GENERATIONAL PROPERTIES

6900 West Parmer Lane
Austin, Travis County/Williamson County, Texas

SEWAGE COLLECTION SYSTEM (SCS) AND LIFT STATION REPORT

Prepared For:

APPLE INC.
12545 Riata Vista Circle, MS 522-EHS
Austin, Texas 78727

Prepared by:

GARZA EMC, LLC.
7708 Rialto Blvd., Suite 125
Austin, Texas 78735
TBPE Registration No. F-14629

FEBRUARY 2024

SEWAGE COLLECTION SYSTEM (SCS) AND LIFT STATION REPORT

FOR

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FEBRUARY 2024

March 13, 2024

Texas Commission on Environmental Quality
Edwards Aquifer Protection Program
12100 Park 35 Circle, Building A
Austin, Texas 78753

RE: TCEQ Modification Application Memo
Capstone
6900 W. Parmer Lane
Austin, Texas 78729

Dear Reviewer,

The purpose of this memo is to explain the proposed modifications to our previously approved Sewage Collection System (SCS) application.

All previously approved SCS infrastructure is detailed in the additional tables' pages immediately after the SCS application form. The tables in the SCS application form itself only contain new SCS infrastructure proposed with this modification. We are now proposing a lift station with 185 feet of 4" force main pipe and an additional 743 feet of 8" wastewater pipe connecting the lift station system to existing, previously approved, SCS infrastructure (Table 1). This table also lists 23 feet of 6" wastewater pipe and 134 feet of 8" wastewater pipe which has been added with changes to building services throughout the site. Table 1 on the SCS application form and the fee table on the Application Fee form only list the new, proposed SCS pipe which has a total length of 1,085 feet. Both the Modification of a Previously Approved Plan form and the Edwards Aquifer Application Cover Page list the previously approved SCC pipe length plus the new proposed SCS pipe length which now has a total length of 6,488 feet.

Furthermore, the previously approved SCS infrastructure listed on the additional tables' pages following the SCS application form reference sheet numbers of the now expired City of Austin Site Development Permit, SP-2018-0602C(R2) which was what the original SCS was approved under. The project is currently under review for a new City of Austin Site Development Permit, SP-0223-0292C which will replace the expired permit. This permit shows all the installed infrastructure from the expired permit as existing with the under construction and future phases being shown as new. The tables for new and revised SCS infrastructure reference sheets from the

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TBPE No. F-14629

new, under review, permit. The new under review permit has been included to be consistent with the tables. There are six new manholes proposed with this SCS pipe (Table 2). Utility sheets showing these new improvements are included with this application's submittal.

The City of Austin Service Extension Request (SER) was updated to include the expansion property. The new approved SER and the new SER's calculations are included as attachments with the modified SCS application.

As mentioned previously, we are now proposing a lift station and have included a Lift Station Application form and its required attachments with this application's submittal. The original TCEQ WPAP and SCS application's approval letter, as well as the approval letters from previous modifications, are included with this submittal.

Sincerely,

John Pelham, P.E.
Senior Vice Presiden

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: Generational Properties						**2. Regulated Entity No.: RN110792173**			
3. Customer Name: Apple Inc.						**4. Customer No.: CN603691783**			
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):**		126.7	
9. Application Fee:	$650.00		**10. Permanent BMP(s):**						
11. SCS (Linear Ft.):	6,664		**12. AST/UST (No. Tanks):**						
13. County:	Travis/Williamson		**14. Watershed:**			Rattan 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.)	___	___	___
Region (1 req.)	___	___	___
County(ies)	___	___	___
Groundwater Conservation District(s)	___Edwards Aquifer Authority ___Barton Springs/ Edwards Aquifer ___Hays Trinity ___Plum Creek	_√_Barton Springs/ Edwards Aquifer	NA
City(ies) Jurisdiction	___Austin ___Buda ___Dripping Springs ___Kyle ___Mountain City ___San Marcos ___Wimberley ___Woodcreek	_√_Austin ___Bee Cave ___Pflugerville ___Rollingwood ___Round Rock ___Sunset Valley ___West Lake Hills	_√_Austin ___Cedar Park ___Florence ___Georgetown ___Jerrell ___Leander ___Liberty Hill ___Pflugerville ___Round Rock

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

I certify that to the best of my knowledge, that the application is complete and accurate. This application is hereby submitted to TCEQ for administrative review and technical review. John Pelham, P.E.
Print Name of Customer/Authorized Agent 04/02/2024
Signature of Customer/Authorized Agent Date

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

General Information Form

Texas Commission on Environmental Quality

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

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

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

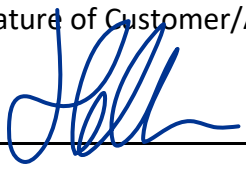
Signature

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

Print Name of Customer/Agent: John Pelham, P.E.

Date: 04/02/2024

Signature of Customer/Agent:



Project Information

1. Regulated Entity Name: Generational Properties
2. County: Travis/Williamson
3. Stream Basin: Brazos River - Rattan Creek
4. Groundwater Conservation District (If applicable): _____
5. Edwards Aquifer Zone:

   ☒ Recharge Zone
   ☐ Transition Zone

6. Plan Type:

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

7. Customer (Applicant):

   Contact Person: Dani Sattman
   Entity: Apple Inc.
   Mailing Address: 12545 Riata Vista Circle, MS 522-EHS
   City, State: Austin, TX Zip: 78727
   Telephone: 512-674-8221 FAX: _____
   Email Address: dsattman598@apple.com

8. Agent/Representative (If any):

   Contact Person: John Pelham, P.E.
   Entity: GarzaEMC,LLC
   Mailing Address: 7708 Rialto Blvd Suite 125
   City, State: Austin Zip: 78735
   Telephone: 512-298-3284 FAX: _____
   Email Address: jpelham@garzaemc.com

9. Project Location:

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

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

    The east side of West Parmer Lane located between its intersections with McNeil Drive and Anderson Mill Road, across from the intersection of Dallas Drive, with the centerline of Rattan Creek being the north boundary of the site, and south boundary near the mid-way point between Rattan Creek and McNeil Drive.

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: _____

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: Site is currently under construction

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:

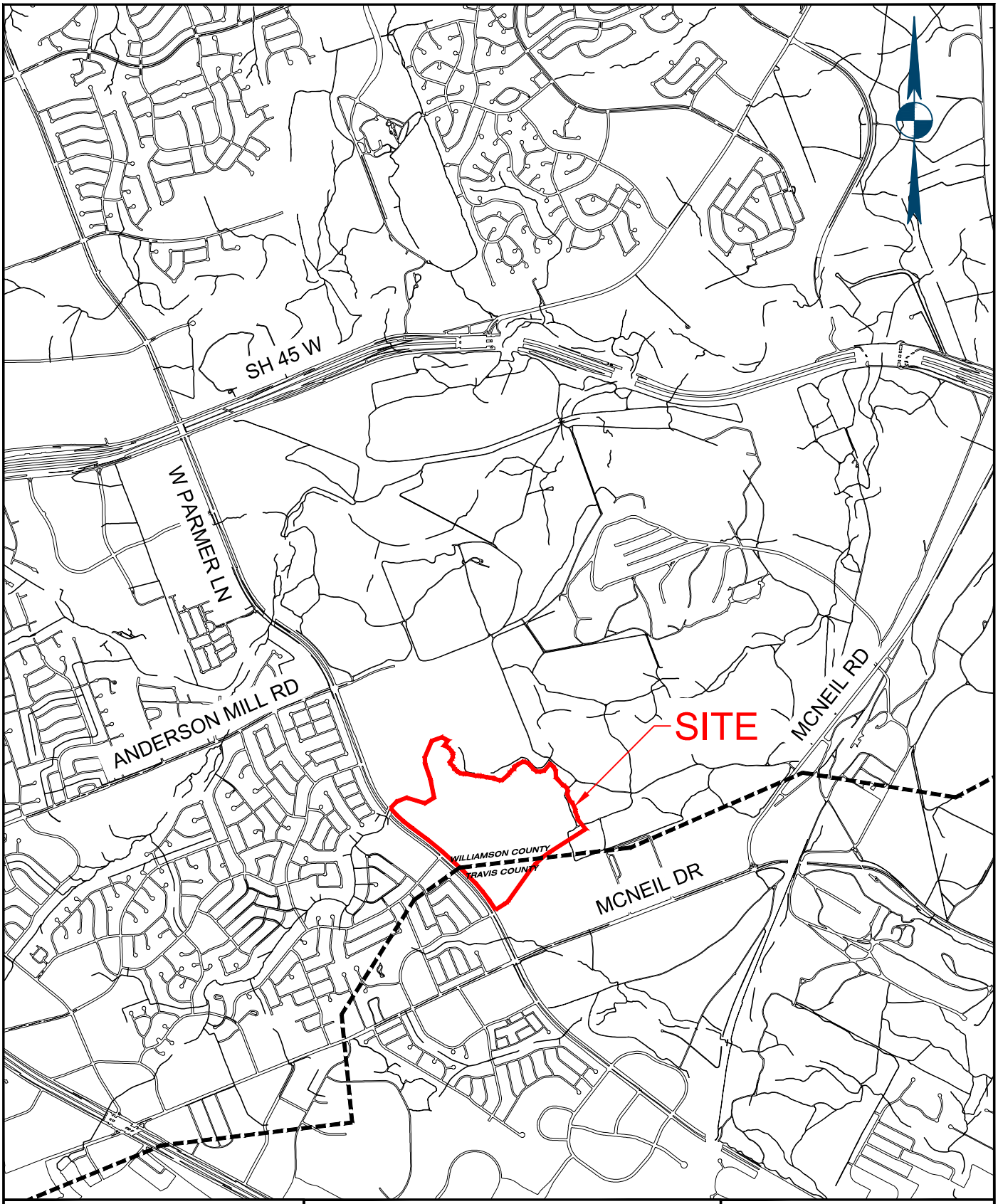
- ☐ TCEQ cashier
- ☒ Austin Regional Office (for projects in Hays, Travis, and Williamson Counties)
- ☐ San Antonio Regional Office (for projects in Bexar, Comal, Kinney, Medina, and Uvalde Counties)

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

A road map is included with this application



garza
7708 Rialto Blvd., Suite 125
Austin, Texas 78735
Tel. (512) 298-3284 Fax (512) 298-2592
TBPE # F-14629

CAPSTONE

6800 PARMER LANE
AUSTIN, TEXAS

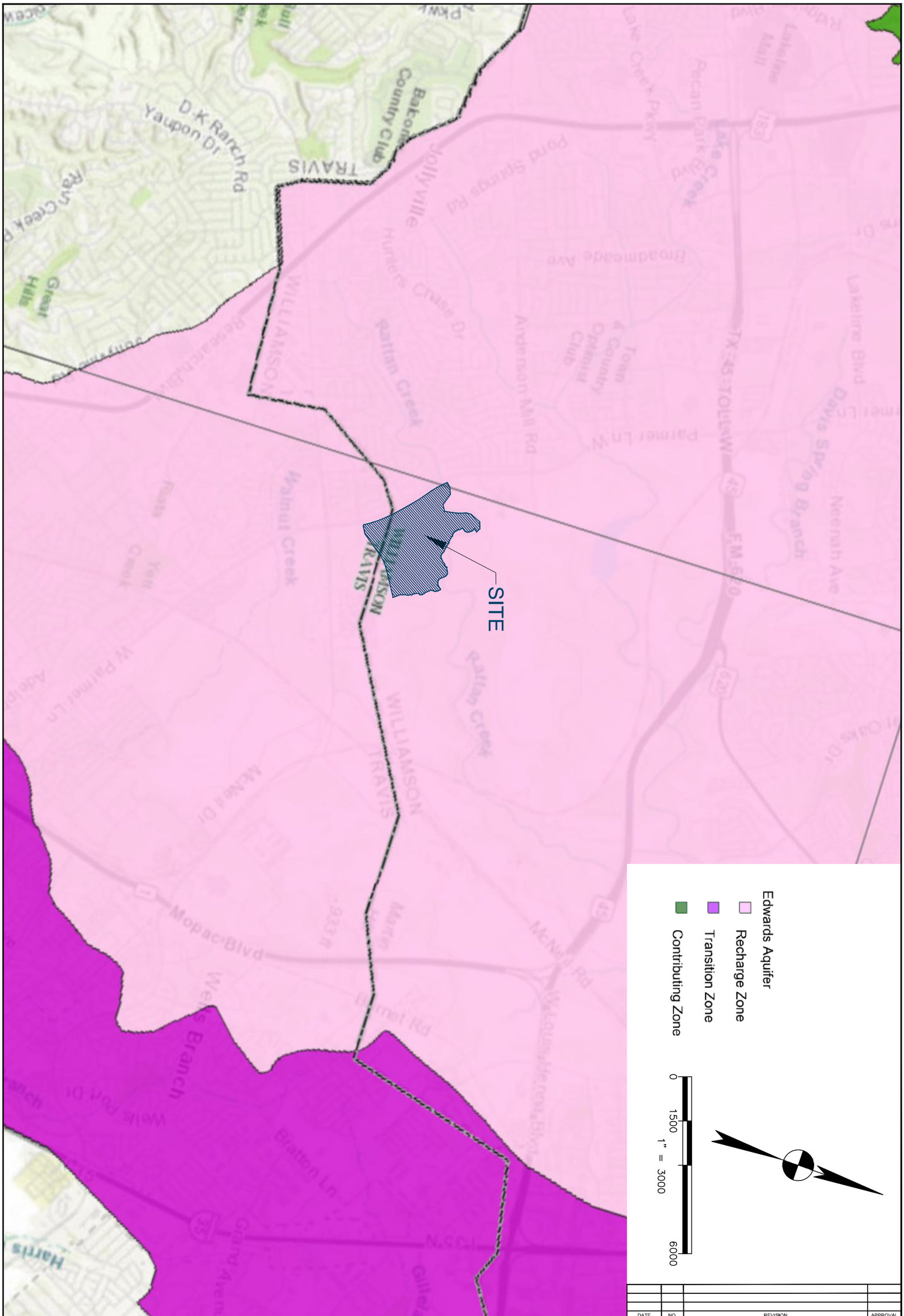
SITE LOCATION MAP

DATE: 06/27/2023	SCALE: 1:3000	DRAWN BY: HCH	FILE:	PROJECT No.: 103452-00009

V:\113799-00002\Civil\00-CAD\EXHIBITS\Drainage Report - Site Location Map.dwg modified by hhumes on Jun 27, 23 12:51 PM

ATTACHMENT B – USGS / EDWARDS RECHARHE ZONE MAP

A USGS / Edwards recharge zone map is included with this application



DATE	NO.	REVISION	APPROVAL

EXH SHEET

DRAWN BY:

DESIGNED BY:

QA / QC:

PROJECT NO.: 103452-00009

GENERATIONAL PROPERTIES
6900 PARMER LANE

EDWARDS AQUIFER
MAP

garza
7708 Rialto Blvd., Suite 125
Austin, Texas 78735
Tel. (512) 298-3284 Fax (512) 298-2592
TBPE # F-14629

V:\103452-00009\Civil\00-CAD\EXHIBITS\SDP EXHIBITS\Edward Aquifer Map.dwg modified by hhumes on Nov 7, 23 9:53 AM

ATTACHMENT C – PROJECT DESCRIPTION

The proposed development consists of approximately 3,000,000 square feet of office and R&D space, parking garages providing approximately 9,092 parking spaces, two central utility plants, and water, wastewater, storm sewer, and other dry utility infrastructure. In addition, there are site circulation roads, landscape and hardscape improvements, and a previously approved biofiltration pond for water quality treatment with a stacked detention pond. The project is proposed to be constructed in three phases.

The project site is approximately 126.7 acres in total area. Approximately 83.3 acres is developable area, with the remaining area proposed as Open Space. The north property boundary is the centerline of Rattan Creek, and the west boundary is West Parmer Lane. Currently the site is partially developed with a large number of existing trees.

The entirety of the site is located within Austin City Limits under Limited Purpose Jurisdiction. The site is also located within the Desired Development Zone as defined by the City of Austin and is currently partially developed. The proposed development is located within the Robinson Ranch PUD, per zoning case number C814-04-0066.

The project is located within the Rattan Creek Watershed which is classified as a suburban Watershed by the City of Austin's Comprehensive Watershed ordinance (CWO). The maximum allowable impervious cover for commercial uses in a suburban Watershed within the Robinson Ranch PUD is 90% under the MXD Major Land Use Category, as identified in the PUD Site Development Standards. Since the site is located within the Edwards Aquifer Recharge Zone, permanent Best Management Practices will be employed through biofiltration.

Modification of a Previously Approved Plan

Texas Commission on Environmental Quality

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

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

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

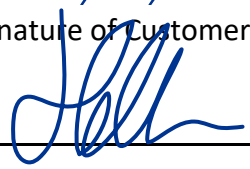
Signature

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

Print Name of Customer/Agent: John Pelham, P.E.

Date: 04/02/2024

Signature of Customer/Agent:



Project Information

1. Current Regulated Entity Name: Generational Properties
   Original Regulated Entity Name: Generational Properties
   Regulated Entity Number(s) (RN): 110792173
   Edwards Aquifer Protection Program ID Number(s): 11001603, 11001604
   ☒ The applicant has not changed and the Customer Number (CN) is: 603691783
   ☐ The applicant or Regulated Entity has changed. A new Core Data Form has been provided.

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

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

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

WPAP Modification Summary	***Approved Project***	***Proposed Modification***
Acres	_____	_____
Type of Development	_____	_____
Number of Residential Lots	_____	_____
Impervious Cover (acres)	_____	_____
Impervious Cover (%	_____	_____
Permanent BMPs	_____	_____
Other	_____	_____

SCS Modification Summary	***Approved Project***	***Proposed Modification***
Linear Feet	5,579	6664
Pipe Diameter	6",8",10",12" and 15"	4",6",8",10",12" and 15"
Other	_____	_____

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

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

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

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

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

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

ATTACHMENT A – ORIGINAL APPROVAL LETTER AND MODIFICATION APPROVAL LETTERS

The original approval letter and approved modification letters are included with this application

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

August 29, 2019

Mr. Scott Sidlow
Apple, Inc.
1 Infinite Loop, MS:47-2 RE
Cupertino, CA 95014-2083

Re: Edwards Aquifer, Williamson County

NAME OF PROJECT: Generational Properties; located east of Dallas Dr. and Parmer Ln., Austin Texas

TYPE OF PLAN: Request for Approval of a Water Pollution Abatement Plan (WPAP) & Organized Sewage Collection System Plan (SCS)
30 Texas Administrative Code (TAC) Chapter 213 Edwards Aquifer

Edwards Aquifer Protection Program ID No. 11001603 and 11001604; Regulated Entity No. RN110792173

Dear Mr. Sidlow:

The Texas Commission on Environmental Quality (TCEQ) has completed its review of the WPAP and SCS applications for the referenced project submitted to the Austin Regional Office on behalf of Apple, Inc. by Garza EMC, LLC on June 11, 2019. Final review of the WPAP and SCS was completed after additional material was received on August 20, 2019 and August 28, 2019. As presented to the TCEQ, the Temporary and Permanent Best Management Practices (BMPs) were selected and construction plans were prepared by a Texas Licensed Professional Engineer to be in general compliance with the requirements of 30 TAC Chapter 213. These planning materials were sealed, signed and dated by a Texas Licensed Professional Engineer. Therefore, based on the engineer's concurrence of compliance, the planning materials for construction of the proposed project and pollution abatement measures are hereby approved subject to applicable state rules and the conditions in this letter. The applicant or a person affected may file with the chief clerk a motion for reconsideration of the executive director's final action on this Edwards Aquifer Protection Plan. A motion for reconsideration must be filed no later than 23 days after the date of this approval letter. *This approval expires two (2) years from the date of this letter unless, prior to the expiration date, more than 10 percent of the construction has commenced on the project or an extension of time has been requested.*

WPAP PROJECT DESCRIPTION

The proposed project will have an area of approximately 126.7 acres. It will include the construction of an office complex with multiple buildings, parking garages, drives, sidewalks, utility plants, water quality facilities, utilities, and associated appurtenances. The impervious cover will be 56.64 acres (45 percent).

PERMANENT POLLUTION ABATEMENT MEASURES

To prevent the pollution of stormwater runoff originating on-site or upgradient of the site and potentially flowing across and off the site after construction, a biofiltration water quality basin, designed using the City of Austin Environmental Criteria Manual (2019), will be constructed to treat stormwater runoff.

SCS PROJECT DESCRIPTION

The proposed SCS will provide disposal service for the development. The system will consist of 3,691 linear feet of 6-inch diameter SDR-26 ASTM D3034 PVC pipe, 706 linear feet of 8-inch diameter SDR-26 ASTM D3034 PVC pipe, 517 linear feet of 10-inch diameter SDR-26 ASTM D3034 PVC pipe, 488 linear feet of 12-inch diameter SDR-26 ASTM D3034 PVC pipe, and 1,730 linear feet of 15-inch diameter SDR-26 ASTM D3034 PVC pipe.

The system will be connected to the existing Walnut Creek Wastewater Treatment Plant for treatment and disposal. The project is located within the City of Austin and will conform to all applicable codes, ordinances, and requirements of the City of Austin.

GEOLOGY

According to the Geologic Assessment included with the application, the site is underlain by Edwards Limestone. The soils are described as Fairlie clay, Georgetown stony clay, and Speck stony clay. Five sensitive features (F-1, F-3, F-4, F-5, and F-7) were identified in the Geologic Assessment. No regulated activities (such as construction or soil disturbing activities) will take place within the natural buffers. The size of the natural buffers is generally based on the drainage area for each sensitive feature and is depicted in the plan. No sensitive features were identified within 50 feet of the proposed SCS. The TCEQ site assessment conducted on August 1, 2019 revealed the site to be generally as described.

SPECIAL CONDITIONS

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

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

III. It is emphasized that where wastewater lines must bridge faults, caverns, sinkholes, or solution features the lines shall be constructed in a manner that will maintain the structural integrity of the pipe. When such sensitive features area encountered, 30 TAC §213.5(f)(2) requires that all regulated activities near the feature must be immediately suspended and the owner/developer shall immediately notify the Austin Regional Office. Additionally, when such geologic features are encountered which are bridged by construction, the location and extend of those features must be assessed by a geologist and must be reported to the Austin Regional Office in writing within two working days of discovery as required by 30 TAC §213.5(c)(3)(K). Construction may not resume in the area of the feature until the executive director has reviewed and approved the methods proposed to protect the aquifer from any potential adverse impacts. See Standard Condition 12 below.

STANDARD CONDITIONS

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

Prior to Commencement of Construction:

4. Within 60 days of receiving written approval of an Edwards Aquifer Protection Plan, the applicant must submit to the Austin Regional Office, proof of recordation of notice in the county deed records, with the volume and page number(s) of the county deed records of the county in which the property is located. A description of the property boundaries shall be included in the deed recordation in the county deed records. A suggested form (Deed Recordation Affidavit, TCEQ-0625) that you may use to deed record the approved WPAP is enclosed.
5. All contractors conducting regulated activities at the referenced project location shall be provided a copy of this notice of approval. At least one complete copy of the approved WPAP, SCS and this notice of approval shall be maintained at the project location until all regulated activities are completed.
6. Modification to the activities described in the referenced WPAP and SCS applications following the date of approval may require the submittal of a plan to modify this approval, including the payment of appropriate fees and all information necessary for its review and approval prior to initiating construction of the modifications.
7. The applicant must provide written notification of intent to commence construction, replacement, or rehabilitation of the referenced project. Notification must be submitted to the Austin Regional Office no later than 48 hours prior to commencement of the regulated activity. Written notification must include the date on which the regulated activity will commence, the name of the approved plan and program ID number for the regulated activity, and the name of the prime contractor with the name and telephone number of the contact person. The executive director will use the notification to determine if the approved plan is eligible for an extension.
8. Temporary erosion and sedimentation (E&S) controls, i.e., silt fences, rock berms, stabilized construction entrances, or other controls described in the approved WPAP, must be installed prior to construction and inspected, maintained and repaired during construction. Temporary E&S controls may be removed when vegetation is established and the construction area is stabilized. If a water quality pond is proposed, it shall be used as a sedimentation basin during construction. The TCEQ may monitor stormwater discharges from the site to evaluate the adequacy of temporary E&S control measures. Additional controls may be necessary if excessive solids are being discharged from the site.
9. All borings with depths greater than or equal to 20 feet must be plugged with non-shrink grout from the bottom of the hole to within three (3) feet of the surface. The remainder of the hole must be backfilled with cuttings from the boring. All borings less than 20 feet must be backfilled with cuttings from the boring. All borings must be backfilled or plugged within four (4) days of completion of the drilling operation. Voids may be filled with gravel.

During Construction:

10. During the course of regulated activities related to this project, the applicant or agent shall comply with all applicable provisions of 30 TAC Chapter 213 and Chapter 217, Edwards Aquifer. The applicant shall remain responsible for the provisions and conditions of this approval until such responsibility is legally transferred to another person or entity.
11. This approval does not authorize the installation of temporary aboveground storage tanks on this project. If the contractor desires to install a temporary aboveground storage tank for use during construction, an application to modify this approval must be submitted and approved prior to installation. The application must include information related to tank location and spill containment. Refer to Standard Condition No. 6, above.
12. If any sensitive feature (caves, solution cavities, sink holes, etc.) is discovered during construction, all regulated activities near the feature must be suspended immediately. The applicant or his agent must immediately notify the Austin Regional Office of the discovery of the feature. Regulated activities near the feature may not proceed until the executive director has reviewed and approved the methods proposed to protect the feature and the aquifer from potentially adverse impacts to water quality. The plan must be sealed, signed, and dated by a Texas Licensed Professional Engineer.
13. All water wells including injection, dewatering, and monitoring wells must be in compliance with the requirements of the Texas Department of Licensing and Regulation under Title 16 TAC Chapter 76 (relating to Water Well Drillers and Pump Installers) and all other locally applicable rules, as appropriate.
14. If sediment escapes the construction site, the sediment must be removed at a frequency sufficient to minimize offsite impacts to water quality (e.g., fugitive sediment in street being washed into surface streams or sensitive features by the next rain). Sediment must be removed from sediment traps or sedimentation ponds not later than when design capacity has been reduced by 50 percent. Litter, construction debris, and construction chemicals shall be prevented from becoming stormwater discharge pollutants.
15. Discharges of sediment laden water are not allowed. If dewatering becomes necessary, the discharge will be filtered through appropriately selected best management practices.
16. The following records shall be maintained and made available to the executive director upon request: the dates when major grading activities occur, the dates when construction activities temporarily or permanently cease on a portion of the site, and the dates when stabilization measures are initiated.
17. 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.
18. No part of the system shall be used as a holding tank for a pump-and-haul operation.

After Completion of Construction:

19. Owners of permanent BMPs and measures must insure that the BMPs and measures are constructed and function as designed. A Texas Licensed Professional Engineer must certify in writing that the permanent BMPs or measures were constructed as designed. The certification letter must be submitted to the Austin Regional Office within 30 days of site completion.
20. The applicant shall be responsible for maintaining the permanent BMPs after construction until such time as the maintenance obligation is either assumed in writing by another entity having ownership or control of the property (such as without limitation, an owner's association, a new property owner or lessee, a district, or municipality) or the ownership of the property is transferred to the entity. Such entity shall then be responsible for maintenance until another entity assumes such obligations in writing or ownership is

transferred. A copy of the transfer of responsibility must be filed with the executive director through the Austin Regional Office within 30 days of the transfer. A copy of the transfer form (TCEQ-10263) is enclosed.

21. Upon legal transfer of this property, the new owner(s) is required to comply with all terms of the approved Edwards Aquifer protection plan. If the new owner intends to commence any new regulated activity on the site, a new Edwards Aquifer protection plan that specifically addresses the new activity must be submitted to the executive director. Approval of the plan for the new regulated activity by the executive director is required prior to commencement of the new regulated activity.
22. Certification by a Texas Licensed Professional Engineer of the testing of sewage collection systems required by 30 TAC Chapter 213 and Chapter 217 shall be submitted to the Austin Regional Office within 30 days of test completion and prior to the new sewage collection system being put into service. The certification should include the project name as it appeared on the approved application, the program ID number, and two copies of a site plan sheet(s) indicating the wastewater lines that were tested and are being certified as complying with the appropriate regulations.
23. Every five years after the initial certification, the sewage collection system shall be retested. Any lines that fail the test must be repaired and retested. Certification that the system continues to meet the requirements of 30 TAC Chapter 213 and Chapter 217 shall be submitted to the Austin Regional Office. The certification should include the project name as it appeared on the approved application, the program ID number and two copies of a site plan sheet(s) indicating the wastewater lines that were tested and are being certified as complying with the appropriate regulations. Should any test result fail to meet passing test criteria, and then subsequently pass testing, the result(s) and an explanation of what repair, adjustment, or other means were taken to facilitate a subsequent passing result shall be provided.
24. If ownership of this organized sewage collection system is legally transferred (e.g., developer to city or Municipal Utility District), the new owner(s) is required to comply with all terms of the approved Edwards Aquifer protection plan. If the new owner intends to commence any new regulated activity on the site, a new Edwards Aquifer protection plan that specifically addresses the new activity must be submitted to the executive director. Approval of the plan for the new regulated activity by the executive director is required prior to commencement of the new regulated activity.
25. At project locations where construction is initiated and abandoned, or not completed, the site shall be returned to a condition such that the aquifer is protected from potential contamination.
26. An Edwards Aquifer protection plan approval or extension will expire and no extension will be granted if more than 50 percent of the total construction has not been completed within ten years from the initial approval of a plan. A new Edwards Aquifer protection plan must be submitted to the Austin Regional Office with the appropriate fees for review and approval by the executive director prior to commencing any additional regulated activities.

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

Sincerely,

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

RCS/jcs

Enclosure: Deed Recordation Affidavit, Form TCEQ-0625
Change in Responsibility for Maintenance of Permanent BMPs, Form TCEQ-10263

Deed Recordation Affidavit
Edwards Aquifer Protection Plan

THE STATE OF TEXAS §

County of _____ §

BEFORE ME, the undersigned authority, on this day personally appeared _____ who, being duly sworn by me, deposes and says:

(1) That my name is _____and that I own the real property described below.

(2) That said real property is subject to an EDWARDS AQUIFER PROTECTION PLAN which was required under the 30 Texas Administrative Code (TAC) Chapter 213.

(3) That the EDWARDS AQUIFER PROTECTION PLAN for said real property was approved by the Texas Commission on Environmental Quality (TCEQ) on _____.

A copy of the letter of approval from the TCEQ is attached to this affidavit as Exhibit A and is incorporated herein by reference.

(4) The said real property is located in _____ County, Texas, and the legal description of the property is as follows:

_____
LANDOWNER-AFFIANT

SWORN AND SUBSCRIBED TO before me, on this __ day of _____, ____.

_____
NOTARY PUBLIC

THE STATE OF _____ §

County of _____ §

BEFORE ME, the undersigned authority, on this day personally appeared _____ 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 __ day of _____, ____.

_____
NOTARY PUBLIC

_____
Typed or Printed Name of Notary

MY COMMISSION EXPIRES: _____

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

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

Customer: _____

Regulated Entity Name: _____

Site Address: _____

City, Texas, Zip: _____

County: _____

Approval Letter Date: _____

BMPs for the project: _____

New Responsible Party: _____

Name of contact: _____

Mailing Address: _____

City, State: _____ Zip: _____

Telephone: _____ FAX: _____

_____ _____

Signature of New Responsible Party Date

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

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

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

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

April 9, 2020

Ms. Dani Sattman
Apple, Inc.
5505 W. Parmer Ln., Bldg 4, EHS-578
Austin, Texas 78727

Re: Edwards Aquifer, Williamson County

NAME OF PROJECT: Generational Properties; located E. of Dallas Dr. and W. Parmer Ln., Austin Texas

TYPE OF PLAN: Request for Modification of a Previously Approved Water Pollution Abatement Plan (WPAP) & Organized Sewage Collection System Plan (SCS)
30 Texas Administrative Code (TAC) Chapter 213 Edwards Aquifer

Edwards Aquifer Protection Program (EAPP) ID Nos. 11001930 and 11001931; Regulated Entity No. RN110792173

Dear Ms. Sattman:

The Texas Commission on Environmental Quality (TCEQ) has completed its review of the WPAP and SCS Modifications for the referenced project submitted to the Austin Regional Office on behalf of Apple, Inc. by Garza EMC, LLC on February 11, 2020. Final review of the WPAP and SCS was completed after additional material was received on April 1, 2020 and April 2, 2020. As presented to the TCEQ, the Temporary and Permanent Best Management Practices (BMPs) were selected and construction plans were prepared by a Texas Licensed Professional Engineer to be in general compliance with the requirements of 30 TAC Chapter 213. These planning materials were sealed, signed and dated by a Texas Licensed Professional Engineer. Therefore, based on the engineer's concurrence of compliance, the planning materials for construction of the proposed project and pollution abatement measures are hereby approved subject to applicable state rules and the conditions in this letter. The applicant or a person affected may file with the chief clerk a motion for reconsideration of the executive director's final action on this Edwards Aquifer Protection Plan. A motion for reconsideration must be filed no later than 23 days after the date of this approval letter. *This approval expires two (2) years from the date of this letter unless, prior to the expiration date, more than 10 percent of the construction has commenced on the project or an extension of time has been requested.*

BACKGROUND

WPAP and SCS applications were approved by letter dated August 29, 2019 (EAPP ID Nos. 11001603 and 11001604). The letter approved the development of a 126.7-acre office complex with 56.64 acres of impervious cover.

WPAP PROJECT DESCRIPTION

The proposed project will have an area of approximately 126.7 acres. It will include the construction of an office complex with multiple buildings, parking garages, drives, sidewalks, utility plants, water quality facilities, utilities, and associated appurtenances. The impervious cover will be 56.1 acres (44 percent).

PERMANENT POLLUTION ABATEMENT MEASURES

To prevent the pollution of stormwater runoff originating on-site or upgradient of the site and potentially flowing across and off the site after construction, a biofiltration water quality basin, designed using the City of Austin Environmental Criteria Manual (2019), will be constructed to treat stormwater runoff.

SCS PROJECT DESCRIPTION

The proposed SCS will provide disposal service for the development. The system will consist of 1,403.49 linear feet of 6-inch diameter SDR-26 ASTM D3034 PVC pipe, 999.80 linear feet of 8-inch diameter SDR-26 ASTM D3034 PVC pipe, 737.77 linear feet of 10-inch diameter SDR-26 ASTM D3034 PVC pipe, 847.07 linear feet of 12-inch diameter SDR-26 ASTM D3034 PVC pipe, and 1,259.46 linear feet of 15-inch diameter SDR-26 ASTM D3034 PVC pipe. Additionally, the system will include 160 linear feet of 6-inch diameter SDR-21 ASTM D2241 PVC pipe, 40 linear feet of 8-inch diameter SDR-21 ASTM D2241 PVC pipe, 20 linear feet of 10-inch diameter SDR-21 ASTM D2241 PVC pipe, and 20 linear feet of 12-inch diameter SDR-21 ASTM D2241 PVC pipe for wastewater line/water line crossings.

The system will be connected to the existing Walnut Creek Wastewater Treatment Plant for treatment and disposal. The project is located within the City of Austin and will conform to all applicable codes, ordinances, and requirements of the City of Austin.

GEOLOGY

According to the Geologic Assessment included with the application, the site is underlain by Edwards Limestone. The soils are described as Fairlie clay, Georgetown stony clay, and Speck stony clay. Five sensitive features (F-1, F-3, F-4, F-5, and F-7) were identified in the Geologic Assessment. No regulated activities (such as construction or soil disturbing activities) will take place within the natural buffers. The size of the natural buffers is generally based on the drainage area for each sensitive feature and is depicted in the plan. No sensitive features were identified within 50 feet of the proposed SCS. The TCEQ site assessment was conducted on August 1, 2019 in association with the EAPP ID Nos. 11001603 and 11001604 applications. The site assessment revealed the site to be generally as described.

SPECIAL CONDITIONS

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

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

STANDARD CONDITIONS

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

Prior to Commencement of Construction:

4. Within 60 days of receiving written approval of an Edwards Aquifer Protection Plan, the applicant must submit to the Austin Regional Office, proof of recordation of notice in the county deed records, with the volume and page number(s) of the county deed records of the county in which the property is located. A description of the property boundaries shall be included in the deed recordation in the county deed records. A suggested form (Deed Recordation Affidavit, TCEQ-0625) that you may use to deed record the approved WPAP is enclosed.
5. All contractors conducting regulated activities at the referenced project location shall be provided a copy of this notice of approval. At least one complete copy of the approved WPAP, SCS and this notice of approval shall be maintained at the project location until all regulated activities are completed.
6. Modification to the activities described in the referenced WPAP and SCS applications following the date of approval may require the submittal of a plan to modify this approval, including the payment of appropriate fees and all information necessary for its review and approval prior to initiating construction of the modifications.
7. The applicant must provide written notification of intent to commence construction, replacement, or rehabilitation of the referenced project. Notification must be submitted to the Austin Regional Office no later than 48 hours prior to commencement of the regulated activity. Written notification must include the date on which the regulated activity will commence, the name of the approved plan and program ID number for the regulated activity, and the name of the prime contractor with the name and telephone number of the contact person. The executive director will use the notification to determine if the approved plan is eligible for an extension.
8. Temporary erosion and sedimentation (E&S) controls, i.e., silt fences, rock berms, stabilized construction entrances, or other controls described in the approved WPAP, must be installed prior to construction and inspected, maintained and repaired during construction. Temporary E&S controls may be removed when vegetation is established and the construction area is stabilized. If a water quality pond is proposed, it shall be used as a sedimentation basin during construction. The TCEQ may monitor stormwater discharges from the site to evaluate the adequacy of temporary E&S control measures. Additional controls may be necessary if excessive solids are being discharged from the site.
9. All borings with depths greater than or equal to 20 feet must be plugged with non-shrink grout from the bottom of the hole to within three (3) feet of the surface. The remainder of the hole must be backfilled with cuttings from the boring. All borings less than 20 feet must be backfilled with cuttings from the boring. All borings must be backfilled or plugged within four (4) days of completion of the drilling operation. Voids may be filled with gravel.

During Construction:

10. During the course of regulated activities related to this project, the applicant or agent shall comply with all applicable provisions of 30 TAC Chapter 213 and Chapter 217, Edwards

Aquifer. The applicant shall remain responsible for the provisions and conditions of this approval until such responsibility is legally transferred to another person or entity.

11. This approval does not authorize the installation of temporary aboveground storage tanks on this project. If the contractor desires to install a temporary aboveground storage tank for use during construction, an application to modify this approval must be submitted and approved prior to installation. The application must include information related to tank location and spill containment. Refer to Standard Condition No. 6, above.
12. If any sensitive feature (caves, solution cavities, sink holes, etc.) is discovered during construction, all regulated activities near the feature must be suspended immediately. The applicant or his agent must immediately notify the Austin Regional Office of the discovery of the feature. Regulated activities near the feature may not proceed until the executive director has reviewed and approved the methods proposed to protect the feature and the aquifer from potentially adverse impacts to water quality. The plan must be sealed, signed, and dated by a Texas Licensed Professional Engineer.
13. All water wells including injection, dewatering, and monitoring wells must be in compliance with the requirements of the Texas Department of Licensing and Regulation under Title 16 TAC Chapter 76 (relating to Water Well Drillers and Pump Installers) and all other locally applicable rules, as appropriate.
14. If sediment escapes the construction site, the sediment must be removed at a frequency sufficient to minimize offsite impacts to water quality (e.g., fugitive sediment in street being washed into surface streams or sensitive features by the next rain). Sediment must be removed from sediment traps or sedimentation ponds not later than when design capacity has been reduced by 50 percent. Litter, construction debris, and construction chemicals shall be prevented from becoming stormwater discharge pollutants.
15. Discharges of sediment laden water are not allowed. If dewatering becomes necessary, the discharge will be filtered through appropriately selected best management practices.
16. The following records shall be maintained and made available to the executive director upon request: the dates when major grading activities occur, the dates when construction activities temporarily or permanently cease on a portion of the site, and the dates when stabilization measures are initiated.
17. 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.
18. No part of the system shall be used as a holding tank for a pump-and-haul operation.

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

19. Owners of permanent BMPs and measures must ensure that the BMPs and measures are constructed and function as designed. A Texas Licensed Professional Engineer must certify in writing that the permanent BMPs or measures were constructed as designed. The certification letter must be submitted to the Austin Regional Office within 30 days of site completion.
20. The applicant shall be responsible for maintaining the permanent BMPs after construction until such time as the maintenance obligation is either assumed in writing by another entity having ownership or control of the property (such as without limitation, an owner's association, a new property owner or lessee, a district, or municipality) or the ownership of the property is transferred to the entity. Such entity shall then be responsible for maintenance until another entity assumes such obligations in writing or ownership is transferred. A copy of the transfer of responsibility must be filed with the executive director through the Austin Regional Office within 30 days of the transfer. A copy of the transfer form (TCEQ-10263) is enclosed.
21. Upon legal transfer of this property, the new owner(s) is required to comply with all terms of the approved Edwards Aquifer protection plan. If the new owner intends to commence

any new regulated activity on the site, a new Edwards Aquifer protection plan that specifically addresses the new activity must be submitted to the executive director. Approval of the plan for the new regulated activity by the executive director is required prior to commencement of the new regulated activity.

22. Certification by a Texas Licensed Professional Engineer of the testing of sewage collection systems required by 30 TAC Chapter 213 and Chapter 217 shall be submitted to the Austin Regional Office within 30 days of test completion and prior to the new sewage collection system being put into service. The certification should include the project name as it appeared on the approved application, the program ID number, and two copies of a site plan sheet(s) indicating the wastewater lines that were tested and are being certified as complying with the appropriate regulations.
23. Every five years after the initial certification, the sewage collection system shall be retested. Any lines that fail the test must be repaired and retested. Certification that the system continues to meet the requirements of 30 TAC Chapter 213 and Chapter 217 shall be submitted to the Austin Regional Office. The certification should include the project name as it appeared on the approved application, the program ID number and two copies of a site plan sheet(s) indicating the wastewater lines that were tested and are being certified as complying with the appropriate regulations. Should any test result fail to meet passing test criteria, and then subsequently pass testing, the result(s) and an explanation of what repair, adjustment, or other means were taken to facilitate a subsequent passing result shall be provided.
24. If ownership of this organized sewage collection system is legally transferred (e.g., developer to city or Municipal Utility District), the new owner(s) is required to comply with all terms of the approved Edwards Aquifer protection plan. If the new owner intends to commence any new regulated activity on the site, a new Edwards Aquifer protection plan that specifically addresses the new activity must be submitted to the executive director. Approval of the plan for the new regulated activity by the executive director is required prior to commencement of the new regulated activity.
25. At project locations where construction is initiated and abandoned, or not completed, the site shall be returned to a condition such that the aquifer is protected from potential contamination.
    An Edwards Aquifer protection plan approval or extension will expire and no extension will be granted if more than 50 percent of the total construction has not been completed within ten years from the initial approval of a plan. A new Edwards Aquifer protection plan must be submitted to the Austin Regional Office with the appropriate fees for review and approval by the executive director prior to commencing any additional regulated activities.

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

Sincerely,

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

RCS/jcs

Enclosure: Deed Recordation Affidavit, Form TCEQ-0625

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

Deed Recordation Affidavit
Edwards Aquifer Protection Plan

THE STATE OF TEXAS §

County of _____ §

BEFORE ME, the undersigned authority, on this day personally appeared _____ who, being duly sworn by me, deposes and says:

(1) That my name is _____ and that I own the real property described below.

(2) That said real property is subject to an EDWARDS AQUIFER PROTECTION PLAN which was required under the 30 Texas Administrative Code (TAC) Chapter 213.

(3) That the EDWARDS AQUIFER PROTECTION PLAN for said real property was approved by the Texas Commission on Environmental Quality (TCEQ) on _____.

A copy of the letter of approval from the TCEQ is attached to this affidavit as Exhibit A and is incorporated herein by reference.

(4) The said real property is located in _____ County, Texas, and the legal description of the property is as follows:

_____
LANDOWNER-AFFIANT

SWORN AND SUBSCRIBED TO before me, on this __ day of _____, ____.

_____
NOTARY PUBLIC

THE STATE OF _____ §

County of _____ §

BEFORE ME, the undersigned authority, on this day personally appeared _____ 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 __ day of _____, ____.

_____
NOTARY PUBLIC

_____
Typed or Printed Name of Notary

MY COMMISSION EXPIRES: _____

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

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

Customer: _____

Regulated Entity Name: _____

Site Address: _____

City, Texas, Zip: _____

County: _____

Approval Letter Date: _____

BMPs for the project: _____

New Responsible Party: _____

Name of contact: _____

Mailing Address: _____

City, State: _____ Zip: _____

Telephone: _____ FAX: _____

_____ _____

Signature of New Responsible Party Date

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

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

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

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

November 16, 2022

Ms. Dani Sattman
Apple, Inc.
5505 W. Parmer Ln. Bldg. 4, EHS-578
Austin, Texas 78727

Re: Edwards Aquifer, Williamson County

NAME OF PROJECT: Generational Properties; located east of Dallas Dr. and West Parmer Lane; Austin, Texas

TYPE OF PLAN: Request for Modification of an approved Water Pollution Abatement Plan (WPAP-MOD) & an approved Organized Sewage Collection System (SCS-MOD) Plan; 30 Texas Administrative Code (TAC) Chapter 213 Edwards Aquifer

Edwards Aquifer Protection Program ID No. 11003239 (WPAP-MOD) and 11003240 (SCS-MOD); Regulated Entity No. RN110792173

Dear Mr. Sidlow:

The Texas Commission on Environmental Quality (TCEQ) has completed its review of the WPAP-MOD and SCS-MOD applications for the above-referenced project submitted to the Austin Regional Office by Garza EMC, LLC. on behalf of Apple, Inc. on September 09, 2022. Final review of the WPAP-MOD and SCS-MOD Applications was completed after additional material was received on November 4, 2022. As presented to the TCEQ, the Temporary and Permanent Best Management Practices (BMPs) were selected, and construction plans were prepared by a Texas Licensed Professional Engineer to be in general compliance with the requirements of 30 TAC Chapter 213 and Chapter 217. These planning materials were sealed, signed and dated by a Texas Licensed Professional Engineer. Therefore, based on the engineer's concurrence of compliance, the planning materials for construction of the proposed project and pollution abatement measures are hereby approved subject to applicable state rules and the conditions in this letter. The applicant or a person affected may file with the chief clerk a motion for reconsideration of the executive director's final action on this Edwards Aquifer Protection Plan. A motion for reconsideration must be filed no later than 23 days after the date of this approval letter. *This approval expires two (2) years from the date of this letter unless, prior to the expiration date, more than 10 percent of the construction has commenced on the project or an extension of time has been requested.*

BACKGROUND

A WPAP application and a SCS application were approved by letter dated August 29, 2019 (EAPP ID Nos. 11001603 and 11001604). The WPAP included the construction of a biofiltration basin. A WPAP-MOD application and a SCS-MOD application were approved by letter dated April 9, 2020 (EAPP ID Nos. 11001930 and 11001931). A WPAP Exception application was approved by letter dated November 12, 2020 (EAPP ID No. 11002205).

WPAP PROJECT DESCRIPTION

The proposed project will have an area of approximately 126.7 acres. It will include the construction of an office complex with multiple buildings, parking garages, drives, sidewalks, utility plants, water quality facilities, utilities, and associated appurtenances. The impervious cover will be 49.8 acres (39.3 percent).

PERMANENT POLLUTION ABATEMENT MEASURES

To prevent the pollution of stormwater runoff originating on-site or upgradient of the site and potentially flowing across and off the site after construction, a biofiltration water quality basin (EAPP ID No. 11001603), designed using the City of Austin Environmental Criteria Manual (2019), will be used to treat stormwater runoff.

SCS PROJECT DESCRIPTION

The proposed sewage collection system will provide disposal service for the development. The 5,819 linear feet gravity SCS will be composed of 1,219 linear feet of 6-inch PVC-SDR 26 ASTM D3034 pipe, 1,503 linear feet of 8-inch PVC-SDR 26 ASTM D3034 pipe, 722 linear feet of 10-inch PVC-SDR 26 ASTM D3034 pipe, 876 linear feet of 12-inch PVC-SDR 26 ASTM D3034 pipe, and 1,259 linear feet of 15-inch PVC-SDR 26 ASTM D3034 pipe. Additionally, the system will include 160 linear feet of 6-inch PVC-SDR 26 ASTM D2241 pipe, 40 linear feet of 8-inch PVC-SDR 26 ASTM D2241 pipe, 20 linear feet of 10-inch PVC-SDR 26 ASTM D2241 pipe, and 20 linear feet of 12-inch PVC-SDR 26 ASTM D2241 pipe. The system will be connected to the existing Walnut Creek Wastewater Treatment Plant for treatment and disposal. The project is located within the City of Austin and will conform to all applicable codes, ordinances, and requirements of the City of Austin.

GEOLOGY

According to the Geologic Assessment included with the application, the site is underlain by Edwards Limestone. The soils are described as Fairlie clay, Georgetown stony clay, and Speck stony clay. Five sensitive features (F-1, F-3, F-4, F-5, and F-7) were identified in the Geologic Assessment. No regulated activities (such as construction or soil disturbing activities) will take place within the natural buffers. The size of the natural buffers is generally based on the drainage area for each sensitive feature and is depicted in the plan. No sensitive features were identified within 50 feet of the proposed SCS. The TCEQ site assessment, conducted during a review for a previous application on August 1, 2019, revealed the site to be generally as described.

STANDARD CONDITIONS

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

Prior to Commencement of Construction:

4. Within 60 days of receiving written approval of an Edwards Aquifer Protection Plan, the applicant must submit to the Austin Regional Office, proof of recordation of notice in the county deed records, with the volume and page number(s) of the county deed records of the county in which the property is located. A description of the property boundaries shall be included in the deed recordation in the county deed records. A suggested form (Deed Recordation Affidavit, TCEQ-0625) that you may use to deed record the approved WPAP is enclosed.
5. All contractors conducting regulated activities at the referenced project location shall be provided a copy of this notice of approval. At least one complete copy of the approved WPAP and SCS and this notice of approval shall be maintained at the project location until all regulated activities are completed.
6. Modification to the activities described in the referenced WPAP and SCS applications following the date of approval may require the submittal of a plan to modify this approval, including the payment of appropriate fees and all information necessary for its review and approval prior to initiating construction of the modifications.
7. The applicant must provide written notification of intent to commence construction, replacement, or rehabilitation of the referenced project. Notification must be submitted to the Austin Regional Office no later than 48 hours prior to commencement of the regulated activity. Written notification must include the date on which the regulated activity will commence, the name of the approved plan and program ID number for the regulated activity, and the name of the prime contractor with the name and telephone number of the contact person. The executive director will use the notification to determine if the approved plan is eligible for an extension.
8. Temporary erosion and sedimentation (E&S) controls, i.e., silt fences, rock berms, stabilized construction entrances, or other controls described in the approved WPAP, must be installed prior to construction and inspected, maintained and repaired during construction. Temporary E&S controls may be removed when vegetation is established and the construction area is stabilized. If a water quality pond is proposed, it shall be used as a sedimentation basin during construction. The TCEQ may monitor stormwater discharges from the site to evaluate the adequacy of temporary E&S control measures. Additional controls may be necessary if excessive solids are being discharged from the site.
9. All borings with depths greater than or equal to 20 feet must be plugged with non-shrink grout from the bottom of the hole to within three (3) feet of the surface. The remainder of the hole must be backfilled with cuttings from the boring. All borings less than 20 feet must be backfilled with cuttings from the boring. All borings must be backfilled or plugged within four (4) days of completion of the drilling operation. Voids may be filled with gravel.

During Construction:

10. During the course of regulated activities related to this project, the applicant or agent shall comply with all applicable provisions of 30 TAC Chapter 213 and Chapter 217, Edwards Aquifer. The applicant shall remain responsible for the provisions and conditions of this approval until such responsibility is legally transferred to another person or entity.
11. This approval does not authorize the installation of temporary aboveground storage tanks on this project. If the contractor desires to install a temporary aboveground storage tank for use during construction, an application to modify this approval must be submitted and approved prior to installation. The application must include information related to tank location and spill containment. Refer to Standard Condition No. 6, above.
12. If any sensitive feature (caves, solution cavities, sink holes, etc.) is discovered during construction, all regulated activities near the feature must be suspended immediately. The applicant or his agent must immediately notify the Austin Regional Office of the discovery of the feature. Regulated activities near the feature may not proceed until the executive director has reviewed and approved the methods proposed to protect the feature and the

aquifer from potentially adverse impacts to water quality. The plan must be sealed, signed, and dated by a Texas Licensed Professional Engineer.

13. All water wells including injection, dewatering, and monitoring wells must be in compliance with the requirements of the Texas Department of Licensing and Regulation under Title 16 TAC Chapter 76 (relating to Water Well Drillers and Pump Installers) and all other locally applicable rules, as appropriate.
14. If sediment escapes the construction site, the sediment must be removed at a frequency sufficient to minimize offsite impacts to water quality (e.g., fugitive sediment in street being washed into surface streams or sensitive features by the next rain). Sediment must be removed from sediment traps or sedimentation ponds not later than when design capacity has been reduced by 50 percent. Litter, construction debris, and construction chemicals shall be prevented from becoming stormwater discharge pollutants.
15. Discharges of sediment laden water are not allowed. If dewatering becomes necessary, the discharge will be filtered through appropriately selected best management practices.
16. The following records shall be maintained and made available to the executive director upon request: the dates when major grading activities occur, the dates when construction activities temporarily or permanently cease on a portion of the site, and the dates when stabilization measures are initiated.
17. 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.
18. No part of the system shall be used as a holding tank for a pump-and-haul operation.

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

19. A Texas Licensed Professional Engineer must certify in writing that the permanent BMPs or measures were constructed as designed. The certification letter must be submitted to the Austin Regional Office within 30 days of site completion.
20. The applicant shall be responsible for maintaining the permanent BMPs after construction until such time as the maintenance obligation is either assumed in writing by another entity having ownership or control of the property (such as without limitation, an owner's association, a new property owner or lessee, a district, or municipality) or the ownership of the property is transferred to the entity. The regulated entity shall then be responsible for maintenance until another entity assumes such obligations in writing or ownership is transferred. A copy of the transfer of responsibility must be filed with the executive director through Austin Regional Office within 30 days of the transfer. A copy of the transfer form (TCEQ-10263) is enclosed.
21. Upon legal transfer of this property, the new owner(s) is required to comply with all terms of the approved Edwards Aquifer protection plan. If the new owner intends to commence any new regulated activity on the site, a new Edwards Aquifer protection plan that specifically addresses the new activity must be submitted to the executive director. Approval of the plan for the new regulated activity by the executive director is required prior to commencement of the new regulated activity.
22. Certification by a Texas Licensed Professional Engineer of the testing of sewage collection systems required by 30 TAC Chapter 213 and Chapter 217 shall be submitted to the Austin Regional Office within 30 days of test completion and prior to the new sewage collection system being put into service. The certification should include the project name as it appeared on the approved application, the program ID number, and two copies of a site plan sheet(s) indicating the wastewater lines that were tested and are being certified as complying with the appropriate regulations.

Every five years after the initial certification, the sewage collection system shall be retested. Any lines that fail the test must be repaired and retested. Certification that the system continues to meet the requirements of 30 TAC Chapter 213 and Chapter 217 shall be submitted to the Austin Regional Office. The certification should include the project name as it appeared on the approved application, the program ID number and two copies of a site plan sheet(s) indicating the wastewater lines that were tested and are being certified as complying with the appropriate regulations. Should any test result fail to meet passing test criteria, and then subsequently pass testing, the result(s) and an explanation of what repair, adjustment, or other means were taken to facilitate a subsequent passing result shall be provided.

23. If ownership of this organized sewage collection system is legally transferred (e.g., developer to city or Municipal Utility District), the new owner(s) is required to comply with all terms of the approved Edwards Aquifer protection plan. If the new owner intends to commence any new regulated activity on the site, a new Edwards Aquifer protection plan that specifically addresses the new activity must be submitted to the executive director. Approval of the plan for the new regulated activity by the executive director is required prior to commencement of the new regulated activity.
24. At project locations where construction is initiated and abandoned, or not completed, the site shall be returned to a condition such that the aquifer is protected from potential contamination.
25. An Edwards Aquifer protection plan approval or extension will expire and no extension will be granted if more than 50 percent of the total construction has not been completed within ten years from the initial approval of a plan. A new Edwards Aquifer protection plan must be submitted to the Austin Regional Office with the appropriate fees for review and approval by the executive director prior to commencing any additional regulated activities.

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

Sincerely,

Lillian Butler

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

LIB/jcs

Enclosures: Deed Recordation Affidavit, Form TCEQ-0625

CC Mr. John D. Pelham, P.E., Garza Emc, LLC

Deed Recordation Affidavit
Edwards Aquifer Protection Plan

THE STATE OF TEXAS §

County of _____ §

BEFORE ME, the undersigned authority, on this day personally appeared _____ who, being duly sworn by me, deposes and says:

(1) That my name is _____and that I own the real property described below.

(2) That said real property is subject to an EDWARDS AQUIFER PROTECTION PLAN which was required under the 30 Texas Administrative Code (TAC) Chapter 213.

(3) That the EDWARDS AQUIFER PROTECTION PLAN for said real property was approved by the Texas Commission on Environmental Quality (TCEQ) on _____.

A copy of the letter of approval from the TCEQ is attached to this affidavit as Exhibit A and is incorporated herein by reference.

(4) The said real property is located in _____ County, Texas, and the legal description of the property is as follows:

_____
LANDOWNER-AFFIANT

SWORN AND SUBSCRIBED TO before me, on this __ day of _____, ____.

_____
NOTARY PUBLIC

THE STATE OF _____ §

County of _____ §

BEFORE ME, the undersigned authority, on this day personally appeared _____ 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 __ day of _____, _____.

_____
NOTARY PUBLIC

_____
Typed or Printed Name of Notary

MY COMMISSION EXPIRES: _____

Attachment B- Narrative of Proposed Modification

This narrative addresses changes associated with the proposed modification to the previously approved Sewage Collection System (SCS). The changes associated with the previously approved SCS plan are as follow:

Site Plan

- Revised drives and Building locations

Grading effects:

- Grading has been revised to reflect the site plan revision
- Changes to temporary stormwater erosion and sedimentation controls to accommodate grading changes

Storm

- Revised storm water routing to reflect site plan changes

Water

- Revised water utility route to reflect site plan changes

Wastewater

- Revised wastewater utility route to reflect site plan changes
- A lift station and associated force main pipe has been added
- Revised F-0582 Application Table 1 – Pipe Description

All the changes associated with this modification are reflected in the attached site plans. See Attachment C.

ATTACHMENT C – CURRENT SITE PLAN OF THE APPROVED PROJECT

Currently approved construction documents are included with this application

Organized Sewage Collection System Application

Texas Commission on Environmental Quality

For Regulated Activities on the Edwards Aquifer Recharge Zone and Relating to 30 TAC §213.5(c), 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.

Regulated Entity Name: Generational Properties

1. ☒ **Attachment A – SCS Engineering Design Report**. This Engineering Design Report is provided to fulfill the requirements of 30 TAC Chapter 217, including 217.10 of Subchapter A, §§217.51 – 217.70 of Subchapter C, and Subchapter D as applicable, and is required to be submitted with this SCS Application Form.

Customer Information

2. The entity and contact person responsible for providing the required engineering certification of testing for this sewage collection system upon completion (including private service connections) and every five years thereafter to the appropriate TCEQ region office pursuant to 30 TAC §213.5(c) is:

   Contact Person: Dani Sattman
   Entity: Apple Inc.
   Mailing Address: 12545 Riata Vista Circle, MS 522-EHS
   City, State: Austin, TX Zip: 78727
   Telephone: 512-674-8221 Fax: _____
   Email Address: dsattman598@apple.com
   The appropriate regional office must be informed of any changes in this information within 30 days of the change.

3. The engineer responsible for the design of this sewage collection system is:

   Contact Person: John Pelham, P.E.
   Texas Licensed Professional Engineer's Number: 98294
   Entity: GarzaEMC, LLC
   Mailing Address: 7708 Rialto Blvd Suite 125
   City, State:Austin, TX Zip: 78735
   Telephone:512 298 3284 Fax:512 298 2592
   Email Address:jpelham@garzaemc.com

Project Information

4. Anticipated type of development to be served (estimated future population to be served, plus adequate allowance for institutional and commercial flows):

   ☐ Residential: Number of single-family lots: _____
   ☐ Multi-family: Number of residential units: _____
   ☒ Commercial
   ☐ Industrial
   ☐ Off-site system (not associated with any development)
   ☐ Other: _____

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

0% Domestic	296,640 gallons/day
0% Industrial	0 gallons/day
100% Commingled	0 gallons/day

   Total gallons/day: 296,640

6. Existing and anticipated infiltration/inflow is 62,475 gallons/day. This will be addressed by: Pipe sizing adjustments.

7. A Water Pollution Abatement Plan (WPAP) is required for construction of any associated commercial, industrial or residential project located on the Recharge Zone.

   ☒ The WPAP application for this development was approved by letter dated 8/29/2019, 4/9/2020, and 11/16/2022 . A copy of the approval letter is attached.
   ☐ The WPAP application for this development was submitted to the TCEQ on _____, but has not been approved.
   ☐ A WPAP application is required for an associated project, but it has not been submitted.
   ☐ There is no associated project requiring a WPAP application.

8. Pipe description:

Table 1 - Pipe Description

Pipe Diameter(Inches)	*Linear Feet (1)*	*Pipe Material (2)*	*Specifications (3)*
4	184.50	PVC SDR 26	ASTM D 2241
6	22.65	PVC SDR 26	ASTM D 3034
8	877.75	PVC SDR 26	ASTM D 3034
Prev approved at end			

Total Linear Feet: 1085

(1) Linear feet - Include stub-outs and double service connections. Do not include private service laterals.
(2) Pipe Material - If PVC, state SDR value.
(3) Specifications - ASTM / ANSI / AWWA specification and class numbers should be included.

9. The sewage collection system will convey the wastewater to the Walnut Creek (name) Treatment Plant. The treatment facility is:

   ☒ Existing
   ☐ Proposed

10. All components of this sewage collection system will comply with:

   ☒ The City of Austin standard specifications.
   ☐ Other. Specifications are attached.

11. ☐ No force main(s) and/or lift station(s) are associated with this sewage collection system.

   ☒ A force main(s) and/or lift station(s) is associated with this sewage collection system and the **Lift Station/Force Main System Application** form (TCEQ-0624) is included with this application.

Alignment

12. ☒ There are no deviations from uniform grade in this sewage collection system without manholes and with open cut construction.

13. ☒ There are no deviations from straight alignment in this sewage collection system without manholes.

   ☐ **Attachment B - Justification and Calculations for Deviation in Straight Alignment without Manholes**. A justification for deviations from straight alignment in this sewage collection system without manholes with documentation from pipe manufacturer allowing pipe curvature is attached.

   ☐ For curved sewer lines, all curved sewer line notes (TCEQ-0596) are included on the construction plans for the wastewater collection system.

Manholes and Cleanouts

14. ☒ Manholes or clean-outs exist at the end of each sewer line(s). These locations are listed below: (Please attach additional sheet if necessary)

Table 2 - Manholes and Cleanouts

Line	*Shown on Sheet*	*Station*	*Manhole or Clean-out?*
CBC	151 Of 235	10+74.51	MH
CBC	151 Of 235	11+20.80	MH
CBC	151 Of 235	11+62.98	CO
CBC	151 Of 235	12+15.63	CO
AC09 GREASE WASTE	151 Of 235	11+22.26	MH
AC09 GREASE WASTE	148 Of 235	11+99.27	MH
AC09 GREASE WASTE	148 Of 235	16.21+88	MH

Line	*Shown on Sheet*	*Station*	*Manhole or Clean-out?*
CBC-GT 11	148 Of 235	11+84.50	MH
	Of		
Prev approved at end	Of		

15. ☒ Manholes are installed at all Points of Curvature and Points of Termination of a sewer line.

16. ☒ The maximum spacing between manholes on this project for each pipe diameter is no greater than:

Pipe Diameter (inches)	Max. Manhole Spacing (feet)
6 - 15	500
16 - 30	800
36 - 48	1000
≥54	2000

☐ **Attachment C – Justification for Variance from Maximum Manhole Spacing**. The maximum spacing between manholes on this project (for each pipe diameter used) is greater than listed in the table above. A justification for any variance from the maximum spacing is attached, and must include a letter from the entity which will operate and maintain the system stating that it has the capability to maintain lines with manhole spacing greater than the allowed spacing.

17. ☒ All manholes will be monolithic, cast-in-place concrete.

☐ The use of pre-cast manholes is requested for this project. The manufacturer's specifications and construction drawings, showing the method of sealing the joints, are attached.

Site Plan Requirements

Items 18 - 25 must be included on the Site Plan.

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

Site Plan Scale: 1" = 30'.

19. ☒ The Site Plan must include the sewage collection system general layout, including manholes with station numbers, and sewer pipe stub outs (if any). Site plan must be overlain by topographic contour lines, using a contour interval of not greater than ten feet and showing the area within both the five-year floodplain and the 100-year floodplain of any drainage way.

20. Lateral stub-outs:

☒ The location of all lateral stub-outs are shown and labeled.
☐ No lateral stub-outs will be installed during the construction of this sewer collection system.

21. Location of existing and proposed water lines:

☐ The entire water distribution system for this project is shown and labeled.
☒ If not shown on the Site Plan, a Utility Plan is provided showing the entire water and sewer systems.
☐ There will be no water lines associated with this project.

22. 100-year floodplain:

☒ After construction is complete, no part of this project will be in or cross a 100-year floodplain, either naturally occurring or manmade. (Do not include streets or concrete-lined channels constructed above of sewer lines.)
☐ After construction is complete, all sections located within the 100-year floodplain will have water-tight manholes. These locations are listed in the table below and are shown and labeled on the Site Plan. (Do not include streets or concrete-lined channels constructed above sewer lines.)

Table 3 - 100-Year Floodplain

Line	*Sheet*	*Station*
	of	to
	of	to
	of	to
	of	to

23. 5-year floodplain:

☒ After construction is complete, no part of this project will be in or cross a 5-year floodplain, either naturally occurring or man-made. (Do not include streets or concrete-lined channels constructed above sewer lines.)
☐ After construction is complete, all sections located within the 5-year floodplain will be encased in concrete or capped with concrete. These locations are listed in the table below and are shown and labeled on the Site Plan. (Do not include streets or concrete-lined channels constructed above sewer lines.)

Table 4 - 5-Year Floodplain

Line	*Sheet*	*Station*
	of	to
	of	to
	of	to
	of	to

24. ☒ Legal boundaries of the site are shown.

25. ☒ The ***final plans and technical specifications*** are submitted for the TCEQ's review. Each sheet of the construction plans and specifications are dated, signed, and sealed by the Texas Licensed Professional Engineer responsible for the design on each sheet.

Items 26 - 33 must be included on the Plan and Profile sheets.

26. ☒ All existing or proposed water line crossings and any parallel water lines within 9 feet of sewer lines are listed in the table below. These lines must have the type of pressure rated pipe to be installed shown on the plan and profile sheets. Any request for a variance from the required pressure rated piping at crossings must include a variance approval from 30 TAC Chapter 290.

☐ There will be no water line crossings.
☐ There will be no water lines within 9 feet of proposed sewer lines.

Table 5 - Water Line Crossings

Line	*Station or Closest Point*	*Crossing or Parallel*	*Horizontal Separation Distance*	*Vertical Separation Distance*
Prev approved at end				

27. Vented Manholes:

☐ **No part** of this sewer line is within the 100-year floodplain and vented manholes are not required by 30 TAC Chapter 217.
☐ **A portion** of this sewer line is within the 100-year floodplain and vented manholes will be provided at less than 1500 foot intervals. These water-tight manholes are listed in the table below and labeled on the appropriate profile sheets.
☐ **A portion** of this sewer line is within the 100-year floodplain and an alternative means of venting shall be provided at less than 1500 feet intervals. A description of the alternative means is described on the following page.
☒ **A portion** of this sewer line is within the 100-year floodplain; however, there is no interval longer than 1500 feet located within. No vented manholes will be used.

Table 6 - Vented Manholes

Line	*Manhole*	*Station*	*Sheet*

Line	*Manhole*	*Station*	*Sheet*
Prev approved at end			

28. Drop manholes:

☐ There are no drop manholes associated with this project.
☒ Sewer lines which enter new or existing manholes or "manhole structures" higher than 24 inches above the manhole invert are listed in the table below and labeled on the appropriate profile sheets. These lines meet the requirements of 30 TAC §217.55(l)(2)(H).

Table 7 - Drop Manholes

Line	*Manhole*	*Station*	*Sheet*
WW-A	EXISTING MH CB-C	31+31.82	151

29. Sewer line stub-outs (For proposed extensions):

☐ The placement and markings of all sewer line stub-outs are shown and labeled.
☒ No sewer line stub-outs are to be installed during the construction of this sewage collection system.

30. Lateral stub-outs (For proposed private service connections):

☒ The placement and markings of all lateral stub-outs are shown and labeled.
☐ No lateral stub-outs are to be installed during the construction of this sewage collection system.

31. Minimum flow velocity (From Appendix A)

☒ Assuming pipes are flowing full; all slopes are designed to produce flows equal to or greater than 2.0 feet per second for this system/line.

32. Maximum flow velocity/slopes (From Appendix A)

☒ Assuming pipes are flowing full, all slopes are designed to produce maximum flows of less than or equal to 10 feet per second for this system/line.
☐ **Attachment D – Calculations for Slopes for Flows Greater Than 10.0 Feet per Second.** Assuming pipes are flowing full, some slopes produce flows which are greater than 10 feet per second. These locations are listed in the table below. Calculations are attached.

Table 8 - Flows Greater Than 10 Feet per Second

Line	*Profile Sheet*	*Station to Station*	*FPS*	*% Slope*	*Erosion/Shock Protection*

33. Assuming pipes are flowing full, where flows are ≥ 10 feet per second, the provisions noted below have been made to protect against pipe displacement by erosion and/or shock under 30 TAC §217.53(l)(2)(B).

☐ Concrete encasement shown on appropriate Plan and Profile sheets for the locations listed in the table above.
☐ Steel-reinforced, anchored concrete baffles/retards placed every 50 feet shown on appropriate Plan and Profile sheets for the locations listed in the table above.
☒ N/A

Administrative Information

34. ☒ The final plans and technical specifications are submitted for TCEQ review. Each sheet of the construction plans and specifications are dated, signed, and sealed by the Texas Licensed Professional Engineer responsible for the design on each sheet.

35. ☒ Standard details are shown on the detail sheets, which are dated, signed, and sealed by the Texas Licensed Professional Engineer, as listed in the table below:

Table 9 - Standard Details

Standard Details	*Shown on Sheet*
Lateral stub-out marking **[Required]**	164 of 235
Manhole, showing inverts comply with 30 TAC §217.55(l)(2) **[Required]**	163 of 235
Alternate method of joining lateral to existing SCS line for potential future connections **[Required]**	164 of 235
Typical trench cross-sections **[Required]**	163 of 235
Bolted manholes **[Required]**	163 of 235
Sewer Service lateral standard details **[Required]**	164 of 235
Clean-out at end of line **[Required, if used]**	161 of 235
Baffles or concrete encasement for shock/erosion protection **[Required, if flow velocity of any section of pipe >10 fps]**	161 of 235
Detail showing Wastewater Line/Water Line Crossing **[Required, if crossings are proposed]**	164 of 235
Mandrel detail or specifications showing compliance with 30 TAC §217.57(b) and (c) **[Required, if Flexible Pipe is used]**	164 of 235

Standard Details	*Shown on Sheet*
Drop manholes **[Required, if a pipe entering a manhole is more than 24 inches above manhole invert]**	164 of 235

36. ☒ All organized sewage collection system general construction notes (TCEQ-0596) are included on the construction plans for this sewage collection system.

37. ☒ All proposed sewer lines will be sufficiently surveyed/staked to allow an assessment prior to TCEQ executive director approval. If the alignments of the proposed sewer lines are not walkable on that date, the application will be deemed incomplete and returned.

    ☐ Survey staking was completed on this date: _____

38. ☒ 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.

39. ☒ Any modification of this SCS application will require TCEQ approval, prior to construction, and may require submission of a revised application, with appropriate fees.

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 **Organized Sewage Collection System Application** is hereby submitted for TCEQ review and executive director approval. The system was designed in accordance with the requirements of 30 TAC §213.5(c) and 30 TAC §217 and prepared by:

Print Name of Licensed Professional Engineer: John Pelham, P.E.

Date: 04/02/2024

Place engineer's seal here:

Signature of Licensed Professional Engineer:

Appendix A-Flow Velocity Table

Flow Velocity (Flowing Full) All gravity sewer lines on the Edwards Aquifer Recharge Zone shall be designed and constructed with hydraulic slopes sufficient to give a velocity when flowing full of not less than 2.0 feet per second, and not greater than 10 feet per second. The grades shown in the following table are based on Manning's formula and an n factor of 0.013 and shall be the minimum and maximum acceptable slopes unless provisions are made otherwise.

Table 10 - Slope Velocity

Pipe Diameter(Inches)	*% Slope required for minimum flow velocity of 2.0 fps*	*% Slope which produces flow velocity of 10.0 fps*
6	0.50	12.35
8	0.33	8.40
10	0.25	6.23
12	0.20	4.88
15	0.15	3.62
18	0.11	2.83
21	0.09	2.30
24	0.08	1.93
27	0.06	1.65
30	0.055	1.43
33	0.05	1.26
36	0.045	1.12
39	0.04	1.01
>39	*	*

**For lines larger than 39 inches in diameter, the slope may be determined by Manning's formula (as shown below) to maintain a minimum velocity greater than 2.0 feet per second when flowing full and a maximum velocity less than 10 feet per second when flowing full.*

$$v = \frac{1.49}{n} \times R_h^{0.67} \times \sqrt{S}$$

Figure 1 - Manning's Formula

Where:

v = velocity (ft/sec)
n = Manning's roughness coefficient (0.013)
Rh = hydraulic radius (ft)
S = slope (ft/ft)

Table 1				
Pipe Diameter (Inches)	Linear Feet (1)	Pipe Material (2)	Specification (3)	
6	1219	PVC SDR 26	ASTM D3034	**(Previously Approved)**
8	1504	PVC SDR 26	ASTM D3034	**(Previously Approved)**
10	722	PVC SDR 26	ASTM D3034	**(Previously Approved)**
12	876	PVC SDR 26	ASTM D3034	**(Previously Approved)**
15	1259	PVC SDR 26	ASTM D3034	**(Previously Approved)**
6	160	PVC SDR 26	ASTM D2241	**(Previously Approved)**
8	40	PVC SDR 26	ASTM D2241	**(Previously Approved)**
10	20	PVC SDR 26	ASTM D2241	**(Previously Approved)**
12	20	PVC SDR 26	ASTM D2241	**(Previously Approved)**

Table 2				
Line	Shown on Sheet	Station	Manhole or Cleanout	
A	152 Of 239	10+00.00	MH EXISTING	**(Previously Approved)**
A	152 Of 239	10+30.31	MH	**(Previously Approved)**
A	152 Of 239	10+73.51	MH	**(Previously Approved)**
A	152 Of 239	14+76.81	MH	**(Previously Approved)**
A	152 Of 239	17+02.73	MH	**(Previously Approved)**
A	153 Of 239	21+72.11	MH	**(Previously Approved)**
A	153 Of 239	22+59.45	MH	**(Previously Approved)**
A	153 Of 239	23+52.88	MH	**(Previously Approved)**
A	153 Of 239	24+84.15	MH	**(Previously Approved)**
A	153 Of 239	27+33.06	MH	**(Previously Approved)**
A	153 Of 239	29+29.98	MH	**(Previously Approved)**
A	153 Of 239	31+31.82	MH	**(Previously Approved)**
A	154 Of 239	33+27.31	MH	**(Previously Approved)**
A	154 Of 239	34+98.24	MH	**(Previously Approved)**
A	154 Of 239	35+28.36	MH	**(Previously Approved)**
A	154 Of 239	36+87.72	MH	**(Previously Approved)**
A	154 Of 239	39+12.13	MH	**(Previously Approved)**
A	154 Of 239	39+96.08	MH	**(Previously Approved)**
A	154 Of 239	41+86.85	MH	**(Previously Approved)**
A	155 Of 239	44+28.06	MH	**(Previously Approved)**
A	155 Of 239	46+77.65	MH	**(Previously Approved)**
A	155 Of 239	47+24.14	CO	**(Previously Approved)**
B	155 Of 239	10+00.00	MH	**(Previously Approved)**
B	155 Of 239	10+59.27	MH	**(Previously Approved)**
B	155 Of 239	11+12.12	MH	**(Previously Approved)**
B	155 Of 239	13+55.50	MH	**(Previously Approved)**
B	156 Of 239	14+92.44	MH	**(Previously Approved)**
B	156 Of 239	16+26.70	MH	**(Previously Approved)**
B	156 Of 239	17+81.02	MH	**(Previously Approved)**
B	156 Of 239	18+43.88	MH	**(Previously Approved)**
B	156 Of 239	19+82.50	MH	**(Previously Approved)**
B	156 Of 239	20+92.03	MH	**(Previously Approved)**
B6	154 Of 239	11+44.77	MH	**(Previously Approved)**
B6	154 Of 239	12+80.85	MH	**(Previously Approved)**
PG2-G2	147 Of 235	10+00.00	CO	
PG2-G2	147 Of 235	10+01.82	CO	

PG2-G2	147 Of 235	10+08.79	CO
RD2-1	147 Of 235	10+09.30	CO

Table 5					
Line	Station or Closest Point	Crossing or Parallel	Horizontal Separation Distance	Vertical Separation Distance(FT)	
A	22+45.53	Crossing		23.1'	**(Previously Approved)**
A	23+04.11	Crossing		21.4	**(Previously Approved)**
A	29+68.78	Crossing		3.8'	**(Previously Approved)**
A	39+25.63	Crossing		3.4'	**(Previously Approved)**
A	41+61.49	Crossing		2.4'	**(Previously Approved)**
A	47+16.45	Crossing		2.6'	**(Previously Approved)**
B	10+44.85	Crossing		5.1'	**(Previously Approved)**
B	15+66.23	Crossing		4.1'	**(Previously Approved)**
B	18+06.27	Crossing		5.8'	**(Previously Approved)**
B	20+09.55	Crossing		7.8'	**(Previously Approved)**

Table 7				
Line	Manhole	Station	Sheet	
A		22+59.45	153 of 239	**(Previously Approved)**
A		23+52.88	153 of 239	**(Previously Approved)**
A		31+31.82	153 of 239	**(Previously Approved)**
A		33+27.31	154 of 239	**(Previously Approved)**
B		10+00.00	155 of 239	**(Previously Approved)**
B		11+12.12	155 of 239	**(Previously Approved)**
B		13+55.50	155 of 239	**(Previously Approved)**
B		16+26.70	156 of 239	**(Previously Approved)**
B		18+43.88	156 of 239	**(Previously Approved)**
B		20+92.03	156 of 239	**(Previously Approved)**

ATTACHMENT A – SCS ENGINEERING DESIGN REPORT

A SCS engineering design report is included with this application

Engineering Design Report

For

Generational Properties
Organized Sewage Collection System

December 2023

Prepared By:
Garza EMC
7708 Rialto Blvd, Suite 125
Austin, Texas 78735
TBPE Registration Number F14629

TABLE OF CONTENTS

ATTACHMENTS

PVC PIPE STANDARDS

The American Society for Testing and Materials (ASTM) also known as ASTM International (Reference: www.astm.org) governs the manufacturing specifications for Polyvinyl Chloride (PVC) pipes, including the dimension ratio and water pressure allowable for use of each pipe, through its D-3034 standard. ASTM D-3034 lists its pipe dimensions and pipe classes using the "SDR" mark up, such as SDR-13.5, SDR-21, SDR-26 and SDR-41. The SDR refers to the standard dimension ratio (SDR) of the outside pipe diameter and the wall thickness. This project specifies the use of SDR-26 PVC pipe, which are to meet the ASTM pressure rating of 160 psi and fall in the size category listed below. ASTM D-3034 standards must be meticulously adhered to by all PVC pipe manufacturers and is recognized as the standard during PVC pressure pipe testing and quality checks. Other in-depth information can be found published in Thermoplastic Pressure Pipe Design and Selection UNI-TR-7, by the Uni-Bell PVC Pipe Association.

SDR 26 Pipe Size Matrix (Per ASTM D-3034)			
Size (in)	**O.D. (in)**	**Avg I.D. (in)**	**Thickness (in)**
4	4.125	3.891	0.162
6	6.275	5.793	0.241
8	8.4	7.754	0.323
10	10.5	9.692	0.404
12	12.5	11.538	0.481
15	15.3	14.124	0.588

PROPOSED TYPE OF PIPE (6")
(6")

Type I, Grade I, Polyvinyl Chloride (PVC) Specifications:
Size of Pipe: 6.00 in.

SDR 26 Properties

Pipe Compliance:	ASTM D-3034
Joint Compliance:	ASTM D-3139
Cell Classification:	12454
Minimum Tensile Strength (psi):	7,000
Minimum Modulus of Elasticity (psi):	400,000
Average Inner Diameter (inch):	6.084
Average Outer Diameter inch):	6.625
Wall Thickness (inch):	0.255
Approximate Trenching Width (feet):	2.00
Minimum Pipe Depth (Cover) used (feet):	**2.41**
Maximum Pipe Depth (Cover) used (feet):	**13.85**

FLOW/CAPACITY ANALYSIS

For the Proposed Project:

Proposed Waste Water Usage: **296,640 GPD**

Q_{max} (As determined in Attachment A) = 0.199 CFS

$$Q_{full} = \frac{1.486}{n} \times A \times R^{\frac{2}{3}} \times \sqrt{S}$$

For the Specified Pipe at the Minimum Design Slope, the full flow is

Q_{full} = **0.582 CFS**

0.199 < 0.582
Design meets TCEQ Guidelines

PROPOSED TYPE OF PIPE (8")
(8")

Type I, Grade I, Polyvinyl Chloride (PVC) Specifications:
Size of Pipe: 8.00 in.

SDR 26 Properties

Pipe Compliance:	ASTM D-3034
Joint Compliance:	ASTM D-3139
Cell Classification:	12454
Minimum Tensile Strength (psi):	7,000
Minimum Modulus of Elasticity (psi):	400,000
Average Inner Diameter (inch):	7.921
Average Outer Diameter inch):	8.625
Wall Thickness (inch):	0.332
Approximate Trenching Width (feet):	2.25
Minimum Pipe Depth (Cover) used (feet):	**2.76**
Maximum Pipe Depth (Cover) used (feet):	**4.74**

FLOW/CAPACITY ANALYSIS

For the Proposed Project:

Proposed Waste Water Usage: **296,640 GPD**

Q_{max} (As determined in Attachment A) = 0.673 CFS

$$Q_{full} = \frac{1.486}{n} \times A \times R^{\frac{2}{3}} \times \sqrt{S}$$

For the Specified Pipe at the Minimum Design Slope, the full flow is

Q_{full} = **1.177 CFS**

0.673 < 1.177
Design meets TCEQ Guidelines

PROPOSED TYPE OF PIPE (10")
(10")

Type I, Grade I, Polyvinyl Chloride (PVC) Specifications:
Size of Pipe: 10.00 in.

