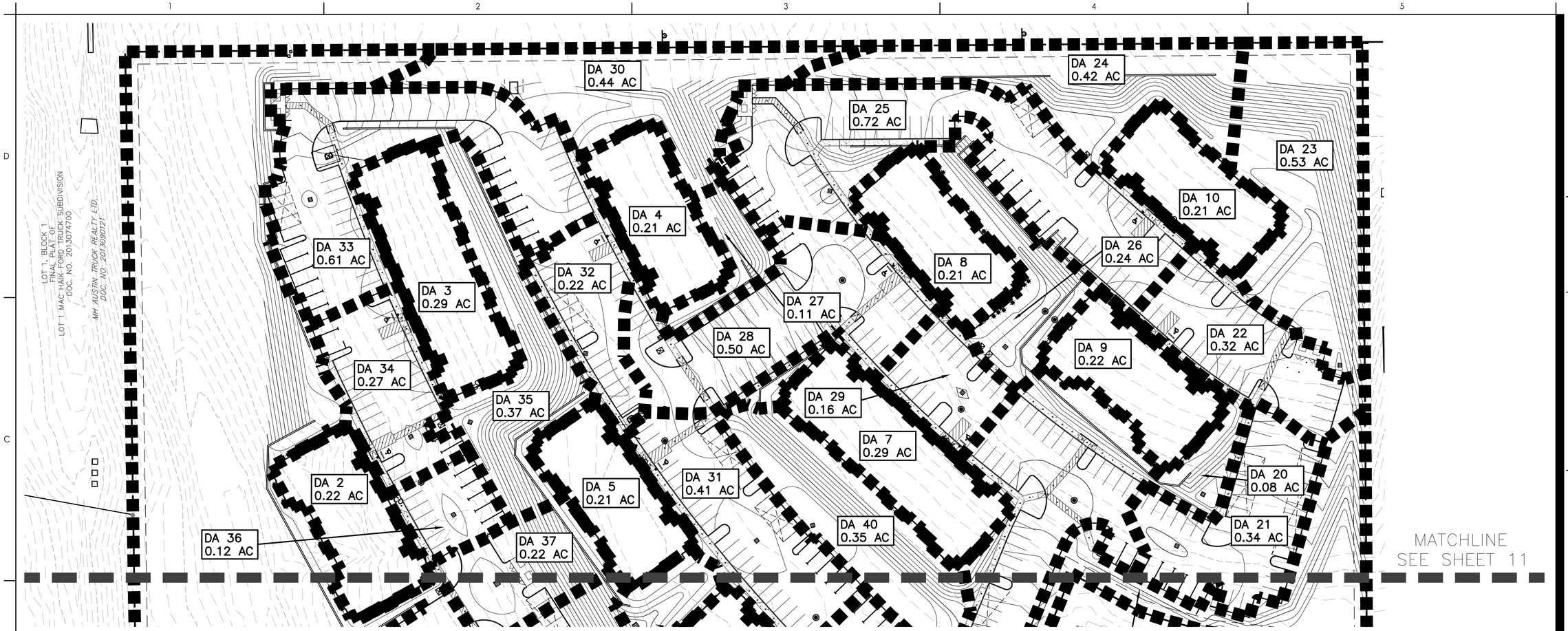
Project No.: 222012278
File Name: 222012278DAM02
Scale:
Dwn. Dsgn. Chkd. 5.21.2023 YYYY.MM.DD

Title
OFF-SITE EXISTING DRAINAGE AREA MAP

Revision:0 Sheet: 09 of 38
Drawing No.
09

ORIGINAL SHEET - ARCH D

2021-65-SDP



DRAINAGE BASIN AREA
RATIONAL METHOD CALCULATIONS

References: *City of Georgetown Drainage Criteria Manual*

Formulas: Rational Method — **Q = CiA**

Q = design flow (cfs)
C = weighted 'C' coefficient
i = Intensity (in/hr)

Intensity (in/hr) — **i = a / ((T$_c$+b)^c)**

	2-year	10-year	25-year	100-year
a=	106.29	96.84	111.07	129.03
b=	16.81	15.88	17.23	17.83
c=	0.9076	0.7952	0.7815	0.7625

Sub-Basin ID	Area (ac)	Tc (min)	2-YEAR Intensity (in/hr)	2-YEAR Weighted 'C' Value	2-YEAR Sub-Basin Q_2 (cfs)	10-YEAR Intensity	10-YEAR Weighted 'C' Value	10-YEAR Sub-Basin Q_{10} (cfs)	25-YEAR Intensity	25-YEAR Weighted 'C' Value	25-YEAR Sub-Basin Q_{25} (cfs)	100-YEAR Intensity	100-YEAR Weighted 'C' Value	100-YEAR Sub-Basin Q_{100} (cfs)	COMMENTS
PROPOSED CONDITIONS DRAINAGE SUB-BASINS															
DA-1	0.21	5.0	6.48	0.97	1.32	8.64	0.97	1.76	9.84	0.97	2.00	11.88	0.97	2.42	Roof drains into storm sewer
DA-2	0.22	5.0	6.48	0.97	1.39	8.64	0.97	1.85	9.84	0.97	2.10	11.88	0.97	2.54	Roof drains into storm sewer
DA-3	0.29	5.0	6.48	0.97	1.84	8.64	0.97	2.45	9.84	0.97	2.79	11.88	0.97	3.37	Roof drains into storm sewer
DA-4	0.21	5.0	6.48	0.97	1.32	8.64	0.97	1.76	9.84	0.97	2.00	11.88	0.97	2.42	Roof drains into storm sewer
DA-5	0.21	5.0	6.48	0.97	1.32	8.64	0.97	1.76	9.84	0.97	2.00	11.88	0.97	2.42	Roof drains into storm sewer
DA-6	0.29	5.0	6.48	0.97	1.84	8.64	0.97	2.45	9.84	0.97	2.79	11.88	0.97	3.37	Roof drains into storm sewer
DA-7	0.29	5.0	6.48	0.97	1.84	8.64	0.97	2.45	9.84	0.97	2.79	11.88	0.97	3.37	Roof drains into storm sewer
DA-8	0.21	5.0	6.48	0.97	1.32	8.64	0.97	1.76	9.84	0.97	2.00	11.88	0.97	2.42	Roof drains into storm sewer
DA-9	0.22	5.0	6.48	0.97	1.39	8.64	0.97	1.85	9.84	0.97	2.10	11.88	0.97	2.54	Roof drains into storm sewer
DA-10	0.21	5.0	6.48	0.97	1.32	8.64	0.97	1.76	9.84	0.97	2.00	11.88	0.97	2.42	Roof drains into storm sewer
DA-11	0.14	5.0	6.48	0.97	0.85	8.64	0.97	1.13	9.84	0.97	1.29	11.88	0.97	1.56	Roof drains into storm sewer
DA-12	0.46	5.0	6.48	0.36	1.06	8.64	0.42	1.65	9.84	0.46	2.05	11.88	0.52	2.84	Roof drains into storm sewer
DA-13	0.87	5.0	6.48	0.71	3.98	8.64	0.73	5.49	9.84	0.75	6.39	11.88	0.77	8.01	Drains into curb inlet
DA-14	0.37	5.0	6.48	0.36	0.86	8.64	0.41	1.33	9.84	0.45	1.66	11.88	0.52	2.30	Drains offsite
DA-15	0.52	5.0	6.48	0.38	1.28	8.64	0.44	1.96	9.84	0.48	2.42	11.88	0.54	3.33	Drains offsite
DA-16	3.15	5.0	6.48	0.34	6.98	8.64	0.40	10.94	9.84	0.44	13.69	11.88	0.51	19.14	Drains offsite
DA-17	0.30	5.0	6.48	0.39	0.76	8.64	0.44	1.16	9.84	0.48	1.44	11.88	0.54	1.97	Drains into proposed pond
DA-18	0.63	5.0	6.48	0.67	2.75	8.64	0.70	3.82	9.84	0.72	4.47	11.88	0.75	5.64	Drains onto access drive
DA-19	0.80	5.0	6.48	0.82	4.26	8.64	0.84	5.77	9.84	0.84	6.64	11.88	0.86	8.16	Drains into grate inlet
DA-20	0.09	9.5	5.47	0.39	0.20	7.41	0.45	0.31	8.53	0.48	0.39	10.37	0.55	0.53	Drains into grate inlet
DA-21	0.34	5.0	6.48	0.91	2.00	8.64	0.92	2.67	9.84	0.92	3.05	11.88	0.92	3.70	Drains into grate inlet
DA-22	0.31	5.0	6.48	0.87	1.72	8.64	0.88	2.32	9.84	0.88	2.65	11.88	0.89	3.24	Drains into grate inlet
DA-23	0.53	7.6	5.84	0.34	1.05	7.86	0.40	1.66	9.01	0.44	2.09	10.93	0.51	2.94	Drains into grate inlet
DA-24	0.42	5.5	6.35	0.34	0.92	8.48	0.40	1.44	9.67	0.44	1.81	11.69	0.51	2.52	Drains into DA-25
DA-25	0.72	5.0	6.48	0.87	4.05	8.64	0.88	5.46	9.84	0.88	6.26	11.88	0.89	7.64	Drains into grate inlet
DA-26	0.24	12.1	5.02	0.36	0.43	6.85	0.42	0.68	7.92	0.46	0.86	9.66	0.53	1.21	Drains into grate inlet
DA-27	0.11	6.1	6.20	0.36	0.25	8.30	0.42	0.39	9.48	0.46	0.49	11.46	0.53	0.67	Drains into grate inlet
DA-28	0.50	5.0	6.48	0.86	2.78	8.64	0.87	3.75	9.84	0.88	4.30	11.88	0.89	5.25	Drains into grate inlet
DA-29	0.16	5.0	6.48	0.88	0.93	8.64	0.88	1.25	9.84	0.89	1.44	11.88	0.90	1.75	Drains into grate inlet
DA-30	0.44	6.7	6.05	0.34	0.90	8.12	0.40	1.42	9.28	0.44	1.78	11.24	0.51	2.50	Drains into DA-33
DA-31	0.41	5.0	6.48	0.86	2.29	8.64	0.87	3.09	9.84	0.87	3.54	11.88	0.89	4.33	Drains into grate inlet
DA-32	0.22	5.0	6.48	0.86	1.20	8.64	0.87	1.62	9.84	0.87	1.86	11.88	0.88	2.27	Drains into grate inlet
DA-33	0.61	5.0	6.48	0.83	3.29	8.64	0.84	4.45	9.84	0.85	5.11	11.88	0.87	6.27	Drains into grate inlet
DA-34	0.27	5.0	6.48	0.88	1.52	8.64	0.88	2.05	9.84	0.89	2.35	11.88	0.90	2.86	Drains into grate inlet
DA-35	0.37	14.6	4.66	0.35	0.61	6.40	0.41	0.98	7.44	0.45	1.24	9.09	0.52	1.75	Drains into grate inlet
DA-36	0.12	5.0	6.48	0.92	0.70	8.64	0.92	0.94	9.84	0.92	1.07	11.88	0.93	1.30	Drains into grate inlet
DA-37	0.22	5.0	6.48	0.60	0.87	8.64	0.64	1.23	9.84	0.66	1.45	11.88	0.70	1.86	Drains into grate inlet
DA-38	0.74	5.0	6.48	0.60	2.89	8.64	0.64	4.07	9.84	0.66	4.80	11.88	0.70	6.14	Drains into grate inlet
DA-39	0.19	7.1	5.95	0.34	0.39	8.00	0.40	0.61	9.16	0.44	0.77	11.09	0.51	1.08	Drains into grate inlet
DA-40	0.35	6.8	6.03	0.34	0.71	8.09	0.40	1.12	9.26	0.44	1.41	11.21	0.51	1.97	Drains into grate inlet

N

0 40' 80'

LEGEND

EXISTING	PROPOSED	DESCRIPTION
		PROPERTY (R.O.W.) LINE
		DIRECTION OF FLOW
678	678	CONTOUR
	EX. DA 1 1.03 AC	DRAINAGE AREA NUMBER AND ACREAGE
		TIME OF CONCENTRATION
		DRAINAGE DIVIDE

25-YEAR ON-GRADE CURB INLET CAPACITY CALCULATIONS

INLET #	DRAINAGE AREA	INLET SIZE (ft)	Q-25	Q-BY	Q-TOT	LONG. SLOPE (ft/ft)	CROSS SLOPE (ft/ft)	n	DEPTH OF GUTTER FLOW (ft.)	PONDED WIDTH (ft.)	EFFECTIVE SLOPE (Se)	REQUIRED SIZE (ft)	PASS?	Q-bypass	BY-PASS TO DA-	CURB DEPRESSION (ft.)	DEPRESSION WIDTH (ft.)	Aw	Pw	Kw	Ao	Po	Ko	Eo
C1	DA-13	10	7.67		7.67	0.007	0.02	0.016	0.3310	16.549	0.268	8.388	OK	0.00		0.47917	1.5	0.833334	1.584061	48.85918	2.264619	15.04865	13.97643	0.777571

100-YEAR ON-GRADE CURB INLET CAPACITY CALCULATIONS

INLET #	DRAINAGE AREA	INLET SIZE (ft)	Q-100	Q-BY	Q-TOT	LONG. SLOPE (ft/ft)	CROSS SLOPE (ft/ft)	n	DEPTH OF GUTTER FLOW (ft.)	PONDED WIDTH (ft.)	EFFECTIVE SLOPE (Se)	REQUIRED SIZE (ft)	PASS?	Q-bypass	BY-PASS TO DA-	CURB DEPRESSION (ft.)	DEPRESSION WIDTH (ft.)	Aw	Pw	Kw	Ao	Po	Ko	Eo
C1	DA-13	10	9.56		9.56	0.007	0.02	0.016	0.359	17.968	0.266	9.245	OK	0.00		0.47917	1.5	0.875917	1.584061	51.35584	2.711974	16.46807	15.29472	0.770524

Grate Inlet Flow Calculation Table (50% Clogging Factor)

Inlet No.	Drainage Area	Inlet Size	Q 25 Yr (CFS)	Q 100 Yr (CFS)	h (FT)	Open Area (SF)	Q Capacity (CFS)	Capacity with 50% Clogging (CFS)	Q25 Pass?
OS G2	OS DA-2	2'x2'	**0.77**	**0.96**	2.00	1.60	10.91	**5.45**	YES
OS G3	OS DA-3	2'x2'	**1.81**	**2.25**	2.00	1.60	10.91	**5.45**	YES
G1	DA-19	2.5'x2.5'	**8.40**	**10.29**	2.00	2.50	17.04	**8.52**	YES
G2	DA-20	2'x2'	**1.44**	**1.80**	2.00	1.60	10.91	**5.45**	YES
G3	DA-21	2'x2'	**3.05**	**3.70**	2.00	1.60	10.91	**5.45**	YES
G4	DA-22	2'x2'	**2.82**	**3.44**	2.00	1.60	10.91	**5.45**	YES
G5	DA-23	2'x2'	**2.79**	**3.78**	2.00	1.60	10.91	**5.45**	YES
G6	DA-25	3'x3'	**10.60**	**12.36**	2.00	3.60	24.54	**12.27**	YES
G7	DA-26	2'x2'	**2.36**	**3.01**	2.00	1.60	10.91	**5.45**	YES
G8	DA-27	2'x2'	**1.23**	**1.57**	2.00	1.60	10.91	**5.45**	YES
G9	DA-28	2'x2'	**4.88**	**5.95**	2.00	1.60	10.91	**5.45**	YES
G10	DA-29	2'x2'	**1.78**	**2.17**	2.00	1.60	10.91	**5.45**	YES
G11	DA-31	2'x2'	**4.92**	**6.00**	2.00	1.60	10.91	**5.45**	YES
G12	DA-32	2'x2'	**2.26**	**2.75**	2.00	1.60	10.91	**5.45**	YES
G13	DA-33	3'x3'	**9.60**	**11.17**	2.00	3.60	24.54	**12.27**	YES
G14	DA-34	2'x2'	**2.92**	**3.55**	2.00	1.60	10.91	**5.45**	YES
G15	DA-35	2'x2'	**3.30**	**4.24**	2.00	1.60	10.91	**5.45**	YES
G16	DA-36	2'x2'	**1.30**	**1.58**	2.00	1.60	10.91	**5.45**	YES
G17	DA-37	2'x2'	**1.78**	**2.26**	2.00	1.60	10.91	**5.45**	YES
G18	DA-38	2.5'x2.5'	**5.48**	**6.97**	2.00	2.50	17.04	**8.52**	YES

On-Grade Curb Equation

LT = Kt*Q^0.42*SI^0.3*[1/(n*Se)]^0.6

LT = curb opening required to intercept 100% of the gutter flow (ft)
Kt=0.6
Q = gutter flow (cfs)
SI = longitudinal slope (ft/ft)
Se = equivalent cross slope for depressed gutters

Depth of Gutter Flow Equation

$$y = z\left(\frac{QnS_x}{S^{1/2}}\right)^{3/8}$$

y= depth of water in the curb and gutter cross section (ft)
Q= gutter flow rate (cfs)
n= Manning's coefficient (0.016)
Sx= roadway cross slope (ft/ft)
S = longitudinal slope (ft/ft)
z= conversion rate (1.24)

Ponded Width

$$T = \frac{y}{S_x}$$

T= Ponded width (ft)
y= depth of water in the curb and gutter cross section (ft)
Sx= roadway cross slope (ft/ft)

Grate Inlet Equation

Submerged grate inlets use the orifice equation:

Q = capacity of grate inlet (cfs)

Know what's below. Call before you dig.

THE LOCATION OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK. HE AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY HIS FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

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Stantec Consulting Services Inc. TBPE # F-6324
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Consultant

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Revision			

Permit/Seal

STATE OF TEXAS
BRIAN E. CARRINGTON
123263
LICENSED
PROFESSIONAL ENGINEER
4/28/2023

Client/Project
DUKE, INC.

CHAPEL HILL PHASE 2

403 WESTINGHOUSE ROAD,
GEORGETOWN, TEXAS 78626

Project No.: 222012278
File Name: 222012278DAM03

Scale:

Dwn.	Dsgn.	Chkd.	5.21.2023 YYYY.MM.DD

Title
ON-SITE PROPOSED DRAINAGE AREA MAP A

Revision:0 Sheet: 10 of 38

Drawing No.
10

2021-65-SDP

On-Grade Curb Equation

LT = Kt*Q^0.42*S^0.3*[1/(n*Se)]^0.6

LT = curb opening required to intercept 100% of the gutter flow (ft)
Kt=0.6
Q = gutter flow (cfs)
Sl = longitudinal slope (ft/ft)
Se = equivalent cross slope for depressed gutters

Depth of Gutter Flow Equation

$$y = z\left(\frac{Qn S_x}{S^{1/2}}\right)^{3/8}$$

y= depth of water in the curb and gutter cross section (ft)
Q= gutter flow rate (cfs)
n= Manning's coefficient (0.016)
Sx= roadway cross slope (ft/ft)
S = longitudinal slope (ft/ft)
z= conversion rate (1.24)

Ponded Width

$$T = \frac{y}{S_x}$$

T= Ponded width (ft)
y= depth of water in the curb and gutter cross section (ft)
Sx= roadway cross slope (ft/ft)

Grate Inlet Equation

Submerged grate inlets use the orfice equation:

Q = capacity of grate inlet (cfs)

Grate Inlet Flow Calculation Table (50% Clogging Factor)

Inlet No.	Drainage Area	Inlet Size	Q 25 Yr (CFS)	Q 100 Yr (CFS)	h (FT)	Open Area (SF)	Q Capacity (CFS)	Capacity with 50% Clogging (CFS)	Q25 Pass?
OS G2	OS DA-2	2'x2'	**0.77**	**0.96**	2.00	1.60	10.91	**5.45**	YES
OS G3	OS DA-3	2'x2'	**1.81**	**2.25**	2.00	1.60	10.91	**5.45**	YES
G1	DA-19	2.5'x2.5'	**8.40**	**10.29**	2.00	2.50	17.04	**8.52**	YES
G2	DA-20	2'x2'	**1.44**	**1.80**	2.00	1.60	10.91	**5.45**	YES
G3	DA-21	2'x2'	**3.05**	**3.70**	2.00	1.60	10.91	**5.45**	YES
G4	DA-22	2'x2'	**2.82**	**3.44**	2.00	1.60	10.91	**5.45**	YES
G5	DA-23	2'x2'	**2.79**	**3.78**	2.00	1.60	10.91	**5.45**	YES
G6	DA-25	3'x3'	**10.60**	**12.36**	2.00	3.60	24.54	**12.27**	YES
G7	DA-26	2'x2'	**2.36**	**3.01**	2.00	1.60	10.91	**5.45**	YES
G8	DA-27	2'x2'	**1.23**	**1.57**	2.00	1.60	10.91	**5.45**	YES
G9	DA-28	2'x2'	**4.88**	**5.95**	2.00	1.60	10.91	**5.45**	YES
G10	DA-29	2'x2'	**1.78**	**2.17**	2.00	1.60	10.91	**5.45**	YES
G11	DA-31	2'x2'	**4.92**	**6.00**	2.00	1.60	10.91	**5.45**	YES
G12	DA-32	2'x2'	**2.26**	**2.75**	2.00	1.60	10.91	**5.45**	YES
G13	DA-33	3'x3'	**9.60**	**11.17**	2.00	3.60	24.54	**12.27**	YES
G14	DA-34	2'x2'	**2.92**	**3.55**	2.00	1.60	10.91	**5.45**	YES
G15	DA-35	2'x2'	**3.30**	**4.24**	2.00	1.60	10.91	**5.45**	YES
G16	DA-36	2'x2'	**1.30**	**1.58**	2.00	1.60	10.91	**5.45**	YES
G17	DA-37	2'x2'	**1.78**	**2.26**	2.00	1.60	10.91	**5.45**	YES
G18	DA-38	2.5'x2.5'	**5.48**	**6.97**	2.00	2.50	17.04	**8.52**	YES

25-YEAR ON-GRADE CURB INLET CAPACITY CALCULATIONS

INLET #	DRAINAGE AREA	INLET SIZE (ft)	Q-25	Q-BY	Q-TOT	LONG SLOPE (ft/ft)	CROSS SLOPE (ft/ft)	n	DEPTH OF GUTTER FLOW (ft.)	PONDED WIDTH (ft.)	EFFECTIVE SLOPE (Se)	REQUIRED SIZE (ft)	PASS?	Q-bypass	BY-PASS TO DA-	CURB DEPRESSION (ft.)	DEPRESSION WIDTH (ft.)	Aw	Pw	Kw	Ao	Po	Ko	Eo
CI	DA-13	10	7.67		7.67	0.007	0.02	0.016	0.3310	16.549	0.268	8.388	OK	0.00		0.47917	1.5	0.833334	1.584061	48.85918	2.264619	15.04865	13.97643	0.777571

100-YEAR ON-GRADE CURB INLET CAPACITY CALCULATIONS

INLET #	DRAINAGE AREA	INLET SIZE (ft)	Q-100	Q-BY	Q-TOT	LONG SLOPE (ft/ft)	CROSS SLOPE (ft/ft)	n	DEPTH OF GUTTER FLOW (ft.)	PONDED WIDTH (ft.)	EFFECTIVE SLOPE (Se)	REQUIRED SIZE (ft)	PASS?	Q-bypass	BY-PASS TO DA-	CURB DEPRESSION (ft.)	DEPRESSION WIDTH (ft.)	Aw	Pw	Kw	Ao	Po	Ko	Eo
CI	DA-13	10	9.56		9.56	0.007	0.02	0.016	0.359	17.968	0.266	9.245	OK	0.00		0.47917	1.5	0.875917	1.584061	51.35584	2.711974	16.46807	15.29472	0.770524

Chapel Hill Phase 2 Onsite Existing Conditions				
	2-YR (CFS)	10 YR (CFS)	25-YR (CFS)	100-YR (CFS)
Point of Interest 1	24.19	43.79	55.71	74.19

Chapel Hill Phase 2 Onsite Proposed Conditions				
	2-YR (CFS)	10 Yr (CFS)	25-YR (CFS)	100-YR (CFS)
Point of Interest 1	21.71	43.74	50.66	59.71

