

PRELIMINARY DRAINAGE PLAN  
FOR

7933 CR 48, IOWA COLONY, TX 77583

OWNER

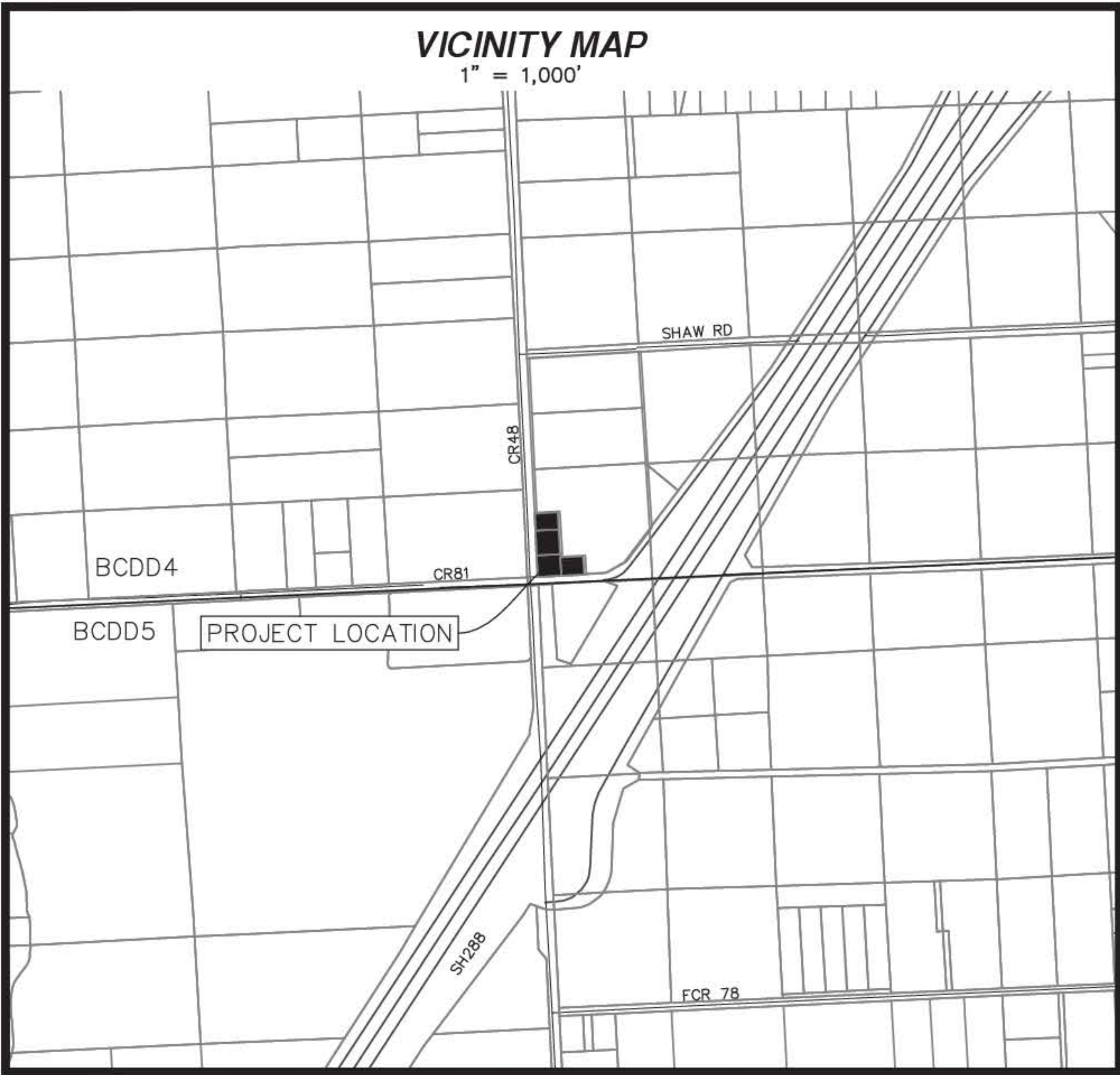
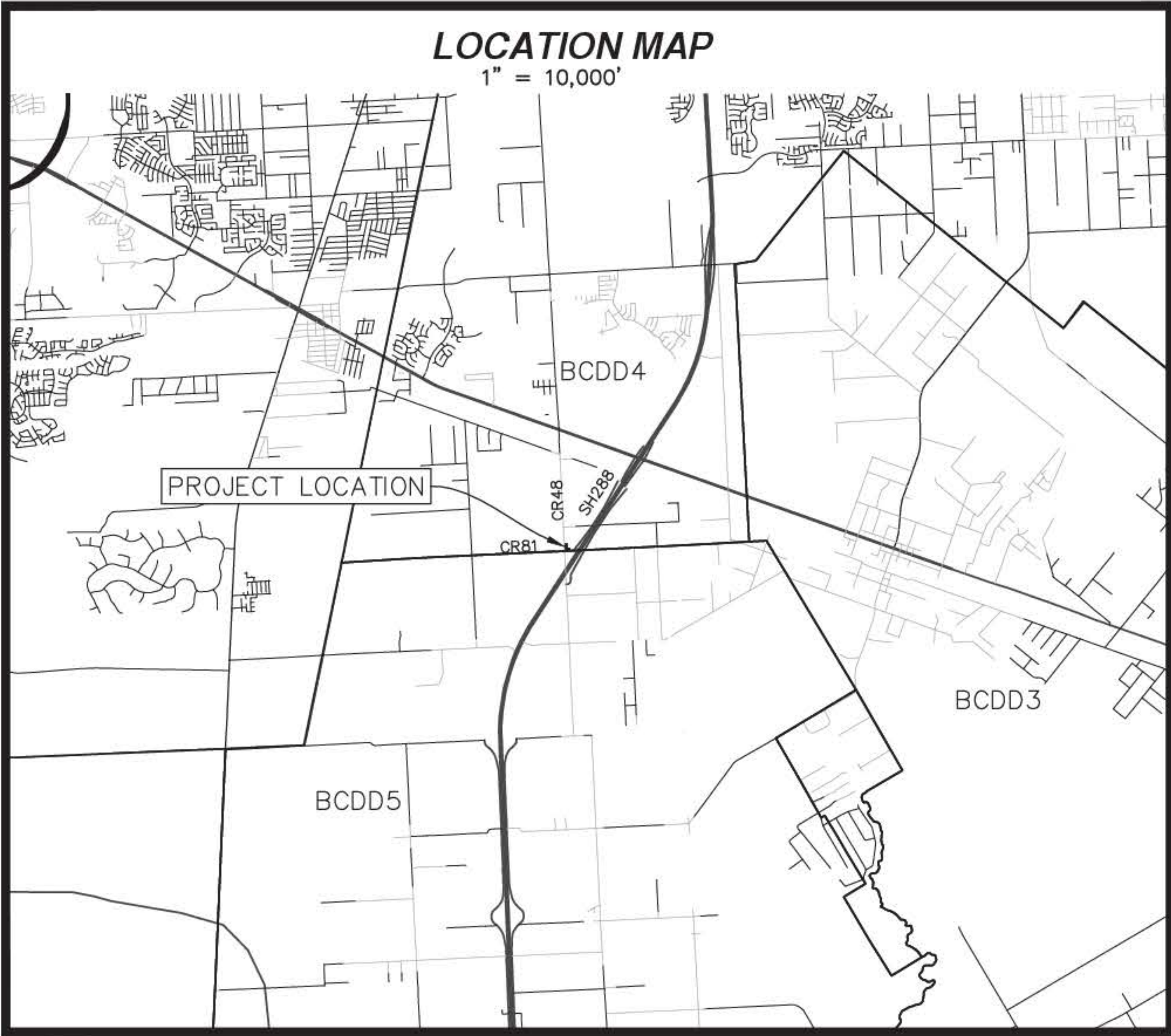
TRENT ANTHONY & MELISSA WILLIAMS

PHONE

832-779-6909

MAILING ADDRESS

9307 MOUNT LOGAN  
MISSOURI CITY, TX 77459



APPROVED BY THE BOARD OF COMMISSIONERS ON April 05, 2022

[Signature]  
Brazoria Drainage District No. 4

[Signature]  
District Engineer

The above have signed these plans and/or plat based on the recommendation of the DISTRICT'S Engineer who has reviewed all sheets provided and found them to be in general compliance with the DISTRICT'S "Rules, Regulations, and Guidelines". This approval is only valid for three hundred sixty-five (365) calendar days. After that time re-approval is required. Please note, this does not necessarily mean that all the calculations provided in these plans and/or plats have been completely checked and verified. In the event of any conflict or inconsistency between the DISTRICT'S "Rules, Regulations, and Guidelines" and these approved drainage plans and/or plat, the DISTRICT'S "Rules, Regulations & Guidelines" shall govern and prevail. Any approved variances shall be itemized on the cover sheet and placed on the appropriate sheet where applicable. Plans submitted have been prepared, signed and sealed by a Professional Engineer licensed to practice engineering in the State of Texas and plat has been signed and sealed by a Registered Professional Land Surveyor licensed to practice in the State of Texas, which conveys the engineer's and/or surveyor's responsibility and accountability.

BDD4 Ref. ID #: 21-000045



Notify Brazoria Drainage District No. 4 at [inspections@bdd4.org](mailto:inspections@bdd4.org) or (281) 485-1434 prior to the start of construction. No building permit shall be issued until detention facility is constructed and approved by the District.