SDR 26 Properties

Pipe Compliance:	ASTM D-3034
Joint Compliance:	ASTM D-3139
Cell Classification:	12454
Minimum Tensile Strength (psi):	7,000
Minimum Modulus of Elasticity (psi):	400,000
Average Inner Diameter (inch):	9.874
Average Outer Diameter inch):	10.75
Wall Thickness (inch):	0.413
Approximate Trenching Width (feet):	2.40
Minimum Pipe Depth (Cover) used (feet):	**7.95**
Maximum Pipe Depth (Cover) used (feet):	**14.27**

FLOW/CAPACITY ANALYSIS

For the Proposed Project:

Proposed Waste Water Usage: **296,640 GPD**

Q_{max} (As determined in Attachment A) = 1.057 CFS

$$Q_{full} = \frac{1.486}{n} \times A \times R^{\frac{2}{3}} \times \sqrt{S}$$

For the Specified Pipe at the Minimum Design Slope, the full flow is

Q_{full} = 1.498 CFS

1.057 < 1.498
Design meets TCEQ Guidelines

PROPOSED TYPE OF PIPE (12")
(12")

Type I, Grade I, Polyvinyl Chloride (PVC) Specifications:
Size of Pipe: 12.00 in.

SDR 26 Properties

Pipe Compliance:	ASTM D-3034
Joint Compliance:	ASTM D-3139
Cell Classification:	12454
Minimum Tensile Strength (psi):	7,000
Minimum Modulus of Elasticity (psi):	400,000
Average Inner Diameter (inch):	11.711
Average Outer Diameter inch):	12.75
Wall Thickness (inch):	0.49
Approximate Trenching Width (feet):	2.60
Minimum Pipe Depth (Cover) used (feet):	**8.07**
Maximum Pipe Depth (Cover) used (feet):	**26.78**

FLOW/CAPACITY ANALYSIS

For the Proposed Project:

Proposed Waste Water Usage: **296,640 GPD**

Q_{max} (As determined in Attachment A) = 1.770 CFS

$$Q_{full} = \frac{1.486}{n} \times A \times R^{\frac{2}{3}} \times \sqrt{S}$$

For the Specified Pipe at the Minimum Design Slope, the full flow is

Q_{full} = **2.361 CFS**

1.770 < 2.361
Design meets TCEQ Guidelines

PROPOSED TYPE OF PIPE (15")
(15")

Type I, Grade I, Polyvinyl Chloride (PVC) Specifications:
Size of Pipe: 15.00 in.

SDR 26 Properties

Pipe Compliance:	ASTM D-3034
Joint Compliance:	ASTM D-3139
Cell Classification:	12454
Minimum Tensile Strength (psi):	7,000
Minimum Modulus of Elasticity (psi):	400,000
Average Inner Diameter (inch):	14.124
Average Outer Diameter inch):	15.3
Wall Thickness (inch):	0.588
Approximate Trenching Width (feet):	2.80
Minimum Pipe Depth (Cover) used (feet):	**7.44**
Maximum Pipe Depth (Cover) used (feet):	**24.90**

FLOW/CAPACITY ANALYSIS

For the Proposed Project:

Proposed Waste Water Usage: **296,640 GPD**

Q_{max} (As determined in Attachment A) = 2.660 CFS

$$Q_{full} = \frac{1.486}{n} \times A \times R^{\frac{2}{3}} \times \sqrt{S}$$

For the Specified Pipe at the Minimum Design Slope, the full flow is

Q_{full} = 3.891 CFS

2.660 < 3.891
Design meets TCEQ Guidelines

MINIMUM AND MAXIMUM GRADES FOR PIPES (30 TAC §217.53(l)(2)(A))
(6")

Minimum and Maximum Pipe Slopes		
Size of Pipe	Minimum Slope (%)	Maximum Slope (%)
6	0.5	12.35
8	0.33	8.4
10	0.25	6.23
12	0.2	4.88
15	0.15	3.62
18	0.11	2.83
21	0.09	2.3
24	0.08	1.93
27	0.06	1.65
30	0.055	1.43
33	0.05	1.26
36	0.045	1.12
39	0.04	1.01
>39	*	*
* For pipes larger than 39 inches in diameter, the slope is determined by Manning's formula to maintain a velocity greater than **2.0 feet per second and less than 10.0 feet per second** when flowing full.		

MINIMUM AND MAXIMUM VELOCITY FOR THE PROPOSED SYSTEM:
(6")

$$V = \frac{1.49}{n} \times R_h^{0.67} \times \sqrt{S}$$

So, using 6.00 inch PVC Pipe:

V = velocity (ft/sec)	=	(solve)
n = Manning's coefficient	=	0.013
R_h = hydraulic radius	=	0.127
S = slope (ft/ft)		

Minimum Slope Used (%): **1.00**

Maximum Slope Used (%): **3.00**

V_{min} = 2.89 ft/sec

V_{max} = 5.01 ft/sec

2.89 **>** **2.00** ft/sec

5.01 **<** **10.00** ft/sec

Design meets TCEQ Guidelines

Design meets TCEQ Guidelines

MINIMUM AND MAXIMUM GRADES FOR PIPES (30 TAC §217.53(l)(2)(A))

(8")

Minimum and Maximum Pipe Slopes		
Size of Pipe	Minimum Slope (%)	Maximum Slope (%)
6	0.5	12.35
8	0.33	8.4
10	0.25	6.23
12	0.2	4.88
15	0.15	3.62
18	0.11	2.83
21	0.09	2.3
24	0.08	1.93
27	0.06	1.65
30	0.055	1.43
33	0.05	1.26
36	0.045	1.12
39	0.04	1.01
>39	*	*
* For pipes larger than 39 inches in diameter, the slope is determined by Manning's formula to maintain a velocity greater than **2.0 feet per second and less than 10.0 feet per second** when flowing full.		

MINIMUM AND MAXIMUM VELOCITY FOR THE PROPOSED SYSTEM:

(8")

$$V = \frac{1.49}{n} \times R_h^{0.67} \times \sqrt{S}$$

So, using 8.00 inch PVC Pipe:

V = velocity (ft/sec) = (solve)

n = Manning's coefficient = 0.013

R_h = hydraulic radius = 0.165

S = slope (ft/ft)

Minimum Slope Used (%): **1.00**

Maximum Slope Used (%): **5.26**

V_{min} = 3.45 ft/sec

V_{max} = 7.90 ft/sec

3.45 **>** **2.00** ft/sec

7.90 **<** **10.00** ft/sec

Design meets TCEQ Guidelines

Design meets TCEQ Guidelines

MINIMUM AND MAXIMUM GRADES FOR PIPES (30 TAC §217.53(l)(2)(A))
(10")

Minimum and Maximum Pipe Slopes		
Size of Pipe	Minimum Slope (%)	Maximum Slope (%)
6	0.5	12.35
8	0.33	8.4
10	0.25	6.23
12	0.2	4.88
15	0.15	3.62
18	0.11	2.83
21	0.09	2.3
24	0.08	1.93
27	0.06	1.65
30	0.055	1.43
33	0.05	1.26
36	0.045	1.12
39	0.04	1.01
>39	*	*
* For pipes larger than 39 inches in diameter, the slope is determined by Manning's formula to maintain a velocity greater than **2.0 feet per second and less than 10.0 feet per second** when flowing full.		

MINIMUM AND MAXIMUM VELOCITY FOR THE PROPOSED SYSTEM:
(10")

$$V = \frac{1.49}{n} \times R_h^{0.67} \times \sqrt{S}$$

So, using 10.00 inch PVC Pipe:

V = velocity (ft/sec)	=	(solve)
n = Manning's coefficient	=	0.013
R_h = hydraulic radius	=	0.206
S = slope (ft/ft)		

Minimum Slope Used (%): **0.50**

Maximum Slope Used (%): **1.00**

V_{min} = 2.82 ft/sec

V_{max} = 3.99 ft/sec

2.82 **>** **2.00** ft/sec

3.99 **<** **10.00** ft/sec

Design meets TCEQ Guidelines

Design meets TCEQ Guidelines

MINIMUM AND MAXIMUM GRADES FOR PIPES (30 TAC §217.53(l)(2)(A))
(12")

Minimum and Maximum Pipe Slopes		
Size of Pipe	Minimum Slope (%)	Maximum Slope (%)
6	0.5	12.35
8	0.33	8.4
10	0.25	6.23
12	0.2	4.88
15	0.15	3.62
18	0.11	2.83
21	0.09	2.3
24	0.08	1.93
27	0.06	1.65
30	0.055	1.43
33	0.05	1.26
36	0.045	1.12
39	0.04	1.01
>39	*	*
* For pipes larger than 39 inches in diameter, the slope is determined by Manning's formula to maintain a velocity greater than **2.0 feet per second and less than 10.0 feet per second** when flowing full.		

MINIMUM AND MAXIMUM VELOCITY FOR THE PROPOSED SYSTEM:
(12")

$$V = \frac{1.49}{n} \times R_h^{0.67} \times \sqrt{S}$$

So, using 12.00 inch PVC Pipe:

V = velocity (ft/sec)	=	(solve)
n = Manning's coefficient	=	0.013
R_h = hydraulic radius	=	0.244
S = slope (ft/ft)		

Minimum Slope Used (%): **0.50**

Maximum Slope Used (%): **0.50**

V_{min} = 3.16 ft/sec

3.16 **>** **2.00** ft/sec

Design meets TCEQ Guidelines

V_{max} = 3.16 ft/sec

3.16 **<** **10.00** ft/sec

Design meets TCEQ Guidelines

MINIMUM AND MAXIMUM GRADES FOR PIPES (30 TAC §217.53(l)(2)(A))
(15")

Minimum and Maximum Pipe Slopes		
Size of Pipe	Minimum Slope (%)	Maximum Slope (%)
6	0.5	12.35
8	0.33	8.4
10	0.25	6.23
12	0.2	4.88
15	0.15	3.62
18	0.11	2.83
21	0.09	2.3
24	0.08	1.93
27	0.06	1.65
30	0.055	1.43
33	0.05	1.26
36	0.045	1.12
39	0.04	1.01
>39	*	*
* For pipes larger than 39 inches in diameter, the slope is determined by Manning's formula to maintain a velocity greater than **2.0 feet per second and less than 10.0 feet per second** when flowing full.		

MINIMUM AND MAXIMUM VELOCITY FOR THE PROPOSED SYSTEM:
(15")

$$V = \frac{1.49}{n} \times R_h^{0.67} \times \sqrt{S}$$

So, using 15.00 inch PVC Pipe:

V = velocity (ft/sec)	=	(solve)
n = Manning's coefficient	=	0.013
R_h = hydraulic radius	=	0.294
S = slope (ft/ft)		

Minimum Slope Used (%): **0.50**

Maximum Slope Used (%): **1.00**

V_{min} = 3.58 ft/sec

V_{max} = 5.07 ft/sec

3.58 **>** **2.00** ft/sec

5.07 **<** **10.00** ft/sec

Design meets TCEQ Guidelines

Design meets TCEQ Guidelines

AVERAGE VALUES OF MODULUS OF SOIL REACTION, E'

Soil type-pipe bedding material (Unified Classification System)	E' for Degree of Compaction of Bedding, in pounds per square inch			
	Dumped	Slight <85% Proctor, <40% relative density	Moderate 85%-95% Proctor, 40%-70% relative density	High, >95% Proctor, >70% relative density
(1)	(2)	(3)	(4)	(5)
Fine-grained Soils (LL>50[b]) Soils with medium to high plasticity CH, MH, CH-MH	No data available; consult a competent soils engineer; Otherwise use E'=0			
Fine-grained Soils (LL<50) Soils with medium to no plasticity, CL, ML, ML-CL,with less than 25% coarse-grained particles	50	200	400	1000
Fine-grained Soils (LL<50) Soils with medium to no plasticity, CL, ML, ML-CL,with more than 25% coarse-grained particles	100	400	1000	2000
Coarse-grained Soils with Fines GM, GC, SM, SC[c] contains more than 12% fines				
Coarse-grained Soils with Little or no Fines GW, GP, SW, SP[c] contains less than 12% fines	200	1000	2000	3000
Crushed Rock	1000	3000	3000	3000
Accuracy in Terms of Percentage Deflection	± 2	± 2	± 1	± 0.5

Taken from: Howard, Amster K. "Soil Reaction for Buried Flexible Pipe"
U.S. Bureau of Reclamation, Denver, CO and the American Society of Civil Engineers.

Modulus of Soil Reaction for the in-situ soil is determined to be = 2000 psi

PIPE BEDDING CLASS

Taken from the American Society for Testing and Material (ASTM) D 2321 and American Association of State Highway and Transportation Officials (AASHTO) M43, and as published on Table 7, in Deflection: The Pipe/Soil Mechanism UNI-TR-1-97, Uni-Bell PVC Pipe Association, Pg 24.

Pipe Embedment Material						E', psi (kPa) for Degree of Embedment Compaction				
ASTM D 2321*		ASTM D 2487		AASHTO M43 Notation	Min. Std. Proctor Density (%)	Lift Placement Depth	Dumped	Slightly < 85%	Moderate 85% - 95%	High > 95%
Class	Description	Notation	Description							
IA	Open-graded, clean manufactured aggregates	N/A	Angular crushed stone or rock, crushed gravel, crushed slag; large voids with little or no fines	5 56	Dumped	18" (0.45 m)	1000 (6,900)	3000 (20,700)	3000 (20,700)	3000 (20,700)
IB	Dense-graded, clean manufactured, processed aggregates	N/A	Angular crushed stone or other Class IA material and stone/sand mixtures; little or no fines							
II	Clean, coarse-grained soils	GW	Well-graded gravel, gravel/sand mixtures; little or no fines	57 6 67	85%	12" (0.30 m)	N/R	1000 (6,900)	2000 (13,800)	3000 (20,700)
		GP	Poorly graded gravel, gravel/sand mixtures; little or no fines							
		SW	Well-graded sands, gravelly sands; little or no fines							
		SP	Poorly graded sands, gravelly sands; little or no fines							
III	Coarse-grained soils with fines	GM	Silty gravels, gravel/sand/silt mixtures	Gravel and sand with <10% fines	90%	9" (0.20 m)	N/R	N/R	1000 (6,900)	2000 (13,800)
		GC	Clayey gravels, gravel/sand/clay mixtures							
		SM	Silty sands, sand/silt mixtures							
		SC	Clayey sands, sand/clay mixtures							

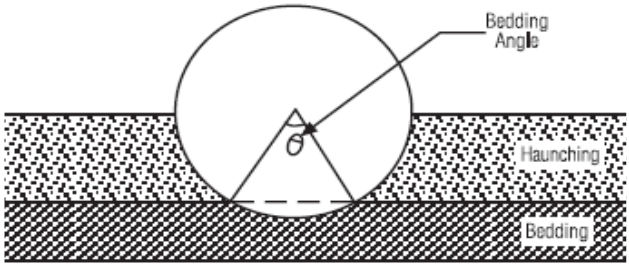
NOTE:

Per TCEQ guidelines, a contractor is allowed to use ASTM D 2321 Bedding Class 1A, 1B, II, or III at no less than 85% percent compaction. To grant the contractor its ability to make the proper judgment of which bedding class to use, the calculations provided in this Engineering Design Report reflect the use of **Bedding Class III, at 85%-95%** compaction, with an E' value of 1000 psi. This provides the "worst case" scenario for the SCS line. All other Bedding Class options will provide an improved value for the zeta factor as well as pipe deflection.

For Bedding Class III, 85%-95% Compaction, E_b = **1000 psi**

PIPE BEDDING ANGLE

As Published on Figure 8 and Table 5, in Deflection: The Pipe/Soil Mechanism UNI-TR-1-97, Uni-Bell PVC Pipe Association, Pgs 18-19.



Bedding Constant Values

Bedding Angle, degrees	Bedding Constant
0	0.110
30	0.108
45	0.105
60	0.102
90	0.096
120	0.090
180	0.083

LIVE LOAD DETERMINATION

Source: AASHTO H20 and E80 Loads and as Published on Table 4, in Deflection: The Pipe/Soil Mechanism UNI-TR-1-97, Uni-Bell PVC Pipe Association, Pg 14.

Height of Cover (ft)	Live Load Transferred to Pipe, lb/in²			Height of Cover (ft)	Live Load Transferred to Pipe, lb/in²		
	Highway H20[1]	Railway E80[2]	Airport[3]		Highway H20[1]	Railway E80[2]	Airport[3]
1	12.50			14	*	4.17	3.06
2	5.56	26.39	13.14	16	*	3.47	2.29
3	4.17	23.61	12.28	18	*	2.78	1.91
4	2.78	18.40	11.27	20	*	2.08	1.53
5	1.74	16.67	10.09	22	*	1.91	1.14
6	1.39	15.63	8.79	24	*	1.74	1.05
7	1.22	12.15	7.85	26	*	1.39	*
8	0.69	11.11	6.93	28	*	1.04	*
10	*	7.64	6.09	30	*	0.69	*
12	*	5.56	4.76	35	*	*	*
				40	*	*	*

[1] Simulates 20 ton truck + impact
[2] Simulates 80,000 lb/ft railway load + impact
[3] 180,000 lbs. dual tandem gear assembly. 26 inch spacing between tires and 66 inch center-to-center spacing between fore and aft tires under a rigid pavement 12 inches thick + impact.
* Negligible live load influence

PRISM LOAD DETERMINATION

Also referred to as the 'dead' load, the prism load is the pressure acting on the pipe by the weight of the soil column above a given section of the pipe. The following prism load columns are industry standards as referenced from Table 3, Deflection: The Pipe/Soil Mechanism UNI-TR-1-97, Uni-Bell PVC Pipe Association, Pg 13.

Table 3
Prism Load Soil Pressure (lbs/in²)

Height of Cover (ft)	Soil Unit Weight (lb/ft³)				
	100	110	120	125	130
1	0.69	0.76	0.83	0.87	0.90
2	1.39	1.53	1.67	1.74	1.81
3	2.08	2.29	2.50	2.60	2.71
4	2.78	3.06	3.33	3.47	3.61
5	3.47	3.82	4.17	4.34	4.51
6	4.17	4.58	5.00	5.21	5.42
7	4.86	5.35	5.83	6.08	6.32
8	5.56	6.11	6.67	6.94	7.22
9	6.25	6.88	7.50	7.81	8.13
10	6.94	7.64	8.33	8.68	9.03
11	7.64	8.40	9.17	9.55	9.93
12	8.33	9.17	10.00	10.42	10.83
13	9.03	9.93	10.83	11.28	11.74
14	9.72	10.69	11.67	12.15	12.64
15	10.42	11.46	12.50	13.02	13.54
16	11.11	12.22	13.33	13.89	14.44
17	11.81	12.99	14.17	14.76	15.35
18	12.50	13.75	15.00	15.63	16.25
19	13.19	14.51	15.83	16.49	17.15
20	13.89	15.28	16.67	17.36	18.06
21	14.58	16.04	17.50	18.23	18.96
22	15.28	16.81	18.33	19.10	19.86
23	15.97	17.57	19.17	19.97	20.76
24	16.67	18.33	20.00	20.83	21.67
25	17.36	19.10	20.83	21.70	22.57
26	18.06	19.86	21.67	22.57	23.47
27	18.75	20.63	22.50	23.44	24.38
28	19.44	21.39	23.33	24.31	25.28
29	20.14	22.15	24.17	25.17	26.18
30	20.83	22.92	25.00	26.04	27.08
31	21.53	23.68	25.83	26.91	27.99
32	22.22	24.44	26.67	27.78	28.89
33	22.92	25.21	27.50	28.65	29.79
34	23.61	25.97	28.33	29.51	30.69
35	24.31	26.74	29.17	30.38	31.60
36	25.00	27.50	30.00	31.25	32.50
37	25.69	28.26	30.83	32.12	33.40
38	26.39	29.03	31.67	32.99	34.31
39	27.08	29.79	32.50	33.85	35.21
40	27.78	30.56	33.33	34.72	36.11
41	28.47	31.32	34.17	35.59	37.01
42	29.17	32.08	35.00	36.46	37.92
43	29.86	32.85	35.83	37.33	38.82
44	30.56	33.61	36.67	38.19	39.72
45	31.25	34.38	37.50	39.06	40.63
46	31.94	35.14	38.33	39.93	41.53
47	32.64	35.90	39.17	40.80	42.43
48	33.33	36.67	40.00	41.67	43.33
49	34.03	37.43	40.83	42.53	44.24
50	34.72	38.19	41.67	43.40	45.14

Note that the Prism Loads are calculated based upon the Marston Theory of Loads, developed by Professor Anson Marston, circa 1913, and is calculated using the formula:

$$P = \frac{\gamma_s * H}{144}$$

This formula determines the earth load on a flexible pipe and is regarded as a conservative approach to determining the dead load placed upon a buried flexible pipe.

BUCKLING PRESSURE (ALLOWABLE)

(6")

Where:	q_a	=	Allowable buckling pressure (psi)		
	h	=	Height of soil surface above top of pipe (in)		
	H	=	Depth of burial, feet, from ground surface to top of pipe		
	B'	=	Empirical coefficient of elastic support		
	E_b	=	Modulus of soil reaction for the bedding material (psi)		
	E	=	Modulus of elasticity of the pipe material (psi)		
	I	=	Moment of inertia of the pipe, per linear inch of pipe (in^3)		
	t	=	Pipe wall thickness (in)		
	D	=	Mean pipe diameter, inner (in)	D =	6.084

Solving for the Empirical coefficient of elastic support, given by Luscher in 1966, as referenced on Pg 113 of Moser, A.P., Buried Pipe Design. 2nd Ed., McGraw-Hill:

$$B' = \frac{4(h^2 + Dh)}{1.5(2h + D)^2}$$

$$B' = \frac{1104.34}{1712.04} = 0.645$$

Using the Allowable Buckling Pressure Equation as shown in Moser, A.P., Buried Pipe Design. 2nd Ed., McGraw-Hill, Pg 112, and an initial factor of safety (SF) of 2.5, the Allowable Buckling Pressure is then:

$$q_a = \frac{1}{FS} * \sqrt{32 * R_w * B' * E_b * \left(E * \frac{I}{D^3} \right)}$$

$$q_a = \frac{1}{2.5} \sqrt{\left[32 \right]\left[1 \right]\left[0.645 \right]\left[1000 \right]\left[400000 \ \frac{0.001}{225.20} \right]}$$

$$q_a = \mathbf{90.03} \quad \mathbf{psi}$$

BUCKLING PRESSURE (ALLOWABLE)

(8")

Where:	q_a	=	Allowable buckling pressure (psi)		
	h	=	Height of soil surface above top of pipe (in)		
	H	=	Depth of burial, feet, from ground surface to top of pipe		
	B'	=	Empirical coefficient of elastic support		
	E_b	=	Modulus of soil reaction for the bedding material (psi)		
	E	=	Modulus of elasticity of the pipe material (psi)		
	I	=	Moment of inertia of the pipe, per linear inch of pipe (in^3)		
	t	=	Pipe wall thickness (in)		
	D	=	Mean pipe diameter, inner (in)	D =	7.921

Solving for the Empirical coefficient of elastic support, given by Luscher in 1966, as referenced on Pg 113 of Moser, A.P., Buried Pipe Design. 2nd Ed., McGraw-Hill:

$$B' = \frac{4(h^2 + Dh)}{1.5(2h + D)^2}$$

$$B' = \frac{240.053}{454.192} = 0.529$$

Using the Allowable Buckling Pressure Equation as shown in Moser, A.P., Buried Pipe Design. 2nd Ed., McGraw-Hill, Pg 112, and an initial factor of safety (SF) of 2.5, the Allowable Buckling Pressure is then:

$$q_a = \frac{1}{FS} * \sqrt{32 * R_w * B' * E_b * \left(E * \frac{I}{D^3} \right)}$$

$$q_a = \frac{1}{2.5} \sqrt{\left[32 \right]\left[1 \right]\left[0.529 \right]\left[1000 \right]\left[400000 \ \frac{0.003}{496.98} \right]}$$

$$q_a = \mathbf{81.50} \quad \mathbf{psi}$$

BUCKLING PRESSURE (ALLOWABLE)

(10")

Where:	q_a	=	Allowable buckling pressure (psi)		
	h	=	Height of soil surface above top of pipe (in)		
	H	=	Depth of burial, feet, from ground surface to top of pipe		
	B'	=	Empirical coefficient of elastic support		
	E_b	=	Modulus of soil reaction for the bedding material (psi)		
	E	=	Modulus of elasticity of the pipe material (psi)		
	I	=	Moment of inertia of the pipe, per linear inch of pipe (in^3)		
	t	=	Pipe wall thickness (in)		
	D	=	Mean pipe diameter, inner (in)	D =	9.874

Solving for the Empirical coefficient of elastic support, given by Luscher in 1966, as referenced on Pg 113 of Moser, A.P., Buried Pipe Design. 2nd Ed., McGraw-Hill:

$$B' = \frac{4(h^2 + Dh)}{1.5(2h + D)^2}$$

$$B' = \frac{1378.14}{2213.45} = 0.623$$

Using the Allowable Buckling Pressure Equation as shown in Moser, A.P., Buried Pipe Design. 2nd Ed., McGraw-Hill, Pg 112, and an initial factor of safety (SF) of 2.5, the Allowable Buckling Pressure is then:

$$q_a = \frac{1}{FS} * \sqrt{32 * R_w * B' * E_b * \left(E * \frac{I}{D^3} \right)}$$

$$q_a = \frac{1}{2.5} \sqrt{\left[32 \right]\left[1 \right]\left[0.623 \right]\left[0 \right]\left[400000 \ \frac{0.006}{962.67} \right]}$$

$$q_a = \mathbf{88.18} \quad \mathbf{psi}$$

BUCKLING PRESSURE (ALLOWABLE)

(12")

Where:	q_a	=	Allowable buckling pressure (psi)		
	h	=	Height of soil surface above top of pipe (in)		
	H	=	Depth of burial, feet, from ground surface to top of pipe		
	B'	=	Empirical coefficient of elastic support		
	E_b	=	Modulus of soil reaction for the bedding material (psi)		
	E	=	Modulus of elasticity of the pipe material (psi)		
	I	=	Moment of inertia of the pipe, per linear inch of pipe (in^3)		
	t	=	Pipe wall thickness (in)		
	D	=	Mean pipe diameter, inner (in)	D =	11.711

Solving for the Empirical coefficient of elastic support, given by Luscher in 1966, as referenced on Pg 113 of Moser, A.P., Buried Pipe Design. 2nd Ed., McGraw-Hill:

$$B' = \frac{4(h^2 + Dh)}{1.5(2h + D)^2}$$

$$B' = \frac{4123.16}{6390.46} = 0.645$$

Using the Allowable Buckling Pressure Equation as shown in Moser, A.P., Buried Pipe Design. 2nd Ed., McGraw-Hill, Pg 112, and an initial factor of safety (SF) of 2.5, the Allowable Buckling Pressure is then:

$$q_a = \frac{1}{FS} * \sqrt{32 * R_w * B' * E_b * \left(E * \frac{I}{D^3} \right)}$$

$$q_a = \frac{1}{2.5} \sqrt{\left[32 \right]\left[1 \right]\left[0.645 \right]\left[0 \right]\left[400000 \ \frac{0.010}{1606.13} \right]}$$

$$q_a = \mathbf{89.81} \quad \mathbf{psi}$$

BUCKLING PRESSURE (ALLOWABLE)

(15")

Where:	q_a	=	Allowable buckling pressure (psi)	
	h	=	Height of soil surface above top of pipe (in)	
	H	=	Depth of burial, feet, from ground surface to top of pipe	
	B'	=	Empirical coefficient of elastic support	
	E_b	=	Modulus of soil reaction for the bedding material (psi)	
	E	=	Modulus of elasticity of the pipe material (psi)	
	I	=	Moment of inertia of the pipe, per linear inch of pipe (in^3)	
	t	=	Pipe wall thickness (in)	
	D	=	Mean pipe diameter, inner (in)	D = 14.124

Solving for the Empirical coefficient of elastic support, given by Luscher in 1966, as referenced on Pg 113 of Moser, A.P., Buried Pipe Design. 2nd Ed., McGraw-Hill:

$$B' = \frac{4(h^2 + Dh)}{1.5(2h + D)^2}$$

$$B' = \frac{3886.79}{6129.42} = 0.634$$

Using the Allowable Buckling Pressure Equation as shown in Moser, A.P., Buried Pipe Design. 2nd Ed., McGraw-Hill, Pg 112, and an initial factor of safety (SF) of 2.5, the Allowable Buckling Pressure is then:

$$q_a = \frac{1}{FS} * \sqrt{32 * R_w * B' * E_b * \left(E * \frac{I}{D^3} \right)}$$

$$q_a = \frac{1}{2.5} \sqrt{\left[32 \right]\left[1 \right]\left[0.634 \right]\left[0 \right]\left[400000 \ \frac{0.017}{2817.56} \right]}$$

$$q_a = \mathbf{88.37} \quad \mathbf{psi}$$

BUCKLING PRESSURE (INSTALLED CONDITION)

(6")

Where:	q_P	=	Pressure applied to pipe under installed conditions (psi)
	γ_W	=	Specific Weight of Water = 0.0361 (pci)
	γ_S	=	Specific Weight of Soil (pcf)
	W_c	=	Vertical Soil Load on the pipe per unit length (lb/in)
	L_L	=	Live load as determined from chart

Standard industry vertical soil load (W_c) calculation (lb/in) developed from empirical data:

$$W_c = \gamma_s * H * \left(\frac{D+t}{144} \right)$$

Where: $\gamma_S = 130$ D = 6.084 t = 0.255

$$W_C = \left[130 \right] \left[13.85 \right] \left[\frac{6.084 + 0.255}{144} \right]$$

$$W_C = 79.26 \text{ lb/in}$$

Using the Equation on Pg 114 of Moser, A.P., Buried Pipe Design. 2nd Ed., McGraw-Hill, Pressure Applied to Pipe under installed conditions at its deepest installed depth (Note, hw = 0, therefore Rw = 1) is calculated to be:

$$q_p = \gamma_w h_w + R_w \left(\frac{W_c + L_L}{D} \right)$$

$$q_P = 62.4 \times 0 + 1 \times \left[\frac{79.26}{6.084} \right]$$

$$\boldsymbol{q_P = 26.06 \text{ psi}}$$

Note: The Buckling pressure under installed conditions is less than the Allowable Buckling Pressure of the specified pipe, (i.e.. $q_a > q_p$) therefore the design is acceptable for installation.

BUCKLING PRESSURE (INSTALLED CONDITION)

(8")

Where:	q_P	=	Pressure applied to pipe under installed conditions (psi)
	γ_W	=	Specific Weight of Water = 0.0361 (pci)
	γ_S	=	Specific Weight of Soil (pcf)
	W_c	=	Vertical Soil Load on the pipe per unit length (lb/in)
	L_L	=	Live load as determined from chart

Standard industry vertical soil load (W_c) calculation (lb/in) developed from empirical data:

$$W_c = \gamma_s * H * \left(\frac{D+t}{144} \right)$$

Where: γ_S = 130 D = 7.921 t = 0.332

$$W_C = \left[130 \right] \left[4.74 \right] \left[\frac{7.921 + 0.332}{144} \right]$$

$$W_C = 35.32 \text{ lb/in}$$

Using the Equation on Pg 114 of Moser, A.P., Buried Pipe Design. 2nd Ed., McGraw-Hill, Pressure Applied to Pipe under installed conditions at its deepest installed depth (Note, hw = 0, therefore Rw = 1) is calculated to be:

$$q_p = \gamma_w h_w + R_w \left(\frac{W_c + L_L}{D} \right)$$

$$q_P = 62.4 \times 0 + 1 \times \left[\frac{35.32}{7.921} \right]$$

$$\boldsymbol{q_P = 8.92 \text{ psi}}$$

Note: The Buckling pressure under installed conditions is less than the Allowable Buckling Pressure of the specified pipe, (i.e.. $q_a > q_p$) therefore the design is acceptable for installation.

BUCKLING PRESSURE (INSTALLED CONDITION)

(10")

Where:	q_P	=	Pressure applied to pipe under installed conditions (psi)
	γ_W	=	Specific Weight of Water = 0.0361 (pci)
	γ_S	=	Specific Weight of Soil (pcf)
	W_c	=	Vertical Soil Load on the pipe per unit length (lb/in)
	L_L	=	Live load as determined from chart

Standard industry vertical soil load (W_c) calculation (lb/in) developed from empirical data:

$$W_c = \gamma_s * H * \left(\frac{D+t}{144} \right)$$

Where: γ_S = 130 D = 9.874 t = 0.413

$$W_C = \left[130 \right] \left[14.27 \right] \left[\frac{9.874 + 0.413}{144} \right]$$

$$W_C = 132.52 \text{ lb/in}$$

Using the Equation on Pg 114 of Moser, A.P., Buried Pipe Design. 2nd Ed., McGraw-Hill, Pressure Applied to Pipe under installed conditions at its deepest installed depth (Note, hw = 0, therefore Rw = 1) is calculated to be:

$$q_p = \gamma_w h_w + R_w \left(\frac{W_c + L_L}{D} \right)$$

$$q_P = 62.4 \times 0 + 1 \times \left[\frac{132.52}{9.874} \right]$$

$$\boldsymbol{q_P = 26.84 \text{ psi}}$$

Note: The Buckling pressure under installed conditions is less than the Allowable Buckling Pressure of the specified pipe, (i.e.. $q_a > q_p$) therefore the design is acceptable for installation.

BUCKLING PRESSURE (INSTALLED CONDITION)

(12")

Where:	q_P	=	Pressure applied to pipe under installed conditions (psi)
	γ_W	=	Specific Weight of Water = 0.0361 (pci)
	γ_S	=	Specific Weight of Soil (pcf)
	W_c	=	Vertical Soil Load on the pipe per unit length (lb/in)
	L_L	=	Live load as determined from chart

Standard industry vertical soil load (W_c) calculation (lb/in) developed from empirical data:

$$W_c = \gamma_s * H * \left(\frac{D+t}{144} \right)$$

Where: $\gamma_S = 130$ D = 11.711 t = 0.49

$$W_C = \left[130 \right] \left[26.78 \right] \left[\frac{11.711 + 0.49}{144} \right]$$

$$W_C = 294.98 \text{ lb/in}$$

Using the Equation on Pg 114 of Moser, A.P., Buried Pipe Design. 2nd Ed., McGraw-Hill, Pressure Applied to Pipe under installed conditions at its deepest installed depth (Note, hw = 0, therefore Rw = 1) is calculated to be:

$$q_p = \gamma_w h_w + R_w \left(\frac{W_c + L_L}{D} \right)$$

$$q_P = 62.4 \times 0 + 1 \times \left[\frac{294.98}{11.711} \right]$$

$$\boldsymbol{q_P = 50.38 \text{ psi}}$$

Note: The Buckling pressure under installed conditions is less than the Allowable Buckling Pressure of the specified pipe, (i.e.. $q_a > q_p$) therefore the design is acceptable for installation.

BUCKLING PRESSURE (INSTALLED CONDITION)

(15")

Where:	q_P	=	Pressure applied to pipe under installed conditions (psi)
	γ_W	=	Specific Weight of Water = 0.0361 (pci)
	γ_S	=	Specific Weight of Soil (pcf)
	W_c	=	Vertical Soil Load on the pipe per unit length (lb/in)
	L_L	=	Live load as determined from chart

Standard industry vertical soil load (W_c) calculation (lb/in) developed from empirical data:

$$W_c = \gamma_s * H * \left(\frac{D+t}{144} \right)$$

Where: γ_S = 130 D = 14.124 t = 0.588

$$W_C = \left[130 \right] \left[24.90 \right] \left[\frac{14.124 + 0.588}{144} \right]$$

$$W_C = 330.71 \text{ lb/in}$$

Using the Equation on Pg 114 of Moser, A.P., Buried Pipe Design. 2nd Ed., McGraw-Hill, Pressure Applied to Pipe under installed conditions at its deepest installed depth (Note, hw = 0, therefore Rw = 1) is calculated to be:

$$q_p = \gamma_w h_w + R_w \left(\frac{W_c + L_L}{D} \right)$$

$$q_P = 62.4 \times 0 + 1 \times \left[\frac{330.71}{14.124} \right]$$

$$\boldsymbol{q_P = 46.83 \text{ psi}}$$

Note: The Buckling pressure under installed conditions is less than the Allowable Buckling Pressure of the specified pipe, (i.e.. $q_a > q_p$) therefore the design is acceptable for installation.

WALL CRUSHING CALCULATION

(6")

Where:	D_o	=	outside pipe diameter, in. =	6.625 in
	P_c	=	Compressive stress or hydrostatic design basis (HDB). For typical PVC pipe assume 4,000 psi. For any other pipe material the HDB must be supplied by the pipe manufacturer.	
	A	=	surface area of the pipe wall, in.²/ft =	0.255 in.²/ft
	γ_S	=	specific weight of soil, pcf, =	130 pcf
	H	=	Depth of burial (ft) from ground surface to crown of pipe	

Using the Wall Crushing and Wall Thrust equations, as referenced in Plastic Pipe Design Manual published by Vylon Pipe, Pg 14 the Wall Crushing due to compressive stress can be found using the following:

$$P_c = \frac{T}{A} \quad \text{where T, Thrust, is calculated as} \quad T = \frac{P_y D}{2}$$

Substituting the Thrust equation into the Wall Crushing equation:

$$P_c = \frac{\frac{P_y D}{2}}{A} = \frac{P_y D}{2A}$$

From the Marston Equation determining the Prism Load Calculation (See previous section on Prism Load), substitute the equation for P_y:

$$P_c = \frac{\frac{\gamma_s * H}{144} D}{2A} \quad \text{Rearranging this equation, it becomes:} \quad 2AP_c = \frac{\gamma_s * H}{144} D$$

And simplifies to: $288 AP_c = \gamma_s HD$

Note that the Surface Area of the Pipe Wall, A, is per unit length in inches^2 per foot, a conversion factor (from feet to inches) of 12 must be applied, therefore,

$$24 AP_c = \gamma_s HD$$

Solving for H, the equation becomes:

$$H = \frac{24 * P_c * A}{\gamma_s * D_o}$$

(Continued on next page)

Using this equation, and converting all units, solve for “height” of the soil column, or in other words, the depth of burial of the PVC pipe:

$$H = \frac{\left[24 \right] \left[4000 \right] \left[0.255 \times 12 \right]}{130 \times 6.625} = \mathbf{341.09}$$

H = 341.09 feet

Note: The resulting Wall Crushing will occur at a greater depth than the deepest burial depth of the proposed SCS lines, therefore pipe design is acceptable.

WALL CRUSHING CALCULATION

(8")

Where:	D_o	=	outside pipe diameter, in. =	8.625 in
	P_c	=	Compressive stress or hydrostatic design basis (HDB). For typical PVC pipe assume 4,000 psi. For any other pipe material the HDB must be supplied by the pipe manufacturer.	
	A	=	surface area of the pipe wall, in.²/ft =	0.332 in.²/ft
	γ_S	=	specific weight of soil, pcf, =	130 pcf
	H	=	Depth of burial (ft) from ground surface to crown of pipe	

Using the Wall Crushing and Wall Thrust equations, as referenced in Plastic Pipe Design Manual published by Vylon Pipe, Pg 14 the Wall Crushing due to compressive stress can be found using the following:

$$P_c = \frac{T}{A} \quad \text{where T, Thrust, is calculated as } T = \frac{P_y D}{2}$$

Substituting the Thrust equation into the Wall Crushing equation:

$$P_c = \frac{\frac{P_y D}{2}}{A} = \frac{P_y D}{2A}$$

From the Marston Equation determining the Prism Load Calculation (See previous section on Prism Load), substitute the equation for P_y:

$$P_c = \frac{\frac{\gamma_s * H}{144} D}{2A} \quad \text{Rearranging this equation, it becomes: } 2AP_c = \frac{\gamma_s * H}{144} D$$

And simplifies to: $288 AP_c = \gamma_s HD$

Note that the Surface Area of the Pipe Wall, A, is per unit length in inches^2 per foot, a conversion factor (from feet to inches) of 12 must be applied, therefore,

$$24 AP_c = \gamma_s HD$$

Solving for H, the equation becomes:

$$H = \frac{24 * P_c * A}{\gamma_s * D_o}$$

(Continued on next page)

Using this equation, and converting all units, solve for “height” of the soil column, or in other words, the depth of burial of the PVC pipe:

$$H = \frac{\left[24 \right] \left[4000 \right] \left[0.332 \times 12 \right]}{130 \times 8.625} = \mathbf{341.11}$$

H = 341.11 feet

Note: The resulting Wall Crushing will occur at a greater depth than the deepest burial depth of the proposed SCS lines, therefore pipe design is acceptable.

WALL CRUSHING CALCULATION

(10")

Where:	D_o	=	outside pipe diameter, in. =	10.75 in
	P_c	=	Compressive stress or hydrostatic design basis (HDB). For typical PVC pipe assume 4,000 psi. For any other pipe material the HDB must be supplied by the pipe manufacturer.	
	A	=	surface area of the pipe wall, $in.^2$/ft =	0.413 $in.^2$/ft
	γ_S	=	specific weight of soil, pcf, =	130 pcf
	H	=	Depth of burial (ft) from ground surface to crown of pipe	

Using the Wall Crushing and Wall Thrust equations, as referenced in Plastic Pipe Design Manual published by Vylon Pipe, Pg 14 the Wall Crushing due to compressive stress can be found using the following:

$$P_c = \frac{T}{A} \quad \text{where T, Thrust, is calculated as } T = \frac{P_y D}{2}$$

Substituting the Thrust equation into the Wall Crushing equation:

$$P_c = \frac{\frac{P_y D}{2}}{A} = \frac{P_y D}{2A}$$

From the Marston Equation determining the Prism Load Calculation (See previous section on Prism Load), substitute the equation for P_y:

$$P_c = \frac{\frac{\gamma_s * H}{144} D}{2A} \quad \text{Rearranging this equation, it becomes: } 2AP_c = \frac{\gamma_s * H}{144} D$$

And simplifies to: $288AP_c = \gamma_s HD$

Note that the Surface Area of the Pipe Wall, A, is per unit length in $inches^2$ per foot, a conversion factor (from feet to inches) of 12 must be applied, therefore,

$$24AP_c = \gamma_s HD$$

Solving for H, the equation becomes:

$$H = \frac{24 * P_c * A}{\gamma_s * D_o}$$

(Continued on next page)

Using this equation, and converting all units, solve for “height” of the soil column, or in other words, the depth of burial of the PVC pipe:

$$H = \frac{\left[24 \right] \left[4000 \right] \left[0.413 \times 12 \right]}{130 \times 10.75} = \mathbf{340.45}$$

H = 340.45 feet

Note: The resulting Wall Crushing will occur at a greater depth than the deepest burial depth of the proposed SCS lines, therefore pipe design is acceptable.

WALL CRUSHING CALCULATION

(12")

Where:	D_o	=	outside pipe diameter, in. =	12.75 in
	P_c	=	Compressive stress or hydrostatic design basis (HDB). For typical PVC pipe assume 4,000 psi. For any other pipe material the HDB must be supplied by the pipe manufacturer.	
	A	=	surface area of the pipe wall, $in.^2/ft$ =	0.49 $in.^2/ft$
	γ_S	=	specific weight of soil, pcf, =	130 pcf
	H	=	Depth of burial (ft) from ground surface to crown of pipe	

Using the Wall Crushing and Wall Thrust equations, as referenced in Plastic Pipe Design Manual published by Vylon Pipe, Pg 14 the Wall Crushing due to compressive stress can be found using the following:

$$P_c = \frac{T}{A} \quad \text{where T, Thrust, is calculated as } T = \frac{P_y D}{2}$$

Substituting the Thrust equation into the Wall Crushing equation:

$$P_c = \frac{\frac{P_y D}{2}}{A} = \frac{P_y D}{2A}$$

From the Marston Equation determining the Prism Load Calculation (See previous section on Prism Load), substitute the equation for P_y:

$$P_c = \frac{\frac{\gamma_s * H}{144} D}{2A} \quad \text{Rearranging this equation, it becomes: } 2AP_c = \frac{\gamma_s * H}{144} D$$

And simplifies to: $288AP_c = \gamma_s HD$

Note that the Surface Area of the Pipe Wall, A, is per unit length in $inches^2$ per foot, a conversion factor (from feet to inches) of 12 must be applied, therefore,

$$24AP_c = \gamma_s HD$$

Solving for H, the equation becomes:

$$H = \frac{24 * P_c * A}{\gamma_s * D_o}$$

(Continued on next page)

Using this equation, and converting all units, solve for “height” of the soil column, or in other words, the depth of burial of the PVC pipe:

$$H = \frac{\left[24 \right] \left[4000 \right] \left[0.49 \times 12 \right]}{130 \times 12.75} = \mathbf{340.56}$$

H = 340.56 feet

Note: The resulting Wall Crushing will occur at a greater depth than the deepest burial depth of the proposed SCS lines, therefore pipe design is acceptable.

WALL CRUSHING CALCULATION

(15")

Where:	D_o	=	outside pipe diameter, in. =	15.3 in
	P_c	=	Compressive stress or hydrostatic design basis (HDB). For typical PVC pipe assume 4,000 psi. For any other pipe material the HDB must be supplied by the pipe manufacturer.	
	A	=	surface area of the pipe wall, $in.^2$/ft =	0.588 $in.^2$/ft
	γ_S	=	specific weight of soil, pcf, =	130 pcf
	H	=	Depth of burial (ft) from ground surface to crown of pipe	

Using the Wall Crushing and Wall Thrust equations, as referenced in Plastic Pipe Design Manual published by Vylon Pipe, Pg 14 the Wall Crushing due to compressive stress can be found using the following:

$$P_c = \frac{T}{A} \quad \text{where T, Thrust, is calculated as } T = \frac{P_y D}{2}$$

Substituting the Thrust equation into the Wall Crushing equation:

$$P_c = \frac{\frac{P_y D}{2}}{A} = \frac{P_y D}{2A}$$

From the Marston Equation determining the Prism Load Calculation (See previous section on Prism Load), substitute the equation for P_y:

$$P_c = \frac{\frac{\gamma_s * H}{144} D}{2A} \quad \text{Rearranging this equation, it becomes: } 2AP_c = \frac{\gamma_s * H}{144} D$$

And simplifies to: $288AP_c = \gamma_s HD$

Note that the Surface Area of the Pipe Wall, A, is per unit length in $inches^2$ per foot, a conversion factor (from feet to inches) of 12 must be applied, therefore,

$$24AP_c = \gamma_s HD$$

Solving for H, the equation becomes:

$$H = \frac{24 * P_c * A}{\gamma_s * D_o}$$

(Continued on next page)

Using this equation, and converting all units, solve for “height” of the soil column, or in other words, the depth of burial of the PVC pipe:

$$H = \frac{\left[24 \right] \left[4000 \right] \left[0.588 \times 12 \right]}{130 \times 15.3} = \mathbf{340.56}$$

H = 340.56 feet

Note: The resulting Wall Crushing will occur at a greater depth than the deepest burial depth of the proposed SCS lines, therefore pipe design is acceptable.

DEFLECTION ANALYSIS: LEONHARDT'S ZETA FACTOR

(6")

The Leonhardt's Zeta Factor Equation can be calculated using Equation 9 of Buczala and Cassady in Buried Plastic Pipe Technology, Pgs 196-197

Where: D = Pipe Outer Diameter, in = 6.625

B = Trench Width, in, = 24

E_b = Modulus of soil reaction for the bedding material (psi)

$E_{'n}$ = Modulus of soil reaction for the in-situ soil (psi)

$$zeta = \frac{1.662 + 0.639\left(\frac{B}{D-1}\right)}{\frac{B}{D-1} + \left[1.662 + 0.361\left(\frac{B}{D}\right) - 1\right]\left[\frac{E_b}{E'_n}\right]}$$

The Leonhardt Zeta factor is then determined as:

$$zeta = \frac{1.662 + 0.639 \times \left(\frac{24}{5.625}\right)}{\frac{24}{5.625}\left[1.662 + 0.361 \times \left(\frac{24}{6.625}\right) - 1\right]\left[\frac{1000}{2000}\right]}$$

Leonhardt's zeta factor **= 0.836**

DEFLECTION ANALYSIS: LEONHARDT'S ZETA FACTOR

(8")

The Leonhardt's Zeta Factor Equation can be calculated using Equation 9 of Buczala and Cassady in Buried Plastic Pipe Technology, Pgs 196-197

Where: D = Pipe Outer Diameter, in = 8.625

B = Trench Width, in, = 27

E_b = Modulus of soil reaction for the bedding material (psi)

E'_n = Modulus of soil reaction for the in-situ soil (psi)

$$zeta = \frac{1.662 + 0.639\left(\frac{B}{D-1}\right)}{\frac{B}{D-1} + \left[1.662 + 0.361\left(\frac{B}{D}\right) - 1\right]\left[\frac{E_b}{E'_n}\right]}$$

The Leonhardt Zeta factor is then determined as:

$$zeta = \frac{1.662 + 0.639 \times \left(\frac{27}{7.625}\right)}{\frac{27}{7.625}\left[1.662 + 0.361 \times \left(\frac{27}{8.625}\right) - 1\right]\left[\frac{1000}{2000}\right]}$$

***Leonhardt's zeta factor* = 0.885**

DEFLECTION ANALYSIS: LEONHARDT'S ZETA FACTOR

(10")

The Leonhardt's Zeta Factor Equation can be calculated using Equation 9 of Buczala and Cassady in Buried Plastic Pipe Technology, Pgs 196-197

Where: D = Pipe Outer Diameter, in = 10.75

B = Trench Width, in, = 28.8

E_b = Modulus of soil reaction for the bedding material (psi)

E'_n = Modulus of soil reaction for the in-situ soil (psi)

$$zeta = \frac{1.662 + 0.639\left(\frac{B}{D-1}\right)}{\frac{B}{D-1} + \left[1.662 + 0.361\left(\frac{B}{D}\right) - 1\right]\left[\frac{E_b}{E'_n}\right]}$$

The Leonhardt Zeta factor is then determined as:

$$zeta = \frac{1.662 + 0.639 \times \left(\frac{28.8}{9.75}\right)}{\frac{28.8}{9.75}\left\{1.662 + 0.361 \times \left(\frac{28.8}{10.75}\right) - 1\right\}\left\{\frac{1000}{2000}\right\}}$$

***Leonhardt's zeta factor* = 0.942**

DEFLECTION ANALYSIS: LEONHARDT'S ZETA FACTOR

(12")

The Leonhardt's Zeta Factor Equation can be calculated using Equation 9 of Buczala and Cassady in Buried Plastic Pipe Technology, Pgs 196-197

Where: D = Pipe Outer Diameter, in = 12.75

B = Trench Width, in, = 31.2

E_b = Modulus of soil reaction for the bedding material (psi)

E'_n = Modulus of soil reaction for the in-situ soil (psi)

$$zeta = \frac{1.662 + 0.639\left(\frac{B}{D-1}\right)}{\frac{B}{D-1} + \left[1.662 + 0.361\left(\frac{B}{D}\right) - 1\right]\left[\frac{E_b}{E'_n}\right]}$$

The Leonhardt Zeta factor is then determined as:

$$zeta = \frac{1.662 + 0.639 \times \left(\frac{31.2}{11.75}\right)}{\frac{31.2}{11.75}\left\{1.662 + 0.361 \times \left(\frac{31.2}{12.75}\right) - 1\right\}\left\{\frac{1000}{2000}\right\}}$$

***Leonhardt's zeta factor* = 0.980**

DEFLECTION ANALYSIS: LEONHARDT'S ZETA FACTOR

(15")

The Leonhardt's Zeta Factor Equation can be calculated using Equation 9 of Buczala and Cassady in Buried Plastic Pipe Technology, Pgs 196-197

Where:

D	=	Pipe Outer Diameter, in	=	15.3
B	=	Trench Width, in,	=	33.6
E_b	=	Modulus of soil reaction for the bedding material (psi)		
E'_n	=	Modulus of soil reaction for the in-situ soil (psi)		

$$zeta = \frac{1.662 + 0.639\left(\frac{B}{D-1}\right)}{\frac{B}{D-1} + \left[1.662 + 0.361\left(\frac{B}{D}\right) - 1\right]\left[\frac{E_b}{E'_n}\right]}$$

The Leonhardt Zeta factor is then determined as:

$$zeta = \frac{1.662 + 0.639 \times \left(\frac{33.6}{14.3}\right)}{\frac{33.6}{14.3}\left\{1.662 + 0.361 \times \left(\frac{33.6}{15.3}\right) - 1\right\}\left\{\frac{1000}{2000}\right\}}$$

***Leonhardt's zeta factor* = 1.028**

PIPE STIFFNESS (Figure: 30 TAC §217.53(k)(3))

(6")

Using Equation B.1, as directed in 30 TAC §217.53(k)(3), to Calculate the Pipe Stiffness:

$$PS = C \times RSC \times \left(\frac{8.337}{D}\right)$$

Where: PS = Pipe Stiffness in pounds per square inch (psi)
C = Conversion factor = 0.8
RSC = Ring Stiffness Constant
D = Mean Pipe Diameter, Inner = 6.084 in

The RSC can be supplied by the manufacturer or otherwise calculated using Equation 4 of Resistance to Ring Bending – Pipe Stiffness (PS), Ring Stiffness Constant (RSC) and Flexibility Factor (FF) for Buried Gravity Flow Pipes TN-19/2005, Pg 6 published by the Plastics Pipe Institute:

$$RSC = 6.44 \times \frac{EI}{D^2}$$

And E = 400,000 psi

Solving for the Moment of Inertia:

$$I = \left(\frac{t^3}{12}\right) * \left(\frac{inches^3}{in_{linear}}\right) = 0.001$$

$$\text{RSC} = 6.44 \times \frac{552.713}{37.015} = 96.1627$$

$$\text{PS} = 0.8 \times 96.163 \times \frac{8.337}{6.084}$$

PS = 105.42 psi

PIPE STIFFNESS (Figure: 30 TAC §217.53(k)(3))

(8")

Using Equation B.1, as directed in 30 TAC §217.53(k)(3), to Calculate the Pipe Stiffness:

$$PS = C \times RSC \times \left(\frac{8.337}{D}\right)$$

Where: PS = Pipe Stiffness in pounds per square inch (psi)
C = Conversion factor = 0.8
RSC = Ring Stiffness Constant
D = Mean Pipe Diameter, Inner = 7.921 in

The RSC can be supplied by the manufacturer or otherwise calculated using Equation 4 of Resistance to Ring Bending – Pipe Stiffness (PS), Ring Stiffness Constant (RSC) and Flexibility Factor (FF) for Buried Gravity Flow Pipes TN-19/2005, Pg 6 published by the Plastics Pipe Institute:

$$RSC = 6.44 \times \frac{EI}{D^2}$$

And E = 400,000 psi

Solving for the Moment of Inertia:

$$I = \left(\frac{t^3}{12}\right) * \left(\frac{inches^3}{in_{linear}}\right) = 0.003$$

$$\text{RSC} = 6.44 \times \frac{1219.812}{62.742} = 125.204$$

$$\text{PS} = 0.8 \times 125.204 \times \frac{8.337}{7.921}$$

PS = 105.42 psi

PIPE STIFFNESS (Figure: 30 TAC §217.53(k)(3))

(10")

Using Equation B.1, as directed in 30 TAC §217.53(k)(3), to Calculate the Pipe Stiffness:

$$PS = C \times RSC \times \left(\frac{8.337}{D}\right)$$

Where:	PS	=	Pipe Stiffness in pounds per square inch (psi)	
	C	=	Conversion factor = 0.8	
	RSC	=	Ring Stiffness Constant	
	D	=	Mean Pipe Diameter, Inner =	9.874 in

The RSC can be supplied by the manufacturer or otherwise calculated using Equation 4 of Resistance to Ring Bending – Pipe Stiffness (PS), Ring Stiffness Constant (RSC) and Flexibility Factor (FF) for Buried Gravity Flow Pipes TN-19/2005, Pg 6 published by the Plastics Pipe Institute:

$$RSC = 6.44 \times \frac{EI}{D^2}$$

And E = 400,000 psi

Solving for the Moment of Inertia:

$$I = \left(\frac{t^3}{12}\right) * \left(\frac{inches^3}{in_{linear}}\right) = 0.006$$

$$\text{RSC} = 6.44 \times \frac{2348.167}{97.496} = 155.106$$

$$\text{PS} = 0.8 \times 155.106 \times \frac{8.337}{9.874}$$

PS = 104.77 psi

PIPE STIFFNESS (Figure: 30 TAC §217.53(k)(3))

(12")

Using Equation B.1, as directed in 30 TAC §217.53(k)(3), to Calculate the Pipe Stiffness:

$$PS = C \times RSC \times \left(\frac{8.337}{D}\right)$$

Where:	PS	=	Pipe Stiffness in pounds per square inch (psi)	
	C	=	Conversion factor =	0.8
	RSC	=	Ring Stiffness Constant	
	D	=	Mean Pipe Diameter, Inner =	11.711 in

The RSC can be supplied by the manufacturer or otherwise calculated using Equation 4 of Resistance to Ring Bending – Pipe Stiffness (PS), Ring Stiffness Constant (RSC) and Flexibility Factor (FF) for Buried Gravity Flow Pipes TN-19/2005, Pg 6 published by the Plastics Pipe Institute:

$$RSC = 6.44 \times \frac{EI}{D^2}$$

And E = 400,000 psi

Solving for the Moment of Inertia:

$$I = \left(\frac{t^3}{12}\right) * \left(\frac{inches^3}{in_{linear}}\right) = 0.010$$

$$\text{RSC} = 6.44 \times \frac{3921.633}{137.148} = 184.147$$

$$\text{PS} = 0.8 \times 184.147 \times \frac{8.337}{11.711}$$

PS = 104.87 psi

PIPE STIFFNESS (Figure: 30 TAC §217.53(k)(3))

(15")

Using Equation B.1, as directed in 30 TAC §217.53(k)(3), to Calculate the Pipe Stiffness:

$$PS = C \times RSC \times \left(\frac{8.337}{D}\right)$$

Where:	PS	=	Pipe Stiffness in pounds per square inch (psi)	
	C	=	Conversion factor = 0.8	
	RSC	=	Ring Stiffness Constant	
	D	=	Mean Pipe Diameter, Inner =	14.124 in

The RSC can be supplied by the manufacturer or otherwise calculated using Equation 4 of Resistance to Ring Bending – Pipe Stiffness (PS), Ring Stiffness Constant (RSC) and Flexibility Factor (FF) for Buried Gravity Flow Pipes TN-19/2005, Pg 6 published by the Plastics Pipe Institute:

$$RSC = 6.44 \times \frac{EI}{D^2}$$

And E = 400,000 psi

Solving for the Moment of Inertia:

$$I = \left(\frac{t^3}{12}\right) * \left(\frac{inches^3}{in_{linear}}\right) = 0.017$$

$$\text{RSC} = 6.44 \times \frac{6776.582}{199.487} = 218.767$$

$$\text{PS} = 0.8 \times 218.767 \times \frac{8.337}{14.124}$$

PS = 103.31 psi

PIPE STIFFNESS TO SOIL STIFFNESS FACTOR

(6")

Where:	PS	=	Pipe Stiffness (psi) = 105.42 psi
	E_b	=	Modulus of soil reaction for the bedding material (psi)
	zeta	=	Leonhardt's Zeta factor = 0.836
	SSF	=	Soil stiffness factor ($0.061 \times zeta \times E_b$)

The Soil Stiffness Factor is calculated using Equation 10 referenced by Buczala and Cassady, Buried Plastic Pipe Technology, Pg 198, where:

$$SSF = 0.6 * zeta * E_b$$

Therefore,

$$\frac{PS}{SSF} = \frac{PS}{0.6 * zeta * E_b}$$

$$\frac{\text{PS}}{\text{SSF}} = \frac{105.42}{501.38} = 0.21$$

PIPE STIFFNESS TO SOIL STIFFNESS FACTOR

(8")

Where:	PS	=	Pipe Stiffness (psi) = 105.42 psi
	E_b	=	Modulus of soil reaction for the bedding material (psi)
	zeta	=	Leonhardt's Zeta factor = 0.885
	SSF	=	Soil stiffness factor ($0.061 \times zeta \times E_b$)

The Soil Stiffness Factor is calculated using Equation 10 referenced by Buczala and Cassady, Buried Plastic Pipe Technology, Pg 198, where:

$$SSF = 0.6 * zeta * E_b$$

Therefore,

$$\frac{PS}{SSF} = \frac{PS}{0.6 * zeta * E_b}$$

$$\frac{\text{PS}}{\text{SSF}} = \frac{105.42}{530.72} = 0.20$$

PIPE STIFFNESS TO SOIL STIFFNESS FACTOR

(10")

Where:	PS	=	Pipe Stiffness (psi) = 104.77 psi
	E_b	=	Modulus of soil reaction for the bedding material (psi)
	zeta	=	Leonhardt's Zeta factor = 0.942
	SSF	=	Soil stiffness factor ($0.061 \times zeta \times E_b$)

The Soil Stiffness Factor is calculated using Equation 10 referenced by Buczala and Cassady, Buried Plastic Pipe Technology, Pg 198, where:

$$SSF = 0.6 * zeta * E_b$$

Therefore,

$$\frac{PS}{SSF} = \frac{PS}{0.6 * zeta * E_b}$$

$$\frac{PS}{SSF} = \frac{104.77}{565.15} = 0.19$$

PIPE STIFFNESS TO SOIL STIFFNESS FACTOR

(12")

Where:	PS	=	Pipe Stiffness (psi) = 104.87 psi
	E_b	=	Modulus of soil reaction for the bedding material (psi)
	zeta	=	Leonhardt's Zeta factor = 0.980
	SSF	=	Soil stiffness factor ($0.061 \times zeta \times E_b$)

The Soil Stiffness Factor is calculated using Equation 10 referenced by Buczala and Cassady, Buried Plastic Pipe Technology, Pg 198, where:

$$SSF = 0.6 * zeta * E_b$$

Therefore,

$$\frac{PS}{SSF} = \frac{PS}{0.6 * zeta * E_b}$$

$$\frac{PS}{SSF} = \frac{104.87}{587.88} = 0.18$$

PIPE STIFFNESS TO SOIL STIFFNESS FACTOR

(15")

Where:	PS	=	Pipe Stiffness (psi) = 103.31 psi
	E_b	=	Modulus of soil reaction for the bedding material (psi)
	zeta	=	Leonhardt's Zeta factor = 1.028
	SSF	=	Soil stiffness factor ($0.061 \times zeta \times E_b$)

The Soil Stiffness Factor is calculated using Equation 10 referenced by Buczala and Cassady, Buried Plastic Pipe Technology, Pg 198, where:

$$SSF = 0.6 * zeta * E_b$$

Therefore,

$$\frac{PS}{SSF} = \frac{PS}{0.6 * zeta * E_b}$$

$$\frac{PS}{SSF} = \frac{103.31}{616.84} = 0.17$$

PREDICTED PIPE DEFLECTION

(6")

Using the Modified Iowa Equation, referenced and published by the Uni-Bell PVC Pipe association and found at http://www.uni-bell.org/faq.html, and Equation 14 of Deflection: The Pipe/Soil Mechanism UNI-TR-1-97, Uni-Bell PVC Pipe Association Pgs 17, the predicted pipe deflection can be calculated.

Where:	%ΔY/D	=	Predicted % vertical deflection under load
	P	=	Prism Load, psi
	K	=	Bedding angle constant, Assumed to = 0.083
	W'	=	Live Load, psi, = 0
	DR	=	Dimension Ratio= 26
	E	=	Modulus of tensile elasticity of the pipe material, psi
	E'	=	Modulus of Soil Reaction, psi
	D_L	=	Deflection Lag Factor = 1.5

And using the Modified Iowa Equation:

$$(\%)\frac{\Delta Y}{D} = \frac{(D_L KP + KW')\times 100}{[2E/(3(DR-1)^3)] + 0.061E'}$$

Where, Prism Load, $P = \frac{\gamma_s * H}{144}$

and/or from previous chart, prism load = 12.50 psi

The Predicted Deflection is determined as:

$$(\%)\frac{\Delta Y}{D} = \frac{\left[\left[1.5 \times 1.03779\right] + 0\right] \times 100}{\left[\frac{800000}{46875}\right] + \left[0.061 \times 1000\right]} = 1.99\%$$

NOTE: 1.99% < 5%, therefore pipe design is acceptable

PREDICTED PIPE DEFLECTION

(8")

Using the Modified Iowa Equation, referenced and published by the Uni-Bell PVC Pipe association and found at http://www.uni-bell.org/faq.html, and Equation 14 of Deflection: The Pipe/Soil Mechanism UNI-TR-1-97, Uni-Bell PVC Pipe Association Pgs 17, the predicted pipe deflection can be calculated.

Where:	%ΔY/D	=	Predicted % vertical deflection under load
	P	=	Prism Load, psi
	K	=	Bedding angle constant, Assumed to = 0.110
	W'	=	Live Load, psi, = 0
	DR	=	Dimension Ratio= 26
	E	=	Modulus of tensile elasticity of the pipe material, psi
	E'	=	Modulus of Soil Reaction, psi
	D_L	=	Deflection Lag Factor = 1.5

And using the Modified Iowa Equation:

$$(\%)\frac{\Delta Y}{D} = \frac{(D_L KP + KW')\times 100}{[2E/(3(DR-1)^3)] + 0.061E'}$$

Where, Prism Load, $P = \frac{\gamma_s * H}{144}$

and/or from previous chart, prism load = 4.28 psi

The Predicted Deflection is determined as:

$$(\%)\frac{\Delta Y}{D} = \frac{\left[\left[1.5 \times 0.47071\right] + 0\right] \times 100}{\left[\frac{800000}{46875}\right] + \left[0.061 \times 1000\right]} = 0.90\%$$

NOTE: 0.90% < 5%, therefore pipe design is acceptable

PREDICTED PIPE DEFLECTION

(10")

Using the Modified Iowa Equation, referenced and published by the Uni-Bell PVC Pipe association and found at http://www.uni-bell.org/faq.html, and Equation 14 of Deflection: The Pipe/Soil Mechanism UNI-TR-1-97, Uni-Bell PVC Pipe Association Pgs 17, the predicted pipe deflection can be calculated.

Where:	%ΔY/D	=	Predicted % vertical deflection under load
	P	=	Prism Load, psi
	K	=	Bedding angle constant, Assumed to = 0.083
	W'	=	Live Load, psi, = 0
	DR	=	Dimension Ratio= 26
	E	=	Modulus of tensile elasticity of the pipe material, psi
	E'	=	Modulus of Soil Reaction, psi
	D_L	=	Deflection Lag Factor = 1.5

And using the Modified Iowa Equation:

$$(\%)\frac{\Delta Y}{D} = \frac{(D_L KP + KW')\times 100}{[2E/(3(DR-1)^3)] + 0.061E'}$$

Where, Prism Load, $P = \frac{\gamma_s * H}{144}$

and/or from previous chart, prism load = 12.88 psi

The Predicted Deflection is determined as:

$$(\%)\frac{\Delta Y}{D} = \frac{\left[\left[1.5 \times 1.06926\right] + 0\right] \times 100}{\left[\frac{800000}{46875}\right] + \left[0.061 \times 1000\right]} = 2.05\%$$

NOTE: 2.05% < 5%, therefore pipe design is acceptable

PREDICTED PIPE DEFLECTION

(12")

Using the Modified Iowa Equation, referenced and published by the Uni-Bell PVC Pipe association and found at http://www.uni-bell.org/faq.html, and Equation 14 of Deflection: The Pipe/Soil Mechanism UNI-TR-1-97, Uni-Bell PVC Pipe Association Pgs 17, the predicted pipe deflection can be calculated.

Where:	%ΔY/D	=	Predicted % vertical deflection under load
	P	=	Prism Load, psi
	K	=	Bedding angle constant, Assumed to = 0.090
	W'	=	Live Load, psi, = 0
	DR	=	Dimension Ratio= 26
	E	=	Modulus of tensile elasticity of the pipe material, psi
	E'	=	Modulus of Soil Reaction, psi
	D_L	=	Deflection Lag Factor = 1.5

And using the Modified Iowa Equation:

$$(\%)\frac{\Delta Y}{D} = \frac{(D_L KP + KW') \times 100}{[2E/(3(DR-1)^3)] + 0.061E'}$$

Where, Prism Load, $P = \frac{\gamma_s * H}{144}$

and/or from previous chart, prism load = 24.18 psi

The Predicted Deflection is determined as:

$$(\%)\frac{\Delta Y}{D} = \frac{\left[\left[1.5 \times 2.17588\right] + 0\right] \times 100}{\left[\frac{800000}{46875}\right] + \left[0.061 \times 1000\right]} = 4.18\%$$

NOTE: 4.18% < 5%, therefore pipe design is acceptable

PREDICTED PIPE DEFLECTION

(15")

Using the Modified Iowa Equation, referenced and published by the Uni-Bell PVC Pipe association and found at http://www.uni-bell.org/faq.html, and Equation 14 of Deflection: The Pipe/Soil Mechanism UNI-TR-1-97, Uni-Bell PVC Pipe Association Pgs 17, the predicted pipe deflection can be calculated.

Where:	%ΔY/D	=	Predicted % vertical deflection under load
	P	=	Prism Load, psi
	K	=	Bedding angle constant, Assumed to = 0.083
	W'	=	Live Load, psi, = 0
	DR	=	Dimension Ratio= 26
	E	=	Modulus of tensile elasticity of the pipe material, psi
	E'	=	Modulus of Soil Reaction, psi
	D_L	=	Deflection Lag Factor = 1.5

And using the Modified Iowa Equation:

$$(\%)\frac{\Delta Y}{D} = \frac{(D_L KP + KW')\times 100}{[2E/(3(DR-1)^3)] + 0.061E'}$$

Where, Prism Load, $P = \frac{\gamma_s * H}{144}$

and/or from previous chart, prism load = 22.48 psi

The Predicted Deflection is determined as:

$$(\%)\frac{\Delta Y}{D} = \frac{\left[\left[1.5 \times 1.86577\right] + 0\right] \times 100}{\left[\frac{800000}{46875}\right] + \left[0.061 \times 2000\right]} = 2.01\%$$

NOTE: 2.01% < 5%, therefore pipe design is acceptable

*Please see SHT 160 of construction drawings for note on pipe embedment material and bedding classes on pipe with >34.5 feet depth of bury.

PIPE STRAIN

(6")

Pipe strain is also known as the elongation of the pipe over the original length of the pipe. Under normal loading conditions of the PVC pipe, the variable that affects the elongation or straining of the pipe stems from the either the flexure or deflection (i.e.. bending) of the pipe within the bedding material (i.e. increased or excessive pipe deflection causing the pipe to elongate) or hoop stress within the pipe wall. Please note that pipe strain is not generally known to be the limiting performance factor during pipe failure. For this system, pipe deflection is limited to 5% for a SDR 26 pipe. This 5% deflection value is the industry accepted value placing the pipe within its straining limits. Therefore, as the calculated deflection above is shown to be less than 5%, the pipe and bedding class used in this system is within the acceptable straining limits for this pipe.

However, total Pipe strain is calculated as the combination of the before mentioned hoop stress and the maximum strain due to deflection. Both items are calculated below using Equations 15 and 16 found in Deflection: the Pipe/Soil Mechanism, UNI-TR-1-97, Published by the Uni-Bell PVC Pipe Association (Pgs 28-30):

Where:	$\in_h$	=	Maximum Pipe Strain due to Hoop Stress, in/in
	P	=	Pressure on the pipe (Live + Prism Loads), psi
	E	=	Modulus of Elasticity of the Pipe, psi
	t	=	Pipe Wall thickness, in
	D	=	Pipe Diameter, Average Outer, in

$$\in_h = \frac{PD}{2tE}$$

Using the maximum cover for both live loads and prism loads as well as the previous unit weight of the soil:

$$\in_h = \frac{[\ 0.00\ +\ 12.50\ ] \times\ 6.625}{2\ \times\ 0.255\ \times\ 400{,}000} = \textbf{4.061E-04}\ \frac{\text{in}}{\text{in}}$$

(*Continued on following page)*

Where:	$\in_f$	=	Maximum Pipe Strain due to Ring Deflection, in/in
	ΔY	=	Change in vertical pipe diameter under load, in, (numerator in the deflection equation, but in decimal form)
	t	=	Pipe Wall thickness, in
	D	=	Pipe Diameter, Average Outer, in
	DR	=	Dimension Ratio= 26

$$\in_f = \frac{t}{D}\left[\frac{3\Delta Y / D}{1 - 2\Delta Y / D}\right] = \frac{1}{DR}\left[\frac{3\Delta Y}{D - 2\Delta Y}\right]$$

$$\in_f = 0.038 \times \frac{4.670}{6.625 - 3.113} = 0.0511 \ \frac{\text{in}}{\text{in}}$$

$$\in_{total} = \textbf{5.1555E-02} \ \frac{\text{in}}{\text{in}}$$

PIPE STRAIN

(8")

Pipe strain is also known as the elongation of the pipe over the original length of the pipe. Under normal loading conditions of the PVC pipe, the variable that affects the elongation or straining of the pipe stems from the either the flexure or deflection (i.e.. bending) of the pipe within the bedding material (i.e. increased or excessive pipe deflection causing the pipe to elongate) or hoop stress within the pipe wall. Please note that pipe strain is not generally known to be the limiting performance factor during pipe failure. For this system, pipe deflection is limited to 5% for a SDR 26 pipe. This 5% deflection value is the industry accepted value placing the pipe within its straining limits. Therefore, as the calculated deflection above is shown to be less than 5%, the pipe and bedding class used in this system is within the acceptable straining limits for this pipe.

However, total Pipe strain is calculated as the combination of the before mentioned hoop stress and the maximum strain due to deflection. Both items are calculated below using Equations 15 and 16 found in Deflection: the Pipe/Soil Mechanism, UNI-TR-1-97, Published by the Uni-Bell PVC Pipe Association (Pgs 28-30):

Where:	$\in_h$	=	Maximum Pipe Strain due to Hoop Stress, in/in
	P	=	Pressure on the pipe (Live + Prism Loads), psi
	E	=	Modulus of Elasticity of the Pipe, psi
	t	=	Pipe Wall thickness, in
	D	=	Pipe Diameter, Average Outer, in

$$\in_h = \frac{PD}{2tE}$$

Using the maximum cover for both live loads and prism loads as well as the previous unit weight of the soil:

$$\in_h = \frac{[\ 0.00\ +\ 4.28\ ] \times\ 8.625}{2\ \times\ 0.332\ \times\ 400{,}000} = \textbf{1.390E-04}\ \frac{\text{in}}{\text{in}}$$

(*Continued on following page)*

Where:	$\in_f$	=	Maximum Pipe Strain due to Ring Deflection, in/in
	ΔY	=	Change in vertical pipe diameter under load, in, (numerator in the deflection equation, but in decimal form)
	t	=	Pipe Wall thickness, in
	D	=	Pipe Diameter, Average Outer, in
	DR	=	Dimension Ratio= 26

$$\in_f = \frac{t}{D}\left[\frac{3\Delta Y / D}{1 - 2\Delta Y / D}\right] = \frac{1}{DR}\left[\frac{3\Delta Y}{D - 2\Delta Y}\right]$$

$$\in_f = 0.038 \times \frac{2.118}{8.625 - 1.412} = 0.0113 \ \frac{\text{in}}{\text{in}}$$

$$\in_{total} = \textbf{1.1434E-02} \ \frac{\text{in}}{\text{in}}$$

PIPE STRAIN

(10")

Pipe strain is also known as the elongation of the pipe over the original length of the pipe. Under normal loading conditions of the PVC pipe, the variable that affects the elongation or straining of the pipe stems from the either the flexure or deflection (i.e.. bending) of the pipe within the bedding material (i.e. increased or excessive pipe deflection causing the pipe to elongate) or hoop stress within the pipe wall. Please note that pipe strain is not generally known to be the limiting performance factor during pipe failure. For this system, pipe deflection is limited to 5% for a SDR 26 pipe. This 5% deflection value is the industry accepted value placing the pipe within its straining limits. Therefore, as the calculated deflection above is shown to be less than 5%, the pipe and bedding class used in this system is within the acceptable straining limits for this pipe.

However, total Pipe strain is calculated as the combination of the before mentioned hoop stress and the maximum strain due to deflection. Both items are calculated below using Equations 15 and 16 found in Deflection: the Pipe/Soil Mechanism, UNI-TR-1-97, Published by the Uni-Bell PVC Pipe Association (Pgs 28-30):

Where:	$\in_h$	=	Maximum Pipe Strain due to Hoop Stress, in/in
	P	=	Pressure on the pipe (Live + Prism Loads), psi
	E	=	Modulus of Elasticity of the Pipe, psi
	t	=	Pipe Wall thickness, in
	D	=	Pipe Diameter, Average Outer, in

$$\in_h = \frac{PD}{2tE}$$

Using the maximum cover for both live loads and prism loads as well as the previous unit weight of the soil:

$$\in_h = \frac{\left[\ 0.00\ +\ 12.88\ \right] \times\ 10.75}{2\ \times\ 0.413\ \times\ 400{,}000} \quad = \quad \textbf{4.192E-04} \quad \frac{\text{in}}{\text{in}}$$

(*Continued on following page)*

Where:	$\in_f$	=	Maximum Pipe Strain due to Ring Deflection, in/in
	ΔY	=	Change in vertical pipe diameter under load, in, (numerator in the deflection equation, but in decimal form)
	t	=	Pipe Wall thickness, in
	D	=	Pipe Diameter, Average Outer, in
	DR	=	Dimension Ratio= 26

$$\in_f = \frac{t}{D}\left[\frac{3\Delta Y / D}{1 - 2\Delta Y / D}\right] = \frac{1}{DR}\left[\frac{3\Delta Y}{D - 2\Delta Y}\right]$$

$$\in_f = 0.038 \times \frac{4.812}{10.75 - 3.208} = 0.0245 \ \frac{\text{in}}{\text{in}}$$

$$\in_{total} = \textbf{2.4956E-02} \ \frac{\text{in}}{\text{in}}$$

PIPE STRAIN

(12")

Pipe strain is also known as the elongation of the pipe over the original length of the pipe. Under normal loading conditions of the PVC pipe, the variable that affects the elongation or straining of the pipe stems from the either the flexure or deflection (i.e.. bending) of the pipe within the bedding material (i.e. increased or excessive pipe deflection causing the pipe to elongate) or hoop stress within the pipe wall. Please note that pipe strain is not generally known to be the limiting performance factor during pipe failure. For this system, pipe deflection is limited to 5% for a SDR 26 pipe. This 5% deflection value is the industry accepted value placing the pipe within its straining limits. Therefore, as the calculated deflection above is shown to be less than 5%, the pipe and bedding class used in this system is within the acceptable straining limits for this pipe.

However, total Pipe strain is calculated as the combination of the before mentioned hoop stress and the maximum strain due to deflection. Both items are calculated below using Equations 15 and 16 found in Deflection: the Pipe/Soil Mechanism, UNI-TR-1-97, Published by the Uni-Bell PVC Pipe Association (Pgs 28-30):

Where:	$\in_h$	=	Maximum Pipe Strain due to Hoop Stress, in/in
	P	=	Pressure on the pipe (Live + Prism Loads), psi
	E	=	Modulus of Elasticity of the Pipe, psi
	t	=	Pipe Wall thickness, in
	D	=	Pipe Diameter, Average Outer, in

$$\in_h = \frac{PD}{2tE}$$

Using the maximum cover for both live loads and prism loads as well as the previous unit weight of the soil:

$$\in_h = \frac{[\ 0.00\ +\ 24.18\ ] \times\ 12.75}{2\ \times\ 0.49\ \times\ 400{,}000} = \textbf{7.863E-04}\ \frac{\text{in}}{\text{in}}$$

(*Continued on following page)*

Where:	$\in_f$	=	Maximum Pipe Strain due to Ring Deflection, in/in
	ΔY	=	Change in vertical pipe diameter under load, in, (numerator in the deflection equation, but in decimal form)
	t	=	Pipe Wall thickness, in
	D	=	Pipe Diameter, Average Outer, in
	DR	=	Dimension Ratio= 26

$$\in_f = \frac{t}{D}\left[\frac{3\Delta Y / D}{1 - 2\Delta Y / D}\right] = \frac{1}{DR}\left[\frac{3\Delta Y}{D - 2\Delta Y}\right]$$

$$\in_f = 0.038 \times \frac{9.791}{12.75 - 6.528} = 0.0605 \ \frac{\text{in}}{\text{in}}$$

$$\in_{total} = \textbf{6.1309E-02} \ \frac{\text{in}}{\text{in}}$$

PIPE STRAIN

(15")

Pipe strain is also known as the elongation of the pipe over the original length of the pipe. Under normal loading conditions of the PVC pipe, the variable that affects the elongation or straining of the pipe stems from the either the flexure or deflection (i.e.. bending) of the pipe within the bedding material (i.e. increased or excessive pipe deflection causing the pipe to elongate) or hoop stress within the pipe wall. Please note that pipe strain is not generally known to be the limiting performance factor during pipe failure. For this system, pipe deflection is limited to 5% for a SDR 26 pipe. This 5% deflection value is the industry accepted value placing the pipe within its straining limits. Therefore, as the calculated deflection above is shown to be less than 5%, the pipe and bedding class used in this system is within the acceptable straining limits for this pipe.

However, total Pipe strain is calculated as the combination of the before mentioned hoop stress and the maximum strain due to deflection. Both items are calculated below using Equations 15 and 16 found in Deflection: the Pipe/Soil Mechanism, UNI-TR-1-97, Published by the Uni-Bell PVC Pipe Association (Pgs 28-30):

Where:	$\in_h$	=	Maximum Pipe Strain due to Hoop Stress, in/in
	P	=	Pressure on the pipe (Live + Prism Loads), psi
	E	=	Modulus of Elasticity of the Pipe, psi
	t	=	Pipe Wall thickness, in
	D	=	Pipe Diameter, Average Outer, in

$$\in_h = \frac{PD}{2tE}$$

Using the maximum cover for both live loads and prism loads as well as the previous unit weight of the soil:

$$\in_h = \frac{\left[\ 0.00\ +\ 22.48\ \right] \times\ 15.3}{2\ \times\ 0.588\ \times\ 400{,}000} \quad = \quad \textbf{7.311E-04} \quad \frac{\text{in}}{\text{in}}$$

(*Continued on following page)*

Where:	$\in_f$	=	Maximum Pipe Strain due to Ring Deflection, in/in
	ΔY	=	Change in vertical pipe diameter under load, in, (numerator in the deflection equation, but in decimal form)
	t	=	Pipe Wall thickness, in
	D	=	Pipe Diameter, Average Outer, in
	DR	=	Dimension Ratio= 26

$$\in_f = \frac{t}{D}\left[\frac{3\Delta Y / D}{1 - 2\Delta Y / D}\right] = \frac{1}{DR}\left[\frac{3\Delta Y}{D - 2\Delta Y}\right]$$

$$\in_f = 0.038 \times \frac{8.396}{15.3 - 5.597} = 0.0333 \ \frac{\text{in}}{\text{in}}$$

$$\in_{total} = \textbf{3.4013E-02} \ \frac{\text{in}}{\text{in}}$$

TCEQ PIPE BEDDING AND TRENCHING REQUIREMENTS (30 TAC 217.54)

These notes are provided in the Construction Documents on **Sheet 4**

a. Pipe Embedment
    1. A rigid pipe must be laid with the adequate bedding, haunching, and initial backfill to support the anticipated load. The bedding classes that are allowed are A, B, or C, as described in American Society for Testing and Materials (ASTM) C 12, American National Standards Institute (ANSI) A 106.2,Water Environment Federation Manual of Practice No. 9 or American Society of Civil Engineers (ASCE) MOP 37.
    2. A flexible pipe must be laid with the adequate bedding, haunching, and initial backfill to support the anticipated load. The bedding classes that are allowed are IA, IB, II, or III, as described in ASTM D-2321 or ANSI K65.171.
    3. Debris, large clods, or stones that are greater than six inches in diameter, organic matter, or other unstable materials are prohibited as bedding, haunching, or initial backfill.
    4. Backfill must not disturb the alignment of a collection system pipe.
    5. If trenching encounters significant fracture, fault zones, caves, or solutional modification to the rock strata, an owner must halt construction until an engineer prepares a written report detailing how construction will accommodate these site conditions.