DRAINAGE BASIN AREA
RATIONAL METHOD CALCULATIONS

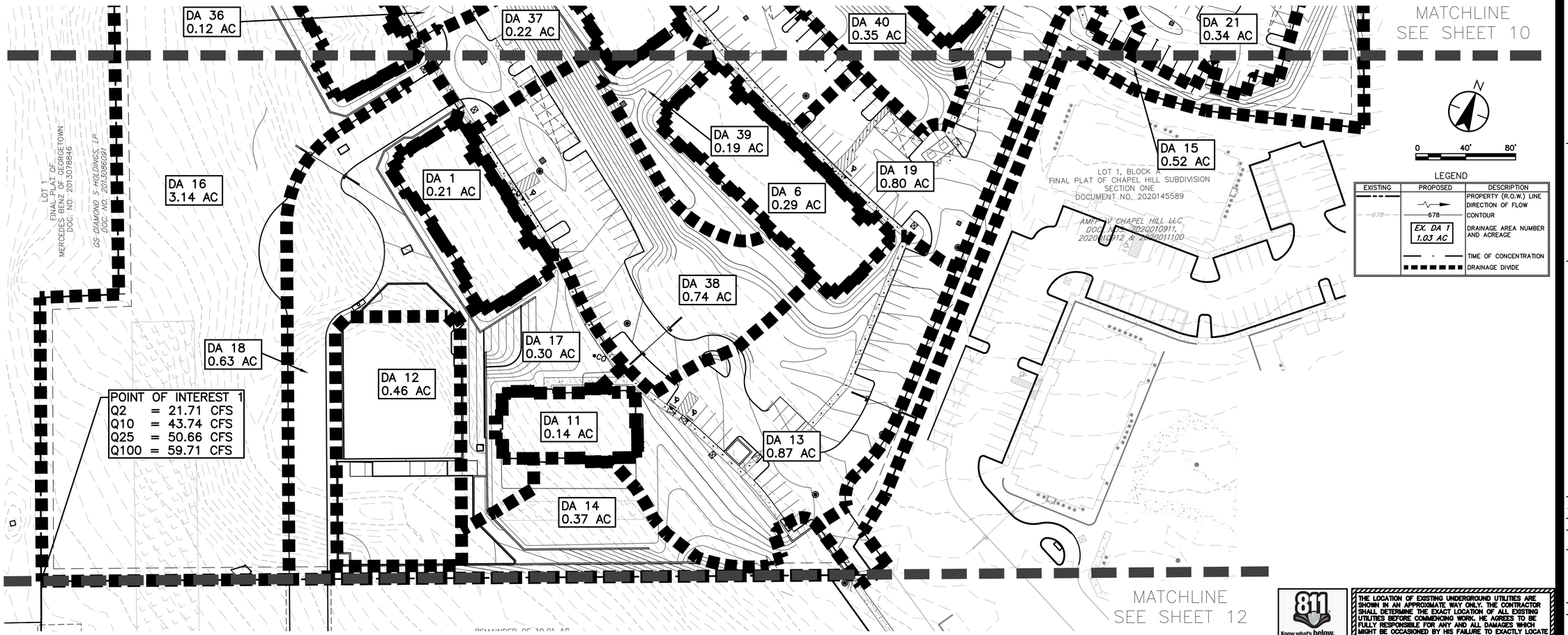
References: *City of Georgetown Drainage Criteria Manual*

Formulas: Rational Method — **Q = CiA** — **i = a / ((Tc+b)^c)**

Q = design flow (cfs)
C = weighted 'C' coefficient
i = Intensity (in/hr)

Intensity (in/hr)	2-year	10-year	25-year	100-year
a=	105.29	96.84	111.07	129.03
b=	16.81	15.88	17.23	17.83
c=	0.9076	0.7952	0.7815	0.7625

Sub-Basin ID	Area (ac)	Tc (min)	2-YEAR Intensity (in/hr)	2-YEAR Weighted 'C' Value	2-YEAR Sub-Basin Q_2 (cfs)	10-YEAR Intensity	10-YEAR Weighted 'C' Value	10-YEAR Sub-Basin Q_{10} (cfs)	25-YEAR Intensity	25-YEAR Weighted 'C' Value	25-YEAR Sub-Basin Q_{25} (cfs)	100-YEAR Intensity	100-YEAR Weighted 'C' Value	100-YEAR Sub-Basin Q_{100} (cfs)	COMMENTS
PROPOSED CONDITIONS DRAINAGE SUB-BASINS															
DA-1	0.21	5.0	6.48	0.97	1.32	8.64	0.97	1.76	9.84	0.97	2.00	11.88	0.97	2.42	Roof drains into storm sewer
DA-2	0.22	5.0	6.48	0.97	1.39	8.64	0.97	1.85	9.84	0.97	2.10	11.88	0.97	2.54	Roof drains into storm sewer
DA-3	0.29	5.0	6.48	0.97	1.84	8.64	0.97	2.45	9.84	0.97	2.79	11.88	0.97	3.37	Roof drains into storm sewer
DA-4	0.21	5.0	6.48	0.97	1.32	8.64	0.97	1.76	9.84	0.97	2.00	11.88	0.97	2.42	Roof drains into storm sewer
DA-5	0.21	5.0	6.48	0.97	1.32	8.64	0.97	1.76	9.84	0.97	2.00	11.88	0.97	2.42	Roof drains into storm sewer
DA-6	0.29	5.0	6.48	0.97	1.84	8.64	0.97	2.45	9.84	0.97	2.79	11.88	0.97	3.37	Roof drains into storm sewer
DA-7	0.29	5.0	6.48	0.97	1.84	8.64	0.97	2.45	9.84	0.97	2.79	11.88	0.97	3.37	Roof drains into storm sewer
DA-8	0.21	5.0	6.48	0.97	1.32	8.64	0.97	1.76	9.84	0.97	2.00	11.88	0.97	2.42	Roof drains into storm sewer
DA-9	0.22	5.0	6.48	0.97	1.39	8.64	0.97	1.85	9.84	0.97	2.10	11.88	0.97	2.54	Roof drains into storm sewer
DA-10	0.21	5.0	6.48	0.97	1.32	8.64	0.97	1.76	9.84	0.97	2.00	11.88	0.97	2.42	Roof drains into storm sewer
DA-11	0.14	5.0	6.48	0.97	0.85	8.64	0.97	1.13	9.84	0.97	1.29	11.88	0.97	1.56	Roof drains into storm sewer
DA-12	0.46	5.0	6.48	0.36	1.06	8.64	0.42	1.65	9.84	0.46	2.05	11.88	0.52	2.84	Roof drains into storm sewer
DA-13	0.87	5.0	6.48	0.71	3.98	8.64	0.73	5.49	9.84	0.75	6.39	11.88	0.77	8.01	Drains into curb inlet
DA-14	0.37	5.0	6.48	0.36	0.86	8.64	0.41	1.33	9.84	0.45	1.66	11.88	0.52	2.30	Drains offsite
DA-15	0.52	5.0	6.48	0.38	1.28	8.64	0.44	1.96	9.84	0.48	2.42	11.88	0.54	3.33	Drains offsite
DA-16	3.15	5.0	6.48	0.34	6.98	8.64	0.40	10.94	9.84	0.44	13.69	11.88	0.51	19.14	Drains offsite
DA-17	0.30	5.0	6.48	0.39	0.76	8.64	0.44	1.16	9.84	0.48	1.44	11.88	0.54	1.97	Drains into proposed pond
DA-18	0.63	5.0	6.48	0.67	2.75	8.64	0.70	3.82	9.84	0.72	4.47	11.88	0.75	5.64	Drains onto access drive
DA-19	0.80	5.0	6.48	0.82	4.26	8.64	0.84	5.77	9.84	0.84	6.64	11.88	0.86	8.16	Drains into grate inlet
DA-20	0.09	9.5	5.47	0.39	0.20	7.41	0.45	0.31	8.53	0.48	0.39	10.37	0.55	0.53	Drains into grate inlet
DA-21	0.34	5.0	6.48	0.91	2.00	8.64	0.92	2.67	9.84	0.92	3.05	11.88	0.92	3.70	Drains into grate inlet
DA-22	0.31	5.0	6.48	0.87	1.72	8.64	0.88	2.32	9.84	0.88	2.65	11.88	0.89	3.24	Drains into grate inlet
DA-23	0.53	7.6	5.84	0.34	1.05	7.86	0.40	1.66	9.01	0.44	2.09	10.93	0.51	2.94	Drains into grate inlet
DA-24	0.42	5.5	6.35	0.34	0.92	8.48	0.40	1.44	9.67	0.44	1.81	11.69	0.51	2.52	Drains into DA-25
DA-25	0.72	5.0	6.48	0.87	4.05	8.64	0.88	5.46	9.84	0.88	6.26	11.88	0.89	7.64	Drains into grate inlet
DA-26	0.24	12.1	5.02	0.36	0.43	6.85	0.42	0.68	7.92	0.46	0.86	9.66	0.53	1.21	Drains into grate inlet
DA-27	0.11	6.1	6.20	0.36	0.25	8.30	0.42	0.39	9.48	0.46	0.49	11.46	0.53	0.67	Drains into grate inlet
DA-28	0.50	5.0	6.48	0.86	2.78	8.64	0.87	3.75	9.84	0.88	4.30	11.88	0.89	5.25	Drains into grate inlet
DA-29	0.16	5.0	6.48	0.88	0.93	8.64	0.88	1.25	9.84	0.89	1.44	11.88	0.90	1.75	Drains into grate inlet
DA-30	0.44	6.7	6.05	0.34	0.90	8.12	0.40	1.42	9.28	0.44	1.78	11.24	0.51	2.50	Drains into DA-33
DA-31	0.41	5.0	6.48	0.86	2.29	8.64	0.87	3.09	9.84	0.87	3.54	11.88	0.89	4.33	Drains into grate inlet
DA-32	0.22	5.0	6.48	0.86	1.20	8.64	0.87	1.62	9.84	0.87	1.86	11.88	0.88	2.27	Drains into grate inlet
DA-33	0.61	5.0	6.48	0.83	3.29	8.64	0.84	4.45	9.84	0.85	5.11	11.88	0.87	6.27	Drains into grate inlet
DA-34	0.27	5.0	6.48	0.88	1.52	8.64	0.88	2.05	9.84	0.89	2.35	11.88	0.90	2.86	Drains into grate inlet
DA-35	0.37	14.6	4.66	0.35	0.61	6.40	0.41	0.98	7.44	0.45	1.24	9.09	0.52	1.75	Drains into grate inlet
DA-36	0.12	5.0	6.48	0.92	0.70	8.64	0.92	0.94	9.84	0.92	1.07	11.88	0.93	1.30	Drains into grate inlet
DA-37	0.22	5.0	6.48	0.60	0.87	8.64	0.64	1.23	9.84	0.66	1.45	11.88	0.70	1.86	Drains into grate inlet
DA-38	0.74	5.0	6.48	0.60	2.89	8.64	0.64	4.07	9.84	0.66	4.80	11.88	0.70	6.14	Drains into grate inlet
DA-39	0.19	7.1	5.95	0.34	0.39	8.00	0.40	0.61	9.16	0.44	0.77	11.09	0.51	1.08	Drains into grate inlet
DA-40	0.35	6.8	6.03	0.34	0.71	8.09	0.40	1.12	9.26	0.44	1.41	11.21	0.51	1.97	Drains into grate inlet



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TBPLS # 10194230
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Revision	By	Appd	YYYY.MM.DD
Issued	By	Appd	YYYY.MM.DD

Permit/Seal

STATE OF TEXAS
BRIAN E. CARRINGTON
123263
LICENSED
PROFESSIONAL ENGINEER
4/28/2023

Client/Project
DUKE, INC.
CHAPEL HILL PHASE 2
403 WESTINGHOUSE ROAD,
GEORGETOWN, TEXAS 78626

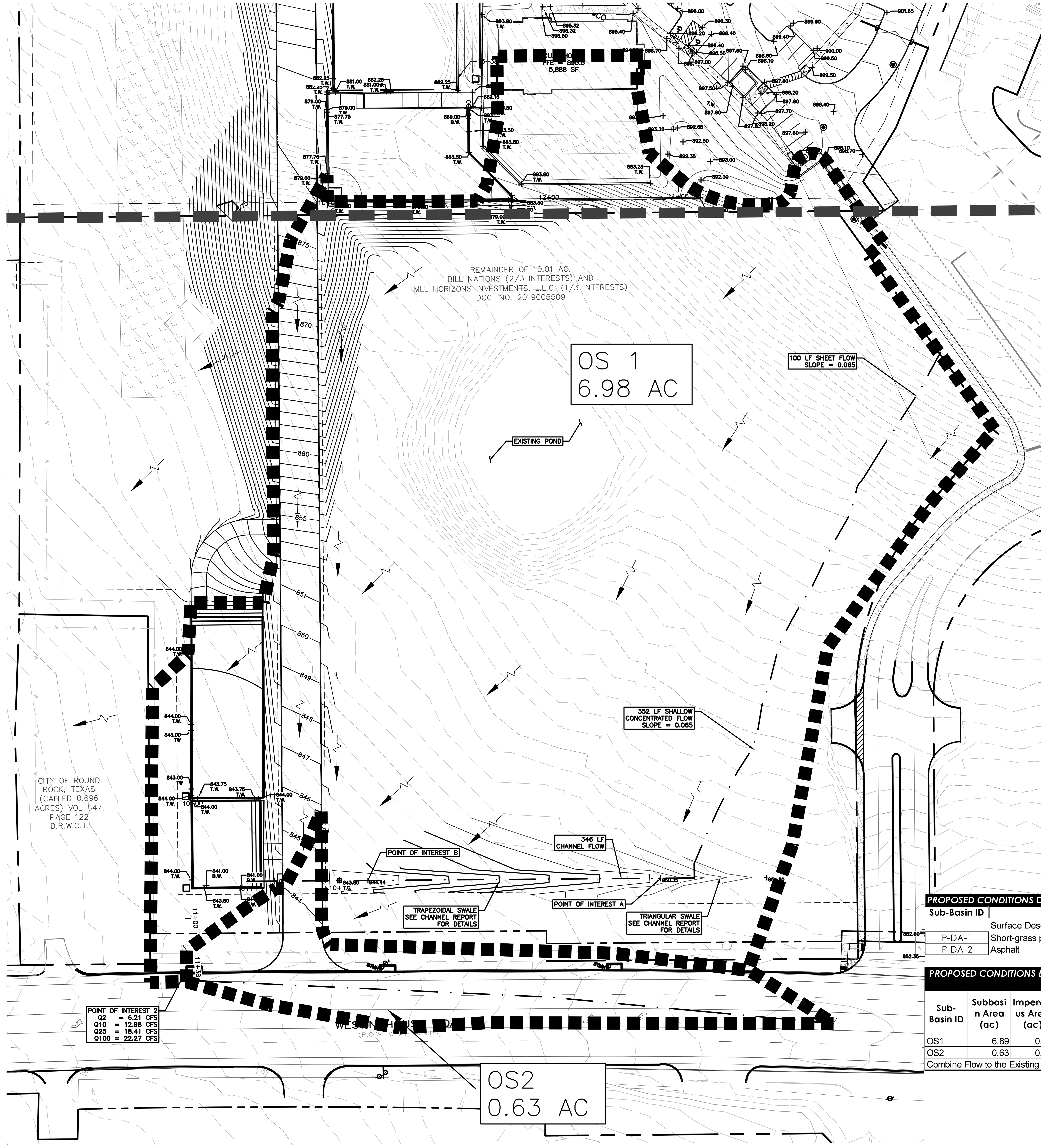
Project No.: 222012278
File Name: 222012278DAM05
Scale:

Dwn.	Dsgn.	Chkd.	5.21.2023 YYYY.MM.DD

Title
ON-SITE PROPOSED
DRAINAGE AREA
MAP B

Revision:0 Sheet: 11 of 38
Drawing No.
11

2021-65-SDP



LEGEND

EXISTING	PROPOSED	DESCRIPTION
		PROPERTY (R.O.W.) LINE
		DIRECTION OF FLOW
678	678	CONTOUR
	EX. DA 1 1.03 AC	DRAINAGE AREA NUMBER AND ACREAGE
		TIME OF CONCENTRATION
		DRAINAGE DIVIDE

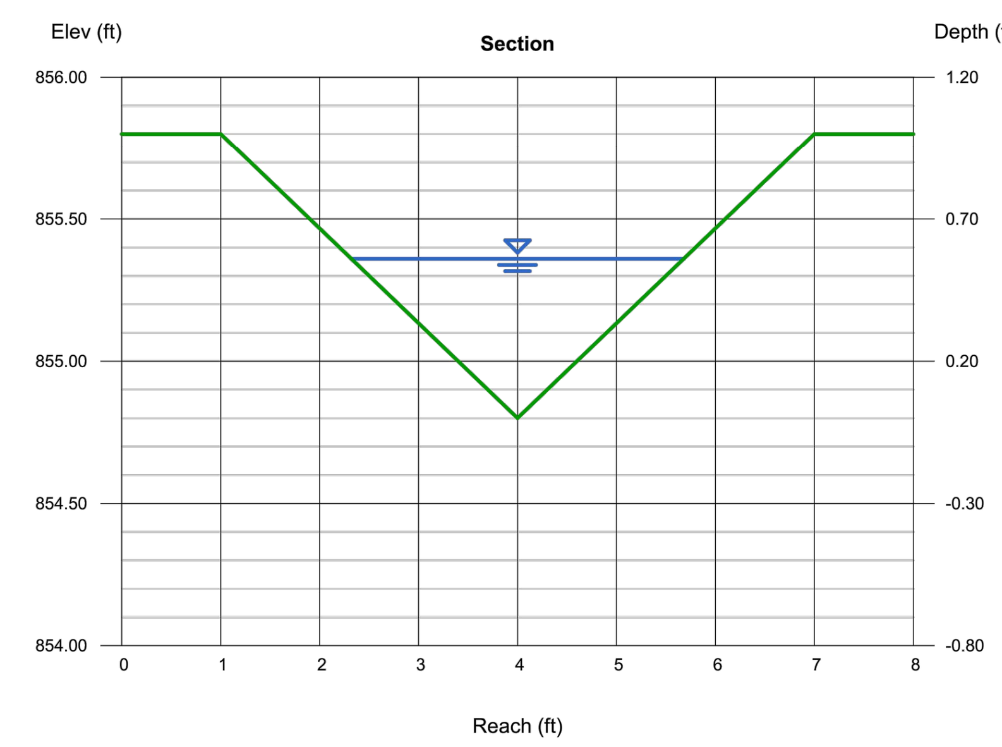
0 40' 80'

Channel Report

Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. — Thursday, Jan 27 2022

<Name>

Triangular		Highlighted	
Side Slopes (z:1)	= 3.00, 3.00	Depth (ft)	= 0.56
Total Depth (ft)	= 1.00	Q (cfs)	= 3.900
		Area (sqft)	= 0.94
Invert Elev (ft)	= 854.80	Velocity (ft/s)	= 4.15
Slope (%)	= 5.74	Wetted Perim (ft)	= 3.54
N-Value	= 0.035	Crit Depth, Yc (ft)	= 0.64
		Top Width (ft)	= 3.36
Calculations		EGL (ft)	= 0.83
Compute by:	Known Q		
Known Q (cfs)	= 3.90		

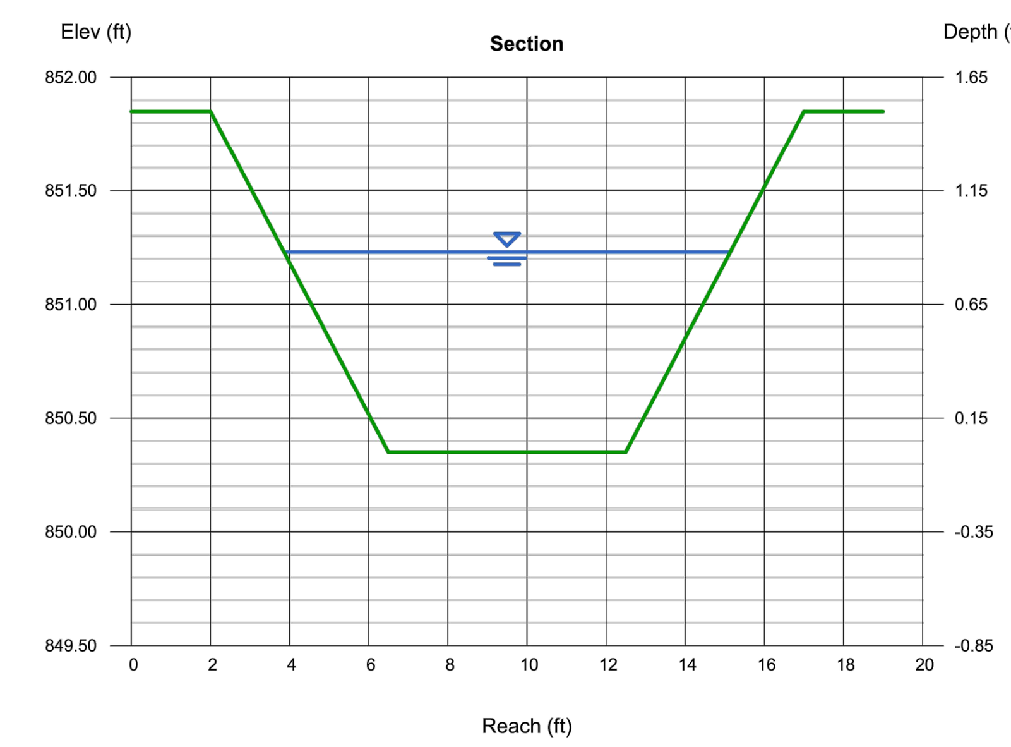


Channel Report

Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. — Wednesday, Feb 2 2022

<Name>

Trapezoidal		Highlighted	
Bottom Width (ft)	= 6.00	Depth (ft)	= 0.88
Side Slopes (z:1)	= 3.00, 3.00	Q (cfs)	= 37.21
Total Depth (ft)	= 1.50	Area (sqft)	= 7.60
Invert Elev (ft)	= 850.35	Velocity (ft/s)	= 4.89
Slope (%)	= 2.34	Wetted Perim (ft)	= 11.57
N-Value	= 0.035	Crit Depth, Yc (ft)	= 0.91
		Top Width (ft)	= 11.28
Calculations		EGL (ft)	= 1.25
Compute by:	Known Q		
Known Q (cfs)	= 37.21		



Flow Calcuation table

Existing		C	i	A	Q
OS 1	2 Yr	0.360	5.89	2.91	6.17
	10 Yr	0.410	7.93		9.46
	25 Yr	0.450	9.41		12.32
	100 Yr	0.530	11.07		17.07
OS 2	2 Yr	0.714	6.48	0.63	2.92
	10 Yr	0.733	8.64		3.99
	25 Yr	0.688	10.18		4.41
	100 Yr	0.688	11.86		5.14

Proposed		C	i	A	Q
OS 1 -A	2 Yr	0.428	8.602	6.24	22.96
	10 Yr	0.410	8.09		20.70
	25 Yr	0.450	9.59		26.92
	100 Yr	0.530	11.25		37.21
OS 1 -B	2 Yr	0.360	6.30	0.87	1.97
	10 Yr	0.410	8.42		3.00
	25 Yr	0.450	9.94		3.89
	100 Yr	0.530	11.61		5.36
OS 2	2 Yr	0.834	6.48	0.63	3.40
	10 Yr	0.870	8.64		4.74
	25 Yr	0.876	10.18		5.62
	100 Yr	0.886	11.86		6.62

NOTES:
OS 1 IS DIVIDED INTO 2 SUB-DRAINAGE AREAS FOR THE SWALE DESIGN USING RATIONAL METHOD. OS 1- A DRAINS TO THE TRIANGULAR SWALE. OS-1-A DRAINS TO THE TRAPEZOIDAL SWALE.