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**FLOOD PLAIN DATA**  
THIS PROPERTY LIES WITHIN ZONE "X-UNSHADED" PER THE FLOOD INSURANCE RATE MAP, COMMUNITY PANEL NO. 48039C0110-H, WHICH BEARS AN EFFECTIVE DATE JUNE 5, 1989.

NOTE:  
CONTRACTOR SHALL NOTIFY BRAZORIA DRAINAGE DISTRICT NO. 4 AT LEAST FORTY-EIGHT (48) HOURS BEFORE PLACING ANY CONCRETE FOR DRAINAGE STRUCTURES. FAILURE TO PROPERLY COORDINATE AN ON-SITE INSPECTION BEFORE CONCRETE IS POURED WILL CAUSE PORTIONS OF THE CONCRETE TO BE BROKEN OUT AT THE APPLICANT'S EXPENSE IN ORDER TO PROBE TO THE DISTRICT'S INSPECTOR THAT CONSTRUCTION COMPLIES WITH DISTRICT RULES, REGULATIONS & GUIDELINES.

02/23/2022



File Name: CO - COVER.dwg Last Plotted: February 21, 2022 2:45 PM

**FIF ENGINEERING**  
1526 KATY GAP RD. SUITE #804 KATY, TX 77494  
PHONE: 346-800-4343  
WWW.FIFENGINEERING.COM

FIRM #  
F-17870

PROJECT ADDRESS:  
  
7933 CR 48  
IOWA COLONY, TX 77583

DRAWING TITLE:  
  
COVER SHEET

|           |            |      |       |       |
|-----------|------------|------|-------|-------|
| DRAWN BY: | CHKD. BY:  | REV# | DATE: | NOTE: |
| RA        | NH         |      |       |       |
| SCALE:    | DATE:      |      |       |       |
| NTS       | 11-12-2021 |      |       |       |

C1



File Name: C2- DEMO PLAN.dwg, Last Printed: February 21, 2022 2:46 PM

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FIRM #  
F-17870

PROJECT ADDRESS:

7933 CR 48  
IOWA COLONY, TX 77583

DRAWING TITLE:

DEMOLITION PLAN

DRAWN BY:

RA

SCALE:

1" = 20'

CHKD. BY:

NH

DATE:

11-12-2021

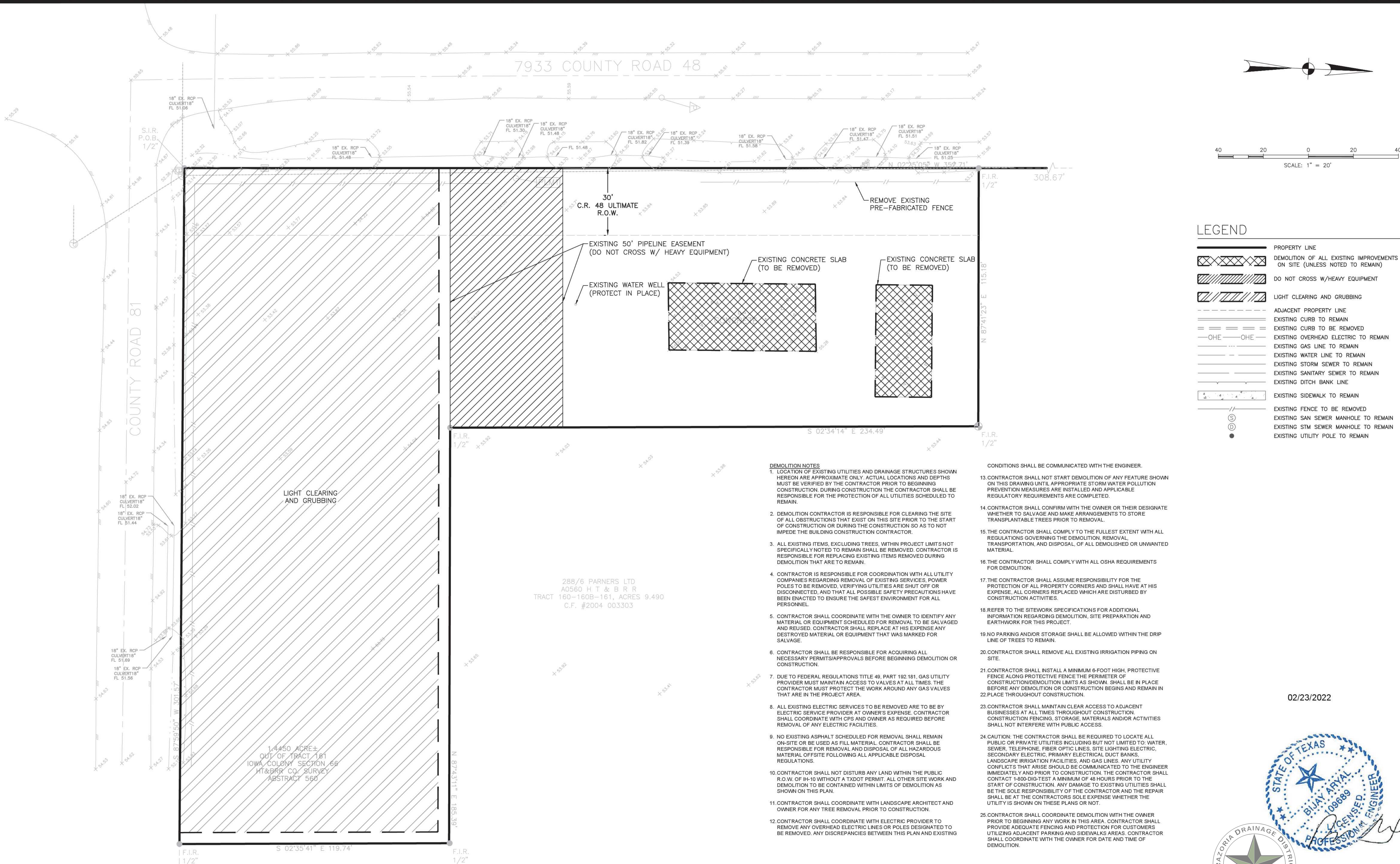
REV#

DATE:

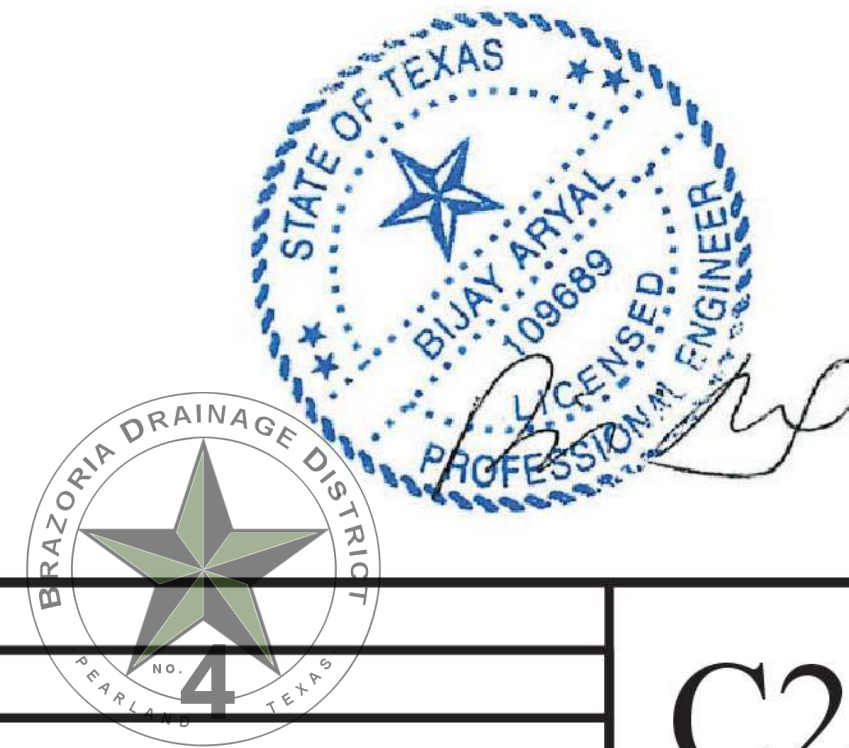
NOTE:

Plan/Plan approvals expire after 365 days

C2



02/23/2022





File Name: C3 - SITE PLAN.dwg, Last Plotter: February 21, 2022 2:48 PM

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**FIRM #**  
**F-17870**

PROJECT ADDRESS:

7933 CR 48  
IOWA COLONY, TX 77583

DRAWING TITLE:

OVERALL SITE PLAN

DRAWN BY:

RA

SCALE:

1" = 20'

CHKD. BY:

NH

DATE:

11-12-2021

REV#

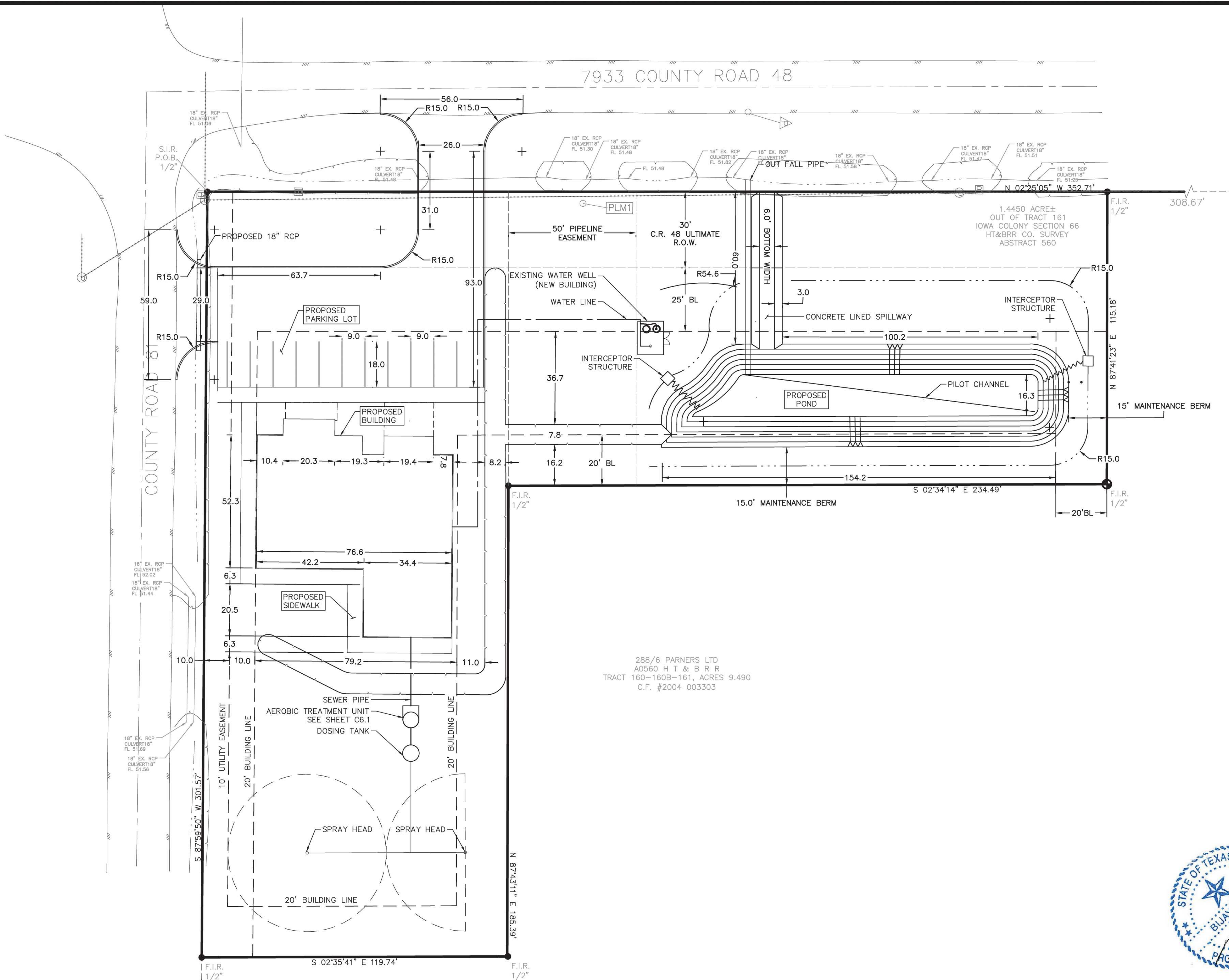
DATE:

NOTE:



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C3



## LEGEND

- PROPERTY LINE
- ADJACENT PROPERTY LINE
- EXISTING CURB
- EXISTING EASEMENT LINE
- PROPOSED BUILDING OVERHANG
- PROPOSED FENCE LINE
- PROPOSED 6-INCH CURB
- PROPOSED CONCRETE SIDEWALK
- PROPOSED SITE LANDSCAPING
- PROPOSED STORM SEWER CATCH BASIN
- PROPOSED CONCRETE WHEELSTOP
- PROPOSED WATER METER AND BACKFLOW DEVICE
- EXISTING SANITARY SEWER MANHOLE
- EXISTING STORM SEWER MANHOLE
- EXISTING TELECOM STRUCTURE
- EXISTING WATER VALVE
- EXISTING UTILITY POLE
- NUMBER OF PARKING SPACES