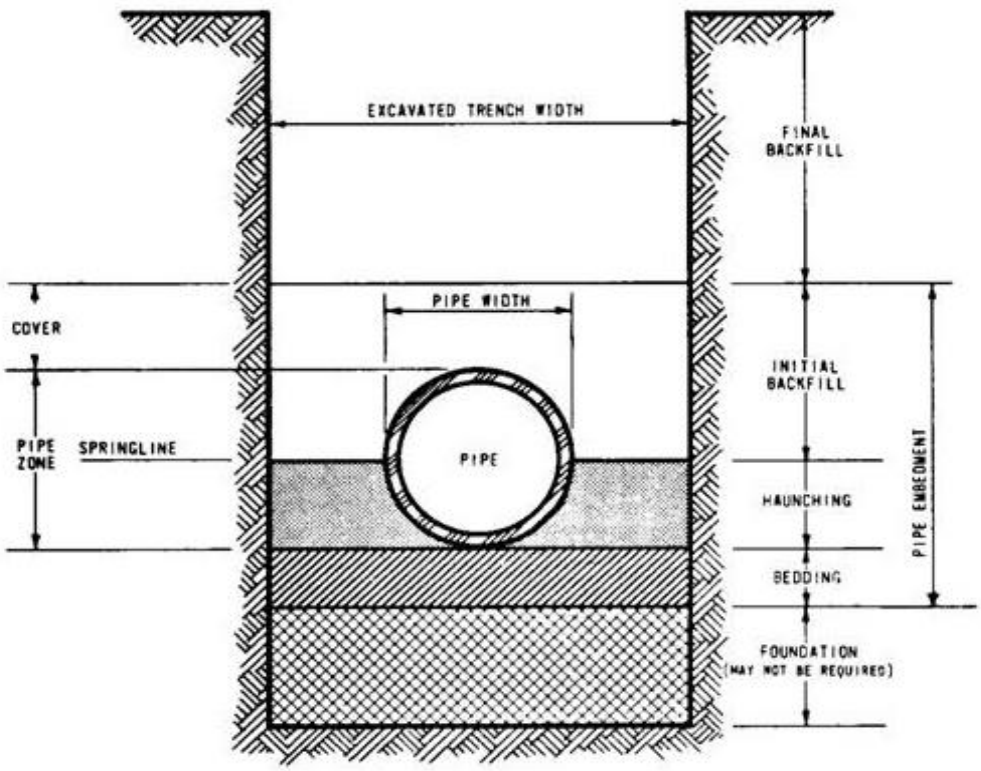
b. Compaction.
    1. Compaction of an embedment envelope must meet the manufacturer's recommendations for the collection system pipe used in a project.
    2. Compaction of an embedment envelope must provide the modulus of soil reaction for the bedding material necessary to ensure a wastewater collection system pipe's structural integrity as required by §217.53 of this title (relating to Pipe Design).
    3. The placement of the backfill above a pipe must not affect the structural integrity of a pipe.

c. Envelope Size.
    1. A minimum clearance of 6.0 inches below and on each side of the bell of all pipes to the trench walls and floor is required.
    2. The embedment material used for haunching and initial backfill must be installed to a minimum depth of 12 inches above the crown of a pipe.

d. Trench Width.

1. The width of a trench must allow a pipe to be laid and jointed properly and must allow the backfill to be placed and compacted as needed.
2. The maximum and minimum trench width needed for safety and a pipe's structural integrity must be included in the report.
3. The width of a trench must be sufficient to properly and safely place and compact haunching materials.
4. The space between a pipe and a trench wall must be wider than the compaction equipment used in the pipe zone.

TRENCH CROSS-SECTION (30 TAC 217.54)



NOTE:

Trenching Details along with 30 TAC 217.54 are annotated in the Construction Documents/Plan Sheets on Sheet 4

MANHOLE SPECIFICATIONS

30 TAC 217.55 Requirements with design comments:

a. An owner must include manholes in a wastewater collection system at:
    1. All points of change in alignment, grade, or size;
    2. At the intersection of all pipes; and
    3. At the end of all pipes that may be extended at a future date. **(Self explanatory, the SCS line will not be extended therefore no stub-outs**

b. Manholes placed at the end of a wastewater collection system pipe that may be extended in the future must include pipe stub outs with plugs. **(Self explanatory, see item a above)**

c. A clean-out with watertight plugs may be installed in lieu of a manhole at the end of a wastewater collection system pipe if no extensions are anticipated. **(Self explanatory, clean outs not used in-lieu of manholes)**

d. Cleanout installations must pass all applicable testing requirements outlined for gravity collection pipes in §217.57 of this title (relating to Testing Requirements for Installation of Gravity Collection System Pipes). **(Self explanatory, see Item d above)**

e. A manhole must be made of monolithic, cast-in-place concrete, fiberglass, pre-cast concrete, high-density polyethylene, or equivalent material that provides adequate structural integrity. **See the Pre-Cast Manhole Details following these construction notes)**

f. The use of bricks to adjust a manhole cover to grade or construct a manhole is prohibited. **(Self explanatory, See Details following these notes)**

g. Manholes may be spaced no further apart than the distances specified in the following table for a wastewater collection system with straight alignment and uniform grades, unless a variance based on the availability of cleaning equipment that is capable of servicing greater distances is granted by the executive director. **(Self explanatory and maintained throughout the design of the SCS)**

Table C.2. - Maximum Manhole Spacing

Pipe Diameter	Maximum Manhole
6-15	500
18-30	800
36-48	1000
54 or larger	2000

h. Tunnels are exempt from manhole spacing requirements because of construction constraints. **(Self explanatory and not applicable)**

i. An intersection of three or more collection pipes must have a manhole. **(Self explanatory and maintained throughout the design of the SCS)**

j. A manhole must not be located in the flow path of a watercourse, or in an area where ponding of surface water is probable. **(Self explanatory and maintained throughout the design of the SCS)**

k. The inside diameter of a manhole must be no less than 48 inches. A manhole diameter must be sufficient to allow personnel and equipment to enter, exit, and work in the manhole and to allow proper joining of the collection system pipes in the manhole wall. **(See Manhole Details following these notes)**

l. Manholes must meet the following requirements for covers, inlets, and bases.

1. Manhole Covers

A. A manhole where personnel entry is anticipated requires at least a 30 inch diameter clear opening. (**Covers to have 32" Openings see Manhole Details)**

B. A manhole located within a 100-year flood plain must have a means of preventing inflow. **(Self explanatory and maintained throughout the design of the SCS)**

C. A manhole cover construction must be constructed of impervious material. **(Self explanatory, See Manhole Details following these construction notes)**

D. A manhole cover that is located in a roadway must meet or exceed the American Association of State Highways and Transportation Officials standard M-306 for load bearing. **(Self explanatory, See Manhole Details)**

2. Manhole Inverts

A. The bottom of a manhole must contain a U-shaped channel that is a smooth continuation of the inlet and outlet pipes. **(Self explanatory, see Manhole Details)**

B. A manhole connected to a pipe less than 15 inches in diameter must have a channel depth equal to at least half the largest pipe's diameter **(Self explanatory, see Manhole Details)**

C. A manhole connected to a pipe at least 15 inches in diameter but not more than 24 inches in diameter must have a channel depth equal to at least three-fourths of the largest pipe's diameter **(Self explanatory, but not applicable for this project)**

D. A manhole connected to a pipe greater than 24 inches in diameter must have a channel depth equal to at least the largest pipe's diameter **(Self explanatory, but not applicable for this project)**.

E. A manhole with pipes of different sizes must have the tops of the pipes at the same elevation and flow channels in the invert sloped on an even slope from pipe to pipe. **(Self explanatory and maintained throughout the design of the SCS)**

F. A bench provided above a channel must slope at a minimum of 0.5 inch per foot. **(Self Explanatory)**

G. An invert must be filleted to prevent solids from being deposited if a wastewater collection system pipe enters a manhole higher than 24 inches above a manhole invert. **(Self Explanatory, see manhole details for a drop manhole)**

H. A wastewater collection system pipe entering a manhole more than 24 inches above an invert must have a drop pipe. **(Self Explanatory, see Manhole Details)**

m. The inclusion of steps in a manhole is prohibited. **(Self Explanatory, see Manhole Details)**

n. Connections. A manhole-pipe connection must use watertight, size-on-size resilient connectors that allow for differential settlement and must conform to American Society for Testing and Materials C-923. **(Self Explanatory, see Manhole Details)**

o. Venting. An owner must use an alternate means of venting if manholes are at more than 1,500 foot intervals and gasketed manhole covers are required for more than three manholes in sequence. Vents must meet the following requirements: **(Self Explanatory, but not applicable for this project)**
    1. Vent design must minimize inflow;
    2. Vents must be located above a 100-year flood event elevation; and
    3. Tunnels must be vented in compliance with this subsection.

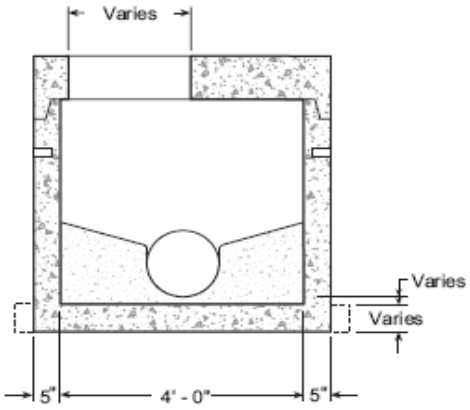
p. Cleanouts. The size of a cleanout must be equal to the size of the wastewater collection system main. **(Self Explanatory)**

Precast Manhole Information:

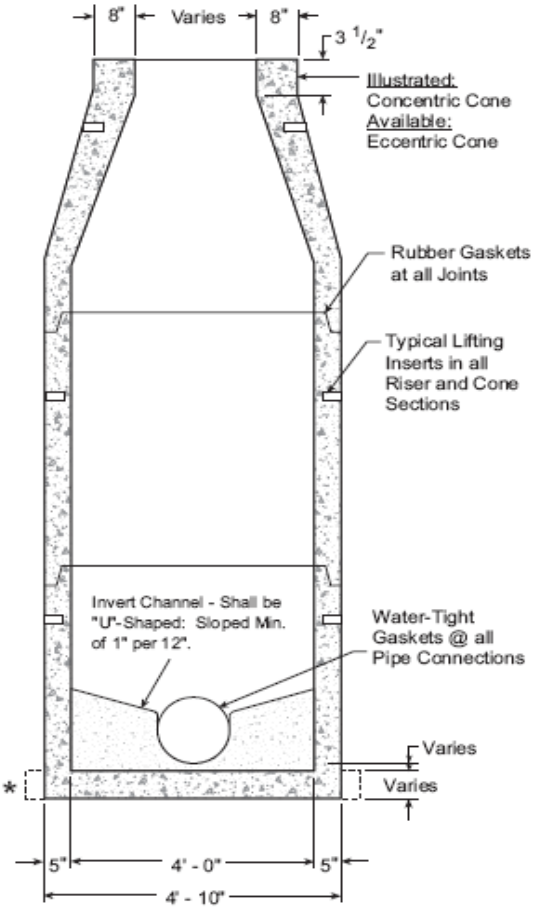
Hanson Pipe and Precast
Hanson Building Products West
300 E John Carpenter Freeway
11th floor
Irving, TX 75062
972.653.5500

San Antonio Metro Area Contact:
210.661.2351
866.426.7661

Precast Manholes



Flattop Illustration
for Shallow Manhole



Section View
4' I.D. Manhole - Regular Base
with Reducing Cone

Materials & Features

HOLES AS SPECIFIED: Max diameter = 32"
CONCRETE: 5,000 PSI, 28 day strength.
REINFORCING: Meets or exceeds ASTM C478 requirements.
Average weight of 24" depth base w/8" invert = 4,500 lbs.
Estimated weiight of riser and cone sections = 870 lbs. / vt. ft.

* - Extended base is available to meet local requirements.

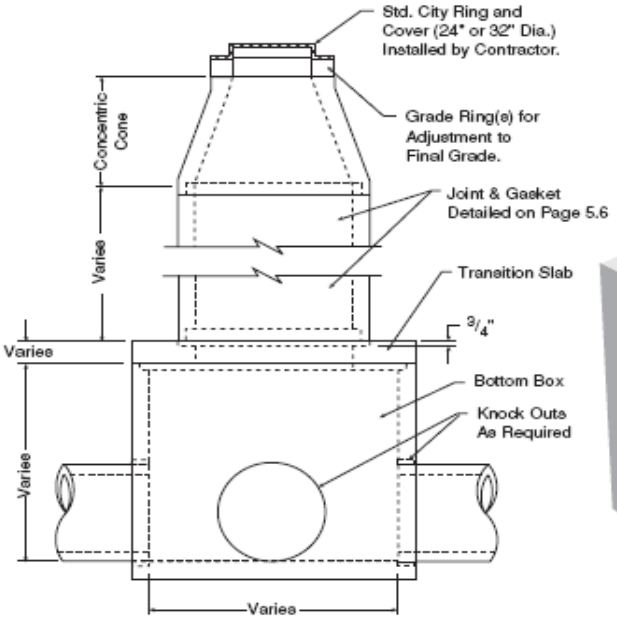
In the event a boot is loose contact your Hanson representative to resolve.

"Manufactured to your specifications."

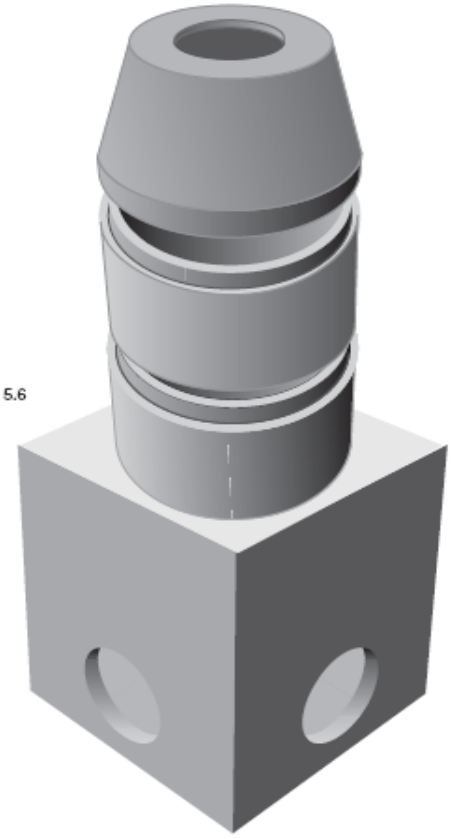
-No Scale-
All dimensions subject to allowable specification tolerances.

TITLE	PLANT	STATE	SECTION.PAGE	DATE	
4' I.D. Manhole **Regular Base w / Reducing Cone**	All Plants	TX	5.5	07-01-06	Hanson

Precast Manholes



Side View



Isometric View

Materials & Features

CONCRETE: 5,000 PSI in 28 days.

REINFORCING STEEL: per ASTM A-615 / A-185

REINFORCING to meet AASHTO HS 20-44 Loading.

BASE DESIGN EQUAL TO OR EXCEEDS ASTM C-357

RISER DESIGN EQUAL TO OR EXCEEDS ASTM C-478

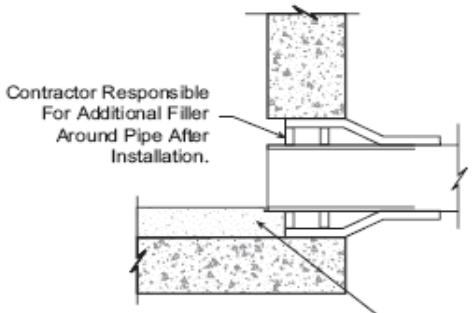
In the event a boot is loose contact your Hanson representative to resolve.

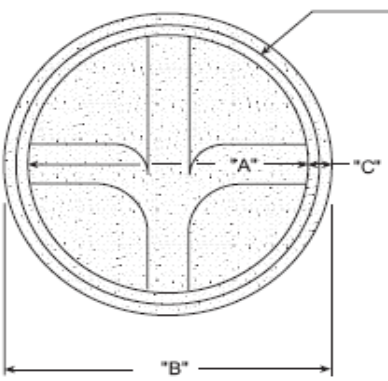
-No Scale-
All dimensions subject to allowable specification tolerances.

TITLE	PLANT	STATE	SECTION.PAGE	DATE	
Type "C" Manhole	Houston San Antonio	TX	5.11	07-01-06	Hanson

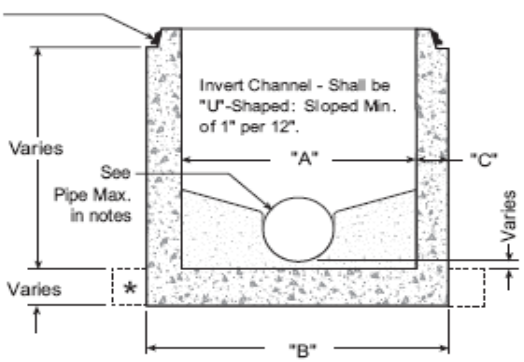
Precast Manholes

For Pipe Entering the Manhole at Excessive Depths Above the Flow Line Out, the Contractor May be Responsible for Grout Work Necessary to Bring Channel up to Flow Line on Inlet Pipe.





Plan View



Section View

Pipe Size	I.D. "A"	O.D. "B"	Wall Thk. "C"
4'	4' - 0"	4' - 10"	5"
5'	5' - 0"	6' - 0"	6"
6'	6' - 0"	7' - 2"	7"

Materials & Features

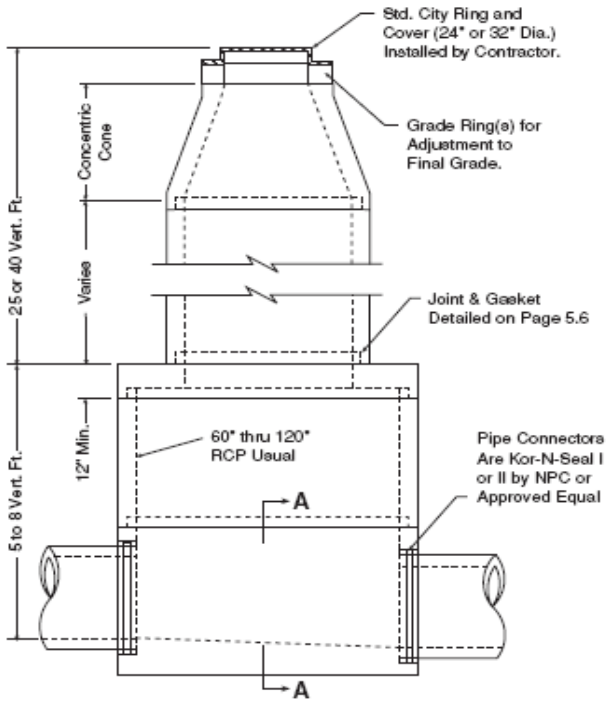
HOLES AS SPECIFIED:
- For 4' I.D. max. diameter = 32"
- For 5' I.D. max. diameter = 40"
- For 6' I.D. max. diameter = 54"

CONCRETE: 5,000 PSI, 28 day strength.
REINFORCING: Meets or exceeds ASTM C478 requirements.
Average weight of 24" depth base w/8" invert = 4,500 lbs.
Water-tight gaskets at all pipe connections.
* - Regular base shown: Extended base also available.
In the event a boot is loose contact your Hanson representative to resolve.

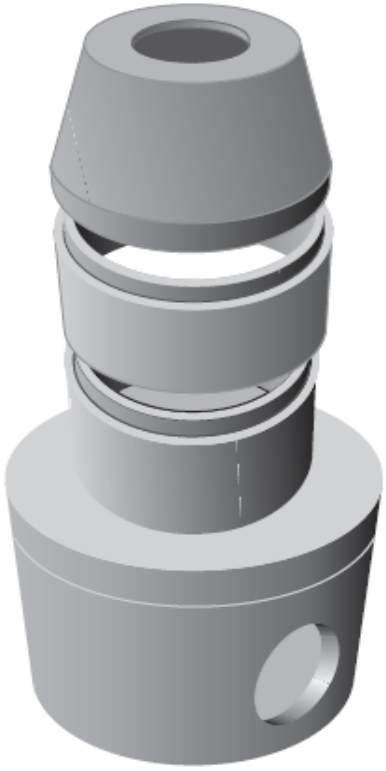
-No Scale-
All dimensions subject to allowable specification tolerances.

TITLE	PLANT	STATE	SECTION.PAGE	DATE	
Details: 4', 5' & 6' I.D. Precast Regular Manhole Base	All Plants	TX	5.7	07-01-06	Hanson

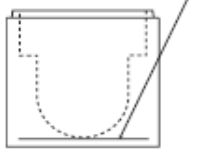
Precast Manholes



w/ Precast Base



Isometric View



Section A-A

Base Slab Reinforcing

30' Deep Structure
60"ø - 6" Thick Slab min. - #5 @ 8" ea.way
72"ø - 8" Thick Slab min. - #5 @ 8" ea.way
84"ø - 8" Thick Slab min. - #5 @ 6" ea.way
96"ø - 10" Thick Slab min. - #5 @ 6" ea.way

45' Deep Structure
60"ø - 8" Thick Slab min. - #5 @ 8" ea.way
72"ø - 8" Thick Slab min. - #5 @ 8" ea.way
84"ø - 10" Thick Slab min. - #5 @ 6" ea.way
96"ø - 12" Thick Slab min. - #5 @ 6" ea.way

All Reinforcing has $1\frac{1}{2}$" cover from top of slab.

Materials & Features

CONCRETE: 5,000 PSI in 28 days.

REINFORCING STEEL: per ASTM A-615, Grade 60.

REINFORCING to meet AASHTO HS 20-44 Loading.

DESIGN EQUAL TO OR EXCEEDS ASTM C-478

In the event a boot is loose contact your Hanson representative to resolve.

Note:

- Inverts shall be specifically sized for connecting pipes; and shall be U-Shaped with the min. depth 3/4 of the largest pipe diameter.

-No Scale-
All dimensions subject to allowable specification tolerances.

TITLE	PLANT	STATE	SECTION.PAGE	DATE	
30 & 45 Ft. Depth 60" thru 96"Large Base Manhole	Houston San Antonio	TX	5.10	07-01-06	Hanson

ATTACHMENT A

WASTEWATER / SEWAGE CALCULATIONS

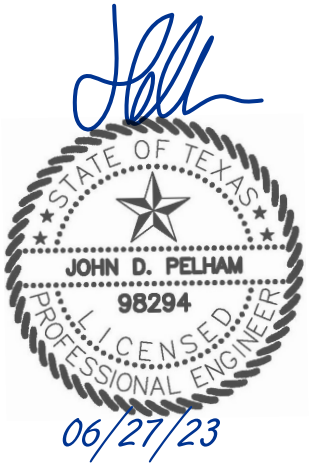
Revised Building Name (Building name from original SERs)	Phase Group	Phase	Estimated Occupancy Date	Gross Area (sf)*	Building Construction Type	LUE Use	Lue Conversion	LUE	Population (persons)	Average Dry Weather Flow (gpm) "F"	PFF	Peak Hour Demand (gpm)	Peak Day Demand (gpm)	Peak Dry Weather Flow (gpm)	Fire Flow Demand (gpm)	Fire Flow Demand (gpm)**
NWUB	1	1	EXISTING	2,880	IIB	Office Warehouse	1 LUE/ 4000 sq ft	0.7	2.5	0.1	4.0	1.6	0.9	0.5	6,000	1,500
PG4 (UPG2)	1	2	EXISTING	353,347	IB	Parking	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6,000	1,500
CENTRAL PLANT (CPW)	1	3	EXISTING	30,000	IIB	Cooling Plant (Office)	1 LUE/ 3000 sq ft	10.0	35.0	1.7	3.9	22.0	13.0	6.6	3,750	1,500
PG1	1	4	EXISTING	495,681	IB	Parking	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6,000	1,500
B2/ KITCHEN	1	5	EXISTING	318,111	IB	R&D (Office)	1 LUE/ 3000 sq ft	106.0	371.1	18.0	3.1	233.3	137.8	55.2	6,000	1,500
B1/CONF	1	6	EXISTING	270,608	IB	Office	1 LUE/ 3000 sq ft	90.2	315.7	15.3	3.1	198.4	117.3	48.0	5,500	1,500
RD1	1	7	EXISTING	208,602	IB	R&D (Office)	1 LUE/ 3000 sq ft	69.5	243.4	11.8	3.2	153.0	90.4	38.3	5,000	1,500
							PHASE 1 TOTAL	**276.5**	**967.7**	**46.9**		**608.3**	**359.4**	**148.6**		
G2 (PG2)	2	8	(Jan 23) 2026	1,109,180	IB	Parking	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6,000	1,500
AC03 (B3)	2	9	(Jan 15) 2026	368,726	IB	Office	1 LUE/ 3000 sq ft	122.9	430.2	20.9	3.0	270.4	159.8	62.7	5,750	1,500
AC09 (CBC)	2	10	(Apr 06) 2026	70,945	IB	Office	1 LUE/ 3000 sq ft	23.6	82.8	4.0	3.6	52.0	30.7	14.6	3,000	1,500
AC09 (CBC)	2	10	(Apr 06) 2026	30,000	IB	Restaurant	1 LUE/ 200 sq ft	150.0	525.0	25.5	2.9	330.0	195.0	74.3	5,000	1,500
AC09 (CBC)	2	10	(Apr 06) 2026	31,489	IB	Retail	1 LUE/ 1660 sq ft	19.0	66.4	3.2	3.7	41.7	24.7	11.9	1,750	1,500
AC09 (CBC)	2	10	(Apr 06) 2026	25,464	IB	Retail	1 LUE/ 1660 sq ft	15.3	53.7	2.6	3.8	33.7	19.9	9.8	1,750	1,500
AC08 (RD2)	2	11	(Jan 21) 2026	289,326	IB	R&D (Office)	1 LUE/ 3000 sq ft	96.4	337.5	16.4	3.1	212.2	125.4	50.9	5,750	1,500
AC07 (RD3)	2	12	(Feb 23) 2026	215,600	IB	R&D (Office)	1 LUE/ 3000 sq ft	71.9	251.5	12.2	3.2	158.1	93.4	39.4	5,000	1,500
AC12-CHILD CARE (CDB) ***	2	13	(Jan 26) 2026	32,947	5B	Childcare	1 LUE/ 15 students	60.0	210.0	10.2	3.3	132.0	78.0	33.6	5,000	1,500
M4 - OFFICE (CWB)	2	14	(June 04) 2026	1,200	5B	Office	1 LUE/ 3000 sq ft	0.4	1.4	0.1	4.0	0.9	0.5	0.3	1,500	1,500
M4 - CENTRAL WASTE (CWB)	2	14	(June 04) 2026	16,312	5B	Office Warehouse	1 LUE/ 4000 sq ft	4.1	14.3	0.7	4.0	9.0	5.3	2.8	3,500	1,500
M5 - OFFICE	2	15	(Sept 1) 2026	1,200	IB	Office	1 LUE/ 3000 sq ft	0.4	1.4	0.1	4.0	0.9	0.5	0.3	1,500	1,500
M5 - WASTEWATER TREATMENT PLANT	2	15	(Sept 1) 2026	22,300	IB	Office Warehouse	1 LUE/ 4000 sq ft	5.6	19.5	0.9	4.0	12.3	7.2	3.8	1,500	1,500
							PHASE 2 TOTAL	**569.6**	**1,993.7**	**96.6**		**1,253.2**	**740.5**	**304.4**		
G3 (PG3)	3	16	(Sept 1) 2028	930,866	IB	Parking	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6,000	1,500
B4	3	17	(Sept 1) 2028	265,616	IB	Office	1 LUE/ 3000 sq ft	88.5	309.9	15.0	3.1	194.8	115.1	47.2	5,000	1,500
B5	3	18	(Sept 1) 2028	258,171	IB	Office	1 LUE/ 3000 sq ft	86.1	301.2	14.6	3.2	189.3	111.9	46.1	5,000	1,500
B6/BMR	3	19	(June 1) 2028	290,989	IB	Office	1 LUE/ 3000 sq ft	97.0	339.5	16.5	3.1	213.4	126.1	51.1	5,250	1,500
HOTEL	3	20	(Sept 1) 2028	199,175	IB	Hotel	0.5 LUE/ room	96.0	336.0	16.3	3.1	211.2	124.8	50.7	4,750	1,500
B7	3	21	(Dec 1) 2028	11,500	IB	Amenity for Offices	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1,500	1,500
B8	3	21	(Dec 1) 2028	11,500	IB	Amenity for Offices	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1,500	1,500
B9	3	21	(Dec 1) 2028	11,500	IB	Amenity for Offices	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1,500	1,500
							PHASE 3 TOTAL	**367.6**	**1,286.6**	**62.4**		**808.7**	**477.9**	**195.1**		
							PHASES 1,2,&3 TOTAL	**1,214**	**4,248**	**206**	**0**	**2,670**	**1,578**	**648**		

*BUILDING S.F. ARE APPROXIMATE

** BASED ON 75% FIRE CODE REDUCTION

***LUE CONVERSION BASED ON 60 EMPLOYEES AND A STUDENT EMPLOYEE RATIO OF 15:1

TOTAL OFFICE	2,559,094	SF
TOTAL CENTRAL PLANT	30,000	SF
TOTAL OFFICE WAREHOUSE	41,492	SF
TOTAL RESTAURANT	30,000	SF
TOTAL HOTEL	199,175	SF
TOTAL RETAIL	56,953	SF
TOTAL AMENITY	34,500	SF
TOTAL BUILDING	**2,951,214**	**SF**
TOTAL PARKING	2,891,954	**SF**

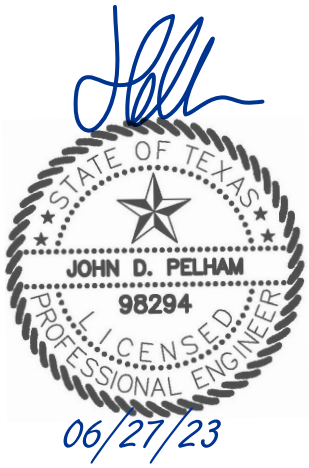


SER Calculations

Project: Capstone SER 4339 & SER 4340 Revision
Phase: Phase Group 2 (indivdual phases 8-15)
Date: 6/23/2023
Area: 29.5 acres (approximately)

Proposed Building Use	Square Feet*	LUE Conversion	LUEs
Total Office Building	946,997	1 LUE/3,000 SF	316
Total Restaurant	30,000	1 LUE/200 SF	150
Total Retail	56,953	1 LUE/1660 SF	34
Total Office Warehouse	38,612	1 LUE/4000 SF	10
Total Childcare**	32,947	1 LUE/ 15 STUDENTS	60
Total S.F.	1,033,950	**Total LUEs**	570

*** Building S.F. are approximate**



Wastewater Design

Population	=	LUEs X 3.5/LUE	
	=	569.6	X 3.5 persons/LUE
	=	1,993.70	persons
Average Dry Weather Flow (F)	=	(70gpd/persons/day) X (population / 1440)	
	=	96.92	gpm
PFF	=	[18+(0.0206 X F)^0.5]/[4+(0.0206 X F)^0.5] , Maximum = 4	
	=	3.59	
Peak Dry Weather Flow	=	Average Dry Weather Flow X PFF	
	=	**347.58**	**gpm**
Peak Wet Flow	=	Peak Dry Flow + Inflow/Infiltration	
	=	347.58	+ (750 gpd/acre) X (acres/1440)
	=	**362.96**	**gpm**

Water Design

Population	=	LUEs X 3.5/LUE	
	=	569.63	X 3.5 persons/LUE
	=	1,993.70	persons
Peak Hour Demand	=	900 gallons/person/day*persons*1 day/1440 minutes	
		1,246.06	**gpm**
Peak Day Demand	=	530 gallons/person/day*persons*1 day/1440 minutes	
		733.79	**gpm**

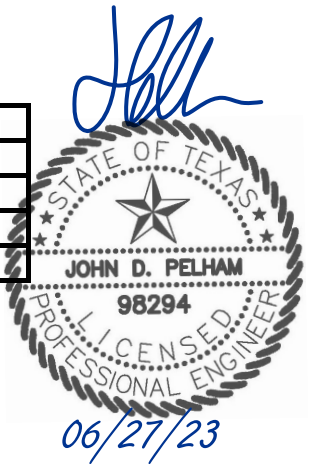
Fire Flow

Largest Building Square Footage	=	1,109,180	sq ft
Construction Type	=	IB	
Buidling Required Fire Flow	=	6000	gpm
Reduced Building Required Fire Flow*	=	**1500**	**gpm**
Total Peak Day Demand + Reduced Fire Flow	=	**2,234**	**gpm**

*Assumed 75% credit for Automatic Sprinkler System

SER Calculations

Project: Capstone SER 4339 & SER 4340 Revision
Phase: Phase Group 3 (individual phases 16-21)
Date: 6/23/2023
Area: 60.0 acres (approximately)



Proposed Building Use	Square Feet*	LUE Conversion	LUEs
Total Office Building	814,776	1 LUE/3,000 SF	272
Total Hotel	192 rooms	0.5 LUE/ ROOM	96
Total S.F.	1,013,951	**Total LUEs**	368

*** Building S.F. are approximate**

Wastewater Design

Population	=	LUEs X 3.5/LUE	
	=	367.6	X 3.5 persons/LUE
	=	1,286.57	persons
Average Dry Weather Flow (F)	=	(70gpd/persons/day) X (population / 1440)	
	=	62.54	gpm
PFF	=	[18+(0.0206 X F)^0.5]/[4+(0.0206 X F)^0.5] , Maximum = 4	
	=	3.73	
Peak Dry Weather Flow	=	Average Dry Weather Flow X PFF	
	=	**233.05**	**gpm**
Peak Wet Flow	=	Peak Dry Flow + Inflow/Infiltration	
	=	233.05	+ (750 gpd/acre) X (acres/1440)
	=	**264.31**	**gpm**

Water Design

Population	=	LUEs X 3.5/LUE	
	=	367.59	X 3.5 persons/LUE
	=	1,286.57	persons
Peak Hour Demand	=	900 gallons/person/day*persons*1 day/1440 minutes	
		804.11	**gpm**
Peak Day Demand	=	530 gallons/person/day*persons*1 day/1440 minutes	
		473.53	**gpm**

Fire Flow

Largest Building Square Footage	=	930866	sq ft
Construction Type	=	IB	
Buidling Required Fire Flow	=	6000	gpm
Reduced Building Required Fire Flow*	=	**1500**	**gpm**
Total Peak Day Demand + Reduced Fire Flow	=	**1,974**	**gpm**

*Assumed 75% credit for Automatic Sprinkler System

ATTACHMENT B

WASTEWATER UTILITY SERVICE AGREEMENT

WATER AND WASTEWATER SERVICE EXTENSION REQUEST FOR CONSIDERATION

Name: Parmer & McNeil (Revised)		Service Requested: **Wastewater**
SER-4340R	Infor (IPS) Service Request Number: 1255001	Date Received: 06/27/2023
Location: 6900 W PARMER LN AUSTIN TX 78729		
Acres: 174.32	Land Use: MIXED	LUE: 1214
Alt. Utility Service or S.E.R. Number: City of Austin Water SER-4339R		
Quad(s): J37 J38	Reclaimed Pressure Zone: N/A	DDZ: YES
Drainage Basin: WALNUT	Pressure Zone: NORTHWEST A	DWPZ: NO
Flow (Estimated Peak Wet Weather): 851 GPM		
Cost Participation: $0	% Within City Limits: 100	% Within Limited Purpose: 0

Description of Improvements:

Phase Group 1 (Up to 277 LUEs)

Applicant shall make a 15-inch gravity wastewater main connection to the 18-inch wastewater interceptor (Project no. 2015-0042; MH ID no. 270592) at the location shown on the attached map. Applicant shall also dedicate an 80-foot wastewater easement for the future Rattan Creek Lower Interceptor along the approximate alignment shown on the attached map.

Phase Groups 2 and 3 (278 to 1,214 LUEs)

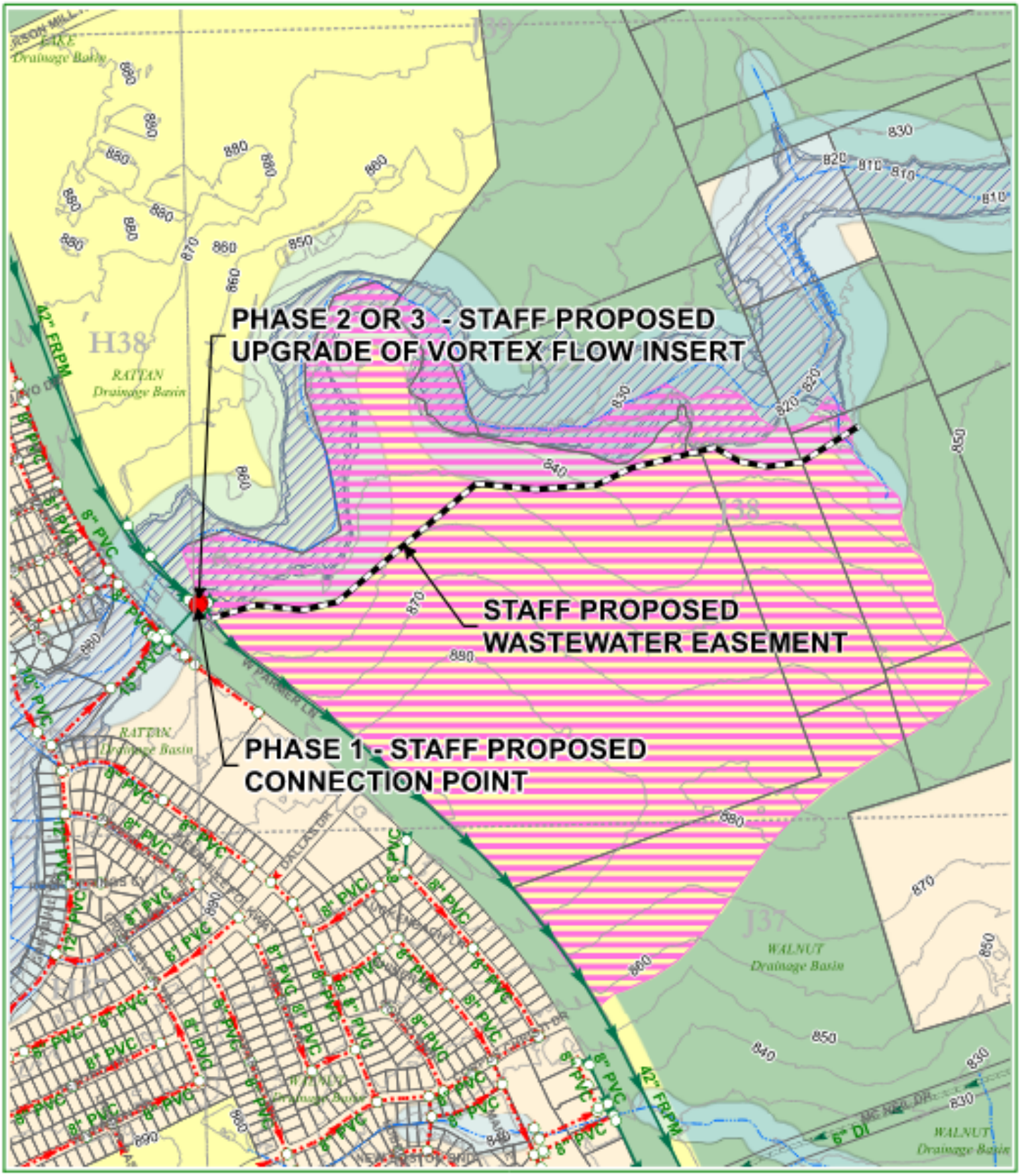
Applicant shall upgrade the vortex flow insert located within the Rattan Creek Shaft (Unit ID #270527) when development on the subject tract exceeds 1,000 LUEs or when the average dry weather flow entering the Rattan Creek Shaft exceeds 0.6 MGD. The upgraded vortex flow insert shall have a design capacity of 4.0 MGD, unless otherwise directed by Austin Water's Systems Planning Division. Applicant shall coordinate with Austin Water to initiate flow monitoring to verify existing flows into the Rattan Creek Shaft and to determine the need for the vortex flow insert upgrade.

NOTES: 1) Wastewater flow based on engineering calculations received from John D. Pelham, P.E. of GarzaEMC, LLC on 6/27/2023. 2) At the time of the approval of this SER, the Phase Group 1 wastewater improvements have already been constructed.

Approval of this Service Extension Request is subject to completion and acceptance of the improvements described above and the conditions set forth below:

1) Construction of all Service Extensions is subject to all environmental and planning ordinances.
2) Service Extensions are subject to the guidelines established in the Land Development Code, Chapter 25-9, Water and Wastewater Utility Service.
3) An approved Service Extension is not a reservation of capacity in the system, but it is an acknowledgment of the intent to serve. Available capacity shall be confirmed at the time a development application is submitted.
4) The level of service approved by this document does not imply commitment for land use.
5) Public utility mains must meet City of Austin Design and Construction Criteria and must be approved by Austin Water Engineering Review. Actual length and location of staff proposed utility mains shall be finalized during the plan review process.
6) Proposed public wastewater improvements will be dedicated to the City of Austin for ownership, operation, and maintenance.
7) Proposed public wastewater improvements must be placed in the public right-of-way or approved utility easements. Utility easements must be approved by Austin Water Engineering Review and must be in place prior to construction plan approval.
8) The approved Service Extension will automatically expire 180 days after date of approval unless a development application has been accepted by the Development Services Department. The Service Extension expires on the date the development expires, or if approved, on the date the development application approval expires.

Project Manager, Utility Development Services	11/6/23 Date	Supervisor, Utility Development Services	11/7/23 Date
Assistant Director, Austin Water	11/09/2023 Date	Director, Austin Water	11/12/2023 Date



0 350 700 1,400 2,100 Feet

Subject Tract
Full-Purpose City Limit
2-Mile ETJ
Limited-Purpose City Limit
100-Year COA Floodplain
Critical Water Quality Zone

W.W. S.E.R. Name: Parmer & McNeil (Revised)
W.W. S.E.R. Number: 4340R

Utility Development Services Plotted 11/2/2023

ATTACHMENT C

LOCAL SANITARY SEWER CONSTRUCTION NOTES

STANDARD CONSTRUCTION NOTES October 1, 2021

1. THE CITY STANDARD CONSTRUCTION SPECIFICATIONS CURRENT AT THE TIME OF BIDDING SHALL COVER MATERIALS AND METHODS USED TO DO THIS WORK.
2. CONTRACTOR MUST OBTAIN A ROW PERMIT FROM AUSTIN TRANSPORTATION DEPT, RIGHT OF WAY MANAGEMENT DIVISION BEFORE BEGINNING CONSTRUCTION WITHIN THE RIGHT-OF-WAY OF A PUBLIC STREET OR ALLEY. ACTIVITY WITHIN RIGHT-OF-WAY SHALL COMPLY WITH APPROVED TCP.
3. AT LEAST 48 HOURS PRIOR TO BEGINNING ANY UTILITY CONSTRUCTION ACTIVITY IN PUBLIC ROW OR PUBLIC EASEMENT, THE CONTRACTOR SHALL NOTIFY THE APPLICABLE CITY OF AUSTIN INSPECTION GROUP (AUSTIN TRANSPORTATION, DEVELOPMENT SERVICES, OR PUBLIC WORKS). SEE CURRENT NOTIFICATION REQUIREMENTS AT WWW.AUSTINTEXAS.GOV.
4. THE CONTRACTOR SHALL CONTACT THE AUSTIN AREA "ONE CALL" SYSTEM AT 1-800-344-8377 FOR EXISTING UTILITY LOCATIONS PRIOR TO ANY EXCAVATION IN ADVANCE OF CONSTRUCTION. THE CONTRACTOR SHALL VERIFY THE LOCATIONS OF ALL UTILITIES TO BE EXTENDED, TIED TO, OR ALTERED, OR SUBJECT TO DAMAGE/INCONVENIENCE BY THE CONSTRUCTION OPERATIONS. THE CITY OF AUSTIN WATER AND WASTEWATER MAINTENANCE RESPONSIBILITY ENDS AT R.O.W./EASEMENT LINES.
5. NO OTHER UTILITY SERVICE/APPURTENANCES SHALL BE PLACED NEAR THE PROPERTY LINE, OR OTHER ASSIGNED LOCATION DESIGNATED FOR WATER AND WASTEWATER UTILITY SERVICE THAT WOULD INTERFERE WITH THE WATER AND WASTEWATER SERVICES.
6. MINIMUM TRENCH SAFETY MEASURES SHALL BE PROVIDED, AS REQUIRED BY OSHA, CITY SPECIFICATION 509S, AND CITY/COUNTY CONSTRUCTION INSPECTORS.
7. ALL MATERIALS TESTS ORDERED BY THE OWNER FOR QUALITY ASSURANCE PURPOSES, SHALL BE CONDUCTED BY AN INDEPENDENT LABORATORY AND FUNDED BY THE OWNER IN ACCORDANCE WITH CITY STANDARD SPECIFICATION ITEM 1804S.04.
8. PRESSURE TAPS SHALL BE ALLOWED ON A CASE BY CASE BASIS, AS DETERMINED BY THE DIRECTOR'S DESIGNEE. NORMALLY PRESSURE TAPS 4 INCHES AND LARGER SHALL BE ALLOWED IN THE FOLLOWING CASES: A) A TEST SHUT CUT INDICATES AN ADEQUATE SHUT OUT TO PERFORM THE WORK IS NOT FEASIBLE B) MORE THAN 30 CUSTOMERS OR A SINGLE CRITICAL CUSTOMER (AS DEFINED BY AUSTIN WATER) WOULD BE IMPACTED BY THE SHUT OUT OR C) THE EXISTING WATER LINE WARRANTS IT.
9. WATER LINE TESTING AND STERILIZATION SHALL BE PERFORMED IN ACCORDANCE WITH CITY STANDARD SPECIFICATION ITEMS 510.3 (27)-(29). FORCE MAIN PRESSURE TESTING SHALL BE CONDUCTED AND FALL UNDER THE SPECIFICATIONS AS WATER LINES (PRESSURE PIPE) OR AT THE PRESSURES SHOWN ON THE APPROVED PLANS.
10. ALL MATERIAL USED ON THIS PROJECT MUST BE LISTED ON THE STANDARD PRODUCTS LISTING. ANY MATERIAL NOT LISTED HAS TO GO THROUGH THE REVIEW OF THE STANDARDS COMMITTEE FOR REVIEW AND APPROVAL PRIOR TO START OF PROJECT. TESTING AND EVALUATION OF PRODUCTS ARE REQUIRED BEFORE APPROVAL WILL BE GIVEN ANY CONSIDERATION.
11. WHEN WATER SERVICES ARE DAMAGED AND THE SERVICE MATERIAL IS POLYETHYLENE (PE), THE LINE SHALL BE REPAIRED ONLY BY HEAT FUSION WELD, AT BRASS FITTINGS, OR THE FULL LENGTH SHALL BE REPLACED PER CURRENT STANDARD DETAIL(S). WHEN POLYBUTYLENE (PB) TUBING IS DAMAGED OR TAMPERED WITH IN ANY WAY, THE FULL LENGTH OF SERVICE LINE SHALL BE REPLACED. (NOTE FULL LENGTH IS FROM THE CORPORATION STOP TO THE METER.) REPAIR COUPLINGS ARE NOT ALLOWED FOR ANY WATER OR WASTEWATER SERVICE LINE REPAIR, RECONNECT, OR REPLACEMENT.
12. WHEN AN EXISTING WATERLINE SHUT OUT IS NECESSARY AND POSSIBLE, THE CONTRACTOR SHALL NOTIFY THE CONSTRUCTION INSPECTOR WHO WILL THEN NOTIFY AUSTIN WATER DISPATCH AND THE AFFECTED CUSTOMERS A MINIMUM OF FORTY-EIGHT (48) HOURS IN ADVANCE.
13. THE CONTRACTOR SHALL NOTIFY THE CONSTRUCTION INSPECTOR SO THAT HE CAN NOTIFY THE AUSTIN WATER AT 972-0000 AT A MINIMUM OF 72 HOURS PRIOR TO RELOCATING ANY DOMESTIC OR FIRE DEMAND WATER METERS. THE CONTRACTOR SHALL CAREFULLY REMOVE ALL METERS AND METERS BOXES THAT ARE INDICATED TO BE RELOCATED OR SALVAGED. THE CONTRACTOR SHALL INSTALL THE REMOVED METER OR CITY PROVIDED METER AT THE NEW LOCATION INDICATED ON THE CONSTRUCTION PLANS.
14. THE CONTRACTOR SHALL VERIFY ALL VERTICAL AND HORIZONTAL LOCATIONS OF EXISTING UTILITIES, BELOW GROUND AND OVERHEAD, PRIOR TO STARTING ONSITE UTILITY WORK.
15. ALL WATER, WASTEWATER, AND RECLAIMED MAINS SHALL BE INSTALLED IN ACCORDANCE WITH THE SEPARATION DISTANCES INDICATED ON THE PLANS, PER UTILITY CRITERIA MANUAL AND TCEQ CHAPTERS 210, 217, AND 290.
16. PROJECT-SPECIFIC SHOP DRAWINGS SHALL BE SUBMITTED FOR AW APPROVAL FOR PRE-CAST CIRCULAR VERTICAL MANHOLE SECTIONS LARGER THAN 48" DIAMETER. THE SHOP DRAWINGS SHALL INCLUDE THE FLOWLINE ELEVATION OF ALL CONNECTING PIPES; ELEVATIONS OF TRANSITIONS FROM LARGE DIAMETER SECTIONS TO 48" DIAMETER SECTIONS; TOP OF MANHOLE AND SURROUNDING GROUND ELEVATIONS; AND DETAILS OF SPECIAL CONSTRUCTION CONSIDERATIONS SPECIFIED IN THE CONTRACT DOCUMENTS.
17. WHEN CONCRETE MANHOLES LARGER THAN 48 INCH DIAMETER ARE USED, DRAWINGS THAT ARE SEALED BY A PROFESSIONAL ENGINEER SHALL BE SUBMITTED FOR BASE SLABS, FLAT TOP LIDS (IF USED), AND FLAT TYPE CONCRETE PIECES USED TO TRANSITION FROM LARGER TO SMALLER DIAMETER MANHOLE SECTIONS.
18. ALL FIRE HYDRANTS AND VALVES THAT ARE TO BE ABANDONED SHALL BE REMOVED, SALVAGED AND RETURNED TO AUSTIN WATER. NOTICE SHOULD BE GIVEN 48 HOURS PRIOR, TO PIPELINE OPERATIONS DISTRIBUTION SYSTEM -VALVES AND HYDRANT SERVICES SUPERVISOR AT 512-972-1280.
19. ALL EXISTING WATER METERS IDENTIFIED TO BE RELOCATED OR ABANDONED AT THE DEVELOPMENT SHALL BE REMOVED FROM THE METER BOX PRIOR TO CONSTRUCTION AND GIVEN IMMEDIATELY TO THE CITY OF AUSTIN INSPECTOR.
20. THE ENGINEER SHALL CALL OUT THE SIZE, TYPE AND USE (DOMESTIC OR IRRIGATION) OF ALL EXISTING WATER METERS TO BE RELOCATED OR REPURPOSED. WATER METER NUMBERS WILL NOT BE REQUIRED TO BE PLACED ON THE PLAN SHEET. A SEPARATE AUSTIN WATER TAPS OFFICE FORM WILL BE USED TO PROVIDE RELEVANT DATA FOR THE EXISTING INFORMATION ON EXISTING METERS TO RECEIVE APPROPRIATE CREDITS. THIS FORM SHALL BE DIRECTLY SUBMITTED TO AUSTIN WATER TAPS OFFICE FOR REVIEW AND PROCESSING.
21. NO CONNECTION MAY BE MADE BETWEEN THE PRIVATE PLUMBING AND AUSTIN WATER INFRASTRUCTURE UNTIL A CITY APPROVED WATER METER HAS BEEN INSTALLED.
22. METER BOXES AND CLEAN OUTS SHALL NOT BE LOCATED WITHIN PAVED AREAS SUCH AS DRIVEWAYS AND SIDEWALKS.

Lift Station/Force Main System Application

Texas Commission on Environmental Quality

for Regulated Activities On the Edwards Aquifer Recharge Zone and Relating to 30 TAC §213.5(c)(3)(B)and(c), 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.

Regulated Entity Name: Generational Properties

Customer Information

(If different than customer information provided on core data form)

1. The person(s) responsible for providing the engineering certification to the TCEQ pursuant to 30 TAC §213.5(f)(2)(C) during construction and 30 TAC §213.5 (c)(3)(D) upon completion of construction is:

   Contact Person: Dani Sattman
   Entity: Apple, Inc.
   Mailing Address: 12545 Riata Vista Circle, MS 522-EHS
   City, State: Austin, TX Zip: 78727
   Telephone: 512-674-8221 Fax: _____
   Email Address: dsattman598@apple.com

2. The engineer responsible for the design of this lift station and force main:

   Contact Person: John Pelham, P.E.
   Entity: GarzaEMC, LLC
   Mailing Address: 7708 Rialto Blvd Suite 125
   City, State: Austin, TX Zip: 78735
   Telephone: 512-298-3284 Fax: _____
   Email Address: jpelham@garzaemc.com
   Texas Licensed Professional Engineer's Serial Number: 98294

Project Information

3. This project is for the construction or replacement of:

   ☐ Lift Station only.

☐ Lift Station and Force Main system.
☒ Lift Station, Force Main, and Gravity system.

4. The sewage collection system will convey the wastewater to the Walnut Creek (name) Treatment Plant. The treatment facility is:

   ☒ Existing
   ☐ Proposed

5. All components of this lift station/force main system will comply with:

   ☒ The City of Austin standard specifications.
   ☐ Other. Specifications are attached.

Site Plan Requirements

Items 6-14 must be included on the Site Plan.

6. ☐ The Site Plan must have a minimum scale of 1" = 400'.

   Site Plan Scale: 1" = 30‘.

7. ☒ Lift station/force main system layout meets all requirements of 30 TAC Chapter 217.

8. Geologic or Manmade Features:

   ☐ No geologic or manmade features were identified in the Geologic Assessment.
   ☒ All geologic or manmade features identified in the Geologic Assessment (caves, solution openings, sinkholes, fractures, joints, porous zones, etc.) which exist at the site of the proposed lift station and along the path(s) or within **50 feet of each side** of a proposed force main line are shown on the Site Plan and are listed in the table below. Designs used to protect the integrity of the sewer line crossing each feature are described and labeled on the attached page. A detailed design drawing for each feature is shown on Plan Sheet 22 of 235.
   ☐ No Geologic Assessment is required for this project.

Table 1 - Geologic or Manmade Features

Line	*Station to Station*	*Type of Feature*
CEP-08	to	Cave
CEP-09	to	Cave
CEF-01	to	Karst
CEF-02	to	Karst
	to	
	to	
	to	
	to	

9. ☒ Existing topographic contours are shown and labeled. The contour interval is 1 feet. (Contour interval must not be greater than 5 feet).

10. ☒ Finished topographic contours are shown and labeled. The contour interval is 1 feet. (Contour interval must not be greater than 5 feet).

    ☐ Finished topographic contours will not differ from the existing topographic configuration and are not shown.

11. 100-year floodplain boundaries

    ☒ Some part(s) of the project site is located within the 100-year floodplain. The floodplain is shown and labeled.

    ☐ No part of the project site is located within the 100-year floodplain.

    The 100-year floodplain boundaries are based on the following specific (including date of material) sources(s): FEMA Map - 12/20/2019

12. 5-year floodplain:

    ☒ After construction is complete, no part of this project will be in or cross a 5-year floodplain, either naturally occurring or manmade. (Do not include streets or concrete-lined channels constructed above sewer lines.)

    ☐ After construction is complete, all sections of the force main located within the 5-year floodplain will be encased in concrete or capped with concrete. These locations are listed in the table below and are shown and labeled on the Site Plan. (Do not include streets or concrete-lined channels constructed above sewer lines.)

Table 2 - 5-Year Floodplain

Line	*Sheet*	*Station to Station*
	of	to
	of	to
	of	to
	of	to

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

    If applicable, this must agree with Item No. 15 on the Geologic Assessment Form.

    ☒ 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 plugged.

    ☒ The wells are not in use and will be properly plugged.

    ☐ 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.

14. ☒ Legal boundaries of the site are shown.

Plan and Profile Sheets

*The construction drawings and technical specifications will not be considered for review unless they are the **final plans and technical specifications** which will be used by the contractor for bidding and construction.*

Items 15 – 18 must be included on the Plan and Profile sheets.

15. ☒ The equipment installation construction plans must have a minimum scale of 1" = 10'.

    Plan sheet scale: 1" = 30 '.

16. ☒ Locations, descriptions and elevations of all required equipment and piping for the lift station and force main are shown and labeled.

17. ☐ Air Release/Vacuum Valves will be provided at all peaks in elevation of the proposed force main. These locations are listed in the table below and labeled on the appropriate plan and profile sheets.

Table 3 - Air Release/Vacuum Valves

Line	*Station*	*Sheet*
		of
		of
		of
		of
		of
		of

18. ☒ The **final plans and technical specifications** are submitted for the TCEQ's review. Each sheet of the construction plans and specifications are dated, signed, and sealed by the Texas Licensed Professional Engineer responsible for the design on each sheet.

19. ☒ **Attachment A - Engineering Design Report**. An engineering design report with the following required items is attached:

    ☒ The report is dated, signed, and sealed by a Texas Licensed Professional Engineer.
    ☒ Calculations for sizing system.
    ☒ Pump head calculations, including, but not limited to, system head and pump capacity curves, head loss calculations, and minimum and maximum static head C values for normal and peak operational conditions.
    ☒ 100-year and 25-year flood considerations.
    ☒ Total lift station pumping capacity with the largest pump out of service.
    ☒ Type of pumps, including standby units.
    ☒ Type of pump controllers, including standby air supply for bubbler controllers, as applicable.

☒ Pump cycle time.
☐ Type of wet well ventilation; include number of air changes for mechanical ventilation.
☒ Minimum and maximum flow velocities for the force main.
☒ Lift station security.
☒ Lift station emergency provisions and reliability.

Administrative Information

20. ☒ Upon completion of the wet well excavation, a geologist must certify that the excavation was inspected for the presence of sensitive features and submit the signed, sealed, and dated certification to the appropriate regional office.

21. ☒ The TCEQ Lift Stations and Force Mains General Construction Notes (TCEQ-0591) are included on the General Notes Sheet of the Final Construction Plans for this lift station and/or force main system.

22. ☒ 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.

23. ☒ Any modification of this lift station/force main system application will require TCEQ approval, prior to construction, and may require submission of a revised application, with appropriate fees.

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 **Lift Station/Force Main System Application** is hereby submitted for TCEQ review and executive director approval. The system was designed in accordance with the requirements of 30 TAC §213.5(c)(3)(C) and 30 TAC Chapter 217, and prepared by:

Print Name of Licensed Professional Engineer: John Pelham, P.E.

Place engineer's seal here:

Date: 04/02/2024

Signature of Licensed Professional Engineer:

ATTACHMENT A – ENGINEERING DESIGN REPORT

A engineering design report is included with this application

MECHANICAL ELECTRICAL PLUMBING

Bay & Associates inc.
CONSULTING ENGINEERS

February 23, 2024

Mr. John Pelham
Garza EMC
7708 Rialto Blvd #125
Austin, Texas 78735

Re: Capstone Phase 2 Building AC09
Grease Waste System Ejector Pump Design Report
6900 W. Parmer Lane
Austin, TX

John,

Please reference the attachments regarding the design for the (2) sets of duplex ejector pumps serving AC09 Kitchen Grease Waste. Included are the below items regarding the design and selection of the duplex pump systems for submission to TCEQ for review and approval.

- The relevant final plan plumbing sheets – Enlarged Plan, Schedule & Detail. Sheets IP3.09, IP4.01 & IP7.02.
- Calculations for sizing system. Flow and pump head.
- Cutsheets of the selected equipment. Pumps with capacity curves and system head indicated and total lift station pumping capacity, pump controllers, pit basins, wastewater valve assemblies and removal system.

Please feel free to contact me if you have any questions or concerns.

Sincerely,
Bay & Associates, Inc.

Kevin Chadwick, P.E.
Mechanical Engineer

02/23/2024

Bay & Associates, Inc.
8217 Shoal Creek Blvd., Suite 100
Austin, TX 78757

(512) 407-9011
(512) 407-8287 (fax)
www.BayMEP.com

Calculations

SSE-1 (Serving Grease Traps, GT-1 & GT-2)
Total Fixture Units = 212 + 219 = 431 DFU
1 GPM is approximately equal to 2 DFU. This approximates to **215.5 GPM**

CITY OF AUSTIN GREASE TRAP SIZING - GT-1

QTY.	FIXTURE TYPE	TRAP SIZE	FIXTURE UNITS		TOTAL FIXTURE UNITS
2	3 COMP SINK (INDIRECT WASTE)	3"	6		12
0	2 COMP SINK (INDIRECT WASTE)	3"	6		0
4	DISHWASHER (HARD PIPED)	2"	4		16
4	PRE-RINSE SINK (INDIRECT WASTE)	4"	4		16
2	MOP SINK	3"	3		6
20	3" FLOOR DRAIN (EMERGENCY)	3"	3		60
34	3" FLOOR SINK (INDIRECT WASTE)	3"	3		102
					212
* 36 FLOOR SINKS OMITTED FROM GREASE CALC FOR RECEIVING CONDENSATE WASTE FROM KITCHEN EQUIPMENT, BEVERAGE SERVICES, WARMING WELLS, ETC . . .				3	636
				12	7,632
					TRAP SIZE = 10,000

TOTAL FIXTURE UNITS X 3 GPM = GREASE TRAP FLOW RATING
GREASE TRAP FLOW RATING X 12 MINUTES = GREASE TRAP LIQUID HOLDING CAPACITY (GALLONS)

CITY OF AUSTIN GREASE TRAP SIZING - GT-2

QTY.	FIXTURE TYPE	TRAP SIZE	FIXTURE UNITS		TOTAL FIXTURE UNITS
2	3 COMP SINK (INDIRECT WASTE)	3"	6		12
2	2 COMP SINK (INDIRECT WASTE)	3"	6		12
2	DISHWASHER (HARD PIPED)	2"	4		8
4	PRE-RINSE SINK (INDIRECT WASTE)	4"	4		16
1	MOP SINK	3"	3		3
30	3" FLOOR DRAIN (EMERGENCY)	3"	3		90
26	3" FLOOR SINK (INDIRECT WASTE)	3"	3		78
					219
* 18 FLOOR SINKS OMITTED FROM GREASE CALC FOR RECEIVING CONDENSATE WASTE FROM KITCHEN EQUIPMENT, BEVERAGE SERVICES, WARMING WELLS, ETC . . .				3	657
				12	7,884
					TRAP SIZE = 10,000

TOTAL FIXTURE UNITS X 3 GPM = GREASE TRAP FLOW RATING
GREASE TRAP FLOW RATING X 12 MINUTES = GREASE TRAP LIQUID HOLDING CAPACITY (GALLONS)

SSE-1 (Serving Grease Traps, GT-3 & GT-4)
Total Fixture Units = 244 + 151 = 395 DFU
1 GPM is approximately equal to 2 DFU. This approximates to **197.5 GPM**

CITY OF AUSTIN GREASE TRAP SIZING - GT-3

QTY.	FIXTURE TYPE	TRAP SIZE	FIXTURE UNITS		TOTAL FIXTURE UNITS
2	3 COMP SINK (INDIRECT WASTE)	3"	6		12
0	2 COMP SINK (INDIRECT WASTE)	3"	6		0
2	DISHWASHER (HARD PIPED)	2"	4		8
2	PRE-RINSE SINK (INDIRECT WASTE)	4"	4		8
2	MOP SINK	3"	3		6
36	3" FLOOR DRAIN (EMERGENCY)	3"	3		108
34	3" FLOOR SINK (INDIRECT WASTE)	3"	3		102
					244
				3	732
				12	8,784
					TRAP SIZE = 10,000

* 16 FLOOR SINKS OMITTED FROM GREASE CALC FOR RECEIVING CONDENSATE WASTE FROM KITCHEN EQUIPMENT, BEVERAGE SERVICES, WARMING WELLS, ETC . . .

TOTAL FIXTURE UNITS X 3 GPM = GREASE TRAP FLOW RATING
GREASE TRAP FLOW RATING X 12 MINUTES = GREASE TRAP LIQUID HOLDING CAPACITY (GALLONS)

CITY OF AUSTIN GREASE TRAP SIZING - GT-4

QTY.	FIXTURE TYPE	TRAP SIZE	FIXTURE UNITS		TOTAL FIXTURE UNITS
2	3 COMP SINK (INDIRECT WASTE)	3"	6		12
0	2 COMP SINK (INDIRECT WASTE)	3"	6		0
2	DISHWASHER (HARD PIPED)	2"	4		8
2	PRE-RINSE SINK (INDIRECT WASTE)	4"	4		8
2	MOP SINK	3"	3		6
19	3" FLOOR DRAIN (EMERGENCY)	3"	3		57
20	3" FLOOR SINK (INDIRECT WASTE)	3"	3		60
					151
				3	453
				12	5,436
					TRAP SIZE = 10,000

* 6 FLOOR SINKS OMITTED FROM GREASE CALC FOR RECEIVING CONDENSATE WASTE FROM KITCHEN EQUIPMENT, BEVERAGE SERVICES, WARMING WELLS, ETC . . .

TOTAL FIXTURE UNITS X 3 GPM = GREASE TRAP FLOW RATING
GREASE TRAP FLOW RATING X 12 MINUTES = GREASE TRAP LIQUID HOLDING CAPACITY (GALLONS)

Nominal Pipe Size: *4"*

- Inside Diameter: *0.102 m (4.0 inches)*

Steel Pipes Schedule 40 - Pressure Loss - *4"*

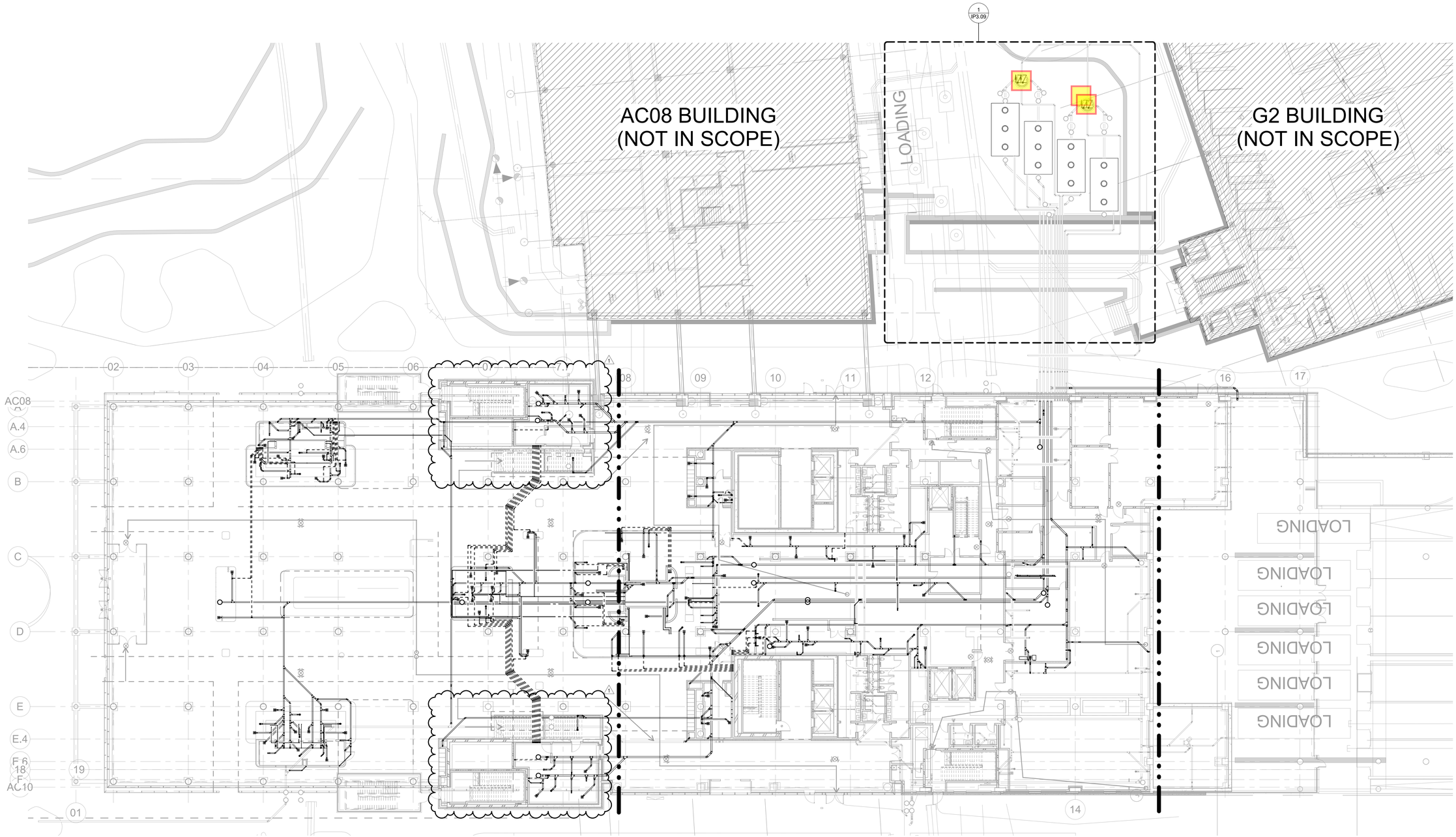
Flow			Velocity		Pressure Drop			
(m^3/s)	*(liter/s)*	*(US gpm)*	*(m/s)*	*(ft/s)*	*(Pa/100m)*	*($mmH_2O/100m$)*	*(psi/100ft)*	*($ftH_2O/100ft$)*
0.0030	3.0	48	0.37	1.2	1649	168	0.073	0.168
0.0040	4.0	63	0.49	1.61	2814	287	0.124	0.29
0.0050	5.0	79	0.61	2.0	4214	430	0.186	0.43
0.0060	6.0	95	0.73	2.4	5805	592	0.26	0.59
0.0070	7.0	111	0.86	2.8	7901	806	0.35	0.81
0.0080	8.0	127	0.98	3.2	10319	1052	0.46	1.05
0.0090	9.0	143	1.1	3.6	12467	1271	0.55	1.27
0.01	10.0	159	1.22	4.0	15391	1569	0.68	1.57
0.011	11.0	174	1.35	4.4	18623	1899	0.82	1.9
0.012	12.0	190	1.47	4.8	22163	2260	0.98	2.3
0.013	13.0	206	1.59	5.2	24772	2526	1.09	2.5
0.014	14.0	222	1.71	5.6	28730	2930	1.27	2.9
0.015	15.0	238	1.84	6.0	32981	3363	1.46	3.4
0.016	16.0	254	1.96	6.4	37525	3826	1.66	3.8
0.017	17.0	269	2.1	6.8	42362	4320	1.87	4.3
0.018	18.0	285	2.2	7.2	47493	4843	2.1	4.8
0.019	19.0	301	2.3	7.6	52916	5396	2.3	5.4
0.02	20	317	2.4	8.0	58633	5979	2.6	6.0
0.03	30	476	3.7	12.0	125328	12780	5.5	12.8

5.4 ft of head / 100 ft pressure drop for 4" iron pipe.
600' of run to sanitary gravity connection.
Pipe losses - 5.4 x 6 = 32.4'
Elevation losses – 15'
Total losses = 32.4 + 15 = 47.4'
Add 20% for fitting losses = 47.4 x 20% = **56.88 ft of head**.

100 Year and 25 Year flood considerations:
The ejector pumps referenced in this report are being proposed entirely outside the 100-year and 25-year floodplain. The lowest elevation of this system is at 856.00 ft, significantly outside of the 100-year flood elevation of 834.47 and 25-year flood elevation of 833.70.

Wet Well Ventilation:
The ejector pump basin is provided with a 4" vent line which routes back to the AC09 building and ties into the building sanitary vent system. The building sanitary vent is terminated to atmosphere at the roof level.

Security:
The traffic rated (H-20 Load Rating) access cover to the duplex ejector pump basin is provided with a locking device to prevent access from unauthorized personnel, as detailed on the attached equipment cut sheets. In addition, the location of the ejector pumps and basin is within a secured yard on the campus.



1 PLUMBING OVERALL SITE PLAN
1/16" = 1'-0"

PLOT DATE:
1/11/2024 11:10:18 AM TEMPLATE VERSION

HKS

ARCHITECT / INTERIORS
HKS INC.
350 NORTH SAINT PAUL, SUITE 100
DALLAS, TEXAS 75201

STRUCTURAL ENGINEER
THORNTON TOMASETTI
707 WILSHIRE BLVD, SUITE 4450
LOS ANGELES, CA 90017

MEP ENGINEER
BAY & ASSOCIATES INC.
8217 SHOAL CREEK BLVD., SUITE 100
AUSTIN, TEXAS 78757
TBPE FIRM F-2005

CIVIL
GARZA EMC
7708 RIALTO BLVD., SUITE 125
AUSTIN, TEXAS 78735

LANDSCAPE
NUDGE DESIGN
127 E. RIVERSIDE, SUITE #103
AUSTIN, TEXAS 78704

TECHNOLOGY
BJL TECHNOLOGY CONSULTANTS
39 CALIFORNIA AVENUE, SUITE 209
PLEASANTON, CA 94566

SECURITY
MARQUIS SYSTEMS INC.
2025 GATEWAY PLACE, SUITE 482
SAN JOSE, CA 95110

ASSOCIATE ARCHITECT
KAI ENTERPRISES
5010 RIVERSIDE DR., SUITE 250
IRVING, TEXAS 75039

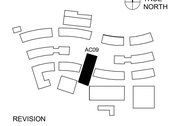
CAPSTONE - PHASE II
AC09 AMENITY BUILDING

6900 W. PARMER LANE, BUILDING 9, AUSTIN, TX 78729

STATE OF TEXAS
KEVIN D. CHADWICK
137523
LICENSED
PROFESSIONAL ENGINEER
01/11/2024

KEY PLAN

TRUE NORTH



REVISION

NO.	DESCRIPTION	DATE
1	AC09_TI_PC03	01/12/2024

HKS PROJECT NUMBER
24899

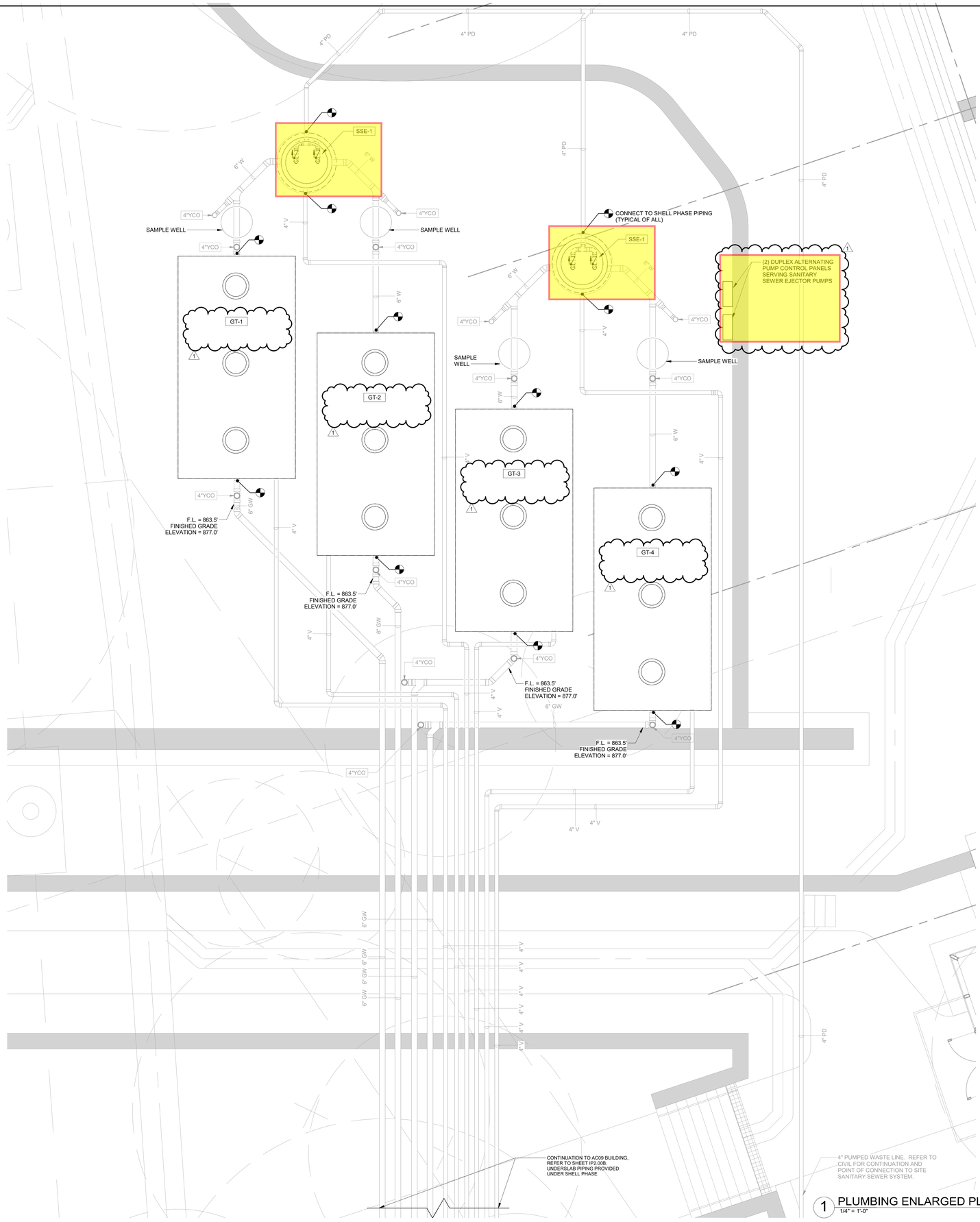
DATE
11/01/2023

ISSUE
AC09_TI_PC01

SHEET TITLE
PLUMBING OVERALL SITE PLAN - INTERIORS

BUILDING ID
AC09

SHEET NO.
IP1.00



1 PLUMBING ENLARGED PLAN - LEVEL 01 - INTERIORS - SERVICE YARD - GREASE TRAPS
1/4" = 1'-0"

AC09 - GREASE TRAPS

ITEM #	DESCRIPTION
GT-1 GT-2 GT-3 GT-4	3 COMPARTMENT, GALLON CAPACITY 10,000, PRECAST CONCRETE, 6-IN TRAFFIC TOP, 24-IN DIAMETER MANHOLE FOR EACH COMPARTMENT, EXTENSIONS TO GRADE, TRAFFIC MANHOLE COVERS, BUTYL SEALS AT EACH JOINT, 5500 PSI CONCRETE. PROVIDE WITH CONCRETE SAMPLING WELL. PROVIDE WITH SAMPLE WELLS DOWNSTREAM OF TRAP. PARK USA # GT-10000-TXAU

CITY OF AUSTIN GREASE TRAP SIZING - GT-1

QTY.	FIXTURE TYPE	TRAP SIZE	FIXTURE UNITS		TOTAL FIXTURE UNITS
2	3 COMP SINK (INDIRECT WASTE)	3"	6		12
0	2 COMP SINK (INDIRECT WASTE)	3"	6		0
4	DISHWASHER (HARD PIPED)	2"	4		16
4	PRE-RINSE SINK (INDIRECT WASTE)	4"	4		16
2	MOP SINK	3"	3		6
20	3" FLOOR DRAIN (EMERGENCY)	3"	3		60
34	3" FLOOR SINK (INDIRECT WASTE)	3"	3		102
					212
				3	636
				12	7,632
					TRAP SIZE = 10,000

* 36 FLOOR SINKS OMITTED FROM GREASE CALC FOR RECEIVING CONDENSATE WASTE FROM KITCHEN EQUIPMENT, BEVERAGE SERVICES, WARMING WELLS, ETC . . .

TOTAL FIXTURE UNITS X 3 GPM = GREASE TRAP FLOW RATING
GREASE TRAP FLOW RATING X 12 MINUTES = GREASE TRAP LIQUID HOLDING CAPACITY (GALLONS)

CITY OF AUSTIN GREASE TRAP SIZING - GT-2

QTY.	FIXTURE TYPE	TRAP SIZE	FIXTURE UNITS		TOTAL FIXTURE UNITS
2	3 COMP SINK (INDIRECT WASTE)	3"	6		12
2	2 COMP SINK (INDIRECT WASTE)	3"	6		12
2	DISHWASHER (HARD PIPED)	2"	4		8
4	PRE-RINSE SINK (INDIRECT WASTE)	4"	4		16
1	MOP SINK	3"	3		3
30	3" FLOOR DRAIN (EMERGENCY)	3"	3		90
26	3" FLOOR SINK (INDIRECT WASTE)	3"	3		78
					219
				3	657
				12	7,884
					TRAP SIZE = 10,000

* 18 FLOOR SINKS OMITTED FROM GREASE CALC FOR RECEIVING CONDENSATE WASTE FROM KITCHEN EQUIPMENT, BEVERAGE SERVICES, WARMING WELLS, ETC . . .

TOTAL FIXTURE UNITS X 3 GPM = GREASE TRAP FLOW RATING
GREASE TRAP FLOW RATING X 12 MINUTES = GREASE TRAP LIQUID HOLDING CAPACITY (GALLONS)

CITY OF AUSTIN GREASE TRAP SIZING - GT-3

QTY.	FIXTURE TYPE	TRAP SIZE	FIXTURE UNITS		TOTAL FIXTURE UNITS
2	3 COMP SINK (INDIRECT WASTE)	3"	6		12
0	2 COMP SINK (INDIRECT WASTE)	3"	6		0
2	DISHWASHER (HARD PIPED)	2"	4		8
2	PRE-RINSE SINK (INDIRECT WASTE)	4"	4		8
2	MOP SINK	3"	3		6
36	3" FLOOR DRAIN (EMERGENCY)	3"	3		108
34	3" FLOOR SINK (INDIRECT WASTE)	3"	3		102
					244
				3	732
				12	8,784
					TRAP SIZE = 10,000

* 16 FLOOR SINKS OMITTED FROM GREASE CALC FOR RECEIVING CONDENSATE WASTE FROM KITCHEN EQUIPMENT, BEVERAGE SERVICES, WARMING WELLS, ETC . . .