PROPOSED CONDITIONS DRAINAGE SUB-BASINS

Sub-Basin ID	Sheet Flow: Surface Description	Length	Vertical Fall	$T_{t(sheet)}$	Shallow Concentrated Flow: Surface Description	Length	Vertical Fall	$T_{t(shallow\ concentrated)}$	Channel Flow: Length	$T_{t(channel)}$	T_t
P-DA-1	Short-grass prairie	100	15.5	4.16	Unpaved	352	23	1.42	346	0.96	6.54
P-DA-2	Asphalt	100	1	2.08	Paved	393	11	1.92	346	0.96	5

PROPOSED CONDITIONS DRAINAGE SUB-BASINS - OFFSITE

Sub-Basin ID	Subbasin Area (ac)	Impervious Area (ac)	Impervious Area (sf)	Pervious Area (ac)	% Impervious	Weighted 'CN"	Tc (min)	Undetained Flow Q2 (cfs)	Undetained Flow Q10 (cfs)	Undetained Flow Q25 (cfs)	Undetained Flow Q100 (cfs)	Post-Detained Flow Q2 (cfs)	Post-Detained Flow Q10 (cfs)	Post-Detained Flow Q25 (cfs)	Post-Detained Flow Q100 (cfs)
OS1	6.89	0.41	17668	6.49	5.89	85	6.5	18.74	11.64	16.13	19.05	4.27	11.64	16.13	19.05
OS2	0.63	0.54	23316	0.10	84.84	96	5	3.1	4.18	4.84	5.86				
Combine Flow to the Existing Inlet												6.21	12.98	18.41	22.27

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Revision | By | Appd | YYYY.MM.DD

Issued | By | Appd | YYYY.MM.DD

Permit/Seal

BRIAN E. CARRINGTON 123263 LICENSED PROFESSIONAL ENGINEER
4/28/2023

Client/Project
DUKE, INC.
CHAPEL HILL PHASE 2
403 WESTINGHOUSE ROAD,
GEORGETOWN, TEXAS 78626

Project No.: 222012278
File Name: 222012278DAM04
Scale:
Dwn. Dsgn. Chkd. 5.21.2023 YYYY.MM.DD

Title
OFF-SITE PROPOSED
DRAINAGE AREA
MAP

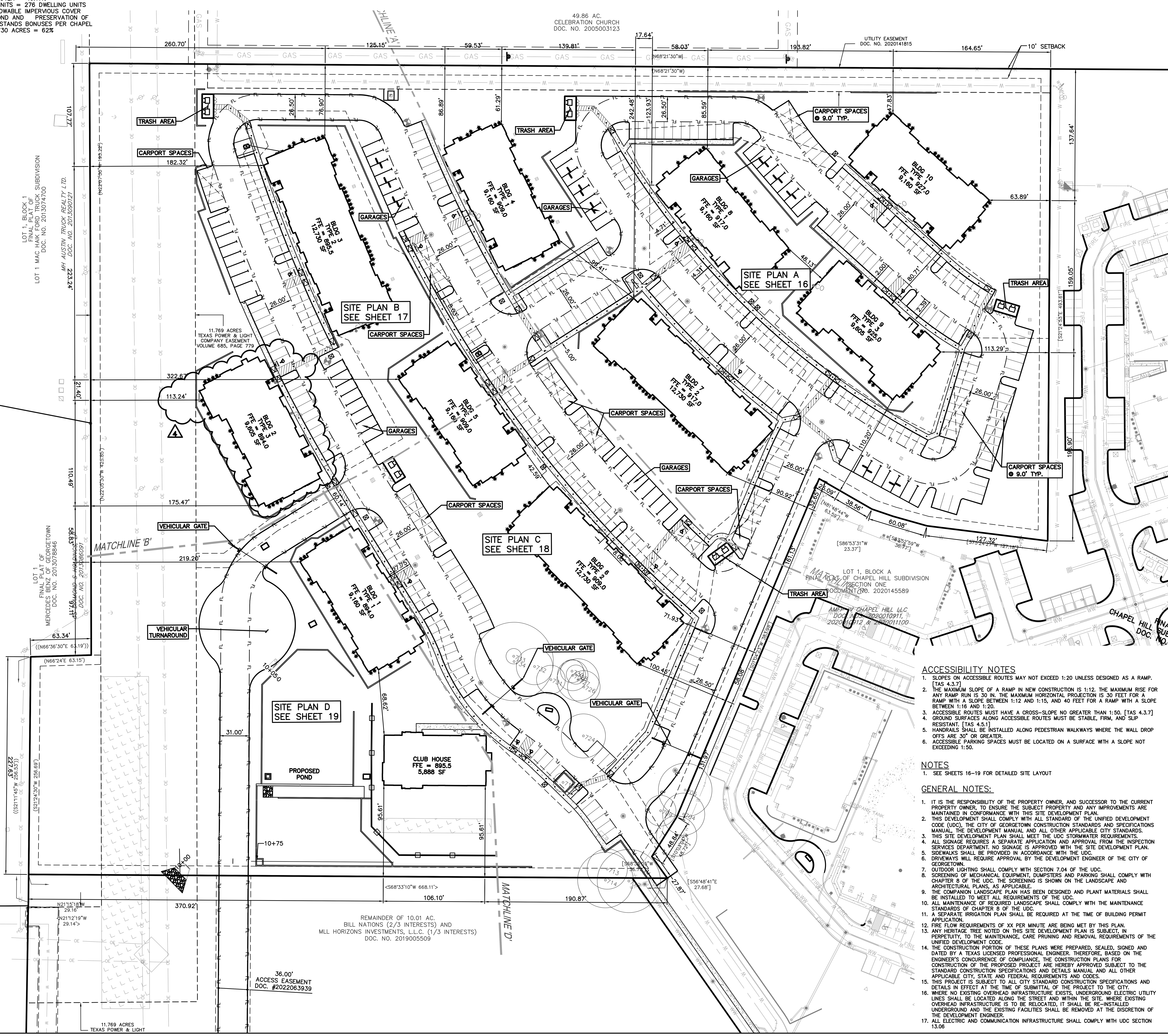
Revision:0 Sheet: 12 of 38
Drawing No.
12

ORIGINAL SHEET - ARCH D

2021-65-SDP

SITE DATA TABLE:

ZONING: P.U.D. ORD NO 2020–46 (MF–2 AND C–1 BASE ZONING)
PROPOSED USE: MULTI–FAMILY
LOT AREA = 14.88 AC
BUILDING FOOTPRINT = 99,483 SF
IMPERVIOUS AREA = 339,768 SF
IMPERVIOUS COVER = 46.17%
NUMBER OF UNITS = 276 DWELLING UNITS
MAXIMUM ALLOWABLE IMPERVIOUS COVER DETENTION POND AND PRESERVATION OF NATIVE TREE STANDS BONUSES PER CHAPEL HILL PUD 11.730 ACRES = 62%



0 50' 100'

LEGEND

EXISTING	PROPOSED	DESCRIPTION
		PROPERTY LINE/(R.O.W.) LINE
XXX		RECORD INFORMATION
		LIGHT POLE
	PP	POWER POLE
		GROUND LIGHT
		DOWN GUY
		JUNCTION BOX
	T	TRANSFORMER (SIZE VARIES)
	SW	ELECTRICAL SWITCHBOX
		FIRE HYDRANT
		WATER VALVE
		WATER METER
	WM	WATER METER VAULT
		BACKFLOW PREVENTER
		TELEPHONE RISER
		CABLE TV RISER
		ELECTRIC BOX
		ELECTRIC METER
		GAS METER
		GAS VALVE
TCB	TCB	TRAFFIC CONTROL BOX
TSP	TSP	TRAFFIC SIGNAL POST
		GRATE INLET
		CURB INLET (SIZE VARIES)
	GT	GREASE TRAP (SIZE VARIES)
		CHAINLINK FENCE
		WOOD FENCE
OE		OVERHEAD ELECTRIC
EMH	EMH	ELECTRIC MANHOLE (SIZE VARIES)
WWMH		WASTEWATER MANHOLE (SIZE VARIES)
SSMH		STORMSEWER MANHOLE (SIZE VARIES)
TMH	TMH	TELEPHONE MANHOLE (SIZE VARIES)
WTRMH		WATER MANHOLE
	CO	WASTEWATER CLEANOUT
	D	DUMPSTER
		CURB & GUTTER
	FL	FIRE LANE DESIGNATION
		ADA ACCESS ROUTE
		CONCRETE SIDEWALKS
		WALL
		SIGN
		WHEELSTOP
		BOLLARD
	R	PARKING COUNT (REGULAR SPACES)
	HC	PARKING COUNT (HANDICAP SPACES)
	C	PARKING COUNT COMPACT SPACES)
	P	PARKING COUNT COMPACT SPACES)
		TREE TO REMAIN
		HANDICAP SPACE
		BIKE RACK
		BICYCLE ACCESS ROUTE
		LIMITS OF CONSTRUCTION
		ZONING LIMITS LINE
		PEDESTRIAN ACCESS ROUTE
		SETBACK LINE
		EASEMENT LINE
		CARPORT SPACES
		GARAGE SPACES

ACCESSIBILITY NOTES

1. SLOPES ON ACCESSIBLE ROUTES MAY NOT EXCEED 1:20 UNLESS DESIGNED AS A RAMP. [TAS 4.3.7]
2. THE MAXIMUM SLOPE OF A RAMP IN NEW CONSTRUCTION IS 1:12. THE MAXIMUM RISE FOR ANY RAMP RUN IS 30 IN. THE MAXIMUM HORIZONTAL PROJECTION IS 30 FEET FOR A RAMP WITH A SLOPE BETWEEN 1:12 AND 1:15, AND 40 FEET FOR A RAMP WITH A SLOPE BETWEEN 1:16 AND 1:20.
3. ACCESSIBLE ROUTES MUST HAVE A CROSS–SLOPE NO GREATER THAN 1:50. [TAS 4.3.7]
4. GROUND SURFACES ALONG ACCESSIBLE ROUTES MUST BE STABLE, FIRM, AND SLIP RESISTANT. [TAS 4.5.1]
5. HANDRAILS SHALL BE INSTALLED ALONG PEDESTRIAN WALKWAYS WHERE THE WALL DROP OFFS ARE 30" OR GREATER.
6. ACCESSIBLE PARKING SPACES MUST BE LOCATED ON A SURFACE WITH A SLOPE NOT EXCEEDING 1:50.

NOTES

1. SEE SHEETS 16–19 FOR DETAILED SITE LAYOUT

GENERAL NOTES:

1. IT IS THE RESPONSIBILITY OF THE PROPERTY OWNER, AND SUCCESSOR TO THE CURRENT PROPERTY OWNER, TO ENSURE THE SUBJECT PROPERTY AND ANY IMPROVEMENTS ARE MAINTAINED IN CONFORMANCE WITH THIS SITE DEVELOPMENT PLAN.
2. THIS DEVELOPMENT SHALL COMPLY WITH ALL STANDARD OF THE UNIFIED DEVELOPMENT CODE (UDC), THE CITY OF GEORGETOWN CONSTRUCTION STANDARDS AND SPECIFICATIONS MANUAL, THE DEVELOPMENT MANUAL AND ALL OTHER APPLICABLE CITY STANDARDS.
3. THIS SITE DEVELOPMENT PLAN SHALL MEET THE UDC STORMWATER REQUIREMENTS.
4. ALL SIGNAGE REQUIRES A SEPARATE APPLICATION AND APPROVAL FROM THE INSPECTION SERVICES DEPARTMENT. NO SIGNAGE IS APPROVED WITH THE SITE DEVELOPMENT PLAN.
5. SIDEWALKS SHALL BE PROVIDED IN ACCORDANCE WITH THE UDC.
6. DRIVEWAYS WILL REQUIRE APPROVAL BY THE DEVELOPMENT ENGINEER OF THE CITY OF GEORGETOWN.
7. OUTDOOR LIGHTING SHALL COMPLY WITH SECTION 7.04 OF THE UDC.
8. SCREENING OF MECHANICAL EQUIPMENT, DUMPSTERS AND PARKING SHALL COMPLY WITH CHAPTER 8 OF THE UDC. THE SCREENING IS SHOWN ON THE LANDSCAPE AND ARCHITECTURAL PLANS, AS APPLICABLE.
9. THE COMPANION LANDSCAPE PLAN HAS BEEN DESIGNED AND PLANT MATERIALS SHALL BE INSTALLED TO MEET ALL REQUIREMENTS OF THE UDC.
10. ALL MAINTENANCE OF REQUIRED LANDSCAPE SHALL COMPLY WITH THE MAINTENANCE STANDARDS OF CHAPTER 8 OF THE UDC.
11. A SEPARATE IRRIGATION PLAN SHALL BE REQUIRED AT THE TIME OF BUILDING PERMIT APPLICATION.
12. FIRE FLOW REQUIREMENTS OF XX PER MINUTE ARE BEING MET BY THIS PLAN.
13. ANY HERITAGE TREE NOTED ON THIS SITE DEVELOPMENT PLAN IS SUBJECT, IN PERPETUITY, TO THE MAINTENANCE, CARE PRUNING AND REMOVAL REQUIREMENTS OF THE UNIFIED DEVELOPMENT CODE.
14. THE CONSTRUCTION PORTION OF THESE PLANS WERE PREPARED, SEALED, SIGNED AND DATED BY A TEXAS LICENSED PROFESSIONAL ENGINEER. THEREFORE, BASED ON THE ENGINEER'S CONCURRENCE OF COMPLIANCE, THE CONSTRUCTION PLANS FOR CONSTRUCTION OF THE PROPOSED PROJECT ARE HEREBY APPROVED SUBJECT TO THE STANDARD CONSTRUCTION SPECIFICATIONS AND DETAILS MANUAL AND ALL OTHER APPLICABLE CITY, STATE AND FEDERAL REQUIREMENTS AND CODES.
15. THIS PROJECT IS SUBJECT TO ALL CITY STANDARD CONSTRUCTION SPECIFICATIONS AND DETAILS IN EFFECT AT THE TIME OF SUBMITTAL OF THE PROJECT TO THE CITY.
16. WHERE NO EXISTING OVERHEAD INFRASTRUCTURE EXISTS, UNDERGROUND ELECTRIC UTILITY LINES SHALL BE LOCATED ALONG THE STREET AND WITHIN THE SITE. WHERE EXISTING OVERHEAD INFRASTRUCTURE IS TO BE RELOCATED, IT SHALL BE RE–INSTALLED UNDERGROUND AND THE EXISTING FACILITIES SHALL BE REMOVED AT THE DISCRETION OF THE DEVELOPMENT ENGINEER.
17. ALL ELECTRIC AND COMMUNICATION INFRASTRUCTURE SHALL COMPLY WITH UDC SECTION 13.06

FIRE APPARATUS ACCESS ROAD GATES:

GATES SECURING FIRE APPARATUS ACCESS ROADS SHALL COMPLY WITH ALL OF THE FOLLOWING CRITERIA:

1. THE MINIMUM UNOBSTRUCTED GATE WIDTH SHALL BE 20 FEET (6096MM). EXCEPTION: ONE– AND TWO–FAMILY DWELLINGS AS APPROVED BY THE FIRE CODE OFFICIAL.
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 ALWAYS BE MAINTAINED IN AN OPERATIVE CONDITION AND REPLACED OR REPAIRED WHEN DEFECTIVE.
5. ELECTRICALLY OPERATED GATES:
   A. SHALL BE EQUIPPED WITH A MEANS OF OPENING THE GATE BY FIRE DEPARTMENT PERSONNEL FOR EMERGENCY ACCESS. EMERGENCY ACCESS DEVICES SHALL BE APPROVED BY THE FIRE CODE OFFICIAL.
   B. SHALL BE IN THE FULLY OPENED POSITION FOR NO MORE THAN 30 SECONDS.
   C. SHALL HAVE A MANUAL OVERRIDE SYSTEM. MANUAL OVERRIDE OPERATIONS SHALL BE LOCATED ON THE ENTRANCE SIDE OF THE GATE, OR WHEN POWER IS RESTORED FOR NORMAL OPERATIONS.
   D. SHALL HAVE INSTALLED APPROVED PREEMPTIVE CONTROL OPENING EQUIPMENT.
   E. EXCEPTIONS
      I. DRIVEWAYS SERVING ONE– AND TWO– FAMILY DWELLINGS AS APPROVED BY THE THE FIRE CODE OFFICIAL.
      II. GATES SERVING AS AN EMERGENCY ACCESS WITH 24–HOUR STAFFED GATEHOUSES
6. MANUAL OPERATING GATES:
   A. MAY BE LOCKED WHEN APPROVED BY THE FIRE CODE OFFICIAL.
   B. IF EQUIPPED WITH A LOCK, KEYS SHALL BE PROVIDED FOR INSTALLATION INTO AN APPROVED FIRE DEPARTMENT KEY BOX. KEYS SHALL BE MAINTAINED CURRENT.
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.
9. GATES INTENDED FOR AUTOMATIC OPERATION SHALL BE DESIGNED, CONSTRUCTED AND INSTALLED TO COMPLY WITH THE REQUIREMENTS OF ASTM F2200.
10. A CONSTRUCTION PERMIT IN ACCORDANCE WITH SUBSECTION 503.6 IS REQUIRED TO INSTALL OR MODIFY A GATE ACROSS FIRE APPARATUS ROADWAYS.
11. MAINTENANCE OF GATES SECURING FIRE APPARATUS ACCESS. GATES SHALL BE MAINTAINED IN AN OPERATIVE CONDITION AND REPAIRED OR REPLACED WHEN DEFECTIVE. WHEN REQUIRED BY THE FIRE CODE OFFICIAL, DEFECTIVE GATES SHALL BE SECURED IN THE OPEN POSITION UNTIL REPAIRED.

PARKING TABLE				
PROPOSED USE		TOTAL UNITS	MINIMUM	
			PARKING RATIO	REQUIRED PARKING
MUTIFAMILY	1 BR	156	1 SPACE/UNIT*	156
	2 BR	108	2 SPACES/UNIT*	216
	3 BR	12	2 SPACES/UNIT*	24
	VISITOR		5% OF TOTAL	20
TOTAL REQUIRED PARKING SPACES: 416				
TOTAL PROVIDED PARKING SPACES: 426				
REQUIRED ACCESSIBLE PARKING SPACES: 12				
PROVDED ACCESSIBLE PARKING SPACES: 14**				
PROVIDED CARPORT PARKING SPACES: 312				
PROVIDED STANDARD PARKING SPACES: 56				

* MINIMUM PARKING RATIO REQUIRED PER PUD ORD 2020-49
** 12 STANDARD ACCESSIBLE SPACES PLUS 2 ACCESSIBLE GARAGE SPACES

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TBPLS # 10194230

Consultant

Revision	By	Appd	YYYY.MM.DD
4 BUILDING AND PARKING UPDATE	ZM	PH	2024.01.12

Issued — By — Appd — YYYY.MM.DD

Permit/Seal

STATE OF TEXAS
BRIAN E. CARRINGTON
123263
LICENSED PROFESSIONAL ENGINEER
4/28/2023

STATE OF TEXAS
PAUL M. HAMES
66791
LICENSED PROFESSIONAL ENGINEER
01-12-2024

THIS SEAL APPLIES ONLY TO THOSE ITEMS NOTED AS REVISION #4.

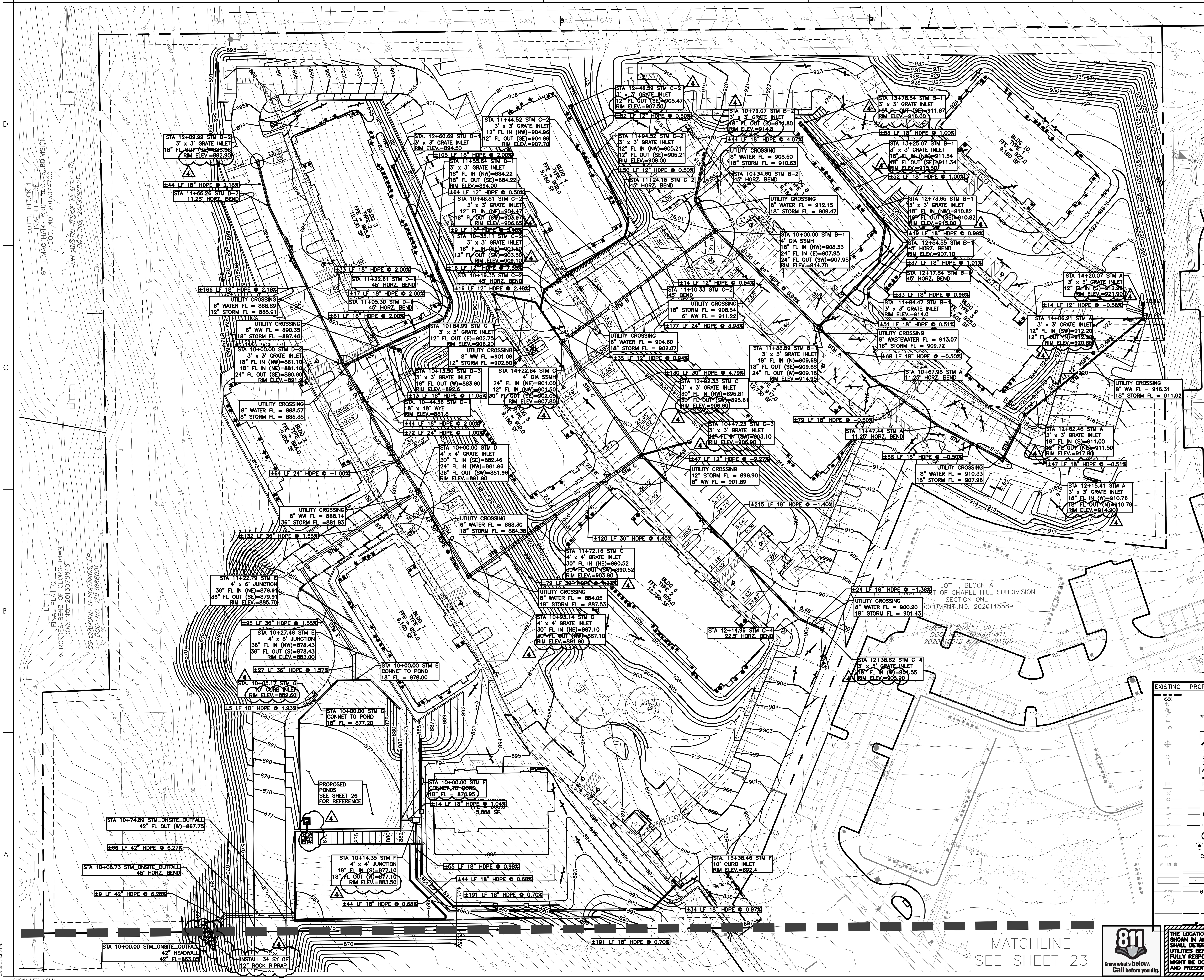
Client/Project
DUKE, INC.
CHAPEL HILL PHASE 2
403 WESTINGHOUSE ROAD
GEORGETOWN, TEXAS 7862[illegible]

Project No.: 222012278
File Name: 222012278SPN01
Scale:
Dwn. Dsgn. Chkd. YYYY.MM.DD 1.30.2024

Title
MASTER SITE PLAN

Revision:0 Sheet: 15 of 42
Drawing No.
15

2021-65-SDP



PAUL M. HAMES
66791
THIS SEAL APPLIES ONLY TO THOSE ITEMS NOTED AS REVISION #4.