## GENERAL SITE NOTES

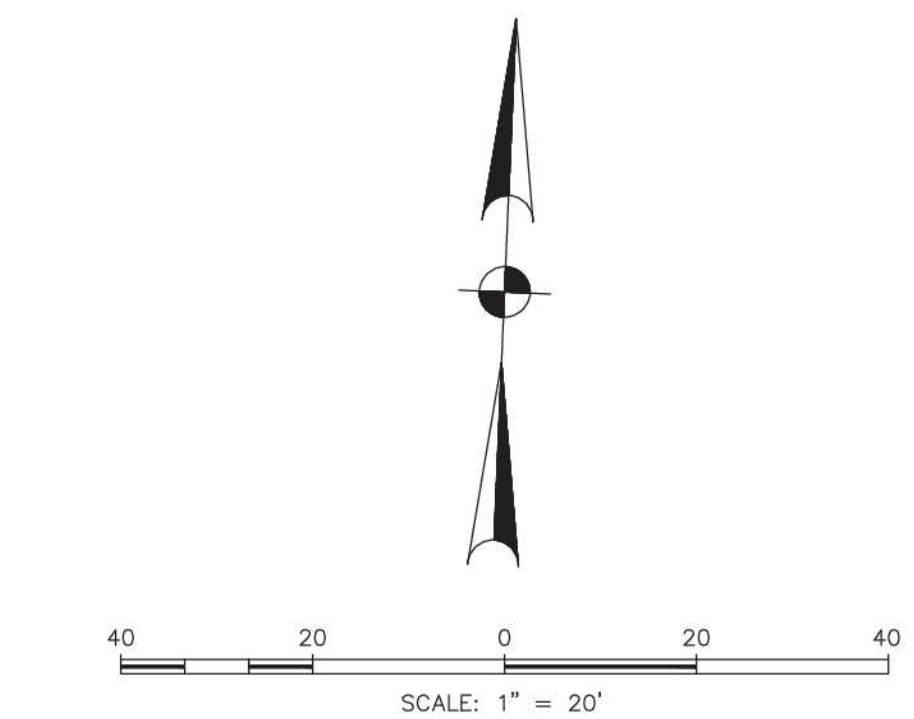
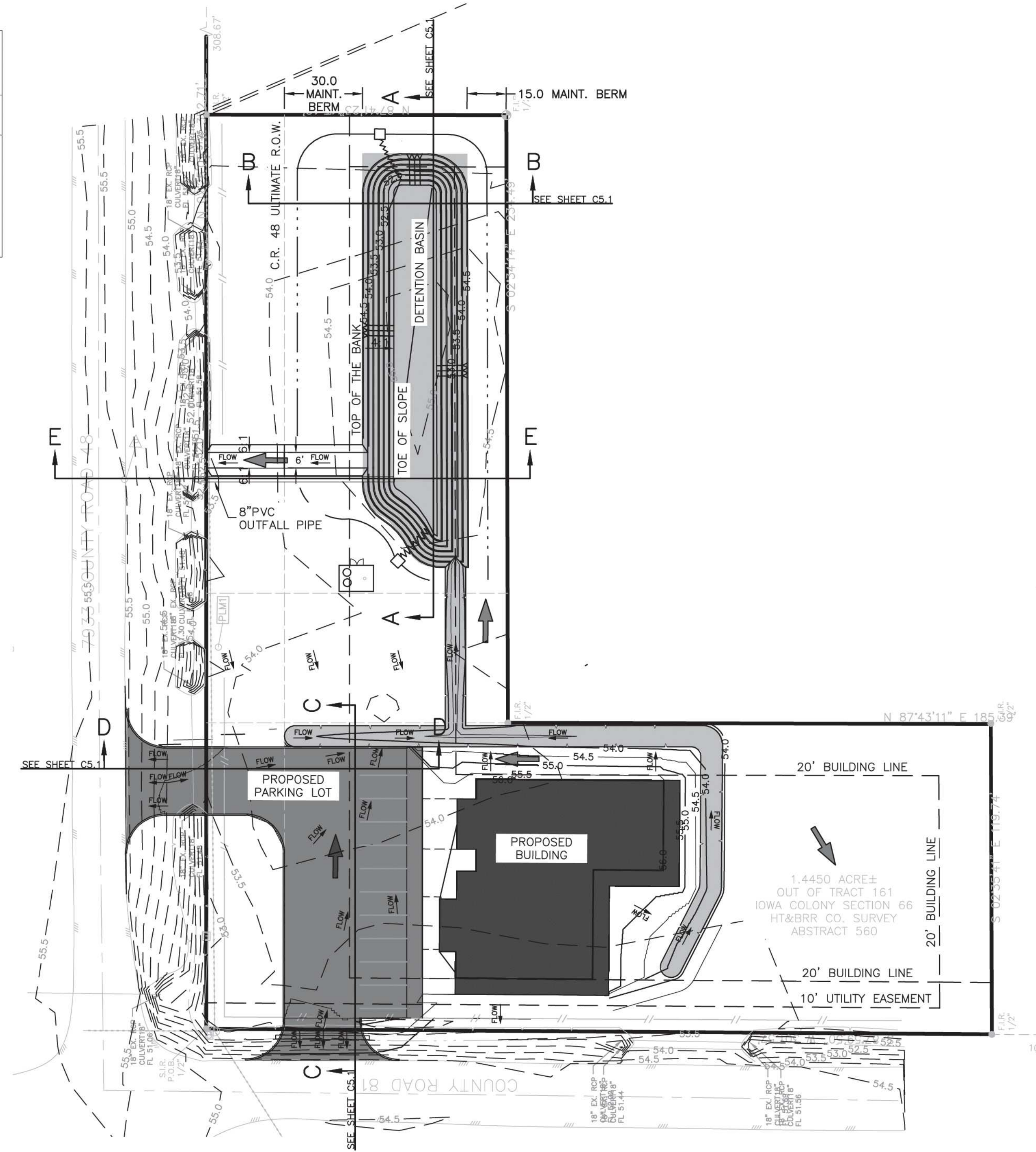
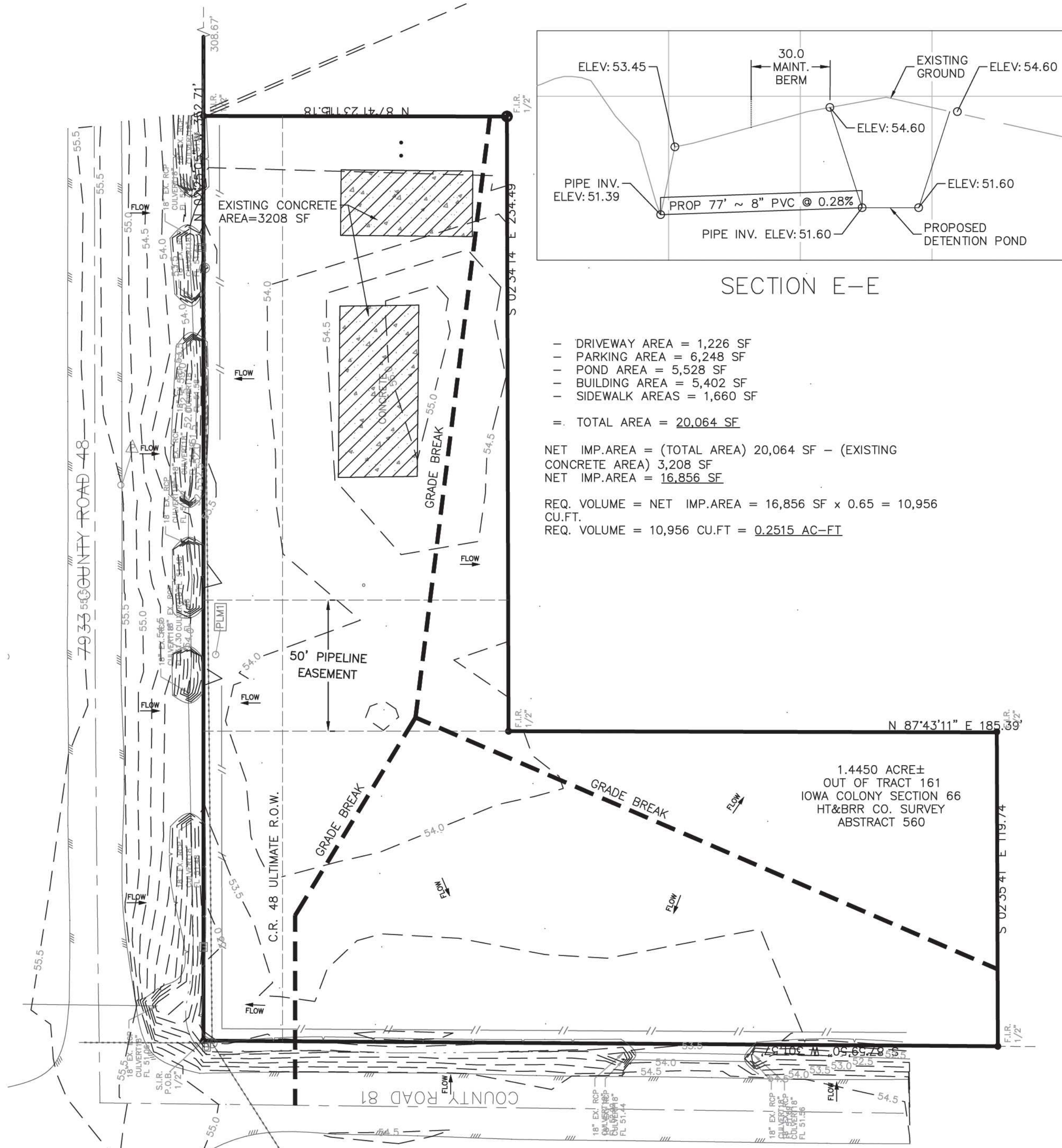
- CONTRACTOR SHALL BE RESPONSIBLE FOR ACQUIRING ALL NECESSARY PERMITS BEFORE BEGINNING CONSTRUCTION.
- ALL DIMENSIONS ARE TO FACE OF CURB, TO CENTER OF PAINT STRIPING, OR PERPENDICULAR TO THE PROPERTY LINE. ALL RADII AND OTHER DIMENSIONS ARE TO BACK OF CURB.
- COORDINATE CONTROL IS AS SHOWN. NO OFFSETS FROM FACE OF CURB OR BUILDINGS ARE GIVEN.
- CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER OF ANY QUESTIONS THAT MAY ARISE CONCERNING THE INTENT, PLACEMENT, OR LIMITS OF DIMENSIONS NECESSARY FOR CONSTRUCTION OF THE PROJECT.
- CONTRACTOR SHALL BE RESPONSIBLE FOR RESTORING TO ITS ORIGINAL OR BETTER CONDITION ANY DAMAGE DONE TO EXISTING UTILITIES, FENCES, PAVEMENT, CURBS, DRIVEWAYS, SIDEWALKS, OR SIGNS.
- CONTRACTOR SHALL PRESERVE ALL PROPERTY CORNER PINS/RODS, CONTROL POINTS, AND BENCHMARKS. IF ANY ARE DESTROYED OR REMOVED BY THE CONTRACTOR OR HIS EMPLOYEES, THEY SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE.
- FIELD SURVEY COMPLETED BY GRULLER SURVEYING, LLC ON APRIL 5, 2011.
- THE BOUNDARY/TOPO SURVEY SHALL BE CONSIDERED A PART OF THE CONTRACT DOCUMENTS.
- ALL CURBS ARE 6" HIGH, UNLESS OTHERWISE NOTED.
- ALL MATERIALS AND CONSTRUCTION PROCEDURES WITHIN THE SCOPE OF THIS CONTRACT SHALL CONFORM TO ALL APPLICABLE CITY OF HOUSTON SPECIFICATIONS.
- THE CONTRACTOR SHALL VERIFY THE EXACT LOCATION OF EXISTING UTILITIES PRIOR TO CONSTRUCTION. ANY UTILITIES, WHETHER SHOWN ON THE PLANS OR NOT, DAMAGED BY THE CONTRACTOR SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CONSTRUCTION STAKING.
- DIMENSIONAL CONTROL POINTS ARE PROVIDED AS NEEDED. ADDITIONAL POINTS MAY BE AVAILABLE UPON REQUEST.
- ALL PAVEMENT MARKINGS AND SIGNAGE OF ACCESSIBLE PARKING AREAS SHALL BE IN ACCORDANCE WITH THE MOST CURRENT T&S AND ADA STANDARDS.
- ALL GROUND-MOUNTED OR BUILDING-MOUNTED EQUIPMENT TO SERVE A BUILDING, INCLUDING MECHANICAL, UTILITY METERBANKS, AND HEATING OR COOLING EQUIPMENT MUST BE SCREENED FROM PUBLIC VIEW WITH LANDSCAPING OR ARCHITECTURAL TREATMENT. REFER TO ARCHITECT AND LANDSCAPE PLANS FOR DETAILS.
- NOT FIELD VERIFIED IS DENOTED N.F.V. IN PLAN.





C4





| LEGEND |                                      |
|--------|--------------------------------------|
|        | PROPERTY LINE                        |
|        | ADJACENT PROPERTY LINE               |
|        | EXISTING CURB                        |
|        | EXISTING EASEMENT LINE               |
|        | EXISTING OVERHEAD ELECTRIC LINE      |
|        | EXISTING GAS LINE                    |
|        | EXISTING WATER LINE                  |
|        | EXISTING STORM SEWER                 |
|        | EXISTING SANITARY SEWER              |
|        | EXISTING FENCE                       |
|        | PROPOSED DRAINAGE AREA LIMITS        |
|        | PROPOSED STORM SEWER CATCH BASIN     |
|        | PROPOSED STORM SEWER MANHOLE         |
|        | PROPOSED FLOW DIRECTION              |
|        | EXTREME EVENT FLOW DIRECTION         |
|        | EXISTING/PROPOSED DRAINAGE AREA (AC) |
|        | EXISTING/PROPOSED 2-YEAR FLOW (CFS)  |
|        | EXISTING STORM SEWER MANHOLE         |
|        | EXISTING SANITARY SEWER MANHOLE      |
|        | EXISTING CURB INLET                  |
|        | EXISTING UTILITY POLE                |
|        | EXISTING LIGHT POLE                  |
|        | EXISTING ELECTRIC/COMMUNICATION BOX  |
|        | EXISTING CONCRETE AREA               |
|        | BUILDING & SIDEWALK AREA             |
|        | POND AREA                            |
|        | DRIVEWAY & PARKING AREA              |

**TRENCH SAFETY NOTE**  
CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/ GEOTECHNICAL SAFETY EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND ANY AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITES WITHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S TRENCH EXCAVATION SAFETY PROTECTION SYSTEMS, PROGRAMS AND/OR PROCEDURES FOR THE PROJECT DESCRIBED IN THE CONTRACT DOCUMENTS. THE CONTRACTOR'S IMPLEMENTATION OF THESE SYSTEMS, PROGRAMS AND/OR PROCEDURES SHALL PROVIDE FOR ADEQUATE TRENCH EXCAVATION SAFETY PROTECTION THAT COMPLY WITH AS A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATIONS. SPECIFICALLY, CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.