TOTAL FIXTURE UNITS X 3 GPM = GREASE TRAP FLOW RATING
GREASE TRAP FLOW RATING X 12 MINUTES = GREASE TRAP LIQUID HOLDING CAPACITY (GALLONS)

CITY OF AUSTIN GREASE TRAP SIZING - GT-4

QTY.	FIXTURE TYPE	TRAP SIZE	FIXTURE UNITS		TOTAL FIXTURE UNITS
2	3 COMP SINK (INDIRECT WASTE)	3"	6		12
0	2 COMP SINK (INDIRECT WASTE)	3"	6		0
2	DISHWASHER (HARD PIPED)	2"	4		8
2	PRE-RINSE SINK (INDIRECT WASTE)	4"	4		8
2	MOP SINK	3"	3		6
19	3" FLOOR DRAIN (EMERGENCY)	3"	3		57
20	3" FLOOR SINK (INDIRECT WASTE)	3"	3		60
					151
				3	453
				12	5,436
					TRAP SIZE = 10,000

* 6 FLOOR SINKS OMITTED FROM GREASE CALC FOR RECEIVING CONDENSATE WASTE FROM KITCHEN EQUIPMENT, BEVERAGE SERVICES, WARMING WELLS, ETC . . .

TOTAL FIXTURE UNITS X 3 GPM = GREASE TRAP FLOW RATING
GREASE TRAP FLOW RATING X 12 MINUTES = GREASE TRAP LIQUID HOLDING CAPACITY (GALLONS)

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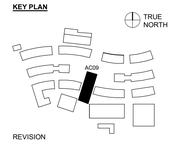
10/27/2023

KEY PLAN



REVISION

NO.	DESCRIPTION	DATE
1	AC09_TI_PC01	11/01/2023

HKS PROJECT NUMBER
24899
DATE
08/31/2023
ISSUE
ISSUE FOR CONSTRUCTION
SHEET TITLE
PLUMBING ENLARGED PLAN - INTERIORS
BUILDING ID
AC09
SHEET NO.
IP3.09

PLOT DATE:
10/30/2023 11:49:07 AM TEMPLATE VERSION

DOMESTIC BOILER (GAS) SCHEDULE

MARK	SERVES	LOCATION	STORAGE GALLONS	RECOVERY DATA		GAS DATA		ELECTRICAL DATA		MANUFACTURER AND MODEL NUMBER
				GALS/HOUR	TEMP. RISE °F	MBH INPUT AT 1/2 PSI	EFF.	KW	VOLTS	
GWH-1	KITCHEN	BOILER ROOM	-	2,375	100°	1,999	98%	-	208 V, 3 PH	LOCHINVAR AWH2000NPM
GWH-2	KITCHEN	BOILER ROOM	-	2,375	100°	1,999	98%	-	208 V, 3 PH	LOCHINVAR AWH2000NPM
GWH-3	KITCHEN	BOILER ROOM	-	2,375	100°	1,999	98%	-	208 V, 3 PH	LOCHINVAR AWH2000NPM
GWH-4	KITCHEN	BOILER ROOM	-	2,375	100°	1,999	98%	-	208 V, 3 PH	LOCHINVAR AWH2000NPM

1 NOTES:

1. PROVIDE QTY. 1 - EXPANSION TANK ET-1, ST-500-CL, 132 GALLON, 1-1/4" CONNECTION, PRECHARGED THERMAL EXPANSION ABSORBER, 150 PSI WORKING PRESSURE, SEAMLESS BLADDER, 240 DEGREE F. MAX WORKING TEMPERATURE. ADD OR REDUCE AIR PRESSURE IN BLADDER UPON STARTUP AS RECOMMENDED BY MANUFACTURER. PROVIDE WITH LOCHINVAR SMP3000 LONWORKS INTEGRATED SEQUENCING CONTROLLER. PROVIDE WITH CONDENSATE NEUTRALIZATION KITS. PROVIDE WITH BOILER PUMPS (2HP, 208V, 3 PH - EACH)
2. PROVIDE A SINGLE 1,250-GALLON INSULATED ASME STORAGE TANK ST-1 (LOCHINVAR #TVG2000J). REFER TO PLUMBING PLANS AND BOILER SCHEMATIC THIS SHEET FOR DETAIL.
3. UNIT SHALL COMPLY WITH THE STATE OF TEXAS LOW-NOx REQUIREMENTS.
4. ALL PLUMBING SUPPLIES, VALVES AND ASSOCIATED APPURTENANCES SHALL BE INSTALLED.
5. SET STORAGE SETPOINT TO 160°.
6. REFER TO MECHANICAL PLANS FOR SIZING AND ROUTING OF PVC INTAKE AND EXHAUST PIPING
7. COORDINATE EXACT MOUNTING LOCATION WITH ARCHITECTURAL.
8. COORDINATE POWER DISCONNECT LOCATION WITH ELECTRICAL AND ARCHITECTURAL.
9. HEATER INSTALLATIONS SHALL MEET OR EXCEED ALL CODE REQUIREMENTS, LOCAL AMENDMENTS AND MANUFACTURERS RECOMMENDATIONS AND REQUIREMENTS.

PUMP SCHEDULE

MARK	SERVICE	TYPE	FLOW GPM	DESIGN HEAD FT. WG	ELECTRICAL DATA				MANUFACTURER AND MODEL NUMBER
					HP	RPM	VOLTS	PH	
HWRP-1	HOT WATER CIRC.	CENTRIFUGAL	20	40	1	3300	120	1	GRUNDFOS MAGNA1 40-180 (SPEED 3)
HWRP-2	HOT WATER CIRC.	CENTRIFUGAL	20	40	1	3300	120	1	GRUNDFOS MAGNA1 40-180 (SPEED 3)

NOTES:

1. PROVIDE HWRP WITH 24-HR, 7-DAY TIMER CONTROLLER. INSTALL AQUASTAT ON RETURN ADJACENT TO LAST FIXTURE TAP.

HEAT TRACE SPECIFICATIONS

THERMON "FLX" SELF REGULATING HEATING CABLE, 120, 8 WATTS PER FOOT (SINGLE PASS ONLY). CONTRACTOR SHALL PROVIDE ALL JUNCTION BOXES, SPLICE KITS, STRAPS AND ASSOICIATED APPURTENANCES TO PROVIDE A COMPLETE AND WORKING SYSTEM. COORDINATE WITH ELECTRICAL.

THERMOSTATIC MIXING VALVE SCHEDULE

MARK	DESIGN FLOW RATE (GPM)	PRESSURE DROP @ DESIGN FLOW RATE (PSI)	MINIMUM FLOW RATE (GPM)	MAXIMUM FLOW RATE (GPM)	MANUFACTURER AND MODEL NUMBER
TMV-1	45	5	0.5	50	POWERS INTELLISTATION LFIS150VL-SYS200RTN
TMV-2	1	5	0.5	1.5	AMERICAN STANDARD 605XTMV

NOTES:

1. MINIMUM FLOW REQUIRED TO MAINTAIN TEMPERATURE CONTROL.
2. VALVE FINISH IS TO BE ROUGH BRONZE.
3. TMV-1 - TEMPERATURE RANGE 50°F TO 160°F. SET POINT 140°F.
4. TMV-2 - TEMPERATURE RANGE 50°F TO 120°F. SET POINT 105°F.

SEWAGE EJECTOR PUMP SCHEDULE (GREASE)

MARK	SERVICE	TYPE	FLOW GPM	DESIGN HEAD FT. WG	ELECTRICAL DATA				MANUFACTURER AND MODEL NUMBER
					HP	RPM	VOLTS	PH	
SSE-1	SEWAGE PUMP 1	SUBMERSIBLE SLICER	300	60	10	1750	460	3	WEIL 1634 SERIES
	SEWAGE PUMP 2	SUBMERSIBLE SLICER	300	60	10	1750	460	3	WEIL 1634 SERIES

NOTES:

1. SUMP PUMPS SHALL BE CONTROLLED BY A WEIL 8151 SERIES DUPLEX ALTERNATING CONTROL PANEL. PROVIDE WITH NEMA 3R ENCLOSURE AND 3-PHASE 460V MAIN CIRCUIT BREAKER OPTION. MOUNT CONTROL PANEL ON ADJACENT WALL.
2. SUMP PIT SHALL BE PROVIDED WITH FOUR (4) FLOAT SWITCHES AS INDICATED ON SUMP PIT SECTION OR RISER DIAGRAM. THEY SHALL BE INSTALLED AS FOLLOWS:
   - 2.1. THE BOTTOM OF THE SUMP SHALL BE CONSIDERED ELEV. 0'-0"
   - 2.2. A FLOAT SHALL BE INSTALLED AT AN OPERATING ELEV. OF 1'-0" (FROM BOTTOM OF SUMP) AND SHALL TURN LEAD PUMP OFF WITH DECREASING WATER LEVEL.
   - 2.3. A FLOAT SHALL BE INSTALLED AT AN OPERATING ELEV. OF 3'-0" (FROM BOTTOM OF SUMP) AND SHALL TURN LEAD PUMP ON WITH INCREASING WATER LEVEL AND TURN OFF LAG PUMP WITH DECREASING WATER LEVEL.
   - 2.4. A FLOAT SHALL BE INSTALLED AT AN OPERATING ELEV. OF 4'-0" (FROM BOTTOM OF SUMP) AND SHALL TURN LAG PUMP ON WITH INCREASING WATER LEVEL.
   - 2.5. A FLOAT SHALL BE INSTALLED AT AN OPERATING ELEV. OF 4'-6" (FROM BOTTOM OF SUMP) AND SHALL SIGNAL HIGH LEVEL ALARM.
3. PROVIDE 48"Ø FRP OR RCP SUMP PIT WITH GAS TIGHT ACCESS COVER (TRAFFIC RATED).
4. PROVIDE ALL NECESSARY APPURTENANCES TO PROVIDE A COMPLETE AND WORKING AUTOMATIC DUPLEX SUMP PUMP SYSTEM.
5. PUMPS SHALL BE MOUNTED WITH WEIL 2613-2 REMOVAL SYSTEM AND 2616-2 VALVE ASSEMBLY.
6. PROVIDE SSE-1 WITH 30 SECOND DELAYED START UPON LOSS OF NORMAL SOURCE POWER.
7. PROVIDE WITH BASIN DIMENSIONS 16" X 5' DIAMETER.

WATER TREATMENT EQUIPMENT SCHEDULE

TAG	DESCRIPTION	MAKE/MODEL	SPECIFICATION
WT-1	RO WATER SYSTEM (KITCHEN HOT WATER) (PROVIDE 3 SYSTEMS TOTAL)	CULLIGAN WATER TECHNOLOGIES	(G2 5HE RO) 9,000 GALLONS PER DAY CENTRAL REVERSE OSMOSIS SYSTEM ON STEEL FRAME, 2 HP MOTOR - 208 V, 3 PHASE
			(HE 1.5 PF CF-21) HIGH CAPACITY, AUTOMATIC BACKWASHING, HIGH EFFICIENCY CARBON FILTRATION SYSTEM, 12 GPM @ 2 PSI PROVIDE WITH CULLIGAN SMART CONTROLLER, FLOW METER, ELECTRONIC BY-PASS, WATER DISCHARGE QUALITY METER CONNECTION TO BUILDING AUTOMATION SYSTEM. PROVIDE WITH D101 3880 PRESSURE STORAGE KIT.
			(FWR 360) DUAL STEEL BLADDER TANKS FOR RO SYSTEMS, 120 GALLON EACH,
			(WATTS PWIOCAL15) RE-MINERALIZATION SYSTEM
WT-2	RO WATER SYSTEM (CENTRAL FILTERED WATER)	CULLIGAN WATER TECHNOLOGIES	(G2 5HE RO) 9,000 GALLONS PER DAY CENTRAL REVERSE OSMOSIS SYSTEM ON STEEL FRAME, 2 HP MOTOR - 208 V, 3 PHASE
			(HE 1.5 PF CF-21) HIGH CAPACITY, AUTOMATIC BACKWASHING, HIGH EFFICIENCY CARBON FILTRATION SYSTEM, 12 GPM @ 2 PSI PROVIDE WITH CULLIGAN SMART CONTROLLER, FLOW METER, ELECTRONIC BY-PASS, WATER DISCHARGE QUALITY METER CONNECTION TO BUILDING AUTOMATION SYSTEM. PROVIDE WITH D101 3880 PRESSURE STORAGE KIT.
			(FWR 360) DUAL STEEL BLADDER TANKS FOR RO SYSTEMS, 120 GALLON EACH,
			(WATTS PWIOCAL15) RE-MINERALIZATION SYSTEM

NOTES:

1. CONTRACTOR SHALL PROVIDE ALL EQUIPMENT AND ASSOCIATED APPURTENANCES REQUIRED TO PROVIDE A FULLY FUNCTIONING SYSTEM.
2. COORDINATE EXACT MOUNTING LOCATION WITH ARCHITECT.
3. INSTALLATIONS SHALL MEET OR EXCEED ALL CODE REQUIREMENTS, LOCAL AMENDMENTS AND MANUFACTURERS RECOMMENDATIONS AND REQUIREMENTS.
4. SYSTEM COMPONENTS SHALL BE RATED BY MANUFACTURER TO ACCOMMODATE A MAXIMUM WORKING PRESSURE OF 125-PSI.
5. ASSEMBLY SHALL BE INSTALLED WITH FULL SIZE BY-PASS.

PLUMBING FIXTURE SCHEDULE

TAG	DESCRIPTION	MOUNTING TYPE	MANUFACTURER	SPECIFICATION	ADA	BRANCH CONNECTION SIZE UNLESS OTHERWISE NOTED				P-TRAP SIZE
						CW	HW	SAN	VENT	
BF-1	BOTTLE FILL	WALL	2 FILTRINE B103 (AUTOMATIC SENSOR OPTION)	SELF CONTAINED, BARRIER FREE, LAMINAR FLOW, 8.0 GPH CAPACITY BOTTLE FILLING STATION. STAINLESS STEEL BASINS AND WALL PLATE CARRIER: CONCEALED FLOOR MOUNTED CARRIES. REFER TO ARCHITECTS DRAWINGS FOR EXACT LOCATION AND MOUNTING HEIGHT. PROVIDE APRONS IF REQUIRED BY TAS.	ADA	1/2"	-	1-1/2"	1-1/2"	1-1/4"
BFS-1	BOTTLE FILLING STATION	COUNTER	TOPBREWER TOPWATER SCANOMAT	COUNTER MOUNTED, 8" PEDESTAL WATER STATION, LAMINAR FLOW, GOOSENECK SPOUT, SENSOR OPERATED. STAINLESS STEEL BASIN	ADA	1/2"	-	1-1/2"	1-1/2"	1-1/4"
DCV-1	BACKFLOW PREVENTER	WALL	WATTS LF709-OSY SERIES	4" DOUBLE CHECK BACKFLOW PREVENTER, REPLACEABLE SEATS AND DISCS, ISOLATION BALL VALVES.	-	-	-	-	-	-
DEW-1	DECK MOUNTED EYE WASH	COUNTER	HAWS 7610	BARRIER-FREE DECK MOUNTED EYE / FACE WASH. 4.2 GPM. 13 INCH DROP DOWN LENGTH, POLISHED CHROME BRASS SINGLE ACTION PULL DOWN VALVE BODY. PROVIDE WTIH THERMOSTATIC MIXING VALVE, HAWS #9201EFE.	ADA	1/2"	1/2"	-	-	-
EW-1	EMERGENCY EYE WASH	IN WALL UNITS	BRADELY S19-294HBT	CHROME-PLATED BRASS SPRAYHEAD, IN WALL STAINLESS STEEL CABINET WITH PULL DOWN DOOR, WATER PRESSURE RANGE 30-90 PSI. PUSH/PULL PIN OPERATION. PROVIDE EMERGENCY THERMOSTATIC MIXING VALVE ON HOT WATER SUPPLY TO FAUCET, NAVIGATOR MODEL S19-2000EFX8. MOUNT MIXING VALVE IN WALL ADJACENT TO FIXTURE SUPPLY STOPS WITH ACCESS PANEL, IN COMPLIANCE WITH IECC-2015.	-	1/2"	1/2"	-	-	-
EWC-1	WATER COOLER	WALL	2 FILTRINE 107-16-HL	SELF CONTAINED, BARRIER FREE, DUAL LEVEL, SELF CLOSING PUSH BUTTON ON FRONT, SAFETY BUBBLERS, 8.0 GPH CAPACITY, AND BOTTLE FILLING STATION. STAINLESS STEEL BASINS AND WALL PLATE CARRIER: CONCEALED FLOOR MOUNTED CARRIES. REFER TO ARCHITECTS DRAWINGS FOR EXACT LOCATION AND MOUNTING HEIGHT. PROVIDE APRONS IF REQUIRED BY TAS.	ADA	1/2"	-	1-1/2"	1-1/2"	1-1/4"
FCO	FLOOR CLEANOUT	FLOOR	JAY R. SMITH 4020 SERIES	CAST-IRON BODY, ABS GASKETED CLEANOUT PLUG, SATIN NICKEL BRONZE FLANGE AND COVER. TWO-PIECE, THREADED, ADJUSTABLE HOUSING FOR FLUSH INSTALLATION. PROVIDE WITH FLANGE WITH FLASHING CLAMPS (-F-C).	-	-	-	SEE PLANS	-	-
FD-1	FLOOR DRAIN	FLOOR	JAY R. SMITH 2005-A SERIES	CAST IRON BODY, 6 INCH ROUND ADJUSTABLE NICKEL BRONZE STRAINER, FLASHING COLLAR WITH SEEPAGE OPENINGS, TAPPED FOR STRAINER HEAD, 1/2 TRAP PRIMER CONNECTION.	-	-	-	SEE PLANS	2"	SEE PLANS
FS-1	FLOOR SINK (BACK OF HOUSE)	FLOOR	JAY R. SMITH 2633 SERIES	12"X12"X8" RECEPTOR, SEDIMENT BUCKET, 3/4 SLOTTED GRATE, 1/2" TRAP PRIMER.	-	-	-	4"	2"	4"
FS-2	FLOOR SINK (KITCHEN)	FLOOR	ZURN Z1902	12"X12"X10" RECEPTOR, BOTTOM DOME STRAINER, LIGHT DUTY $\frac{1}{2}$ GRATE, WHITE ACID RESISTING PORCELAIN ENAMEL INTERIOR AND TOP, TRAP PRIMER TO DISCHARGE INTO TOP OF DRAIN.	-	-	-	3"	2"	4"
FI-1	FILTER UNIT	WALL	3M DSW160-L	0.2 MICRO FILTER, TASTE/VOC/CYSTS/SCALE/IRON FILTER, 2.5-GPM FLOW RATE, 450-GALLON, SHUT-OFF VALVE.	-	1/2"	-	-	-	-
GT-1 GT-2 GT-3 GT-4	GREASE TRAPS	-	PARK USA # GT-10000-TXAU	3 COMPARTMENT, GALLON CAPACITY 10,000, PRECAST CONCRETE, 8-IN TRAFFIC TOP, 24-IN DIAMETER MANHOLE FOR EACH COMPARTMENT, EXTENSIONS TO GRADE, TRAFFIC MANHOLE COVERS, BUTYL SEALS AT EACH JOINT, 5500 PSI CONCRETE. PROVIDE WITH CONCRETE SAMPLING WELL.	-	-	-	4" GW	4"	-
HB-1	HOSE BIBB	WALL	WOODFORD 24 SERIES	ROUGH CHROME-PLATED BRASS HOSE BIBB, 3/4-IN FLANGED INLET, LOOSE KEY, VANDAL-RESISTANT, SELF-DRAINING VACUUM BREAKER, 3/4-IN MALE HOSE OUTLET.	-	3/4"	-	-	-	-
HD-1	HUB DRAIN	-	-	HUB DRAIN. FIELD FABRICATED 4-IN OR 6-IN DIAMETER HUB DRAIN FITTING, REDUCER WITH P-TRAP AND TRAP ARM, INDEPENDENTLY VENTED.	-	-	-	SEE PLAN	2"	SEE PLAN
LV-1	LAVATORY	SOLID SURFACE	BY ARCHITECT	SOLID SURFACE CORIAN COUNTER AND BASIN, INTEGRAL FRONT OVERFLOW, CLAMPS. FAUCET: LACAVA # EX11.35, PLUG-IN, 0.35 GPM AERATOR, SENSOR ACTIVATED, BRASS CONSTRUCTION AND BRUSHED STAINLESS FINISH, SINGLE HOLE CENTER-SET, FACTORY SET TIME OUT SETTING AT 30 SECONDS (LEED DEFAULT), AND NAVIGATOR MIXING VALVE. SUPPLY: MCGUIRE 2167 SERIES. LOOSE KEY WITH RISER, TRAP: MCGUIRE 8902 SERIES. CAST BODY WITH CLEAN-OUT. STRAINER AND TAILPIECE: MCGUIRE 155WC OFFSET TAILPIECE, OPEN GRID STRAINER. PROTECTIVE PIPE COVERS: TRUEBRO OR EQUAL. REFER TO ARCHITECTS DRAWINGS FOR EXACT LOCATION.	ADA	1/2"	1/2"	1-1/2"	1-1/2"	1-1/4"
LV-2	LAVATORY	WALL	AMERICAN STANDARD DECORUM 9024.011EC	20-1/2"x27", VITREOUS CHINA, INTEGRAL FRONT OVERFLOW, HALF PEDESTAL. CARRIER: CONCEALED ARM, ZURN (OR EQUAL) FAUCET: LACAVA # EX11.35, PLUG-IN, 0.35 GPM AERATOR, SENSOR ACTIVATED, BRASS CONSTRUCTION AND BRUSHED STAINLESS FINISH, SINGLE HOLE CENTER-SET, FACTORY SET TIME OUT SETTING AT 30 SECONDS (LEED DEFAULT), AND NAVIGATOR MIXING VALVE. SUPPLY: MCGUIRE 2167 SERIES. LOOSE KEY WITH RISER. TRAP: MCGUIRE 8902 SERIES. CAST BODY WITH CLEAN-OUT. STRAINER AND TAILPIECE: MCGUIRE 155WC OFFSET TAILPIECE, OPEN GRID. PROTECTIVE PIPE COVERS: TRUEBRO OR EQUAL. REFER TO ARCHITECTS DRAWINGS FOR EXACT LOCATION.	ADA	1/2"	1/2"	1-1/2"	1-1/2"	1-1/4"
MS-1	MOP SINK	FLOOR	ZURN Z1996-24 SERIES	CORNER 24 X 24-IN, ONE-PIECE, MOLDED HIGH DENSITY BASIN, 3-IN PVC DRAIN BODY, STAINLESS STEEL DOME STRAINER. FAUCET: ZURN Z1996-SF SERIES. INTEGRAL VACUUM BREAKER, PAIL HOOK, STOPS, WALL BRACE AND HOSE THREADED SPOUT. ACCESSORIES: HOSE AND HOSE BRACKET, MOP HANGER AND WALL GUARDS.	-	3/4"	3/4"	3"	2"	3"
PRV-1	PRESSURE RED.	-	WATTS LF25AUB-Z3	PRESSURE REDUCING VALVE. BRONZE BODY CONSTRUCTION, HIGH TEMP RESISTANT DIAPHRAGM, SPRING CAGE AND SEAT ORIFICE AND SEALED SPRING CAGE, INTEGRAL STAINLESS STEEL STRAINER. TRIM: PROVIDE FULL LINE-SIZE ISOLATION VALVES, STRAINER AND UNIONS. PROVIDE FULL SIZE BY-PASS WITH ISOLATION VALVE.	-	SEE PLAN	-	-	-	-
RPZ-1	BACKFLOW PREVENTER	WALL	WATTS 1 LF009QT-FS SERIES	REDUCED-PRESSURE ZONE, LEAD FREE FULL LINE SIZE TWO CHECK VALVES, TEST COCKS, STRAINER, PRESSURE DIFFERENTIAL RELIEF VALVE, ISOLATION VALVES, FIXED AIR GAP FITTING. STRAINER SHALL BE PART OF RATED ASSEMBLY. PROVIDE WATTS SENTRY PLUS ALERT FLOOD PROTECTION AND DETECTION SYSTEM. PROVIDE WITH SENSOR AND AUTOMATED FLOOD PROTECTION SHUTDOWN VALVE, AND INTEGRATION TO BUILDING MANAGEMENT SYSTEM (BMS) FOR NOTIFICATION.	-	3/4"	-	-	-	-
SH-1	SHOWER	-	AMERICAN STANDARD BERWICK #TU430507	TILED SHOWER STALL BY SPECIFIED BY ARCHITECT. MIXING VALVE: PRESSURE-BALANCED, FLUSH-MOUNTED VALVE, ADJUSTABLE STOP SCREW, INTEGRAL STOPS, WALL FLANGE, ANCHOR PLATE, VANDAL RESISTANT. SHOWER HEAD: AMERICAN STANDARD BERWICK #TU430507 SHOWERHEAD, WALL-MOUNTED, ANGLED ARM, 1.75 GPM FLOW RATE. DRAIN: INFINITY DRAIN #S-TIF 6596 LINEAR DRAIN, FRAMELESS TILEABLE COVER. ARCHITECT TO GIVE FINAL APPROVAL OF GRATE DESIGN TYPE.	-	1/2"	1/2"	-	-	-
SH-2	SHOWER	-	AMERICAN STANDARD BERWICK #TU430507 (TRIM ONLY)	TILED SHOWER STALL BY SPECIFIED BY ARCHITECT. BARRIER-FREE ADA COMPLIANT MIXING VALVE: PRESSURE-BALANCED, FLUSH-MOUNTED VALVE, ADJUSTABLE STOP SCREW, INTEGRAL STOPS, WALL FLANGE, ANCHOR PLATE, VANDAL RESISTANT. SHOWER HEAD: KOHLER AWAKEN #G110 HAND SHOWERHEAD, W/ SLIDEBAR, ANGLED ARM, 2.0 GPM FLOW RATE. DRAIN: INFINITY DRAIN #S-TIF 6596 LINEAR DRAIN, FRAMELESS TILEABLE COVER. ARCHITECT TO GIVE FINAL APPROVAL OF GRATE DESIGN TYPE.	ADA	1/2"	1/2"	-	-	-
KTD-1	KITCHEN TRENCH DRAIN	FLOOR	JAY R. SMITH 9660 SERIES	6" WIDE MODULAR STAINLESS STEEL TRENCH DRAIN WITH BUILT IN SLOPE, PROVIDE WITH SECURED LIGHT DUTY STAINLESS STEEL GRATE. PROVIDE FITTINGS, PLUGS, OUTLETS AND CLEANOUTS AS REQUIRED. SHALLOW INVERT = 6 IN.. CONTRACTOR SHALL COORDINATE REQUIRED LENGTH WITH KITCHEN CONSULTANT EQUIPMENT PLANS.	-	-	-	4"	-	-
TD-1	TRENCH DRAIN (RESTROOMS)	FLOOR	SCHLUTER KERDI-LINE	3" WIDE X 43" LONG PER DRAIN SECTION. COORDINATE FINAL PROCURED DRAIN SECTION LENGTHS WITH DIMENSIONED ARCHITECTURAL PLANS. FRAMELESS TILEABLE COVER. ARCHITECT TO GIVE FINAL APPROVAL OF GRATE DESIGN TYPE AND FINISH. PROVIDE FITTINGS, PLUGS, OUTLETS AND CLEANOUTS AS REQUIRED.	-	-	-	3"	2"	-
TD-2	TRENCH DRAIN (LOCKER ROOMS)	FLOOR	INFINITY DRAIN FFST #	304L STAINLESS STEEL LINEAR SLOT DRAINS. COORDINATE FINAL PROCURED DRAIN SECTION LENGTHS WITH DIMENSIONED ARCHITECTURAL PLANS. TILE INSERT CLEAN OUT. ARCHITECT TO GIVE FINAL APPROVAL OF GRATE DESIGN TYPE AND FINISH. PROVIDE FITTINGS, PLUGS, OUTLETS AND CLEANOUTS AS REQUIRED.	-	-	-	3"	2"	-
SK-1	SINK (BREAK ROOM)	SOLID SURFACE	1 BY ARCHITECT	SOLID SURFACE CORIAN COUNTER AND BASIN, INTEGRAL FRONT OVERFLOW, CLAMPS, ADA COMPLIANT. FAUCET: MOEN - ALIGN 7365 (NO BASEPLATE, BRUSHED SATIN FINISH). LEDGE-MOUNTED, 8-INCH CENTER-SET ESCUTCHEON, SINGLE LEVER HANDLES, 8-INCH GOOSENECK SPOUT, 1.5 GPM FLOW RATE. MCGUIRE 2167 SERIES. TRAP: MCGUIRE 8912 SERIES. STRAINER AND TAILPIECE: MCGUIRE 151 SERIES. BASKET TYPE. SOAP DISPENSER: MOEN - # S3947SRS. PROVIDE BREAK SINKS AND ADJACENT ICUP COFFEE MAKER WITH FLOOD STOP LEAK DETECTION: ONSITE PRO INC. FS38CD SINK KIT. KIT INCLUDES HOT & COLD MOTORIZED BALL VALVES, BATTERY POWERED CONTROL UNIT (UNDER COUNTER), SENSOR BOARD AND PIGTAIL FOR INTEGRATION TO BUILDING MANAGEMENT SYSTEM (BMS).	ADA	1/2"	1/2"	2"	1-1/2"	1-1/2"
SK-2	SINK (PHARMACY)	UNDERMOUNT	STERLING UCL1515	18-GAUGE, SOUND PADS UNDERCOAT, STAINLESS STEEL, SINGLE-BOWL, THREE FAUCET HOLE, OFF-CENTER DRAIN, ADA COMPLIANT, 3-1/2-INCH OUTLET. FAUCET: LACAVA. #EX11.5 (0.5 GPM) DECK-MOUNTED, ESCUTCHEON, TOUCH FREE ELECTRONIC FAUCET, PLUG-IN, 6-3/4-INCH GOOSENECK SPOUT. SUPPLY: MCGUIRE 2167 SERIES. TRAP: MCGUIRE 8912 SERIES. STRAINER AND TAILPIECE: MCGUIRE 151 SERIES. BASKET TYPE.	ADA	1/2"	1/2"	2"	1-1/2"	1-1/2"
SK-3	SINK (VISION)	COUNTER	ELKAY LRAD1919-3	18-GAUGE, SOUND PADS UNDERCOAT, STAINLESS STEEL, SINGLE-BOWL, THREE FAUCET HOLE, OFF-CENTER DRAIN, ADA COMPLIANT, 3-1/2-INCH OUTLET. FAUCET: LACAVA. #EX11.5 (0.5 GPM) DECK-MOUNTED, ESCUTCHEON, TOUCH FREE ELECTRONIC FAUCET, PLUG-IN, 6-3/4-INCH GOOSENECK SPOUT. SUPPLY: MCGUIRE 2167 SERIES. TRAP: MCGUIRE 8912 SERIES. STRAINER AND TAILPIECE: MCGUIRE 151 SERIES. BASKET TYPE.	ADA	1/2"	1/2"	2"	1-1/2"	1-1/2"
SK-4	SINK (DENTAL - BACK OF HOUSE)	COUNTER	ELKAY LRAD1919-3	18-GAUGE, SOUND PADS UNDERCOAT, STAINLESS STEEL, SINGLE-BOWL, THREE FAUCET HOLE, OFF-CENTER DRAIN, ADA COMPLIANT, 3-1/2-INCH OUTLET. FAUCET: LACAVA. #EX11.5 (0.5 GPM) DECK-MOUNTED, ESCUTCHEON, TOUCH FREE ELECTRONIC FAUCET, PLUG-IN, 6-3/4-INCH GOOSENECK SPOUT. SUPPLY: MCGUIRE 2167 SERIES. TRAP: MCGUIRE 8912 SERIES. STRAINER AND TAILPIECE: MCGUIRE 151 SERIES. BASKET TYPE.	ADA	1/2"	1/2"	2"	1-1/2"	1-1/2"
SK-5	SINK (EXAM ROOM)	SOLID SURFACE	BY ARCHITECT	SOLID SURFACE CORIAN COUNTER AND BASIN, INTEGRAL FRONT OVERFLOW, CLAMPS, ADA COMPLIANT. FAUCET: LACAVA. #EX11.5 (0.5 GPM) DECK-MOUNTED, ESCUTCHEON, TOUCH FREE ELECTRONIC FAUCET, PLUG-IN, 6-3/4-INCH GOOSENECK SPOUT. SUPPLY: MCGUIRE 2167 SERIES. TRAP: MCGUIRE 8912 SERIES. STRAINER AND TAILPIECE: MCGUIRE 151 SERIES. BASKET TYPE.	ADA	1/2"	1/2"	2"	1-1/2"	1-1/2"
TP-1	TRAP PRIMER	-	JAY R. SMITH 2698 SERIES	CHROME PLATED CAST BRASS P-TRAP, TAILPIECE TYPE TRAP PRIMER, 1/2-IN PRIMER TUBE WITH COMPRESSION FITTING, THREADED JOINT ELBOW CONNECTOR, AND ESCUTCHEONS.	-	1/2"	-	-	-	-
TP-2	TRAP PRIMER	-	PPP PRIME-TIME	SURFACE MOUNTED ELECTRONIC TRAP PRIMER PT-# (# BASED ON NUMBER OF DRAINS SERVED), NEMA TYPE 1 ENCLOSURE, 14"X16"X" - 16 GAUGE STEEL W/ SCREW ON COVER, 120V 1PH POWER CONNECTION, 3/4" FEMALE NPT INLET, 1/2" FEMALE NPT OUTLET.	-	3/4"	-	-	-	-
UR-1	URINAL	WALL	SLOAN SU-7009	VITREOUS CHINA, SIPHON JET ACTION, 3/4-IN TOP SPUD, BOLT CAPS, INTEGRAL TRAP. VANDAL RESISTANT OUTLET STRAINER. FLUSH VALVE: TOTO - TEU1UAX#CP (RECLAIMED WATER), SENSOR ACTIVATED, ECOPOWER, HIGH EFFICIENCY (0.125 GPF). CARRIER: SMITH 0637 SERIES.	ADA	3/4"	-	2"	2"	-
UR-2	URINAL	WALL	SLOAN SU-7009	VITREOUS CHINA, SIPHON JET ACTION, 3/4-IN TOP SPUD, BOLT CAPS, INTEGRAL TRAP. VANDAL RESISTANT OUTLET STRAINER. FLUSH VALVE: TOTO - TEU1UAX#CP (RECLAIMED WATER), SENSOR ACTIVATED, ECOPOWER, HIGH EFFICIENCY (0.125 GPF). CARRIER: SMITH 0637 SERIES. MOUNTING HEIGHT OF URINAL AND FLUSH VALVE SHALL BE ADA COMPLIANT.	-	3/4"	-	2"	2"	-
WB-1	WALL BOX	WALL	IPS WATER-TITE SERIES	ANGLE STOP WALL BOX, WITH 1/4 TURN ANGLE STOP, INTEGRAL WATER HAMMER ARRESTERS. FRONT FLANGE.	-	1/2"	-	-	-	-
WC-1	WATER CLOSET	WALL	TOTO CT728CU	VITREOUS CHINA, ELONGATED RIM, SIPHON JET ACTION, 1-1/2-IN TOP SPUD, 1.28 GAL FLUSH, BOLT CAPS, INTEGRAL TRAP. SEAT: TOTO - SC534. OPEN-FRONT SEAT WITHOUT COVER. FLUSH VALVE: TOTO - TET1LAX#CP (RECLAIMED WATER) SENSOR ACTIVATED, ECOPOWER, HIGH EFFICIENCY FLUSH VALVE (1.28 GPF). CARRIER: JR SMITH OR EQUAL.	-	1"	-	4"	2"	-
WC-2	WATER CLOSET	WALL	TOTO CT728CU	VITREOUS CHINA, ELONGATED RIM, SIPHON JET ACTION, 1-1/2-IN TOP SPUD, 1.28 GAL FLUSH, BOLT CAPS, INTEGRAL TRAP. SEAT: TOTO - SC534. OPEN-FRONT SEAT WITHOUT COVER. FLUSH VALVE: TOTO - TET1LAX#CP (RECLAIMED WATER) SENSOR ACTIVATED, ECOPOWER, HIGH EFFICIENCY FLUSH VALVE (1.28 GPF). CARRIER: JR SMITH OR EQUAL. MOUNTING HEIGHT OF WATER CLOSET AND FLUSH VALVE SHALL BE ADA COMPLIANT. MOUNT FLUSH VALVE HANDLE TOWARD "WIDE" SIDE OF ADA COMPLIANT STALL. COORDINATE FLUSH VALVE MOUNTING HEIGHT WITH GRAB BAR.	ADA	1"	-	4"	2"	-
WCO	WALL CLEANOUT	WALL	-	TAPPED CLEANOUT TEE, EXTRA-HEAVY, THREADED, SOLID HEXAGONAL NUT. CLEANOUTS IN HUBS OF COMBINATION WYE AND 1/8-BENDS OR WYES: TAPPED SPIGOT. CLEANOUTS AT ENDS OF HUBLESS COMBINATION WYE AND 1/8-BENDS OR WYES: BLIND PLUG. COVERS OVER CLEANOUTS IN CONCEALED VERTICAL PIPING (ALL AREAS, FINISHED AND UNFINISHED): SQUARE FRAME WITH SECURED, SMOOTH, SATIN NICKEL BRONZE ACCESS COVER. OPENING SIZES: 4-IN AND SMALLER PIPING: 6 X 6-IN. LARGER THAN 4-IN PIPING: 8 X 8-IN. CERAMIC TILE, QUARRY TILE, STONE, RESILIENT TILE, AND SHEET: FACE FLANGE TO HIDE ROUGH WALL OPENING. SMITH 4430 SERIES. TERRAZZO AND CONCRETE (FINISHED AREAS): PLASTER GROUND FLANGE AND FLUSH-WITH-WALL FRAME. SMITH 4431 SERIES	-	-	-	-	-	-
WH-1	WALL HYDRANT	WALL	WOODFORD B67 SERIES	ANTI-SIPHON FREEZE-LESS WALL HYDRANT. CHROME FINISH WITH ANTI-SIPHON VACUUM BREAKER WITH 3/4" MALE HOSE THREAD. HARDENED STAINLESS STEEL STEM WITH LOOSE TEE KEY OPERATOR, CONCEALED BOX TYPE.	-	3/4"	-	-	-	-
2 WH-2	WALL HYDRANT	WALL	JAY R. SMITH 5518-R	NARROW BODY WALL HYDRANT. CHROME FINISH WITH ANTI-SIPHON VACUUM BREAKER WITH 3/4" MALE HOSE THREAD. HARDENED STAINLESS STEEL STEM WITH LOOSE TEE KEY OPERATOR, CONCEALED BOX TYPE.	-	3/4"	-	-	-	-

*NOTE: ALL FIXTURES SHALL COMPLY WITH THE AUSTIN GREEN BUILDING PROGRAM REQUIREMENTS IN REGARD TO APPROVED FIXTURES AND WATER USAGE.

HKS

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TBPE FIRM F-2005

CIVIL
GARZA EMC
7708 RIALTO BLVD., SUITE 125
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ASSOCIATE ARCHITECT
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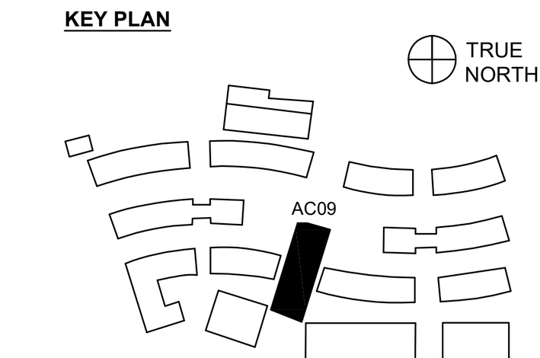
CAPSTONE - PHASE II
AC09 AMENITY BUILDING

6900 W. PARMER LANE, BUILDING 9, AUSTIN, TX 78729

STATE OF TEXAS
KEVIN D. CHADWICK
137523
LICENSED
PROFESSIONAL ENGINEER

01/11/2024

KEY PLAN



REVISION NO.	DESCRIPTION	DATE
1	AC09_TI_PC 01	11/01/2023
2	AC09_TI_PC 03	01/12/2024

HKS PROJECT NUMBER
24899

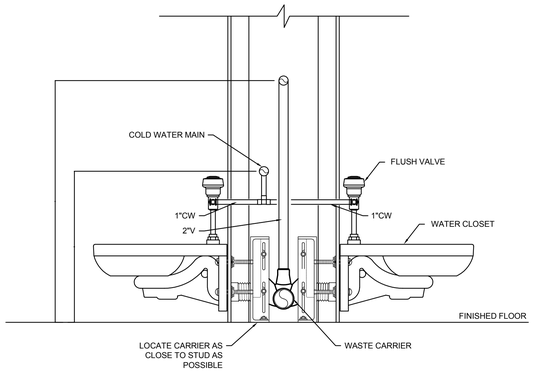
DATE
08/31/2023

ISSUE
ISSUE FOR CONSTRUCTION

SHEET TITLE
PLUMBING SCHEDULES - INTERIORS

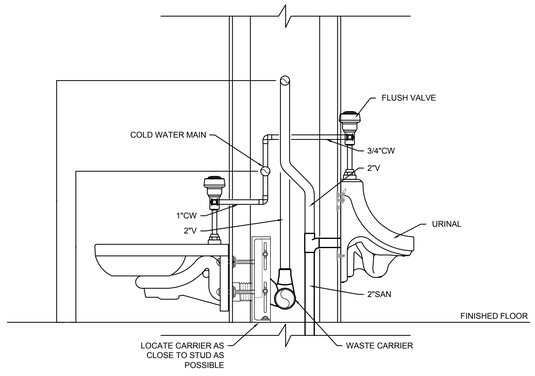
BUILDING ID
AC09

SHEET NO.
IP4.01



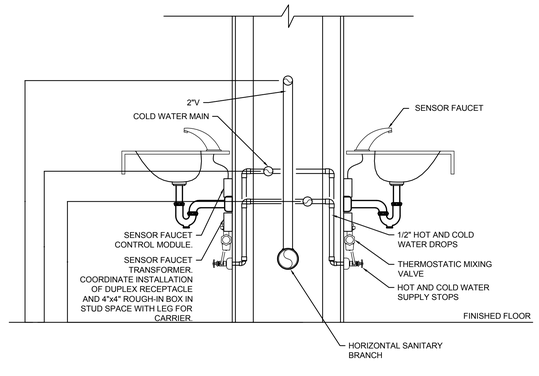
NOTE: SEE PLAN AND SCHEDULES FOR FIXTURE TYPES

1 CHASE WALL SECTION - WATER CLOSETS (BACK TO BACK)
Scale: NONE



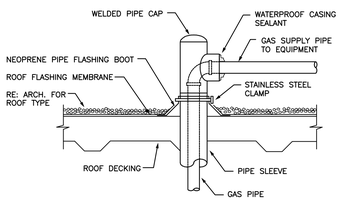
NOTE: SEE PLAN AND SCHEDULES FOR FIXTURE TYPES

2 CHASE WALL SECTION - WATER CLOSET AND URINAL (BACK TO BACK)
Scale: NONE

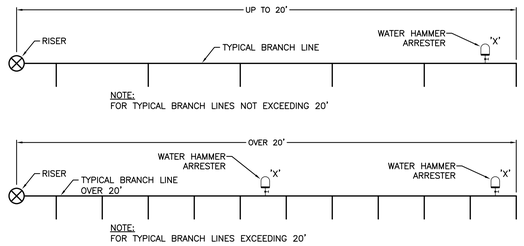


NOTE: SEE PLAN AND SCHEDULES FOR FIXTURE TYPES

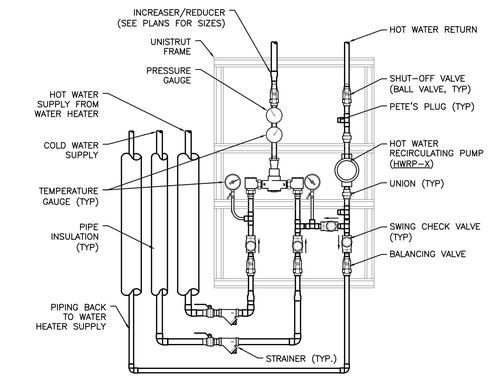
3 CHASE WALL SECTION - LAVATORIES (BACK TO BACK)
Scale: NONE



4 GAS PIPING SLEEVE PENETRATION
Scale: NONE

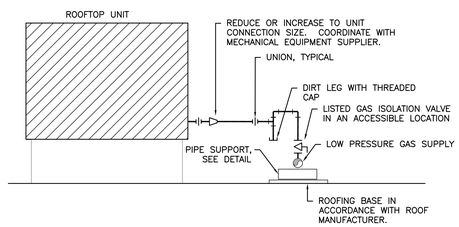


5 TYPICAL WATER HAMMER ARRESTOR PLACEMENT
Scale: NONE

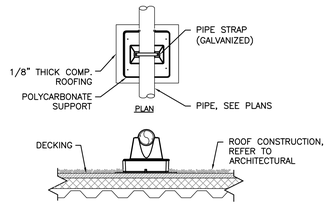


NOTES:
1. REFER TO MANUFACTURERS RECOMMENDED PIPING DIAGRAM FOR THE THERMOSTATIC MIXING VALVE BEING INSTALLED.
2. PROVIDE ALL TEMPERATURE GAUGES AND PRESSURE GAUGE INDICATED TO PROPERLY BALANCE SYSTEM.

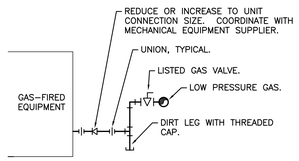
6 TYPICAL MASTER DISTRIBUTION MIXING VALVE WITH CIRCULATING PUMP
Scale: NONE



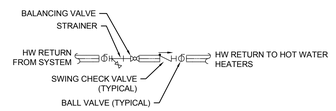
7 TYPICAL GAS CONNECTION
Scale: NONE



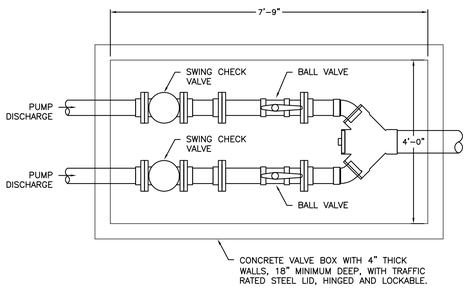
8 GAS PIPE SUPPORT ON ROOF
Scale: NONE



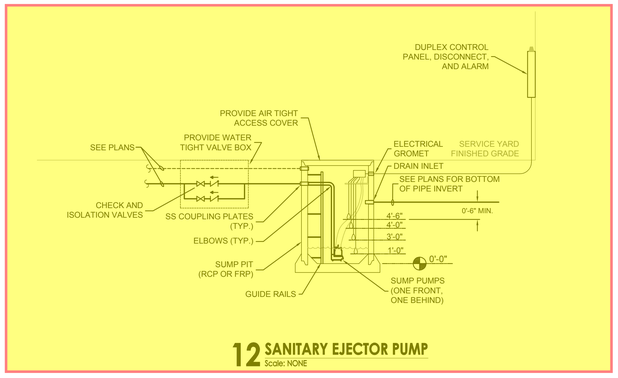
9 TYPICAL GAS CONNECTION
Scale: NONE



10 TYPICAL HOT WATER RETURN BALANCING VALVE
Scale: NONE



11 EJECTOR PUMP HORIZONTAL VALVE BOX
Scale: NONE



12 SANITARY EJECTOR PUMP
Scale: NONE

ARCHITECT / INTERIORS
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TBPE FIRM F-2005

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STATE OF TEXAS
KEVIN D. CHADWICK
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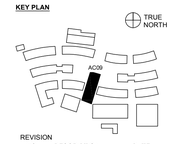
LICENSED PROFESSIONAL ENGINEER
08/28/2023

KEY PLAN



REVISION
NO. DESCRIPTION DATE

HKS PROJECT NUMBER
24899
DATE
08/31/2023
ISSUE
ISSUE FOR CONSTRUCTION
SHEET TITLE
PLUMBING DETAILS - INTERIORS

BUILDING ID
AC09
SHEET NO.
IP7.02

System: SSE-1,2

TI Build-Out

Pump

Quantity 2 of Model 2524 Submersible Quick Removal Mounted Slicer Pump, 4-inch discharge, for up to 2-inch solids, with a 15 HP 1750 RPM 3 PH 460 V 60 HZ motor.

Details

- *Design Flow (GPM per Pump): 300
- *Flow (GPM per Pump): 300
- *Head (TDH in Feet): 60
- Impeller Trim: 894
- Lifting Cable Length: 20 FT
- Power Cable Length: 40 FT
- Quantity: 2

Options

- Option (3): Extra Power Cable
- Option (3): Extra Sensor Cable
- Option (1): Sensors - Moisture and Temp Limiter
- Option (1): Stainless Steel Lift Cable (20ft)

Pump Accessory

Quantity 1 of Model 2613 Sub Base. Order Number 2613K501. Galvanized steel sub base for a duplex set of 2 inch 2613 removal systems.

Details

- Quantity: 1

Pump Accessory

Quantity 1 of Model 2613-4. Order Number 2613K7023. Two removal systems for a duplex set of 4 inch pumps, with cast iron sliding brackets and a duplex BCB upper guide pipe bracket (for discharge pipe mounting).

Details

- Quantity: 1

Options

- Option (1): 205.666.001 Intermediate Guide Pipe Brackets
- Option (1): 2613K204 Discharge Flange Kits
- Option (1): 2613K801 Level Control Lifting Assembly

Pump Accessory

Quantity 1 of Model 2616-4. Order Number 2616K1023B. Duplex wastewater valve assembly, 4 inch.

Details

- Quantity: 1

Level Control

Quantity 4 of Model 8233. Order Number 8233K1014. Single pole tethered float switch with cord grip and 40ft cord length.

Details

- Quantity: 4

Level Control Accessory

Quantity 1 of Model 8200 Mounting Pipe. Order Number 303.935.103. 1 inch schedule 40 mounting pipe, 10 feet long, threaded on one end.

Details

Control Panel

Quantity 1 of Model 8151 Duplex Control Panel in a Type 4X GRP enclosure for use with 3 phase 208-230/460 volts motor(s) drawing between 20 and 25 amps each. Order Number 8151-T-250.

Details

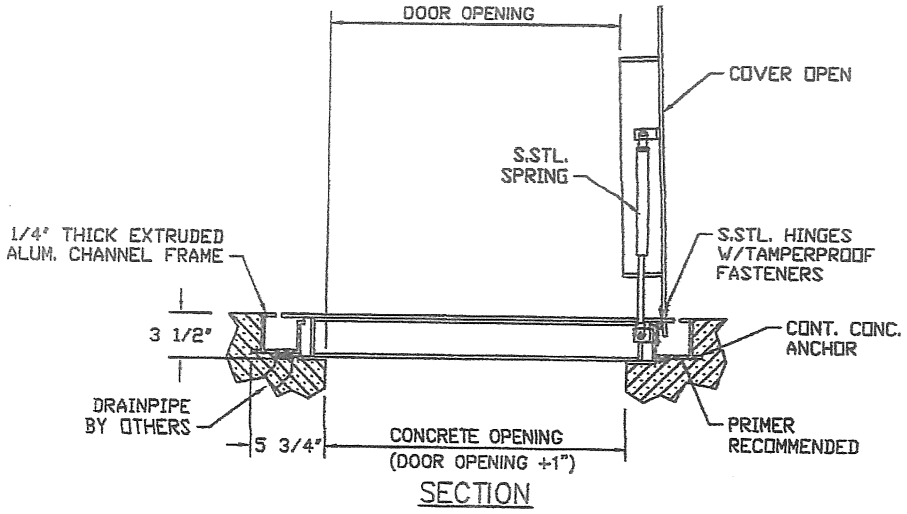
- Quantity: 1
- Voltage: 460

Options

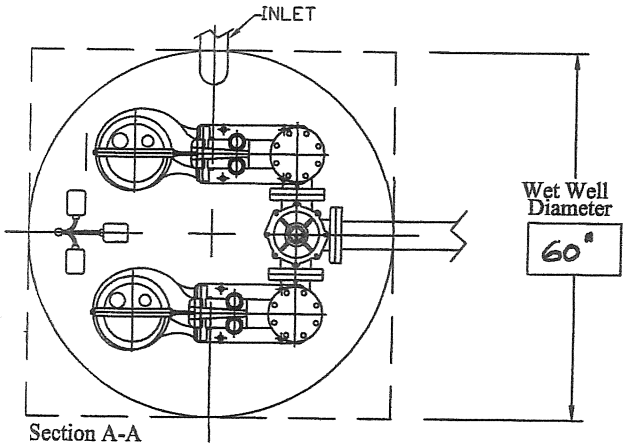
- Option (1): 8100K7102 HWA Dome Light (Type 4X)
- Option (1): 8100K7111 Larger Enclosure (Type 4X)
- Option (1): 8100K7224D Moisture Sensor / Temp Limiter Feature

WEIL Duplex Submersible Pump S-9016

2613 Removal System - Discharge Below Cover
2616 Valve Assembly Below Cover

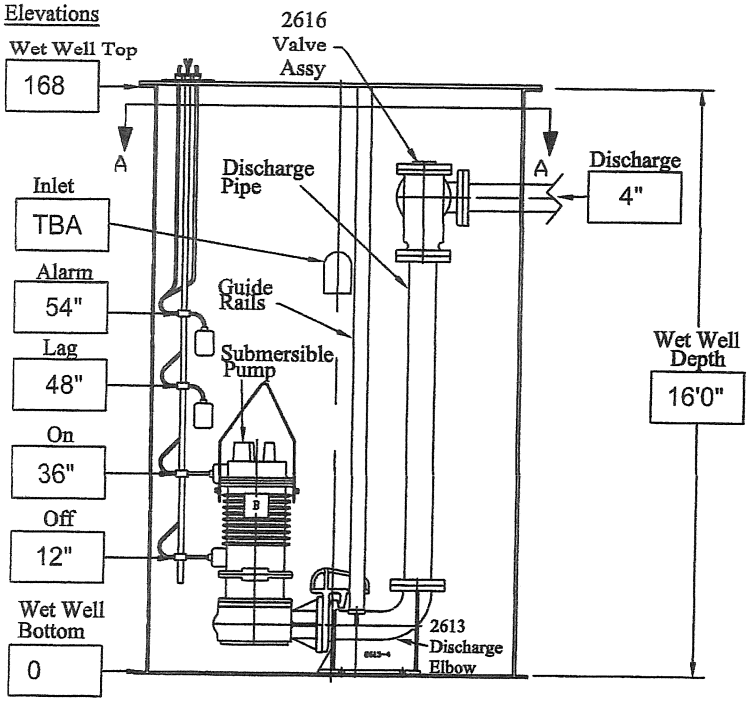


SECTION



Section A-A

Elevations



Date: January 22, 2024

Project: Capstone Amenity
AC09 Amenity

Item: Duplex Storm Sump Pumps

Spec Reference: SSE-1

Contractor: Way Mechanical

Engineer: Bay & Associates

- Pump: 1634 Qty: 2
  - GPM: 300 Head: 60'
  - HP: 10 RPM: 1750
  - PH: 3 Hz: 60 Volts: 460
  - Solid Size: 1.25"
  - Pump Discharge Size: 4"
- Removal System 2613 Size: 4"
- Valve 2616 Size: 4"
- Wet Well: FRP with top and bottom flanges
  - Diameter: 60"ID
  - Depth: 192" (16')
- Minimum Water Level: 12"
- Wet Well Cover: Halliday H20 24 x 36
  - Diameter:
  - Pump Opening
    - X _____ from Cover 8804 or 8815
    - H _____ from Cover 8804 or 8815
- Control Panel: 8151 Nema 4X
- Level Control System: 8233

Notes:

1. Minimum Wet Well Diameter
   - 3 inch Discharge - 42 inch
   - 4 inch Discharge
     - 7 inch Pump Case - 48 inch
     - 9 inch Pump Case - 54 inch
     - 12 inch Pump Case - 60 inch
2. 10 Starts per hour maximum.
3. Minimum water level 1 inch above pump case.
4. Installation of this equipment to conform to local and/or national codes and ordinances and is the responsibility of the installer.
5. Pump openings with doors on cover:
   - 2 and 3 inch Discharge - 1
   - 4 inch Discharge - 2
6. Not to be used for construction purposes unless certified.

WEIL 6-Inch Submersible Wastewater Pump 2524

Submersible Wastewater Pump Association SWPA MEMBER

Heavy duty pump for commercial and industrial applications.
Pump clear water, gray water, effluent and wastewater with solids up to 3 inch diameter.

Disch. Size	6 Inch
Disch. Type	ANSI
Solids Max.	3 Inch
Mounting Style	2613 Removal

Pump
- Case - Cast Iron
- Impeller - Cast Iron
- Stainless Steel Hardware

Motor
- **Double Seal - Tandem**
  - Upper - Carbon against Ceramic
  - Lower - Silicon Carbide against Silicon Carbide
- **Air-Filled Hermetically Sealed**
- **Shaft - Stainless Steel Series 300**
- Motor Shell - Cast Iron
- Insulation - Class F
- Ball Bearings - 2 - Double Sealed
- Power Cable Length - 25 ft
- Three-phase motor
  - 1150 and 1750 RPM
  - 60 Hz, 230 or 460 volts

Options
- Bronze Impeller
- UL/CUL Explosion Proof Motor
- 575 Volt 3 Phase 60hz Motor
- Moisture Sensor and Temperature Limiter
- Additional Power Cable Lengths
- Stainless Steel Lifting Cable

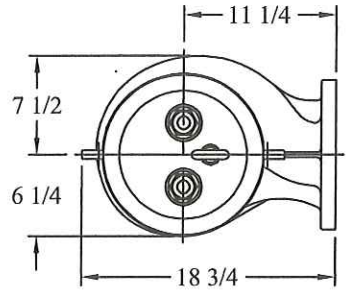
Flow - To prevent solids from settling out

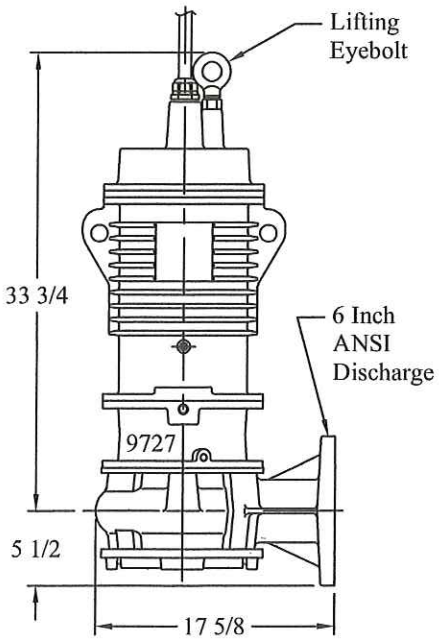
Discharge Pipe Size Dia Inches	Minimum Flow GPM
4	90
6	200

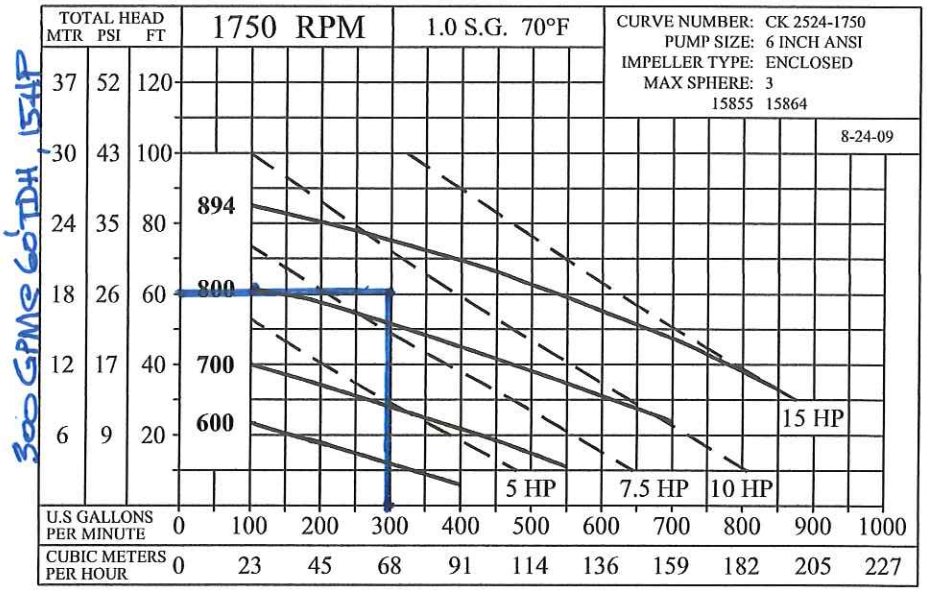
Capacities - Wet Wells

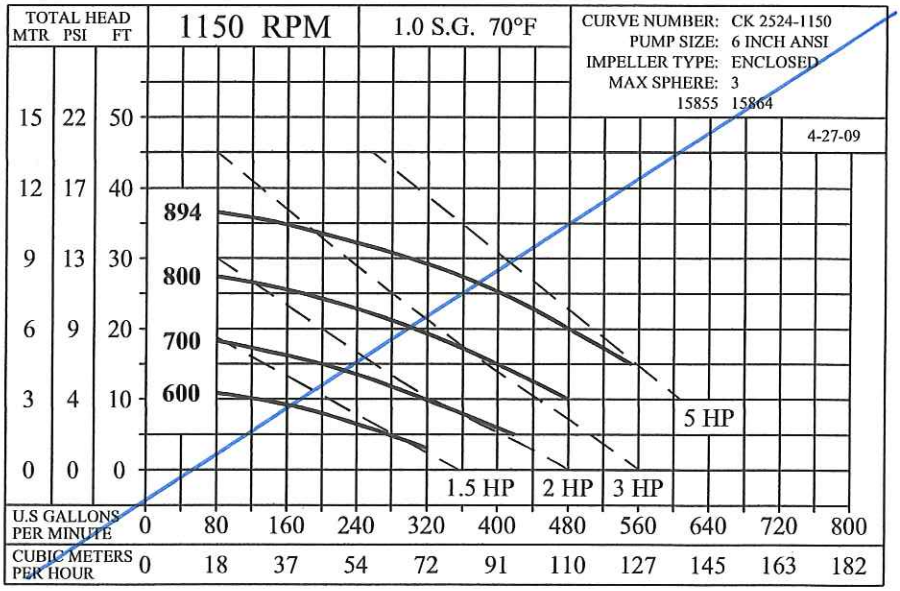
Dia or Side Inches	Gallons per Foot of Depth	
	Round	Square
48	94	120
60	147	187
72	212	269

Good wet well design
Maximum 10 starts per hour.
Minimum run time - 1 1/2 minutes.







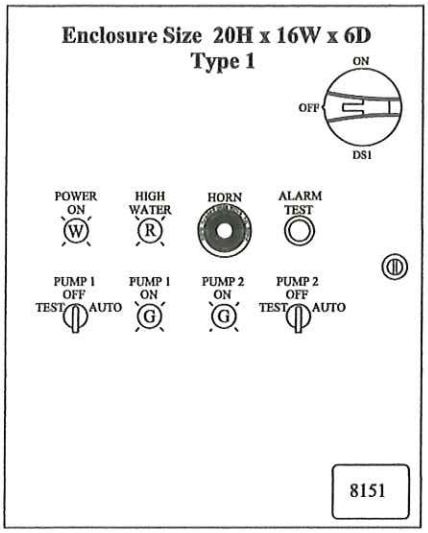


WEIL Duplex Alternating Pump Control Panel

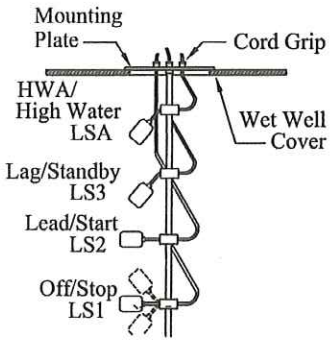
8151
Duplex

Single-Phase or Three-Phase - U/L Type 1 or 4XFRP

• The 8151 Duplex Panel controls two pumps. It is a customer full featured panel that includes a high water alarm system, alternator, and a lockable through-the-door disconnect.
• Panel can be operated on 50 or 60 Hertz power.
• Select level controls
  - 8213 Mechanical Lever (not shown)
  - 8220 Pressure Diaphragm (not shown)
  - 8230 Tethered



8230 Tethered



Panel Includes:

• U/L Listed Label.
• LED Lights, hour meter, switches and test buttons are mounted on door.
• One lockable panel disconnect - through-the-door with door interlock. The mechanical interlock prevents the door from being opened when the disconnect is in the ON position. Lock is not provided.
• Padlocking hasp - on door, padlock not included.
• Two lockable pump disconnects, on motor overload protectors. Lock is not provided.
• Electric Alternator has a 3 position selector switch: that locks the pumps in Auto, Pump 1-2 or Pump 2-1 sequencing.
• Two

Contactors - industrial duty.

• Two Overloads - Ambient compensated bi-metallic (class 10) motor overloads circuit protector. Instantaneous magnetic trip for short circuit protection. Single-phase protection for three phase motors. Field adjustable within the amp range.
• Control transformer, with fused primary and fused secondary on all three phase and single phase 208 and 230 volt. Single phase 115 volt has a fused control circuit.
• Pump Run Switches - Three position TOA (Test-Off-Automatic) with spring return to off from test. One per pump.
• Green light on the door indicates power to pump motors.
• White light on the door indicates control power on.
• High Water Alarm System, Type 4X. Hold finger over hole of horn for 1-2 seconds and remove to silence horn (95 dB).
  - Red HWA light and test button on the door.
  - Two isolated contacts for remote monitoring and or to use as a connection to a phone dialer.
• Control terminal board, numbered and wired.
• Layout and schematic CAD diagrams are provided. Installer connections at terminal board are clearly marked.

Motor Protector Amp Range	Order Number: Single-Phase 115 Volts	Single-Phase 208 or 230 Volts	Three-Phase 208, 230, 460 Volts	Approx. Weight Lbs.
1.0 - 1.6	8151-L-016	8151-D-016	8151-T-016	55
1.6 - 2.5	8151-L-025	8151-D-025	8151-T-025	55
2.5 - 4.0	8151-L-040	8151-D-040	8151-T-040	55
4.0 - 6.3	8151-L-063	8151-D-063	8151-T-063	55
6.3 - 10.0	8151-L-100	8151-D-100	8151-T-100	56
10.0 - 16.0	8151-L-160	8151-D-160	8151-T-160	56
16.0 - 20.0	8151-L-200	8151-D-200	8151-T-200	57
20.0 - 25.0	~~8151-L-250~~	~~8151-D-250~~	8151-T-250	57
*25.0 - 32.0	8151-L-320	8151-D-320	8151-T-320	72
*32.0 - 40.0	8151-L-400	8151-D-400	8151-T-400	72
*40.0 - 50.0	8151-L-500	8151-D-500	8151-T-500	74

* Includes two disconnects and larger enclosure

Control Panel Selection Guide
- Determine Phase and Voltage
- Determine maximum run current in amps required by the pump motor.
-Determine Enclosure Type, 1 or 4XGRP.

How to Order: Specify Order Number, System Phase, Voltage, Pump HP, Motor Amps and any options. F.O.B. Cedarburg (Milwaukee), Wisconsin

WEIL Duplex Alternating Pump Control Panel 8151

Single-Phase or Three-Phase - U/L Type 1 or 4XFRP

Duplex

Options:

8100K7037: Motor Overload - per pump. Red light on door indicates motor overload condition and pump is off. Light remains on and pump remains off until manually reset.
8000K7075: Fused disconnect in lieu of standard non-fused disconnect.
8000K7076: Additional fused disconnect (second disconnect).
8100K7053: HWA Dome Light - Type 1 - Lexan, red flashing, on top of panel. Light remains on until condition is corrected.
8100K7102: HWA Dome Light - Type 4X - Lexan, red flashing, on top of panel. Light remains on until condition is corrected.
8100K7105: Hour meter - per pump. Non resetting meter indicates total pump run time, mounted on floor.
8100K3000: Qty 1 soft starter for gentle ramp up/ramp down of an electric motor. Adjustable from 0-20 second ramp time. Provides for enhanced motor life and systems operation. (One required per motor)

OPTIONS: Requiring a Larger Enclosure when more than one (1) of the following is ordered:

8100K7024: Isolated contact. Can be used for Building Management Service monitor. Closure indicates monitor condition (dry contact).
8100K7031: Lighting Arrestor - Surge Protection for panel components.
8100K7035: Phase monitor - Use with three phase panels only. Monitors line status to protect system.
8100K7107-3: Circuit Breaker - 3 pole inside enclosure. Max. 30 amp breaker per pump.
8100K7109-3: Fuse Block - 3 pole for type "LP-CC" Fuses. Max 30 amp fuses per pump. Fuses not included.

OPTIONS: Requiring a Larger Enclosure:

8100K7074: Disconnect Switch. One additional through-the-door with interlock.
8100K7222D: Moisture Sensor circuit - for duplex set of pumps with 9712, 9725 motors only. Moisture sensor relay and tetst buttons. Two amber lights indicate moisture in pump motor.
8100K7224D: Moisture Sensor and Temperature limit Circuits - for duplex set of pumps with standard Non Explosion Proof Motors (9706, 9709, 9727).
- Moisture sensor relay and test buttons. Two amber lights indicate moisture in the pump motor.
- Temperature limiter circuit shuts down pump motor when motor over temperature is sensed. Automatic reset when the motor temperature falls to motors normal operating range. Two blue lights indicate motor over temperature.

After dollars for Larger Enclosure:

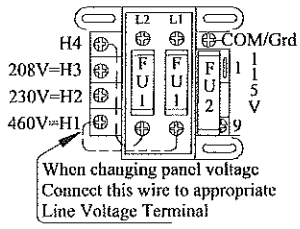
8100K7110: Larger 24H x 20W x 6D type 1 enclosure adder.
8100K7111: Larger 24H x 20W x 8D type 4X GRP enclosure.
8100K2001: BACnet Option (through gateway).
8100KXXXX: Anti-Condensation Heater with adjustable thermostat control.
8000KXXXX: ISR Circuits - Provides a low output voltage for level control switches and maintains UL compliant spacing of components.
8000KXXXX: General fault dome light for all fault conditions in lieu of High Water Dome Light.
8000KXXXX: Clear cover-gasketed and lockable for mounting over door face components.
8100KXXXX: Digital basin level display (requires 826X level sensor).
8100KXXXX: Motor soft starter/soft stop.
8100KXXXX: Panel Floor Mount Kit (Riser).
8100KXXXX: Convenience receptacle - 120V duplex - interior (120V + other).
8100KXXXX: Hand-off-auto in lieu of test-off-auto for pump switches.
8100KXXXX: 4" NEMA 4X Bell in lieu of horn.
8100KXXXX: Time delay circuit - non-simultaneous start
8100KXXXX: Exercise timer circuit
8100KXXXX: Low level alarm light and 150 contact.
8100KXXXX: Alternate light colors to standard.

How to Order: Specify Order Number, System Phase, Voltage, Pump HP, Motor Amps and any options. F.O.B. Cedarburg (Milwaukee), Wisconsin

WEIL CEDA 10/6/2017 5:56 AM H8151-T1-11 Layout 3 Phase .dwg

PANEL NAME PLATE INCLUDES:
- -System Voltage
- -Motor Amp Range
- -MAX Panel Amps
- -Phase & HZ
- -Enclosure Type

Control Transformer Is Connected For Proper Line Voltage At Factory



Dotted lines (- - - - - -) represent Field Connections.

Wire Colors: Black = Power Green = Ground
Red = Control White = Common (Neutral)
Yellow = Alarm Circuit and Isolated Contacts

Installer to Supply Branch Circuit Protection in accordance with NEC and local codes.

Fuses (LP-J or Equivalent) for Branch Circuit Protection 1.25 X full load amps of both motors, Plus 1 Amp for C.P..

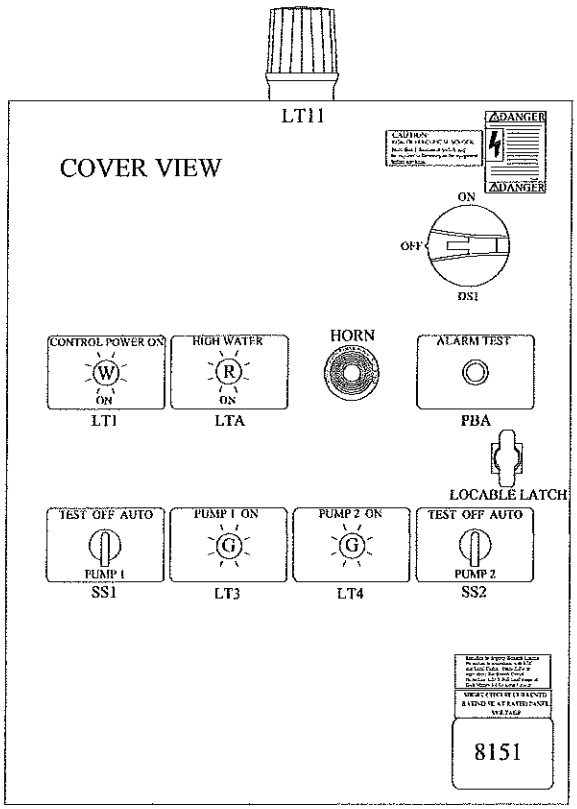
Pump should rotate in the direction of the Arrow on the pump case. Change rotation of the pump at the control panel. Interchange wires:
T1 And T2 On M1 For Pump 1.
T1 And T2 On M2 For Pump 2.

Wires are Individually Numbered.
M1 & M2 = Motor Contactors
MP1 & MP2 = Motor Circuit Protectors
PBA = Alarm Test
SS1 & SS2 = Spring Return Test To Off

(LT11) = Component Coil
[ ] = Numbers on Terminal Blocks (TB1 or TB2).
( ) = Numbers on Components.
| | = Normally Open Contact on Components.
|N| = Normally Closed Contact on Components.

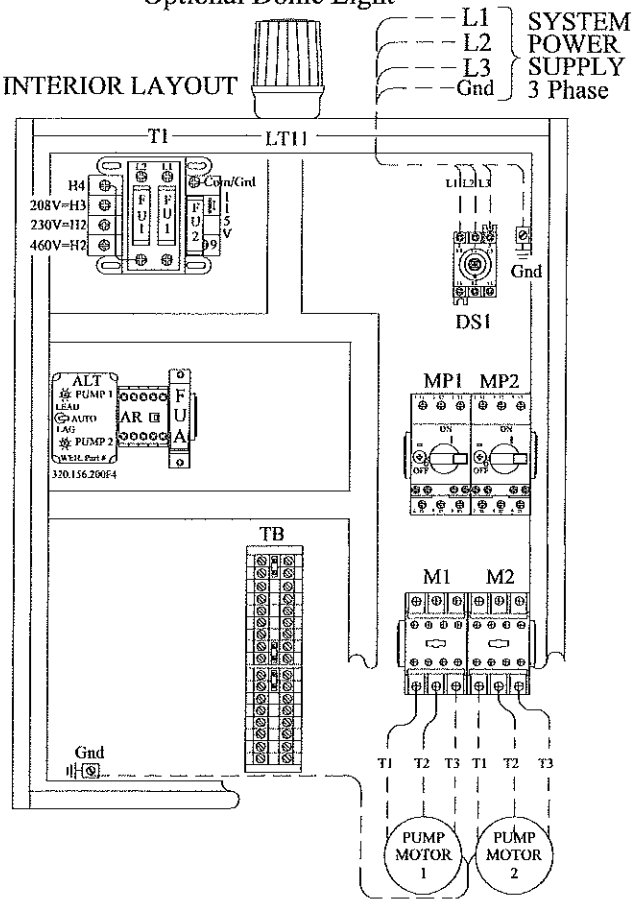
Caution: Connection of any other device to the Control Power Source of this Panel will cause improper operation and Void the Warranty.

Optional Dome Light

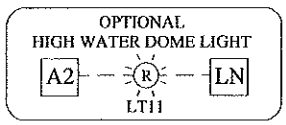


Optional Dome Light

INTERIOR LAYOUT

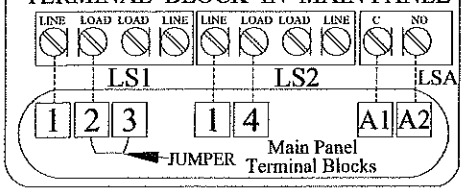


OPTIONAL HIGH WATER DOME LIGHT



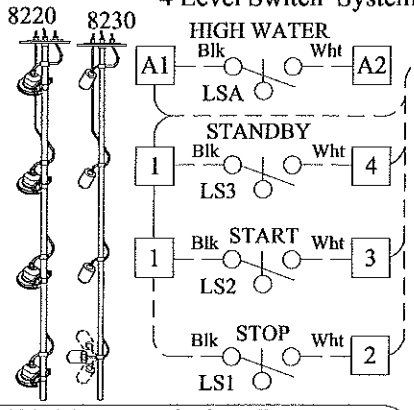
LEVEL SWITCH CONNECTIONS

CONNECTIONS FROM 8213 Non Alternating Mechanical Level Switch To TERMINAL BLOCK IN MAIN PANEL



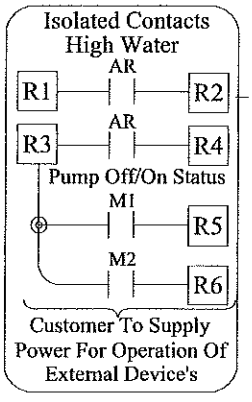
CONNECT EACH WIRE TO MATCHING NUMBER ON TERMINAL BLOCK

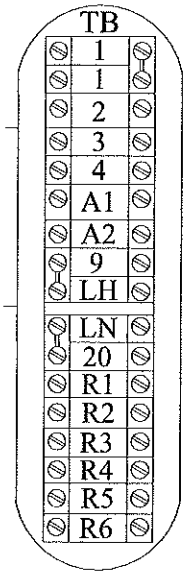
4 Level Switch System



FIELD CONNECTIONS

R1 & R2 ARE FOR EXTERNAL ALARM; OR EMERG. PHONE DIALER
R3-R6 FOR BUILDING BMS SYSTEM





LS3 & LSA float positions May Be Changed to activate High Water Alarm, before Lag Pump is called for.

OPTIONAL: External Alarm Power
1. WARNING: Disconnect Power TO PANEL
2. Remove Jumpers Between 9 & LH and LN & 20
3. Connect 115 VAC Between LH & LN

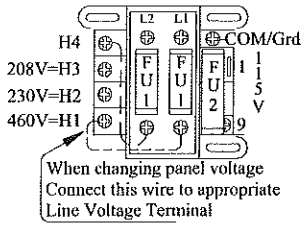
WEIL PUMP
A WILO COMPANY

GND 1/16/2017

WEIL WI 4/27/2021 5:35 AM H8151-T1-11 Schematic 3-Phase .dwg

PANEL NAME PLATE INCLUDES:
- -System Voltage
- -Motor Amp Range
- -MAX Panel Amps
- -Phase & HZ
- -Enclosure Type

Control Transformer Is Connected For Proper Line Voltage At Factory



Dotted lines (– – – – –) represent Field Connections.
Wire Colors: Black = Power Green = Ground
Red = Control White = Common (Neutral)
Yellow = Alarm Circuit and Isolated Contacts

Installer to Supply Branch Circuit Protection in accordance with NEC and local codes.
Fuses (LP-J or Equivalent) for Branch Circuit Protection 1.25 X full load amps of both motors, Plus 1 Amp for C.P..
Pump should rotate in the direction of the Arrow on the pump case. Change rotation of the pump at the control panel. Interchange wires:
T1 And T2 On M1 For Pump 1.
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Wires are Individually Numbered.
M1 & M2 = Motor Contactors
MP1 & MP2 = Motor Circuit Protectors
PBA = Alarm Test
SS1 & SS2 = Spring Return Test To Off

(W) = Component Coil
□ = Numbers on Terminal Blocks (TB1 or TB2).
○ = Numbers on Components.
| | = Normally Open Contact on Components.
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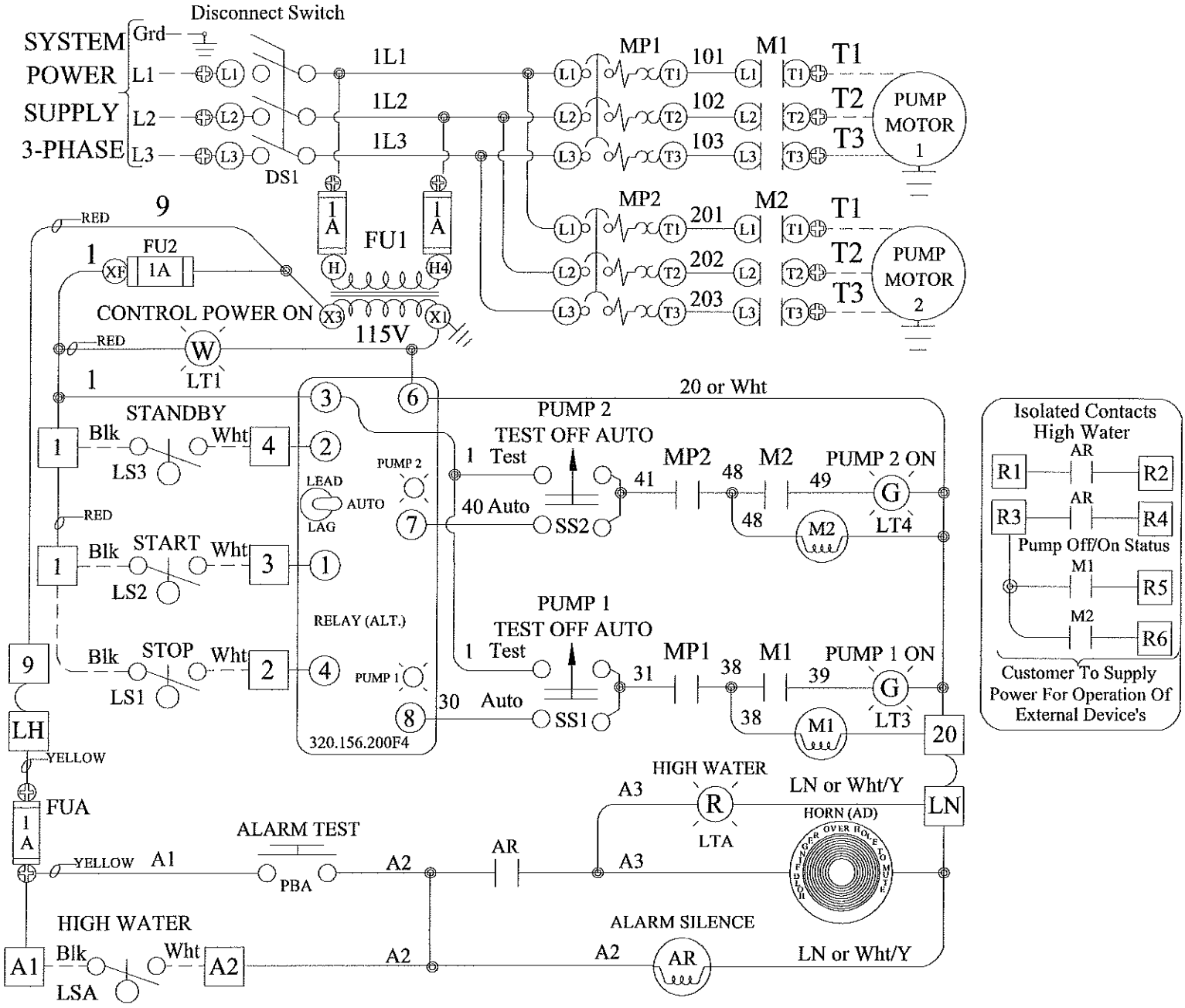
Caution: Connection of any other device to the Control Power Source of this Panel will cause improper operation and Void the Warranty.