0 40' 80'

LEGEND

EXISTING	PROPOSED	DESCRIPTION
		PROPERTY LINE/ (R.O.W.) LINE
XXX		RECORD INFORMATION
		LIGHT POLE
		GROUND LIGHT
	PP	POWER POLE
		DOWN GUY
		WATER LINE MARKER
	T	TRANSFORMER (SIZE VARIES)
		FIRE HYDRANT
		FIRE DEPARTMENT CONNECTION
		WATER VALVE
		WATER METER
	WM	WATER METER VAULT
		BACKFLOW PREVENTER
		GRATE INLET
		CURB INLET (SIZE VARIES)
		WIRE FENCE
SS		STORMSEWER LINE
W	W	WATER LINE
WW	WW	WASTEWATER LINE
G	G	GAS LINE
UE	UE	ELECTRIC LINE
WWMH		WASTEWATER MANHOLE (SIZE VARIES)
SSMH		STORMSEWER MANHOLE (SIZE VARIES)
CO	CO	WASTEWATER CLEANOUT
WTRMH		WATER MANHOLE
		CURB & GUTTER
		CONCRETE SIDEWALKS
		WALL
678	678	CONTOUR
		TREE TO REMAIN
		ROW
		EASEMENT
		TELECOMMUNICATION LINE

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Consultant

Revision	By	Appd	YYYY.MM.DD
4 UPDATED RIM ELEVATIONS UPDATED BACKGROUND	ZM	PH	2024.01.12

Issued	By	Appd	YYYY.MM.DD

Permit/Seal
STATE OF TEXAS
BRIAN E. CARRINGTON
123263
LICENSED PROFESSIONAL ENGINEER
4/28/2023

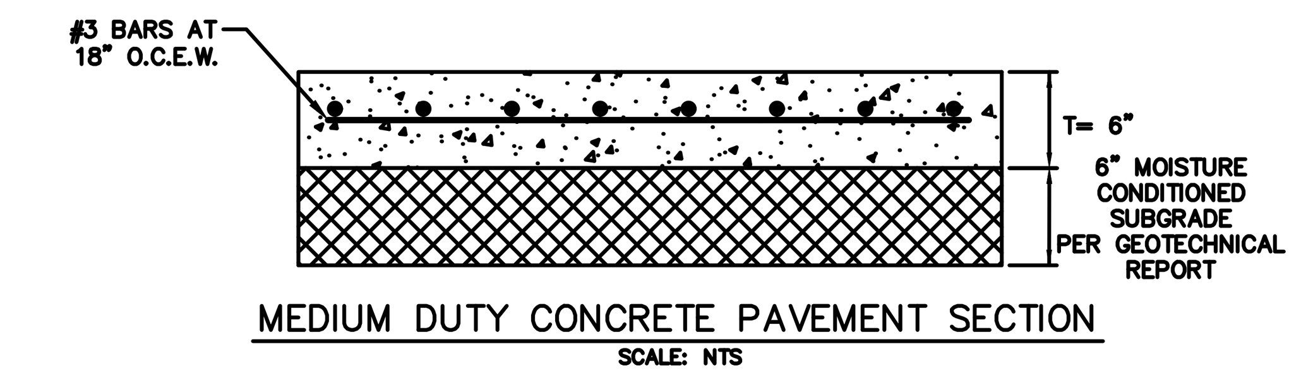
Client/Project
DUKE, INC.
CHAPEL HILL PHASE 2
403 WESTINGHOUSE ROAD,
GEORGETOWN, TEXAS 78626

Project No.: 222012278
File Name: 222012278SSP01
Scale:
Dwn. Dsgn. Chkd. 1.30.2024 YYYY.MM.DD

Title
ON-SITE DRAINAGE PLAN

Revision:0 Sheet: 22 of 42
Drawing No.
22

2021-65-SDP



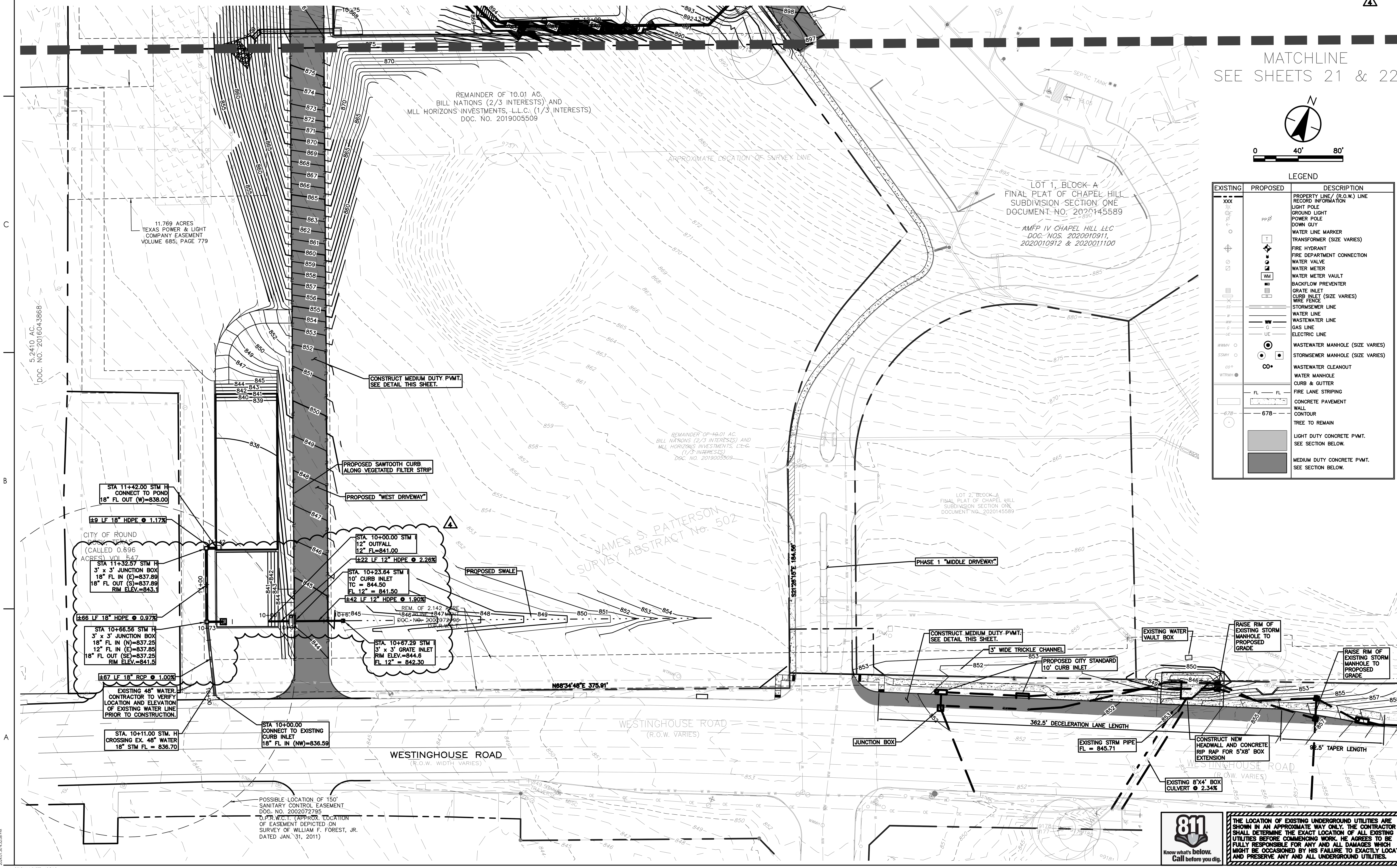
MEDIUM DUTY CONCRETE PAVEMENT SECTION

SCALE: NTS

NOTES:

1. THE PAVING LAYOUT SHOWN ON THIS PLAN PROVIDES A GENERAL LAYOUT OF THE NECESSARY PAVEMENT SECTIONS BASED UPON REVIEW OF THE GEOTECHNICAL ENGINEERING REPORT PROVED BY TERRADYNE ENTITLED "GEOTECHNICAL ENGINEERING REPOST CHAPEL HILL APARTMENTS GEORGETOWN, TEXAS" DATED JULTY 7 2021, TERRADYNE PROJECT NO.A211032-R1.
2. ALL EARTHWORK AND PAVEMENT PREPARATIONS SHALL BE IN ACCORDANCE WITH THE GEOTECHNICAL ENGINEERING REPORT DESCRIBED IN NOTE 2 ABOVE, EXCEPT WHERE STRICTER SPECIFICATIONS ARE PROVIDED WITHIN THIS PLAN SET.
3. ALL SIDEWALKS SHALL BE BUILT TO CITY OF GEORGETOWN STANDARDS, BUT SIDEWALKS ADJACENT TO BUILDINGS SHALL HAVE THE FULL DEPTH OF DARK BROWN CLAY REMOVED. ACCEPTABLE FILL MATERIAL IS SELECT FILL MATERIAL ONLY. NO ONSITE CLAY FILL MATERIAL SHALL BE UTILIZED ADJACENT TO BUILDINGS.
4. ALL GARAGES SHALL BE BUILT AT THE TIME OF BUILDING CONSTRUCTION. ALL ADA SIDEWALKS SHALL BE BUILT WITH CIVIL INFRASTRUCTURE.

STATE OF TEXAS
PAUL M. HAMES
66791
LICENSED PROFESSIONAL ENGINEER
THIS SEAL APPLIES ONLY TO THOSE ITEMS NOTED AS REVISION #4.



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

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Stantec

Stantec Consulting Services Inc.
1905 Aldrich Street Suite 300
Austin TX 78723-3544
Tel: (512) 328-0011
www.stantec.com

TBPE # F-6324
TBPLS # 10194230

Consultant

Revision	By	Appd	YYYY.MM.DD
4 UPDATED STORM SEWERS	ZM	PH	2024.01.12
2 UPDATED FL ELEVATIONS, ADDED UTILITY CORSSING	ZM	BC	2023.11.20

Issued	By	Appd	YYYY.MM.DD

Permit/Seal

STATE OF TEXAS
BRIAN E. CARRINGTON
123263
LICENSED PROFESSIONAL ENGINEER

Client/Project
DUKE, INC.

CHAPEL HILL PHASE 2

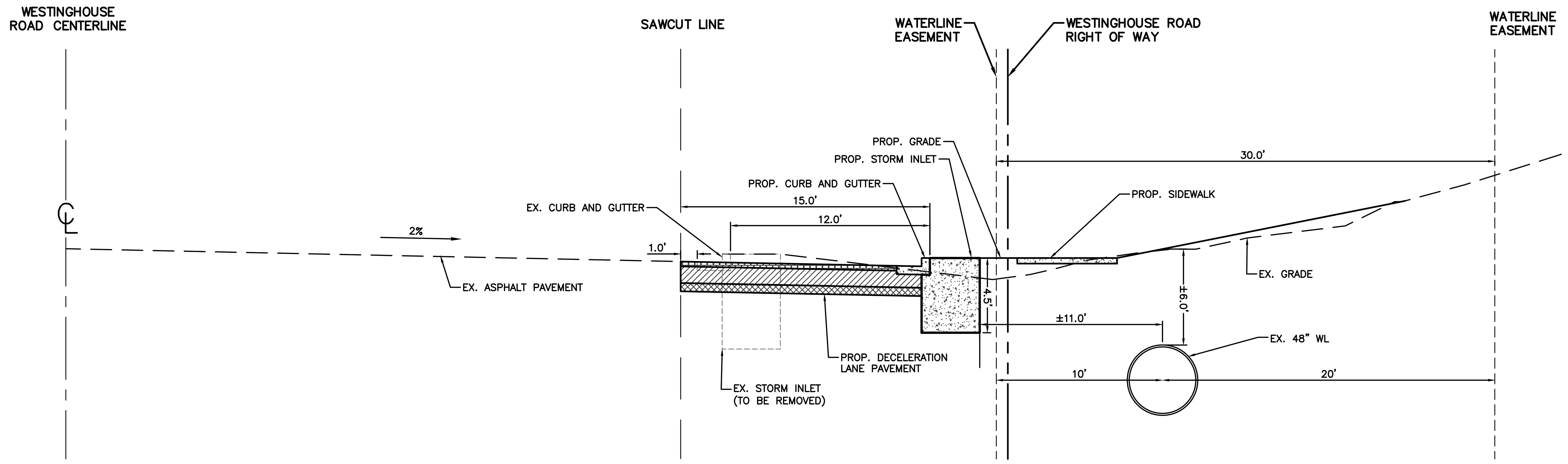
403 WESTINGHOUSE ROAD,
GEORGETOWN, TEXAS 78626

Project No.: 222012278
File Name: 222012278SSP02
Scale:

Dwn.	Dsgn.	Chkd.	YYYY.MM.DD
			1.30.2024

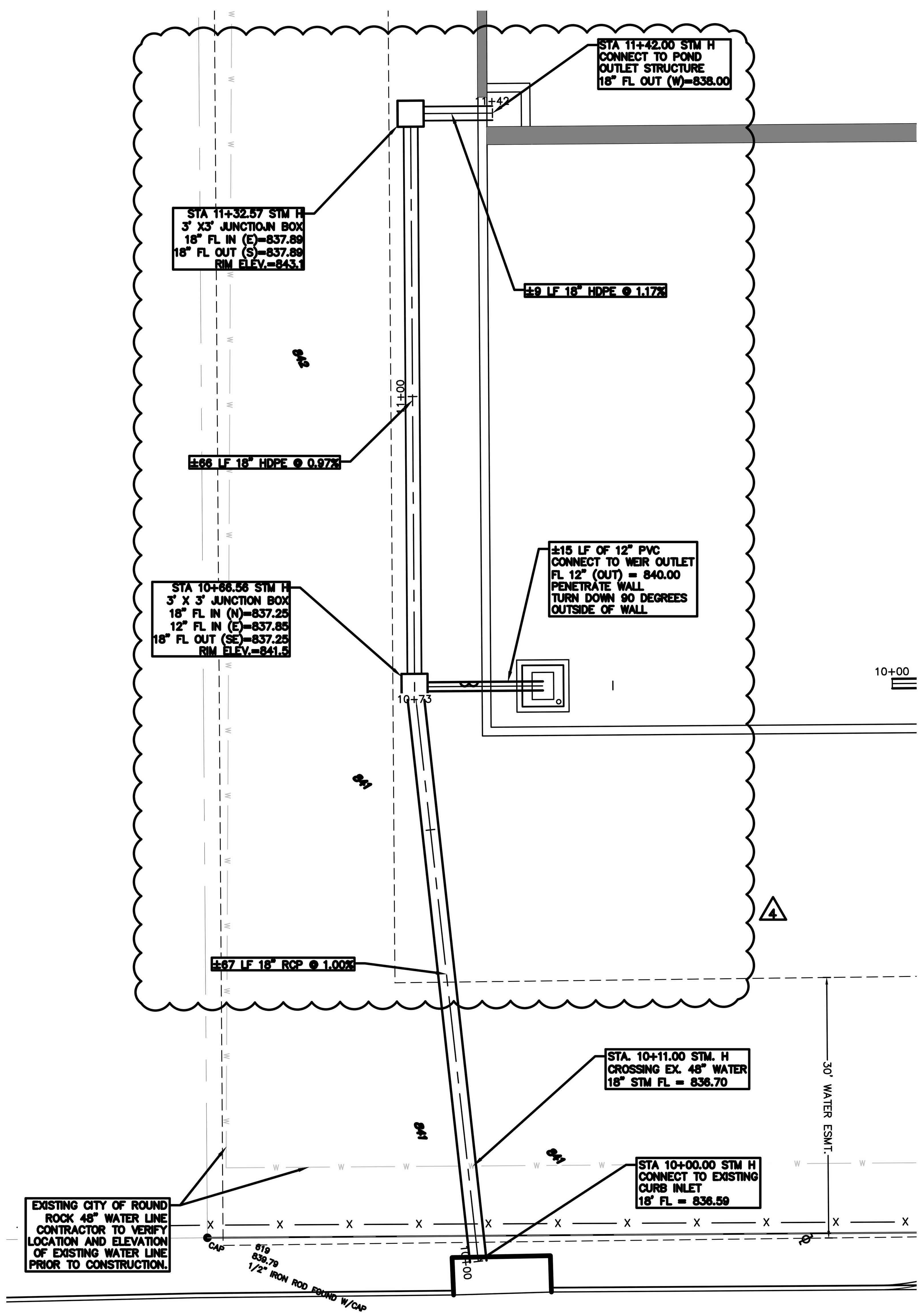
Title
OFF-SITE PAVING & DRAINAGE PLAN

Revision:0 Sheet: 23 of 42
Drawing No.
23



TYPICAL ROAD SECTION

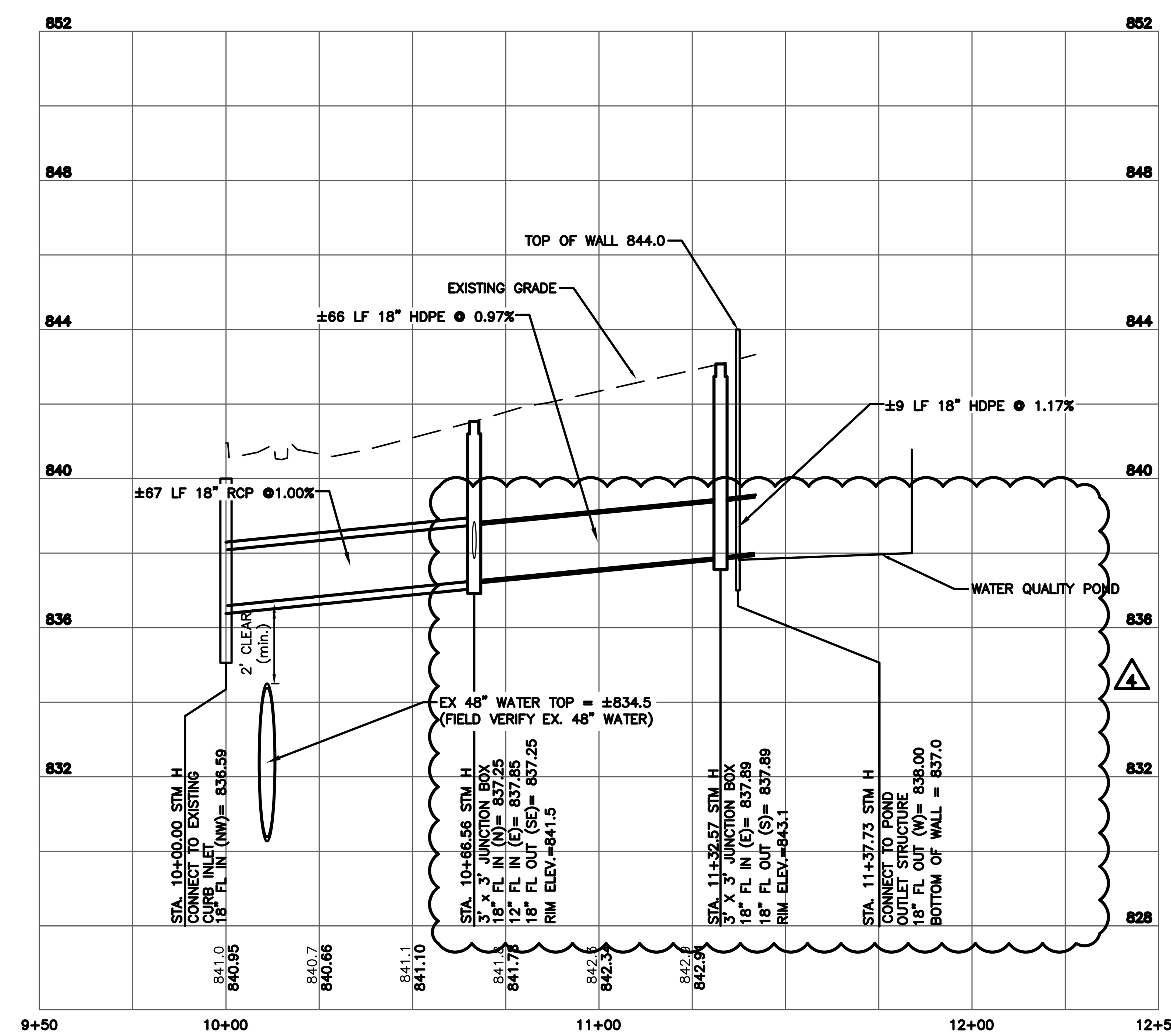
HORIZONTAL SCALE: 1"=5'



STORM LINE H

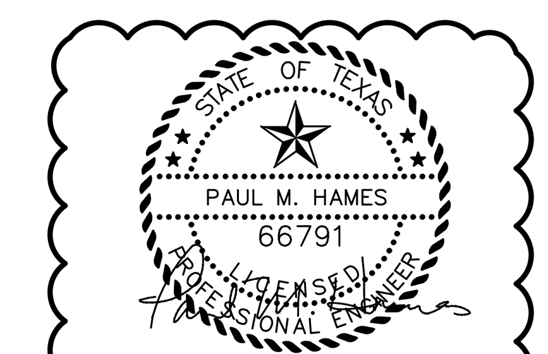
PLAN SCALE: 1"=10'

STM H



STORM LINE H PROFILE

PROFILE LEGEND:	PROFILE SCALE:
EXISTING GRADE / PROPOSED GRADE / PROPOSED PIPE	1"= 30' HORIZONTAL 1"= 3' VERTICAL
ELEVATION EXISTING GRADE 855.5	ELEVATION PROPOSED GRADE 853.0



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Revision	By	Appd	YYYY.MM.DD
4 UPDATED STORM SEWERS	ZM	PH	2024.01.12
ADDED STORM AND EX. RR WATER CROSSING PLAN & PROFILE, UPDATED DECEL LANE	ZM	BC	2023.11.20

Issued

Permit/Seal

Client/Project
DUKE, INC.

CHAPEL HILL PHASE 2

403 WESTINGHOUSE ROAD, GEORGETOWN, TEXAS 78626

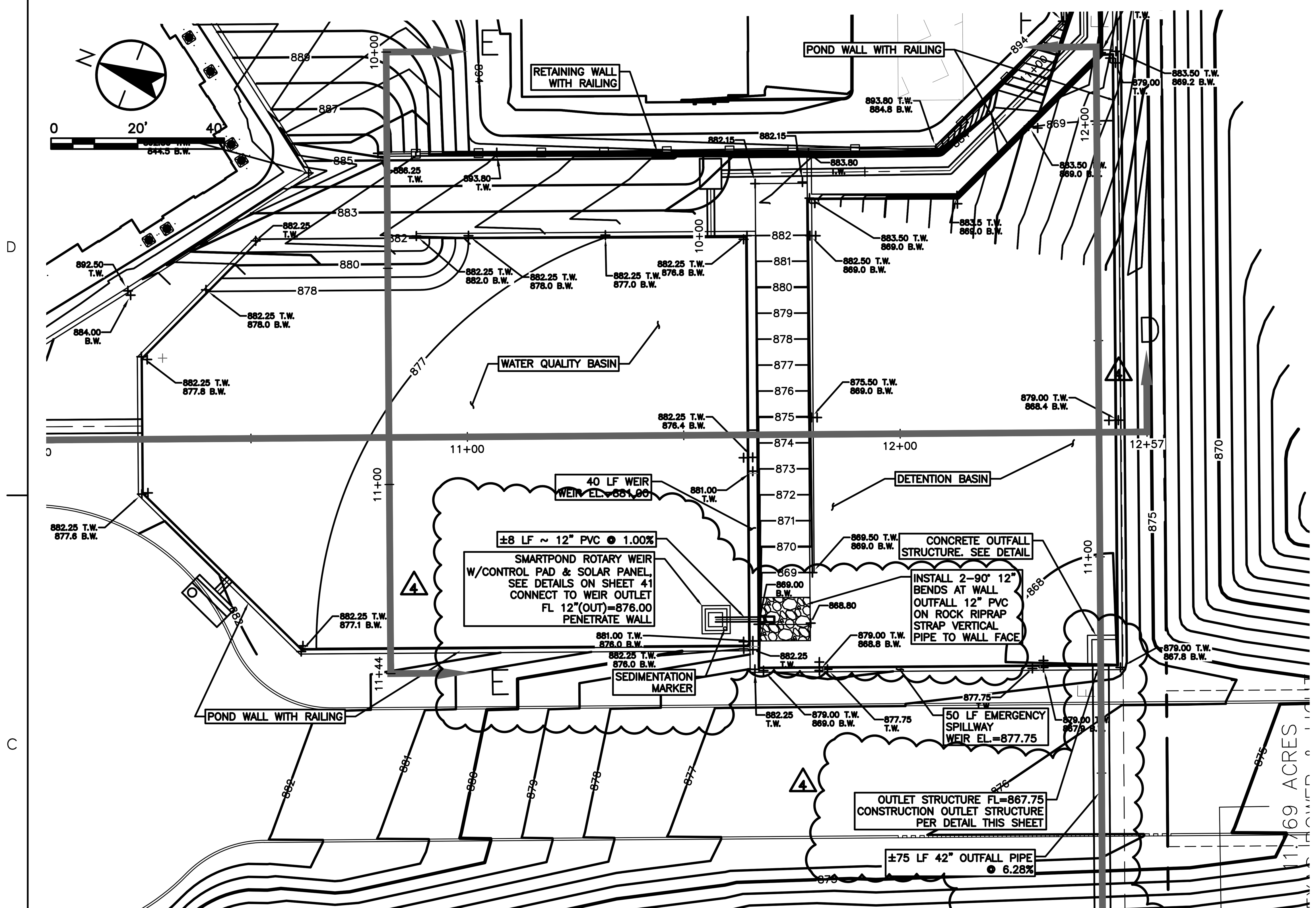
Project No.: 222012278
File Name: 222012278PVP02