- BCDD4 NOTES**
- ANY GOVERNMENTAL BODY FOR PURPOSES OF DRAINAGE WORK MAY USE DRAINAGE EASEMENTS AND FEE STRIPS PROVIDED THE DISTRICT IS PROPERLY NOTIFIED.
  - PERMANENT STRUCTURES, INCLUDING FENCES AND PERMANENT LANDSCAPING SHALL NOT BE ERECTED IN A DRAINAGE EASEMENT OR FEE STRIPS.
  - MAINTENANCE OF DETENTION FACILITIES IS THE SOLE RESPONSIBILITY OF THE OWNER OF THE PROPERTY. THE DISTRICT WILL PROVIDE MAINTENANCE OF REGIONAL FACILITIES CONSTRUCTED BY DEVELOPER(S) FOR WHICH OWNERSHIP HAS BEEN TRANSFERRED TO THE DISTRICT WITH THE DISTRICT'S APPROVAL. THE DISTRICT IS RESPONSIBLE ONLY FOR THE MAINTENANCE OF FACILITIES OWNED BY THE DISTRICT UNLESS THE DISTRICT SPECIFICALLY CONTRACTS OR AGREES TO MAINTAIN OTHER FACILITIES.
  - CONTRACTOR SHALL NOTIFY THE DISTRICT IN WRITING AT LEAST FORTY-EIGHT (48) HOURS BEFORE PLACING ANY CONCRETE FOR DRAINAGE STRUCTURES.
  - THE DISTRICT'S PERSONNEL SHALL HAVE THE RIGHT TO ENTER UPON THE PROPERTY FOR INSPECTION AT ANY TIME DURING CONSTRUCTION OR AS MAY BE WARRANTED TO ENSURE THE DETENTION FACILITY AND DRAINAGE SYSTEM ARE OPERATING PROPERLY.

- APPROPRIATE COVER FOR THE SIDE SLOPES, BOTTOM AND MAINTENANCE BERM SHALL BE ESTABLISHED PRIOR TO ACCEPTANCE OF THE CONSTRUCTION BY THE DISTRICT. AT LEAST 95% GERMINATION OF THE GRASS MUST BE ESTABLISHED PRIOR TO ACCEPTANCE OF CONSTRUCTION BY THE DISTRICT.
- NO BUILDING PERMIT SHALL BE ISSUED FOR ANY LOT WITHIN THIS DEVELOPMENT UNTIL THE DETENTION FACILITY HAS BEEN CONSTRUCTED AND APPROVED BY THE DISTRICT.
- THE DISTRICT'S APPROVAL OF THE FINAL DRAINAGE PLAN (AND FINAL PLAT IF REQUIRED) DOES NOT AFFECT THE PROPERTY RIGHTS OF THIRD PARTIES. THE DEVELOPER IS RESPONSIBLE FOR OBTAINING AND MAINTAINING ANY AND ALL EASEMENTS, FEE STRIPS, AND/OR ANY OTHER RIGHTS-OF-WAY ACROSS THIRD PARTIES' PROPERTIES FOR PURPOSES OF MOVING EXCESS RUNOFF TO THE DISTRICT'S DRAINAGE FACILITIES AS CONTEMPLATED BY THE FINAL DRAINAGE PLAN AND FINAL PLAT.
- FUTURE DEVELOPMENT ON THIS SITE MUST BE APPROVED BY BRAZORIA DRAINAGE DISTRICT NO. 4.
- DRAINAGE EASEMENT SHALL BE USED ONLY FOR THE PURPOSES OF CONSTRUCTING, OPERATING, MAINTAINING, REPAIRING, REPLACING, AND RECONSTRUCTING OF A DRAINAGE FACILITY, AND ANY ALL RELATED EQUIPMENT AND FACILITIES TOGETHER WITH ANY AND ALL NECESSARY INCIDENTALS AND APPURTENANCES THERETO IN, UPON, OVER, ACROSS, AND THROUGH THE EASEMENT AREA. THE DISTRICT'S SUCCESSORS, ASSIGNS, AGENTS, EMPLOYEES, WORKMEN, AND REPRESENTATIVES SHALL AT ALL PRESENT AND FUTURE TIMES, HAVE THE RIGHT AND PRIVILEGE OF EGRESS IN, UPON, OVER, CROSS AND THROUGH THE EASEMENT AREA.
- ACCESS EASEMENTS SHALL BE USED FOR INGRESS AND EGRESS TO THE DISTRICT'S DRAINAGE FACILITIES AND SHALL BE KEPT CLEAR OF ANY AND ALL OBSTRUCTIONS
- AN AS-BUILT CERTIFICATE AND AS-BUILT SURVEY ARE REQUIRED TO BE SUBMITTED TO THE DISTRICT BEFORE A CERTIFICATE OF COMPLIANCE CAN BE ISSUED. CONTACT THE DISTRICT INSPECTOR FOR FURTHER CLARIFICATION.
- ALL DRAINAGE PLAN AND PLATS SHALL BE IN CONFORMANCE WITH THE DISTRICT'S RULES, REGULATIONS & GUIDELINES. BOARD APPROVALS OF A DRAINAGE PLAN OR PLAT DOES NOT CONSTITUTE PERMISSION TO DEVIATE. DEVIATION FROM THE DISTRICT'S RULES, REGULATIONS & GUIDELINES IS ONLY AUTHORIZED AND ALLOWED BY A SEPARATE REQUEST FOR VARIANCE WHICH WAS APPROVED BY THE BOARD. ANY BOARD APPROVED VARIANCE SHALL BE REFERENCED ON THE PLAN COVER PAGE AND ON THE APPROPRIATE SHEET WHERE APPLICABLE. THE USE OF THE TERM "GUIDELINES" HEREIN DOES NOT AFFECT THE MANDATORY NATURE OF THESE RULES, REGULATIONS & GUIDELINES.



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FIRM #  
F-17870

PROJECT ADDRESS:  
**7933 CR 48**  
**IOWA COLONY, TX 77583**

DRAWING TITLE:  
**DRAINAGE PLAN**

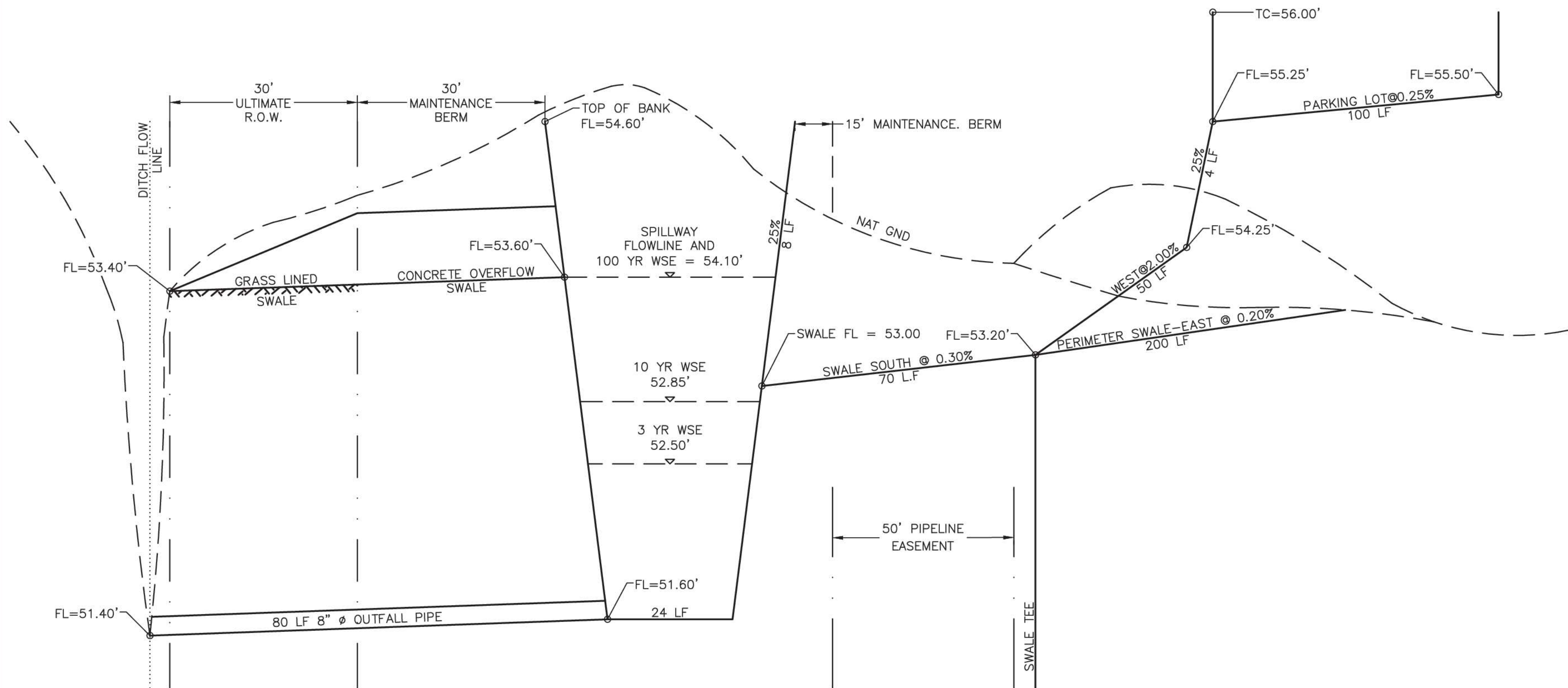
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| DRAWN BY: | CHKD. BY:  | REV# | DATE: | NOTE: |
| RA        | NH         |      |       |       |
| SCALE:    | DATE:      |      |       |       |
| 1" = 20'  | 11-12-2021 |      |       |       |