OPTIONAL
HIGH WATER DOME LIGHT
A2 — R — LN
LT11

LS3 & LSA float positions May Be Changed to activate High Water Alarm, before Lag Pump is called for.

OPTIONAL: External Alarm Power
1. WARNING: Disconnect Power TO PANEL
2. Remove Jumpers Between 9 & LH and LN & 20
3. Connect 115 VAC Between LH & LN

DND 1/10/2017

WEIL Duplex Wastewater Valve Assembly 2616-6

6-Inch ANSI - 6 Inch Solids

The 2616-6 Valve Assmbly has the check valve and isolation valve requirements for a duplex pumping system combined into one unit.

The 2616-6 cast iron assembly consists of two check valves and one four-way isolation valve.

The check valve ball is ground to close spherical tolerances which assures positive sealing at low back pressures.

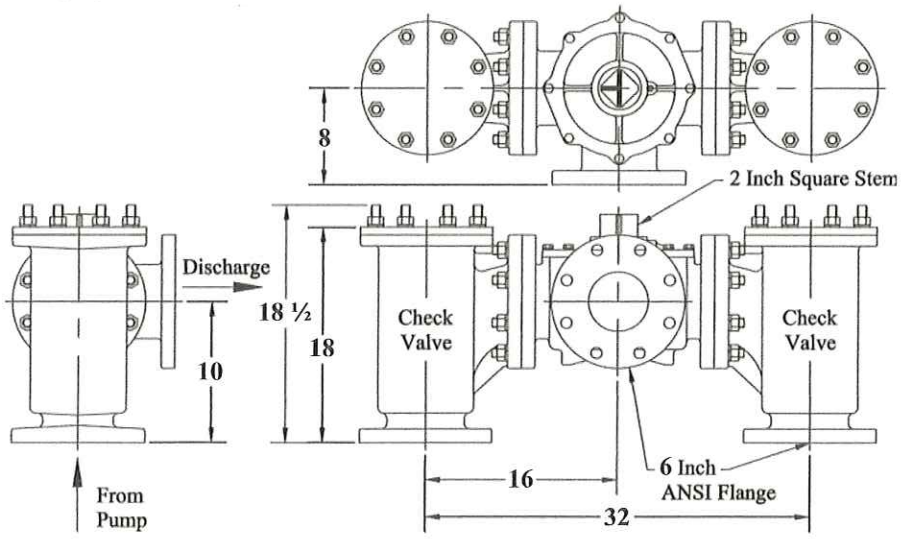
The low friction, easy to operate four-way valve is marked to locate each of the four positions. The valve is lockable in any of the four positions.

The assembly has standard ANSI B61 iron 125 PSI flanges and standard 32-inch spacing.

Use with submersible pumps and 2613 Removal System.

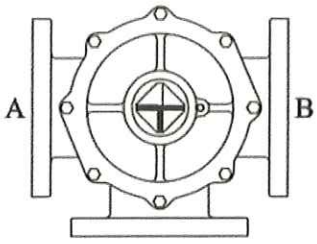
2616-6 Includes

2 - 90 degree Ball Check Valves
1 - 4-way Isolation Valve
1 - Lockable Handle



The 2616-6 Isolation Valve has four positions:

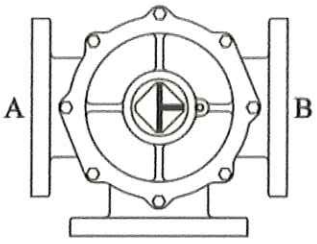
Position 1



Discharge

Normal Operation
Pump A And Pump B
Open To Discharge Line

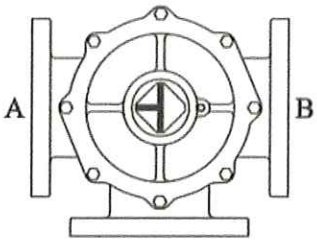
Position 2



Discharge

Pump A Isolated
Pump B Open To
Discharge Line

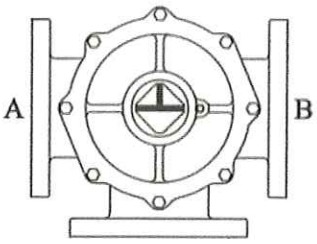
Position 3



Discharge

Pump B Isolated
Pump A Open To
Discharge Line

Position 4



Discharge

Discharge Line
Blocked To Both
Pump A And Pump B

Model	Disch.	Disch. Mount	Wt. Lbs.
2616K1063	6-Inch	90 degrees	450

WEIL Duplex Wastewater Valve Assembly 2616-6

6-Inch ANSI - 6 Inch Solids

In a typical duplex wastewater discharge piping arrangement the 2616 assembly replaces the following components:

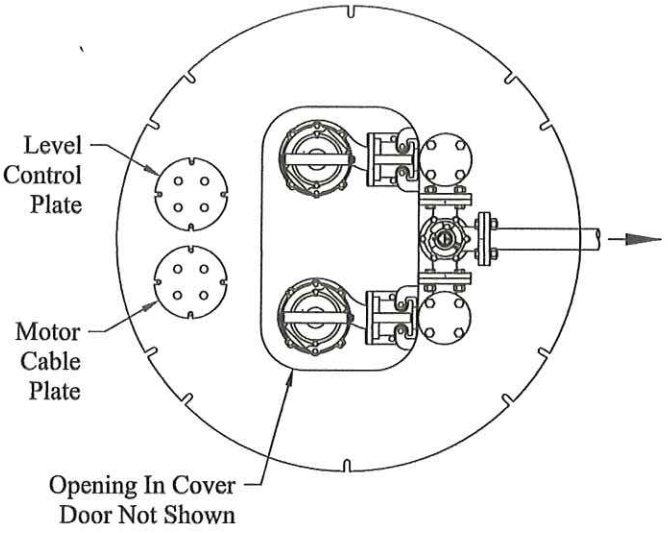
* 4 Elbows
* 1 Tee
* 2 Check Valves
* 2 or 3 Isolation Valves

A valve box compartment could be eliminated when the discharge is below cover.

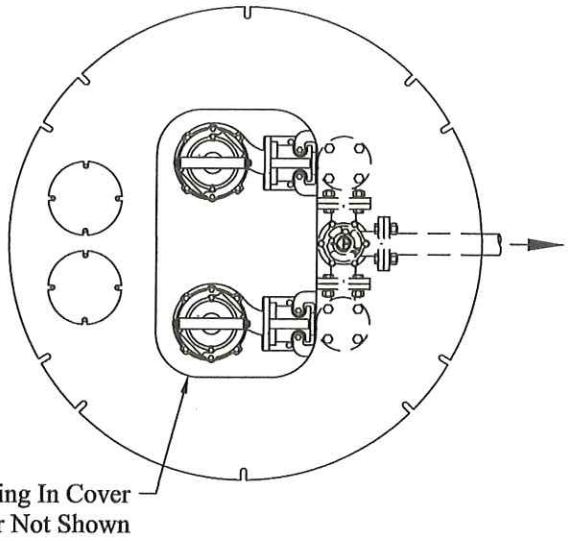
Field installation cost is greatly reduced. Space requirements are the same as two elbows and one tee.

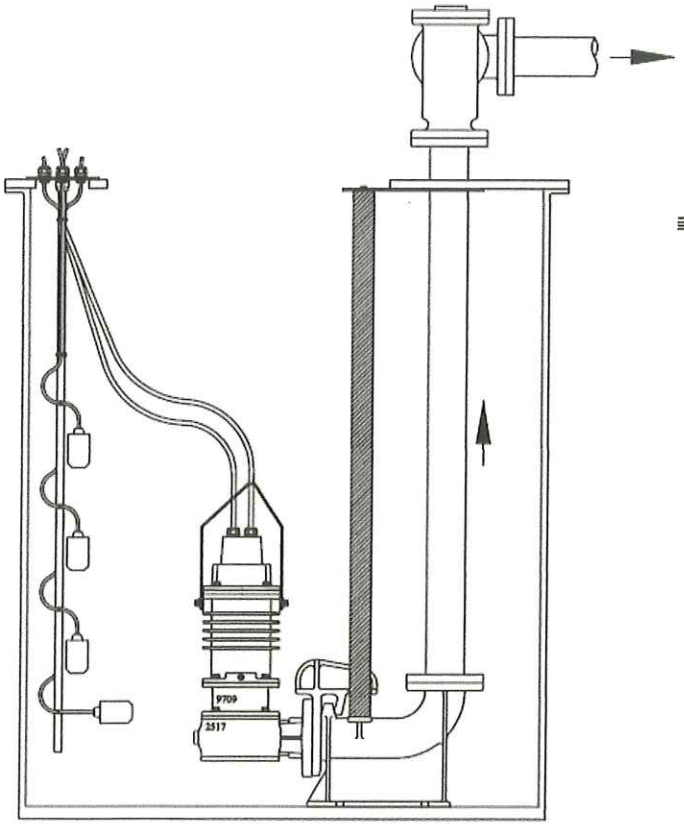
Install check valves upright.
Isolation valve may be rotated for discharge position.

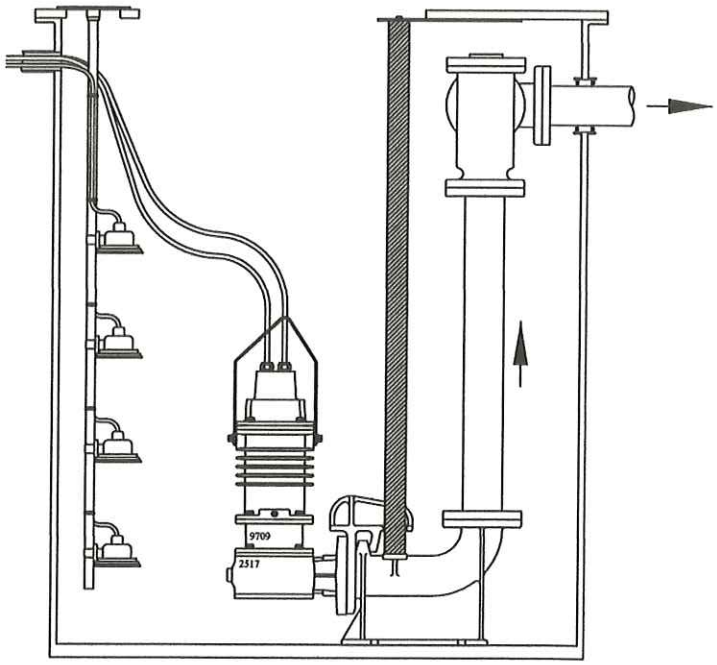
Above Cover Discharge



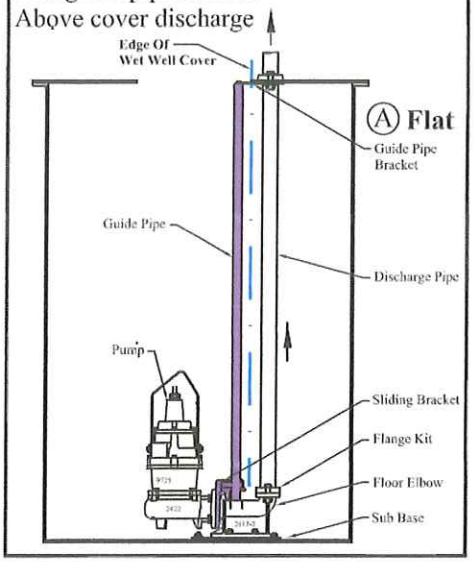
Below Cover Discharge



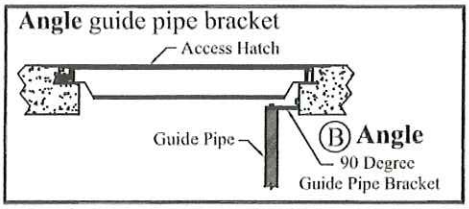




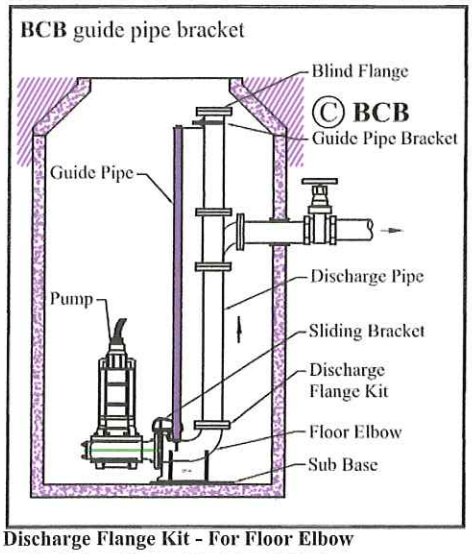
Flat guide pipe bracket
Above cover discharge



Angle guide pipe bracket



BCB guide pipe bracket



Discharge Flange Kit - For Floor Elbow
Includes - Flange, Gasket and Hardware
Weil = 2 bolt oval configuration

Order Number	Pipe Type	Type
2613K205	Plain End	Weil
2613K107	Threaded	ANSI

Intermediate Guide Pipe Bracket:

205.666.001	Intermediate Guide Pipe Bracket

System Includes:
- Discharge Floor Elbow - one
- Sliding Bracket - one
  - Iron or
  - Bronze for use with Explosion Proof Motors
    - 316 Stainless Steel
- Guide Pipe Bracket - one
  A - Flat (cover mount) - bolts to wet well cover or
  B - Angle 90° (side mount) bolts to vertical side wall or
  C - BCB Bracket - Duplex or Simplex mounts to discharge pipe(s) - see pg 2 diagrams

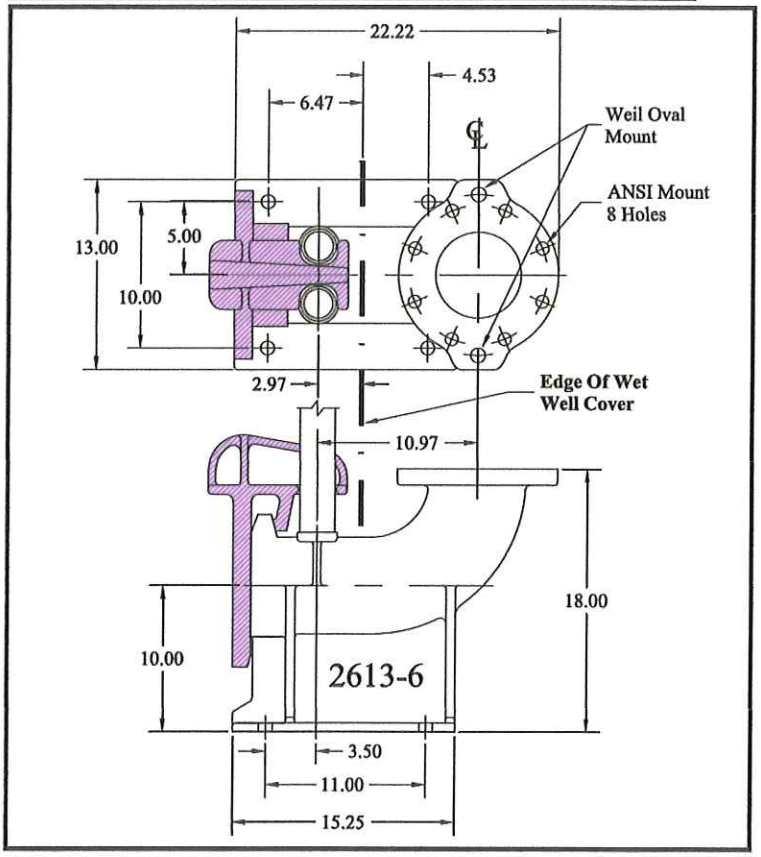
Not Included:
- Discharge Pipe. Guide Pipe - 2 inch schedule 40 & Flange Kit

Options:
- Discharge Flange Kit for Floor Elbow
- Intermediate Guide Pipe Bracket
- Sub Base for Floor Elbow
- Level Control Lifting Assembly for BCB Duplex Bracket

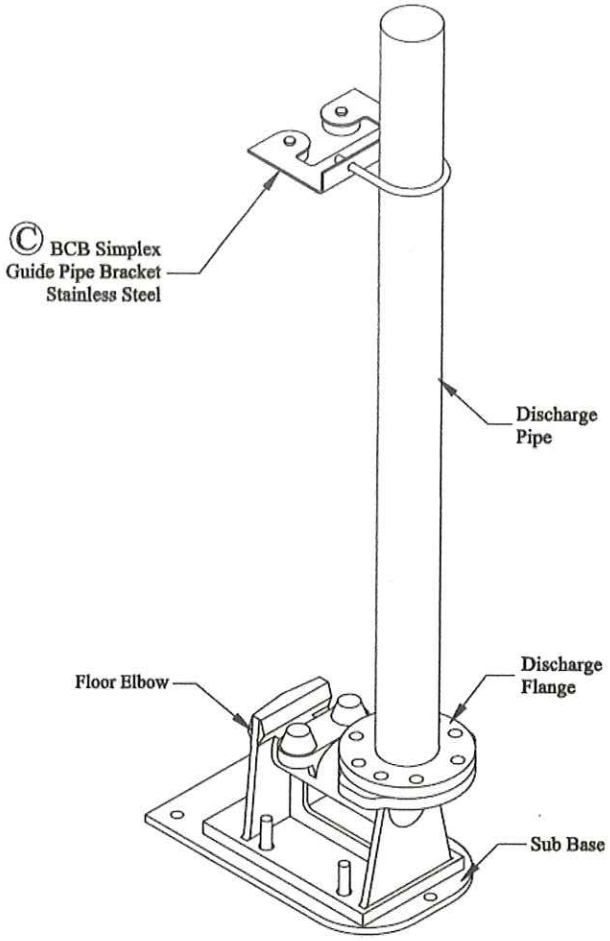
Removal System:

Simplex

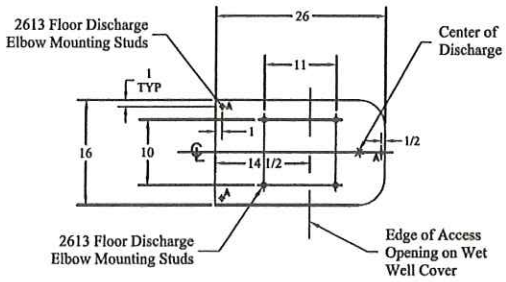
Order Number	Sliding Bracket	Guide Pipe Bracket	Mount Type	Wt Lbs
2613K1024	Iron	Flat	Cover	196
2613K5014	Iron	Angle	Side	196
2613K2024	Bronze	Flat	Cover	196
2613K6035	Bronze	Angle	Side	196
2613K3024	Iron	BCB	Pipe	196
2613K4024	Bronze	BCB	Pipe	196



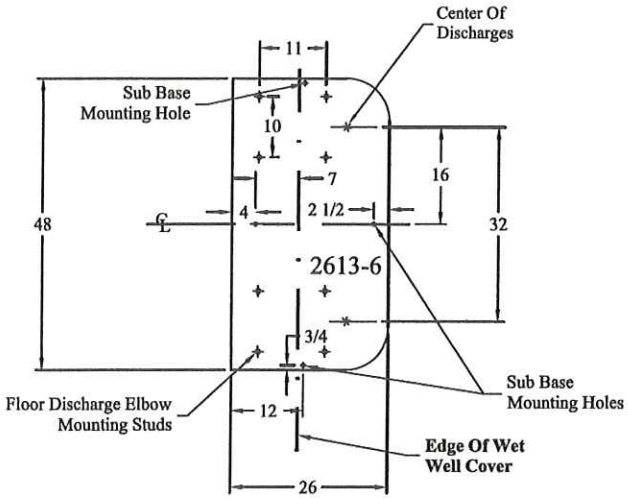
BCB - Simplex



Sub-Base - SIMPLEX



Sub-Base - DUPLEX



Sub Base for Simplex/Duplex Installations

Epoxy Coated or Stainless Steel sub base with stainless steel studs is used to locate and install the 2613 discharge floor elbows in a wet well. Mounting locations match standard Weil 8804/8815 wet well covers and 2616 valves. Three 9/16 holes for bolting to the wet well floor. Waterproof adhesive 3M Marine 5200 could be used instead of bolting.

Order Number	Style	Stud Size	Pump Size	Min. Wet Well Diameter
2613K606	Simplex	3/4"	9" case 12" case	42" 48"
2613K504	Duplex	3/4"	9" case 12" case	60" 72"

Level Control Lifting Assembly
(Duplex BCB systems only)

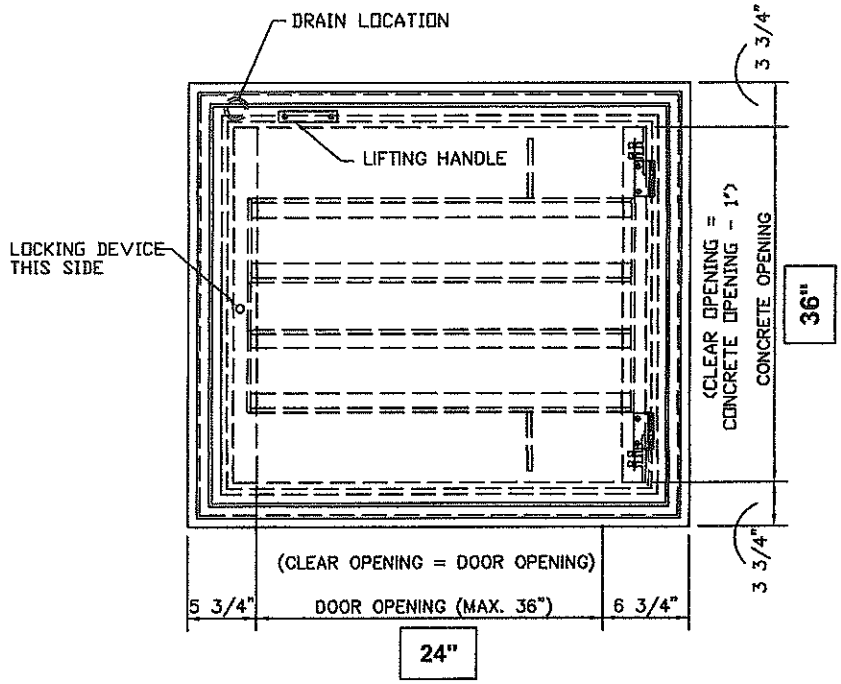
Does not include level control switches or mounting pipe.
See SN-8220 and SN-8230

Order Number	
2613K801	Level Control Lifting Assembly with Tailpiece

HALLIDAY PRODUCTS, INC.
ORLANDO, FL
http://www.hallidayproducts.com

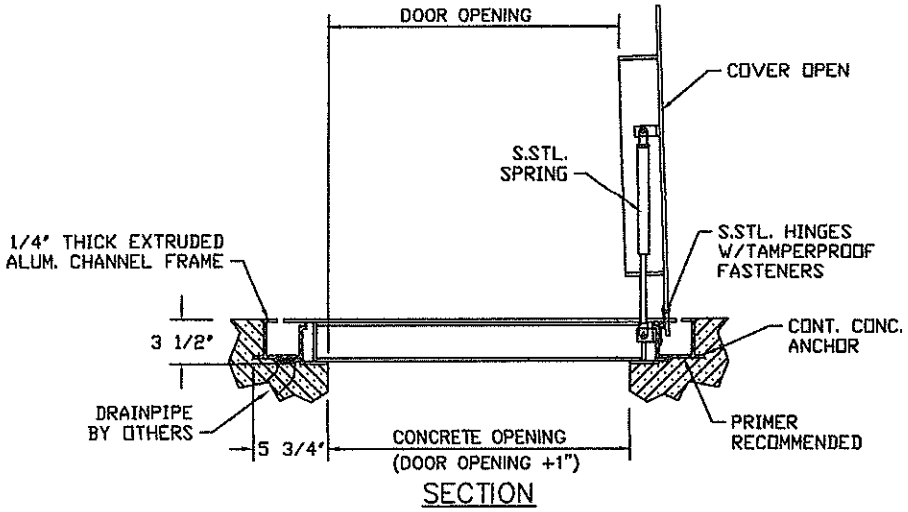
HALLIDAY PRODUCTS

MODEL NO. H1W024036C-B------
QUANTITY: 1
DOCUMENT NO. Q47041
DATE: 1/18/24
LOCATION/TAG:



STANDARD FEATURES:

H-20 LOAD RATING
1/4 ALUMINUM TREAD PLATE COVER
1/4 THICK ALUM. CHANNEL FRAME EXTRUSION
SINGLE LEAF CONSTRUCTION
1 1/2" DRAIN COUPLING
S.STL & ALUM. HOLD OPEN ARM
S.STL SLAM LOCK W/ KEY
RECESSED LIFT HANDLE(S)
T-316 S.STL. HINGES AND ATTACHING HARDWARE
S.STL. COMPRESSION SPRING ASSIST
LIFETIME GUARANTEE



SECTION

OPTIONS/FEATURES:

	PADLOCK BAR
	RECESSED LOCK BOX
	KEYED CYLINDER LOCK
	EPDM GASKET/CUSHION
	BITUMINOUS COATING
	PVC PROTECTIVE FILM
	SLAB SKIRT HEIGHT (INCLUDING FRAME)
	CLEAR ANODIZED FINISH
	SAFETY CHAIN WITH POSTS
	SAFETY CABLE WITH POSTS
	3" INSULATION W/ CAPTIVE PAN
	NUTRAIL - SPECIFY LENGTH & LOCATION
	RETRO-GRATE (SEE ATTACHED DETAIL)
	BOLT DOWN COVER
	INSPECTION DOOR
	MODULAR DESIGN
	SIDE DRAIN
	MISCELLANEOUS

NOTES:

1) SUITABLE FOR USE IN OFF STREET LOCATION WHERE NOT SUBJECTED TO TRAFFIC.

2) PROVIDE A FULL BED OF CLASS "A" CONCRETE UNDER FRAME AND SUPPORT ANGLES.

NOTE: STANDARD PRODUCT WARRANTY DOES NOT COVER CORROSION FROM CHLORINE CONTACT.

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

I Edwin Baylosis,
Print Name

Senior Manager, EHS,
Title - Owner/President/Other

of Apple Inc.,
Corporation/Partnership/Entity Name

have authorized John Pelham, P.E.
Print Name of Agent/Engineer

of GarzaEMC, LLC.
Print Name of Firm

to represent and act on the behalf of the above named Corporation, Partnership, or Entity for the purpose of preparing and submitting this plan application to the Texas Commission on Environmental Quality (TCEQ) for the review and approval consideration of regulated activities.

I also understand that:

1. The applicant is responsible for compliance with 30 Texas Administrative Code Chapter 213 and any condition of the TCEQ's approval letter. The TCEQ is authorized to assess administrative penalties of up to $10,000 per day per violation.

2. For those submitting an application who are not the property owner, but who have the right to control and possess the property, additional authorization is required from the owner.

3. Application fees are due and payable at the time the application is submitted. The application fee must be sent to the TCEQ cashier or to the appropriate regional office. The application will not be considered until the correct fee is received by the commission.

4. A notarized copy of the Agent Authorization Form must be provided for the person preparing the application, and this form must accompany the completed application.

5. No person shall commence any regulated activity on the Edwards Aquifer Recharge Zone, Contributing Zone or Transition Zone until the appropriate application for the activity has been filed with and approved by the Executive Director.

SIGNATURE PAGE:

Applicant's Signature

3/29/24
Date

THE STATE OF CALIFORNIA §

County of Santa Clara §

BEFORE ME, the undersigned authority, on this day personally appeared Edward A Bayless 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 29 day of March, 2024.

ANNA MARIE BREWSTER
COMM # 2459116
ALAMEDA County
California Notary Public
Comm Exp Aug. 14, 2027

NOTARY PUBLIC

ANNA MARIE BREWSTER
Typed or Printed Name of Notary

MY COMMISSION EXPIRES: August 14, 2027

Application Fee Form

Texas Commission on Environmental Quality
Name of Proposed Regulated Entity: Generational Properties
Regulated Entity Location: 6900 W Parmer Lane Austin, TX 78729
Name of Customer: Apple Inc.
Contact Person: Dani Sattman Phone: 512-674-8221
Customer Reference Number (if issued):CN 603691783
Regulated Entity Reference Number (if issued):RN 110792173
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	Acres	$
Sewage Collection System	1085 L.F.	$ 650.00
Lift Stations without sewer lines	Acres	$
Underground or Aboveground Storage Tank Facility	Tanks	$
Piping System(s)(only)	Each	$
Exception	Each	$
Extension of Time	Each	$

Signature: _____ Date: 04/02/2024

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

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 **Modification of a Previously Approved Plan**

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 603691783		**RN 110792173**

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:*

Apple Inc.

7. TX SOS/CPA Filing Number	8. TX State Tax ID (11 digits)	9. Federal Tax ID (9 digits)	10. DUNS Number *(if applicable)*
0004789806	19424041101	94-2404110	060704780

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

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

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

13. Independently Owned and Operated? ☒ Yes ☐ No

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

☐ Owner ☐ Operator ☒ Owner & Operator

☐ Occupational Licensee ☐ Responsible Party ☐ Voluntary Cleanup Applicant ☐ Other:

15. Mailing Address:

One Apple Park Way

319-3EHS

City	Cupertino	State	CA	ZIP	95014	ZIP + 4	

16. Country Mailing Information *(if outside USA)*	17. E-Mail Address *(if applicable)*
	ebaylosis@apple.com

18. Telephone Number	19. Extension or Code	20. Fax Number *(if applicable)*
(408) 783-7928		( ) -

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.)*

Generational Properties								
23. Street Address of the Regulated Entity: *(No PO Boxes)*	One Apple Park Way							
	319-3EHS							
	City	Cupertino	State	CA	ZIP	95014	ZIP + 4	
24. County	Santa Clara							

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:	30.451912		28. Longitude (W) In Decimal:	-97.745563	
Degrees	Minutes	Seconds	Degrees	Minutes	Seconds
30	27	6.8832	-97	44	44.0268

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)
3663	3571	334111	334220

33. What is the Primary Business of this entity? *(Do not repeat the SIC or NAICS description.)*
General Office Space and Reseach and Development Space

34. Mailing Address:	One Apple Park Way						
	319-3EHS						
	City	Cupertino	State	CA	ZIP	95014	ZIP + 4

35. E-Mail Address:	ebaylosis@apple.com

36. Telephone Number	37. Extension or Code	38. Fax Number *(if applicable)*
(408) 783-7928		( ) -

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
		11001603 and 11001604		
☐ 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:	John Pelham, P.E.	41. Title:	Sr. Vice President

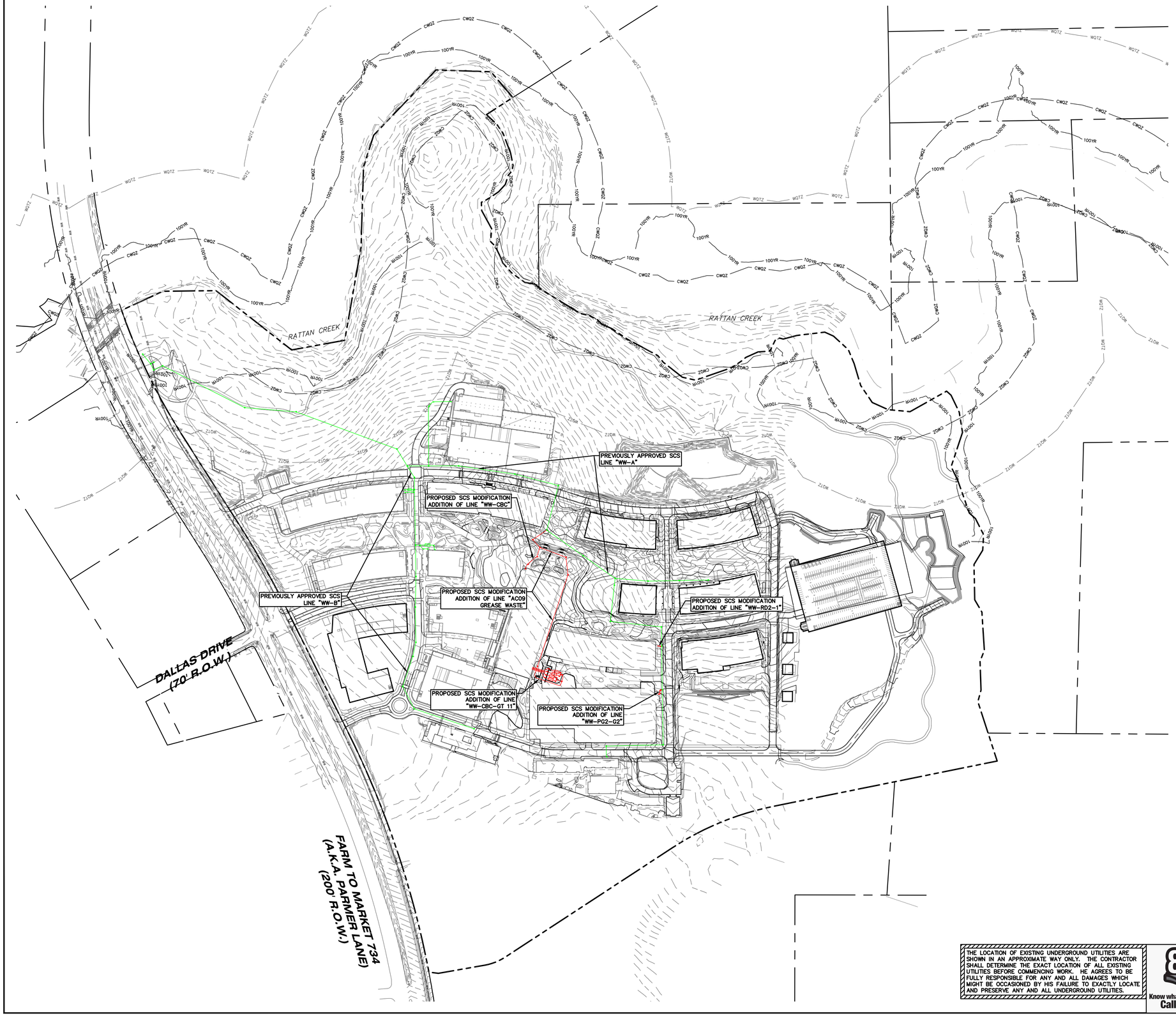
42. Telephone Number	43. Ext./Code	44. Fax Number	45. E-Mail Address
(512) 298-3284		( ) -	jpelham@garzaemc.com

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:	Apple Inc.	Job Title:	Sr Manager, EHS
Name*(In Print)* :	Edwin Baylosis	Phone:	(925) 413-7150

Signature:		Date:	3/29/24



NO	DATE	REVISION

garza EMC
7708 Rialto Blvd., Suite 125
Austin, Texas 78735
Tel: (512) 298-2284 Fax (512) 298-2592
TBPE #F-14924 TBPLS #10028
Garza EMC, LLC © Copyright 2024

THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF INTERIM REVIEW UNDER THE AUTHORITY OF ALEXANDRA A. BOONE TX P.E. #138951 ON THE DATE SHOWN ON THE DATE STAMP. IT IS NOT TO BE USED FOR CONSTRUCTION, BIDDING, OR PERMIT PURPOSES.

SCS MODIFICATION EXHIBIT

CAPSTONE
6900 W. PARMER LANE

APPLE INC.

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.

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

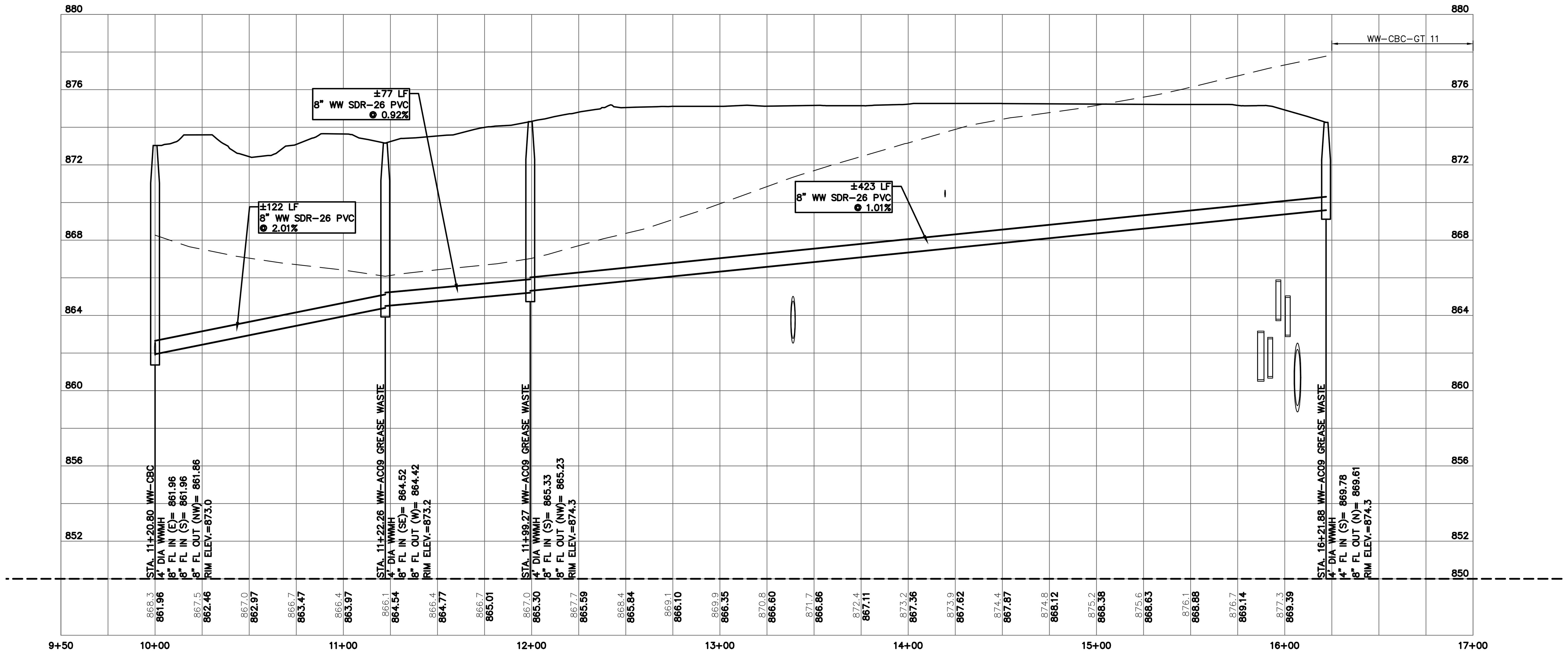
FOR CITY USE ONLY:

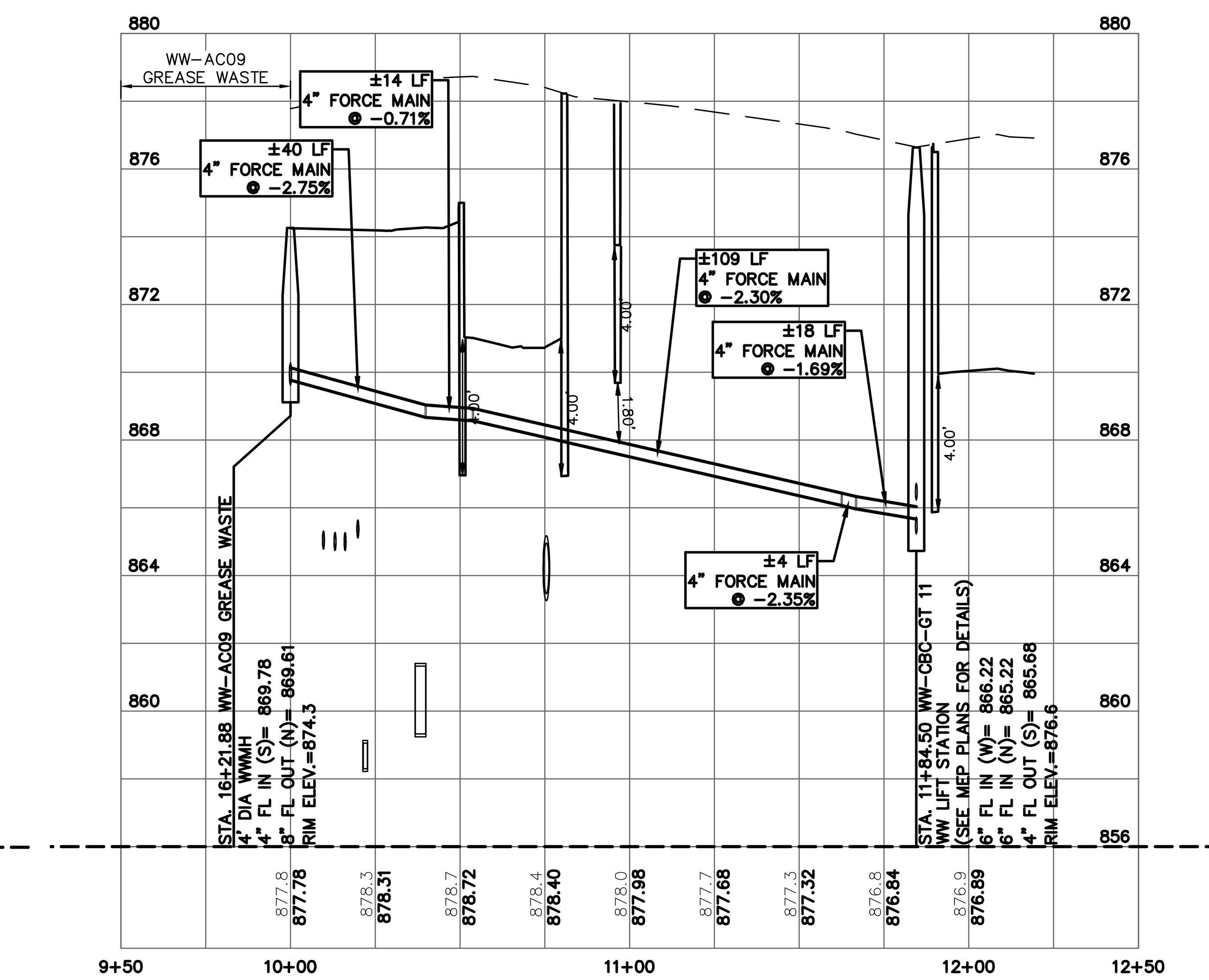
DRAWN BY: SPM	DESIGNED BY: ANG, IHR, HCH	QA / QC: JDP	PROJECT NO.: 101649.00031

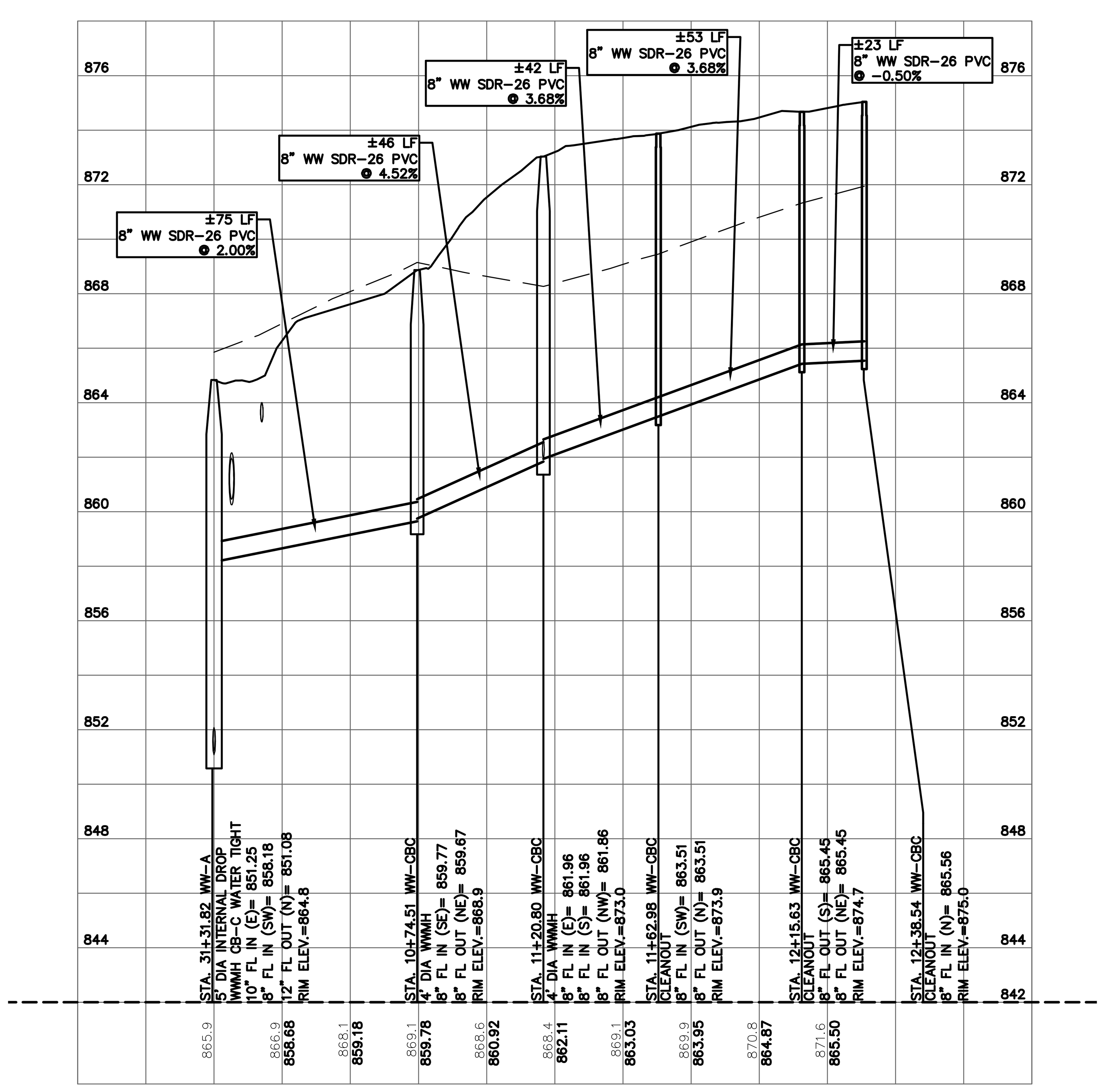
SHEET 130 OF 235

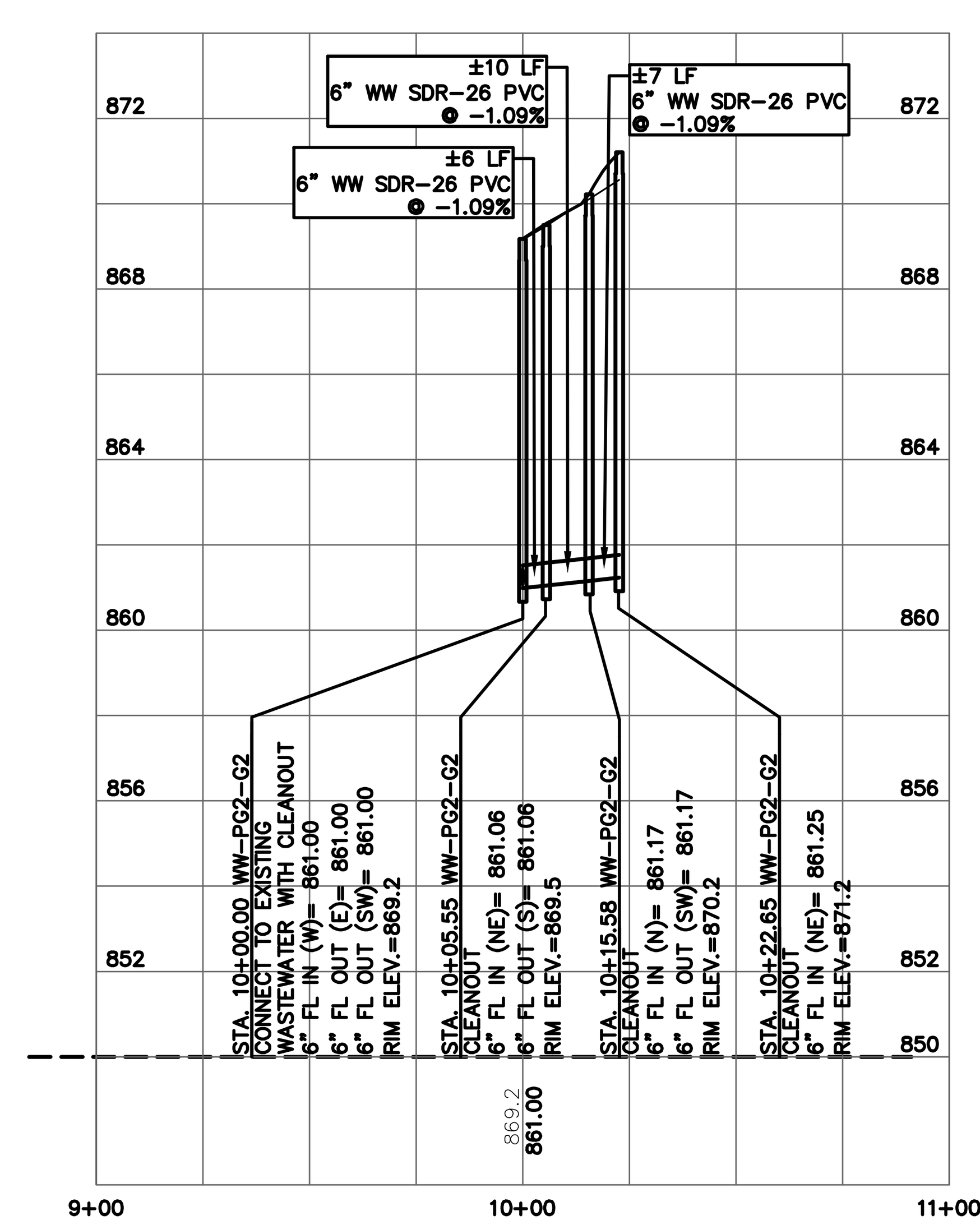
V:\101649-00031\Civil\00-CAD\EXHIBITS\2024-02-26 TCEQ SCS Exhibit.dwg modified by hhumes on Mar 7, 24 9:41 AM

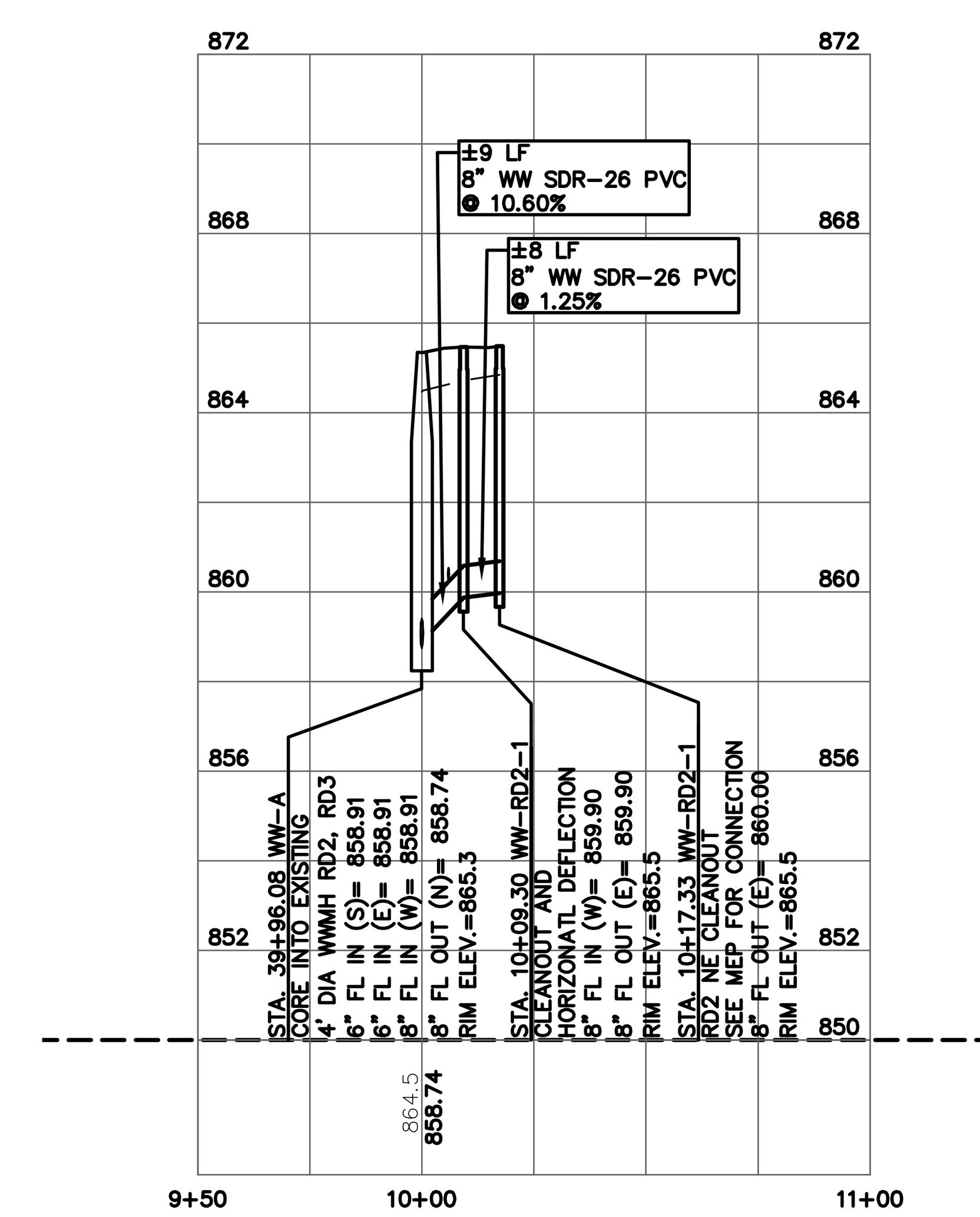
SP-2023-0292C











30 0 15 30 60

1" = 30'

garza emc

7708 Rialto Blvd, Suite 125
Austin, Texas 78735
Tel. (512) 298-3284 Fax (512) 298-2592
TBPE # F-14629

REVISION | NO. | DATE

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SCS PROFILES

CAPSTONE
6900 W. PARMER LANE

APPLE INC.

DRAWN BY: SPM
DESIGNED BY: ANG, IHR, HCH
QA / QC: JDP
PROJECT NO.: 101649.00031

SHEET 130 OF 235

FOR CITY USE ONLY:

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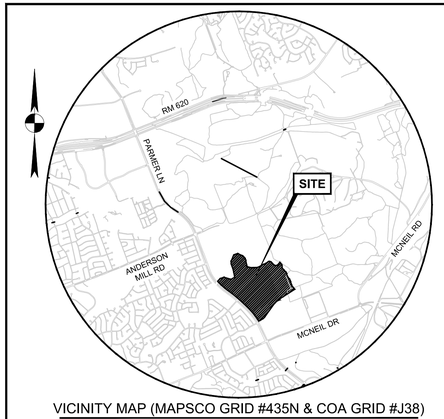
SP-2023-0292C



VICINITY MAP (MAPSCO GRID #435N & COA GRID #J38)

N.T.S.

DEVELOPER: TRAMMELL CROW COMPANY
500 W 2ND STREET, SUITE 1400
AUSTIN, TX 78701
(512) 482-5565

OWNER: APPLE INC.
ONE APPLE PARK WAY, MS 119-RE
CUPERTINO, CA 95014

ARCHITECT: HKS
350 N SAINT PAUL ST, #100
DALLAS, TX 75201
(214) 969-5599

ENGINEER: GARZA EMC, LLC.
7708 RIALTO BLVD, SUITE 125
AUSTIN, TX 78735
(512) 298-3284

LANDSCAPE ARCHITECT: NUDGE DESIGN
2501 SOUTH LAMAR BLVD.
AUSTIN, TX 78704
(512) 415-5570

WATERSHED STATUS:

THIS SITE IS LOCATED IN THE RATTAN CREEK AND WALNUT CREEK WATERSHEDS. IT IS CLASSIFIED AS AN SUBURBAN WATERSHED AND SHALL BE DEVELOPED, CONSTRUCTED AND MAINTAINED IN CONFORMANCE WITH CHAPTER 25 OF THE LAND DEVELOPMENT CODE.

FLOODPLAIN INFORMATION:

ACCORDING TO THE FLOOD INSURANCE RATE MAP (FIRM) COMMUNITY PANEL NUMBERS 48491C0630E (DATED SEPTEMBER 26, 2008) AND 48453C0255J (DATED AUGUST 18, 2014) ISSUED BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA), THE NORTH PORTION OF THE TRACT ADJACENT TO RATTAN CREEK IS LOCATED WITHIN THE 100-YEAR FEMA FLOODPLAIN. THIS SITE IS LOCATED OVER THE EDWARDS AQUIFER RECHARGE ZONE.

LEGAL DESCRIPTION:

LOT 1A BLOCK A, RESUBDIVISION OF LOT 1 BLOCK A GENERATIONAL COMMERCIAL SUBDIVISION ACCORDING TO THE PLAT RECORDED AS DOCUMENT NO. 202400041 OF THE OFFICIAL PUBLIC RECORDS OF TRAVIS COUNTY, TEXAS AND AS DOCUMENT NO. 2024020082 OF THE OFFICIAL PUBLIC RECORDS OF WILLIAMSON COUNTY, TEXAS.

BENCHMARK NOTE:

SEE SURVEY

SUBDIVISION No: C8J-2018-0223.0A, C8-2021-0160.0APA, C8-2023-0182.0A

ZONING ORDINANCE No: C814-04-0066, 040617-39: ROBINSON RANCH ANNEXATION AND DEVELOPMENT AGREEMENT, 040617-40: ROBINSON RANCH LIMITED PURPOSE ZONING, 040617-Z-12: ROBINSON RANCH INITIAL PERMANENT ZONING, AND 040617-41: ROBINSON RANCH REGULATORY PLAN

garza emc
7708 Rialto Blvd., Suite 125
Austin, Texas 78735
Tel. (512) 298-3284 Fax (512) 298-2592
TBPE # F-14629

NOTES:

1. RELEASE OF THIS APPLICATION DOES NOT CONSTITUTE A VERIFICATION OF ALL DATA, INFORMATION, AND CALCULATIONS SUPPLIED BY THE APPLICANT. THE ENGINEER OF RECORD IS SOLELY RESPONSIBLE FOR THE COMPLETENESS, ACCURACY, AND ADEQUACY OF HIS/HER SUBMITTAL, WHETHER OR NOT THE APPLICATION IS REVIEWED FOR CODE COMPLIANCE BY CITY ENGINEERS.
2. ALL RESPONSIBILITY FOR THE ADEQUACY OF THESE PLANS REMAINS WITH THE ENGINEER WHO PREPARED THEM. IN REVIEWING THESE PLANS, THE CITY OF AUSTIN MUST RELY UPON THE ADEQUACY OF THE WORK OF THE DESIGN ENGINEER.
3. THIS PROJECT IS WITHIN THE EDWARDS AQUIFER RECHARGE ZONE AS DEFINED BY THE CITY OF AUSTIN.
4. THE ENVIRONMENTAL INSPECTOR HAS THE AUTHORITY TO CHANGE OR MODIFY EROSION/SEDIMENTATION CONTROLS, PER SECTION 25-8-183 OF THE CITY OF AUSTIN'S LAND DEVELOPMENT CODE.
5. THE PLAN IS COMPLETE, ACCURATE AND IN COMPLIANCE WITH CHAPTER 25-8 SUBCHAPTER A OF THE LAND DEVELOPMENT CODE. [LDC 25-8-152]
6. NO NATURALLY OCCURRING SLOPES IN EXCESS OF 15% EXIST WITHIN THE LIMITS OF CONSTRUCTION FOR THIS PROJECT.
7. APPROVAL OF THESE PLANS BY THE CITY OF AUSTIN INDICATES COMPLIANCE WITH APPLICABLE CITY REGULATIONS ONLY. APPROVAL BY OTHER GOVERNMENTAL ENTITIES MAY BE REQUIRED PRIOR TO THE START OF CONSTRUCTION. THE APPLICANT IS RESPONSIBLE FOR DETERMINING WHAT ADDITIONAL APPROVALS MAY BE NECESSARY.
8. THIS PROJECT HAS PRIVATE HYDRANTS LOCATED WITHIN THE PROPERTY. THE PROPERTY OWNER IS REQUIRED TO COMPLY WITH AUSTIN FIRE CODE. FAILURE TO COMPLY MAY RESULT IN CIVIL AND/OR CRIMINAL REMEDIES AVAILABLE TO THE CITY. THE PERFORMANCE OF THIS OBLIGATION SHALL ALWAYS REST WITH THE OWNER OF RECORD. FIRE HYDRANTS ON PRIVATE PROPERTY ARE REQUIRED TO BE SERVICED, MAINTAINED AND FLOWED ANNUALLY, USING A CONTRACTOR REGISTERED WITH THE CITY TO PROVIDE THE SERVICE. THIS PROJECT INCLUDES TWO (2) PRIVATE HYDRANTS.
9. THIS PROJECT IS SUBJECT TO THE VOID AND WATER FLOW MITIGATION RULE (COA ECM 1.12.0 AND COA ITEM NO. 658S OF THE SSM) PROVISION THAT ALL TRENCHING GREATER THAN 5 FEET DEEP MUST BE INSPECTED BY A GEOLOGIST (TEXAS P.G.) OR A GEOLOGIST'S REPRESENTATIVE.
10. COMPLIANCE WITH THE COMMERCIAL AND MULTI-FAMILY RECYCLING ORDINANCE IS MANDATORY FOR MULTI-FAMILY COMPLEXES, BUSINESSES AND OFFICE BUILDINGS.
11. APPROVAL OF THESE PLANS BY THE CITY OF AUSTIN INDICATES COMPLIANCE WITH APPLICABLE CITY REGULATIONS ONLY. APPROVAL BY OTHER GOVERNMENTAL ENTITIES MAY BE REQUIRED PRIOR TO THE START OF CONSTRUCTION. THE APPLICANT IS RESPONSIBLE FOR DETERMINING WHAT ADDITIONAL APPROVALS MAY BE NECESSARY.
12. AN ADMINISTRATIVE ENVIRONMENTAL VARIANCE HAS BEEN GRANTED IN ACCORDANCE WITH LDC 25-8-42 AND THE ROBINSON RANCH PUD REGULATIONS IN EFFECT ON THE DATE OF THE ORDINANCE TO ALLOW CUT OR FILL TO EXCEED THE ALLOWABLE FOUR FEET FOR A WATER QUALITY OR DETENTION FACILITY.
13. AN ADMINISTRATIVE ENVIRONMENTAL VARIANCE HAS BEEN GRANTED IN ACCORDANCE WITH LDC 25-8-42 AND THE ROBINSON RANCH PUD REGULATIONS IN EFFECT ON THE DATE OF THE ORDINANCE TO ALLOW CUT OR FILL BETWEEN FOUR TO EIGHT FEET FOR THE SITE.
14. IF, DURING CONSTRUCTION OF THE WATERLINE, A VOID IS ENCOUNTERED THAT IS LOCATED WITHIN TRAVIS COUNTY AND MEETS THE NOTIFICATION CRITERIA OUTLINED BY THE CITY OF AUSTIN AND TCEQ(SHT 4, TCEQ WPAP GENERAL NOTES- NOTE 3 AND SHT 87, P-1 EROSION CONTROL NOTES- NOTE 8), NICO HAUWERT (512-972-1661) AND DAVID GIMNICH (512-972-1663) WITH AUSTIN WATER - WILDLAND CONSERVATION SHALL BE NOTIFIED IN ADDITION TO THE TCEQ AND THE CITY OF AUSTIN ENVIRONMENTAL INSPECTOR.
15. PHASES TO BE CONSTRUCTED IN NUMBER SEQUENCED ORDER PER LDC 25-5-21(A) TO ENSURE SUFFICIENT PARKING.
16. IF AT ANY TIME DURING CONSTRUCTION OF THIS PROJECT AN UNDERGROUND STORAGE TANK (UST) IS FOUND, CONSTRUCTION IN THAT AREA MUST STOP UNTIL A CITY OF AUSTIN UST CONSTRUCTION PERMIT IS APPLIED FOR AND APPROVED. ANY UST REMOVAL WORK MUST BE CONDUCTED BY A UST CONTRACTOR THAT IS REGISTERED WITH THE TEXAS COMMISSION OF ENVIRONMENTAL QUALITY (TCEQ). CONTACT ELIZABETH SIMMONS AT ELIZABETH.SIMMONS@AUSTINTEXAS.GOV IF YOU HAVE ANY QUESTIONS. [COA TITLE 6]
17. RETAINING WALLS OVER FOUR FEET IN HEIGHT, MEASURED FROM THE BOTTOM OF THE FOOTING TO THE TOP OF THE WALL, SHALL BE ENGINEERED AND WILL REQUIRE A SEPARATE PERMIT (UNIFORM BUILDING CODE 106.2.5).
18. CRITICAL ENVIRONMENTAL FEATURES (CEF) ARE PRESENT ON THIS SITE. ALL ACTIVITIES WITH THE CEF SETBACK MUST COMPLY WITH THE CITY OF AUSTIN CODE AND CRITERIA.
19. ALL PERMANENT FENCING MUST BE INSTALLED AT THE PERIMETER OF THE CRITICAL ENVIRONMENTAL FEATURE (CEF) SETBACK PRIOR TO THE INITIATION OF ANY CONSTRUCTION OR CLEARING ACTIVITY. THE FENCE MATERIAL SHALL BE IN ACCORDANCE WITH COA ITEM NO. 701S.3(E) OF THE SSM, UNLESS OTHER MATERIALS ARE APPROVED BY THE CITY OF AUSTIN. A LOCKABLE ACCESS GATE SHALL BE INSTALLED FOR EACH CRITICAL ENVIRONMENTAL FEATURE (CEF) SETBACK.
20. CITY OF AUSTIN MAY REQUIRE THE DEDICATION OF OPEN SPACE UPON MEETING THE TRIGGER DESCRIBED IN SECTION 3.06.b.1 OF ZONING ORDINANCE 040617-39.

SITE DEVELOPMENT PERMIT PLANS

FOR

CAPSTONE

PERMIT NO. : SP-2023-0292C

SUBDIVISION NO. : C8J-2018-0223.0A, C8-2021-0160.0APA, C8-2023-0182.0A

ADDRESS : 6900 W. PARMER LANE

SUBMITTAL DATE : JULY 28, 2023

SUBMITTED BY : Alexandra Boone 03-29-2024

ALEXANDRA A. BOONE, P.E. DATE
GARZA EMC, LLC.
7708 RIALTO BLVD, SUITE 125
AUSTIN, TEXAS 78735
(512) 298-3284

STATE OF TEXAS · ALEXANDRA A. BOONE · 138951 · LICENSED PROFESSIONAL ENGINEER

PLAN SUBMITTALS:

NO.	DATE	COMMENTS

I, ALEXANDRA A. BOONE, 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.

SUBSURFACE POND MAINTENANCE NOTE:

NO CERTIFICATE OF OCCUPANCY SHALL BE RELEASED FOR THIS PROJECT UNTIL THE PROPOSED SPM RESTRICTIVE COVENANT HAS BEEN APPROVED BY COA LEGAL AND COA WATERSHED, RECORDED BY THE COUNTY AND RECORDATION NUMBERS INCLUDED IN THE PLANS. RECORDED WM. DOC#2019064152

INTEGRATED PEST MANAGEMENT PLAN NOTE:

NO CERTIFICATE OF OCCUPANCY SHALL BE RELEASED FOR THIS PROJECT UNTIL THE PROPOSED IPM RESTRICTIVE COVENANT HAS BEEN APPROVED BY COA LEGAL AND COA WATERSHED, RECORDED BY THE COUNTY AND RECORDATION NUMBERS INCLUDED IN THE PLANS. RECORDED WM. DOC#2019064153

AUSTIN TRANSPORTATION DEPARTMENT NOTE:

A MINIMUM 15 FT WIDE SIDEWALK TRAIL AND RECREATION EASEMENT ENCOMPASSING THE TRAIL SHOWN EXTENDING FROM THE NORTHERN DRIVEWAY TO THE NORTHERN MOST PROPERTY LINE ALONG WEST PARMER LANE AND FROM WEST PARMER LANE TO THE EASTERN PROPERTY LINE WITHIN THE OPEN SPACE, MUST BE DEDICATED AND RECORDATION NUMBER ADDED TO THE SITE PLAN PRIOR TO APPROVAL OF ANY CERTIFICATE OF OCCUPANCY WITHIN THE SITE.

RSMP PARTICIPATION NOTE:

PARTICIPATION IN THE REGIONAL STORMWATER MANAGEMENT PROGRAM THROUGH PAYMENT TO, AND AGREEMENT WITH, THE UPPER BRUSHY CREEK WATER CONTROL AND IMPROVEMENT DISTRICT WAS APPROVED FOR THIS SITE ON APRIL 24, 2020 BY THE CITY OF AUSTIN WATERSHED PROTECTION DEPARTMENT, OFFICE OF THE DIRECTOR. THE RSMP NUMBER FOR THIS CASE IS: RAT-RS-2020-00240."

DEMOLITION NOTE:
A PRECONSTRUCTION MEETING WITH THE ENVIRONMENTAL INSPECTOR IS REQUIRED PRIOR TO ANY SITE DISTURBANCE.

AUSTIN FIRE DEPARTMENT - PROJECT INFORMATION TABLE	
FIRE DESIGN CODES	IFC 2015
FIRE FLOW DEMAND @ 20 PSI (GPM)	6000 GPM
INTENDED USE	OFFICE
CONSTRUCTION CLASSIFICATION	IB/ IIB
BUILDING FIRE AREA (SF)	1,076,454 SF
AUTOMATIC FIRE SPRINKLER SYSTEM TYPE (IF APPLICABLE)	FULLY SPRINKLERED
REDUCED FIRE FLOW DEMAND @ 20 PSI FOR HAVING A SPRINKLER SYSTEM (GMP) (IF APPLICABLE)	1500 GPM
AFD FIRE HYDRANT FLOW TEST DATE	09-14-2018
AFD FIRE HYDRANT FLOW TEST LOCATION	7000 BLK W PARMER LN & 6000 BLK MCNEIL DR.
HIGH-RISE	YES
WILDLAND URBAN INTERFACE CODE	2015 INTERNATIONAL WILDLAND-URBAN INTERFACE CODE (IWUIC) WITH CITY OF AUSTIN LOCAL AMENDMENTS
ALTERNATIVE METHOD OF COMPLIANCE (AMOC), IF APPLICABLE TO YOUR PROJECT	YES

CITY OF AUSTIN
WATER AND WASTEWATER UTILITY
SPECIAL SERVICES DIVISION
(512) 972-1060

AUSTIN WATER UTILITIES NOTES:

THIS PROJECT HAS PRIVATE HYDRANTS LOCATED WITHIN THE PROPERTY. THE PROPERTY OWNER IS REQUIRED TO COMPLY WITH AUSTIN FIRE CODE. FAILURE TO COMPLY MAY RESULT IN CIVIL AND/OR CRIMINAL REMEDIES AVAILABLE TO THE CITY. THE PERFORMANCE OF THIS OBLIGATION SHALL ALWAYS REST WITH THE OWNER OF RECORD. FIRE HYDRANTS ON PRIVATE PROPERTY ARE REQUIRED TO BE SERVICED, MAINTAINED AND FLOWED ANNUALLY, USING CONTRACTOR REGISTERED WITH THE CITY TO PROVIDE THE SERVICE. THIS PROJECT INCLUDES 28 PRIVATE HYDRANTS.

TRACKING#: UCC-190328-11-01
ROW ID#12144360

TRAFFIC CONTROL NOTES:

THIS NOTE IS BEING PLACED ON THE PLAN SET IN PLACE OF TEMPORARY TRAFFIC CONTROL STRATEGY WITH THE FULL UNDERSTANDING THAT, AT A MINIMUM OF 6 WEEKS PRIOR TO THE START OF CONSTRUCTION, A TEMPORARY TRAFFIC CONTROL PLAN MUST BE REVIEWED AND APPROVED BY THE RIGHT OF WAY MANAGEMENT DIVISION. THE OWNER/REPRESENTATIVE FURTHER RECOGNIZE THAT REVIEW FEE, AS PRESCRIBED BY THE MOST CURRENT VERSION OF THE CITY'S FEE ORDINANCE, SHALL BE PAID EACH TIME A PLAN OR PLAN REVISION IS SUBMITTED TO RIGHT OF WAY MANAGEMENT DIVISION FOR REVIEW.

APPROVED FOR ACCEPTANCE:

DEVELOPMENT SERVICES DEPARTMENT DATE

INDUSTRIAL WASTE DEPARTMENT DATE

CITY OF AUSTIN FIRE DEPARTMENT DATE

AUSTIN WATER UTILITY DEPARTMENT DATE

WILLIAMSON COUNTY DATE

FOR CITY USE ONLY:

SITE PLAN APPROVAL Sheet 001 of 238
FILE NUMBER: SP-2023-0292C APPLICATION DATE: _____
APPROVED BY COMMISSION ON: _____ UNDER SECTION 112 OF CHAPTER 25-5 OF THE CITY OF AUSTIN CODE.
EXPIRATION DATE (25-5-81,LDC) _____ CASE MANAGER ROSEMARY AVILA
PROJECT EXPIRATION DATE (ORD.#970905-A) _____ DWPZ ____ DDZ ____

_____
Director, Development Services Department

RELEASED FOR GENERAL COMPLIANCE: _____ ZONING: PUD
Rev. 1 _____ Correction 1 _____
Rev. 2 _____ Correction 2 _____
Rev. 3 _____ Correction 3 _____

FINAL PLAT MUST BE RECORDED BY THE PROJECT EXPIRATION DATE, IF APPLICABLE. SUBSEQUENT SITE PLANS WHICH DO NOT COMPLY WITH THE CODE CURRENT AT THE TIME OF FILING, AND ALL REQUIRED BUILDING PERMITS AND/OR A NOTICE OF CONSTRUCTION (IF A BUILDING PERMIT IS NOT REQUIRED), MUST ALSO BE APPROVED PRIOR TO THE PROJECT EXPIRATION DATE.

SHEET 001 OF 238

CAPSTONE

V:\1016649-000331\Civil\00-CAD\Replacement SDP\1016649-000331-CVR.dwg modified by smcnulty on Mar 29, 24 10:37 AM

SP-2023-0292C

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NO.	DESCRIPTION	REVISE (R) ADD (A) VOID (V) SHEET NO.'S	TOTAL # SHEETS IN PLAN SET	NET CHANGE IMP. COVER (sq. ft.)	TOTAL SITE IMP. COVER (sq. ft.) [%]	CITY OF AUSTIN APPROVAL/DATE	DATE IMAGED

FOR CITY USE ONLY:

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.

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

REVISION	NO.	DATE

garza emc
7708 Rialto Blvd., Suite 125
Austin, Texas 78735
Tel. (512) 298-3284 Fax (512) 298-2592
TBPE # F-14629

STATE OF TEXAS
ALEXANDRA A. BOONE
138951
LICENSED PROFESSIONAL ENGINEER
03/29/2024

SHEET LIST

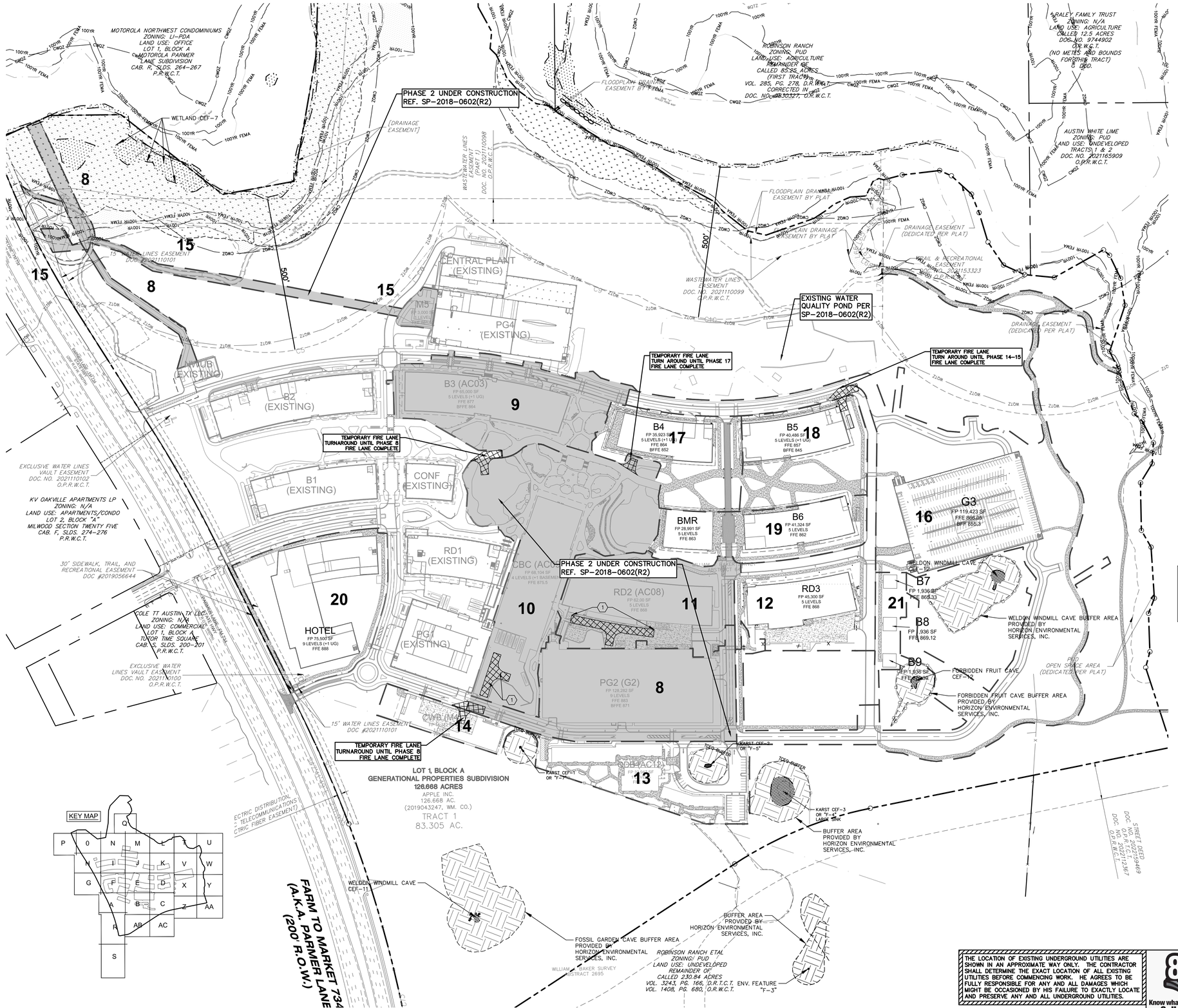
CAPSTONE
6900 W. PARMER LANE

APPLE INC.

DRAWN BY: SPM
DESIGNED BY: ANG, IHR, HCH
QA / QC: JDP
PROJECT NO.: 101649.00031

SHEET
002
OF 238

SP-2023-0292C



LEGEND

EXISTING	PROPOSED	DESCRIPTION
		PROPERTY LINE / R.O.W. LINE
(xxx)		RECORD INFORMATION
		LIGHT POLE
		GROUND LIGHT
		POWER POLE
		DOWN GUY
WTMH		WATER MANHOLE
		WATER LINE MARKER
		UNDERGROUND CABLE MARKER
		UNDERGROUND GAS LINE MARKER
		UNDERGROUND TELEPHONE MARKER
		GAS RISER
		TELEPHONE RISER
		SPRINKLER CONTROL BOX
	SW	SWITCH GEAR & PAD
	T	TRANSFORMER (SIZE VARIES)
		FIRE HYDRANT
		WATER VALVE
		WATER METER
		WATER METER VAULT (SIZE VARIES)
		CABLE TV RISER
		ELECTRIC BOX
		ELECTRIC METER
		GAS METER
		GAS VALVE
TCM	TCM	TRAFFIC CONTROL BOX
TSP	TSP	TRAFFIC SIGNAL POST
		GRATE INLET
		CURB INLET (SIZE VARIES)
		GREASE TRAP (SIZE VARIES)
EMH		ELECTRIC MANHOLE (SIZE VARIES)
WMH		WASTEWATER MANHOLE (SIZE VARIES)
SMH		STORMSEWER MANHOLE (SIZE VARIES)
TMH	TMH	TELEPHONE MANHOLE (SIZE VARIES)
CO	CO	WASTEWATER CLEANOUT
x	x	WIRE FENCE
//	//	WOOD FENCE
		CHAIN LINK FENCE
	D	DUMPSTER
		CURB & GUTTER
		EDGE OF PAVEMENT
		FIRE LANE DESIGNATION
		ACCESSIBLE ROUTE
		CONCRETE SIDEWALKS
		WALL
		SIGN
		WHEELSTOP
		BOLLARD
		SITE LIGHTING
		LANDSCAPE LIGHTING
	FFE	FINISH FLOOR ELEVATION
_R @ 9.0'	_R 9.0'	PARKING COUNT (REGULAR SPACES)
_HC @ 9.0'	_HC 9.0'	PARKING COUNT (ACCESSIBLE SPACES)
_P @ 9.0'	_P 9.0'	PARKING COUNT (PARALLEL SPACES)
		ACCESSIBLE SPACE
	BIKE PARKING	BIKE PARKING
	BARRICADE	BARRICADE
		LIMITS OF CONSTRUCTION

NO BUILDINGS EXIST WITHIN 50 FEET ON ADJOINING LOTS.
BUILDING TABLE ON SITE DETAIL SHEET.

PHASE 2 UNDER CONSTRUCTION REF. SP-2018-0602(R2)

NOTE: ALL EXISTING EASEMENTS, FLOODPLAINS, BUFFERS, SETBACKS, AND THE LIKE ARE DETAILED IN EACH TECHNICAL SHEET.

PHASING LEGEND

PHASE BOUNDARY

KEY NOTES

(1) TEMPORARY ALL WEATHER SURFACE FIRE LANE TO REMAIN OPEN AT ALL TIMES DURING CONSTRUCTION UNTIL PERMANENT FIRE LANE IS COMPLETE.

NOTES:
PHASES WILL BE BUILT IN GROUPS AS SHOWN ON TABLES AND ENS SHEETS:
GROUP A (PHASE 1-7, 1 OFFSITE, AND 1 TRAIL) – 43.92 AC.
GROUP B (PHASE 8-15) – 26.28 AC.
GROUP C (PHASE 16-21) – 23.52 AC.

TEMPORARY FIRE LANE GROUP TURN AROUNDS

NOTES:
1. PARKING TABLE WITH PHASES ON SITE PLAN DETAIL SHEET. PHASES SHOULD BE CONSTRUCTED IN ORDER TO ENSURE SUFFICIENT PARKING. BUILDING TABLE ON SITE PLAN DETAIL SHEET.
2. THERE ARE NO PUBLIC ROADS OR STREETS PROPOSED. ALL INTERNAL CIRCULATION DRIVES WITHIN THE PROPERTY ARE PRIVATE.