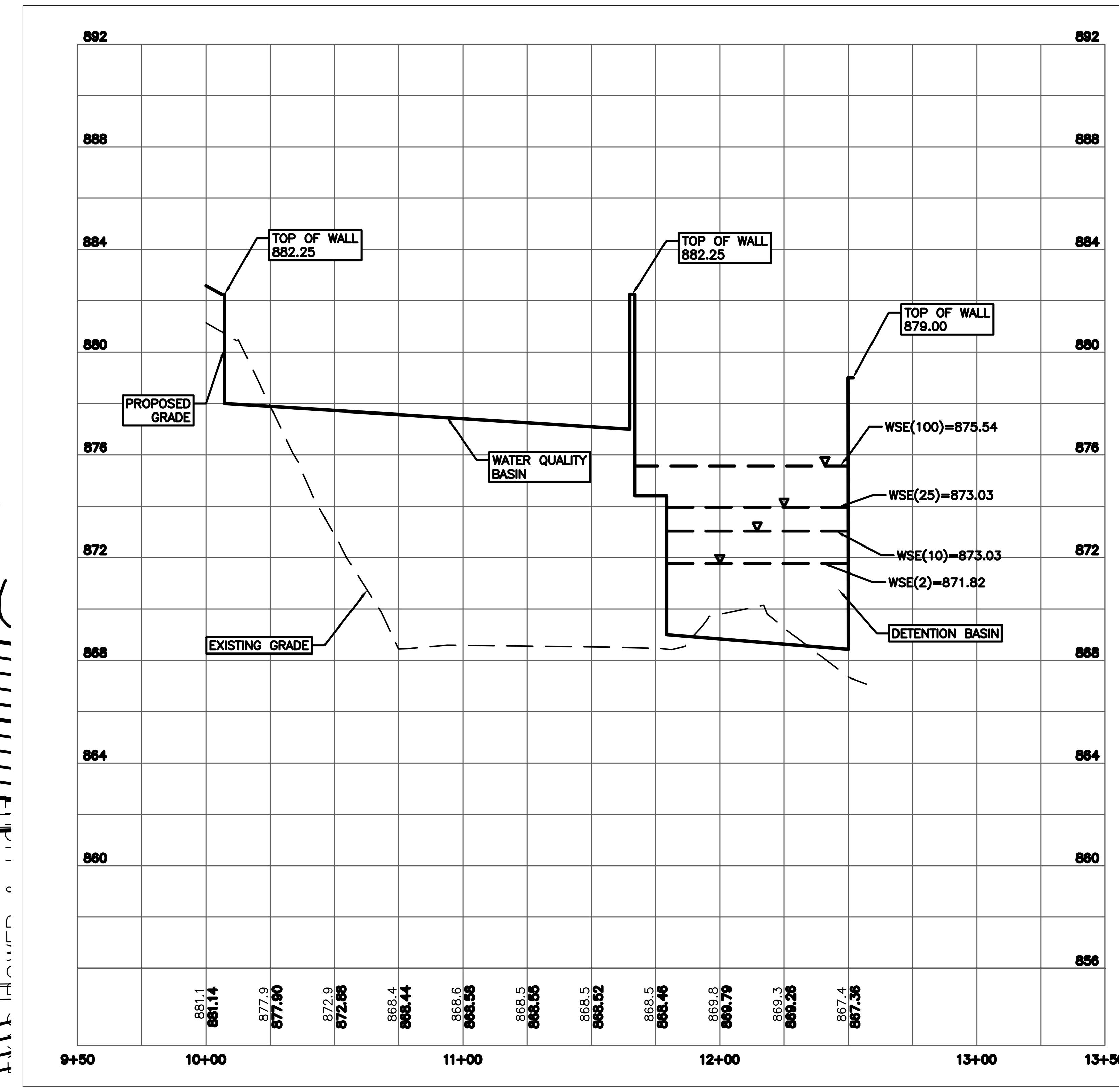
Scale:
Dwn. Dsgn. Chkd. YYYY.MM.DD 1.30.2024

Title
TYPICAL ROAD SECTIONS

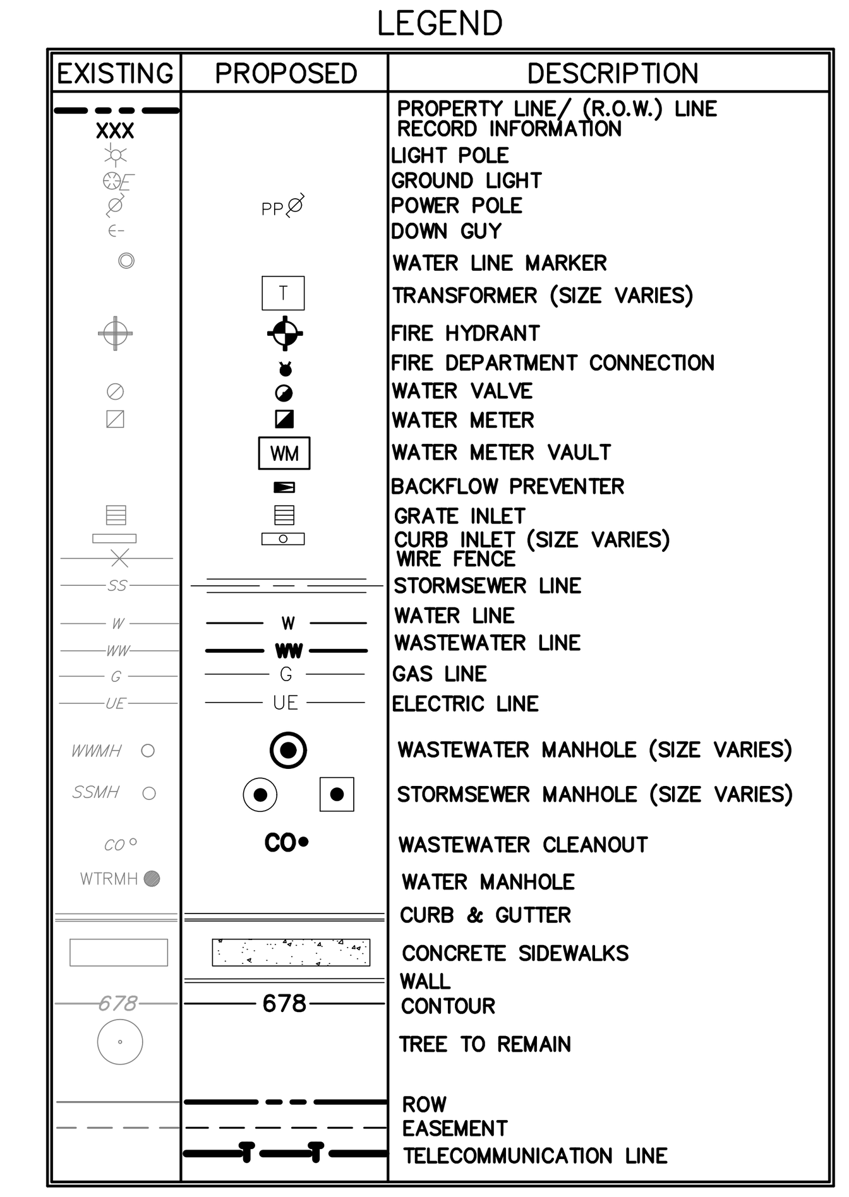
Revision: Sheet: 25 of 42
Drawing No.
25

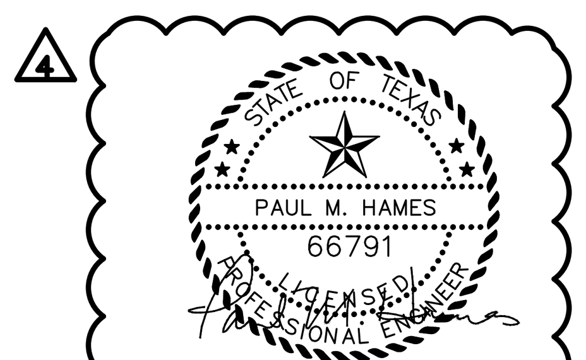
2021-65-SDP





POND CROSS SECTION D-D SCALE: 1:40





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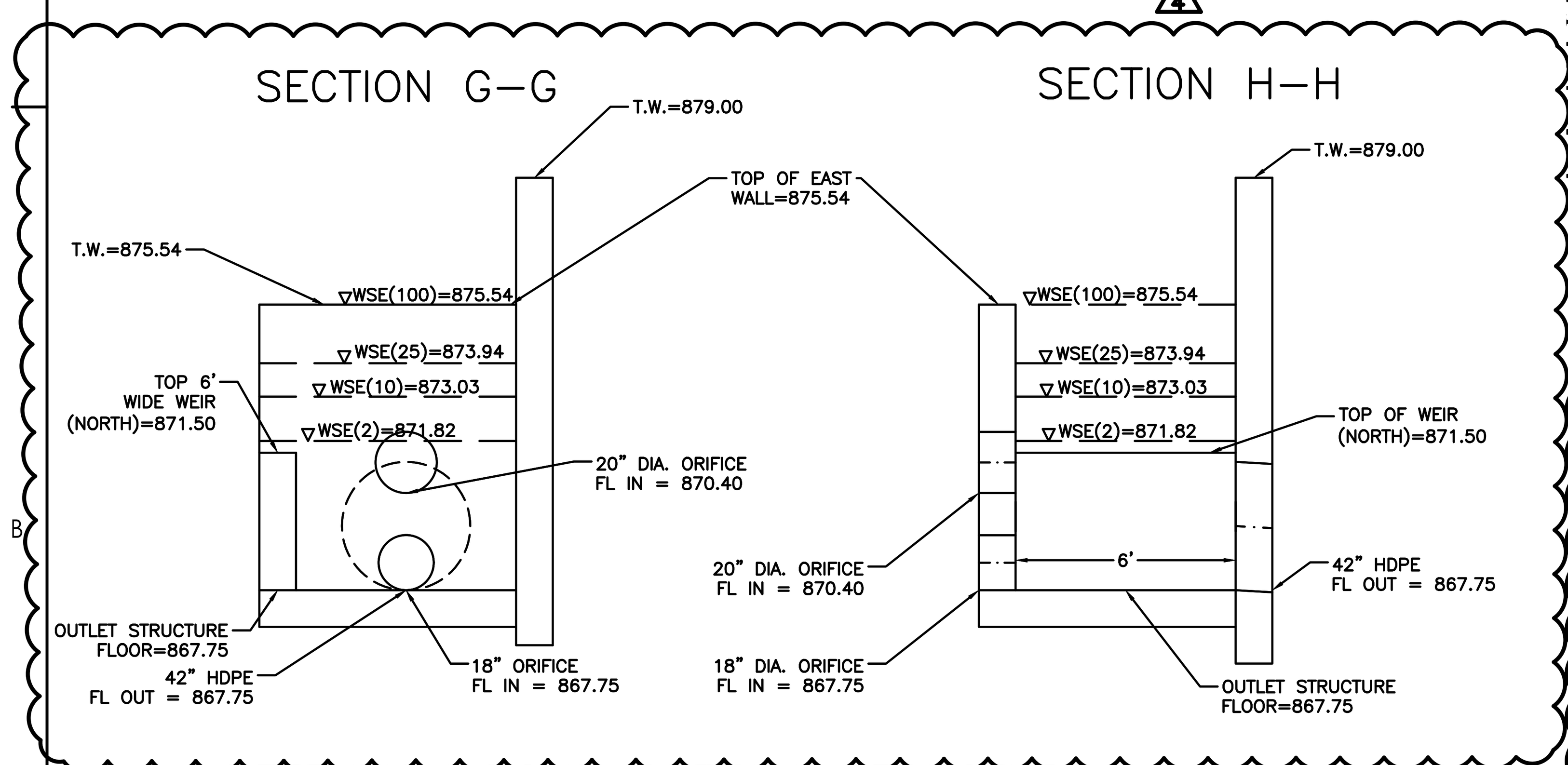
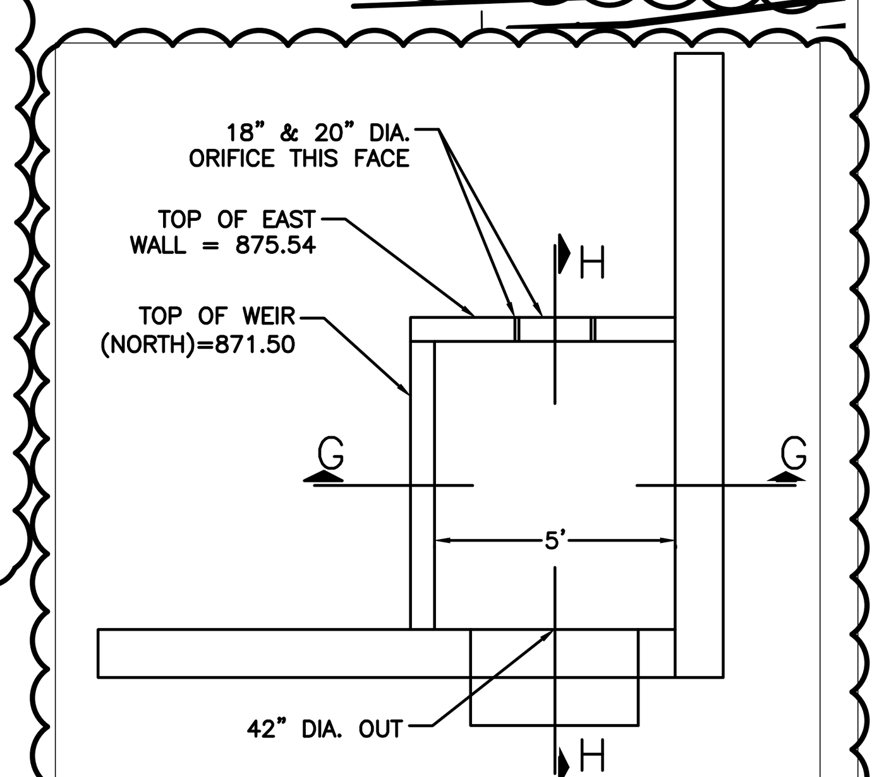
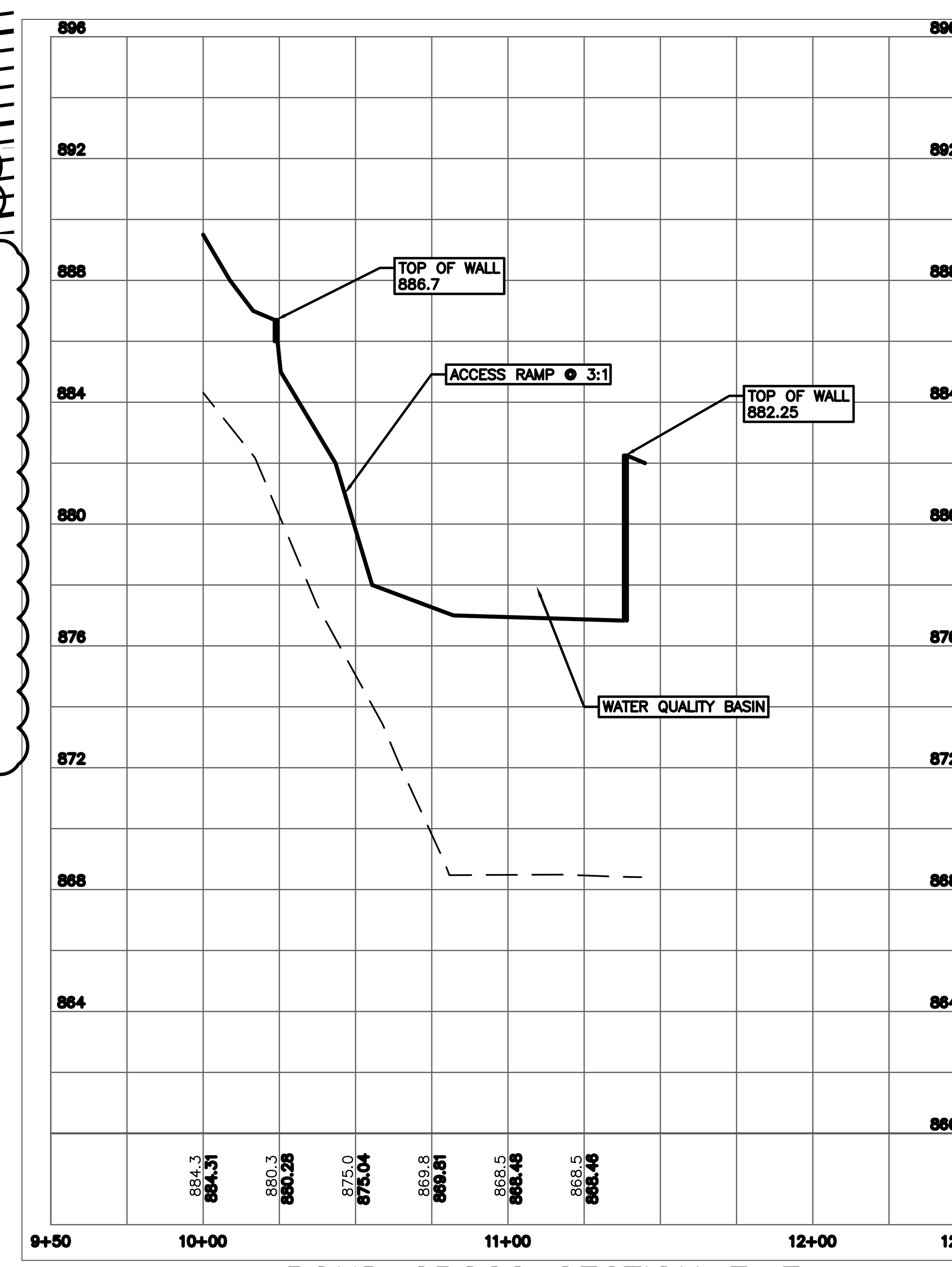


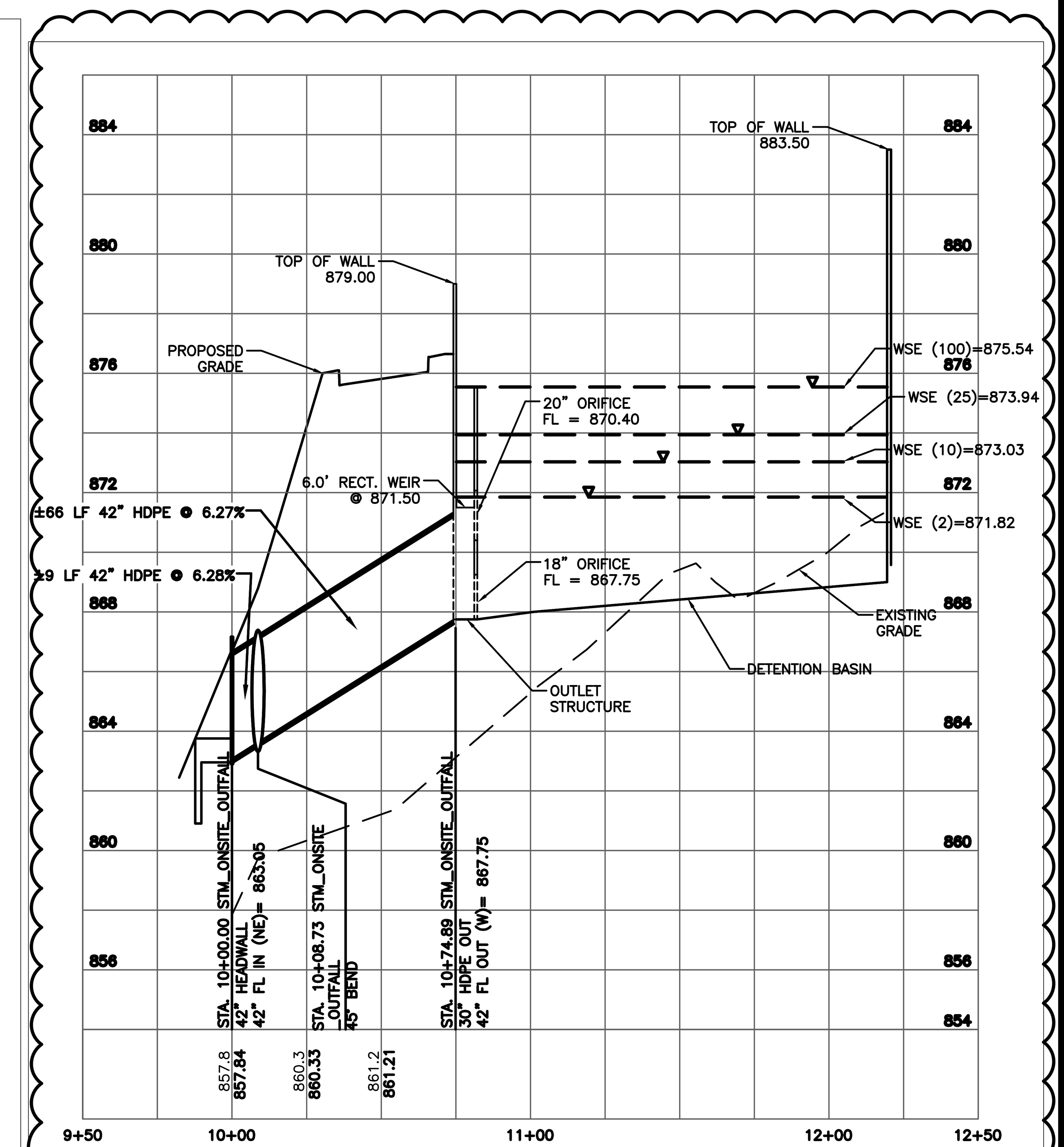
DETENTION POND OUTFALL STRUCTURE
SCALE: N.T.S



PLAN VIEW



POND CROSS SECTION E-E
SCALE: 1:40



POND CROSS SECTION F-F
SCALE: 1:40

Chapel Hill Phase 2 Onsite Existing Conditions				
	2-YR (CFS)	10 YR (CFS)	25-YR (CFS)	100-YR (CFS)
Point of Interest 1	24.19	43.79	55.71	74.19

Chapel Hill Phase 2 Onsite Proposed Conditions				
	2-YR (CFS)	10 Yr (CFS)	25-YR (CFS)	100-YR (CFS)
Point of Interest 1	21.71	43.74	50.66	59.71

2 Proposed North				
	2-YR	10-Yr	25-YR	100-YR
Top of Pond	879	879	879	879
Bottom of Pond	867.8	867.8	867.8	867.8
Pond WSE	871.82	873.03	873.94	875.5
Ponding Depth	4.1	5.3	6.2	7.8
Freeboard	7.18	5.97	5.06	3.5

Basin	Drainage Area (AC)	Impervious Cover (AC)	Pervious Cover	Overtreatment (AC)	Lm Project (lbs)	Lm Basin (lbs)
North WQ pond	13.28	7.43	5.85	0.16	6,874	6,972
Required Batch Detention Volume: 45,456 CF						
Fr=1.00, Rainfall Depth=4.00"						

Stage Storage Table - WQ Pond

North Water Quality Pond				
Contour Elevation	Contour Area (SF)	Depth (ft)	Incre. Vol Avg. End (CF)	Cumu. Vol Avg. End (CF)
876	0.02	N/A	3862.37	0
877	7,724.72	1	9652.49	3862.37
878	11,580.25	1	11682.87	13514.86
879	11,785.48	1	11876.95	25197.73
880	11,968.41	1	12047.62	37074.68
881	12,126.83	1	13902.19	49122.3
882	15,677.54	1	0	63024.49

Stage Storage Table - Detention Pond

North Detention Pond				
Contour Elevation	Contour Area (SF)	Depth (ft)	Incre. Vol Avg. End (CF)	Cumu. Vol Avg. End (CF)
867.75	0.02	N/A	N/A	0
868	511.21	0.25	42.86	63.9
869	8,519.95	1	3706.05	4579.48
870	8,599.44	1	8559.66	13139.18
871	8,680.63	1	8640.01	21779.22
872	8,756.29	1	8718.44	30497.68
873	8,835.43	1	8795.83	39293.54
874	8,912.00	1	8873.69	48167.26
875	8,988.85	1	8950.4	57117.68
876	9,063.23	1	9026.01	66143.72
876.75	9,114.32	0.75	6816.57	72960.3
877	9,138.71	0.25	2281.63	75241.93
877.75	9,189.46	0.75	6873.06	82114.99
878	9,215.08	0.25	2300.57	84415.56
879	9,290.87	1	9252.95	93668.54