Plan/Plan approvals expire after 365 days

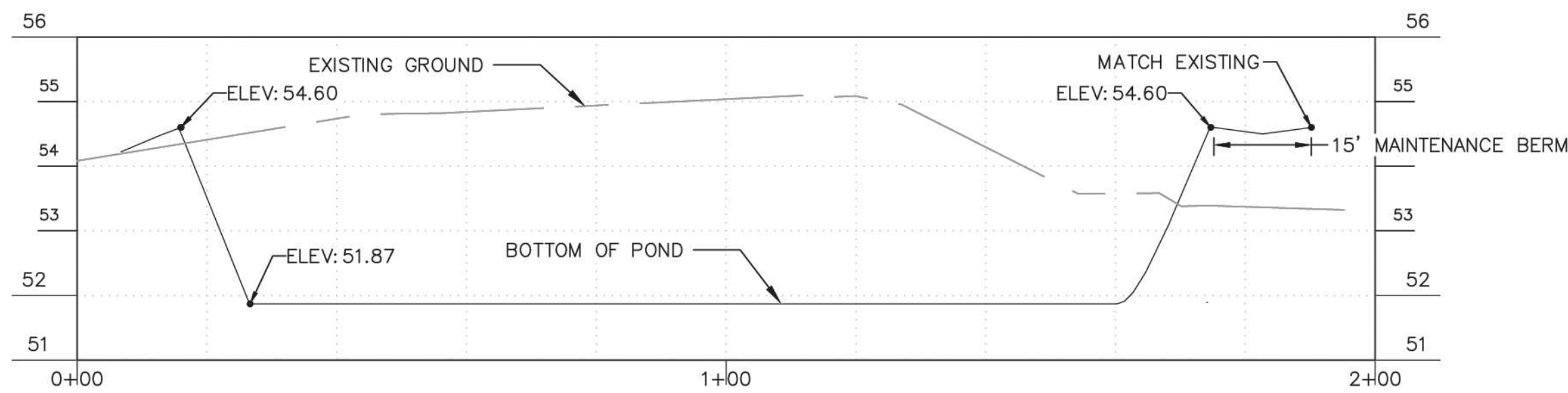
C5



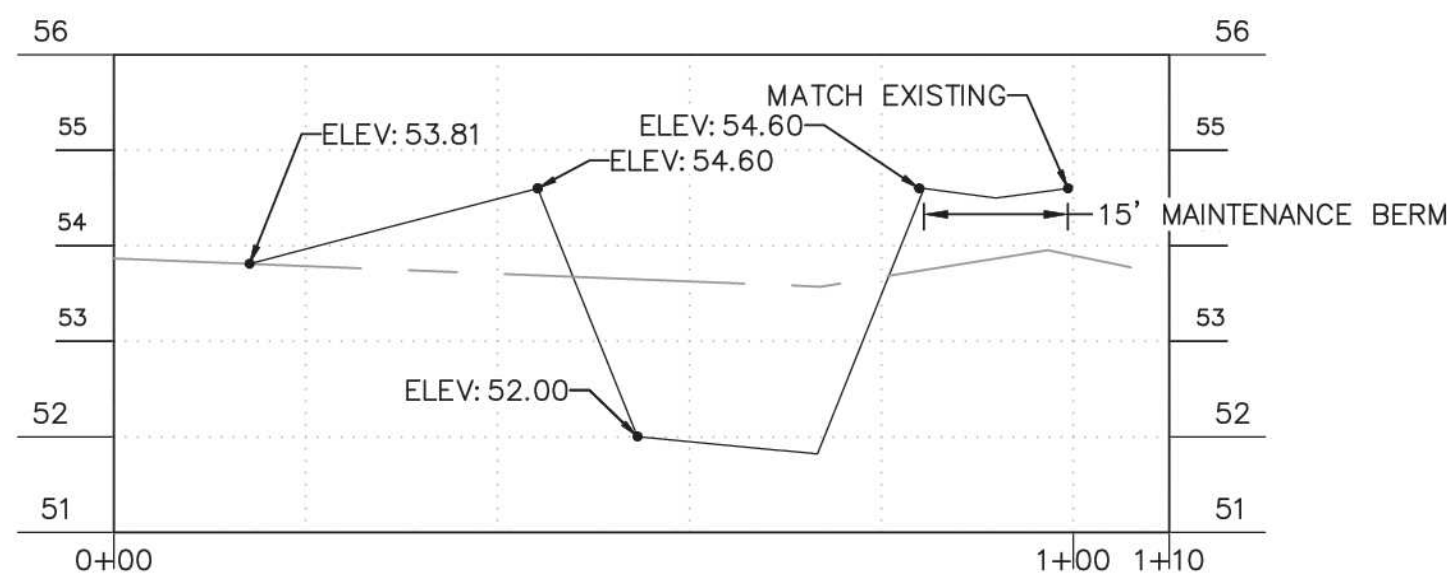
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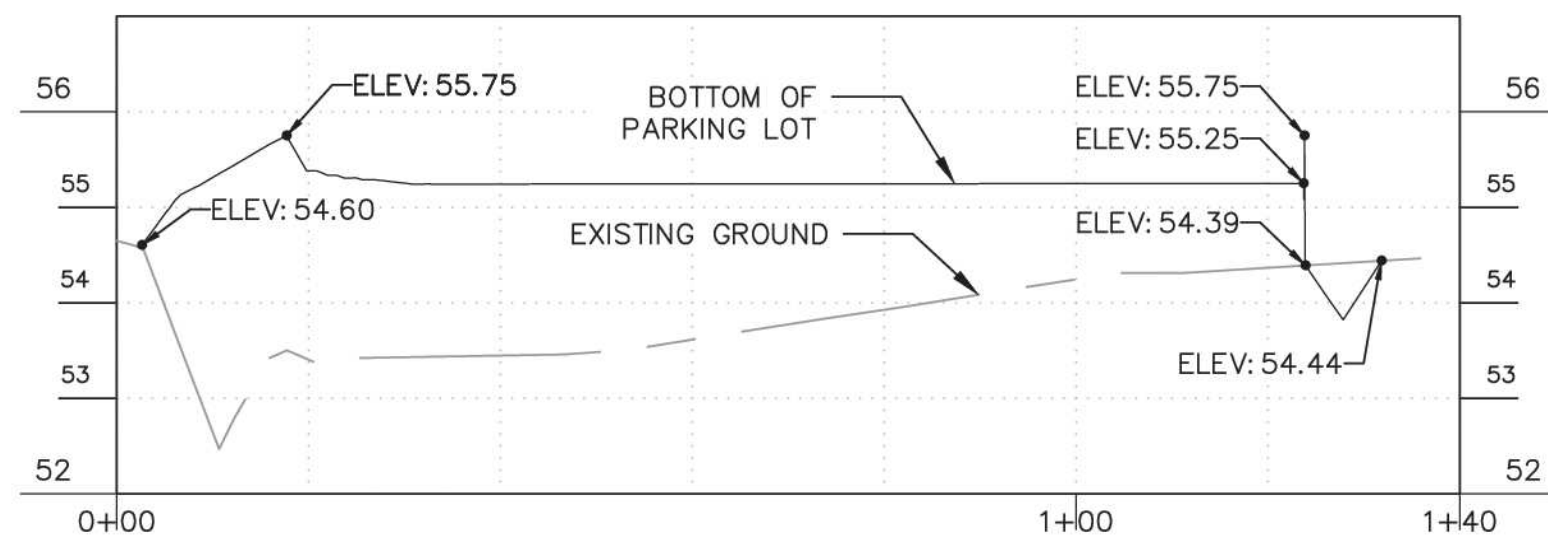
STORM SEWER SYSTEM FLOW DIAGRAM  
NOT TO SCALE



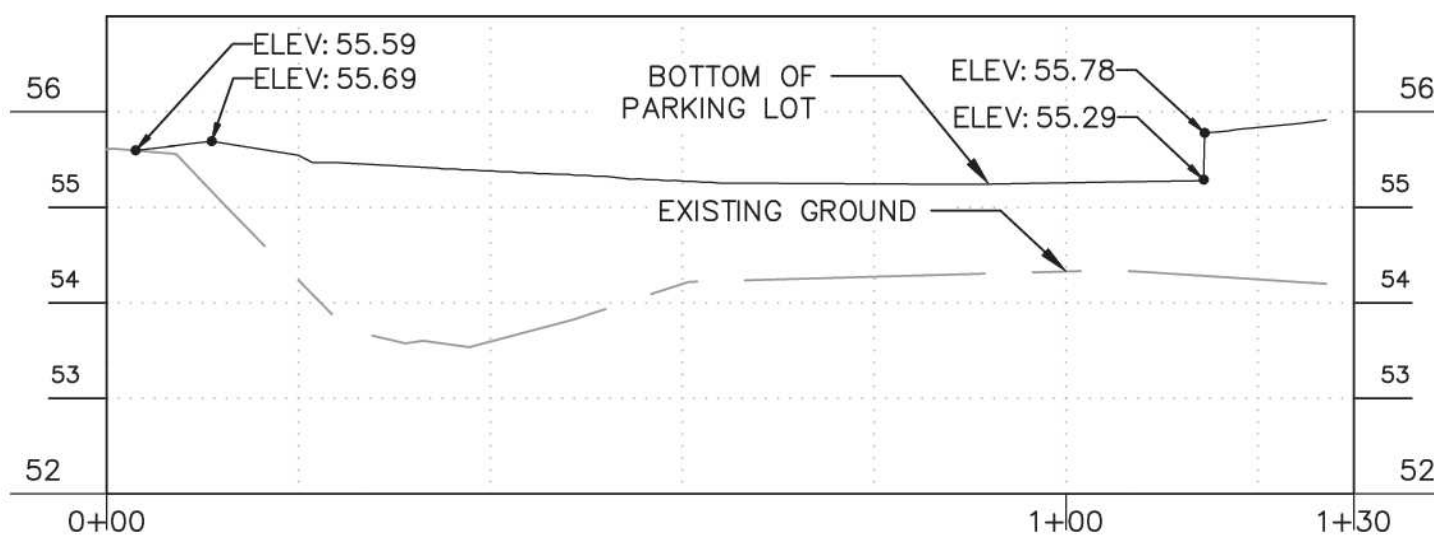
SECTION A-A  
V SCALE = 1:20  
H SCALE = 1:2