FOR CITY USE ONLY:

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garza
7708 Rialto Blvd., Suite 125
Austin, Texas 78735
TEL (512) 298-2284 Fax (512) 298-2592
TBPE F-439 TBPLS 10194459

NO	DATE	REVISION

STATE OF TEXAS
ALEXANDRA A. BOONE
138951
LICENSED PROFESSIONAL ENGINEER
Alexandra Boone
03/29/2024

PHASING PLAN

CAPSTONE
6900 W. PARMER LANE

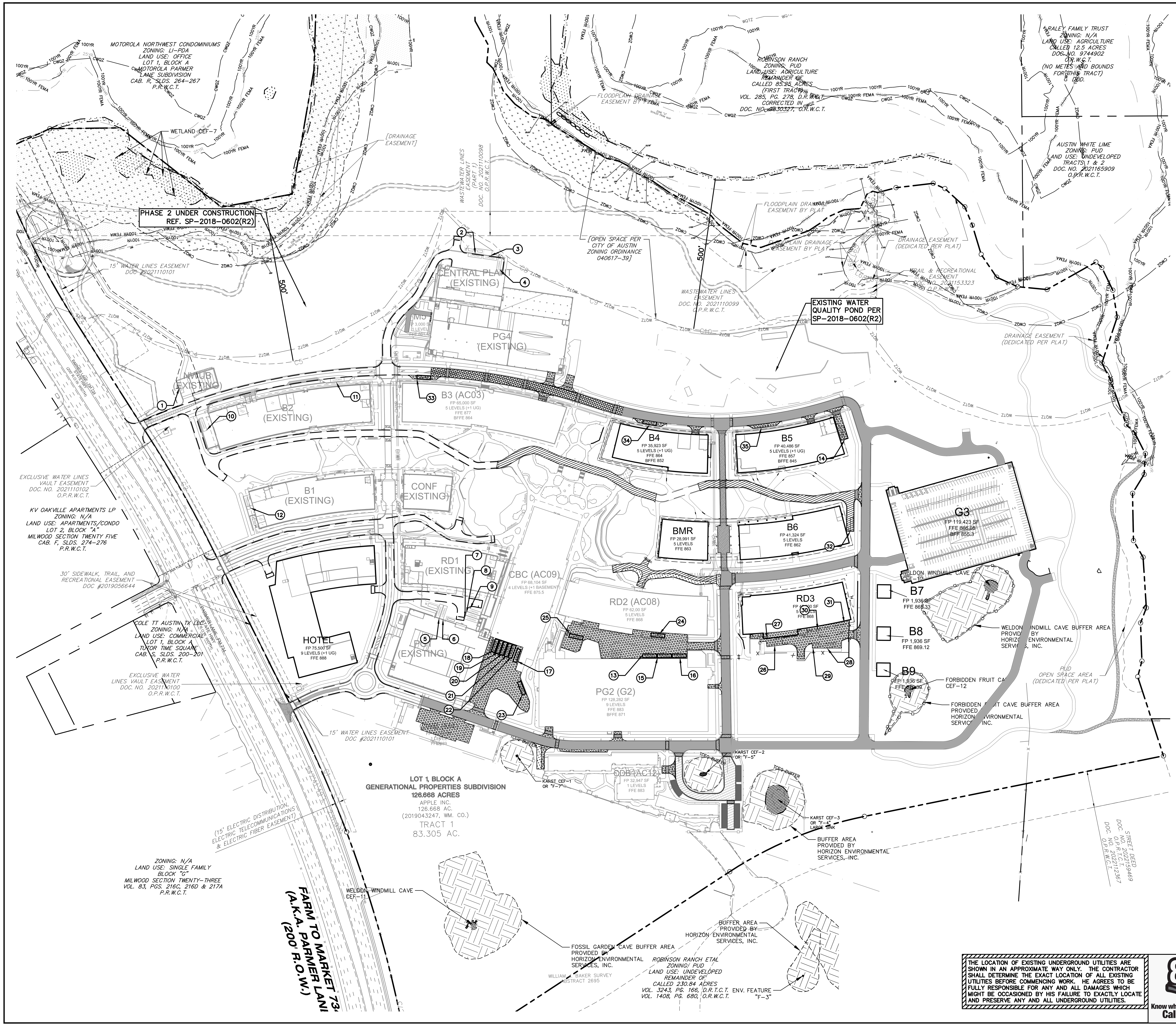
APPLE INC.

DRAWN BY: SPM
DESIGNED BY: ANG, IHR, HCH
QA / QC: JDP
PROJECT NO.: 101649.00031

SHEET
052
OF 238

V:\101649-00031\Civil\00-CAD\Replacement SDP\101649-00031-PHS.dwg modified by hhumes on Mar 28, 24 5:13 PM

SP-2023-0292C



LEGEND

EXISTING	PROPOSED	DESCRIPTION
		PROPERTY LINE / R.O.W. LINE
		RECORD INFORMATION
		LIGHT POLE
		GROUND LIGHT
		POWER POLE
		DOWN GUY
		WATER MANHOLE
		WATER LINE MARKER
		UNDERGROUND CABLE MARKER
		UNDERGROUND GAS LINE MARKER
		UNDERGROUND TELEPHONE MARKER
		GAS RISER
		TELEPHONE RISER
		SPRINKLER CONTROL BOX
		SWITCH GEAR & PAD
		TRANSFORMER (SIZE VARIES)
		FIRE HYDRANT
		WATER VALVE
		WATER METER
		WATER METER VAULT (SIZE VARIES)
		CABLE TV RISER
		ELECTRIC BOX
		ELECTRIC METER
		GAS METER
		GAS VALVE
		TRAFFIC CONTROL BOX
		TRAFFIC SIGNAL POST
		GRATE INLET
		CURB INLET (SIZE VARIES)
		GREASE TRAP (SIZE VARIES)
		ELECTRIC MANHOLE (SIZE VARIES)
		WASTEWATER MANHOLE (SIZE VARIES)
		STORMSEWER MANHOLE (SIZE VARIES)
		TELEPHONE MANHOLE (SIZE VARIES)
		WASTEWATER CLEANOUT
		WIRE FENCE
		WOOD FENCE
		CHAIN LINK FENCE
		DUMPSTER
		CURB & GUTTER
		EDGE OF PAVEMENT
		FIRE LANE DESIGNATION
		ACCESSIBLE ROUTE
		CONCRETE SIDEWALKS
		WALL
		SIGN
		WHEELSTOP
		BOLLARD
		SITE LIGHTING
		LANDSCAPE LIGHTING
	FFE	FINISH FLOOR ELEVATION
_R 9.0'	_R 9.0'	PARKING COUNT (REGULAR SPACES)
_HC 9.0'	_HC 9.0'	PARKING COUNT (ACCESSIBLE SPACES)
_P 9.0'	_P 9.0'	PARKING COUNT (PARALLEL SPACES)
		ACCESSIBLE SPACE
		BIKE PARKING
		BARRICADE
		LIMITS OF CONSTRUCTION

NO BUILDINGS EXIST WITHIN 50 FEET ON ADJOINING LOTS. BUILDING TABLE ON SITE DETAIL SHEET.

PAVING LEGEND

- DI-1 ASPHALT PAVEMENT SECTION PER GEOTECHNICAL ENGINEERING REPORT
- DI-2 ASPHALT PAVEMENT SECTION PER GEOTECHNICAL ENGINEERING REPORT
- DI-4 ASPHALT PAVEMENT SECTION PER GEOTECHNICAL ENGINEERING REPORT
- DI-5 ASPHALT PAVEMENT SECTION PER GEOTECHNICAL ENGINEERING REPORT
- LOADING AREAS - DI-6 CONCRETE PAVEMENT SECTION PER GEOTECHNICAL ENGINEERING REPORT
- HARDSCAPE FIRE LANE - HEAVY DUTY DI-2 CONCRETE PAVEMENT SECTION PER GEOTECHNICAL ENGINEERING REPORT. SEE LANDSCAPE PLAN FOR DETAILS.
- CROSSWALK PAVERS - HS-20 LOADING PAVER SECTION. SEE LANDSCAPE PLAN FOR DETAILS.
- GRASS PAVE FIRE LAN - HS-20 LOADING GEOBLOCK PAVING SECTION. SEE LANDSCAPE PLAN FOR DETAILS.
- LOADING 12' 45' — OFF-STREET LOADING SPACE (NUMBERED) -VERTICAL CLEARANCE MINIMUM 15FT -REQUIRED : 35 -PROVIDED : 35

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7708 Rialto Blvd., Suite 125
Austin, Texas 78735
Tel. (512) 298-3284 Fax (512) 298-2592
TBPE # F-14629

REVISION | NO. | DATE

STATE OF TEXAS — ALEXANDRA A. BOONE — 138951 — LICENSED PROFESSIONAL ENGINEER — Alexandra Boone 03/29/2024

PAVING PLAN

CAPSTONE
6900 W. PARMER LANE

APPLE INC.

DRAWN BY: SPM
DESIGNED BY: ANG, IHR, HCH
QA / QC: JDP
PROJECT NO.: 101649.00031

SHEET 053 OF 238

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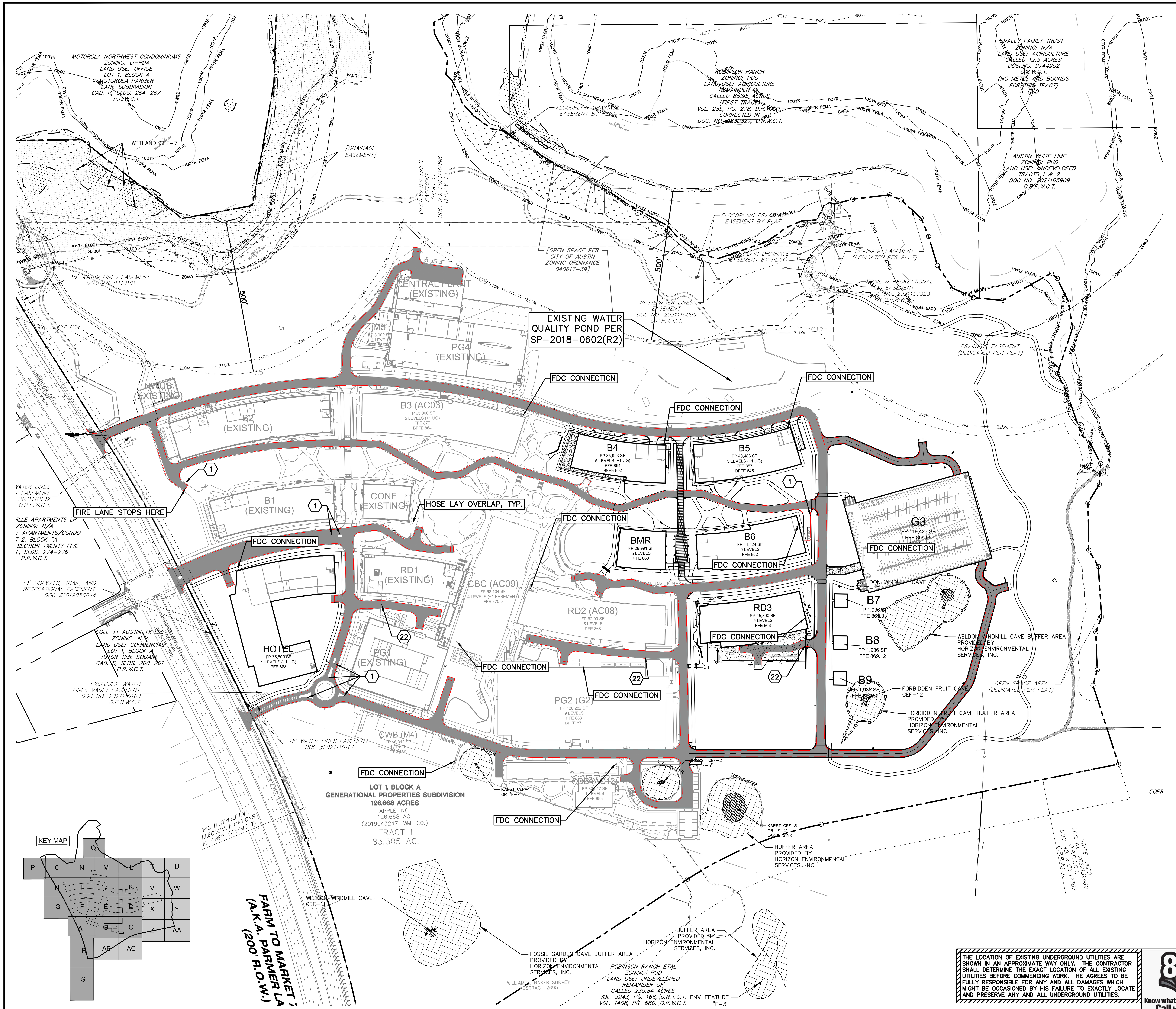

1" = 150

LEGEND

EXISTING	PROPOSED	DESCRIPTION
		PROPERTY LINE / R.O.W. LINE
(XXX)		RECORD INFORMATION
		LIGHT POLE
		GROUND LIGHT
		POWER POLE
		DOWN GUY
WTRMH		WATER MANHOLE
		WATER LINE MARKER
CMKR		UNDERGROUND CABLE MARKER
GMKR		UNDERGROUND GAS LINE MARKER
UGTM		UNDERGROUND TELEPHONE MARKER
GRSR		GAS RISER
TRSR		TELEPHONE RISER
SPC		SPRINKLER CONTROL BOX
	SW	SWITCH GEAR & PAD
	T	TRANSFORMER (SIZE VARIES)
		FIRE HYDRANT
		WATER VALVE
		WATER METER
		WATER METER VAULT (SIZE VARIES)
TV	TV	CABLE TV RISER
E	E	ELECTRIC BOX
EM	EM	ELECTRIC METER
GM	GM	GAS METER
G	G	GAS VALVE
TCB	TCB	TRAFFIC CONTROL BOX
TSP	TSP	TRAFFIC SIGNAL POST
		GRATE INLET
		CURB INLET (SIZE VARIES)
		GREASE TRAP (SIZE VARIES)
EMH		ELECTRIC MANHOLE (SIZE VARIES)
WWMH		WASTEWATER MANHOLE (SIZE VARIES)
SSMH		STORMSEWER MANHOLE (SIZE VARIES)
TMH	TMH	TELEPHONE MANHOLE (SIZE VARIES)
CO	CO	WASTEWATER CLEANOUT
X	X	WIRE FENCE
//	//	WOOD FENCE
		CHAIN LINK FENCE
	D	DUMPSTER
		CURB & GUTTER
		EDGE OF PAVEMENT
		FIRE LANE DESIGNATION
	ADA	ACCESSIBLE ROUTE
		CONCRETE SIDEWALKS
		WALL
		SIGN
		WHEELSTOP
		BOLLARD
		SITE LIGHTING
		LANDSCAPE LIGHTING
	FFE	FINISH FLOOR ELEVATION
_R @ 9.0'	_R 9.0'	PARKING COUNT (REGULAR SPACES)
_HC @ 9.0'	_HC 9.0'	PARKING COUNT (ACCESSIBLE SPACES)
_P @ 9.0'	_P 9.0'	PARKING COUNT (PARALLEL SPACES)
		ACCESSIBLE SPACE
		BIKE PARKING
		BARRICADE
		LIMITS OF CONSTRUCTION

FIRE LANE DESIGNATED DRIVES

(1) LAYDOWN, PER DETAIL 430S-1

(22) ANY POWER OPERATED GATES ACROSS FIRE ACCESS ROADS MUST BE PROVIDED WITH A KNOX KEY SWITCH. ALSO, GATES INSTALLED ACROSS FIRE ACCESS ROADS SHALL BE EQUIPPED WITH GATE OPERATORS COMPLYING WITH UL 325 AND ASTM F2200. A MANUAL MEANS OF OPENING THE GATE IN THE EVENT OF POWER LOSS IS REQUIRED.

NOTE:

1. A MAXIMUM OF 500' HOSE LAY IS REQUIRED FROM FIRE HYDRANTS TO ALL BUILDING EXTERIORS. THE MAXIMUM IS 500' FOR FLOW LESS THAN 1750 GPM.
2. FIRE LANES ON TOP OF BUILDINGS MUST BE DESIGNED TO BRIDGE STANDARDS PER IFC 503.2.6 AND 503.2.6.1 AS AMENDED.
3. TEMPORARY FIRE LANE TURN AROUNDS FOR PHASED CONSTRUCTION SHOWN ON PHASE SHEET.
4. ANY POWER OPERATED GATES ACROSS FIRE ACCESS ROADS MUST BE PROVIDED WITH A KNOX KEY SWITCH. ALSO, GATES INSTALLED ACROSS FIRE ACCESS ROADS SHALL BE EQUIPPED WITH GATE OPERATORS COMPLYING WITH UL 325 AND ASTM F2200. A MANUAL MEANS OF OPENING THE GATE IN THE EVENT OF POWER LOSS IS REQUIRED.

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Tel. (512) 298-3284 Fax (512) 298-2592
TBPE # F-14629

REVISION | NO. | DATE

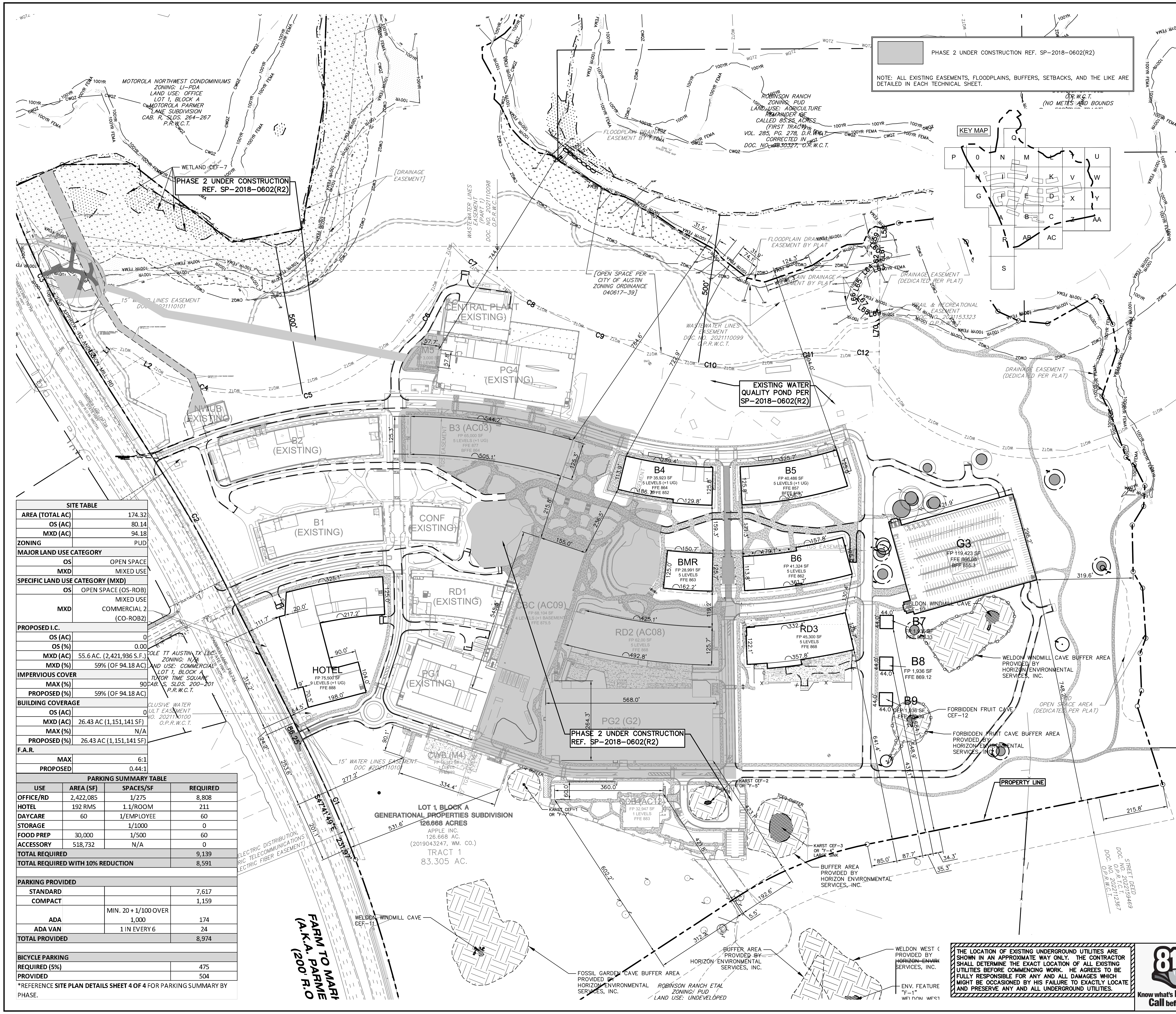
STATE OF TEXAS
ALEXANDRA A. BOONE
138951
LICENSED PROFESSIONAL ENGINEER
03/29/2024

FIRE ACCESS SITE PLAN

CAPSTONE
6900 W. PARMER LANE

APPLE INC.

DRAWN BY: SPM
DESIGNED BY: ANG, IHR, HCH
QA / QC: JDP
PROJECT NO.: 101649.00031



SITE TABLE	
AREA (TOTAL AC)	174.32
OS (AC)	80.14
MXD (AC)	94.18
ZONING	PUD
MAJOR LAND USE CATEGORY	
OS	OPEN SPACE
MXD	MIXED USE
SPECIFIC LAND USE CATEGORY (MXD)	
OS	OPEN SPACE (OS-ROB)
MXD	MIXED USE COMMERCIAL 2 (CO-ROB2)
PROPOSED I.C.	
OS (AC)	0
OS (%)	0.00
MXD (AC)	55.6 AC. (2,421,936 S.F.)
MXD (%)	59% (OF 94.18 AC)
IMPERVIOUS COVER	
MAX (%)	90
PROPOSED (%)	59% (OF 94.18 AC)
BUILDING COVERAGE	
OS (AC)	0
MXD (AC)	26.43 AC (1,151,141 SF)
MAX (%)	N/A
PROPOSED (%)	26.43 AC (1,151,141 SF)
F.A.R.	
MAX	6:1
PROPOSED	0.44:1

PARKING SUMMARY TABLE			
USE	AREA (SF)	SPACES/SF	REQUIRED
OFFICE/RD	2,422,085	1/275	8,808
HOTEL	192 RMS	1.1/ROOM	211
DAYCARE	60	1/EMPLOYEE	60
STORAGE		1/1000	0
FOOD PREP	30,000	1/500	60
ACCESSORY	518,732	N/A	0
TOTAL REQUIRED			9,139
TOTAL REQUIRED WITH 10% REDUCTION			8,591
PARKING PROVIDED			
STANDARD			7,617
COMPACT			1,159
ADA		MIN. 20 + 1/100 OVER 1,000	174
ADA VAN		1 IN EVERY 6	24
TOTAL PROVIDED			8,974
BICYCLE PARKING			
REQUIRED (5%)			475
PROVIDED			504

*REFERENCE **SITE PLAN DETAILS SHEET 4 OF 4** FOR PARKING SUMMARY BY PHASE.

LEGEND

EXISTING | PROPOSED | DESCRIPTION

- PROPERTY LINE / R.O.W. LINE
- RECORD INFORMATION
- LIGHT POLE
- GROUND LIGHT
- POWER POLE
- DOWN GUY
- WATER MANHOLE
- WATER LINE MARKER
- UNDERGROUND CABLE MARKER
- UNDERGROUND GAS LINE MARKER
- UNDERGROUND TELEPHONE MARKER
- GAS RISER
- TELEPHONE RISER
- SPRINKLER CONTROL BOX
- SWITCH GEAR & PAD
- TRANSFORMER (SIZE VARIES)
- FIRE HYDRANT
- WATER VALVE
- WATER METER
- WATER METER VAULT (SIZE VARIES)
- CABLE TV RISER
- ELECTRIC BOX
- ELECTRIC METER
- GAS METER
- GAS VALVE
- TRAFFIC CONTROL BOX
- TRAFFIC SIGNAL POST
- GRATE INLET
- CURB INLET (SIZE VARIES)
- GREASE TRAP (SIZE VARIES)
- ELECTRIC MANHOLE (SIZE VARIES)
- WASTEWATER MANHOLE (SIZE VARIES)
- STORMSEWER MANHOLE (SIZE VARIES)
- TELEPHONE MANHOLE (SIZE VARIES)
- WASTEWATER CLEANOUT
- WIRE FENCE
- WOOD FENCE
- CHAIN LINK FENCE
- DUMPSTER
- CURB & GUTTER
- EDGE OF PAVEMENT
- FIRE LANE DESIGNATION
- ACCESSIBLE ROUTE
- CONCRETE SIDEWALKS
- WALL
- SIGN
- WHEELSTOP
- BOLLARD
- SITE LIGHTING
- LANDSCAPE LIGHTING
- FFE — FINISH FLOOR ELEVATION
- _R @ 9.0' — PARKING COUNT (REGULAR SPACES)
- _HC @ 9.0' — PARKING COUNT (ACCESSIBLE SPACES)
- _P @ 9.0' — PARKING COUNT (PARALLEL SPACES)
- ACCESSIBLE SPACE
- BIKE PARKING
- BARRICADE
- LIMITS OF CONSTRUCTION

NO BUILDINGS EXIST WITHIN 50 FEET ON ADJOINING LOTS.
BUILDING TABLE ON SITE DETAIL SHEET.

(22) ANY POWER OPERATED GATES ACROSS FIRE ACCESS ROADS MUST BE PROVIDED WITH A KNOX KEY SWITCH. ALSO, GATES INSTALLED ACROSS FIRE ACCESS ROADS SHALL BE EQUIPPED WITH GATE OPERATORS COMPLYING WITH UL 325 AND ASTM F2200. A MANUAL MEANS OF OPENING THE GATE IN THE EVENT OF POWER LOSS IS REQUIRED.

A MINIMUM 15 FT WIDE SIDEWALK TRAIL AND RECREATION EASEMENT ENCOMPASSING THE TRAIL SHOWN EXTENDING FROM THE NORTHERN DRIVEWAY TO THE NORTHERN MOST PROPERTY LINE ALONG WEST PARMER LANE AND FROM WEST PARMER LANE TO THE EASTERN PROPERTY LINE WITHIN THE OPEN SPACE, MUST BE DEDICATED AND RECORDATION NUMBER ADDED TO THE SITE PLAN PRIOR TO APPROVAL OF ANY CERTIFICATE OF OCCUPANCY WITHIN THE SITE.

NOTES:
ALL EXTERIOR LIGHTING WILL BE FULL CUT-OFF AND FULLY SHIELDED IN COMPLIANCE WITH SUBCHAPTER E 2.5 AND WILL BE REVIEWER DURING BUILDING PLAN REVIEW. ANY CHANGE OR SUBSTITUTION OF LAMP/LIGHT FIXTURES SHALL BE SUBMITTED TO THE DIRECTOR FOR APPROVAL IN ACCORDANCE WITH SECTION 2.5.2.E.

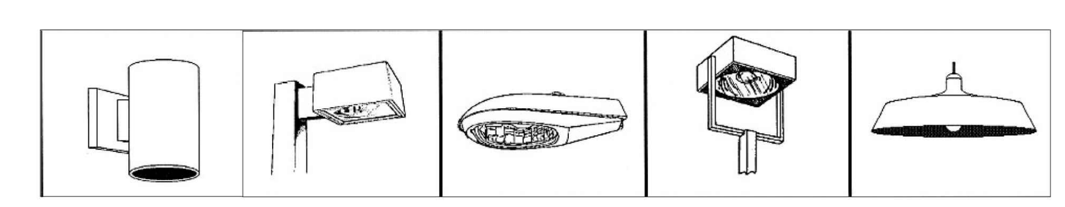


Figure 34:
Examples of fully-shielded light fixtures.

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TBPE # F-14629
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ALEXANDRA A. BOONE 138951 LICENSED
03/29/2024

MASTER SITE PLAN

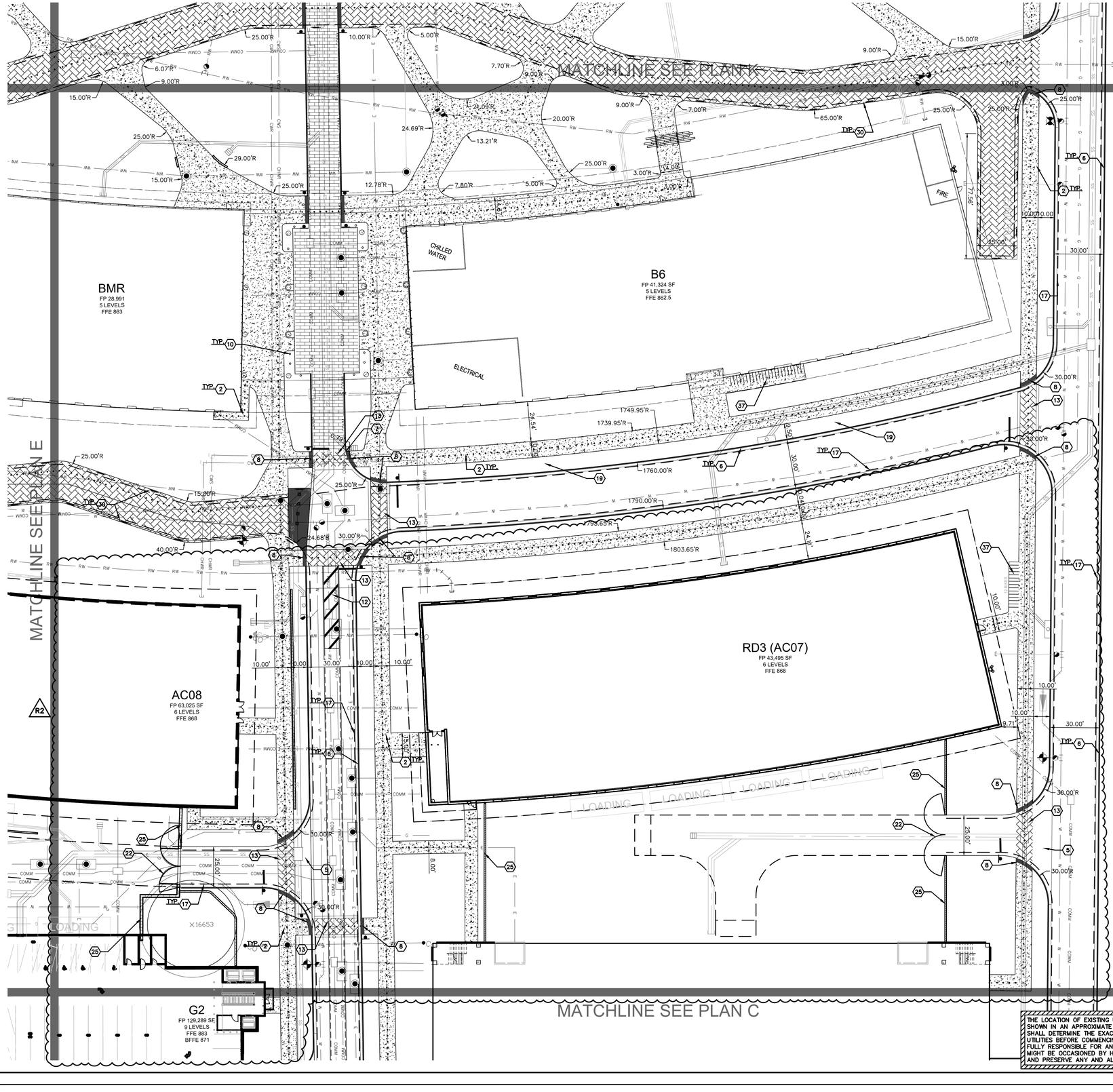
CAPSTONE
6900 W. PARMER LANE

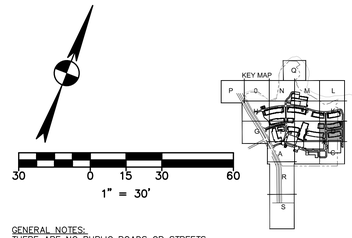
APPLE INC.

DRAWN BY: SPM
DESIGNED BY: ANG, IHR, HCH
QA / QC: JDP
PROJECT NO.: 101649.00031

SHEET 057 OF 238

SP-2023-0292C





GENERAL NOTES:
THERE ARE NO PUBLIC ROADS OR STREETS PROPOSED. ALL INTERNAL CIRCULATION DRIVES WITHIN THE PROPERTY ARE PRIVATE.

LEGEND

EXISTING	PROPOSED	DESCRIPTION
		PROPERTY LINE / R.O.W. LINE
(xxx)		RECORD INFORMATION
		LIGHT POLE PER LANDSCAPE PLANS
		BOLLARD LIGHT PER LANDSCAPE PLANS
		POWER POLE
		DOWN GUY
WTRMH		WATER MANHOLE
WM		WATER LINE MARKER
UGCA		UNDERGROUND CABLE MARKER
UGGA		UNDERGROUND GAS LINE MARKER
UGTM		UNDERGROUND TELEPHONE MARKER
GRSR		GAS RISER
TPSR		TELEPHONE RISER
SPC		SPRINKLER CONTROL BOX
	SW	SWITCH GEAR & PAD
	T	TRANSFORMER (SIZE VARIES)
		FIRE HYDRANT
		FIRE DEPARTMENT CONNECTION
		WATER VALVE
		WATER METER
		WATER METER VAULT (SIZE VARIES)
		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)
		GREASE TRAP (SIZE VARIES)
EMH		ELECTRIC MANHOLE (SIZE VARIES)
WWMH		WASTEWATER MANHOLE (SIZE VARIES)
SSMH		STORMSEWER MANHOLE (SIZE VARIES)
TMH	TMH	TELEPHONE MANHOLE (SIZE VARIES)
CO	CO	WASTEWATER CLEANOUT
X	X	LANDSCAPE FENCE
//	//	WOOD FENCE
		CHAIN LINK FENCE
	D	DUMPSTER
		CURB & GUTTER
		EDGE OF PAVEMENT
		FIRE LANE DESIGNATION
		HANDICAP ACCESS ROUTE
		CONCRETE SIDEWALKS 5in PER GEOTECH
		WALL
		SIGN
		WHEELSTOP
		BOLLARD PER LANDSCAPE PLANS
	FFE	FINISH FLOOR ELEVATION
R @ 9.0'	R @ 9.0'	PARKING COUNT (REGULAR SPACES)
HC @ 9.0'	HC @ 9.0'	PARKING COUNT (HANDICAP SPACES)
P @ 9.0'	P @ 9.0'	PARKING COUNT (PARALLEL SPACES)
		HANDICAP SPACE
	BIKE RACK	BIKE PARKING PER LANDSCAPE PLANS
		BARRICADE
		LIMITS OF CONSTRUCTION
		BUILDING FOOTPRINT
		UNDERGROUND PARKING GARAGE
		ROOFLINE

SITE PLAN KEY NOTES

1. EDGE OF PAVEMENT
2. CONCRETE SIDEWALK PER LANDSCAPE DETAIL
3. MATCH EXIST. SIDEWALK
4. ACCESSIBLE RAMP PER DETAIL 432S-3, 432S-3A, 432S-5, 432S-5B
5. DRIVEWAY PER DETAIL 433S-2
6. STANDARD CONCRETE CURB AND GUTTER PER DETAIL 430S-1
7. LAYDOWN CONCRETE CURB AND GUTTER PER DETAIL 430S-1
8. DETECTABLE WARNING SURFACE, PER DETAIL 432S-2B
9. WHEEL STOP PER DETAIL
10. BOLLARD PER DETAIL SHEET 061
11. CURB TRANSITION PER DETAIL
12. 24" 45° YELLOW STRIPING PER DETAIL SHEET 061
13. CROSS WALK PER LANDSCAPE DETAILS
14. STOP SIGN, PER DETAIL
15. PAINT DIRECTIONAL ARROW PER DETAIL
16. STEEL PLATED UNDERSIDEWALK DRAIN, PER DETAIL
17. 4" WORDING "NO PARKING – FIRE LANE" PAINTED RED PER DETAIL SHEET 061
18. PROVIDE PAVEMENT TRANSITION AT PAVEMENT ADJACENT TO ACCESSIBLE RAMP PER DETAIL
19. SITE LIGHTING SEE ELECTRICAL PLANS
20. 10'x10' PADS FOR AE SWITCHGEAR, SEE MEP PLANS
21. TGS ENCLOSURE, SEE MEP PLANS
22. ANY POWER OPERATED GATES ACROSS FIRE ACCESS ROADS MUST BE PROVIDED WITH A KNOX KEY SWITCH. ALSO, GATES INSTALLED ACROSS FIRE ACCESS ROADS SHALL BE EQUIPPED WITH GATE OPERATORS COMPLYING WITH UL 325 AND ASTM F2200. A MANUAL MEANS OF OPENING THE GATE IN THE EVENT OF POWER LOSS IS REQUIRED
23. COLUMN, SEE STRUCTURAL PLAN
24. RETAINING WALL, SEE STRUCTURAL SITE PLANS
25. SCREEN WALL/DECORATIVE WALL, SEE ARCHITECTURAL SITE PLANS
26. CONCRETE STEPS
27. TXDOT ACCESSIBLE RAMP
28. FENCE, SEE LANDSCAPE ARCHITECTURE PLAN
29. UNDERGROUND PARKING GARAGE FOOTPRINT
30. NO PARKING FIRE LANE MARKING PER LANDSCAPE DETAILS (TYP.)
31. PAINT ACCESSIBLE SYMBOL PER DETAIL WITH "VAN" IN 12" SIGN WORDING WHERE SHOWN
32. PAINT NO PARKING ZONE WITH 4" WIDE YELLOW DIAGONAL LINES
33. "STOP" PAVEMENT MARKING PER DETAIL
34. ACCESSIBLE PARKING SIGN PER DETAIL
35. PAINT PARKING STALL WITH 4" WIDE WHITE LINE
36. TRASH ENCLOSURE PER ARCHITECTURAL PLANS
37. BICYCLE PARKING
38. GUARDRAIL – TXDOT METAL BEAM GUARD FENCE GF(31)-14
39. GRAVEL TRAIL PER DETAIL 130IS-1
40. UNDERGROUND DRIVEWAY PER DETAIL 433S-2
41. 4" WIDE DASHED WHITE LANE STRIPING
42. DOUBLE 4" WIDE SOLID YELLOW LANE STRIPING
43. 4" WIDE SOLID WHITE LANE STRIPING

FOR CITY USE ONLY:

SITE PLAN APPROVAL Sheet 046 of 217
FILE NUMBER: SP-2018-0602C(R1) APPLICATION DATE: DECEMBER 19, 2018
APPROVED BY COMMISSION ON: N/A UNDER SECTION 112 OF CHAPTER 25-5 OF THE CITY OF AUSTIN CODE.
EXPIRATION DATE (25-5-81,LDC)_____ CASE MANAGER ROSEMARY AVILA
PROJECT EXPIRATION DATE (ORD.#970905-A)_____ DWPZ ____ DDZ X

Director, Development Services Department

RELEASED FOR GENERAL COMPLIANCE: _____ ZONING: PUD

Rev. 1 _____ Correction 1 _____
Rev. 2 _____ Correction 2 _____
Rev. 3 _____ Correction 3 _____

FINAL PLAT MUST BE RECORDED BY THE PROJECT EXPIRATION DATE, IF APPLICABLE. SUBSEQUENT SITE PLANS WHICH DO NOT COMPLY WITH THE CODE CURRENT AT THE TIME OF FILING, AND ALL REQUIRED BUILDING PERMITS AND/OR A NOTICE OF CONSTRUCTION (IF A BUILDING PERMIT IS NOT REQUIRED), MUST ALSO BE APPROVED PRIOR TO THE PROJECT EXPIRATION 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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NO.	DATE	REVISION	APPROVAL
R2	2022-07-18	SITE LAYOUT, UTILITIES, AND GRADING REVISION	
1R	2020-02-27	SITE LAYOUT, UTILITIES, AND GRADING REVISION	

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TBPE F-471 TBPLS 10194409

STATE OF TEXAS
JOHN D. PELHAM
98294
LICENSED PROFESSIONAL ENGINEER
08/19/22

SITE PLAN D

GENERATIONAL PROPERTIES
6900 W. PARMER LANE

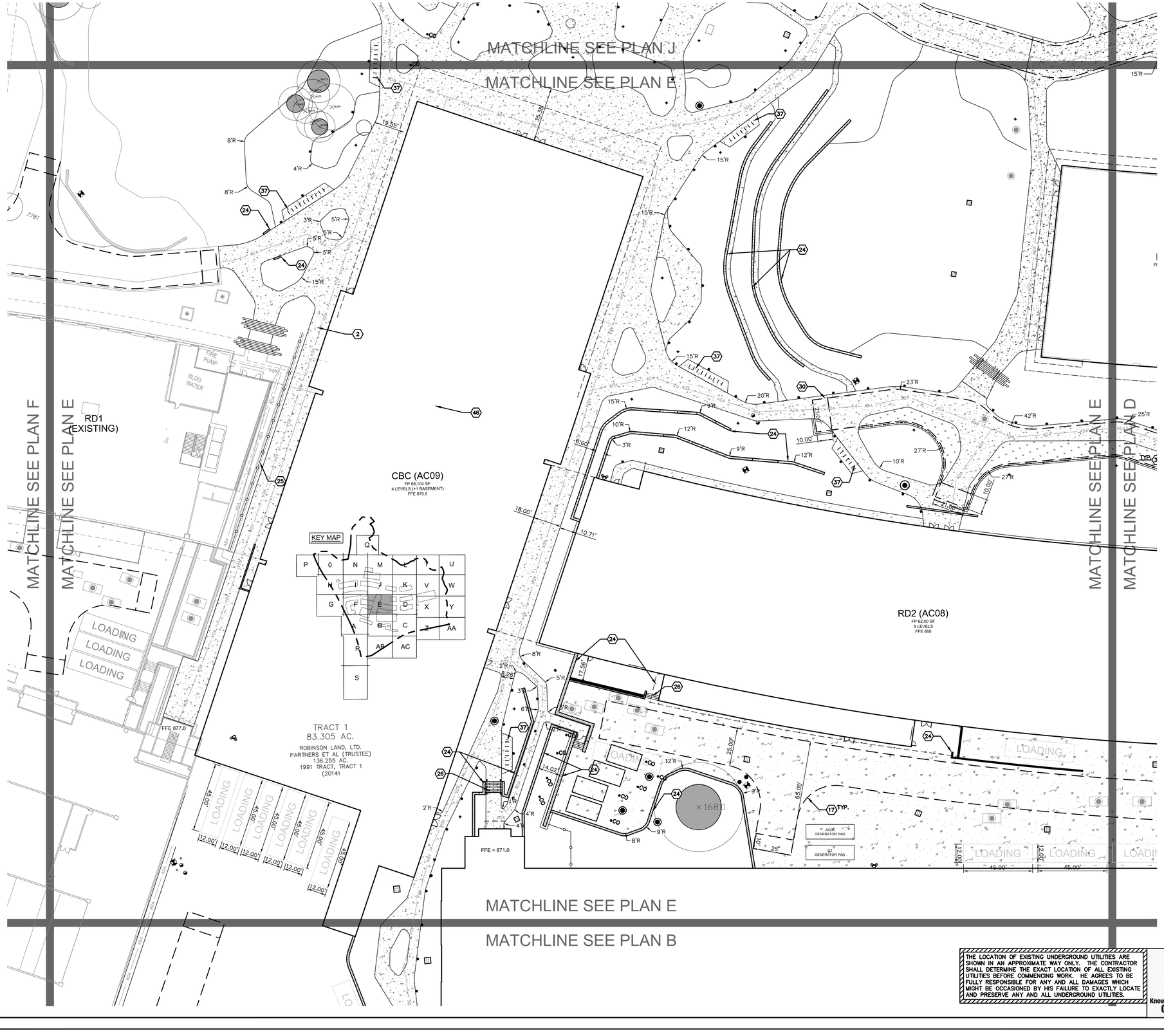
RR CAMPUS C/O GENERATIONAL
COMMERCIAL PROPERTIES

DRAWN BY:
DESIGNED BY:
QA / QC:
PROJECT NO.: 101649-00024

SHEET 046 OF 217

V:\101649-00024\Civil\00-CAD\Phase 2 Correction\101649-00024-SITE-D.dwg modified by jpomez on Aug 10, 22 9:57 AM

R2 REPLACEMENT SHEET SP-2018-0602C



1" = 30'

LEGEND

EXISTING	PROPOSED	DESCRIPTION
		PROPERTY LINE / R.O.W. LINE
(xxxx)		RECORD INFORMATION
		LIGHT POLE
		GROUND LIGHT
		POWER POLE
		DOWN GUY
WTMH		WATER MANHOLE
		WATER LINE MARKER
UGCB		UNDERGROUND CABLE MARKER
UGG		UNDERGROUND GAS LINE MARKER
UGTM		UNDERGROUND TELEPHONE MARKER
GR		GAS RISER
TR		TELEPHONE RISER
SPR		SPRINKLER CONTROL BOX
	SW	SWITCH GEAR & PAD
	T	TRANSFORMER (SIZE VARIES)
		FIRE HYDRANT
		WATER VALVE
		WATER METER
		WATER METER VAULT (SIZE VARIES)
		CABLE TV RISER
		ELECTRIC BOX
		ELECTRIC METER
		GAS METER
		GAS VALVE
TCR	TCB	TRAFFIC CONTROL BOX
TSPA	TSP	TRAFFIC SIGNAL POST
		GRATE INLET
		CURB INLET (SIZE VARIES)
		GREASE TRAP (SIZE VARIES)
EMH		ELECTRIC MANHOLE (SIZE VARIES)
WMH		WASTEWATER MANHOLE (SIZE VARIES)
SSMH		STORMSEWER MANHOLE (SIZE VARIES)
TMH	TMH	TELEPHONE MANHOLE (SIZE VARIES)
CO	CO	WASTEWATER CLEANOUT
X	X	WIRE FENCE
//	//	WOOD FENCE
		CHAIN LINK FENCE
	D	DUMPSTER
		CURB & GUTTER
		EDGE OF PAVEMENT
		FIRE LANE DESIGNATION
		ACCESSIBLE ROUTE
		CONCRETE SIDEWALKS
		WALL
		SIGN
		WHEELSTOP
		BOLLARD
		SITE LIGHTING
		LANDSCAPE LIGHTING
	FFE	FINISH FLOOR ELEVATION
_R @ 9.0'	_R @ 9.0'	PARKING COUNT (REGULAR SPACES)
_HC @ 9.0'	_HC @ 9.0'	PARKING COUNT (ACCESSIBLE SPACES)
_P @ 9.0'	_P @ 9.0'	PARKING COUNT (PARALLEL SPACES)
		ACCESSIBLE SPACE
		BIKE PARKING
		BARRICADE

NO BUILDINGS EXIST WITHIN 50 FEET ON ADJOINING LOTS.
BUILDING TABLE ON SITE DETAIL SHEET.

SITE PLAN KEY NOTES

1. EDGE OF PAVEMENT
2. CONCRETE SIDEWALK PER LANDSCAPE DETAIL
3. MATCH EXIST. SIDEWALK
4. ACCESSIBLE RAMP PER DETAIL 432S–3, 432S–3A, 432S–5, 432S–5B
5. DRIVEWAY PER DETAIL 433S–2
6. STANDARD CONCRETE CURB AND GUTTER PER DETAIL 430S–1
7. LAYDOWN CONCRETE CURB AND GUTTER PER DETAIL 430S–1
8. DETECTABLE WARNING SURFACE, PER DETAIL 432S–2B
9. WHEEL STOP PER DETAIL
10. BOLLARD PER "TYPICAL BOLLARD DETAIL"
11. CURB TRANSITION PER DETAIL
12. 24" 45° WHITE STRIPING PER DETAIL
13. CROSS WALK PER LANDSCAPE DETAILS
14. STOP SIGN, PER DETAIL
15. PAINT DIRECTIONAL ARROW PER DETAIL
16. STEEL PLATED UNDERSIDEWALK DRAIN, PER DETAIL
17. 4" WORDING "NO PARKING – FIRE LANE" PAINTED RED PER DETAIL
18. PROVIDE PAVEMENT TRANSITION AT PAVEMENT ADJACENT TO ACCESSIBLE RAMP PER DETAIL
19. SITE LIGHTING SEE ELECTRICAL PLANS
20. 10'x10' PADS FOR AE SWITCHGEAR, SEE MEP PLANS
21. TGS ENCLOSURE, SEE MEP PLANS
22. ANY POWER OPERATED GATES ACROSS FIRE ACCESS ROADS MUST BE PROVIDED WITH A KNOX KEY SWITCH. ALSO, GATES INSTALLED ACROSS FIRE ACCESS ROADS SHALL BE EQUIPPED WITH GATE OPERATORS COMPLYING WITH UL 325 AND ASTM F2200. A MANUAL MEANS OF OPENING THE GATE IN THE EVENT OF POWER LOSS IS REQUIRED
23. COLUMN, SEE STRUCTURAL PLAN
24. RETAINING WALL, SEE STRUCTURAL SITE PLANS
25. SCREEN WALL/DECORATIVE WALL, SEE ARCHITECTURAL SITE PLANS
26. CONCRETE STEPS, SEE LANDSCAPE PLAN FOR DETAILS
27. TXDOT ACCESSIBLE RAMP
28. FENCE, SEE LANDSCAPE ARCHITECTURE PLAN
29. UNDERGROUND PARKING GARAGE FOOTPRINT
30. NO PARKING FIRE LANE MARKING PER LANDSCAPE DETAILS (TYP.)
31. PAINT ACCESSIBLE SYMBOL PER DETAIL WITH "VAN" IN 12" SIGN WORDING WHERE SHOWN
32. PAINT NO PARKING ZONE WITH 4" WIDE WHITE DIAGONAL LINES
33. "STOP" PAVEMENT MARKING PER DETAIL
34. ACCESSIBLE PARKING SIGN PER DETAIL
35. PAINT PARKING STALL WITH 4" WIDE WHITE LINE
36. TRASH ENCLOSURE PER ARCHITECTURAL PLANS
37. BICYCLE PARKING PER LANDSCAPE DETAILS
38. GUARDRAIL – TXDOT METAL BEAM GUARD FENCE GF(31)–14
39. GRAVEL TRAIL PER DETAIL 130IS–1
40. UNDERGROUND DRIVEWAY PER DETAIL 433S–2
41. 4" WIDE DASHED WHITE LANE STRIPING
42. DOUBLE 4" WIDE SOLID WHITE LANE STRIPING
43. 4" WIDE SOLID WHITE LANE STRIPING
44. REMOVABLE BOLLARD FOR FIRE LANE ACCESS. SEE LANDSCAPE PLANS FOR DETAILS.
45. SAWTOOTH CURB AND GUTTER PER "SAW TOOTH CURB DETAIL"
46. PROPOSED SHOWERS – 22 PER GENDER

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.

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

FOR CITY USE ONLY:

garza EMC
7708 Rialto Blvd., Suite 125
Austin, Texas 78735
Tel. (512) 298-2284 Fax (512) 298-2592
TBPE #F-14658 TBPLS #10194198

NO	REVISION	DATE

STATE OF TEXAS
ALEXANDRA A. BOONE
138951
LICENSED
PROFESSIONAL ENGINEER
Alexandra Boone
03/29/2024

SITE PLAN E

CAPSTONE
6900 W. PARMER LANE

APPLE INC.

DRAWN BY: SPM	DESIGNED BY: ANG, IHR, HCH	QA / QC: JDP	PROJECT NO.: 101649.00031

SHEET
062
OF 238

SP-2023-0292C

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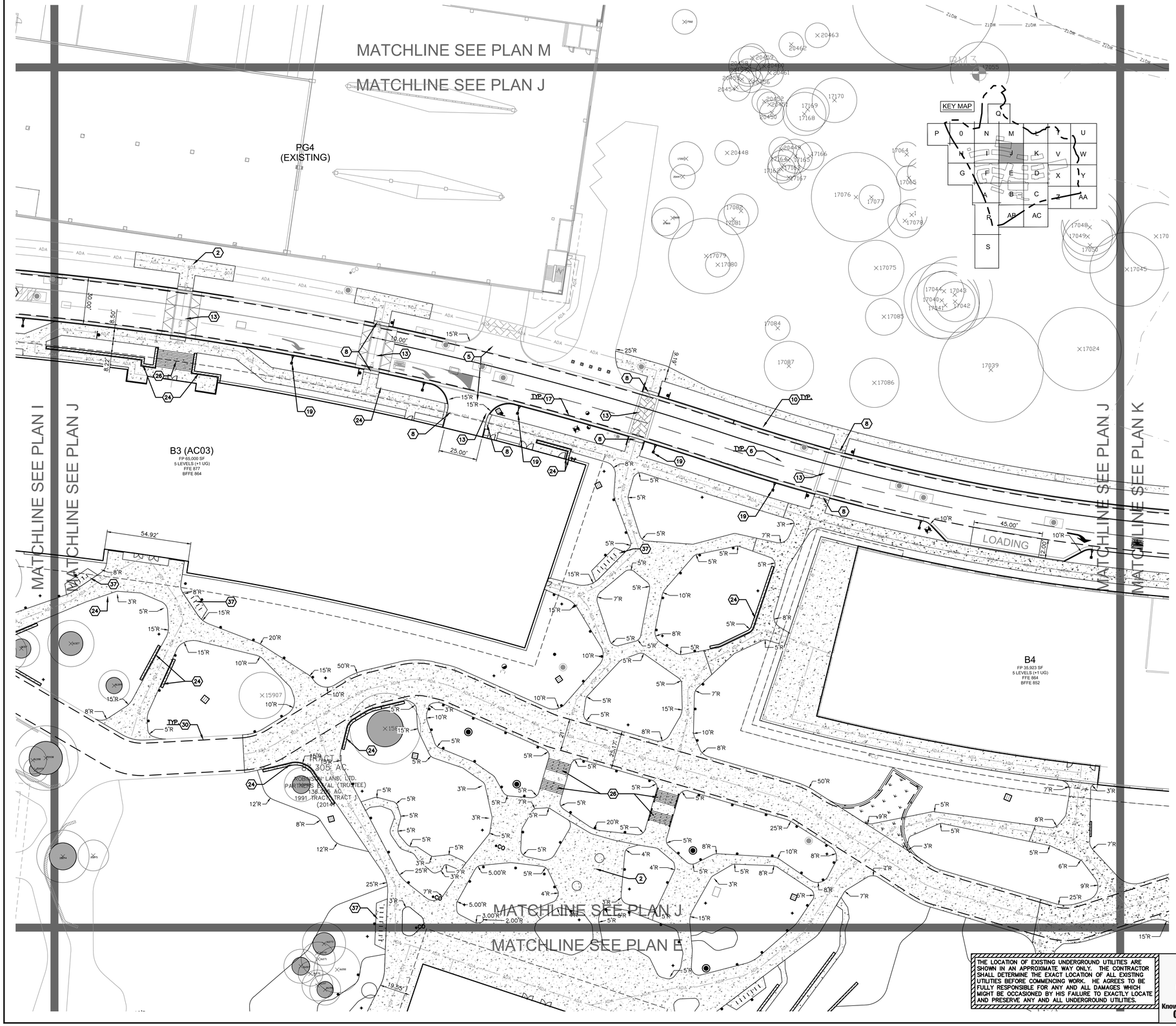

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Tel. (512) 298-2284 Fax (512) 298-2592
TBPE #F-14469

STATE OF TEXAS
ALEXANDRA A. BOONE
138951
LICENSED
PROFESSIONAL ENGINEER
Alexandra Boone
03/29/2024

SITE PLAN J

CAPSTONE
6900 W. PARMER LANE

APPLE INC.

DRAWN BY: SPM
DESIGNED BY: ANG, IHR, HCH
QA / QC: JDP
PROJECT NO.: 101649.00031

SHEET
065
OF 238

SP-2023-0292C

PRETREATMENT DEVICE	BUILDING	DESCRIPTION
GREASE INTERCEPTOR #1 (UNDER CONSTRUCTION)	BUILDING CBC (AC09)	GI #1 SERVING CAFETERIA BUILDING KITCHEN LEVELS 1 AND 2
GREASE INTERCEPTOR #2 (UNDER CONSTRUCTION)	BUILDING CBC (AC09)	GI #2 SERVING CAFETERIA BUILDING KITCHEN LEVELS 1 AND 2
GREASE INTERCEPTOR #3 (UNDER CONSTRUCTION)	BUILDING CBC (AC09)	GI #3 SERVING CAFETERIA BUILDING KITCHEN LEVELS 1 AND 2
GREASE INTERCEPTOR #4 (UNDER CONSTRUCTION)	BUILDING CBC (AC09)	GI #4 SERVING CAFETERIA BUILDING KITCHEN LEVELS 1 AND 2
GREASE INTERCEPTOR #5 (UNDER CONSTRUCTION)	BUILDING CDB (AC12)	GI #5 SERVING DAYCARE CENTER KITCHEN LEVEL 1
GREASE INTERCEPTOR #6 (EXISTING)	BUILDING CONF	GI #6 SERVING CATERING KITCHEN ON LEVEL 4 AND 5 OF BUILDING (AC01)
GREASE INTERCEPTOR #7 (EXISTING)	BUILDING 2	GI #7 SERVING BUILDING B2 (AC02) CAFFE ON LEVELS 1 AND BASEMENT
GREASE INTERCEPTOR #8 (EXISTING)	BUILDING 2	GI #8 SERVING BUILDING B2 (AC02) CAFFE ON LEVELS 1 AND BASEMENT
GREASE INTERCEPTOR #9 (PROPOSED)	HOTEL	GI #9 SERVING HOTEL KITCHEN ON LEVEL 1
SAND-OIL INTERCEPTOR #1 (UNDER CONSTRUCTION)	GARAGE 2	SOI #1 SERVING THE ENTIRE PARKING GARAGE 2

APPENDIX Q-2:

IMPERVIOUS COVER

SUBURBAN WATERSHEDS

NOTE: Q-1 TABLES ARE NOT REQUIRED FOR SUBURBAN WATERSHEDS

1	IMPERVIOUS COVER ALLOWED AT 90 % X 174.3 ACRES	=	156.9	ACRES	
	PROPOSED IMPERVIOUS COVER				
2	EXISITING IMPERVIOUS COVER PROPOSED TO REMAIN	=	14.7	ACRES	
3	PROPOSED NEW IMPERVIOUS COVER	=	40.9	ACRES	
4	**TOTAL PROPOSED IMPERVIOUS COVER**	**=**	**55.6**	**ACRES**	

	ALLOWABLE IMPERVIOUS COVER BREAKDOWN BY SLOPE CATEGORY				
5	TOTAL ACREAGE WITH SLOPES 15-25% = 0.2 ACRES X 10%	=	0.02	ACRES	
	PROPOSED IMPERVIOUS COVER ON SLOPES		**IMPERVIOUS COVER**		
	SLOPES		BUILDING & OTHER IMPERVIOUS COVER		DRIVES / ROADWAYS
	SLOPE CATEGORIES	ACRES	ACRES	**% OF SLOPE CATEGORY**	ACRES
6	0-15%	174.0	31.7	18%	23.9
7	15-25%	0.2	0	0%	0
8	25-35%	0.1	0	0%	0
9	OVER 35%	0	0	0%	0
10	GROSS SITE AREA	174.3			

NOTES:
PHASES WILL BE COMPLETED SUCH THAT REQUIRED PARKING IS ALWAYS LESS THAN PARKING PROVIDED.

					TOTAL PARKING					TOTAL SHOWERS				TOTAL ADA PARKING		VAN ADA PARKING		STD ADA PARKING		REGULAR PARKING		COMPACT PARKING		BICYCLE PARKING				OFFSTREET LOADING			
BLDG	PHASE	PROP USE	GROSS FL AREA (SF)	APPENDIX A PARKING REQUIREMENT	REQUIRED	REQUIRED W/ 10% REDUCTION	PROVIDED	CUMULATIVE REQUIRED	CUMULATIVE PROVIDED	REQUIRED**	PROVIDED**	CUMULATIVE REQUIRED	CUMULATIVE PROVIDED	REQUIRED	PROVIDED	REQUIRED	PROVIDED	REQUIRED	PROVIDED	REQUIRED	PROVIDED	ALLOWABLE (30% max)	PROVIDED	REQUIRED	PROVIDED	CUMULATIVE REQUIRED	CUMULATIVE PROVIDED	REQUIRED	PROVIDED	CUMULATIVE REQUIRED	CUMULATIVE PROVIDED
					PHASE GROUP A (CONSTRUCTED)																										
NWUB	EX. 1	UTILITY ENCLOSURE	2,880	N/A				0	0					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
PG4	EX. 2	GARAGE	353,347	N/A			1082	0	1082					21	33	6	4	15	29	0	899	325	150	0	50	0	50	0	0	0	1
CENTRAL PLANT	EX. 3	UTILITY ENCLOSURE	2,985	OFFICE 1/275SF*	11	10		10	1082					0	0	0	0	0	0	11	0	0	0	1	0	1	50	1	3	1	4
PG1	EX. 4	GARAGE	495,681	NA			1537	10	2619					25	42	7	5	18	37	0	1267	461	228	0	50	1	100	0	5	1	9
B2/KITCHEN*	EX. 5	OFFICE (PROFESSIONAL)	318,111	OFFICE 1/275SF*	1157	1041		1051	2619	2	11	2	11	0	0	0	0	0	0	1157	0	0	0	58	16	58	116	3	2	4	11
B1/CONF*	EX. 6	OFFICE (PROFESSIONAL)	270,608	OFFICE 1/275SF*	984	886		1936	2619	2	0	4	11	0	0	0	0	0	0	984	0	0	0	49	30	108	146	3	1	7	12
RD1*	EX. 7	RESEARCH &	208,602	RESEARCH 1/275SF*	759	683		2619	2619	2	0	6	11	0	0	0	0	0	0	759	0	0	0	38	16	146	162	3	0	10	12
					PHASE GROUP B (UNDER CONSTRUCTION PER. SP-2018-0602C(R2))																										
G2	***8	GARAGE	1,109,180	N/A			3421	2619	6040			6	11	44	54	9	8	35	46	0	2883	865	484	0	42	146	204	0	3	10	15
AC03*	***9	OFFICE (PROFESSIONAL)	368,651	OFFICE 1/275SF*	1341	1206		3826	6040	2		8	11	0	0	0	0	0	0	1341	0	0	0	67	56	213	260	3	1	13	16
AC09 Office*	***10	OFFICE (PROFESSIONAL)	70,945	OFFICE 1/275SF*	258	232		4058	6040	2	22	10	33	0	0	0	0	0	0	258	0	0	0	13	0	225	260	2	7	15	23
AC09 Kitchen*	***10	FOOD PREP	29,734	F PREP- SCH A 1/500SF*	59	54		4111	6040			10	33	0	0	0	0	0	0	59	0	0	0	3	0	228	260	1	0	16	23
AC09 Fitness	***10	FITNESS	31,489	N/A	0		0	4111	6040			10	33																		
AC09 Wellness	***10	WELLNESS	25,464	N/A	0		0	4111	6040			10	33																		
AC09 TOTAL	***10	AMENITY	203,884	ACCESSORY																			0		40						
AC08	***11	RESEARCH &	292,898	RESEARCH 1/275SF	1065	959		5070	6040	2		12	33	0	0	0	0	0	0	1065	0	0	0	53	6	282	266	3	2	22	25
AC07	***12	RESEARCH &	212,566	RESEARCH 1/275SF	773	696		5766	6040	2		14	33	0	0	0	0	0	0	773	0	0	0	39	12	320	278	3	6	31	31
AC12	***13	CHILDCARE	32,353	1 PER STAFF	60	60	42	5826	6082			14	33	2	2	0	0	2	2	58	40	12	0	3	0	323	278	1	0	32	31
M4 Office	***14	OFFICE (PROFESSIONAL)	1,132	OFFICE 1/275SF	4	4		5830	6082			14	33							4											
M4 TOTAL	***14	Central Waste Collection	16,378	ACCESSORY										0	0	0	0	0	0	0	0	0	0	0	0	323	278	0	0	35	31
M5 Office	***15	OFFICE (PROFESSIONAL)	1,200	OFFICE 1/275SF	4	4		5834	6082			14	33							4											
M5 TOTAL	***15	WWTP	6,529	ACCESSORY										0	0	0	0	0	0	0	0	0	0	0	0	323	278	3	0	31	31
					PHASE GROUP C (PROPOSED)																										
G3	16	GARAGE	855,495	NA			2638	5834	8720			14	33	36	44	7	8	29	36	0	2299	690	295	0	42	323	320	0	0	16	31
B4	17	OFFICE (PROFESSIONAL)	221,207	OFFICE 1/275SF	804	724		6558	8720	2		16	33	0	0	0	0	0	0	804	0	0	0	40	56	363	376	3	1	19	32
B5	18	OFFICE (PROFESSIONAL)	213,762	OFFICE 1/275SF	777	700		7258	8720	2		18	33	0	0	0	0	0	0	777	0	0	0	39	58	402	434	3	2	25	34
B6/BMR	19	OFFICE (PROFESSIONAL)	316,143	OFFICE 1/275SF	1150	1035		8292	8720	2		20	33	0	0	0	0	0	0	1150	0	0	0	57	30	460	464	3	1	28	35
HOTEL	20	HOTEL	199,175	1.1 FOR EACH RM(192 RM)	211	211		8503	8720			20	33	0	0	0	0	0	0	211	0	0	0	11	0	470	464	3	0	35	35
B7	21	AMENITY	1,936	ACCESSORY																						470	464	0	0	35	35
B8	21	AMENITY	1,936	ACCESSORY																						470	464	0	0	35	35
B9	21	AMENITY	1,936	ACCESSORY										0	0	0	0	0	0	0	0	0	0	0	0	470	464	0	0	35	35
TOTAL			5,706,243		**9417**	**8503**	**8720**			**20**	**33**			**129**	**175**	**29**	**25**	**100**	**150**	**9415**	**7388**	**2352**	**1157**	**470**	**504**						

*REQUIRED AFTER 10% REDUCTION FOR PROVIDING SHOWERS AND CHANGING FACILITY PER 25-6-478 (D)

** SHOWERS PER GENDER

*** PHASES UNDER CONSTRUCTION PER SP-2018-0602C(R2)

BUILDING TABLE

BLDG	BLDG Number Address	PHASE	BLDG HT (FT)	# STORIES	PROP USE	BLDG FFE	FOUNDATION TYPE	BLDF FOOTPRINT (SF)	GROSS FLOOR AREA (SF)	BUILDING TYPE	SPRINKLED	FIRE FLOW (GPM)	REDUCED FIRE FLOW (GPM)
B1	1	6 - EXISTING	75	5	OFFICE (PROFESSIONAL)	882	SLAB	47,493	270,608	IB	YES	6000	1500
B2	2	5 - EXISTING	75	5	OFFICE (PROFESSIONAL)	880	SLAB	63,114	318,111	IB	YES	6000	1500
AC03	3	9	72	5	OFFICE (PROFESSIONAL)	876	SLAB	65,000	368,651	IB	YES	6000	1500
B4	*4*	*17*	*75*	*5*	*OFFICE (PROFESSIONAL)*	*864*	*SLAB*	*51,278*	*221,207*	*IB*	*YES*	*4750*	*1500*
B5	*5*	*18*	*75*	*5*	*OFFICE (PROFESSIONAL)*	*857*	*SLAB*	*52,276*	*213,762*	*IB*	*YES*	*5000*	*1500*
B6	*6*	*19*	*75*	*5*	*OFFICE (PROFESSIONAL)*	*862.5*	*SLAB*	*89,243*	*316,143*	*IB*	*YES*	*6000*	*1500*
RD1	10	7 - EXISTING	81	5	RESEARCH & DEVELOPMENT	882	SLAB	40,085	208,602	IB	YES	4750	1500
AC08	8	11	78	5	RESEARCH & DEVELOPMENT	868	SLAB	61,744	292,898	IB	YES	6000	1500
AC07	7	12	78	5	RESEARCH & DEVELOPMENT	868	SLAB	45,300	212,566	IB	YES	5500	1500
AC09	9	10	73' 6"	4	ACCESSORY	875.5	SLAB	64,128	203,884	IB	YES	5,750	1500
NWUB	M1	1 - EXISTING	19	1	UTILITY ENCLOSURE	868	SLAB	4,600	2,880	IIB	NO	1500	1500
CENTRAL PLANT	M2	2 - EXISTING	66	1	COOLING PLANT	862	SLAB	26,200	30,000	IIB	YES	3000	1500
HOTEL	*11*	*20*	*113*	*9*	*HOTEL*	*888*	*SLAB*	*83,509*	*199,175*	*IB*	*YES*	*5500*	*1500*
M4- Central Waste	M4	14	24	1	ACCESSORY	889	SLAB	16,378	16,378	5B	YES	1500	1500
AC12 -Child Care	12	13	15	1	ACCESSORY	883	SLAB	32,353	32,353	5B	YES	3750	1500
PG1	GAR1	4 - EXISTING	75'6"	8	GARAGE	887	SLAB	64,242	495,681	IB	YES	6000	1500
G2	GAR2	8	98'8"	9	GARAGE	883	SLAB	128,285	1,109,180	IB	YES	6000	1500
PG3	*GAR3*	*16*	*75'6"*	*8*	*GARAGE*	*861*	*SLAB*	*119,430*	*855,495*	*IB*	*YES*	*6000*	*1500*
PG4	GAR4	3 - EXISTING	43'6"	5	GARAGE	874	SLAB	78,069	353,347	IB	YES	6000	1500
M5	M5	15	24	1	ACCESSORY	881.4	SLAB	3,000	6,529	IB	YES	N/A	N/A
B7	*13*	*21*	*15*	*1*	*ACCESSORY*	*872.3*	*SLAB*	*1,936*	*1,936*	*IB*	*NO*	*1500*	*1500*
B8	*14*	*21*	*15*	*1*	*ACCESSORY*	*872.3*	*SLAB*	*1,936*	*1,936*	*IB*	*NO*	*1500*	*1500*
B9	*15*	*21*	*15*	*1*	*ACCESSORY*	*873*	*SLAB*	*1,936*	*1,936*	*IB*	*NO*	*1500*	*1500*
TOTAL								1,141,535	5,733,258				

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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FOR CITY USE ONLY:

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garza emc
7708 Rialto Blvd., Suite 125
Austin, Texas 78735
Tel. (512) 298-3284 Fax (512) 298-2592
TBPE # F-14629

STATE OF TEXAS ALEXANDRA A. BOONE 138951 LICENSED PROFESSIONAL ENGINEER

03/29/2024

SITE PLAN NOTES AND DETAILS 4 OF 4

CAPSTONE
6900 W. PARMER LANE

APPLE INC.

DRAWN BY: SPM
DESIGNED BY: ANG, IHR, HCH
QA / QC: JDP
PROJECT NO.: 101649.00031

SHEET 077 OF 238

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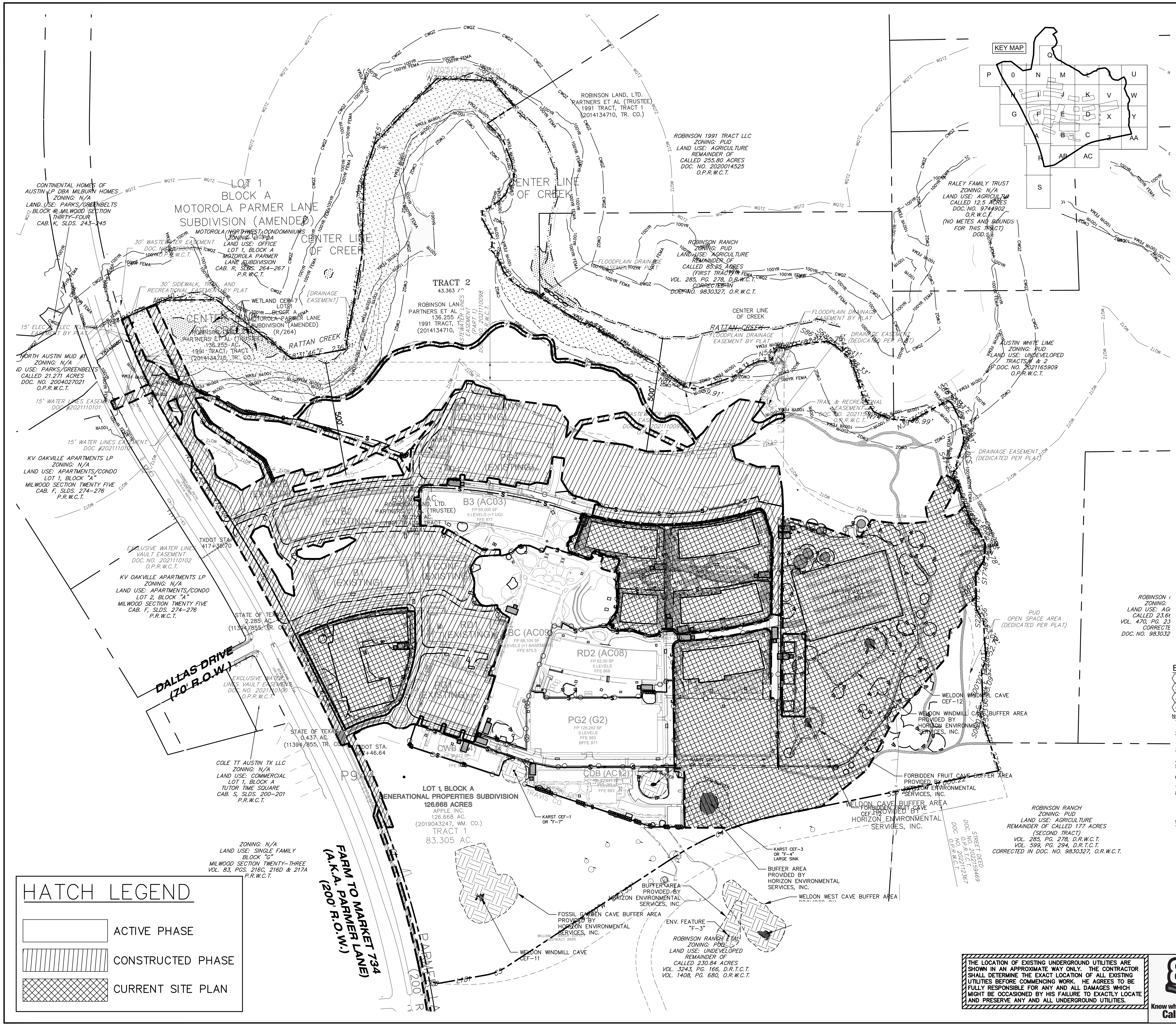

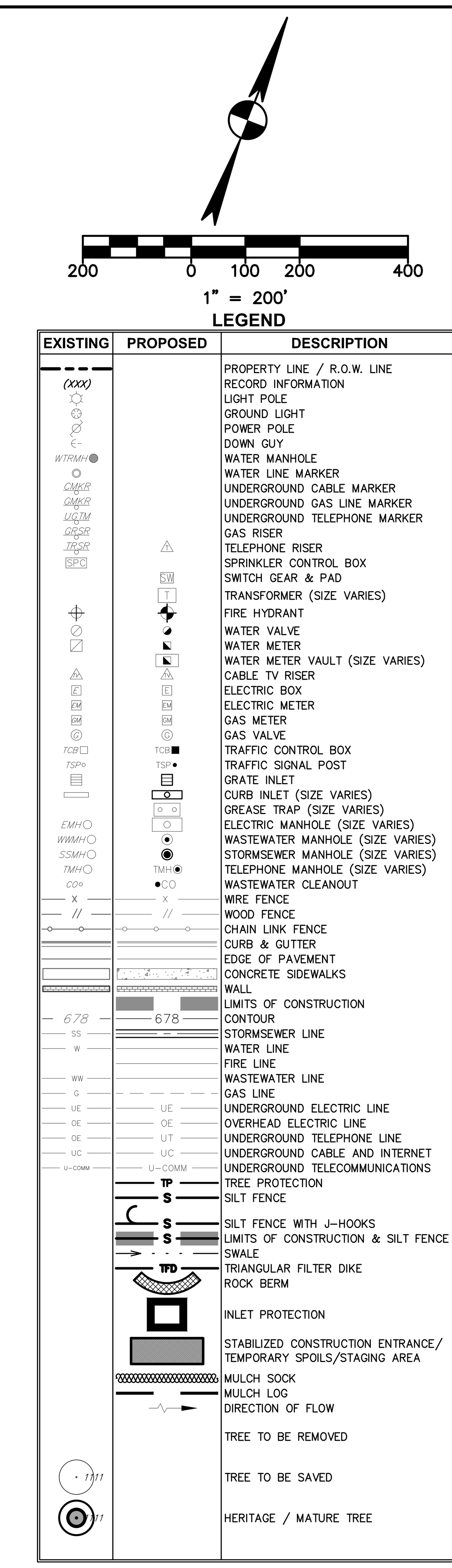

E&S PLAN KEY NOTES

1. SILT FENCE PER DETAIL 642S-1
2. CONSTRUCTION ENTRANCE PER DETAIL 641S-1
3. CHAIN LINK FENCE
4. TRIANGULAR FILTER DIKE PER DETAIL 628S
5. INLET PROTECTION PER DETAIL 632S-1
6. CONSTRUCTION STAGING AREA
7. CONCRETE WASH OUT AREA PER DETAIL
8. TREE PROTECTION PER DETAIL 610S-2
9. MULCH SOCK PER DETAIL 648S-1

NOTES:

1. IF DISTURBED AREA IS NOT TO BE WORKED ON FOR MORE THEN 14 DAYS, DISTURBED AREA NEEDS TO BE STABILIZED BY REVEGETATION, MULCH, TARP OR REVEGETATION MATTING. [ECM 1.4.4.B.3, SECTION 5,1.]
2. ENVIRONMENTAL INSPECTOR HAS THE AUTHORITY TO ADD AND/OR MODIFY EROSION/SEDIMENTATION CONTROLS ON SITE TO KEEP PROJECT IN-COMPLIANCE WITH THE CITY OF AUSTIN RULES AND REGULATIONS.[LDC 25-8-183]
3. CONTRACTOR SHALL UTILIZE DUST CONTROL MEASURES DURING SITE CONSTRUCTION SUCH AS IRRIGATION TRUCKS AND MULCHING AS PER ECM 1.4.5(A), OR AS DIRECTED BY THE ENVIRONMENTAL INSPECTOR.
4. THE CONTRACTOR WILL CLEAN UP SPOILS THAT MIGRATE ONTO THE ROADS A MINIMUM OF ONCE DAILY.
5. WHEN INSTALLING MULCH LOG, IF DAYLIGHT CAN BE SEEN UNDER MULCH LOG DUE TO TOPOGRAPHIC CHANGES, ADD ADDITIONAL ROWS OF MULCH LOG TO CLOSE GAPS.
6. ONLY RUBBER TIRED EQUIPMENTS IS ALLOWED WITHIN THE WQTZ AND FLOODPLAIN. NO TRACK EQUIPMENTS IS ALLOWED.
7. ALL EQUIPMENT AND SPOILS ARE TO BE REMOVED FOR THE WQTZ AND 100 YEAR FLOODPLAIN NIGHTLY.
8. PROVIDE EROSION CONTROL MATTING ON THE SLOPES ASSOCIATED WITH THE WATER QUALITY POND, OR PROVIDE 18" MULCH SOCK AT THE TOP AND BASE OF THE SLOPES TO PREVENT RUNOFF AND SEDIMENT TRANSPORT UNTIL PERMANENT VEGETATIVE STABILIZATION HAS GROWN TO A MINIMUM 1.5 INCHES AND THERE ARE NO BARE SPOTS GREATER THAN 10 SQUARE FEET. [ECM 1.4.4.B.1, 1.4.5.F, 1.4.7.B, ECM APPENDIX P-1]
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Tel. (512) 298-3284 Fax (512) 298-2592
TBPE # F-14629

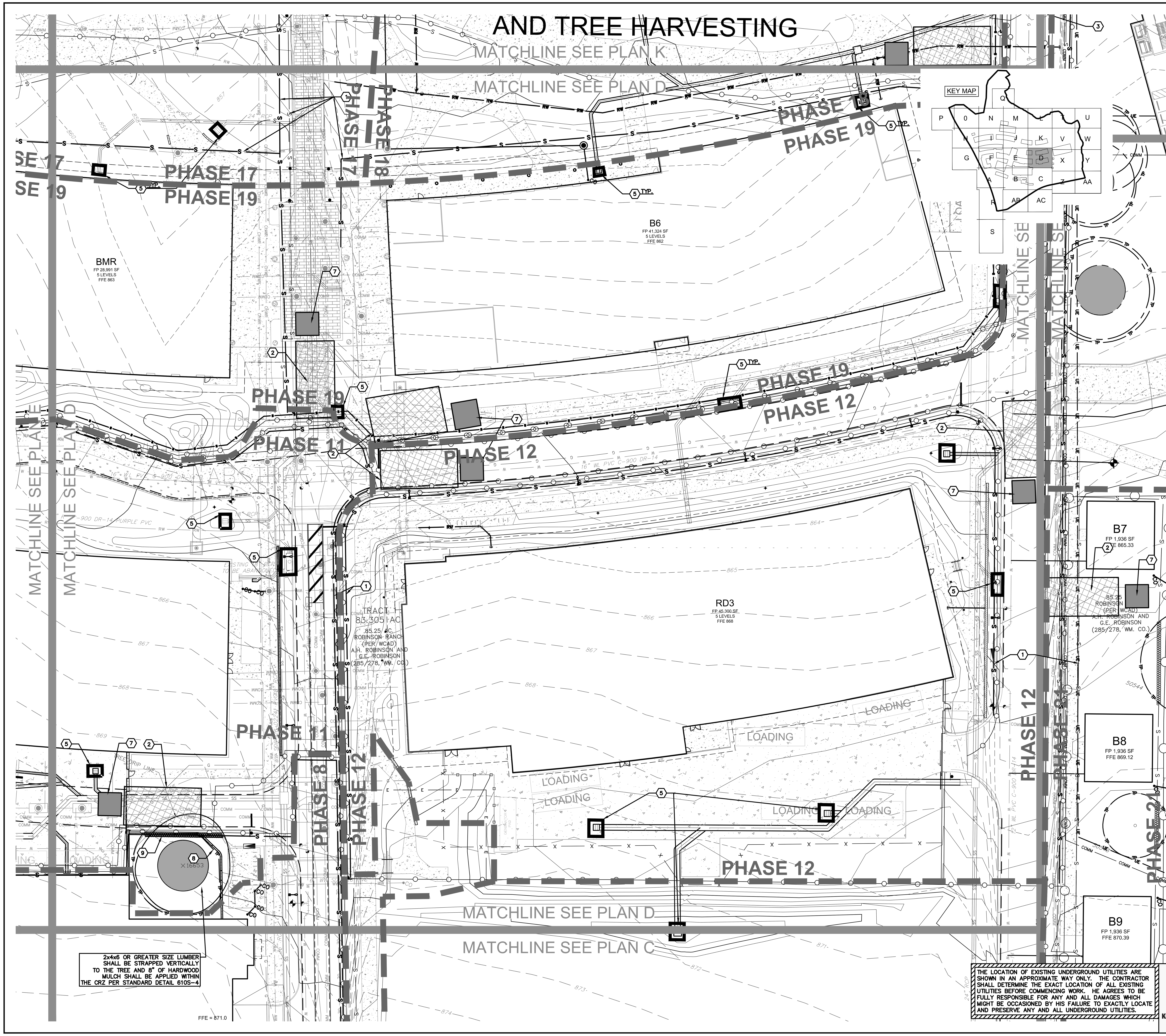
STATE OF TEXAS — ALEXANDRA A. BOONE — 138951 — LICENSED PROFESSIONAL ENGINEER
Alexandra Boone 03/29/2024

MASTER EROSION AND SEDIMENTATION CONTROL PLAN PHASES 8-15

CAPSTONE
6900 W. PARMER LANE

APPLE INC.