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Consultant

Revision	By	Appd.	YYYY.MM.DD
4. ADDED POND INFO	ZM	PH	2024.07.04
3. REVISED SPOT ELEVATIONS AND CROSS SECTIONS	ZM	PH	2024.01.12

Issued

Permit/Seal

4/28/2023

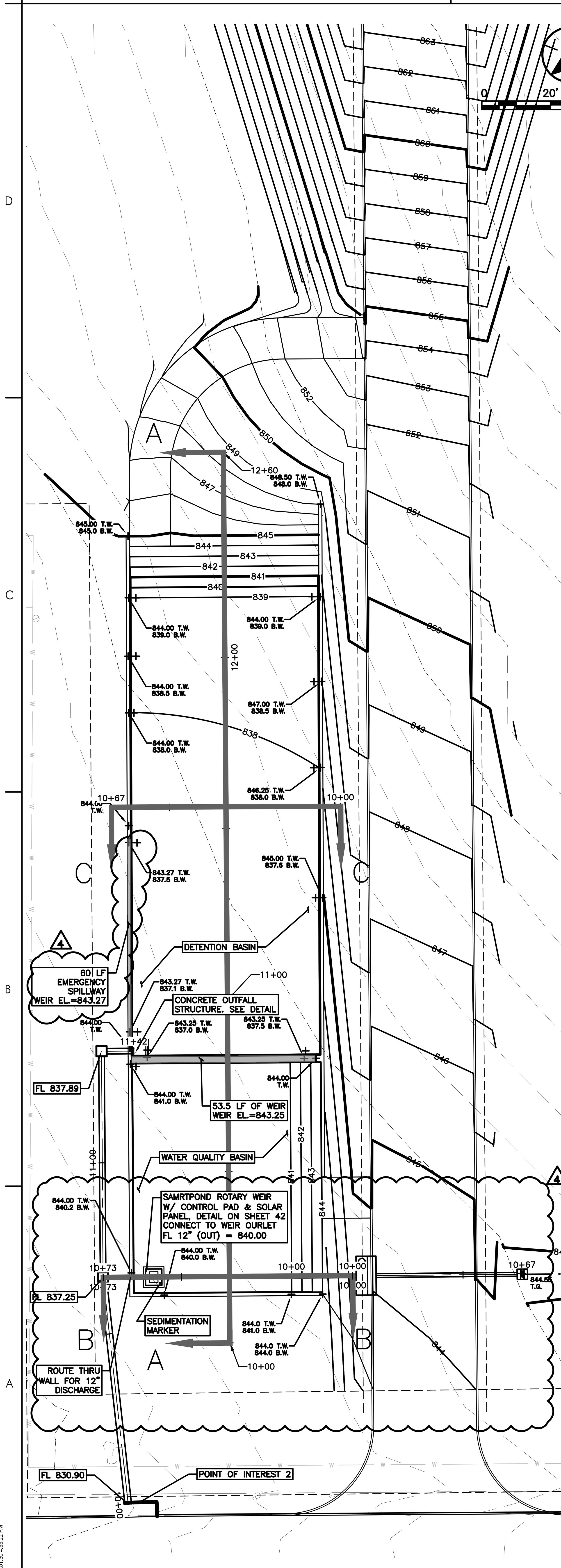
Client/Project
DUKE, INC.
CHAPEL HILL PHASE 2
403 WESTINGHOUSE ROAD, GEORGETOWN, TEXAS 78626

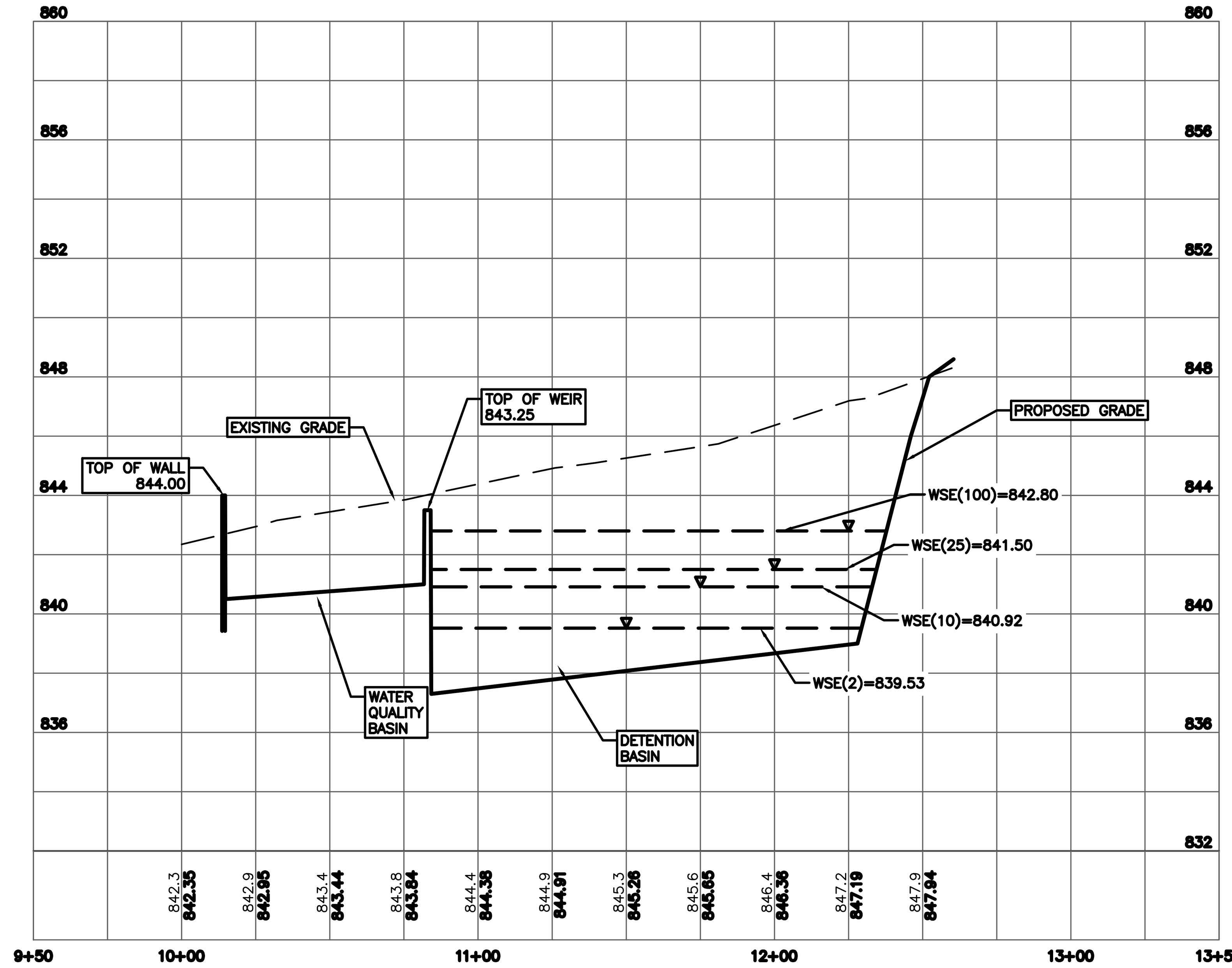
Project No.: 222012278
File Name: 222012278PND01
Scale:
1.30.2024
Dwn. Dsgn. Chkd. YYYY.MM.DD

Title
NORTH WATER QUALITY & DETENTION POND

Revision:0 Sheet: 26 of 42

Drawing No.
26





POND CROSS SECTION A–A SCALE: 1:40

South Water Quality Pond				
Contour Elevation	Contour Area (SF)	Depth (ft)	Incre. Vol Avg. End (CF)	Cumu. Vol Avg. End (CF)
840	0	N.A.	0	0
841	3073.4	1	1536.71	1536.71
842	3282.11	1	4714.46	4714.46
843	3491.44	1	8101.24	8101.24
843.25	3543.86	0.25	8980.65	8980.65
844	3701.37	0.75	11697.61	11697.61

Stage Storage Table - WQ Pond

Stage Storage Table - Detention Pond

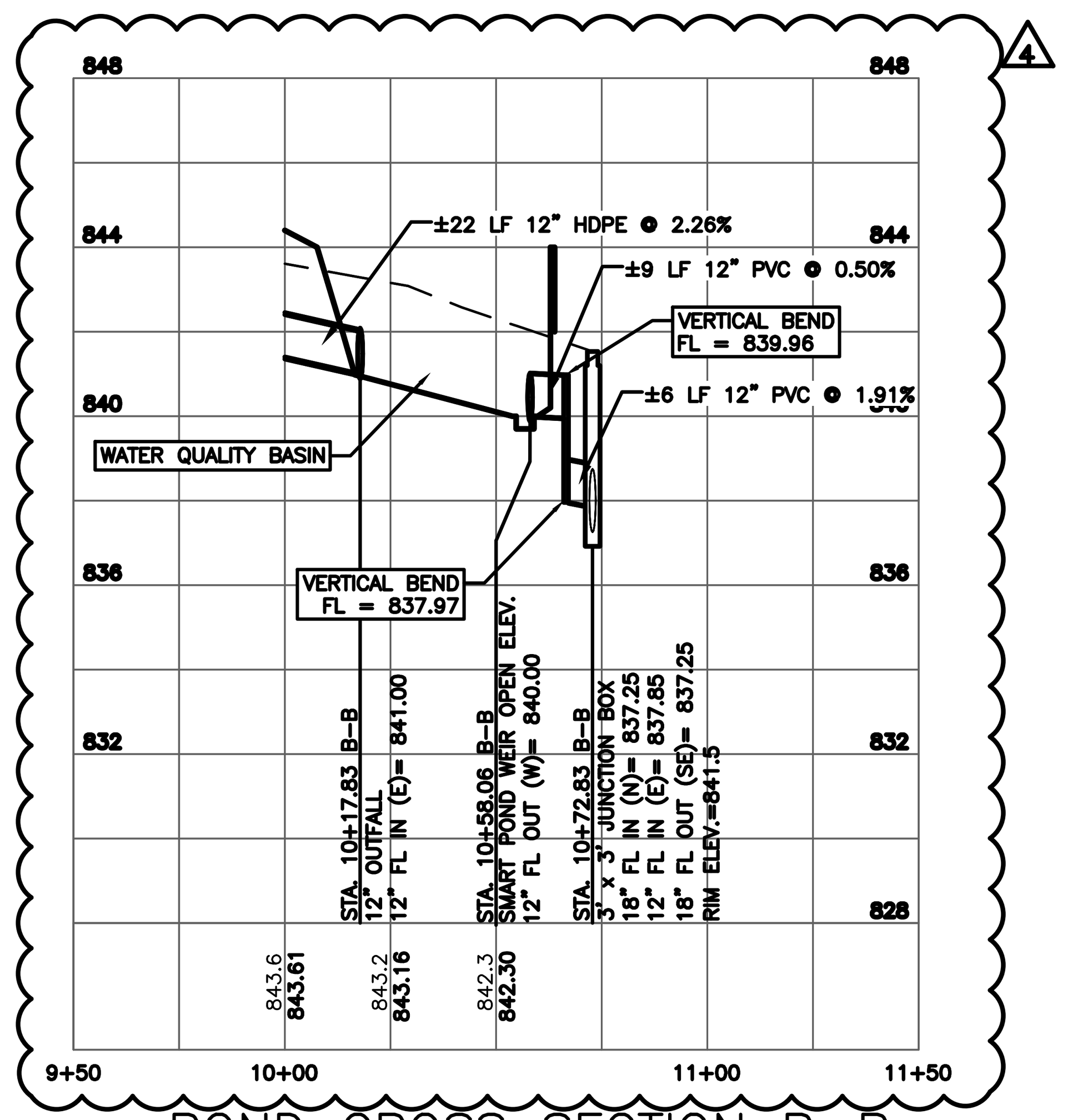
South Detention Pond				
Contour Elevation	Contour Area (SF)	Depth (ft)	Incre. Vol Avg. End (CF)	Cumu. Vol Avg. End (CF)
837	0	N.A.	N/A	0
838	5,165.10	1	2582.65	2582.65
839	7,297.81	1	6231.46	8814.11
840	7,477.78	1	7387.8	16201.9
841	7,658.72	1	7568.25	23770.15
841.8	7,674.28	0.8	6133.2	29903.35
842	7,840.26	0.2	1551.45	31454.81
843	8,022.42	1	7931.34	39386.15
844	8,205.18	1	8113.8	47499.95

Basin	Drainage Area (AC)	Impervious Cover (AC)	Pervious Cover	Overtreatment (AC)	Lm Project (lbs)	Lm Project (lbs)
South WQ pond	6.02	0.34	5.68	0.13	312	429
Required Batch Detention Volume: 8,720 CF						
Fr=1.00, Rainfall Depth=4.00"						

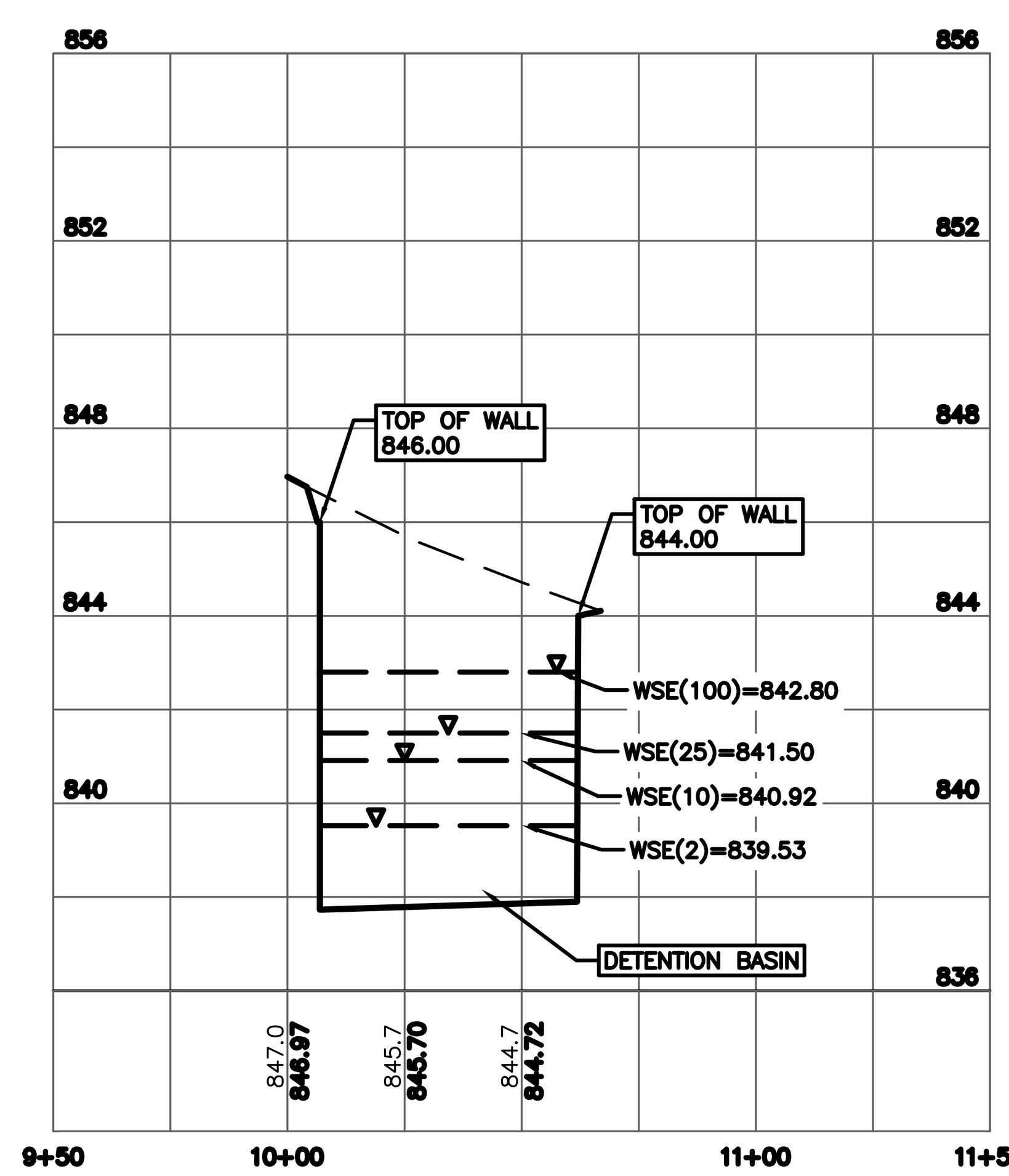
SOUTH WATER QUALITY POND SIZING

LEGEND

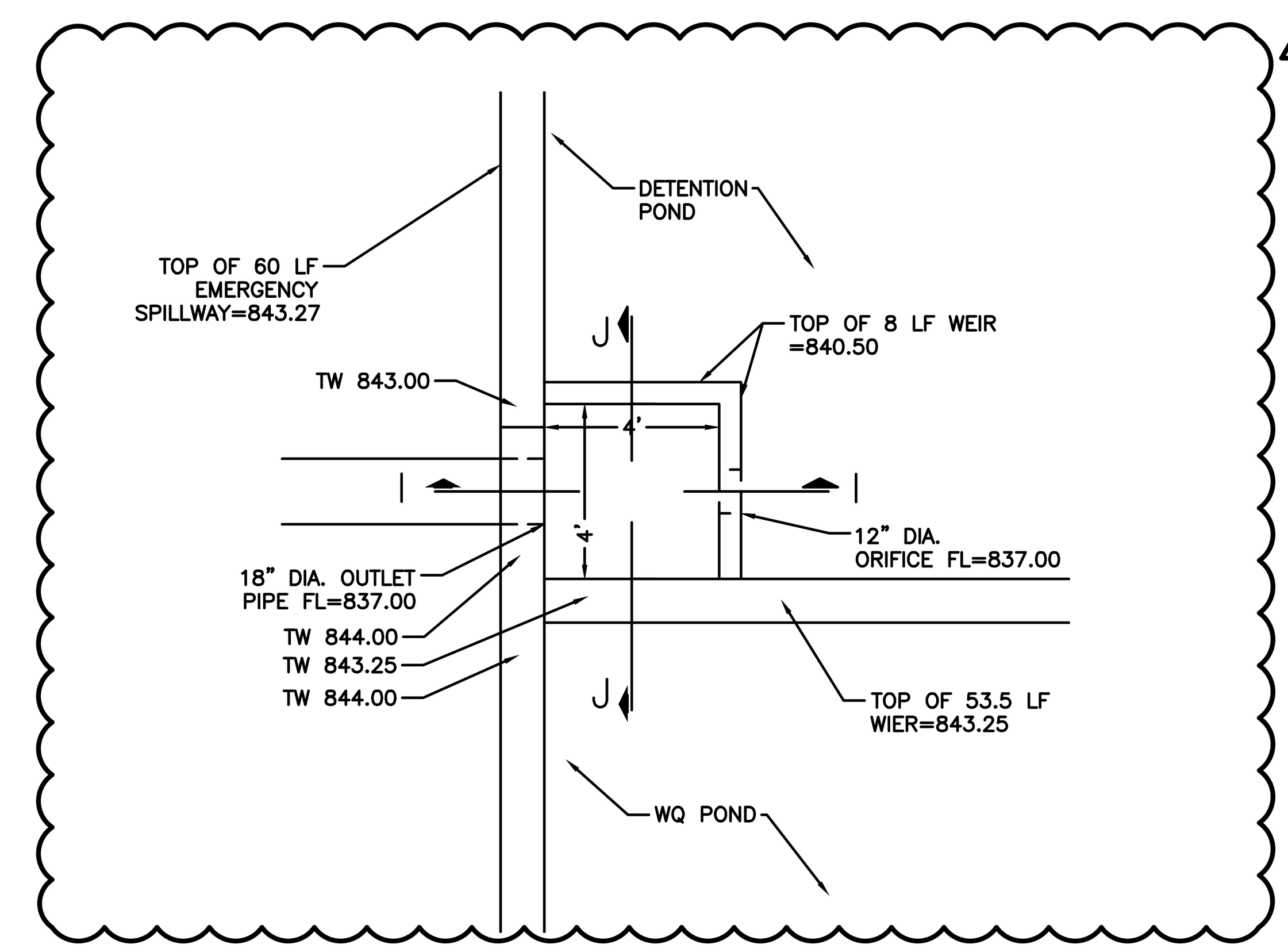
EXISTING	PROPOSED	DESCRIPTION
		PROPERTY LINE/ (R.O.W.) LINE RECORD INFORMATION
		LIGHT POLE
		GROUND LIGHT
		POWER POLE
		DOWN GUY
		WATER LINE MARKER
		TRANSFORMER (SIZE VARIES)
		FIRE HYDRANT
		FIRE DEPARTMENT CONNECTION
		WATER VALVE
		WATER METER
	WM	WATER METER VAULT
		BACKFLOW PREVENTER
		GRATE INLET
		CURB INLET (SIZE VARIES)
		WIRE FENCE
		STORMSEWER LINE
	W	WATER LINE
	WW	WASTEWATER LINE
	G	GAS LINE
	UE	ELECTRIC LINE
		WASTEWATER MANHOLE (SIZE VARIES)
		STORMSEWER MANHOLE (SIZE VARIES)
	CO	WASTEWATER CLEANOUT
		WATER MANHOLE
		CURB & GUTTER
		CONCRETE SIDEWALKS
		WALL
678	678	CONTOUR
		TREE TO REMAIN
		ROW
		EASEMENT
		TELECOMMUNICATION LINE



POND CROSS SECTION B–B SCALE: 1:40



POND CROSS SECTION C–C SCALE: 1:40

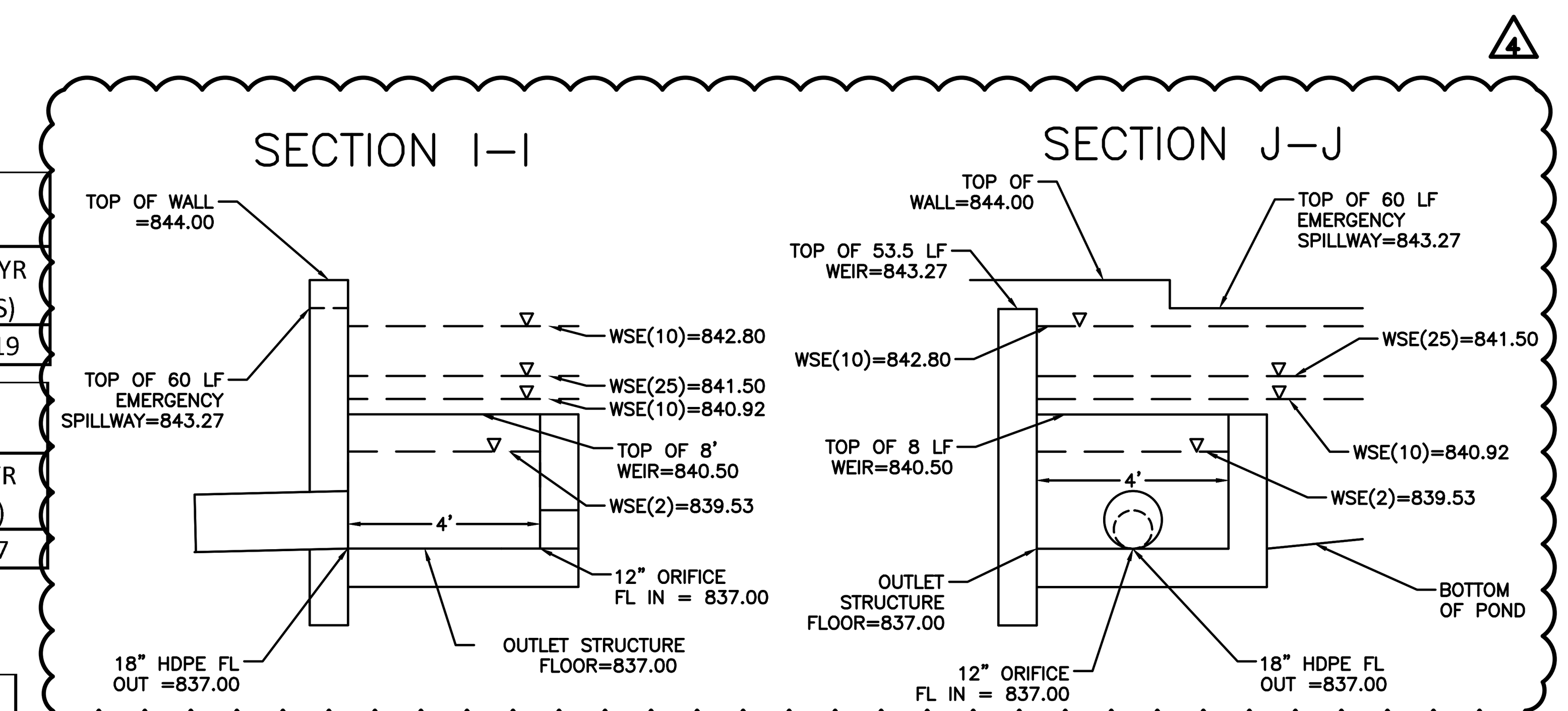


PLAN VIEW

Chapel Hill Phase 2 Offsite Existing Conditions				
	2-YR (CFS)	10 YR (CFS)	25-YR (CFS)	100-YR (CFS)
Point of Interest 2	8.64	14.82	18.49	24.19

Chapel Hill Phase 2 Offsite Proposed Conditions				
	2-YR (CFS)	10 Yr (CFS)	25-YR (CFS)	100-YR (CFS)
Point of Interest 2	6.21	12.98	18.41	22.27

Chapel Hill Phase 2 Proposed South Detention Pond				
	2-YR	10-Yr	25-YR	100-YR
Top of Pond	844	844	844	844
Bottom of Pond	837.0	837.0	837.0	837.0
Pond WSE	839.53	840.92	841.5	842.8
Ponding Depth	2.5	3.9	4.5	5.8
Freeboard	4.47	3.08	2.5	1.2



DETENTION POND OUTFALL STRUCTURE SCALE: N.T.S

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Consultant

Revision	By	Appd	YYYY.MM.DD
4. UPDATED WQ POND INFO	ZM	PH	2024.01.12
3. REVISED SPOT ELEVATIONS AND CROSS SECTIONS	ZM	PH	2024.01.04

Issued

Permit/Seal

BRIAN E. CARRINGTON 123263 LICENSED PROFESSIONAL ENGINEER
4/28/2023

STATE OF TEXAS PAUL M. HAMES 66791 LICENSED PROFESSIONAL ENGINEER
01-12-2024

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Client/Project
DUKE, INC.