DRAWN BY: SPM
DESIGNED BY: ANG, IHR, HCH
QA / QC: JDP
PROJECT NO.: 101649.00031



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LEGEND

EXISTING	PROPOSED	DESCRIPTION
		PROPERTY LINE / R.O.W. LINE
(XXX)		RECORD INFORMATION
		LIGHT POLE
		GROUND LIGHT
		POWER POLE
		DOWN GUY
WTRMH		WATER MANHOLE
		WATER LINE MARKER
CMKR		UNDERGROUND CABLE MARKER
GMKR		UNDERGROUND GAS LINE MARKER
UGTM		UNDERGROUND TELEPHONE MARKER
GRSR		GAS RISER
TRSR	T	TELEPHONE RISER
SPC		SPRINKLER CONTROL BOX
	SW	SWITCH GEAR & PAD
	T	TRANSFORMER (SIZE VARIES)
		FIRE HYDRANT
		WATER VALVE
		WATER METER
		WATER METER VAULT (SIZE VARIES)
TV	TV	CABLE TV RISER
E	E	ELECTRIC BOX
EM	EM	ELECTRIC METER
GM	GM	GAS METER
G	G	GAS VALVE
TCB	TCB	TRAFFIC CONTROL BOX
TSP	TSP	TRAFFIC SIGNAL POST
		GRATE INLET
		CURB INLET (SIZE VARIES)
		GREASE TRAP (SIZE VARIES)
EMH		ELECTRIC MANHOLE (SIZE VARIES)
WWMH		WASTEWATER MANHOLE (SIZE VARIES)
SSMH		STORMSEWER MANHOLE (SIZE VARIES)
TMH	TMH	TELEPHONE MANHOLE (SIZE VARIES)
CO	CO	WASTEWATER CLEANOUT
X	X	WIRE FENCE
//	//	WOOD FENCE
		CHAIN LINK FENCE
		CURB & GUTTER
		EDGE OF PAVEMENT
		CONCRETE SIDEWALKS
		WALL
		LIMITS OF CONSTRUCTION
678	678	CONTOUR
SS		STORMSEWER LINE
W		WATER LINE
		FIRE LINE
WW		WASTEWATER LINE
G		GAS LINE
UE	UE	UNDERGROUND ELECTRIC LINE
OE	OE	OVERHEAD ELECTRIC LINE
OE	UT	UNDERGROUND TELEPHONE LINE
UC	UC	UNDERGROUND CABLE AND INTERNET
U-COMM	U-COMM	UNDERGROUND TELECOMMUNICATIONS
	TP	TREE PROTECTION
	S	SILT FENCE
	S	SILT FENCE WITH J-HOOKS
	S	LIMITS OF CONSTRUCTION & SILT FENCE
		SWALE
	TFD	TRIANGULAR FILTER DIKE
		ROCK BERM
		INLET PROTECTION
		STABILIZED CONSTRUCTION ENTRANCE/ TEMPORARY SPOILS/STAGING AREA
		MULCH SOCK
		MULCH LOG
		DIRECTION OF FLOW
		TREE TO BE REMOVED
1111		TREE TO BE SAVED
1111		HERITAGE / MATURE TREE

E&S PLAN KEY NOTES

1. SILT FENCE PER DETAIL 642S-1
2. CONSTRUCTION ENTRANCE PER DETAIL 641S-1
3. CHAIN LINK FENCE
4. TRIANGULAR FILTER DIKE PER DETAIL 628S
5. INLET PROTECTION PER DETAIL 632S-1
6. CONSTRUCTION STAGING AREA
7. CONCRETE WASH OUT AREA PER DETAIL
8. TREE PROTECTION PER DETAIL 610S-2
9. MULCH SOCK PER DETAIL 648S-1

NOTES:

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Austin, Texas 78735
Tel. (512) 298-3284 Fax (512) 298-2592
TBPE # F-14629

STATE OF TEXAS
ALEXANDRA A. BOONE
138951
LICENSED PROFESSIONAL ENGINEER
Alexandra Boone
03/29/2024

EROSION AND SEDIMENTATION CONTROL PLAN D

CAPSTONE
6900 W. PARMER LANE

APPLE INC.

DRAWN BY: SPM
DESIGNED BY: ANG, IHR, HCH
QA / QC: JDP
PROJECT NO.: 101649.00031

SHEET
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OF 238

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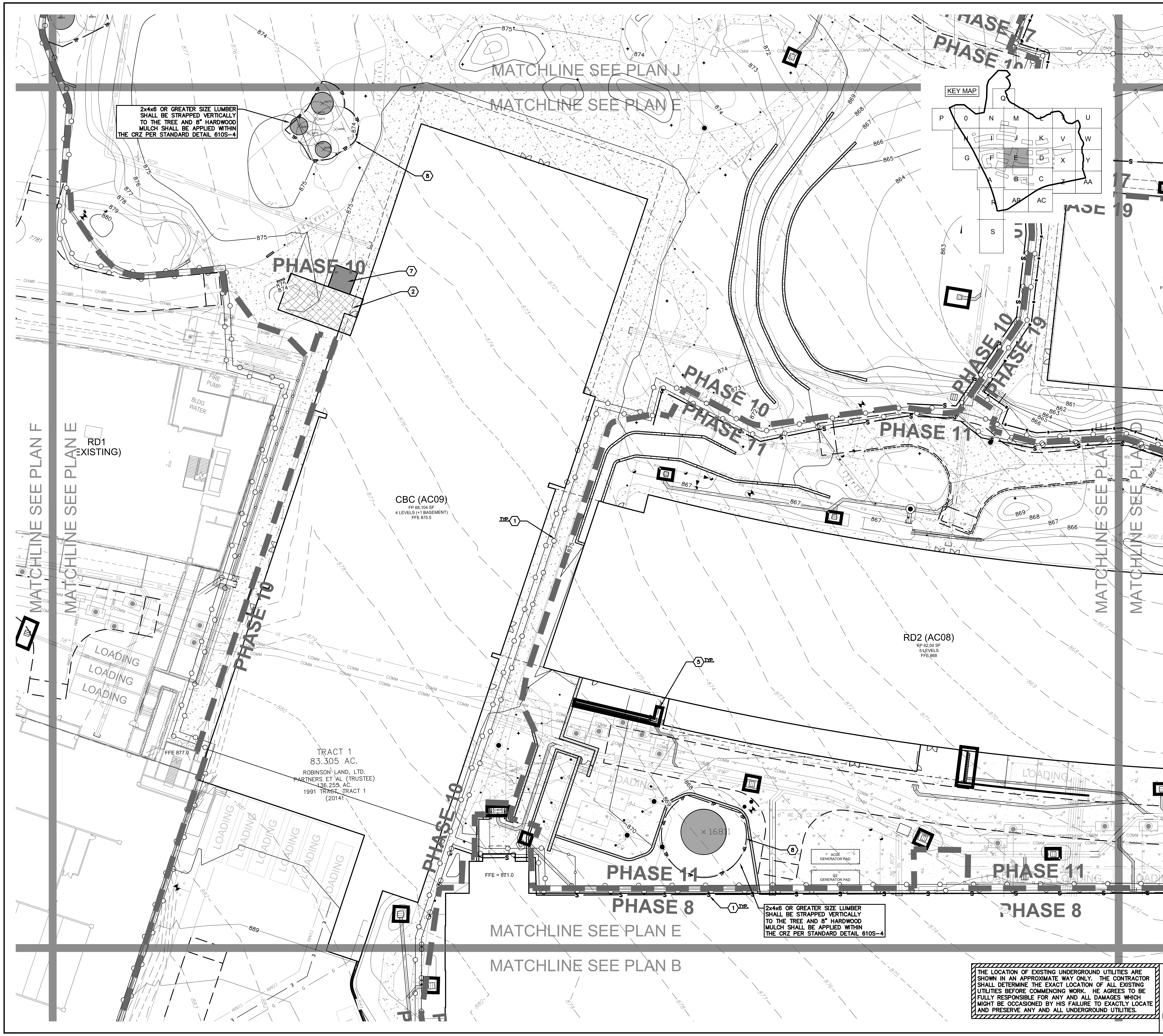

1" = 30'

LEGEND

EXISTING	PROPOSED	DESCRIPTION
		PROPERTY LINE / R.O.W. LINE
(XXX)		RECORD INFORMATION
		LIGHT POLE
		GROUND LIGHT
		POWER POLE
		DOWN GUY
WTRMH		WATER MANHOLE
		WATER LINE MARKER
CMKR		UNDERGROUND CABLE MARKER
GMKR		UNDERGROUND GAS LINE MARKER
UGTM		UNDERGROUND TELEPHONE MARKER
GRSR		GAS RISER
TRSR	T	TELEPHONE RISER
SPC		SPRINKLER CONTROL BOX
	SW	SWITCH GEAR & PAD
	T	TRANSFORMER (SIZE VARIES)
		FIRE HYDRANT
		WATER VALVE
		WATER METER
		WATER METER VAULT (SIZE VARIES)
TV	TV	CABLE TV RISER
E	E	ELECTRIC BOX
EM	EM	ELECTRIC METER
GM	GM	GAS METER
G	G	GAS VALVE
TCB	TCB	TRAFFIC CONTROL BOX
TSP	TSP	TRAFFIC SIGNAL POST
		GRATE INLET
		CURB INLET (SIZE VARIES)
		GREASE TRAP (SIZE VARIES)
EMH		ELECTRIC MANHOLE (SIZE VARIES)
WWMH		WASTEWATER MANHOLE (SIZE VARIES)
SSMH		STORMSEWER MANHOLE (SIZE VARIES)
TMH	TMH	TELEPHONE MANHOLE (SIZE VARIES)
CO	CO	WASTEWATER CLEANOUT
X	X	WIRE FENCE
//	//	WOOD FENCE
		CHAIN LINK FENCE
		CURB & GUTTER
		EDGE OF PAVEMENT
		CONCRETE SIDEWALKS
		WALL
		LIMITS OF CONSTRUCTION
678	678	CONTOUR
SS		STORMSEWER LINE
W		WATER LINE
		FIRE LINE
WW		WASTEWATER LINE
G		GAS LINE
UE	UE	UNDERGROUND ELECTRIC LINE
OE	OE	OVERHEAD ELECTRIC LINE
OE	UT	UNDERGROUND TELEPHONE LINE
UC	UC	UNDERGROUND CABLE AND INTERNET
U-COMM	U-COMM	UNDERGROUND TELECOMMUNICATIONS
	TP	TREE PROTECTION
	S	SILT FENCE
	S	SILT FENCE WITH J-HOOKS
	S	LIMITS OF CONSTRUCTION & SILT FENCE
		SWALE
	TFD	TRIANGULAR FILTER DIKE
		ROCK BERM
		INLET PROTECTION
		STABILIZED CONSTRUCTION ENTRANCE/ TEMPORARY SPOILS/STAGING AREA
		MULCH SOCK
		MULCH LOG
		DIRECTION OF FLOW
		TREE TO BE REMOVED
1111		TREE TO BE SAVED
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E&S PLAN KEY NOTES

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7. CONCRETE WASH OUT AREA PER DETAIL
8. TREE PROTECTION PER DETAIL 610S-2
9. MULCH SOCK PER DETAIL 648S-1

NOTES:

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TBPE # F-14629

STATE OF TEXAS ALEXANDRA A. BOONE 138951 LICENSED PROFESSIONAL ENGINEER
Alexandra Boone
03/29/2024

EROSION AND SEDIMENTATION CONTROL PLAN E

CAPSTONE
6900 W. PARMER LANE

APPLE INC.

DRAWN BY:SPM
DESIGNED BY: ANG, IHR, HCH
QA / QC: JDP
PROJECT NO.: 101649.00031

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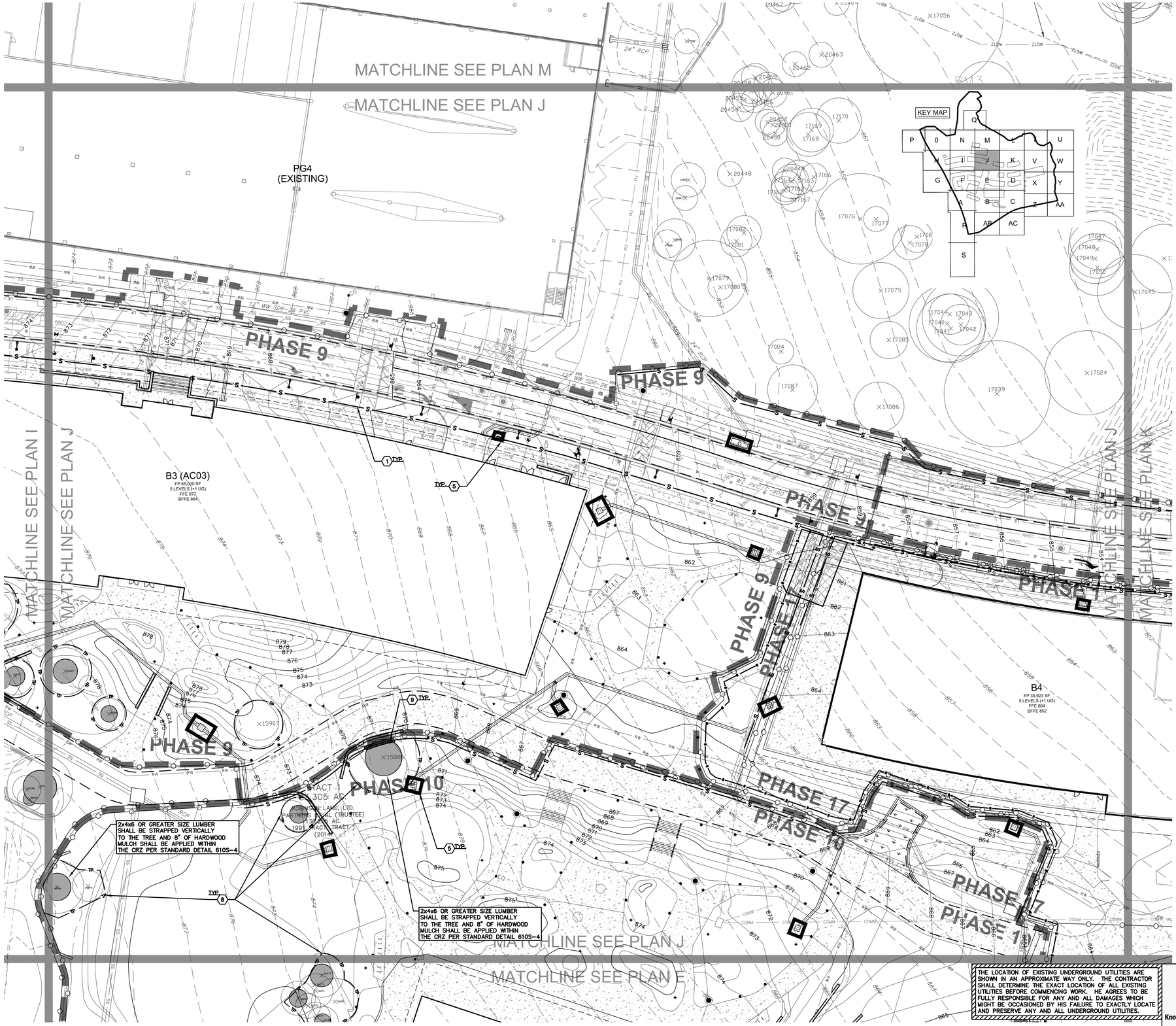

30 0 15 30 60

1" = 30'

LEGEND

EXISTING	PROPOSED	DESCRIPTION
		PROPERTY LINE / R.O.W. LINE
(XXX)		RECORD INFORMATION
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		GROUND LIGHT
		POWER POLE
		DOWN GUY
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		WATER LINE MARKER
UGCR		UNDERGROUND CABLE MARKER
UGGR		UNDERGROUND GAS LINE MARKER
UGTM		UNDERGROUND TELEPHONE MARKER
UGGR		GAS RISER
TERR		TELEPHONE RISER
SPCR		SPRINKLER CONTROL BOX
	SW	SWITCH GEAR & PAD
	T	TRANSFORMER (SIZE VARIES)
		FIRE HYDRANT
		WATER VALVE
		WATER METER
	W	WATER METER VAULT (SIZE VARIES)
		CABLE TV RISER
		ELECTRIC BOX
		ELECTRIC METER
		GAS METER
		GAS VALVE
TCR	TCR	TRAFFIC CONTROL BOX
TSP	TSP	TRAFFIC SIGNAL POST
		GRATE INLET
		CURB INLET (SIZE VARIES)
		GREASE TRAP (SIZE VARIES)
EMH		ELECTRIC MANHOLE (SIZE VARIES)
WMH		WASTEWATER MANHOLE (SIZE VARIES)
SSMH		STORMSEWER MANHOLE (SIZE VARIES)
TMH	TMH	TELEPHONE MANHOLE (SIZE VARIES)
CO	CO	WASTEWATER CLEANOUT
X	X	WIRE FENCE
//	//	WOOD FENCE
		CHAIN LINK FENCE
		CURB & GUTTER
		EDGE OF PAVEMENT
		CONCRETE SIDEWALKS
		WALL
		LIMITS OF CONSTRUCTION
678	678	CONTOUR
SS	SS	STORMSEWER LINE
W	W	WATER LINE
	FM	FIRE LINE
WW	WW	WASTEWATER LINE
G	G	GAS LINE
UE	UE	UNDERGROUND ELECTRIC LINE
OE	OE	OVERHEAD ELECTRIC LINE
UT	UT	UNDERGROUND TELEPHONE LINE
UC	UC	UNDERGROUND CABLE AND INTERNET
U-COMM	U-COMM	UNDERGROUND TELECOMMUNICATIONS
TP	TP	TREE PROTECTION
S	S	SILT FENCE
S	S	SILT FENCE WITH J-HOOKS
S	S	LIMITS OF CONSTRUCTION & SILT FENCE
		SWALE
TPD	TPD	TRIANGULAR FILTER DIKE
		ROCK BERM
		INLET PROTECTION
		STABILIZED CONSTRUCTION ENTRANCE/ TEMPORARY SPOILS/STAGING AREA
		MULCH SOCK
		MULCH LOG
		DIRECTION OF FLOW
		TREE TO BE REMOVED
		TREE TO BE SAVED
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E&S PLAN KEY NOTES

1. SILT FENCE PER DETAIL 642S-1
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3. CHAIN LINK FENCE
4. TRIANGULAR FILTER DIKE PER DETAIL 628S
5. INLET PROTECTION PER DETAIL 632S-1
6. CONSTRUCTION STAGING AREA
7. CONCRETE WASH OUT AREA PER DETAIL
8. TREE PROTECTION PER DETAIL 610S-2
9. MULCH SOCK PER DETAIL 648S-1

NOTES:

1. IF DISTURBED AREA IS NOT TO BE WORKED ON FOR MORE THEN 14 DAYS, DISTURBED AREA NEEDS TO BE STABILIZED BY REVEGETATION, MULCH, TARP OR REVEGETATION MATTING. [ECM 1.4.4.B.3, SECTION 5,1.]
2. ENVIRONMENTAL INSPECTOR HAS THE AUTHORITY TO ADD AND/OR MODIFY EROSION/SEDIMENTATION CONTROLS ON SITE TO KEEP PROJECT IN-COMPLIANCE WITH THE CITY OF AUSTIN RULES AND REGULATIONS.[LDC 25-8-183]
3. CONTRACTOR SHALL UTILIZE DUST CONTROL MEASURES DURING SITE CONSTRUCTION SUCH AS IRRIGATION TRUCKS AND MULCHING AS PER ECM 1.4.5(A), OR AS DIRECTED BY THE ENVIRONMENTAL INSPECTOR.
4. THE CONTRACTOR WILL CLEAN UP SPOILS THAT MIGRATE ONTO THE ROADS A MINIMUM OF ONCE DAILY.
5. WHEN INSTALLING MULCH LOG, IF DAYLIGHT CAN BE SEEN UNDER MULCH LOG DUE TO TOPOGRAPHIC CHANGES, ADD ADDITIONAL ROWS OF MULCH LOG TO CLOSE GAPS.
6. ONLY RUBBER TIRED EQUIPMENTS IS ALLOWED WITHIN THE WQTZ AND FLOODPLAIN. NO TRACK EQUIPMENTS IS ALLOWED.
7. ALL EQUIPMENT AND SPOILS ARE TO BE REMOVED FOR THE WQTZ AND 100 YEAR FLOODPLAIN NIGHTLY.
8. PROVIDE EROSION CONTROL MATTING ON THE SLOPES ASSOCIATED WITH THE WATER QUALITY POND, OR PROVIDE 18" MULCH SOCK AT THE TOP AND BASE OF THE SLOPES TO PREVENT RUNOFF AND SEDIMENT TRANSPORT UNTIL PERMANENT VEGETATIVE STABILIZATION HAS GROWN TO A MINIMUM 1.5 INCHES AND THERE ARE NO BARE SPOTS GREATER THAN 10 SQUARE FEET. [ECM 1.4.4.B.1, 1.4.5.F, 1.4.7.B, ECM APPENDIX P-1]
9. CONSTRUCTION FENCE WILL DOUBLE AS TREE PROTECTION AS WELL AS EROSION PROTECTION.
10. ALL PERMANENT FENCING MUST BE INSTALLED AT THE PERIMETER OF THE CRITICAL ENVIRONMENTAL FEATURE (CEF) SETBACK PRIOR TO THE INITIATION OF ANY CONSTRUCTION OR CLEARING ACTIVITY. THE FENCE MATERIAL SHALL BE IN ACCORDANCE WITH COA ITEM NO. 701S.3(E) OF THE SSM, UNLESS OTHER MATERIALS ARE APPROVED BY THE CITY OF AUSTIN. A LOCKABLE ACCESS GATE SHALL BE INSTALLED FOR EACH CRITICAL ENVIRONMENTAL FEATURE (CEF) SETBACK.

FOR CITY USE ONLY.

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

REVISION	NO	DATE

garza
7708 Rialto Blvd., Suite 125
Austin, Texas 78735
Tel. (512) 298-2284 Fax (512) 298-2592
TBPE F-1386 TBPLS 10194462

STATE OF TEXAS
ALEXANDRA A. BOONE
138951
LICENSED PROFESSIONAL ENGINEER
Alexandra Boone
03/29/2024

EROSION AND SEDIMENTATION CONTROL PLAN J

CAPSTONE
6900 W. PARMER LANE

APPLE INC.

DRAWN BY: SPM
DESIGNED BY: ANG, IHR, HCH
QA / QC: JDP
PROJECT NO.: 101649.00031

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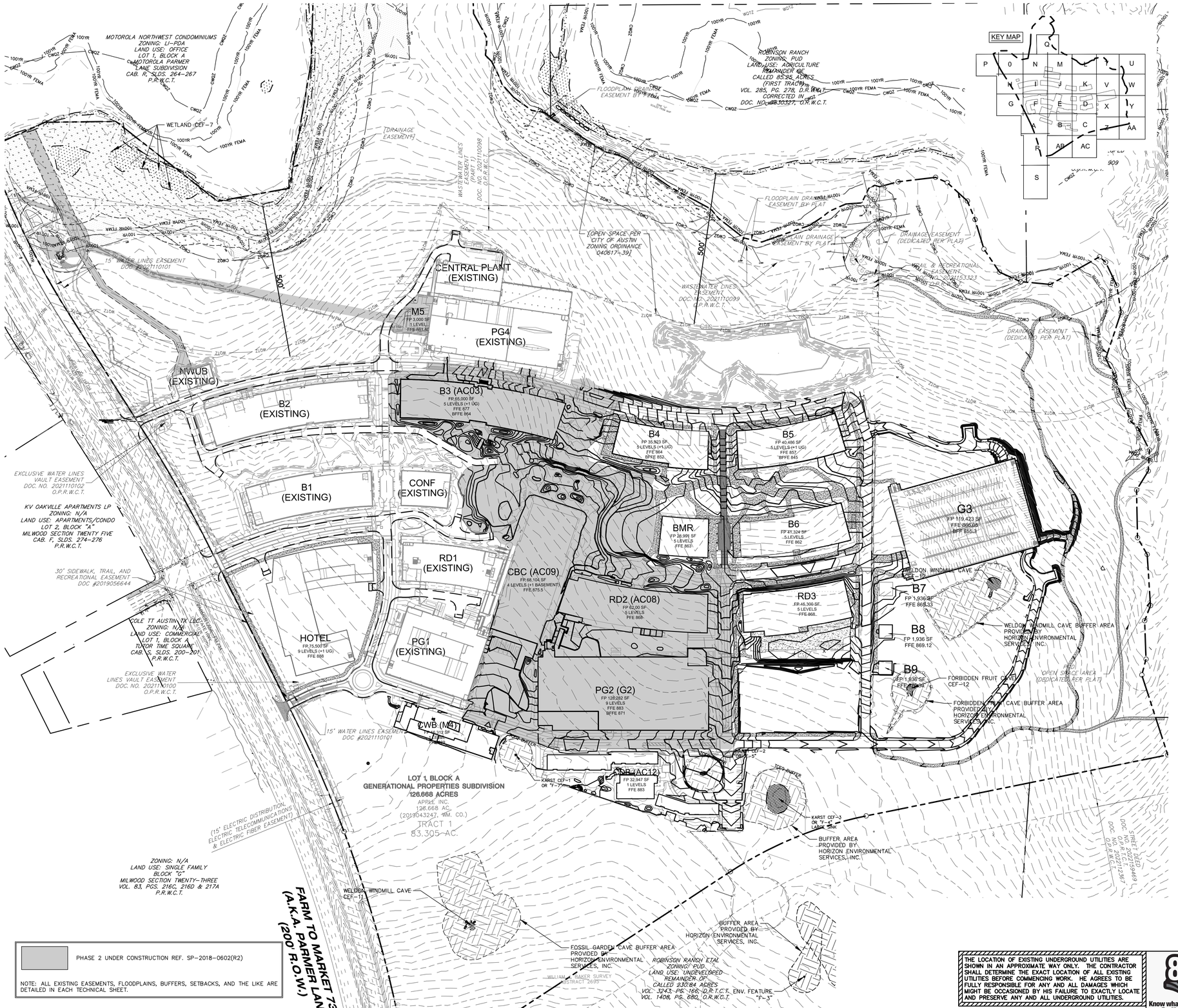
088
OF 238

SP-2023-0292C



NOTES:
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FOR CITY USE ONLY:

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Austin, Texas 78735
Tel. (512) 298-2284 Fax (512) 298-2592
TBPE F-2968 TBPLS 10194459

NO	DATE	REVISION

STATE OF TEXAS
ALEXANDRA A. BOONE
138951
LICENSED PROFESSIONAL ENGINEER
Alexandra Boone
03/29/2024

MASTER GRADING PLAN

CAPSTONE
6900 W. PARMER LANE

APPLE INC.

DRAWN BY: SPM
DESIGNED BY: ANG, IHR, HCH
QA / QC: JDP
PROJECT NO.: 101649.00031

SHEET
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OF 238

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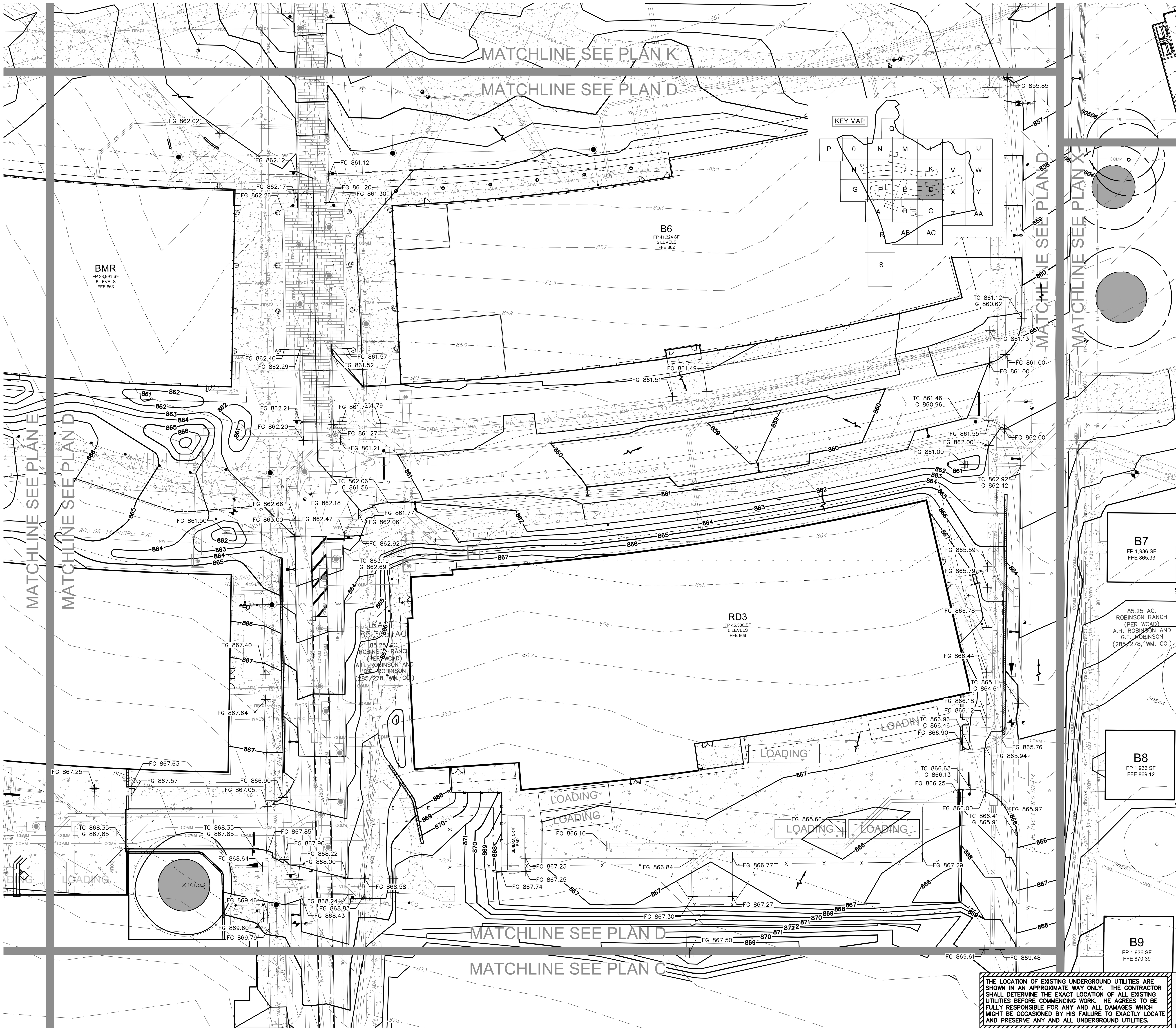

1" = 30'

LEGEND

EXISTING	PROPOSED	DESCRIPTION
		PROPERTY LINE / R.O.W. LINE
(XXX)		RECORD INFORMATION
		LIGHT POLE
		GROUND LIGHT
		POWER POLE
		DOWN GUY
WTRMH		WATER MANHOLE
		WATER LINE MARKER
CMKR		UNDERGROUND CABLE MARKER
GMKR		UNDERGROUND GAS LINE MARKER
UGTM		UNDERGROUND TELEPHONE MARKER
GRSR		GAS RISER
TRSR	T	TELEPHONE RISER
SPC		SPRINKLER CONTROL BOX
	SW	SWITCH GEAR & PAD
	T	TRANSFORMER (SIZE VARIES)
		FIRE HYDRANT
		WATER VALVE
		WATER METER
		WATER METER VAULT (SIZE VARIES)
TV	TV	CABLE TV RISER
E	E	ELECTRIC BOX
EM	EM	ELECTRIC METER
GM	GM	GAS METER
G	G	GAS VALVE
TCB	TCB	TRAFFIC CONTROL BOX
TSP	TSP	TRAFFIC SIGNAL POST
		GRATE INLET
		CURB INLET (SIZE VARIES)
		GREASE TRAP (SIZE VARIES)
EMH		ELECTRIC MANHOLE (SIZE VARIES)
WWMH		WASTEWATER MANHOLE (SIZE VARIES)
SSMH		STORMSEWER MANHOLE (SIZE VARIES)
TMH	TMH	TELEPHONE MANHOLE (SIZE VARIES)
CO	CO	WASTEWATER CLEANOUT
X	X	WIRE FENCE
//	//	WOOD FENCE
		CHAIN LINK FENCE
	D	DUMPSTER
		CURB & GUTTER
		EDGE OF PAVEMENT
		CONCRETE SIDEWALKS
		WALL
		LIMITS OF CONSTRUCTION
678	678	CONTOUR
SS		STORMSEWER LINE
W		WATER LINE
		FIRE LINE
WW		WASTEWATER LINE
G		GAS LINE
UE	UE	UNDERGROUND ELECTRIC LINE
OE	OE	OVERHEAD ELECTRIC LINE
OE	UT	UNDERGROUND TELEPHONE LINE
UC	UC	UNDERGROUND CABLE AND INTERNET
U-COMM	U-COMM	UNDERGROUND TELECOMMUNICATIONS
		ACCESSIBLE ROUTE
		SIGN
		WHEELSTOP
		BOLLARD
	FFE	FINISH FLOOR ELEVATION
		ACCESSIBLE SPACE
		BIKE PARKING
		SWALE
		DIRECTION OF FLOW
1111		TREE TO BE SAVED
1111		HERITAGE / MATURE TREE
	HP	HIGH POINT
	TW	TOP OF WALL
	TC	TOP OF CURB
	G	GUTTER
701.33	701.33	SPOT ELEVATION

NOTES:

1. ALL DISTURBED AREAS NOT SUBJECT TO MASS GRADING SHALL BE GRADED TO DRAIN.
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6. CONTRACTOR TO PROVIDE CERTIFIED SURVEY DEMONSTRATING COMPLIANCE WITH THIS GRADING PLAN.

REFERENCE LANDSCAPE PLANS FOR DETAILED GRADING IN THIS AREA.

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garza EMC
7708 Rialto Blvd., Suite 125
Austin, Texas 78735
Tel. (512) 298-3284 Fax (512) 298-2592
TBPE # F-14629

STATE OF TEXAS
ALEXANDRA A. BOONE
138951
LICENSED PROFESSIONAL ENGINEER
Alexandra Boone
03/29/2024

GRADING PLAN D

CAPSTONE
6900 W. PARMER LANE

APPLE INC.

DRAWN BY: SPM
DESIGNED BY: ANG, IHR, HCH
QA / QC: JDP
PROJECT NO.: 101649.00031

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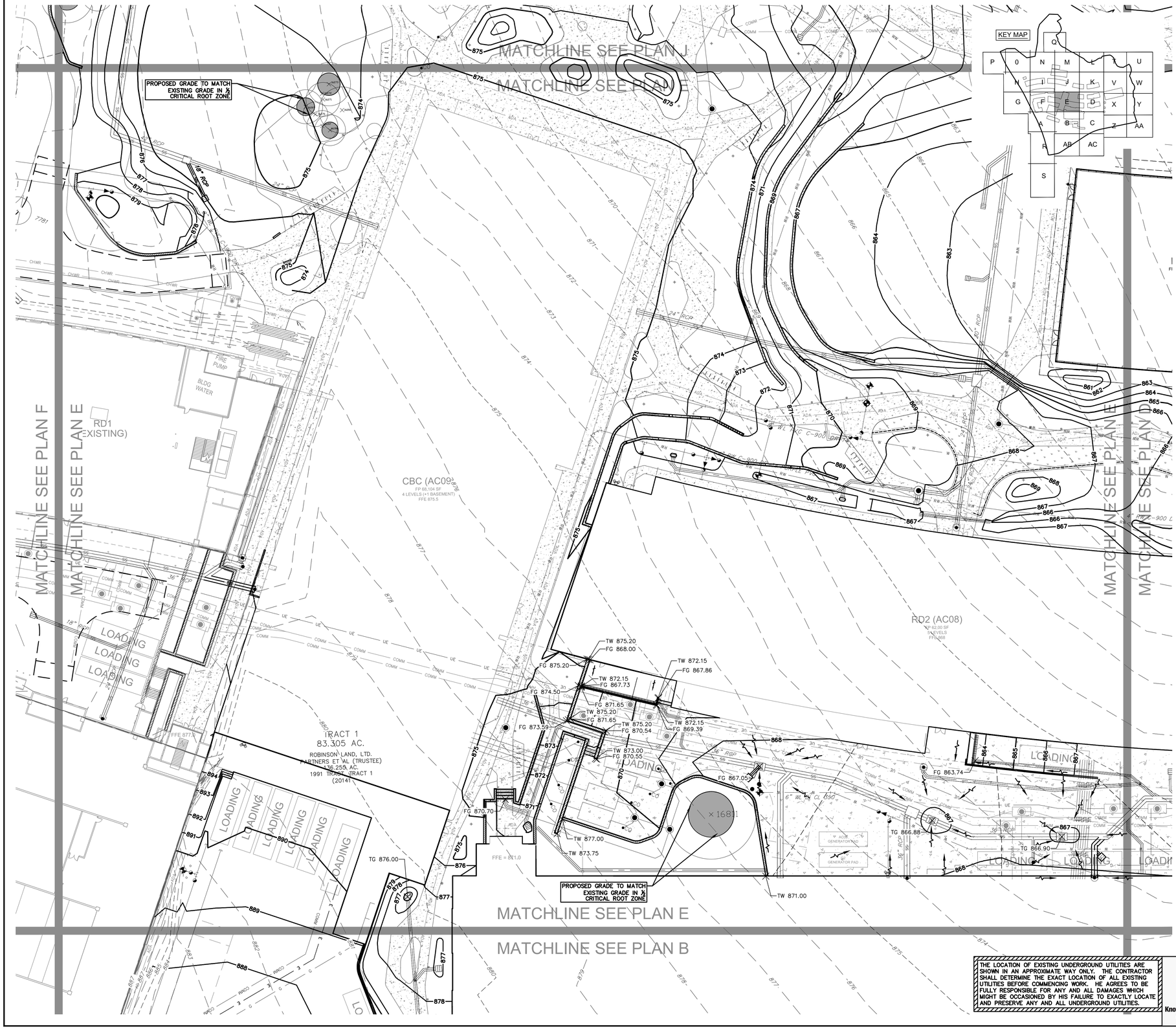

LEGEND

EXISTING	PROPOSED	DESCRIPTION
		PROPERTY LINE / R.O.W. LINE
(XXX)		RECORD INFORMATION
		LIGHT POLE
		GROUND LIGHT
		POWER POLE
		DOWN GUY
WTRMH		WATER MANHOLE
		WATER LINE MARKER
CMKR		UNDERGROUND CABLE MARKER
GMKR		UNDERGROUND GAS LINE MARKER
UGTM		UNDERGROUND TELEPHONE MARKER
GRSR		GAS RISER
TERR		TELEPHONE RISER
SPC		SPRINKLER CONTROL BOX
	SW	SWITCH GEAR & PAD
		TRANSFORMER (SIZE VARIES)
		FIRE HYDRANT
		WATER VALVE
		WATER METER
		WATER METER VAULT (SIZE VARIES)
		CABLE TV RISER
		ELECTRIC BOX
		ELECTRIC METER
		GAS METER
		GAS VALVE
TCR	TCR	TRAFFIC CONTROL BOX
TSP	TSP	TRAFFIC SIGNAL POST
		GRATE INLET
		CURB INLET (SIZE VARIES)
		GREASE TRAP (SIZE VARIES)
EMH		ELECTRIC MANHOLE (SIZE VARIES)
WWMH		WASTEWATER MANHOLE (SIZE VARIES)
SSMH		STORMSEWER MANHOLE (SIZE VARIES)
TMH	TMH	TELEPHONE MANHOLE (SIZE VARIES)
CO		WASTEWATER CLEANOUT
X	X	WIRE FENCE
//	//	WOOD FENCE
		CHAIN LINK FENCE
	D	DUMPSTER
		CURB & GUTTER
		EDGE OF PAVEMENT
		CONCRETE SIDEWALKS
		WALL
		LIMITS OF CONSTRUCTION
678	678	CONTOUR
SS		STORMSEWER LINE
W		WATER LINE
		FIRE LINE
WW		WASTEWATER LINE
G		GAS LINE
UE	UE	UNDERGROUND ELECTRIC LINE
OE	OE	OVERHEAD ELECTRIC LINE
UT	UT	UNDERGROUND TELEPHONE LINE
UC	UC	UNDERGROUND CABLE AND INTERNET
U-COMM	U-COMM	UNDERGROUND TELECOMMUNICATIONS
		ACCESSIBLE ROUTE
		SIGN
		WHEELSTOP
		BOLLARD
	FFE	FINISH FLOOR ELEVATION
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		SWALE
		DIRECTION OF FLOW
		TREE TO BE SAVED
		HERITAGE / MATURE TREE
	HP	HIGH POINT
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701.33	701.33	SPOT ELEVATION

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Austin, Texas 78735
Tel. (512) 298-2284 Fax (512) 298-2592
TBPE #F-439 TBPLS #10194459

STATE OF TEXAS
ALEXANDRA A. BOONE
138951
LICENSED
PROFESSIONAL ENGINEER
Alexandra Boone
03/29/2024

GRADING PLAN E

CAPSTONE
6900 W. PARMER LANE

APPLE INC.

DRAWN BY:SPM
DESIGNED BY: ANG, IHR, HCH
QA / QC: JDP
PROJECT NO.: 101649.00031

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SP-2023-0292C

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1" = 30'

LEGEND

EXISTING	PROPOSED	DESCRIPTION
		PROPERTY LINE / R.O.W. LINE
(XXX)		RECORD INFORMATION
		LIGHT POLE
		GROUND LIGHT
		POWER POLE
		DOWN GUY
WTRMH		WATER MANHOLE
		WATER LINE MARKER
UGCT		UNDERGROUND CABLE MARKER
UGGT		UNDERGROUND GAS LINE MARKER
UGTM		UNDERGROUND TELEPHONE MARKER
GSR		GAS RISER
TSR		TELEPHONE RISER
SPC		SPRINKLER CONTROL BOX
	SW	SWITCH GEAR & PAD
	T	TRANSFORMER (SIZE VARIES)
		FIRE HYDRANT
		WATER VALVE
		WATER METER
		WATER METER VAULT (SIZE VARIES)
		CABLE TV RISER
E	E	ELECTRIC BOX
EM	EM	ELECTRIC METER
GM	GM	GAS METER
GV	GV	GAS VALVE
TCR	TCR	TRAFFIC CONTROL BOX
TSP	TSP	TRAFFIC SIGNAL POST
		GRATE INLET
		CURB INLET (SIZE VARIES)
		GREASE TRAP (SIZE VARIES)
EMH		ELECTRIC MANHOLE (SIZE VARIES)
WMH		WASTEWATER MANHOLE (SIZE VARIES)
SSMH		STORMSEWER MANHOLE (SIZE VARIES)
TMH	TMH	TELEPHONE MANHOLE (SIZE VARIES)
CO	CO	WASTEWATER CLEANOUT
X	X	WIRE FENCE
//	//	WOOD FENCE
		CHAIN LINK FENCE
	D	DUMPSTER
		CURB & GUTTER
		EDGE OF PAVEMENT
		CONCRETE SIDEWALKS
		WALL
		LIMITS OF CONSTRUCTION
678	678	CONTOUR
SS		STORMSEWER LINE
W		WATER LINE
		FIRE LINE
WW		WASTEWATER LINE
G		GAS LINE
UE	UE	UNDERGROUND ELECTRIC LINE
OE	OE	OVERHEAD ELECTRIC LINE
UT	UT	UNDERGROUND TELEPHONE LINE
UC	UC	UNDERGROUND CABLE AND INTERNET
U-COMM	U-COMM	UNDERGROUND TELECOMMUNICATIONS
		ACCESSIBLE ROUTE
		SIGN
		WHEELSTOP
		BOLLARD
	FFE	FINISH FLOOR ELEVATION
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		BIKE PARKING
		SWALE
		DIRECTION OF FLOW
777		TREE TO BE SAVED
777		HERITAGE / MATURE TREE
	HP	HIGH POINT
	TW	TOP OF WALL
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	G	GUTTER
701.33	701.33	SPOT ELEVATION

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7708 Rialto Blvd., Suite 125
Austin, Texas 78735
Tel: (512) 298-2284 Fax (512) 298-2592
TBPE F-1386 TBPLS 10194459

STATE OF TEXAS
ALEXANDRA A. BOONE
138951
LICENSED
PROFESSIONAL ENGINEER
Alexandra Boone
03/29/2024

GRADING PLAN J

CAPSTONE
6900 W. PARMER LANE

APPLE INC.

DRAWN BY: SPM
DESIGNED BY: ANG, IHR, HCH
QA / QC: JDP
PROJECT NO.: 1016490.00031

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OF 238

SP-2023-0292C

FOR CITY USE ONLY:

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Austin, Texas 78735
TEL (512) 298-2284 Fax (512) 298-2592
TBPE F-1386 TBPLS 10194489
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STATE OF TEXAS
ALEXANDRA A. BOONE
138951
LICENSED PROFESSIONAL ENGINEER
Alexandra Boone
03/29/2024

INLET DRAINAGE AREA MAP 1 OF 2

CAPSTONE
6900 W. PARMER LANE

APPLE INC.

DRAWN BY: SPM
DESIGNED BY: ANG, IHR, HCH
QA / QC: JDP
PROJECT NO.: 101649.00031

SHEET 118 OF 238

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SP-2023-0292C

GENERAL PROPERTIES

Proposed Conditions

Peak Discharge Calculations:

STM A NETWORK

Area: B4-NW

Event	2-yr	10-yr	25-yr	100-yr	500-yr	Surface	Acres	SF	%
Acres	0.49	0.49	0.49	0.49	0.49	Concrete	0.49	21,344	100.00
C	0.75	0.83	0.88	0.97	1.00		0.00	0	0.00
Tc	5.00	5.00	5.00	5.00	5.00		0.00	0	0.00
I	5.76	8.57	10.11	12.54	15.93		0.00	0	0.00
Q	2.1	3.5	4.4	6.0	7.8	Total	0.49	21,344	100

Area: A-2

Event	2-yr	10-yr	25-yr	100-yr	500-yr	Surface	Acres	SF	%
Acres	0.66	0.66	0.66	0.66	0.66	Asphalt	0.25	10,890	37.88
C	0.52	0.58	0.63	0.71	0.78	Concrete	0.06	2,614	9.09
Tc	5.00	5.00	5.00	5.00	5.00	Grass, Fair, 2-7%	0.35	15,246	53.03
I	5.76	8.57	10.11	12.54	15.93		0.00	0	0.00
Q	2.0	3.3	4.2	5.9	8.2	Total	0.66	28,750	100

Area: A-3

Event	2-yr	10-yr	25-yr	100-yr	500-yr	Surface	Acres	SF	%
Acres	1.85	1.85	1.85	1.85	1.85	Asphalt	0.76	33,106	41.08
C	0.58	0.65	0.69	0.77	0.84	Concrete	0.37	16,117	20.00
Tc	5.00	5.00	5.00	5.00	5.00	Grass, Fair, 2-7%	0.72	31,363	38.92
I	5.76	8.57	10.11	12.54	15.93		0.00	0	0.00
Q	6.2	10.2	13.0	18.0	24.6	Total	1.85	80,586	100

Area: B3-NE

Event	2-yr	10-yr	25-yr	100-yr	500-yr	Surface	Acres	SF	%
Acres	0.51	0.51	0.51	0.51	0.51	Concrete	0.51	22,216	100.00
C	0.75	0.83	0.88	0.97	1.00		0.00	0	0.00
Tc	5.00	5.00	5.00	5.00	5.00		0.00	0	0.00
I	5.76	8.57	10.11	12.54	15.93		0.00	0	0.00
Q	2.2	3.6	4.5	6.2	8.1	Total	0.51	22,216	100

Area: B3-N

Event	2-yr	10-yr	25-yr	100-yr	500-yr	Surface	Acres	SF	%
Acres	0.51	0.51	0.51	0.51	0.51	Concrete	0.51	22,216	100.00
C	0.75	0.83	0.88	0.97	1.00		0.00	0	0.00
Tc	5.00	5.00	5.00	5.00	5.00		0.00	0	0.00
I	5.76	8.57	10.11	12.54	15.93		0.00	0	0.00
Q	2.2	3.6	4.5	6.2	8.1	Total	0.51	22,216	100

Area: B3-NW

Event	2-yr	10-yr	25-yr	100-yr	500-yr	Surface	Acres	SF	%
Acres	0.51	0.51	0.51	0.51	0.51	Concrete	0.51	22,216	100.00
C	0.75	0.83	0.88	0.97	1.00		0.00	0	0.00
Tc	5.00	5.00	5.00	5.00	5.00		0.00	0	0.00
I	5.76	8.57	10.11	12.54	15.93		0.00	0	0.00
Q	2.2	3.6	4.5	6.2	8.1	Total	0.51	22,216	100

Area: PG4-SE

Event	2-yr	10-yr	25-yr	100-yr	500-yr	Surface	Acres	SF	%
Acres	0.61	0.61	0.61	0.61	0.61	Concrete	0.61	26,572	100.00
C	0.75	0.83	0.88	0.97	1.00		0.00	0	0.00
Tc	5.00	5.00	5.00	5.00	5.00		0.00	0	0.00
I	5.76	8.57	10.11	12.54	15.93		0.00	0	0.00
Q	2.6	4.3	5.4	7.4	9.7	Total	0.61	26,572	100

Area: PG4-S

Event	2-yr	10-yr	25-yr	100-yr	500-yr	Surface	Acres	SF	%
Acres	0.61	0.61	0.61	0.61	0.61	Concrete	0.61	26,572	100.00
C	0.75	0.83	0.88	0.97	1.00		0.00	0	0.00
Tc	5.00	5.00	5.00	5.00	5.00		0.00	0	0.00
I	5.76	8.57	10.11	12.54	15.93		0.00	0	0.00
Q	2.6	4.3	5.4	7.4	9.7	Total	0.61	26,572	100

Area: PG4-SW

Event	2-yr	10-yr	25-yr	100-yr	500-yr	Surface	Acres	SF	%
Acres	0.61	0.61	0.61	0.61	0.61	Concrete	0.61	26,572	100.00
C	0.75	0.83	0.88	0.97	1.00		0.00	0	0.00
Tc	5.00	5.00	5.00	5.00	5.00		0.00	0	0.00
I	5.76	8.57	10.11	12.54	15.93		0.00	0	0.00
Q	2.6	4.3	5.4	7.4	9.7	Total	0.61	26,572	100

Area: CP-S

Event	2-yr	10-yr	25-yr	100-yr	500-yr	Surface	Acres	SF	%
Acres	0.07	0.07	0.07	0.07	0.07	Concrete	0.07	3,049	100.00
C	0.75	0.83	0.88	0.97	1.00		0.00	0	0.00
Tc	5.00	5.00	5.00	5.00	5.00		0.00	0	0.00
I	5.76	8.57	10.11	12.54	15.93		0.00	0	0.00
Q	0.3	0.5	0.6	0.9	1.1	Total	0.07	3,049	100

Area: A-5

Event	2-yr	10-yr	25-yr	100-yr	500-yr	Surface	Acres	SF	%
Acres	1.02	1.02	1.02	1.02	1.02	Concrete	1.02	44,431	100.00
C	0.75	0.83	0.88	0.97	1.00		0.00	0	0.00
Tc	5.00	5.00	5.00	5.00	5.00		0.00	0	0.00
I	5.76	8.57	10.11	12.54	15.93		0.00	0	0.00
Q	4.4	7.3	9.1	12.4	16.2	Total	1.02	44,431	100

Area: A-9

Event	2-yr	10-yr	25-yr	100-yr	500-yr	Surface	Acres	SF	%
Acres	1.01	1.01	1.01	1.01	1.01	Asphalt	0.60	26,136	59.41
C	0.57	0.64	0.68	0.76	0.83	Grass, Fair, 2-7%	0.41	17,860	40.59
Tc	5.00	5.00	5.00	5.00	5.00		0.00	0	0.00
I	5.76	8.57	10.11	12.54	15.93		0.00	0	0.00
Q	3.3	5.5	7.0	9.7	13.3	Total	1.01	43,996	100

Area: B2-N

Event	2-yr	10-yr	25-yr	100-yr	500-yr	Surface	Acres	SF	%
Acres	0.78	0.78	0.78	0.78	0.78	Concrete	0.78	33,977	100.00
C	0.75	0.83	0.88	0.97	1.00		0.00	0	0.00
Tc	5.00	5.00	5.00	5.00	5.00		0.00	0	0.00
I	5.76	8.57	10.11	12.54	15.93		0.00	0	0.00
Q	3.4	5.5	6.9	9.5	12.4	Total	0.78	33,977	100

Area: B2-NW

Event	2-yr	10-yr	25-yr	100-yr	500-yr	Surface	Acres	SF	%
Acres	0.78	0.78	0.78	0.78	0.78	Concrete	0.78	33,977	100.00
C	0.75	0.83	0.88	0.97	1.00		0.00	0	0.00
Tc	5.00	5.00	5.00	5.00	5.00		0.00	0	0.00
I	5.76	8.57	10.11	12.54	15.93		0.00	0	0.00
Q	3.4	5.5	6.9	9.5	12.4	Total	0.78	33,977	100

Area: A-6

Event	2-yr	10-yr	25-yr	100-yr	500-yr	Surface	Acres	SF	%
Acres	0.58	0.58	0.58	0.58	0.58	Asphalt	0.38	16,553	65.52
C	0.61	0.69	0.73	0.82	0.88	Concrete	0.03	1,307	5.17
Tc	5.00	5.00	5.00	5.00	5.00	Grass, Fair, 2-7%	0.17	7,405	29.31
I	5.76	8.57	10.11	12.54	15.93		0.00	0	0.00
Q	2.0	3.4	4.3	5.9	8.1	Total	0.58	25,265	100

Area: B2-W

Event	2-yr	10-yr	25-yr	100-yr	500-yr	Surface	Acres	SF	%
Acres	0.24	0.24	0.24	0.24	0.24	Asphalt	0.24	10,454	100.00
C	0.73	0.81	0.86	0.95	1.00		0.00	0	0.00
Tc	5.00	5.00	5.00	5.00	5.00		0.00	0	0.00
I	5.76	8.57	10.11	12.54	15.93		0.00	0	0.00
Q	1.0	1.7	2.1	2.9	3.8	Total	0.24	10,454	100

Area: A-7

Event	2-yr	10-yr	25-yr	100-yr	500-yr	Surface	Acres	SF	%
Acres	1.83	1.83	1.83	1.83	1.83	Concrete	0.18	7,841	9.84
C	0.37	0.42	0.47	0.54	0.62	Grass, Fair, 2-7%	1.65	71,874	90.16
Tc	5.00	5.00	5.00	5.00	5.00		0.00	0	0.00
I	5.76	8.57	10.11	12.54	15.93		0.00	0	0.00
Q	3.9	6.7	8.6	12.3	18.1	Total	1.83	79,715	100

Area: A-8

Event	2-yr	10-yr	25-yr	100-yr	500-yr	Surface	Acres	SF	%
Acres	0.59	0.59	0.59	0.59	0.59	Asphalt	0.09	3,920	15.25
C	0.55	0.62	0.67	0.75	0.81	Concrete	0.23	10,019	38.98
Tc	5.00	5.00	5.00	5.00	5.00	Grass, Fair, 2-7%	0.27	11,761	45.76
I	5.76	8.57	10.11	12.54	15.93		0.00	0	0.00
Q	1.9	3.1	4.0	5.5	7.6	Total	0.59	25,700	100

Area: A

Event	2-yr	10-yr	25-yr	100-yr	500-yr	Surface	Acres	SF	%
Acres	0.67	0.67	0.67	0.67	0.67	Asphalt	0.44	19,166	65.67
C	0.65	0.72	0.77	0.86	0.91	Concrete	0.09	3,920	13.43
Tc	5.00	5.00	5.00	5.00	5.00	Grass, Fair, 2-7%	0.14	6,098	20.90
I	5.76	8.57	10.11	12.54	15.93		0.00	0	0.00
Q	2.5	4.1	5.2	7.2	9.7	Total	0.67	29,185	100

Area: A-10

Event	2-yr	10-yr	25-yr	100-yr	500-yr	Surface	Acres	SF	%
Acres	0.22	0.22	0.22	0.22	0.22	Asphalt	0.07	3,049	31.82
C	0.72	0.80	0.85	0.94	0.98	Concrete	0.14	6,098	63.64
Tc	5.00	5.00	5.00	5.00	5.00	Grass, Fair, 2-7%	0.01	436	4.55
I	5.76	8.57	10.11	12.54	15.93		0.00	0	0.00
Q	0.9	1.5	1.9	2.6	3.4	Total	0.22	9,583	100

STM D NETWORK

Area: B2-NE

Event	2-yr	10-yr	25-yr	100-yr	500-yr	Surface	Acres	SF	%
Acres	0.52	0.52	0.52	0.52	0.52	Asphalt	0.12	5,227	23.08
C	0.58	0.64	0.69	0.77	0.83	Concrete	0.19	8,276	36.54
Tc	5.00	5.00	5.00	5.00	5.00	Grass, Fair, 2-7%	0.21	9,148	40.38
I	5.76	8.57	10.11	12.54	15.93		0.00	0	0.00
Q	1.7	2.9	3.6	5.0	6.9	Total	0.52	22,651	100

Area: A-4

Event	2-yr	10-yr	25-yr	100-yr	500-yr	Surface	Acres	SF	%
Acres	0.76	0.76	0.76	0.76	0.76	Concrete	0.45	19,602	59.21
C	0.58	0.65	0.69	0.77	0.83	Grass, Fair, 2-7%	0.31	13,504	40.79
Tc	5.00	5.00	5.00	5.00	5.00		0.00	0	0.00
I	5.76	8.57	10.11	12.54	15.93		0.00	0	0.00
Q	2.5	4.2	5.3	7.4	10.0	Total	0.76	33,106	100

Area: I-3

Event	2-yr	10-yr	25-yr	100-yr	500-yr	Surface	Acres	SF	%
Acres	0.67	0.67	0.67	0.67	0.67	Concrete	0.21	9,148	31.34
C	0.46	0.52	0.56	0.64	0.71	Grass, Fair, 2-7%	0.46	20,038	68.66
Tc	5.00	5.00	5.00	5.00	5.00		0.00	0	0.00
I	5.76	8.57	10.11	12.54	15.93		0.00	0	0.00
Q	1.8	3.0	3.8	5.4	7.6	Total	0.67	29,185	100

Area: B1-NE

Event	2-yr	10-yr	25-yr	100-yr	500-yr	Surface	Acres	SF	%
Acres	0.50	0.50	0.50	0.50	0.50	Concrete	0.50	21,780	100.00
C	0.75	0.83	0.88	0.97	1.00		0.00	0	0.00
Tc	5.00	5.00	5.00	5.00	5.00		0.00	0	0.00
I	5.76	8.57	10.11	12.54	15.93		0.00	0	0.00
Q	2.2	3.6	4.4	6.1	8.0	Total	0.50	21,780	100

Area: B1-N

Event	2-yr	10-yr	25-yr	100-yr	500-yr	Surface	Acres	SF	%
Acres	0.38	0.38	0.38	0.38	0.38	Concrete	0.38	16,553	100.00
C	0.75	0.83	0.88	0.97	1.00		0.00	0	0.00
Tc	5.00	5.00	5.00	5.00	5.00		0.00	0	0.00
I	5.76	8.57	10.11	12.54	15.93		0.00	0	0.00
Q	1.6	2.7	3.4	4.6	6.1	Total	0.38	16,553	100

Area: B1-NW

Event	2-yr	10-yr	25-yr	100-yr	500-yr	Surface	Acres	SF	%
Acres	0.38	0.38	0.38	0.38	0.38	Concrete	0.38	16,553	100.00
C	0.75	0.83	0.88	0.97	1.00		0.00	0	0.00
Tc	5.00	5.00	5.00	5.00	5.00		0.00	0	0.00
I	5.76	8.57	10.11	12.54	15.93		0.00	0	0.00
Q	1.6	2.7	3.4	4.6	6.1	Total	0.38	16,553	100

Area: CONF-S

Event	2-yr	10-yr	25-yr	100-yr	500-yr	Surface	Acres	SF	%
Acres	0.53	0.53	0.53	0.53	0.53	Concrete	0.53	23,087	100.00
C	0.75	0.83	0.88	0.97	1.00		0.00	0	0.00
Tc	5.00	5.00	5.00	5.00	5.00		0.00	0	0.00
I	5.76	8.57	10.11	12.54	15.93		0.00	0	0.00
Q	2.3	3.8	4.7	6.4	8.4	Total	0.53	23,087	100

Area: B-4

Event	2-yr	10-yr	25-yr	100-yr	500-yr	Surface	Acres	SF	%
Acres	0.12	0.12	0.12	0.12	0.12	Concrete	0.12	5,009	100.00
C	0.75	0.83	0.88	0.97	1.00		0.00	0	0.00
Tc	5.00	5.00	5.00	5.00	5.00		0.00	0	0.00
I	5.76	8.57	10.11	12.54	15.93		0.00	0	0.00
Q	0.5	0.8	1.0	1.4	1.8	Total	0.12	5,009	100

Area: REP CTR

Event	2-yr	10-yr	25-yr	100-yr	500-yr	Surface	Acres	SF	%
Acres	0.32	0.32	0.32	0.32	0.32	Concrete	0.32	13,939	100.00
C	0.75	0.83	0.88	0.97	1.00		0.00	0	0.00
Tc	5.00	5.00	5.00	5.00	5.00		0.00	0	0.00
I	5.76	8.57	10.11	12.54	15.93		0.00	0	0.00
Q	1.4	2.3	2.8	3.9	5.1	Total	0.32	13,939	100

Area: CB-C-NW

Event	2-yr	10-yr	25-yr	100-yr	500-yr	Surface	Acres	SF	%
Acres	0.76	0.76	0.76	0.76	0.76	Concrete	0.76	33,106	100.00
C	0.75	0.83	0.88	0.97	1.00		0.00	0	0.00
Tc	5.00	5.00	5.00	5.00	5.00		0.00	0	0.00
I	5.76	8.57	10.11	12.54	15.93		0.00	0	0.00
Q	3.3	5.4	6.8	9.2	12.1	Total	0.76	33,106	100

Area: B-6

Event	2-yr	10-yr	25-yr	100-yr	500-yr	Surface	Acres	SF	%
Acres	0.37	0.37	0.37	0.37	0.37	Asphalt	0.17	7,405	45.95
C	0.67	0.75	0.80	0.88	0.93	Concrete	0.14	6,098	37.84
Tc	5.00	5.00	5.00	5.00	5.00	Grass, Fair, 2-7%	0.06	2,614	16.22
I	5.76	8.57	10.11	12.54	15.93		0.00	0	0.00
Q	1.4	2.4	3.0	4.1	5.5	Total	0.37	16,117	100

Area: B1-SE

Event	2-yr	10-yr	25-yr	100-yr	500-yr	Surface	Acres	SF	%
Acres	0.09	0.09	0.09	0.09	0.09	Concrete	0.04	1,742	44.44
C	0.52	0.58	0.62	0.70	0.77	Grass, Fair, 2-7%	0.05	2,178	55.56
Tc	5.00	5.00	5.00	5.00	5.00		0.00	0	0.00
I	5.76	8.57	10.11	12.54	15.93		0.00	0	0.00
Q	0.3	0.4	0.6	0.8	1.1	Total	0.09	3,920	100

Area: B1-SW

Event	2-yr	10-yr	25-yr	100-yr	500-yr	Surface	Acres	SF	%
Acres	0.12	0.12	0.12	0.12	0.12	Concrete	0.06	2,614	50.00
C	0.54	0.61	0.65	0.73	0.79	Grass, Fair, 2-7%	0.06	2,614	50.00
Tc	5.00	5.00	5.00	5.00	5.00		0.00	0	0.00
I	5.76	8.57	10.11	12.54	15.93		0.00	0	0.00
Q	0.4	0.6	0.8	1.1	1.5	Total	0.12	5,227	100

Area: B-8

Event	2-yr	10-yr	25-yr	100-yr	500-yr	Surface	Acres	SF	%
Acres	1.17	1.17	1.17	1.17	1.17	Concrete	0.12	5,227	10.26
C	0.37	0.43	0.47	0.54	0.62	Grass, Fair, 2-7%	1.05	45,738	89.74
Tc	5.00	5.00	5.00	5.00	5.00		0.00	0	0.00
I	5.76	8.57	10.11	12.54	15.93		0.00	0	0.00
Q	2.5	4.3	5.5	7.9	11.6	Total	1.17	50,965	100

Area: B-5

Event	2-yr	10-yr	25-yr	100-yr	500-yr	Surface	Acres	SF	%
Acres	1.05	1.05	1.05	1.05	1.05	Asphalt	0.60	26,136	57.14
C	0.60	0.67	0.72	0.80	0.86	Concrete	0.11	4,792	10.48
Tc	5.00	5.00	5.00	5.00	5.00	Grass, Fair, 2-7%	0.34	14,810	32.38
I	5.76	8.57	10.11	12.54	15.93		0.00	0	0.00
Q	3.6	6.1	7.6	10.6	14.4	Total	1.05	45,738	100

Area: BYPASS

Event	2-yr	10-yr	25-yr	100-yr	500-yr	Surface	Acres	SF	%
Acres	0.92	0.92	0.92	0.92	0.92	Asphalt	0.21	9,148	22.83
C	0.51	0.57	0.62	0.69	0.76	Concrete	0.19	8,276	20.65
Tc	5.00	5.00	5.00	5.00	5.00	Grass, Fair, 2-7%	0.52	22,651	56.52
I	5.76	8.57	10.11	12.54	15.93		0.00	0	0.00
Q	2.7	4.5	5.7	8.0	11.2	Total	0.92	40,075	100

Area: HB-N

Event	2-yr	10-yr	25-yr	100-yr	500-yr	Surface	Acres	SF	%
Acres	0.29	0.29	0.29	0.29	0.29	Concrete	0.29	12,632	100.00
C	0.75	0.83	0.88	0.97	1.00		0.00	0	0.00
Tc	5.00	5.00	5.00	5.00	5.00		0.00	0	0.00
I	5.76	8.57	10.11	12.54	15.93		0.00	0	0.00
Q	1.3	2.1	2.6	3.5	4.6	Total	0.29	12,632	100

Area: HB-V

Event	2-yr	10-yr	25-yr	100-yr	500-yr	Surface	Acres	SF	%
Acres	0.29	0.29	0.29	0.29	0.29	Concrete	0.29	12,632	100.00
C	0.75	0.83	0.88	0.97	1.00		0.00	0	0.00
Tc	5.00	5.00	5.00	5.00	5.00		0.00	0	0.00
I	5.76	8.57	10.11	12.54	15.93		0.00	0	0.00
Q	1.3	2.1	2.6	3.5	4.6	Total	0.29	12,632	100

Area: B-W

Event	2-yr	10-yr	25-yr	100-yr	500-yr	Surface	Acres	SF	%
Acres	1.24	1.24	1.24	1.24	1.24	Concrete	1.24	54,014	100.00
C	0.75	0.83	0.88	0.97	1.00		0.00	0	0.00
Tc	5.00	5.00	5.00	5.00	5.00		0.00	0	0.00
I	5.76	8.57	10.11	12.54	15.93		0.00	0	0.00
Q	5.4	8.8	11.0	15.1	19.7	Total	1.24	54,014	100

Area: RD1

Event	2-yr	10-yr	25-yr	100-yr	500-yr	Surface	Acres	SF	%
Acres	0.92	0.92	0.92	0.92	0.92	Concrete	0.92	40,075	100.00
C	0.75	0.83	0.88	0.97	1.00		0.00	0	0.00
Tc	5.00	5.00	5.00	5.00	5.00		0.00	0	0.00
I	5.76	8.57	10.11	12.54	15.93		0.00	0	0.00
Q	4.0	6.5	8.2	11.2	14.7	Total	0.92	40,075	100

Area: D-1

Event	2-yr	10-yr	25-yr	100-yr	500-yr	Surface	Acres	SF	%
Acres	0.86	0.86	0.86	0.86	0.86	Asphalt	0.39	16,988	45.35
C	0.52	0.58	0.62	0.70	0.78	Concrete	0.01	436	1.16
Tc	5.00	5.00	5.00	5.00	5.00	Grass, Fair, 2-7%	0.46	20,038	53.49
I	5.76	8.57	10.11	12.54	15.93		0.00	0	0.00
Q	2.6	4.3	5.4	7.6	10.6	Total	0.86	37,462	100

Area: D-2

Event	2-yr	10-yr	25-yr	100-yr	500-yr	Surface	Acres	SF	%
Acres	0.88	0.88	0.88	0.88	0.88	Asphalt	0.27	11,761	30.68
C	0.46	0.52	0.57	0.64	0.72	Concrete	0.02	871	2.27
Tc	5.00	5.00	5.00	5.00	5.00	Grass, Fair, 2-7%	0.59	25,700	67.05
I	5.76	8.57	10.11	12.54	15.93		0.00	0	0.00
Q	2.3	3.9	5.0	7.1	10.1	Total	0.88	38,333	100

Area: D-3

Event	2-yr	10-yr	25-yr	100-yr	500-yr	Surface	Acres	SF	%
Acres	0.29	0.29	0.29	0.29	0.29	Asphalt	0.29	12,632	100.00
C	0.73	0.81	0.86	0.95	1.00		0.00	0	0.00
Tc	5.00	5.00	5.00	5.00	5.00		0.00	0	0.00
I	5.76	8.57	10.11	12.54	15.93		0.00	0	0.00
Q	1.2	2.0	2.5	3.5	4.6	Total	0.29	12,632	100

Area: CB-C-S

Event	2-yr	10-yr	25-yr	100-yr	500-yr	Surface	Acres	SF	%
Acres	0.35	0.35	0.35	0.35	0.35	Asphalt	0.32	13,939	91.43
C	0.73	0.81	0.86	0.95	1.00	Concrete	0.03	1,307	8.57
Tc	5.00	5.00	5.00	5.00	5.00		0.00	0	0.00
I	5.76	8.57	10.11	12.54	15.93		0.00	0	0.00
Q	1.5	2.4	3.0	4.2	5.6	Total	0.35	15,246	100

Area: CB-C-W

Event	2-yr	10-yr	25-yr	100-yr	500-yr	Surface	Acres	SF	%
Acres	0.76	0.76	0.76	0.76	0.76	Concrete	0.76	33,106	100.00
C	0.75	0.83	0.88	0.97	1.00		0.00	0	0.00
Tc	5.00	5.00	5.00	5.00	5.00		0.00	0	0.00
I	5.76	8.57	10.11	12.54	15.93		0.00	0	0.00
Q	3.3	5.4	6.8	9.2	12.1	Total	0.76	33,106	100

Area: PG1-NW

Event	2-yr	10-yr	25-yr	100-yr	500-yr	Surface	Acres	SF	%
Acres	0.76	0.76	0.76	0.76	0.76	Concrete	0.76	33,106	100.00
C	0.75	0.83	0.88	0.97	1.00		0.00	0	0.00
Tc	5.00	5.00	5.00	5.00	5.00		0.00	0	0.00
I	5.76	8.57	10.11	12.54	15.93		0.00	0	0.00
Q	3.3	5.4	6.8	9.2	12.1	Total	0.76	33,106	100

Area: PG1-NE

Event	2-yr	10-yr	25-yr	100-yr	500-yr	Surface	Acres	SF	%
Acres	0.76	0.76	0.76	0.76	0.76	Concrete	0.76	33,106	100.00
C	0.75	0.83	0.88	0.97	1.00		0.00	0	0.00
Tc	5.00	5.00	5.00	5.00	5.00		0.00	0	0.00
I	5.76	8.57	10.11	12.54	15.93		0.00	0	0.00
Q	3.3	5.4	6.8	9.2	12.1	Total	0.76	33,106	100

Area: C-3

Event	2-yr	10-yr	25-yr	100-yr	500-yr	Surface	Acres	SF	%
Acres	0.55	0.55	0.55	0.55	0.55	Asphalt	0.29	12,632	52.73
C	0.59	0.66	0.70	0.78	0.85	Concrete	0.06	2,614	10.91
Tc	5.00	5.00	5.00	5.00	5.00	Grass, Fair, 2-7%	0.20	8,712	36.36
I	5.76	8.57	10.11	12.54	15.93		0.00	0	0.00
Q	1.9	3.1	3.9	5.4	7.4	Total	0.55	23,958	100

Area: D

Event	2-yr	10-yr	25-yr	100-yr	500-yr	Surface	Acres	SF	%
Acres	0.43	0.43	0.43	0.43	0.43	Asphalt	0.29	12,632	67.44
C	0.66	0.73	0.78	0.86	0.92	Concrete	0.05	2,178	11.63
Tc	5.00	5.00	5.00	5.00	5.00	Grass, Fair, >7%	0.09	3,920	20.93
I	5.76	8.57	10.11	12.54	15.93		0.00	0	0.00
Q	1.6	2.7	3.4	4.7	6.3	Total	0.43	18,731	100

STM CB-C-E2 NETWORK

Area: CB-C-NE

Event	2-yr	10-yr	25-yr	100-yr	500-yr	Surface	Acres	SF	%
Acres	0.76	0.76	0.76	0.76	0.76	Concrete	0.76	33,106	100.00
C	0.75	0.83	0.88	0.97	1.00		0.00	0	0.00
Tc	5.00	5.00	5.00	5.00	5.00		0.00	0	0.00
I	5.76	8.57	10.11	12.54	15.93		0.00	0	0.00
Q	3.3	5.4	6.8	9.2	12.1	Total	0.76	33,106	100

Area: RD2-N

Event	2-yr	10-yr	25-yr	100-yr	500-yr	Surface	Acres	SF	%
Acres	0.69	0.69	0.69	0.69	0.69	Concrete	0.69	30,056	100.00
C	0.75	0.83	0.88	0.97	1.00		0.00	0	0.00
Tc	5.00	5.00	5.00	5.00	5.00		0.00	0	0.00
I	5.76	8.57	10.11	12.54	15.93		0.00	0	0.00
Q	3.0	4.9	6.1	8.4	11.0	Total	0.69	30,056	100

Area: B-3

Event	2-yr	10-yr	25-yr	100-yr	500-yr	Surface	Acres	SF	%
Acres	1.57	1.57	1.57	1.57	1.57	Concrete	0.95	41,382	60.51
C	0.58	0.65	0.70	0.78	0.83	Grass, Fair, 2-7%	0.62	27,007	39.49
Tc	5.00	5.00	5.00	5.00	5.00		0.00	0	0.00
I	5.76	8.57	10.11	12.54	15.93		0.00	0	0.00
Q	5.3	8.8	11.1	15.4	20.9	Total	1.57	68,389	100

Area: J-2

Event	2-yr	10-yr	25-yr	100-yr	500-yr	Surface	Acres	SF	%
Acres	0.20	0.20	0.20	0.20	0.20	Concrete	0.07	3,049	35.00
C	0.48	0.54	0.58	0.66	0.73	Grass, Fair, 2-7%	0.13	5,663	65.00
Tc	5.00	5.00	5.00	5.00	5.00		0.00	0	0.00
I	5.76	8.57	10.11	12.54	15.93		0.00	0	0.00
Q	0.5	0.9	1.2	1.7	2.3	Total	0.20	8,712	100

Area: J-1

Event	2-yr	10-yr	25-yr	100-yr	500-yr	Surface	Acres	SF	%
Acres	0.52	0.52	0.52	0.52	0.52	Concrete	0.24	10,454	46.15
C	0.52	0.59	0.63	0.71	0.77	Grass, Fair, 2-7%	0.28	12,197	53.85
Tc	5.00	5.00	5.00	5.00	5.00		0.00	0	0.00
I	5.76	8.57	10.11	12.54	15.93		0.00	0	0.00
Q	1.6	2.6	3.3	4.6	6.4	Total	0.52	22,651	100

Area: J-3

Event	2-yr	10-yr	25-yr	100-yr	500-yr	Surface	Acres	SF	%
Acres	0.81	0.81	0.81	0.81	0.81	Concrete	0.36	15,682	44.44
C	0.52	0.58	0.62	0.70	0.77	Grass, Fair, 2-7%	0.45	19,602	55.56
Tc	5.00	5.00	5.00	5.00	5.00		0.00	0	0.00
I	5.76	8.57	10.11	12.54	15.93		0.00	0	0.00
Q	2.4	4.0	5.1	7.1	9.9	Total	0.81	35,284	100

Area: CB-C-E2

Event	2-yr	10-yr	25-yr	100-yr	500-yr	Surface	Acres	SF	%
Acres	0.25	0.25	0.25	0.25	0.25	Asphalt	0.03	1,307	12.00
C	0.48	0.54	0.58	0.66	0.73	Concrete	0.06	2,614	24.00
Tc	5.00	5.00	5.00	5.00	5.00	Grass, Fair, 2-7%	0.16	6,970	64.00
I	5.76	8.57	10.11	12.54	15.93		0.00	0	0.00
Q	0.7	1.2	1.5	2.1	2.9	Total	0.25	10,890	100

STM E NETWORK

Area: A-1

Event	2-yr	10-yr	25-yr	100-yr	500-yr	Surface	Acres	SF	%
Acres	0.47	0.47	0.47	0.47	0.47	Asphalt	0.31	13,504	65.96
C	0.67	0.74	0.79	0.88	0.93	Concrete	0.08	3,485	17.02
Tc	5.00	5.00	5.00	5.00	5.00	Grass, Fair, 2-7%	0.08	3,485	17.02
I	5.76	8.57	10.11	12.54	15.93		0.00	0	0.00
Q	1.8	3.0	3.7	5.2	6.9	Total	0.47	20,473	100

Area: B4-NE

Event	2-yr	10-yr	25-yr	100-yr	500-yr	Surface	Acres	SF	%
Acres	0.49	0.49	0.49	0.49	0.49	Concrete	0.49	21,344	100.00
C	0.75	0.83	0.88	0.97	1.00		0.00	0	0.00
Tc	5.00	5.00	5.00	5.00	5.00		0.00	0	0.00
I	5.76	8.57	10.11	12.54	15.93		0.00	0	0.00
Q	2.1	3.5	4.4	6.0	7.8	Total	0.49	21,344	100

Area: PG3-S

Event	2-yr	10-yr	25-yr	100-yr	500-yr	Surface	Acres	SF	%
Acres	0.69	0.69	0.69	0.69	0.69	Asphalt	0.14	6,098	20.29
C	0.58	0.65	0.70	0.78	0.84	Concrete	0.28	12,197	40.58
Tc	5.00	5.00	5.00	5.00	5.00	Grass, Fair, 2-7%	0.27	11,761	39.13
I	5.76	8.57	10.11	12.54	15.93		0.00	0	0.00
Q	2.3	3.8	4.9	6.7	9.2	Total	0.69	30,056	100

Area: I-4

Event	2-yr	10-yr	25-yr	100-yr	500-yr	Surface	Acres	SF	%
Acres	0.27	0.27	0.27	0.27	0.27	Concrete	0.08	3,485	29.63
C	0.45	0.51	0.56	0.63	0.70	Grass, Fair, 2-7%	0.19	8,276	70.37
Tc	5.00	5.00	5.00	5.00	5.00		0.00	0	0.00
I	5.76	8.57	10.11	12.54	15.93		0.00	0	0.00
Q	0.7	1.2	1.5	2.1	3.0	Total	0.27	11,761	100

Area: B-7

Event	2-yr	10-yr	25-yr	100-yr	500-yr	Surface	Acres	SF	%
Acres	0.30	0.30	0.30	0.30	0.30	Concrete	0.16	6,970	53.33
C	0.55	0.62	0.67	0.75	0.80	Grass, Fair, 2-7%	0.14	6,098	46.67
Tc	5.00	5.00	5.00	5.00	5.00		0.00	0	0.00
I	5.76	8.57	10.11	12.54	15.93		0.00	0	0.00
Q	1.0	1.6	2.0	2.8	3.8	Total	0.30	13,068	100

Area: BMR-S

Event	2-yr	10-yr	25-yr	100-yr	500-yr	Surface	Acres	SF	%
Acres	0.59	0.59	0.59	0.59	0.59	Concrete	0.59	25,700	100.00
C	0.75	0.83	0.88	0.97	1.00		0.00	0	0.00
Tc	5.00	5.00	5.00	5.00	5.00		0.00	0	0.00
I	5.76	8.57	10.11	12.54	15.93		0.00	0	0.00
Q	2.5	4.2	5.2	7.2	9.4	Total	0.59	25,700	100

Area: RD3-NW

Event	2-yr	10-yr	25-yr	100-yr	500-yr	Surface	Acres	SF	%
Acres	0.45	0.45	0.45	0.45	0.45	Concrete	0.25	10,890	55.56
C	0.56	0.63	0.68	0.76	0.81	Grass, Fair, 2-7%	0.20	8,712	44.44
Tc	5.00	5.00	5.00	5.00	5.00		0.00	0	0.00
I	5.76	8.57	10.11	12.54	15.93		0.00	0	0.00
Q	1.5	2.4	3.1	4.3	5.8	Total	0.45	19,602	100

Area: RD2-NW

Event	2-yr	10-yr	25-yr	100-yr	500-yr	Surface	Acres	SF	%
Acres	0.74	0.74	0.74	0.74	0.74	Asphalt	0.26	11,326	35.14
C	0.51	0.57	0.62	0.70	0.77	Concrete	0.07	3,049	9.46
Tc	5.00	5.00	5.00	5.00	5.00	Grass, Fair, 2-7%	0.41	17,860	55.41
I	5.76	8.57	10.11	12.54	15.93		0.00	0	0.00
Q	2.2	3.6	4.6	6.5	9.0	Total	0.74	32,234	100

Area: RD2-NE

Event	2-yr	10-yr	25-yr	100-yr	500-yr	Surface	Acres	SF	%
Acres	0.69	0.69	0.69	0.69	0.69	Concrete	0.69	30,056	100.00
C	0.75	0.83	0.88	0.97	1.00		0.00	0	0.00
Tc	5.00	5.00	5.00	5.00	5.00		0.00	0	0.00
I	5.76	8.57	10.11	12.54	15.93		0.00	0	0.00
Q	3.0	4.9	6.1	8.4	11.0	Total	0.69	30,056	100

Area: E-1

Event	2-yr	10-yr	25-yr	100-yr	500-yr	Surface	Acres	SF	%
Acres	0.96	0.96	0.96	0.96	0.96	Asphalt	0.31	13,504	32.29
C	0.54	0.60	0.65	0.73	0.79	Concrete	0.18	7,841	18.75
Tc	5.00	5.00	5.00	5.00	5.00	Grass, Fair, 2-7%	0.47	20,473	48.96
I	5.76	8.57	10.11	12.54	15.93		0.00	0	0.00
Q	3.0	5.0	6.3	8.8	12.1	Total	0.96	41,818	100

Area: E-3B

Event	2-yr	10-yr	25-yr	100-yr	500-yr	Surface	Acres	SF	%
Acres	0.46	0.46	0.46	0.46	0.46	Asphalt	0.46	20,038	100.00
C	0.73	0.81	0.86	0.95	1.00		0.00	0	0.00
Tc	5.00	5.00	5.00	5.00	5.00		0.00	0	0.00
I	5.76	8.57	10.11	12.54	15.93		0.00	0	0.00
Q	1.9	3.2	4.0	5.5	7.3	Total	0.46	20,038	100

Area: E-3C

Event	2-yr	10-yr	25-yr	100-yr	500-yr	Surface	Acres	SF	%
Acres	0.72	0.72	0.72	0.72	0.72	Asphalt	0.72	31,363	100.00
C	0.73	0.81	0.86	0.95	1.00		0.00	0	0.00
Tc	5.00	5.00	5.00	5.00	5.00		0.00	0	0.00
I	5.76	8.57	10.11	12.54	15.93		0.00	0	0.00
Q	3.0	5.0	6.3	8.6	11.5	Total	0.72	31,363	100

Area: CB-C-E

Event	2-yr	10-yr	25-yr	100-yr	500-yr	Surface	Acres	SF	%
Acres	0.76	0.76	0.76	0.76	0.76	Concrete	0.76	33,106	100.00
C	0.75	0.83	0.88	0.97	1.00		0.00	0	0.00
Tc	5.00	5.00	5.00	5.00	5.00		0.00	0	0.00
I	5.76	8.57	10.11	12.54	15.93		0.00	0	0.00
Q	3.3	5.4	6.8	9.2	12.1	Total	0.76	33,106	100

Area: PG2-NW

Event	2-yr	10-yr	25-yr	100-yr	500-yr	Surface	Acres	SF	%
Acres	0.98	0.98	0.98	0.98	0.98	Concrete	0.98	42,689	100.00
C	0.75	0.83	0.88	0.97	1.00		0.00	0	0.00
Tc	5.00	5.00	5.00	5.00	5.00		0.00	0	0.00
I	5.76	8.57	10.11	12.54	15.93		0.00	0	0.00
Q	4.2	7.0	8.7	11.9	15.6	Total	0.98	42,689	100

Area: PG2-N

Event	2-yr	10-yr	25-yr	100-yr	500-yr	Surface	Acres	SF	%
Acres	0.98	0.98	0.98	0.98	0.98	Concrete	0.98	42,689	100.00
C	0.75	0.83	0.88	0.97	1.00		0.00	0	0.00
Tc	5.00	5.00	5.00	5.00	5.00		0.00	0	0.00
I	5.76	8.57	10.11	12.54	15.93		0.00	0	0.00
Q	4.2	7.0	8.7	11.9	15.6	Total	0.98	42,689	100

Area: PG2-NE

Event	2-yr	10-yr	25-yr	100-yr	500-yr	Surface	Acres	SF	%
Acres	0.98	0.98	0.98	0.98	0.98	Concrete	0.98	42,689	100.00
C	0.75	0.83	0.88	0.97	1.00		0.00	0	0.00
Tc	5.00	5.00	5.00	5.00	5.00		0.00	0	0.00
I	5.76	8.57	10.11	12.54	15.93		0.00	0	0.00
Q	4.2	7.0	8.7	11.9	15.6	Total	0.98	42,689	100

Area: PG3-NW

Event	2-yr	10-yr	25-yr	100-yr	500-yr	Surface	Acres	SF	%
Acres	1.27	1.27	1.27	1.27	1.27	Asphalt	0.40	17,424	31.50
C	0.49	0.55	0.59	0.67	0.75	Concrete	0.10	4,356	7.87
Tc	5.00	5.00	5.00	5.00	5.00	Grass, Fair, 2-7%	0.77	33,541	60.63
I	5.76	8.57	10.11	12.54	15.93		0.00	0	0.00
Q	3.6	6.0	7.6	10.7	15.1	Total	1.27	55,321	100

Area: PG2-S

Event	2-yr	10-yr	25-yr	100-yr	500-yr	Surface	Acres	SF	%
Acres	0.67	0.67	0.67	0.67	0.67	Asphalt	0.28	12,197	41.79
C	0.58	0.65	0.69	0.78	0.84	Concrete	0.13	5,663	19.40
Tc	5.00	5.00	5.00	5.00	5.00	Grass, Fair, 2-7%	0.26	11,326	38.81
I	5.76	8.57	10.11	12.54	15.93		0.00	0	0.00
Q	2.2	3.7	4.7	6.5	8.9	Total	0.67	29,185	100

Area: CP

Event	2-yr	10-yr	25-yr	100-yr	500-yr	Surface	Acres	SF	%
Acres	1.47	1.47	1.47	1.47	1.47	Asphalt	0.06	2,614	4.08
C	0.40	0.46	0.50	0.57	0.65	Concrete	0.19	8,276	12.93
Tc	5.00	5.00	5.00	5.00	5.00	Grass, Fair, 2-7%	1.22	53,143	82.99
I	5.76	8.57	10.11	12.54	15.93		0.00	0	0.00
Q	3.4	5.7	7.4	10.5	15.2	Total	1.47	64,033	100

Area: E-2

Event	2-yr	10-yr	25-yr	100-yr	500-yr	Surface	Acres	SF	%
Acres	0.34	0.34	0.34	0.34	0.34	Concrete	0.27	11,761	79.60
C	0.60	0.66	0.70	0.77	0.80		0.00	0	0.00
Tc	5.00	5.00	5.00	5.00	5.00		0.07	3,014	20.40
I	5.76	8.57	10.11	12.54	15.93		0.00	0	0.00
Q	1.2	1.9	2.4	3.3	4.3	Total	0.34	14,775	100

Area: DC-N

Event	2-yr	10-yr	25-yr	100-yr	500-yr	Surface	Acres	SF	%
Acres	0.27	0.27	0.27	0.27	0.27	Concrete	0.27	11,761	100.00
C	0.75	0.83	0.88	0.97	1.00		0.00	0	0.00
Tc	5.00	5.00	5.00	5.00	5.00		0.00	0	0.00
I	5.76	8.57	10.11	12.54	15.93		0.00	0	0.00
Q	1.2	1.9	2.4	3.3	4.3	Total	0.27	11,761	100

Area: C-2

Event	2-yr	10-yr	25-yr	100-yr	500-yr	Surface	Acres	SF	%
Acres	0.95	0.95	0.95	0.95	0.95	Asphalt	0.52	22,651	54.74
C	0.62	0.69	0.74	0.82	0.88	Concrete	0.16	6,970	16.84
Tc	5.00	5.00	5.00	5.00	5.00	Grass, Fair, 2-7%	0.27	11,761	28.42
I	5.76	8.57	10.11	12.54	15.93		0.00	0	0.00
Q	3.4	5.6	7.1	9.8	13.3	Total	0.95	41,382	100

Area: LOAD

Event	2-yr	10-yr	25-yr	100-yr	500-yr	Surface	Acres	SF	%
Acres	0.88	0.88	0.88	0.88	0.88	Asphalt	0.79	34,412	89.77
C	0.72	0.80	0.85	0.93	0.99	Concrete	0.06	2,614	6.82
Tc	5.00	5.00	5.00	5.00	5.00	Grass, Good, 2-7%	0.03	1,307	3.41
I	5.76	8.57	10.11	12.54	15.93		0.00	0	0.00
Q	3.6	6.0	7.5	10.3	13.8	Total	0.88	38,333	100

Area: PG1-S

Event	2-yr	10-yr	25-yr	100-yr	500-yr	Surface	Acres	SF	%
Acres	1.50	1.50	1.50	1.50	1.50	Asphalt	0.36	15,682	24.00
C	0.43	0.48	0.53	0.60	0.68	Grass, Fair, 2-7%	1.14	49,658	76.00
Tc	5.00	5.00	5.00	5.00	5.00		0.00	0	0.00
I	5.76	8.57	10.11	12.54	15.93		0.00	0	0.00
Q	3.7	6.2	8.0	11.3	16.3	Total	1.50	65,340	100

STM F NETWORK

Area: F-1

Event	2-yr	10-yr	25-yr	100-yr	500-yr	Surface	Acres	SF	%
Acres	0.77	0.77	0.77	0.77	0.77	Concrete	0.45	19,602	58.44
C	0.62	0.69	0.74	0.82	0.88	Asphalt	0.12	5,227	15.58
Tc	5.00	5.00	5.00	5.00	5.00	Grass, Fair, 0-2%	0.20	8,712	25.97
I	5.76	8.57	10.11	12.54	15.93		0.00	0	0.00
Q	2.7	4.5	5.7	7.9	10.8	Total	0.77	33,541	100

Area: B5-NW

Event	2-yr	10-yr	25-yr	100-yr	500-yr	Surface	Acres	SF	%
Acres	0.50	0.50	0.50	0.50	0.50	Concrete	0.50	21,780	100.00
C	0.75	0.83	0.88	0.97	1.00		0.00	0	0.00
Tc	5.00	5.00	5.00	5.00	5.00		0.00	0	0.00
I	5.76	8.57	10.11	12.54	15.93		0.00	0	0.00
Q	2.2	3.6	4.4	6.1	8.0	Total	0.50	21,780	100

Area: B5-NE

Event	2-yr	10-yr	25-yr	100-yr	500-yr	Surface	Acres	SF	%
Acres	0.50	0.50	0.50	0.50	0.50	Concrete	0.50	21,780	100.00
C	0.75	0.83	0.88	0.97	1.00		0.00	0	0.00
Tc	5.00	5.00	5.00	5.00	5.00		0.00	0	0.00
I	5.76	8.57	10.11	12.54	15.93		0.00	0	0.00
Q	2.2	3.6	4.4	6.1	8.0	Total	0.50	21,780	100

Area: F-2

Event	2-yr	10-yr	25-yr	100-yr	500-yr	Surface	Acres	SF	%
Acres	1.13	1.13	1.13	1.13	1.13	Asphalt	0.52	22,651	46.02
C	0.52	0.58	0.63	0.71	0.78	Concrete	0.01	436	0.88
Tc	5.00	5.00	5.00	5.00	5.00	Grass, Fair, 2-7%	0.60	26,136	53.10
I	5.76	8.57	10.11	12.54	15.93		0.00	0	0.00
Q	3.4	5.6	7.2	10.0	14.0	Total	1.13	49,223	100

Area: F-3

Event	2-yr	10-yr	25-yr	100-yr	500-yr	Surface	Acres	SF	%
Acres	0.55	0.55	0.55	0.55	0.55	Concrete	0.02	871	3.64
C	0.35	0.40	0.44	0.51	0.60	Grass, Fair, 2-7%	0.53	23,087	96.36
Tc	5.00	5.00	5.00	5.00	5.00		0.00	0	0.00
I	5.76	8.57	10.11	12.54	15.93		0.00	0	0.00
Q	1.1	1.9	2.4	3.5	5.2	Total	0.55	23,958	100

Area: BYPASS2

Event	2-yr	10-yr	25-yr	100-yr	500-yr	Surface	Acres	SF	%
Acres	0.74	0.74	0.74	0.74	0.74	Concrete	0.33	14,375	44.59
C	0.52	0.58	0.63	0.70	0.77	Grass, Fair, 2-7%	0.41	17,860	55.41
Tc	5.00	5.00	5.00	5.00	5.00		0.00	0	0.00
I	5.76	8.57	10.11	12.54	15.93		0.00	0	0.00
Q	2.2	3.7	4.7	6.5	9.0	Total	0.74	32,234	100

Area: B6-SW

Event	2-yr	10-yr	25-yr	100-yr	500-yr	Surface	Acres	SF	%
Acres	1.10	1.10	1.10	1.10	1.10	Concrete	1.10	47,916	100.00
C	0.75	0.83	0.88	0.97	1.00		0.00	0	0.00
Tc	5.00	5.00	5.00	5.00	5.00		0.00	0	0.00
I	5.76	8.57	10.11	12.54	15.93		0.00	0	0.00
Q	4.7	7.8	9.8	13.4	17.5	Total	1.10	47,916	100

#VALUE!

Area: B-1

Event	2-yr	10-yr	25-yr	100-yr	500-yr	Surface	Acres	SF	%
Acres	0.15	0.15	0.15	0.15	0.15	Grass, Fair, 2-7%	0.09	3,920	60.00
C	0.50	0.56	0.60	0.68	0.75	Concrete	0.06	2,614	40.00
Tc	5.00	5.00	5.00	5.00	5.00		0.00	0	0.00
I	5.76	8.57	10.11	12.54	15.93		0.00	0	0.00
Q	0.4	0.7	0.9	1.3	1.8	Total	0.15	6,534	100

Area: B-2

Event	2-yr	10-yr	25-yr	100-yr	500-yr	Surface	Acres	SF	%
Acres	1.03	1.03	1.03	1.03	1.03	Asphalt	0.27	11,761	26.21
C	0.51	0.57	0.62	0.69	0.76	Concrete	0.18	7,841	17.48
Tc	5.00	5.00	5.00	5.00	5.00	Grass, Fair, 2-7%	0.58	25,265	56.31
I	5.76	8.57	10.11	12.54	15.93		0.00	0	0.00
Q	3.0	5.0	6.4	9.0	12.5	Total	1.03	44,867	100

Area: RD3-NE

Event	2-yr	10-yr	25-yr	100-yr	500-yr	Surface	Acres	SF	%
Acres	1.02	1.02	1.02	1.02	1.02	Concrete	1.02	44,431	100.00
C	0.75	0.83	0.88	0.97	1.00		0.00	0	0.00
Tc	5.00	5.00	5.00	5.00	5.00		0.00	0	0.00
I	5.76	8.57	10.11	12.54	15.93		0.00	0	0.00
Q	4.4	7.3	9.1	12.4	16.2	Total	1.02	44,431	100

Area: F-4

Event	2-yr	10-yr	25-yr	100-yr	500-yr	Surface	Acres	SF	%
Acres	1.00	1.00	1.00	1.00	1.00	Asphalt	0.65	28,314	65.00
C	0.64	0.72	0.77	0.85	0.91	Concrete	0.13	5,663	13.00
Tc	5.00	5.00	5.00	5.00	5.00	Grass, Fair, 2-7%	0.22	9,583	22.00
I	5.76	8.57	10.11	12.54	15.93		0.00	0	0.00
Q	3.7	6.2	7.7	10.7	14.5	Total	1.00	43,560	100

Area: F-5

Event	2-yr	10-yr	25-yr	100-yr	500-yr	Surface	Acres	SF	%
Acres	0.75	0.75	0.75	0.75	0.75	Asphalt	0.75	32,670	100.00
C	0.73	0.81	0.86	0.95	1.00		0.00	0	0.00
Tc	5.00	5.00	5.00	5.00	5.00		0.00	0	0.00
I	5.76	8.57	10.11	12.54	15.93		0.00	0	0.00
Q	3.2	5.2	6.5	8.9	11.9	Total	0.75	32,670	100

Area: PG3-NE

Event	2-yr	10-yr	25-yr	100-yr	500-yr	Surface	Acres	SF	%
Acres	2.00	2.00	2.00	2.00	2.00	Concrete	2.00	87,120	100.00
C	0.75	0.83	0.88	0.97	1.00		0.00	0	0.00
Tc	5.00	5.00	5.00	5.00	5.00		0.00	0	0.00
I	5.76	8.57	10.11	12.54	15.93		0.00	0	0.00
Q	8.6	14.2	17.8	24.3	31.9	Total	2.00	87,120	100

Area: F-6

Event	2-yr	10-yr	25-yr	100-yr	500-yr	Surface	Acres	SF	%
Acres	0.08	0.08	0.08	0.08	0.08	Asphalt	0.07	3,049	87.50
C	0.68	0.76	0.81	0.89	0.95	Grass, Fair, 2-7%	0.01	436	12.50
Tc	5.00	5.00	5.00	5.00	5.00		0.00	0	0.00
I	5.76	8.57	10.11	12.54	15.93		0.00	0	0.00
Q	0.3	0.5	0.7	0.9	1.2	Total	0.08	3,485	100

FOR CITY USE ONLY:

REVISION

NO. DATE

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STATE OF TEXAS
ALEXANDRA A. BOONE
138951
LICENSED
PROFESSIONAL ENGINEER
Alexandra Boone
03/29/2024

INLET CALCULATIONS 1 OF 2

CAPSTONE
6900 W. PARMER LANE

APPLE INC.

DRAWN BY: SPM

DESIGNED BY: ANG, IHR, HCH

QA / QC: JDP

PROJECT NO.: 101649.00031

STM F NETWORK

Area:	F-7								
Event	2-yr	10-yr	25-yr	100-yr	500-yr	Surface	Acres	SF	%
Acres	0.12	0.12	0.12	0.12	0.12	*Concrete*	0.12	5,140	100.00
C	0.75	0.83	0.88	0.97	1.00		0.00	0	0.00
Tc	5.00	5.00	5.00	5.00	5.00		0.00	0	0.00
I	5.76	8.57	10.11	12.54	15.93		0.00	0	0.00
Q	**0.5**	**0.8**	**1.0**	**1.4**	**1.9**	**Total**	**0.12**	**5,140**	**100**

Area:	F-8								
Event	2-yr	10-yr	25-yr	100-yr	500-yr	Surface	Acres	SF	%
Acres	0.07	0.07	0.07	0.07	0.07	*Asphalt*	0.05	2,178	71.43
C	0.62	0.69	0.73	0.82	0.88	*Grass, Fair, 2-7%*	0.02	871	28.57
Tc	5.00	5.00	5.00	5.00	5.00		0.00	0	0.00
I	5.76	8.57	10.11	12.54	15.93		0.00	0	0.00
Q	**0.2**	**0.4**	**0.5**	**0.7**	**1.0**	**Total**	**0.07**	**3,049**	**100**

Area:	F-9								
Event	2-yr	10-yr	25-yr	100-yr	500-yr	Surface	Acres	SF	%
Acres	0.07	0.07	0.07	0.07	0.07	*Asphalt*	0.05	2,178	71.43
C	0.62	0.69	0.73	0.82	0.88	*Grass, Fair, 2-7%*	0.02	871	28.57
Tc	5.00	5.00	5.00	5.00	5.00		0.00	0	0.00
I	5.76	8.57	10.11	12.54	15.93		0.00	0	0.00
Q	**0.2**	**0.4**	**0.5**	**0.7**	**1.0**	**Total**	**0.07**	**3,049**	**100**

Area:	F-10								
Event	2-yr	10-yr	25-yr	100-yr	500-yr	Surface	Acres	SF	%
Acres	0.07	0.07	0.07	0.07	0.07	*Asphalt*	0.06	2,614	85.71
C	0.67	0.75	0.80	0.88	0.94	*Grass, Fair, 2-7%*	0.01	436	14.29
Tc	5.00	5.00	5.00	5.00	5.00		0.00	0	0.00
I	5.76	8.57	10.11	12.54	15.93		0.00	0	0.00
Q	**0.3**	**0.4**	**0.6**	**0.8**	**1.0**	**Total**	**0.07**	**3,049**	**100**

Area:	F-11								
Event	2-yr	10-yr	25-yr	100-yr	500-yr	Surface	Acres	SF	%
Acres	0.10	0.10	0.10	0.10	0.10	*Asphalt*	0.08	3,485	80.00
C	0.65	0.72	0.77	0.86	0.92	*Grass, Fair, 2-7%*	0.02	871	20.00
Tc	5.00	5.00	5.00	5.00	5.00		0.00	0	0.00
I	5.76	8.57	10.11	12.54	15.93		0.00	0	0.00
Q	**0.4**	**0.6**	**0.8**	**1.1**	**1.5**	**Total**	**0.10**	**4,356**	**100**

Area:	F-12								
Event	2-yr	10-yr	25-yr	100-yr	500-yr	Surface	Acres	SF	%
Acres	0.20	0.20	0.20	0.20	0.20	*Asphalt*	0.16	6,970	80.00
C	0.65	0.72	0.77	0.86	0.92	*Grass, Fair, 2-7%*	0.04	1,742	20.00
Tc	5.00	5.00	5.00	5.00	5.00		0.00	0	0.00
I	5.76	8.57	10.11	12.54	15.93		0.00	0	0.00
Q	**0.7**	**1.2**	**1.6**	**2.2**	**2.9**	**Total**	**0.20**	**8,712**	**100**

Area:	G-1W								
Event	2-yr	10-yr	25-yr	100-yr	500-yr	Surface	Acres	SF	%
Acres	0.45	0.45	0.45	0.45	0.45	*Grass, Fair, 2-7%*	0.45	19,602	100.00
C	0.33	0.38	0.42	0.49	0.58		0.00	0	0.00
Tc	5.00	5.00	5.00	5.00	5.00		0.00	0	0.00
I	5.76	8.57	10.11	12.54	15.93		0.00	0	0.00
Q	**0.9**	**1.5**	**1.9**	**2.8**	**4.2**	**Total**	**0.45**	**19,602**	**100**

Area:	G-1E								
Event	2-yr	10-yr	25-yr	100-yr	500-yr	Surface	Acres	SF	%
Acres	0.30	0.30	0.30	0.30	0.30	*Grass, Fair, 2-7%*	0.30	13,068	100.00
C	0.33	0.38	0.42	0.49	0.58		0.00	0	0.00
Tc	5.00	5.00	5.00	5.00	5.00		0.00	0	0.00
I	5.76	8.57	10.11	12.54	15.93		0.00	0	0.00
Q	**0.6**	**1.0**	**1.3**	**1.8**	**2.8**	**Total**	**0.30**	**13,068**	**100**

Area:	G3-N								
Event	2-yr	10-yr	25-yr	100-yr	500-yr	Surface	Acres	SF	%
Acres	1.35	1.35	1.35	1.35	1.35	*Concrete*	1.35	58,588	100.00
C	0.75	0.83	0.88	0.97	1.00		0.00	0	0.00
Tc	5.00	5.00	5.00	5.00	5.00		0.00	0	0.00
I	5.76	8.57	10.11	12.54	15.93		0.00	0	0.00
Q	**5.8**	**9.6**	**12.0**	**16.4**	**21.4**	**Total**	**1.35**	**58,588**	**100**

STM J NETWORK

Area:	G3-S								
Event	2-yr	10-yr	25-yr	100-yr	500-yr	Surface	Acres	SF	%
Acres	1.54	1.54	1.54	1.54	1.54	*Concrete*	1.54	67,170	100.00
C	0.75	0.83	0.88	0.97	1.00		0.00	0	0.00
Tc	5.00	5.00	5.00	5.00	5.00		0.00	0	0.00
I	5.76	8.57	10.11	12.54	15.93		0.00	0	0.00
Q	**6.7**	**11.0**	**13.7**	**18.8**	**24.6**	**Total**	**1.54**	**67,170**	**100**

Area:	H-1								
Event	2-yr	10-yr	25-yr	100-yr	500-yr	Surface	Acres	SF	%
Acres	2.11	2.11	2.11	2.11	2.11	*Grass, Good, 2-7%*	2.11	91,912	100.00
C	0.29	0.35	0.39	0.46	0.56		0.00	0	0.00
Tc	5.00	5.00	5.00	5.00	5.00		0.00	0	0.00
I	5.76	8.57	10.11	12.54	15.93		0.00	0	0.00
Q	**3.5**	**6.3**	**8.3**	**12.2**	**18.8**	**Total**	**2.11**	**91,912**	**100**

Area:	J-1								
Event	2-yr	10-yr	25-yr	100-yr	500-yr	Surface	Acres	SF	%
Acres	2.87	2.87	2.87	2.87	2.87	*Grass, Fair, 2-7%*	2.87	124,974	100.00
C	0.33	0.38	0.42	0.49	0.58		0.00	0	0.00
Tc	5.00	5.00	5.00	5.00	5.00		0.00	0	0.00
I	5.76	8.57	10.11	12.54	15.93		0.00	0	0.00
Q	**5.4**	**9.3**	**12.2**	**17.6**	**26.5**	**Total**	**2.87**	**124,974**	**100**

Area:	J-2								
Event	2-yr	10-yr	25-yr	100-yr	500-yr	Surface	Acres	SF	%
Acres	0.11	0.11	0.11	0.11	0.11	*Concrete*	0.11	4,792	100.00
C	0.75	0.83	0.88	0.97	1.00		0.00	0	0.00
Tc	5.00	5.00	5.00	5.00	5.00		0.00	0	0.00
I	5.76	8.57	10.11	12.54	15.93		0.00	0	0.00
Q	**0.5**	**0.8**	**1.0**	**1.3**	**1.8**	**Total**	**0.11**	**4,792**	**100**

Area:	J-3								
Event	2-yr	10-yr	25-yr	100-yr	500-yr	Surface	Acres	SF	%
Acres	0.10	0.10	0.10	0.10	0.10	*Concrete*	0.10	4,312	100.00
C	0.75	0.83	0.88	0.97	1.00		0.00	0	0.00
Tc	5.00	5.00	5.00	5.00	5.00		0.00	0	0.00
I	5.76	8.57	10.11	12.54	15.93		0.00	0	0.00
Q	**0.4**	**0.7**	**0.9**	**1.2**	**1.6**	**Total**	**0.10**	**4,312**	**100**

Area:	J-4								
Event	2-yr	10-yr	25-yr	100-yr	500-yr	Surface	Acres	SF	%
Acres	0.14	0.14	0.14	0.14	0.14	*Concrete*	0.14	5,881	100.00
C	0.75	0.83	0.88	0.97	1.00		0.00	0	0.00
Tc	5.00	5.00	5.00	5.00	5.00		0.00	0	0.00
I	5.76	8.57	10.11	12.54	15.93		0.00	0	0.00
Q	**0.6**	**1.0**	**1.2**	**1.6**	**2.1**	**Total**	**0.14**	**5,881**	**100**

Area:	J-5								
Event	2-yr	10-yr	25-yr	100-yr	500-yr	Surface	Acres	SF	%
Acres	0.13	0.13	0.13	0.13	0.13	*Concrete*	0.13	5,619	100.00
C	0.75	0.83	0.88	0.97	1.00		0.00	0	0.00
Tc	5.00	5.00	5.00	5.00	5.00		0.00	0	0.00
I	5.76	8.57	10.11	12.54	15.93		0.00	0	0.00
Q	**0.6**	**0.9**	**1.1**	**1.6**	**2.1**	**Total**	**0.13**	**5,619**	**100**

Area:	J-6								
Event	2-yr	10-yr	25-yr	100-yr	500-yr	Surface	Acres	SF	%
Acres	0.25	0.25	0.25	0.25	0.25	*Asphalt*	0.25	10,846	100.00
C	0.73	0.81	0.86	0.95	1.00		0.00	0	0.00
Tc	5.00	5.00	5.00	5.00	5.00		0.00	0	0.00
I	5.76	8.57	10.11	12.54	15.93		0.00	0	0.00
Q	**1.0**	**1.7**	**2.2**	**3.0**	**4.0**	**Total**	**0.25**	**10,846**	**100**

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REVISION | NO | DATE

STATE OF TEXAS
ALEXANDRA A. BOONE
138951
LICENSED
PROFESSIONAL ENGINEER
Alexandra Boone
03/29/2024

INLET CALCULATIONS 2 OF 2

CAPSTONE
6900 W. PARMER LANE

APPLE INC.

DRAWN BY: SPM
DESIGNED BY: ANG, IHR, HCH
QA / QC: JDP
PROJECT NO.: 101649.00031

SHEET
121
OF 238

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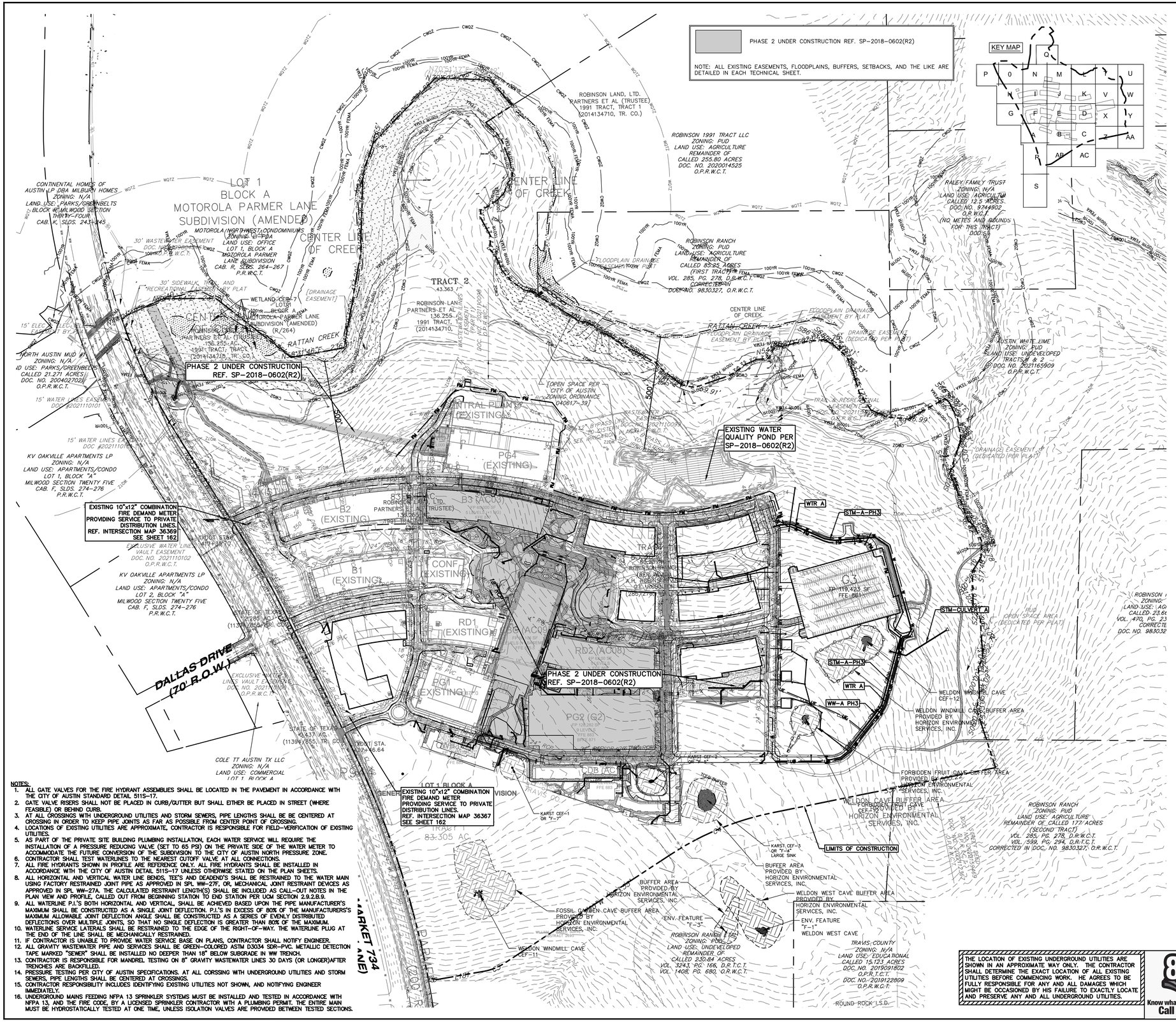

LEGEND

EXISTING	PROPOSED	DESCRIPTION
		PROPERTY LINE / R.O.W. LINE
(xxx)		RECORD INFORMATION
		LIGHT POLE
		GROUND LIGHT
		POWER POLE
		DOWN GUY
WTRMH		WATER MANHOLE
		WATER LINE MARKER
CMCR		UNDERGROUND CABLE MARKER
GMGR		UNDERGROUND GAS LINE MARKER
UGTM		UNDERGROUND TELEPHONE MARKER
GRSR		GAS RISER
TRSR		TELEPHONE RISER
SPC		SPRINKLER CONTROL BOX
	SW	SWITCH GEAR & PAD
	T	TRANSFORMER (SIZE VARIES)
		FIRE HYDRANT
		WATER VALVE
		WATER METER
		WATER METER VAULT (SIZE VARIES)
		CABLE TV RISER
	E	ELECTRIC BOX
		ELECTRIC METER
		GAS METER
		GAS VALVE
TSPC	TSP	TRAFFIC CONTROL BOX
TSPn	TSP	TRAFFIC SIGNAL POST
		GRATE INLET
	CI	CURB INLET (SIZE VARIES)
		GREASE TRAP (SIZE VARIES)
EMH		ELECTRIC MANHOLE (SIZE VARIES)
WWMH		WASTEWATER MANHOLE (SIZE VARIES)
SWMH		STORMSEWER MANHOLE (SIZE VARIES)
TMH	TMH	TELEPHONE MANHOLE (SIZE VARIES)
COn	CO	WASTEWATER CLEANOUT
x x	x x	WIRE FENCE
//	//	WOOD FENCE
o-o-o	o-o-o	CHAIN LINK FENCE
		CURB & GUTTER
		EDGE OF PAVEMENT
		CONCRETE SIDEWALKS
		WALL
		LIMITS OF CONSTRUCTION
678	678	CONTOUR
SS	SS	STORMSEWER LINE
W	W	WATER LINE
		FIRE LINE
WW	WW	WASTEWATER LINE
G	G	GAS LINE
UE	UE	UNDERGROUND ELECTRIC LINE
OE	OE	OVERHEAD ELECTRIC LINE
UT	UT	UNDERGROUND TELEPHONE LINE
UC	UC	UNDERGROUND CABLE AND INTERNET
U-COMM	U-COMM	UNDERGROUND TELECOMMUNICATIONS
	FFE	FINISH FLOOR ELEVATION
		TREE TO BE SAVED
		HERITAGE / MATURE TREE

CITY OF AUSTIN
WATER AND WASTEWATER UTILITY
SPECIAL SERVICES DIVISION
(512) 972-1060

AUSTIN WATER UTILITIES NOTES:

THIS PROJECT HAS PRIVATE HYDRANTS LOCATED WITHIN THE PROPERTY. THE PROPERTY OWNER IS REQUIRED TO COMPLY WITH AUSTIN FIRE CODE. FAILURE TO COMPLY MAY RESULT IN CIVIL AND/OR CRIMINAL REMEDIES AVAILABLE TO THE CITY. THE PERFORMANCE OF THIS OBLIGATION SHALL ALWAYS REST WITH THE OWNER OF RECORD. FIRE HYDRANTS ON PRIVATE PROPERTY ARE REQUIRED TO BE SERVICED, MAINTAINED AND FLOWED ANNUALLY, USING CONTRACTOR REGISTERED WITH THE CITY TO PROVIDE THE SERVICE. THIS PROJECT INCLUDES 28 PRIVATE HYDRANTS.

NOTES:
1. ALL GATE VALVES FOR THE FIRE HYDRANT ASSEMBLIES SHALL BE LOCATED IN THE PAVEMENT IN ACCORDANCE WITH THE CITY OF AUSTIN STANDARD DETAIL 511S-17.
2. GATE VALVE RISERS SHALL NOT BE PLACED IN CURB/GUTTER BUT SHALL EITHER BE PLACED IN STREET (WHERE FEASIBLE) OR BEHIND CURB.
3. AT ALL CROSSINGS WITH UNDERGROUND UTILITIES AND STORM SEWERS, PIPE LENGTHS SHALL BE BE CENTERED AT CROSSING IN ORDER TO KEEP PIPE JOINTS AS FAR AS POSSIBLE FROM CENTER POINT OF CROSSING.
4. LOCATIONS OF EXISTING UTILITIES ARE APPROXIMATE, CONTRACTOR IS RESPONSIBLE FOR FIELD-VERIFICATION OF EXISTING UTILITIES.
5. AS PART OF THE PRIVATE SITE BUILDING PLUMBING INSTALLATION, EACH WATER SERVICE WILL REQUIRE THE INSTALLATION OF A PRESSURE REDUCING VALVE (SET TO 65 PSI) ON THE PRIVATE SIDE OF THE WATER METER TO ACCOMMODATE THE FUTURE CONVERSION OF THE SUBDIVISION TO THE CITY OF AUSTIN NORTH PRESSURE ZONE.
6. CONTRACTOR SHALL TEST WATERLINES TO THE NEAREST CUTOFF VALVE AT ALL CONNECTIONS.
7. ALL FIRE HYDRANTS SHOWN IN PROFILE ARE REFERENCE ONLY. ALL FIRE HYDRANTS SHALL BE INSTALLED IN ACCORDANCE WITH THE CITY OF AUSTIN DETAIL 511S-17 UNLESS OTHERWISE STATED ON THE PLAN SHEETS.
8. ALL HORIZONTAL AND VERTICAL WATER LINE BENDS, TEE'S AND DEADEND'S SHALL BE RESTRAINED TO THE WATER MAIN USING FACTORY RESTRAINED JOINT PIPE AS APPROVED IN SPL WW-27F, OR, MECHANICAL JOINT RESTRAINT DEVICES AS APPROVED IN SPL WW-27A. THE CALCULATED RESTRAINT LENGTH(S) SHALL BE INCLUDED AS CALL-OUT NOTES IN THE PLAN VIEW AND PROFILE, CALLED OUT FROM BEGINNING STATION TO END STATION PER UCM SECTION 2.8.2.B.9.
9. ALL WATERLINE P.I.'S BOTH HORIZONTAL AND VERTICAL, SHALL BE ACHIEVED BASED UPON THE PIPE MANUFACTURER'S MAXIMUM SHALL BE CONSTRUCTED AS A SINGLE JOINT DEFLECTION. P.I.'S IN EXCESS OF 80% OF THE MANUFACTURER'S MAXIMUM ALLOWABLE JOINT DEFLECTION ANGLE SHALL BE CONSTRUCTED AS A SERIES OF EVENLY DISTRIBUTED DEFLECTIONS OVER MULTIPLE JOINTS, SO THAT NO SINGLE DEFLECTION IS GREATER THAN 80% OF THE MAXIMUM.
10. WATERLINE SERVICE LATERALS SHALL BE RESTRAINED TO THE EDGE OF THE RIGHT-OF-WAY. THE WATERLINE PLUG AT THE END OF THE LINE SHALL BE MECHANICALLY RESTRAINED.
11. IF CONTRACTOR IS UNABLE TO PROVIDE WATER SERVICE BASE ON PLANS, CONTRACTOR SHALL NOTIFY ENGINEER.
12. ALL GRAVITY WASTEWATER PIPE AND SERVICES SHALL BE GREEN-COLORED ASTM D3034 SDR-PVC. METALLIC DETECTION TAPE MARKED "SEWER" SHALL BE INSTALLED NO DEEPER THAN 18" BELOW SUBGRADE IN WW TRENCH.
13. CONTRACTOR IS RESPONSIBLE FOR MANDREL TESTING ON 8" GRAVITY WASTEWATER LINES 30 DAYS (OR LONGER)AFTER TRENCHES ARE BACKFILLED.
14. PRESSURE TESTING PER CITY OF AUSTIN SPECIFICATIONS. AT ALL CORSSING WITH UNDERGROUND UTILITIES AND STORM SEWERS, PIPE LENGTHS SHALL BE CENTERED AT CROSSINGS.
15. CONTRACTOR RESPONSIBILITY INCLUDES IDENTIFYING EXISTING UTILITIES NOT SHOWN, AND NOTIFYING ENGINEER IMMEDIATELY.
16. UNDERGROUND MAINS FEEDING NFPA 13 SPRINKLER SYSTEMS MUST BE INSTALLED AND TESTED IN ACCORDANCE WITH NFPA 13, AND THE FIRE CODE, BY A LICENSED SPRINKLER CONTRACTOR WITH A PLUMBING PERMIT. THE ENTIRE MAIN MUST BE HYDROSTATICALLY TESTED AT ONE TIME, UNLESS ISOLATION VALVES ARE PROVIDED BETWEEN TESTED SECTIONS.

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FOR CITY USE ONLY:

DRAWN BY: SPM	DESIGNED BY: ANG, IHR, HCH	QA / QC: JDP	PROJECT NO.: 101649.00031

SHEET 130 OF 238

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garza EMC
7708 Rialto Blvd., Suite 125
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TBPE #F-14952 TBPLS #10124500

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03/29/2024

MASTER UTILITY PLAN

CAPSTONE
6900 W. PARMER LANE

APPLE INC.

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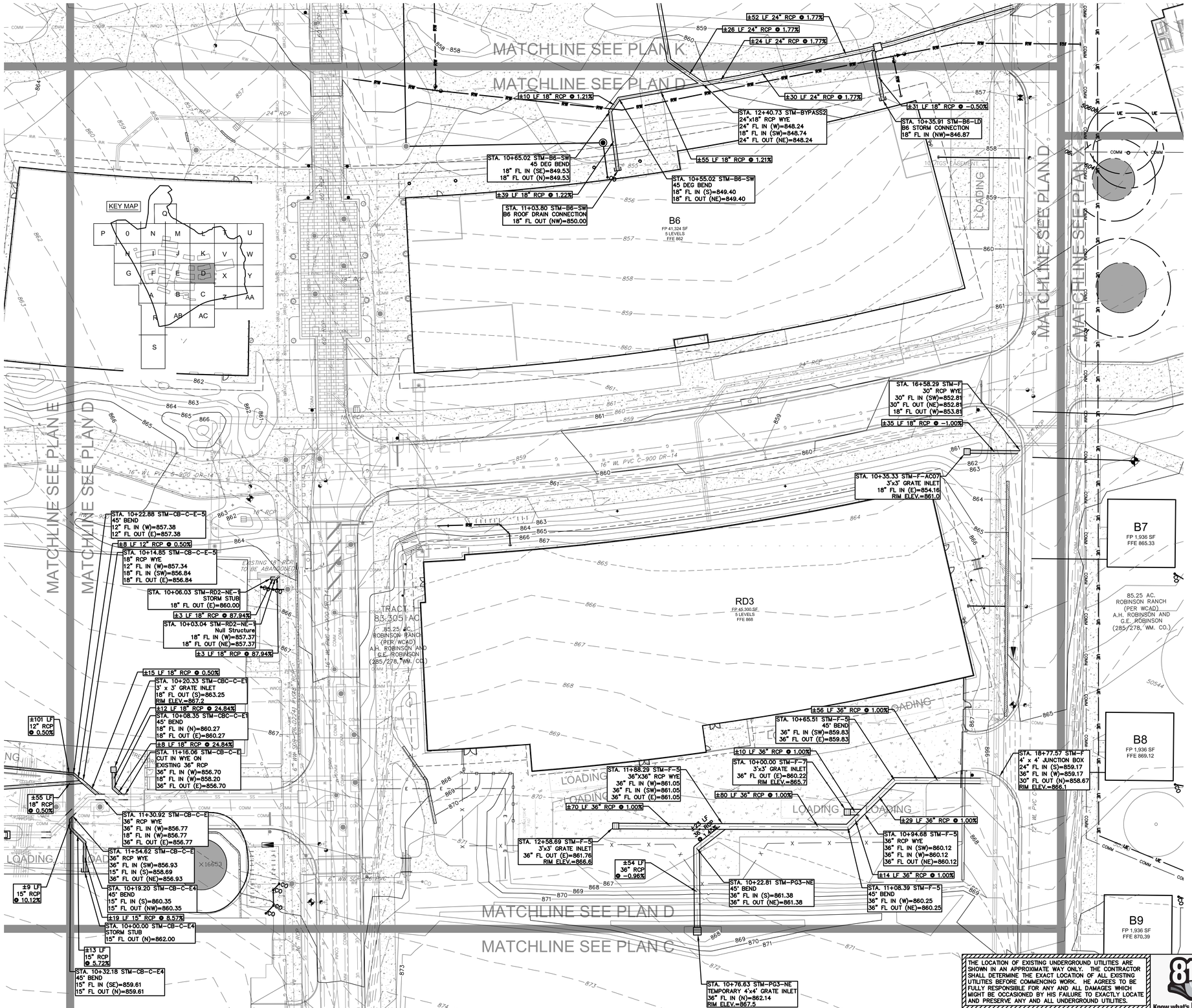
SP-2023-0292C



1" = 30'

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		DOWN GUY
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		WATER LINE MARKER
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UGGS		UNDERGROUND GAS LINE MARKER
UGTM		UNDERGROUND TELEPHONE MARKER
GSR		GAS RISER
TSR		TELEPHONE RISER
SPC		SPRINKLER CONTROL BOX
	SW	SWITCH GEAR & PAD
		TRANSFORMER (SIZE VARIES)
		FIRE HYDRANT
		WATER VALVE
		WATER METER
		WATER METER VAULT (SIZE VARIES)
		CABLE TV RISER
		ELECTRIC BOX
		ELECTRIC METER
		GAS METER
		GAS VALVE
TCP	TCP	TRAFFIC CONTROL BOX
TSP	TSP	TRAFFIC SIGNAL POST
		GRATE INLET
		CURB INLET (SIZE VARIES)
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EMH		ELECTRIC MANHOLE (SIZE VARIES)
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SSMH		STORMSEWER MANHOLE (SIZE VARIES)
TMH	TMH	TELEPHONE MANHOLE (SIZE VARIES)
CO		WASTEWATER CLEANOUT
X	X	WIRE FENCE
//	//	WOOD FENCE
		CHAIN LINK FENCE
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		CONCRETE SIDEWALKS
		WALL
		LIMITS OF CONSTRUCTION
678	678	CONTOUR
SS	SS	STORMSEWER LINE
W	W	WATER LINE
		FIRE LINE
WW	WW	WASTEWATER LINE
G	G	GAS LINE
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OE	OE	OVERHEAD ELECTRIC LINE
UT	UT	UNDERGROUND TELEPHONE LINE
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SEE MASTER WATER UTILITY SHEET XXX FOR NOTES ON JOINT RESTRAIN. RESTRAIN ALL PUBLIC WATER LINE AND JOINTS.

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garza
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Tel. (512) 298-2284 Fax (512) 298-2592
TBPE F-1741 TBPLS 10194447

NO	DATE	REVISION

STATE OF TEXAS
ALEXANDRA A. BOONE
138951
LICENSED PROFESSIONAL ENGINEER
Alexandra Boone
03/29/2024

STORMSEWER PLAN D

CAPSTONE
6900 W. PARMER LANE

APPLE INC.

DRAWN BY: SPM
DESIGNED BY: ANG, IHR, HCH
QA / QC: JDP
PROJECT NO.: 1016490.00031

SHEET
134
OF 238

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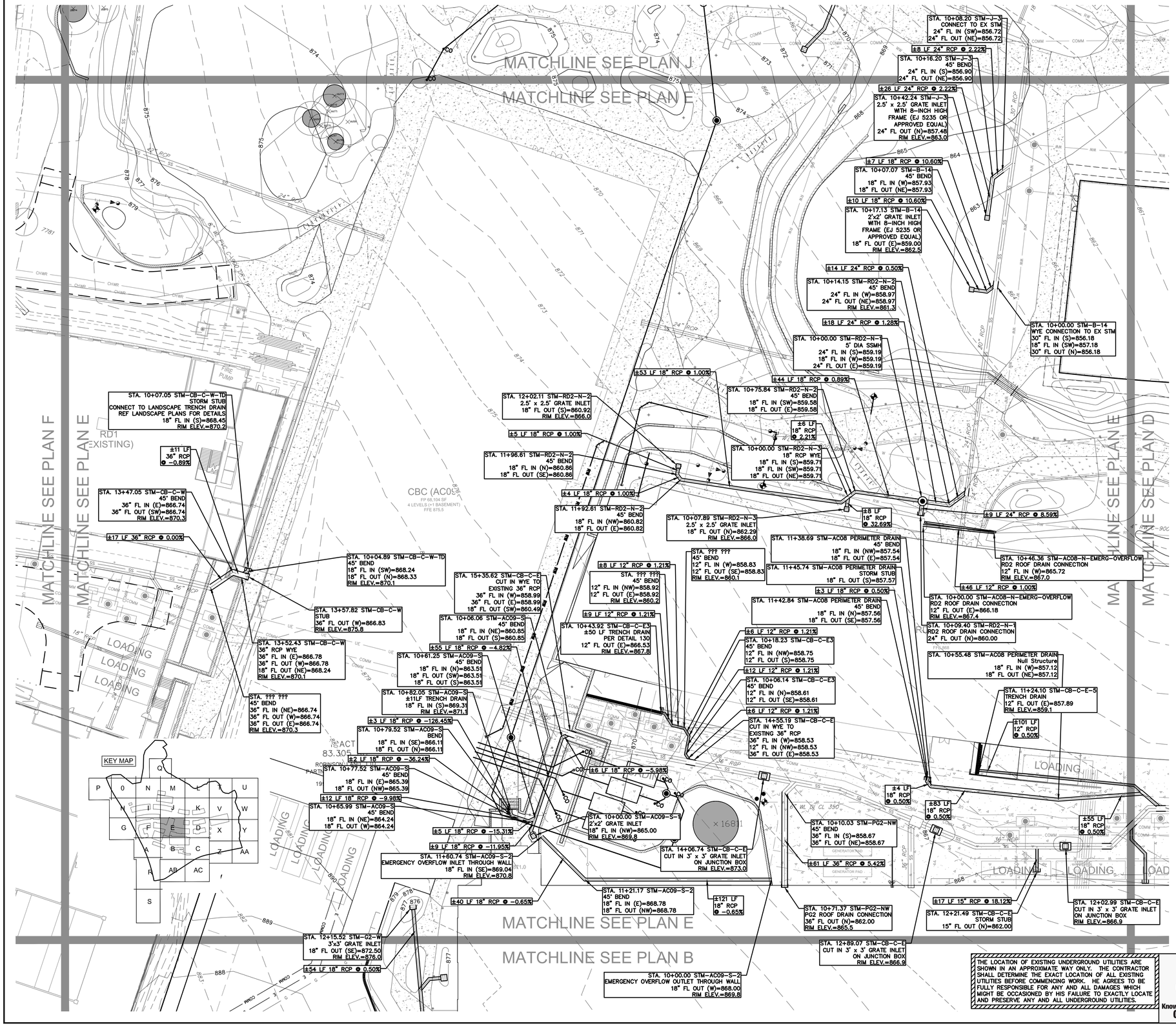

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		WATER METER
		WATER METER VAULT (SIZE VARIES)
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		ELECTRIC BOX
		ELECTRIC METER
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TCB	TCB	TRAFFIC CONTROL BOX
TSP	TSP	TRAFFIC SIGNAL POST
		GRATE INLET
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WWMH		WASTEWATER MANHOLE (SIZE VARIES)
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TMH	TMH	TELEPHONE MANHOLE (SIZE VARIES)
CO		WASTEWATER CLEANOUT
X	X	WIRE FENCE
//	//	WOOD FENCE
		CHAIN LINK FENCE
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		EDGE OF PAVEMENT
		CONCRETE SIDEWALKS
		WALL
		LIMITS OF CONSTRUCTION
678	678	CONTOUR
SS	SS	STORMSEWER LINE
W	W	WATER LINE
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WW	WW	WASTEWATER LINE
G	G	GAS LINE
UE	UE	UNDERGROUND ELECTRIC LINE
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UT	UT	UNDERGROUND TELEPHONE LINE
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STORMSEWER PLAN E

CAPSTONE
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APPLE INC.

DRAWN BY: SPM
DESIGNED BY: ANG, IHR, HCH
QA / QC: JDP
PROJECT NO.: 1016490.00031

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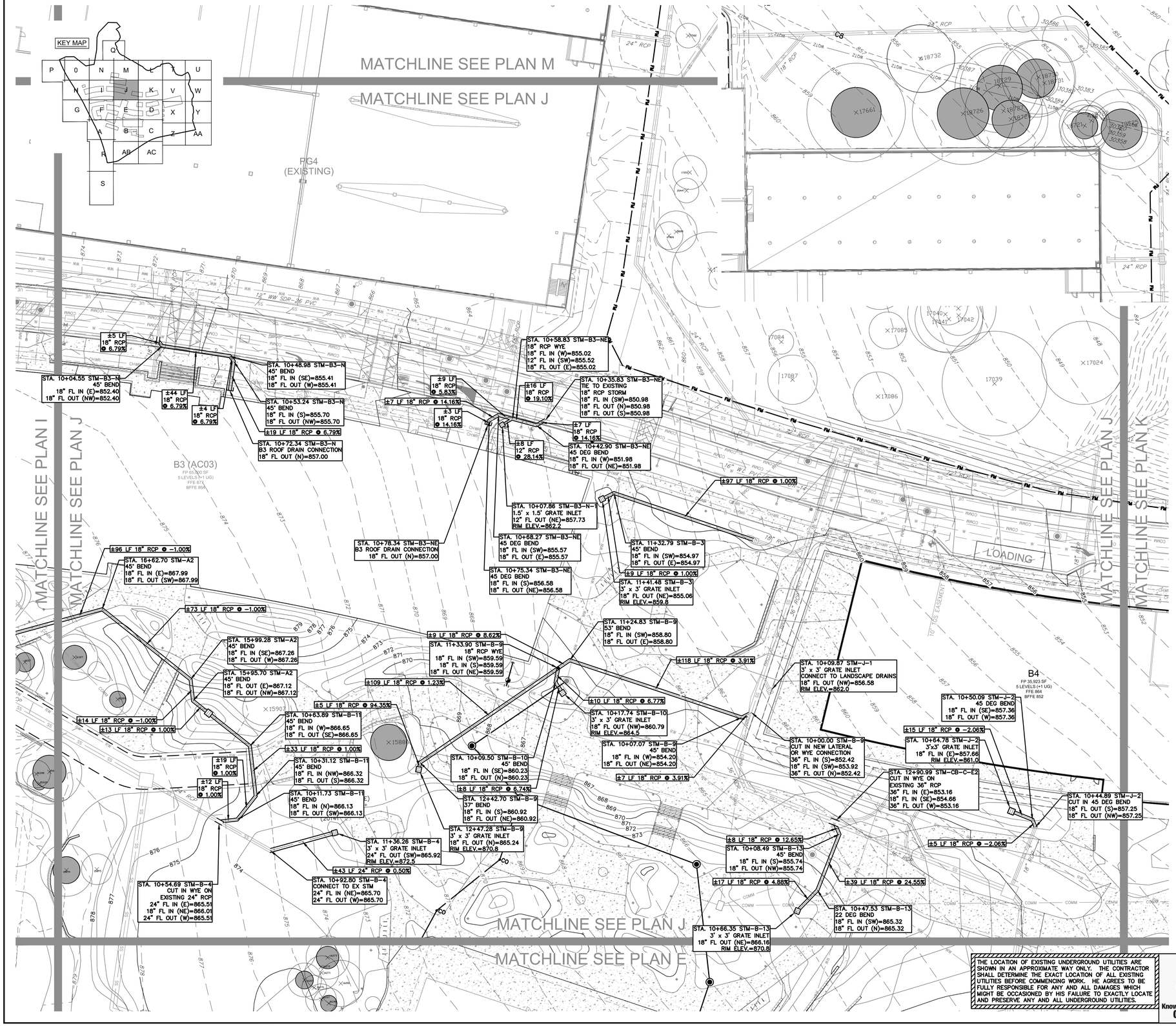

200 0 100 200 400

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03/29/2024

STORMSEWER PLAN J

CAPSTONE
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DESIGNED BY: ANG, IHR, HCH
QA / QC: JDP
PROJECT NO.: 1016149.00031

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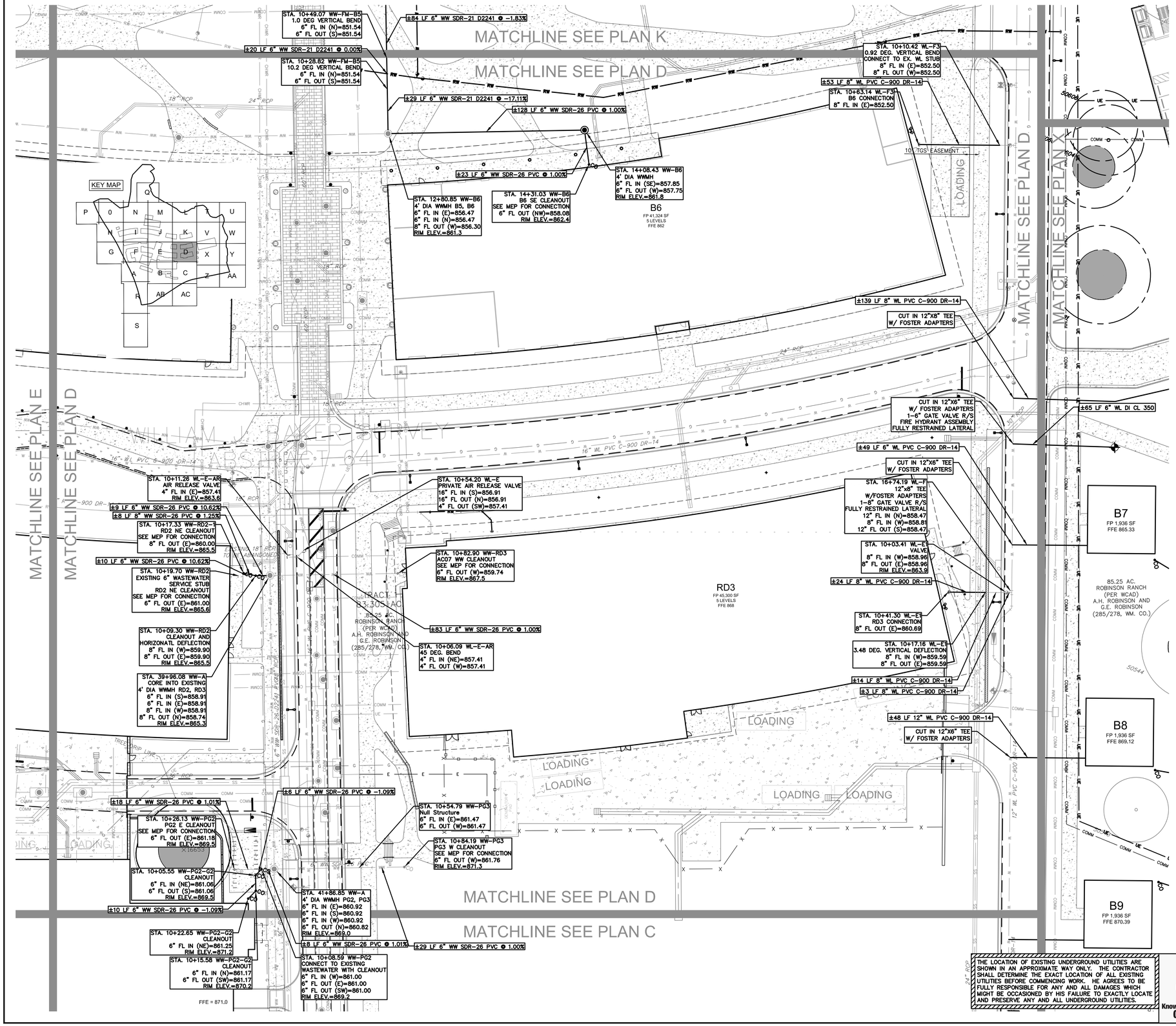

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LEGEND

EXISTING	PROPOSED	DESCRIPTION
(000)		PROPERTY LINE / R.O.W. LINE
		RECORD INFORMATION
		LIGHT POLE
		GROUND LIGHT
		POWER POLE
		DOWN GUY
WTRMH		WATER MANHOLE
		WATER LINE MARKER
CABLE	CABLE	UNDERGROUND CABLE MARKER
GAS	GAS	UNDERGROUND GAS LINE MARKER
UGTM		UNDERGROUND TELEPHONE MARKER
GSR		GAS RISER
TSR		TELEPHONE RISER
SPR		SPRINKLER CONTROL BOX
	EW	SWITCH GEAR & PAD
		TRANSFORMER (SIZE VARIES)
		FIRE HYDRANT
		WATER VALVE
		WATER METER
		WATER METER VAULT (SIZE VARIES)
		CABLE TV RISER
		ELECTRIC BOX
		ELECTRIC METER
		GAS METER
		GAS VALVE
TCR	TCR	TRAFFIC CONTROL BOX
TSP	TSP	TRAFFIC SIGNAL POST
		GRATE INLET
		CURB INLET (SIZE VARIES)
		GREASE TRAP (SIZE VARIES)
EMH		ELECTRIC MANHOLE (SIZE VARIES)
WWMH		WASTEWATER MANHOLE (SIZE VARIES)
SSMH		STORMSEWER MANHOLE (SIZE VARIES)
TMH	TMH	TELEPHONE MANHOLE (SIZE VARIES)
CO		WASTEWATER CLEANOUT
X	X	WIRE FENCE
//	//	WOOD FENCE
		CHAIN LINK FENCE
		CURB & GUTTER
		EDGE OF PAVEMENT
		CONCRETE SIDEWALKS
		WALL
		LIMITS OF CONSTRUCTION
678	678	CONTOUR
SS	SS	STORMSEWER LINE
W	W	WATER LINE
	F	FIRE LINE
WW	WW	WASTEWATER LINE
G	G	GAS LINE
UE	UE	UNDERGROUND ELECTRIC LINE
OE	OE	OVERHEAD ELECTRIC LINE
UT	UT	UNDERGROUND TELEPHONE LINE
UC	UC	UNDERGROUND CABLE AND INTERNET
U-COMM	U-COMM	UNDERGROUND TELECOMMUNICATIONS
	FFE	FINISH FLOOR ELEVATION
		TREE TO BE SAVED
		HERITAGE / MATURE TREE

SEE MASTER WATER UTILITY SHEET XXX FOR NOTES ON JOINT RESTRAIN. RESTRAIN ALL PUBLIC WATER LINE AND JOINTS.

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CITY OF AUSTIN
WATER AND WASTEWATER UTILITY
SPECIAL SERVICES DIVISION
(512) 972-1060

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

garza
7708 Rialto Blvd., Suite 125
Austin, Texas 78735
TEL (512) 298-2284 FAX (512) 298-2592
TBPELS #10194394

NO	DATE	REVISION

STATE OF TEXAS
ALEXANDRA A. BOONE
138951
LICENSED PROFESSIONAL ENGINEER
Alexandra Boone
03/29/2024

PRIVATE WATER-WASTEWATER PLAN D

CAPSTONE
6900 W. PARMER LANE

APPLE INC.

DRAWN BY: SPM
DESIGNED BY: ANG, IHR, HCH
QA / QC: JDP
PROJECT NO.: 101649.00031

SHEET
147
OF 238

SP-2023-0292C

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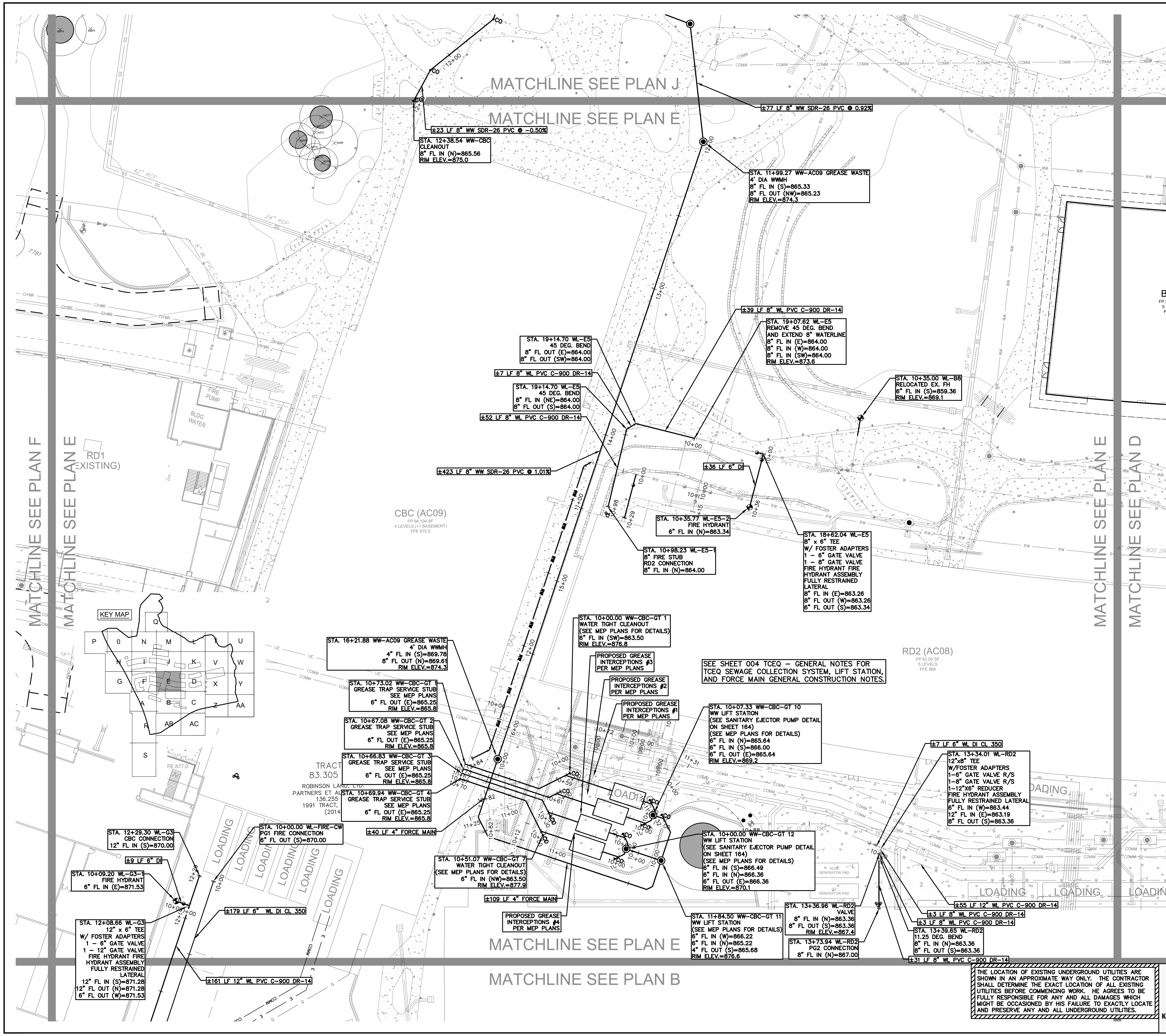

MATCHLINE SEE PLAN J
MATCHLINE SEE PLAN E
MATCHLINE SEE PLAN F
MATCHLINE SEE PLAN E
MATCHLINE SEE PLAN E
MATCHLINE SEE PLAN D
MATCHLINE SEE PLAN E
MATCHLINE SEE PLAN B
±23 LF 8" WW SDR-26 PVC @ -0.50%
STA. 12+38.54 WW-CBC CLEANOUT 8" FL IN (N)=865.56 RIM ELEV.=875.0
±77 LF 8" WW SDR-26 PVC @ 0.92%
STA. 11+99.27 WW-AC09 GREASE WASTE 4' DIA WWMH 8" FL IN (S)=865.33 8" FL OUT (NW)=865.23 RIM ELEV.=874.3
±39 LF 8" WL PVC C-900 DR-14
STA. 19+07.62 WL-E5 REMOVE 45 DEG. BEND AND EXTEND 8" WATERLINE 8" FL IN (E)=864.00 8" FL IN (W)=864.00 8" FL OUT (SW)=864.00 RIM ELEV.=873.6
STA. 19+14.70 WL-E5 45 DEG. BEND 8" FL OUT (E)=864.00 8" FL OUT (SW)=864.00
±7 LF 8" WL PVC C-900 DR-14
STA. 19+14.70 WL-E5 45 DEG. BEND 8" FL IN (NE)=864.00 8" FL OUT (S)=864.00
±52 LF 8" WL PVC C-900 DR-14
STA. 10+35.00 WL-B8 RELOCATED EX. FH 6" FL IN (S)=859.36 RIM ELEV.=869.1
±423 LF 8" WW SDR-26 PVC @ 1.01%
±36 LF 6" DI
STA. 10+35.77 WL-E5-2 FIRE HYDRANT 6" FL IN (N)=863.34
STA. 10+98.23 WL-E5-1 8" FIRE STUB RD2 CONNECTION 8" FL IN (N)=864.00
STA. 18+62.04 WL-E5 8" x 6" TEE W/ FOSTER ADAPTERS 1 - 6" GATE VALVE 1 - 8" GATE VALVE FIRE HYDRANT FIRE HYDRANT ASSEMBLY FULLY RESTRAINED LATERAL 8" FL IN (E)=863.26 8" FL OUT (W)=863.26 6" FL OUT (S)=863.34
RD1 (EXISTING)
CBC (AC09)
RD2 (AC08)
KEY MAP
STA. 10+00.00 WW-CBC-GT 1 WATER TIGHT CLEANOUT (SEE MEP PLANS FOR DETAILS) 6" FL IN (SW)=863.50 RIM ELEV.=876.8
PROPOSED GREASE INTERCEPTIONS #3 PER MEP PLANS
PROPOSED GREASE INTERCEPTIONS #2 PER MEP PLANS
PROPOSED GREASE INTERCEPTIONS #1 PER MEP PLANS
SEE SHEET 004 TCEQ - GENERAL NOTES FOR TCEQ SEWAGE COLLECTION SYSTEM, LIFT STATION, AND FORCE MAIN GENERAL CONSTRUCTION NOTES.
STA. 16+21.88 WW-AC09 GREASE WASTE 4' DIA WWMH 4" FL IN (S)=869.78 8" FL OUT (N)=869.61 RIM ELEV.=874.3
STA. 10+73.02 WW-CBC-GT 1 GREASE TRAP SERVICE STUB SEE MEP PLANS 6" FL OUT (E)=865.25 RIM ELEV.=865.8
STA. 10+67.08 WW-CBC-GT 2 GREASE TRAP SERVICE STUB SEE MEP PLANS 6" FL OUT (E)=865.25 RIM ELEV.=865.8
STA. 10+66.83 WW-CBC-GT 3 GREASE TRAP SERVICE STUB SEE MEP PLANS 6" FL OUT (E)=865.25 RIM ELEV.=865.8
STA. 10+69.94 WW-CBC-GT 4 GREASE TRAP SERVICE STUB SEE MEP PLANS 6" FL OUT (E)=865.25 RIM ELEV.=865.8
STA. 10+07.33 WW-CBC-GT 10 WW LIFT STATION (SEE SANITARY EJECTOR PUMP DETAIL ON SHEET 164) (SEE MEP PLANS FOR DETAILS) 6" FL IN (N)=865.64 6" FL IN (S)=866.00 6" FL OUT (E)=865.64 RIM ELEV.=869.2
±40 LF 4" FORCE MAIN
STA. 12+29.30 WL-G3 CBC CONNECTION 12" FL IN (S)=870.00
STA. 10+00.00 WL-FIRE-CW PG1 FIRE CONNECTION 6" FL OUT (S)=870.00
±9 LF 6" DI
STA. 10+09.20 WL-G3-1 FIRE HYDRANT 6" FL IN (E)=871.53
STA. 10+51.07 WW-CBC-GT 7 WATER TIGHT CLEANOUT (SEE MEP PLANS FOR DETAILS) 6" FL IN (NW)=863.50 RIM ELEV.=877.9
STA. 10+00.00 WW-CBC-GT 12 WW LIFT STATION (SEE SANITARY EJECTOR PUMP DETAIL ON SHEET 164) (SEE MEP PLANS FOR DETAILS) 6" FL IN (S)=866.49 6" FL IN (N)=866.36 6" FL OUT (E)=866.36 RIM ELEV.=870.1
±109 LF 4" FORCE MAIN
±179 LF 6" WL DI CL 350
PROPOSED GREASE INTERCEPTIONS #4 PER MEP PLANS
STA. 12+08.66 WL-G3 12" x 6" TEE W/ FOSTER ADAPTERS 1 - 6" GATE VALVE 1 - 12" GATE VALVE FIRE HYDRANT FIRE HYDRANT ASSEMBLY FULLY RESTRAINED LATERAL 12" FL IN (S)=871.28 12" FL OUT (N)=871.28 6" FL OUT (W)=871.53
STA. 11+84.50 WW-CBC-GT 11 WW LIFT STATION (SEE MEP PLANS FOR DETAILS) 6" FL IN (W)=866.22 6" FL IN (N)=865.22 4" FL OUT (S)=865.68 RIM ELEV.=876.6
±161 LF 12" WL PVC C-900 DR-14
±7 LF 6" WL DI CL 350
STA. 13+34.01 WL-RD2 12"x8" TEE W/FOSTER ADAPTERS 1-6" GATE VALVE R/S 1-8" GATE VALVE R/S 1-12"X8" REDUCER FIRE HYDRANT ASSEMBLY FULLY RESTRAINED LATERAL 6" FL IN (W)=863.44 12" FL IN (E)=863.19 8" FL OUT (S)=863.36
STA. 13+36.96 WL-RD2 VALVE 8" FL IN (N)=863.36 8" FL OUT (S)=863.36 RIM ELEV.=867.4
STA. 13+73.94 WL-RD2 PG2 CONNECTION 8" FL IN (N)=867.00
±55 LF 12" WL PVC C-900 DR-14
±3 LF 8" WL PVC C-900 DR-14
±3 LF 8" WL PVC C-900 DR-14
STA. 13+39.65 WL-RD2 11.25 DEG. BEND 8" FL IN (N)=863.36 8" FL OUT (S)=863.36
±31 LF 8" WL PVC C-900 DR-14
LOADING

200 0 100 200 400

1" = 200'

LEGEND

EXISTING	PROPOSED	DESCRIPTION
		PROPERTY LINE / R.O.W. LINE
(xxx)		RECORD INFORMATION
		LIGHT POLE
		GROUND LIGHT
		POWER POLE
		DOWN GUY
		WATER MANHOLE
		WATER LINE MARKER
		UNDERGROUND CABLE MARKER
		UNDERGROUND GAS LINE MARKER
		UNDERGROUND TELEPHONE MARKER
		GAS RISER
		TELEPHONE RISER
		SPRINKLER CONTROL BOX
		SWITCH GEAR & PAD
		TRANSFORMER (SIZE VARIES)
		FIRE HYDRANT
		WATER VALVE
		WATER METER
		WATER METER VAULT (SIZE VARIES)
		CABLE TV RISER
		ELECTRIC BOX
		ELECTRIC METER
		GAS METER
		GAS VALVE
		TRAFFIC CONTROL BOX
		TRAFFIC SIGNAL POST
		GRATE INLET
		CURB INLET (SIZE VARIES)
		GREASE TRAP (SIZE VARIES)
		ELECTRIC MANHOLE (SIZE VARIES)
		WASTEWATER MANHOLE (SIZE VARIES)
		STORMSEWER MANHOLE (SIZE VARIES)
		TELEPHONE MANHOLE (SIZE VARIES)
		WASTEWATER CLEANOUT
		WIRE FENCE
		WOOD FENCE
		CHAIN LINK FENCE
		CURB & GUTTER
		EDGE OF PAVEMENT
		CONCRETE SIDEWALKS
		WALL
		LIMITS OF CONSTRUCTION
678	678	CONTOUR
SS		STORMSEWER LINE
W		WATER LINE
		FIRE LINE
		WASTEWATER LINE
G		GAS LINE
UE	UE	UNDERGROUND ELECTRIC LINE
OE	OE	OVERHEAD ELECTRIC LINE
UT	UT	UNDERGROUND TELEPHONE LINE
UC	UC	UNDERGROUND CABLE AND INTERNET
U-COMM	U-COMM	UNDERGROUND TELECOMMUNICATIONS
	FFE	FINISH FLOOR ELEVATION
1111		TREE TO BE SAVED
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811 Know what's below. Call before you dig.

REVISION	NO.	DATE

garza emc
7708 Rialto Blvd., Suite 125
Austin, Texas 78735
Tel. (512) 298-3284 Fax (512) 298-2592
TBPE # F-14629

STATE OF TEXAS ALEXANDRA A. BOONE 138951 LICENSED PROFESSIONAL ENGINEER
Alexandra Boone 03/29/2024

PRIVATE WATER-WASTEWATER PLAN E

CAPSTONE
6900 W. PARMER LANE

APPLE INC.

DRAWN BY: SPM
DESIGNED BY: ANG, IHR, HCH
QA / QC: JDP
PROJECT NO.: 101649.00031

SHEET 148 OF 238

SP-2023-0292C

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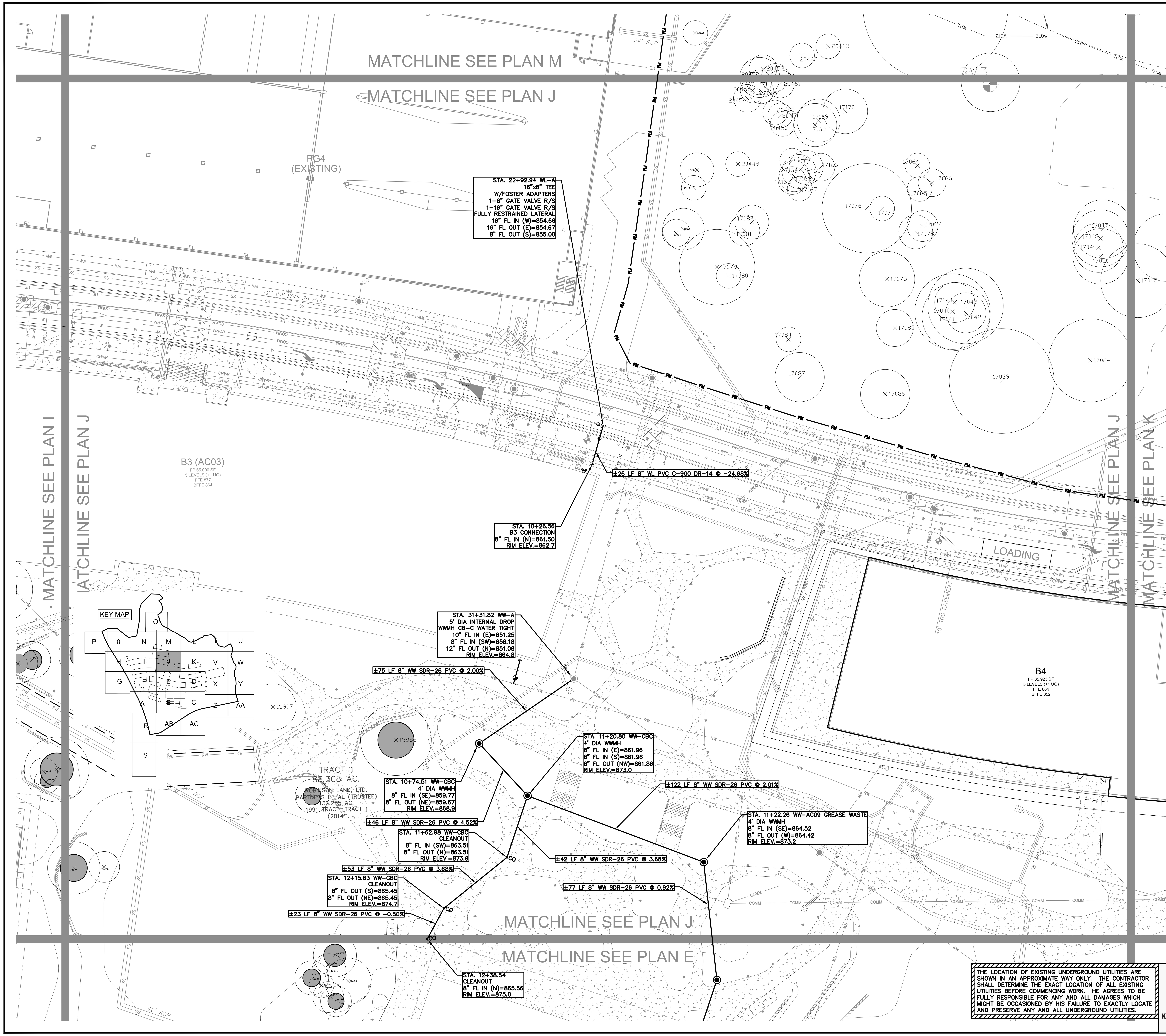

MATCHLINE SEE PLAN M
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MATCHLINE SEE PLAN K
MATCHLINE SEE PLAN J
MATCHLINE SEE PLAN E
PG4 (EXISTING)
STA. 22+92.94 WL-A
16"x8" TEE
W/FOSTER ADAPTERS
1-8" GATE VALVE R/S
1-16" GATE VALVE R/S
FULLY RESTRAINED LATERAL
16" FL IN (W)=854.66
16" FL OUT (E)=854.67
8" FL OUT (S)=855.00
±26 LF 8" WL PVC C-900 DR-14 @ -24.68%
STA. 10+26.56
B3 CONNECTION
8" FL IN (N)=861.50
RIM ELEV.=862.7
B3 (AC03)
LOADING
B4
KEY MAP
STA. 31+31.82 WW-A
5' DIA INTERNAL DROP
WWMH CB-C WATER TIGHT
10" FL IN (E)=851.25
8" FL IN (SW)=858.18
12" FL OUT (N)=851.08
RIM ELEV.=864.8
±75 LF 8" WW SDR-26 PVC @ 2.00%
STA. 11+20.80 WW-CBC
4' DIA WWMH
8" FL IN (E)=861.96
8" FL IN (S)=861.96
8" FL OUT (NW)=861.86
RIM ELEV.=873.0
STA. 10+74.51 WW-CBC
4' DIA WWMH
8" FL IN (SE)=859.77
8" FL OUT (NE)=859.67
RIM ELEV.=868.9
±46 LF 8" WW SDR-26 PVC @ 4.52%
TRACT 1
83.305 AC.
±122 LF 8" WW SDR-26 PVC @ 2.01%
STA. 11+22.26 WW-AC09 GREASE WASTE
4' DIA WWMH
8" FL IN (SE)=864.52
8" FL OUT (W)=864.42
RIM ELEV.=873.2
STA. 11+62.98 WW-CBC
CLEANOUT
8" FL IN (SW)=863.51
8" FL OUT (N)=863.51
RIM ELEV.=873.9
±42 LF 8" WW SDR-26 PVC @ 3.68%
±53 LF 8" WW SDR-26 PVC @ 3.68%
STA. 12+15.63 WW-CBC
CLEANOUT
8" FL OUT (S)=865.45
8" FL OUT (NE)=865.45
RIM ELEV.=874.7
±77 LF 8" WW SDR-26 PVC @ 0.92%
±23 LF 8" WW SDR-26 PVC @ -0.50%
STA. 12+38.54
CLEANOUT
8" FL IN (N)=865.56
RIM ELEV.=875.0
30 0 15 30 60
1" = 30'

LEGEND

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—		PROPERTY LINE / R.O.W. LINE
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—		POWER POLE
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—		WATER LINE MARKER
CMKR		UNDERGROUND CABLE MARKER
GMKR		UNDERGROUND GAS LINE MARKER
UGTM		UNDERGROUND TELEPHONE MARKER
GRSR		GAS RISER
TRSR	T	TELEPHONE RISER
SPC		SPRINKLER CONTROL BOX
	SW	SWITCH GEAR & PAD
	T	TRANSFORMER (SIZE VARIES)
—	—	FIRE HYDRANT
—	—	WATER VALVE
—	—	WATER METER
	—	WATER METER VAULT (SIZE VARIES)
TV	TV	CABLE TV RISER
E	E	ELECTRIC BOX
EM	EM	ELECTRIC METER
GM	GM	GAS METER
G	G	GAS VALVE
TCB	TCB	TRAFFIC CONTROL BOX
TSP	TSP	TRAFFIC SIGNAL POST
—	—	GRATE INLET
—	—	CURB INLET (SIZE VARIES)
	—	GREASE TRAP (SIZE VARIES)
EMH	—	ELECTRIC MANHOLE (SIZE VARIES)
WWMH	—	WASTEWATER MANHOLE (SIZE VARIES)
SSMH	—	STORMSEWER MANHOLE (SIZE VARIES)
TMH	TMH	TELEPHONE MANHOLE (SIZE VARIES)
CO	CO	WASTEWATER CLEANOUT
X	X	WIRE FENCE
//	//	WOOD FENCE
—	—	CHAIN LINK FENCE
—	—	CURB & GUTTER
—	—	EDGE OF PAVEMENT
—	—	CONCRETE SIDEWALKS
—	—	WALL
	—	LIMITS OF CONSTRUCTION
678	678	CONTOUR
SS	—	STORMSEWER LINE
W	—	WATER LINE
	—	FIRE LINE
WW	—	WASTEWATER LINE
G	—	GAS LINE
UE	UE	UNDERGROUND ELECTRIC LINE
OE	OE	OVERHEAD ELECTRIC LINE
OE	UT	UNDERGROUND TELEPHONE LINE
UC	UC	UNDERGROUND CABLE AND INTERNET
U-COMM	U-COMM	UNDERGROUND TELECOMMUNICATIONS
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REVISION | NO. | DATE

garza EMC
7708 Rialto Blvd., Suite 125
Austin, Texas 78735
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ALEXANDRA A. BOONE
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LICENSED PROFESSIONAL ENGINEER
Alexandra Boone 03/29/2024

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6900 W. PARMER LANE

APPLE INC.

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QA / QC: JDP
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