CHAPEL HILL PHASE 2
403 WESTINGHOUSE ROAD,
GEORGETOWN, TEXAS 78626

Project No.: 222012278
File Name: 222012278PND04

Scale:

1.30.2024
Dwn. Dsgn. Chkd. YYYY.MM.DD

Title
SOUTH WATER QUALITY & DETENTION POND

Revision:0 Sheet: 27 of 42

Drawing No.
27

ORIGINAL SHEET - ARCH D

2021-65-SDP

Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Project Name: Chapel Hill Phase 2
Date Prepared: 01.28.2022

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

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

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

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

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

County =	Williamson	
Total project area included in plan * =	19.54	acres
Predevelopment impervious area within the limits of the plan * =	0.00	acres
Total post-development impervious area within the limits of the plan* =	8.17	acres
Total post-development impervious cover fraction * =	**0.42**	
P =	**32**	inches
$L_{M\ TOTAL\ PROJECT}$ =	**7111**	lbs.

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

Number of drainage basins / outfalls areas leaving the plan area = 4

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

Drainage Basin/Outfall Area No. = 1

Total drainage basin/outfall area =	13.28	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 =	**0.56**	
$L_{M\ THIS\ BASIN}$ =	**6467**	lbs.

3. Indicate the proposed BMP Code for this basin.

Proposed BMP = Batch Detention
Removal efficiency = **91** percent

Aqualogic Cartridge Filter
Bioretention
Contech StormFilter
Constructed Wetland
Extended Detention
Grassy Swale
Retention / Irrigation
Sand Filter
Stormceptor
Vegetated Filter Strips
Vortechs
Wet Basin
Wet Vault
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: $L_R = (\text{BMP efficiency}) \times P \times (A_I \times 34.6 + A_P \times 0.54)$

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

A_C =	13.28	acres
A_I =	7.43	acres
A_P =	**5.85**	acres
L_R =	**7578**	lbs

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

Desired $L_{M\ THIS\ BASIN}$ = 6467 lbs.

F = **0.92**

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

Rainfall Depth =	**2.00**	inches
Post Development Runoff Coefficient =	**0.39**	
On-site Water Quality Volume =	**37865**	cubic feet

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

Off-site area draining to BMP =	0.17	acres
Off-site Impervious cover draining to BMP =	0.17	acres
Impervious fraction of off-site area =	**1.00**	
Off-site Runoff Coefficient =	**0.82**	
Off-site Water Quality Volume =	**1007**	cubic feet
Storage for Sediment =	**7775**	
Total Capture Volume (required water quality volume(s) x 1.20) =	**46647**	cubic feet

ON-SITE WATER QUALITY VOLUME CALCULATION (NORTH POND)

Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Project Name: Chapel Hill Phase 2
Date Prepared: 01.28.2022

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where:
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A_N = Net increase in impervious area for the project
P = Average annual precipitation, inches

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

County =	Williamson	
Total project area included in plan * =	19.54	acres
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Total post-development impervious area within the limits of the plan* =	8.17	acres
Total post-development impervious cover fraction * =	**0.42**	
P =	**32**	inches
$L_{M\ TOTAL\ PROJECT}$ =	**7111**	lbs.

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

Number of drainage basins / outfalls areas leaving the plan area = 4

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

Drainage Basin/Outfall Area No. = 1

Total drainage basin/outfall area =	6.02	acres
Predevelopment impervious area within drainage basin/outfall area =	0.00	acres
Post-development impervious area within drainage basin/outfall area =	0.34	acres
Post-development impervious fraction within drainage basin/outfall area =	**0.06**	
$L_{M\ THIS\ BASIN}$ =	**296**	lbs.

3. Indicate the proposed BMP Code for this basin.

Proposed BMP = Batch Detention
Removal efficiency = **91** percent

Aqualogic Cartridge Filter
Bioretention
Contech StormFilter
Constructed Wetland
Extended Detention
Grassy Swale
Retention / Irrigation
Sand Filter
Stormceptor
Vegetated Filter Strips
Vortechs
Wet Basin
Wet Vault
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: $L_R = (\text{BMP efficiency}) \times P \times (A_I \times 34.6 + A_P \times 0.54)$

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

A_C =	6.02	acres
A_I =	0.34	acres
A_P =	**5.68**	acres
L_R =	**432**	lbs

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

Desired $L_{M\ THIS\ BASIN}$ = 432 lbs.

F = **1.00**

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 =	**4.00**	inches
Post Development Runoff Coefficient =	**0.08**	
On-site Water Quality Volume =	**7298**	cubic feet

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

Off-site area draining to BMP =	0.11	acres
Off-site Impervious cover draining to BMP =	0.00	acres
Impervious fraction of off-site area =	**0.00**	
Off-site Runoff Coefficient =	**0.02**	
Off-site Water Quality Volume =	**32**	cubic feet
Storage for Sediment =	**1466**	
Total Capture Volume (required water quality volume(s) x 1.20) =	**8796**	cubic feet

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

OFF-SITE WATER QUALITY VOLUME CALCULATION (SOUTH POND)

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TBPLS # 10194230

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Revision | By | Appd | YYYY.MM.DD

Issued | By | Appd | YYYY.MM.DD

Permit/Seal

4/28/2023

Client/Project
DUKE, INC.
CHAPEL HILL PHASE 2
403 WESTINGHOUSE ROAD, GEORGETOWN, TEXAS 78626

Project No.: 222012278

Scale:

1.12.2024
Dwn. Dsgn. Chkd. YYYY.MM.DD

Title
TCEQ WATER QUALITY CALCUATIONS

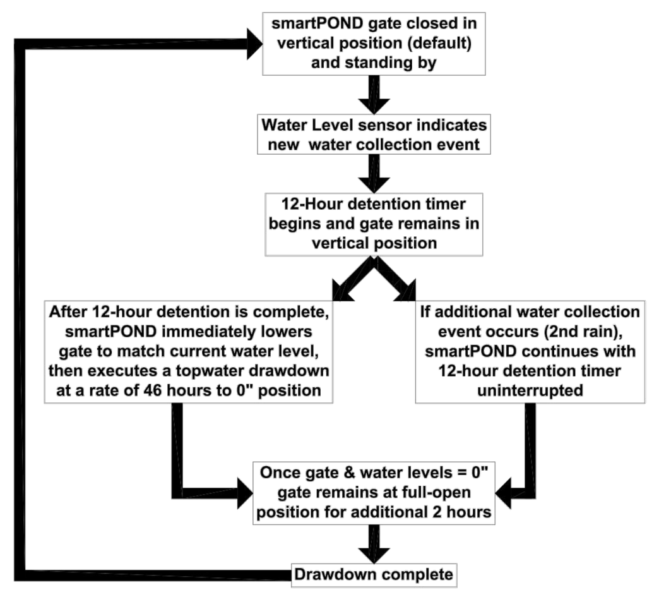
Revision:0 Sheet: 28 of 42

Drawing No.
28

2021-65-SDP

ORIGINAL SHEET - ARCH D

PROGRAMMABLE LOGIC FLOW CHART



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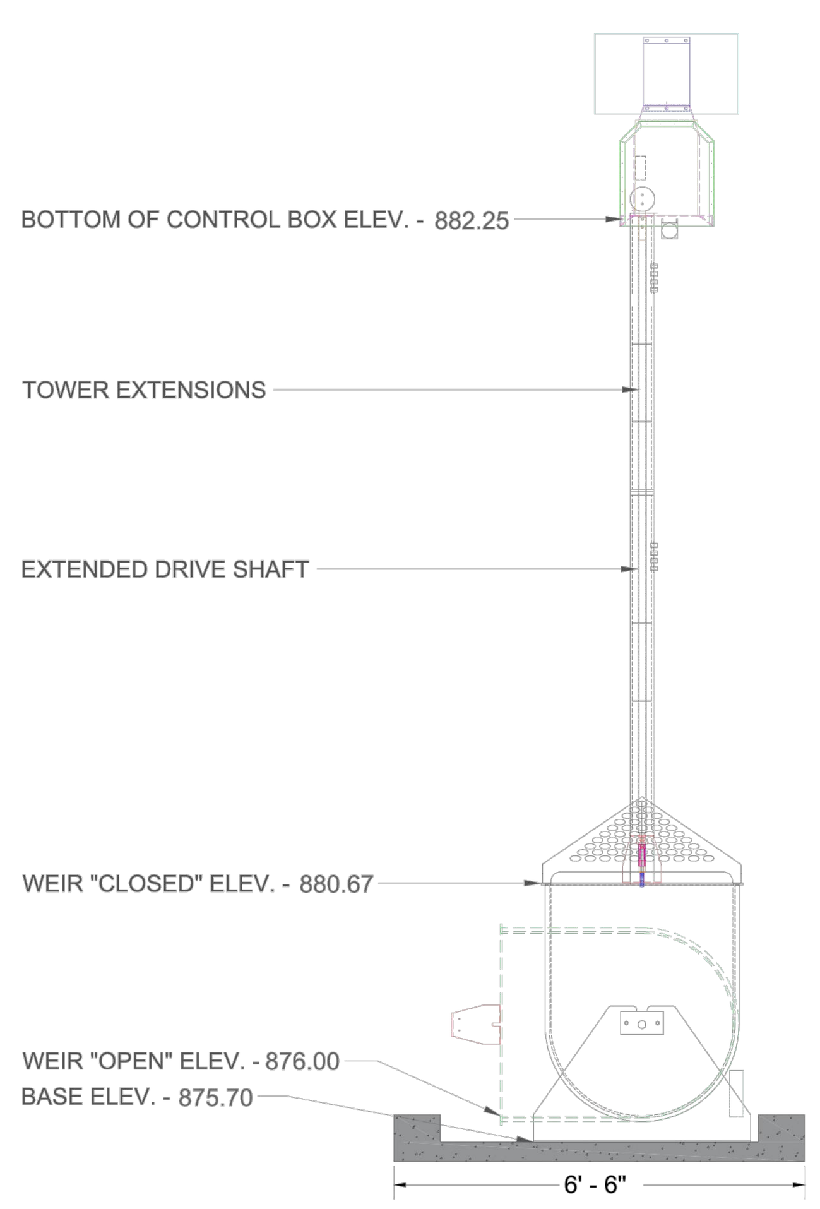
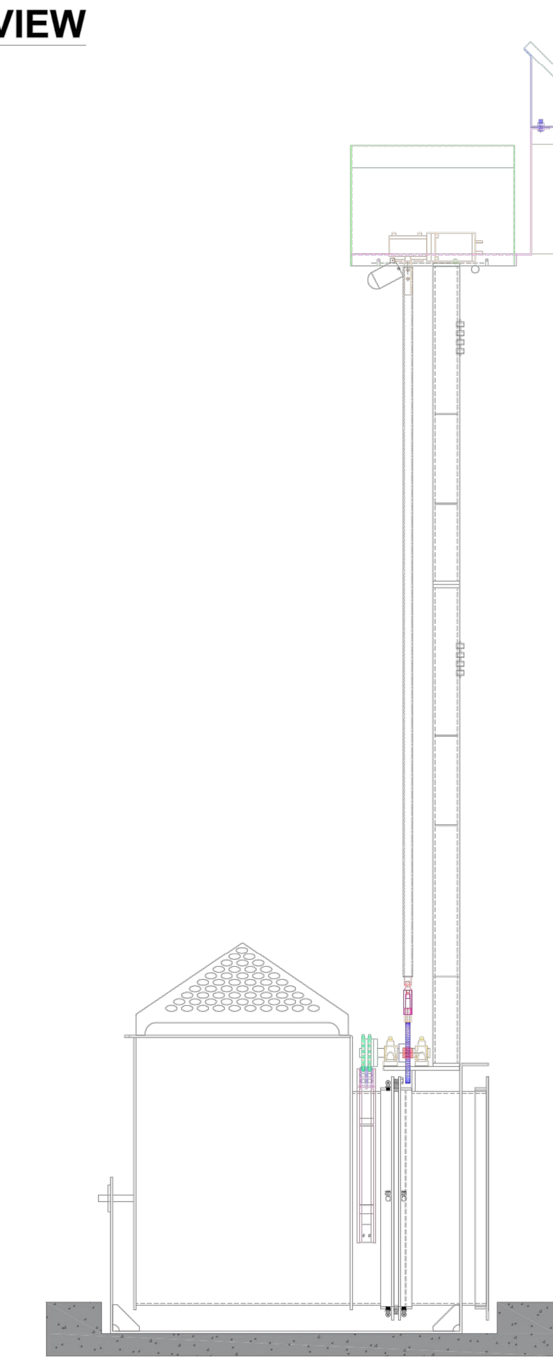


SIDE VIEW



CONSTRUCTION ECO SERVICES

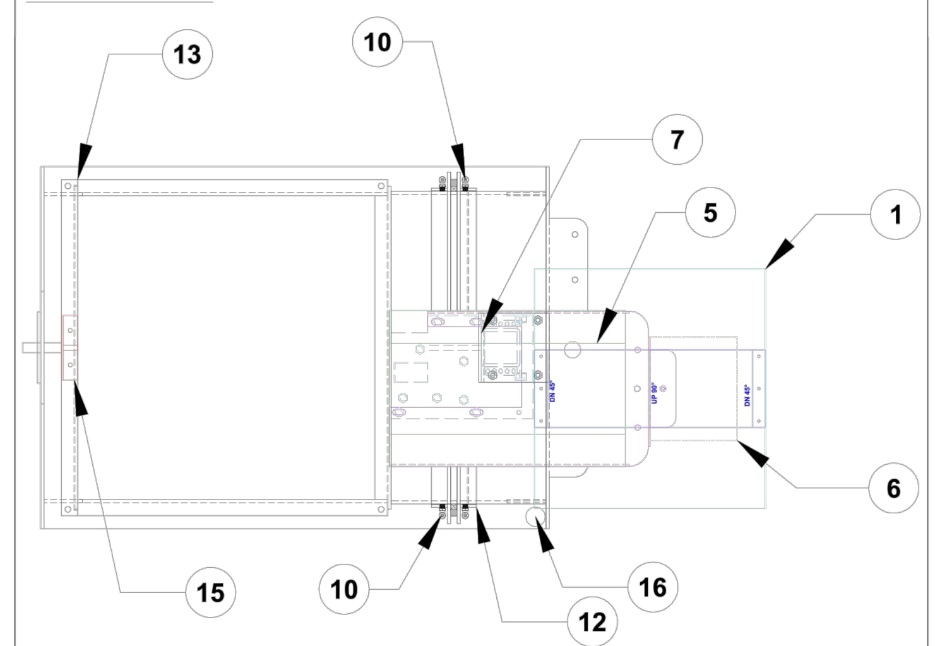
smartPOND Automated Stormwater Control.

FOR ADDITIONAL INFORMATION PLEASE CONTACT: CONSTRUCTION ECO SERVICES, 832-456-1000, www.ecosvs.com

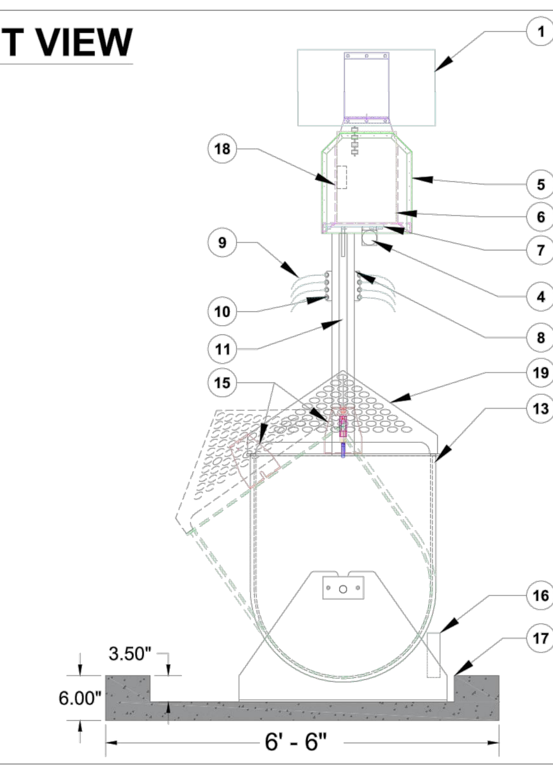
CONVERGENT WATER TECHNOLOGIES

DATE OF ISSUE: 7/27/22

TOP VIEW



FRONT VIEW



Parts List	
Item	**smartPOND Components**
1	12 V SOLAR PANEL WITH 30 WATT CHARGING CAPACITY
2	ANTENNA (NOT DISPLAYED)
3	CELL DATA MODEM (NOT DISPLAYED)
4	CAMERA
5	LOCKABLE WEATHERPROOF ELECTRONIC BOX
6	CONTROL BOX W/ LOCKING LATCHES
7	PEDESTAL
8	REMOTE GREASE MANIFOLD
9	GREASE TUBES
10	GREASE FITTINGS
11	EXTENDED DRIVE SHAFT
12	24" Rotary Valve
13	24" Drum (30"-70" TALL)
14	Outlet Pipe (Size TBD By Engineer, Max 24")
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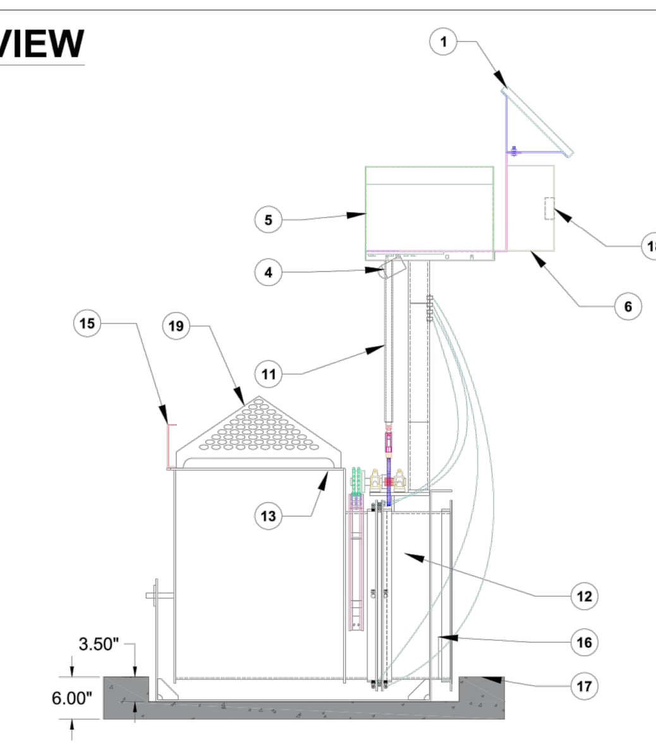
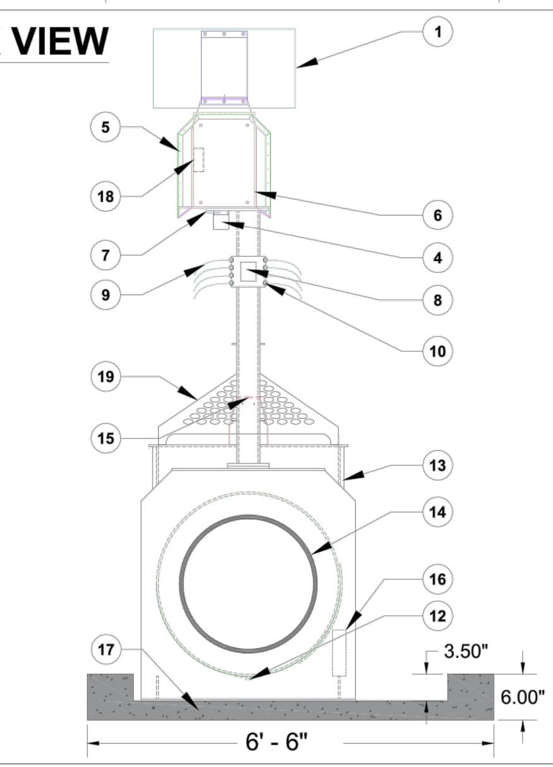
16	Level Transducer
17	6" Concrete Pad (By Others, Size Varies)
18	ON/OFF SWITCH
19	TRASH RACK

SIDE VIEW



BACK VIEW



NOTES:

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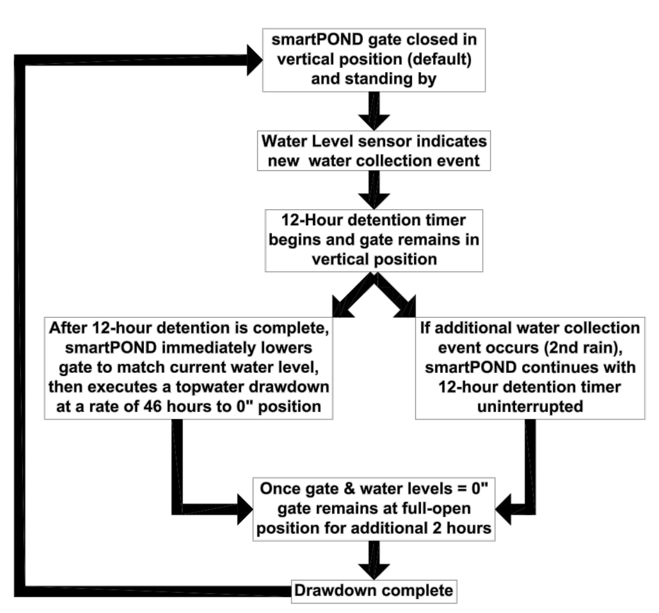
CONVERGENT WATER TECHNOLOGIES

DATE OF ISSUE: 7/27/22

PROGRAMMABLE LOGIC FLOW CHART



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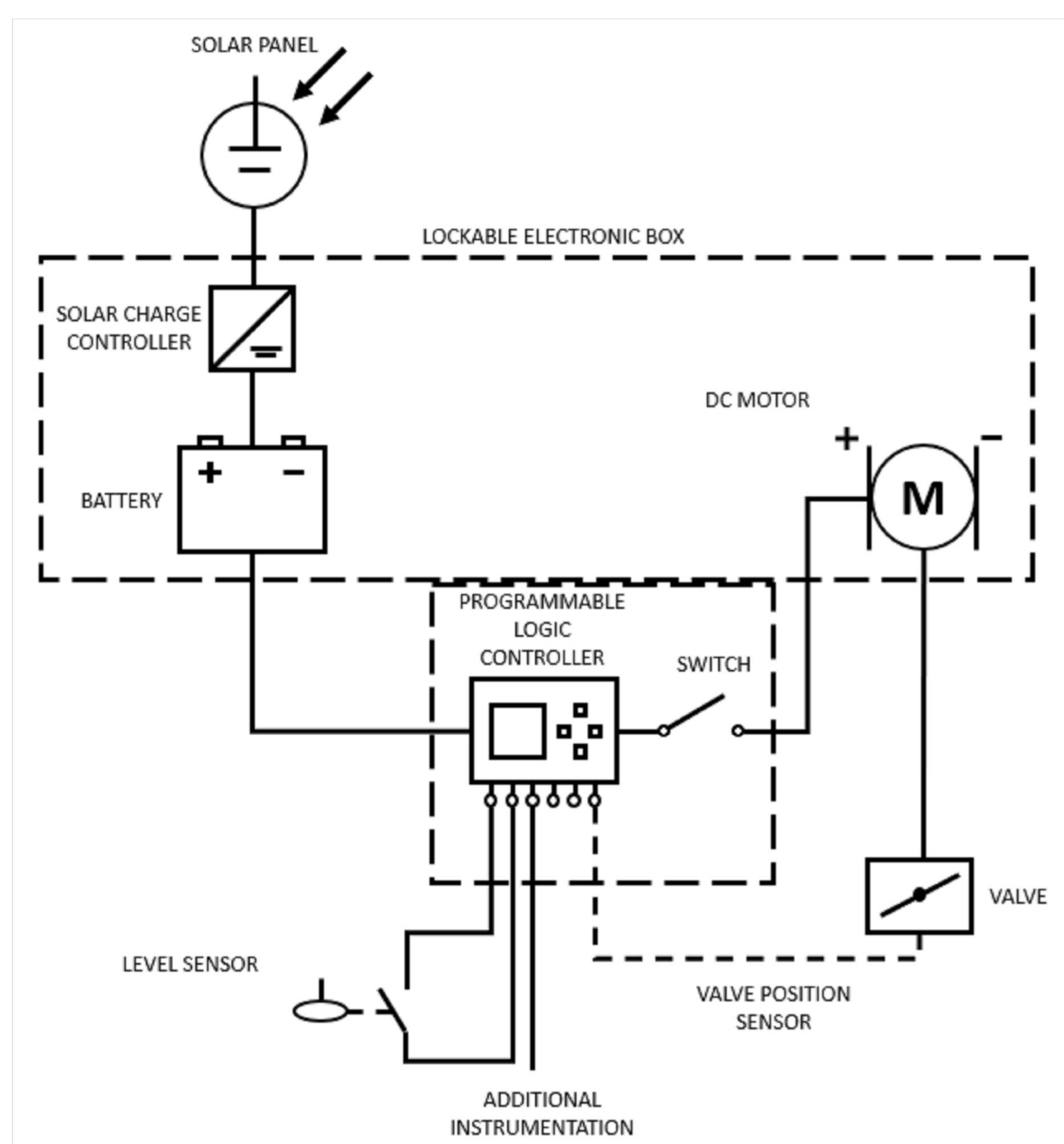

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CONVERGENT WATER TECHNOLOGIES

DATE OF ISSUE: 7/27/22

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TBPLS # 10194230

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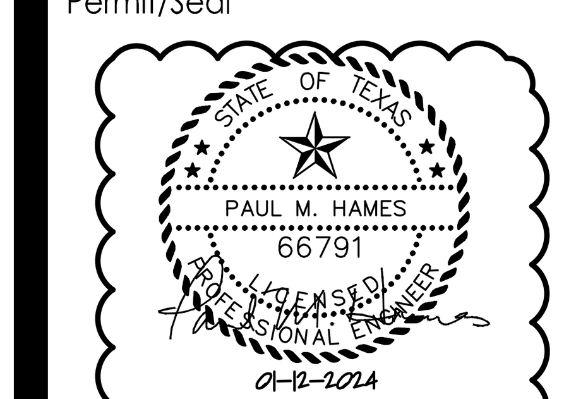
Issued | By | Appd. | YYYY.MM.DD

Permit/Seal



THIS SEAL APPLIES ONLY TO THOSE ITEMS NOTED AS REVISION #4.

Client/Project
DUKE, INC.

CHAPEL HILL PHASE 2

403 WESTINGHOUSE ROAD,
GEORGETOWN, TEXAS 78626

Project No.: 222012278

File Name: 222012278PND02

Scale:

Dwn. | Dsgn. | Chkd. | 1.12.2024 YYYY.MM.DD

Title

NORTH WATER QUALITY POND DETAILS

Revision:0 Sheet: 41 of 42

Drawing No.

41

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ORIGINAL SHEET - ARCH D

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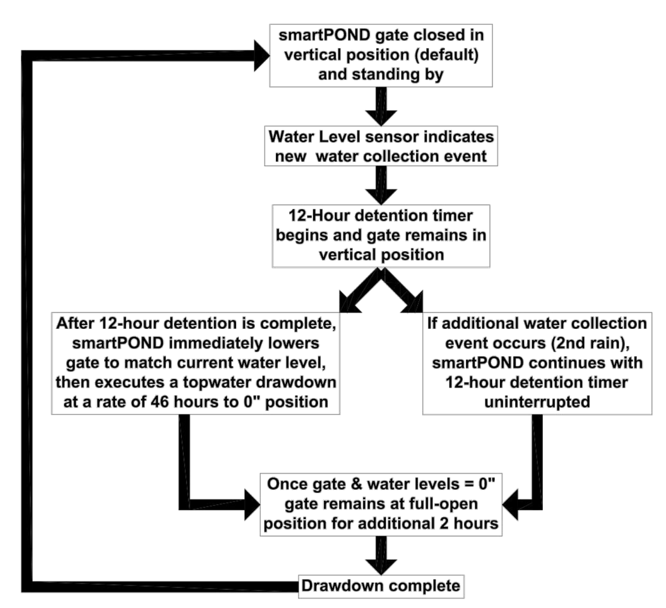
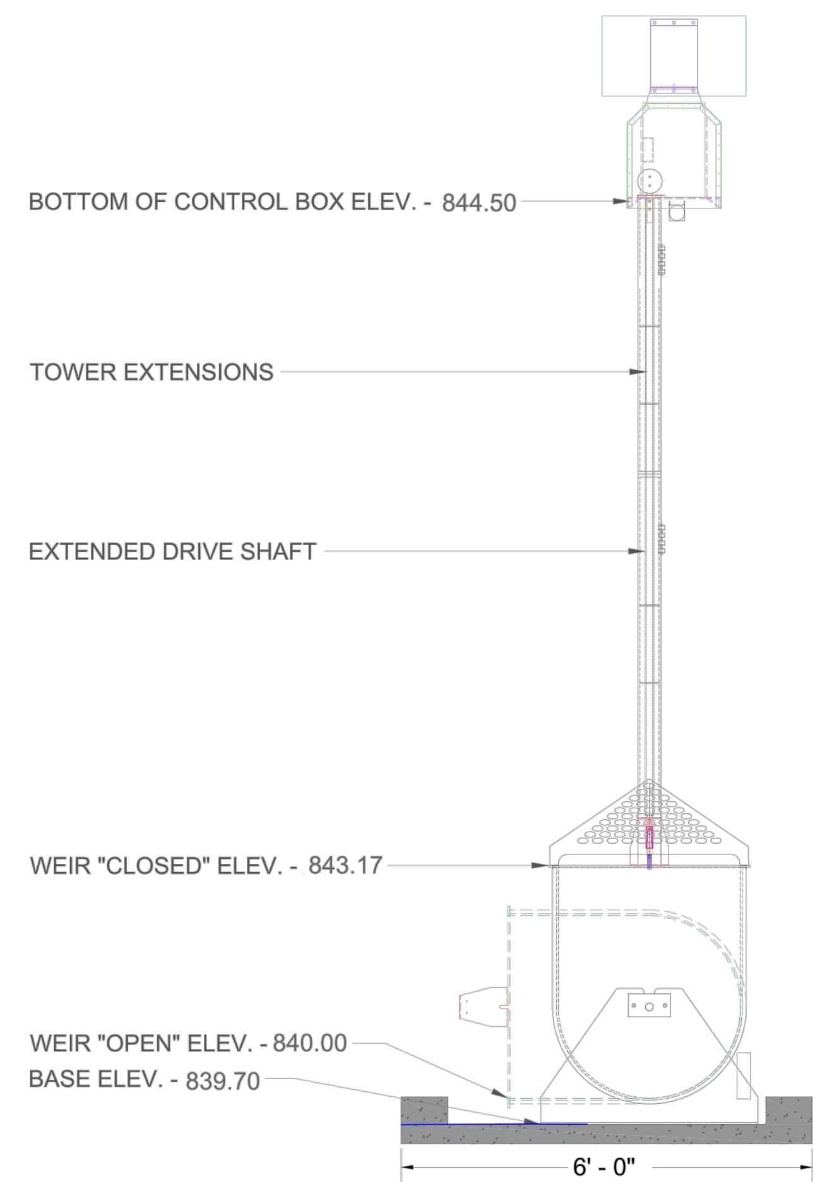
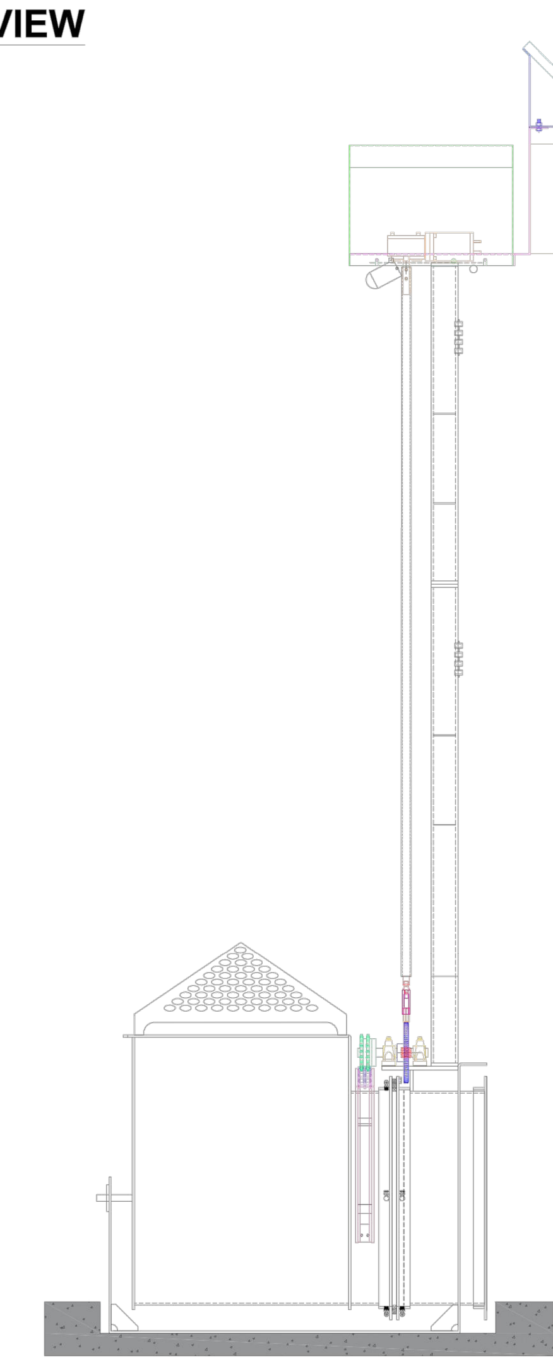


FRONT VIEW



SIDE VIEW



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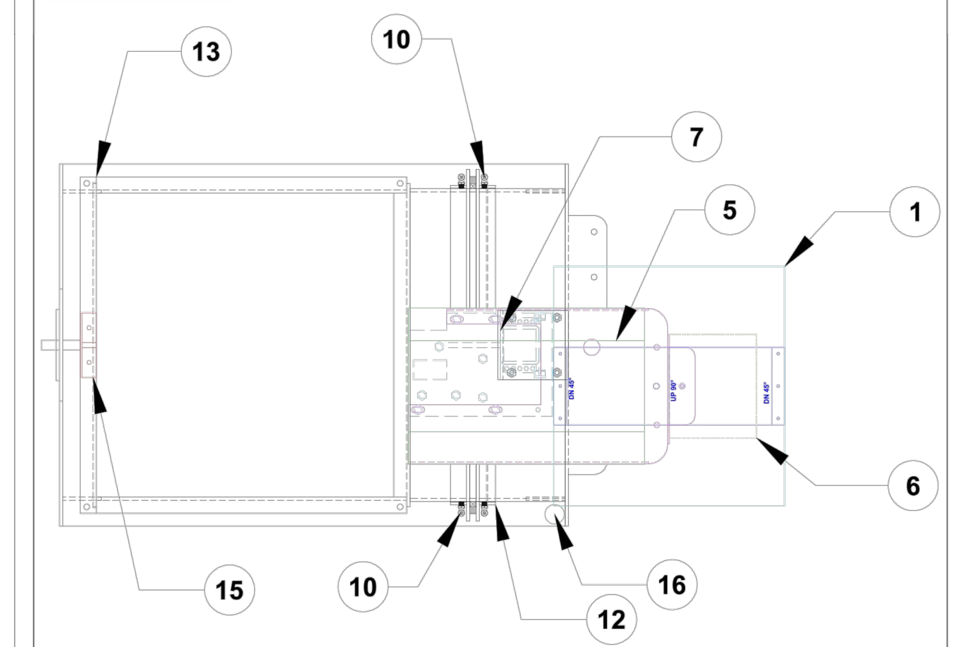
CONVERGENT WATER TECHNOLOGIES

DATE OF ISSUE: 7/27/22

TOP VIEW



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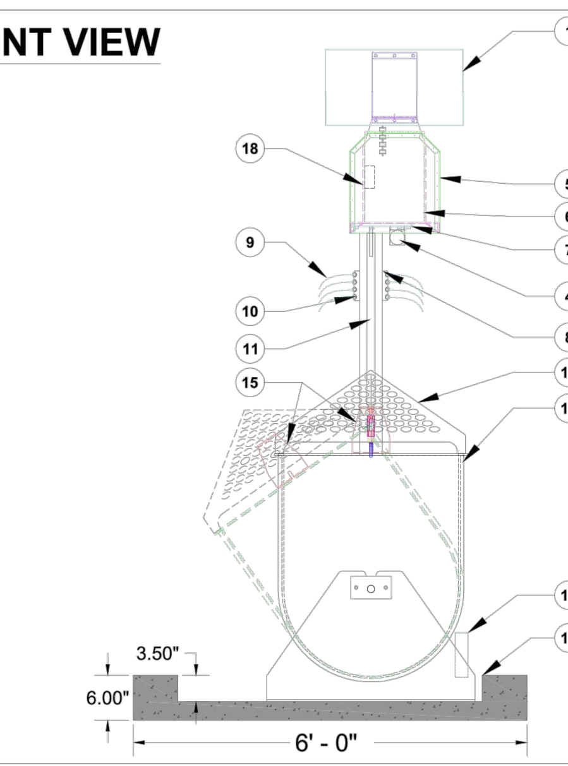

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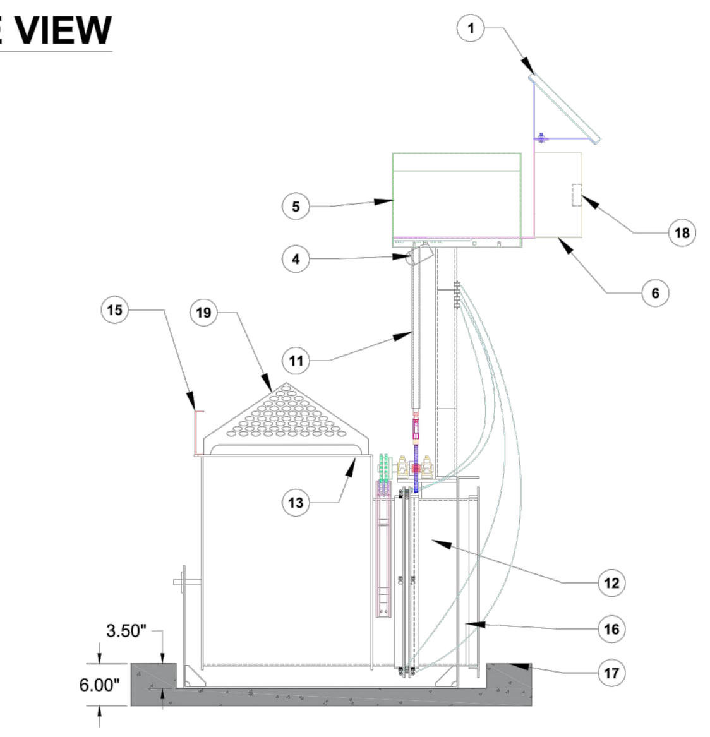

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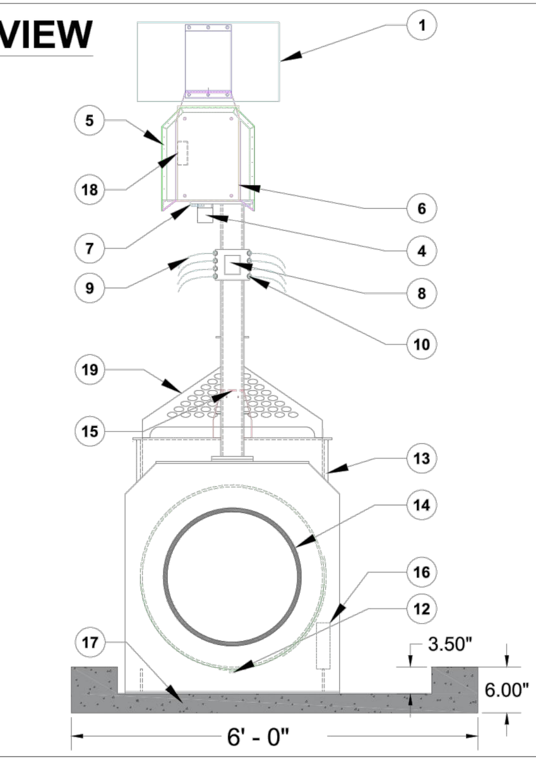

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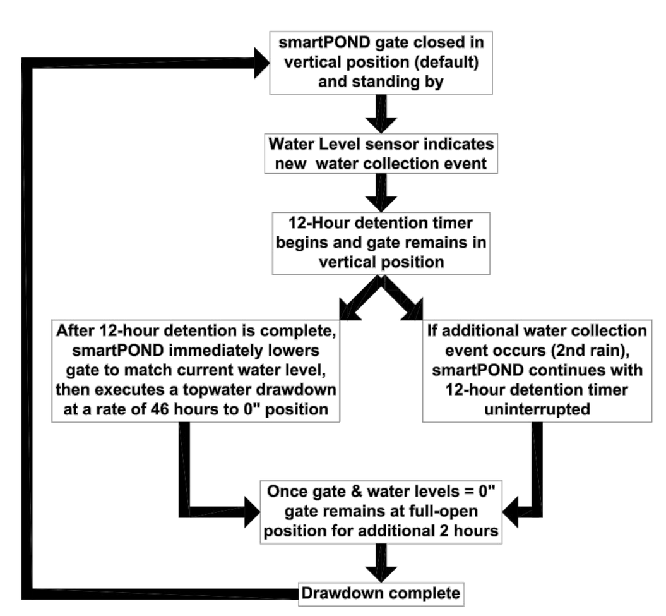
CONVERGENT WATER TECHNOLOGIES

DATE OF ISSUE: 7/27/22

PROGRAMMABLE LOGIC FLOW CHART



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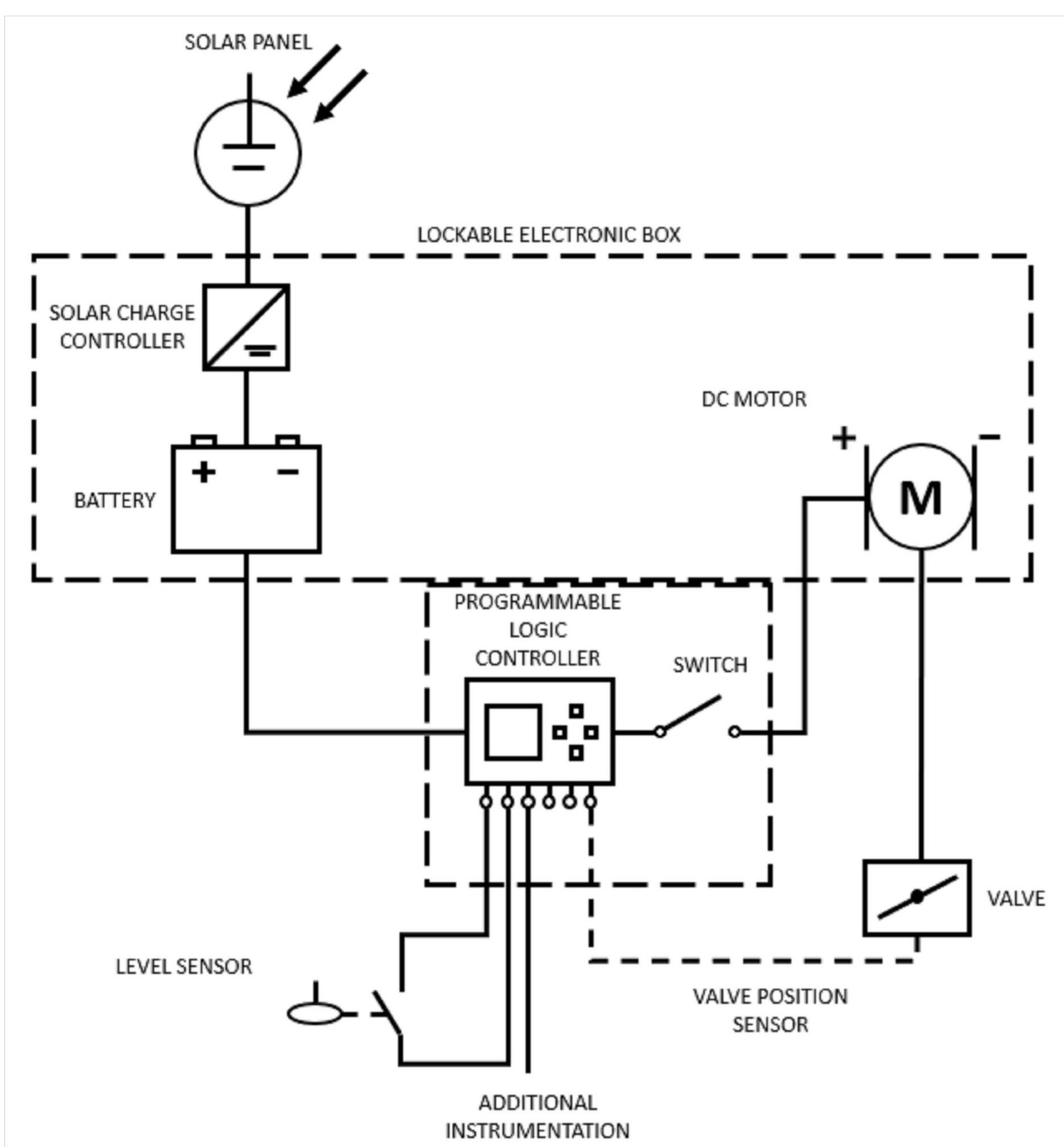

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CONVERGENT WATER TECHNOLOGIES

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Revision: 4 ADDED SHEET | JM | PH | 2024.01.12

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Issued

Permit/Seal

STATE OF TEXAS
PAUL M. HAMES
66791
LICENSED PROFESSIONAL ENGINEER
01-12-2024

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Client/Project
DUKE, INC.

CHAPEL HILL PHASE 2

403 WESTINGHOUSE ROAD,
GEORGETOWN, TEXAS 78626

Project No.: 222012278
File Name: 222012278PND7

Scale:

Dwn. | Dsgn. | Chkd. | 1.12.2024 YYYY.MM.DD

Title
SOUTH WATER QUALITY POND DETAILS

Revision: 0 | Sheet: 42 of 42

Drawing No.
42

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