SECTION B-B  
V SCALE = 1:20  
H SCALE = 1:2



SECTION C-C  
V SCALE = 1:20  
H SCALE = 1:2



SECTION D-D  
V SCALE = 1:20  
H SCALE = 1:2

#### DETENTION VOLUME CAPACITY CALCULATIONS

TOTAL TRACT AREA = 1.4442 ACRES

PER BRAZORIA COUNTY DRAINAGE CRITERIA MANUAL

SECTION 3.7.1

- SMALL PROJECTS ARE TWO (2) ACRES OR SMALLER
- ON-SITE DETENTION WILL BE REQUIRED BASED ON 0.65 AC-FT/AC
- OUTLET SHALL BE SIZED IN ACCORDANCE WITH SECTION 3.7.2
- 10-YR VOLUME = 100 YR VOLUME x 0.57
- 3-YR VOLUME = 100 YR VOLUME x 0.39
- RUNOFF HYDROGRAPH AND ROUTING OF FLOOD FLOWS ARE NOT REQUIRED

1. AREA OF IMPERVIOUS COVER TO BE REMOVED/DEMOLISHED  
= 3,208 SF = 0.0851 AC  
AREA OF IMPERVIOUS COVER TO BE ADDED/CONSTRUCTED  
20,064 SF = 0.4606 AC  
NET AREA OF IMPERVIOUS COVER  
= 20,064 SF - 3,208 SF = 16,856 SF = 0.3870 AC
2. VOLUME OF DETENTION CAPACITY REQUIRED BY SECTION 3.7.1  
= 0.3870 AC x 0.65 = 0.2515 AC-FT
3. VOLUME OF DETENTION CAPACITY TO BE ADDED/CONSTRUCTED IN POND
  - POND TOP OF BANK = 54.60'
  - POND MAX WSE = 53.60'
  - OUTFALL FL = 51.60'
  - CAPACITY VOLUME = 8,343 CU.FT (FROM SOFTWARE)  
= 0.1915 AC-FT
  - VOLUME REQUIRED = 0.2515 AC-FT
  - REMAINING REQUIRED = 0.2515 - 0.1915  
= 0.060 AC-FT OR 2,614 AC.FT

4. VOLUME OF DETENTION CAPACITY TO BE CONSTRUCTED/ADDED IN PARKING LOT
  - PARKING AREA = 100' L x 47' W = 4,700 SF
  - RECTANGULAR VOLUME = 4,700 SF x 0.5 LF  
= 2,350 CU.FT
  - TETRAHEDRAL VOLUME => 1/3 (BASE AREA) x (HEIGHT)  
AREA OF BASE 11.75 SF  
HEIGHT = 100'  
=> 1,175/3 = 391.67 CU.FT
  - TOTAL VOLUME IN PARKING AREA  
= 2,350 CU.FT + 391.67 CU.FT = 2,741.67 CU.FT  
= 0.0629 AC-FT

5. VOLUME PROVIDED IN RELATION TO VOLUME REQUIRED
  - VOLUME REQUIRED = 0.2515 AC-FT
  - VOLUME PROVIDED  
= 0.1915 AC-FT + 0.0629 AC-FT  
= 0.2544 AC-FT
  - VOLUME PROVIDED > VOLUME REQUIRED  
=> 0.2544 AC-FT > 0.2515 AC-FT**VOLUME PROVIDED IS GREATER THAN VOLUME REQUIRED**

#### OVERFLOW WEIR CAPACITY

54.60  
54.10  
3'  
6'  
3'  
6'  
Q<sub>100</sub> = 4.48 CFS  
CIPOLLETTI TRAPEZOIDAL WEIR  
Q = 3.247 Lh<sup>3/2</sup>  
L = 6.0'  
h = 0.50'  
=> Q = 3.367x6.0x0.5<sup>3/2</sup> = 7.14 CFS  
Q<sub>weir</sub> > Q<sub>100</sub>

#### RESTRICTOR PIPE CALCULATIONS

2.1.3.2

PREDEVELOPMENT TIME OF CONSTRUCTION

$$TC = D / (60V) + TI$$
$$V = 0.35 \text{ FT/S (GRASS)}$$
$$TI = 15 \text{ MINUTES (UNDEVELOPED)}$$
$$D = 100 \text{ LF}$$

$$TC = 100 / (60 \times 0.35) + 15$$
$$= 19.8 \text{ MINUTES}$$

2.1.3.3

RAINFALL INTENSITY

$$I = b / (Tc + d)^e$$

$$b_{100} = 90.8$$
$$d_{100} = 16.5$$
$$e_{100} = 0.685$$
$$b_{10} = 107.9$$
$$d_{10} = 23.6$$
$$e_{10} = 0.781$$
$$b_3 = 90.6$$
$$d_3 = 19.5$$
$$e_3 = 0.803$$

$$\Rightarrow I_{100} = 7.75$$
$$I_{10} = 5.68$$
$$I_3 = 4.75$$

PRE-DEVELOPMENT PEAK RUNOFF CALCULATIONS

$$Q = CIA$$
$$C = 0.40$$
$$A = 1.444 \text{ AC}$$
$$I_{100} = 7.75$$
$$I_{10} = 5.68$$
$$I_3 = 4.75$$

$$Q_{100} = 4.48 \text{ CFS}$$
$$Q_{10} = 3.28 \text{ CFS}$$
$$Q_3 = 2.74 \text{ CFS}$$

RESTRICTOR PIPE CALCULATIONS

1. 100 YR WSE IN BASIN = 53.60'  
10 YR WSE IN BASIN = 52.85'  
3 YR WSE IN BASIN = 52.50'  
RECEIVING CHANNEL FL = 51.40'

2. Q = CA<sup>1/2</sup>gH  
H<sub>100</sub> = 53.60 - 51.40 = 2.20'  
H<sub>10</sub> = 52.85 - 51.40 = 1.45'  
H<sub>3</sub> = 52.50 - 51.40 = 1.10'  
g = 32.2 FT/S<sup>2</sup>  
C = 0.80  
Q<sub>100</sub> = 4.48 CFS  
Q<sub>10</sub> = 3.28 CFS  
Q<sub>3</sub> = 2.74 CFS  
A<sub>100</sub> = 0.470 SF  
A<sub>10</sub> = 0.424 SF  
A<sub>3</sub> = 0.407 SF

USE 8" Ø RESTRICTOR PIPE

- => AREA OF 8" Ø PIPE = 0.349 SF  
RESTRICTED Q<sub>100</sub> = 3.32 CFS  
RESTRICTED Q<sub>10</sub> = 2.70 CFS  
RESTRICTED Q<sub>3</sub> = 2.35 CFS

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DRAWING TITLE:

DRAINAGE CALCULATIONS

DRAWN BY:

RA

SCALE:

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REV#

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NOTE:



02/23/2022

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C5.1



Fif Name: C5- DRAINAGE PLANNING, Last Printed: February 21, 2022 2:48 PM

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DRAWING TITLE:

DRAINAGE DETAILS

DRAWN BY:

RA

SCALE:

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NH

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11-12-2021

REV#

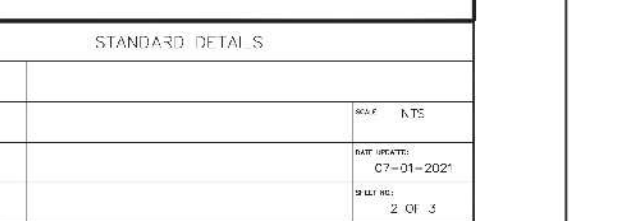
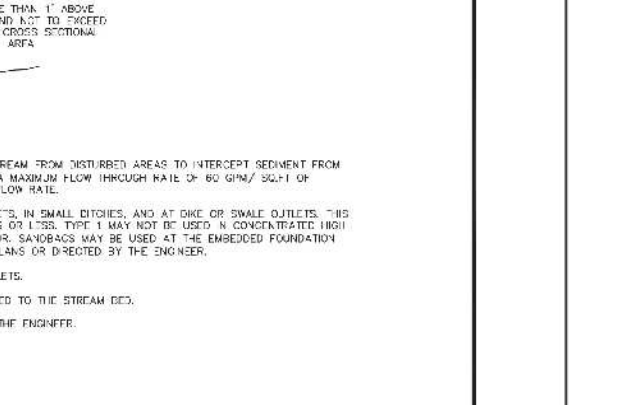
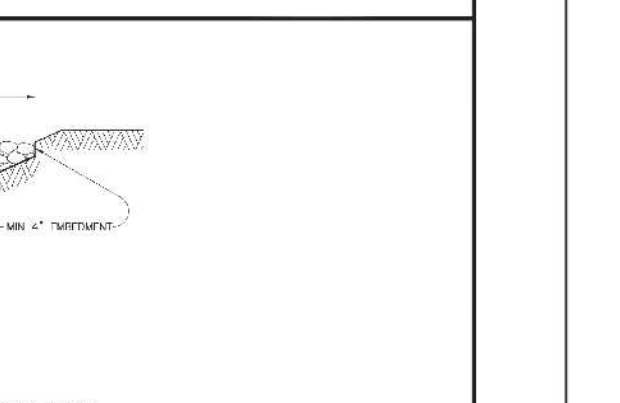
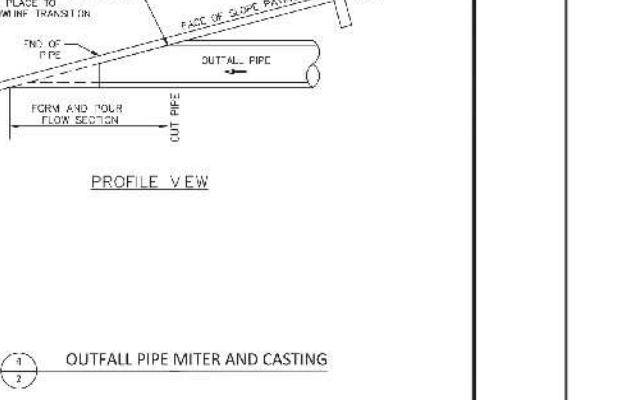
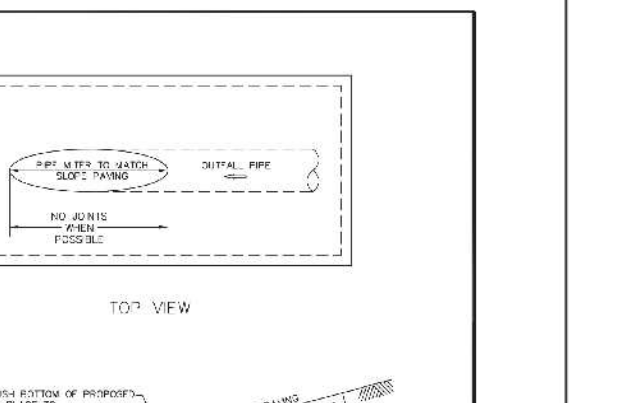
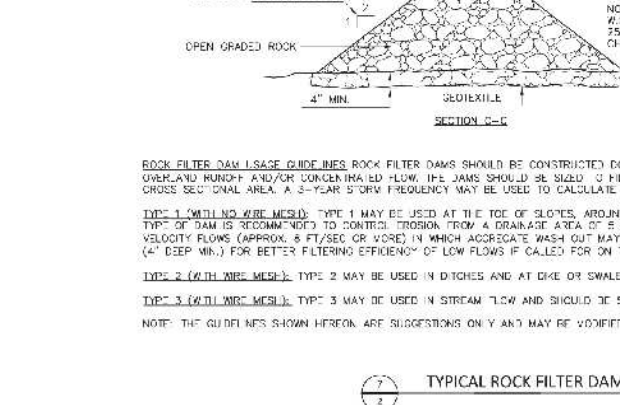
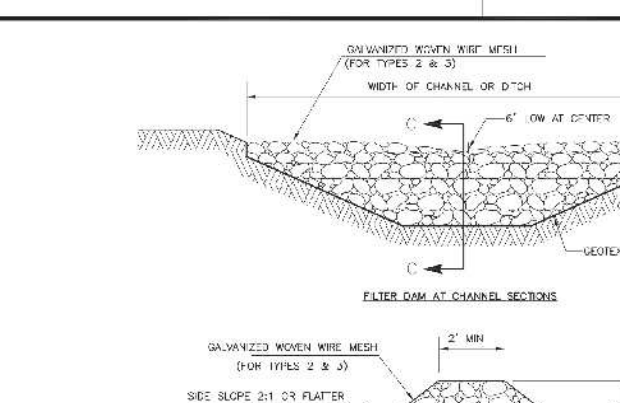
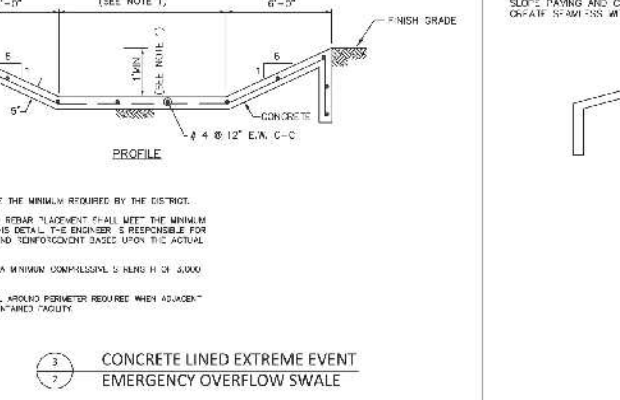
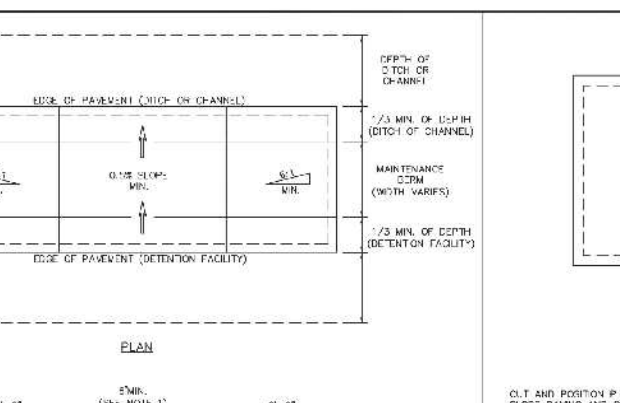
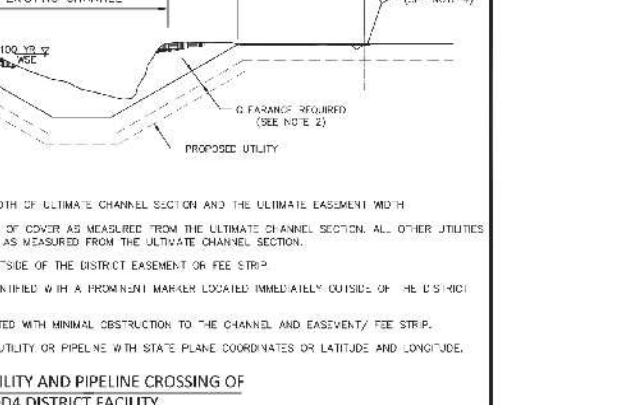
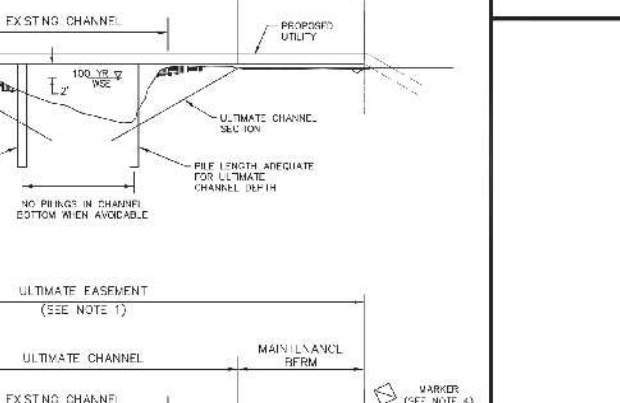
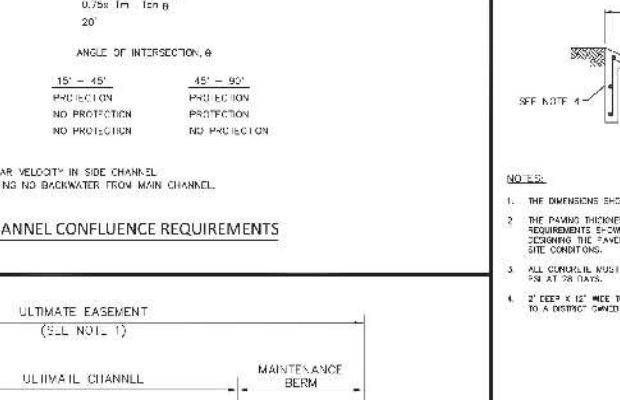
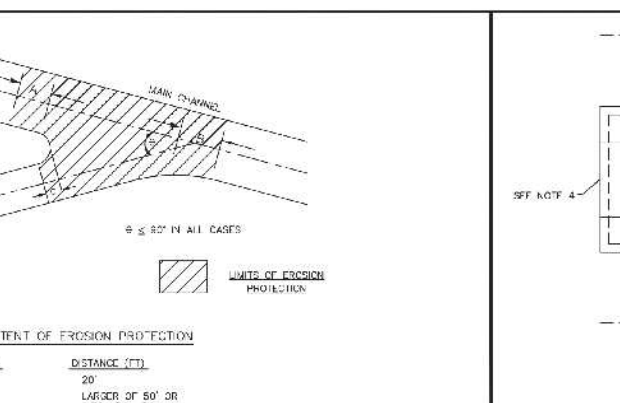
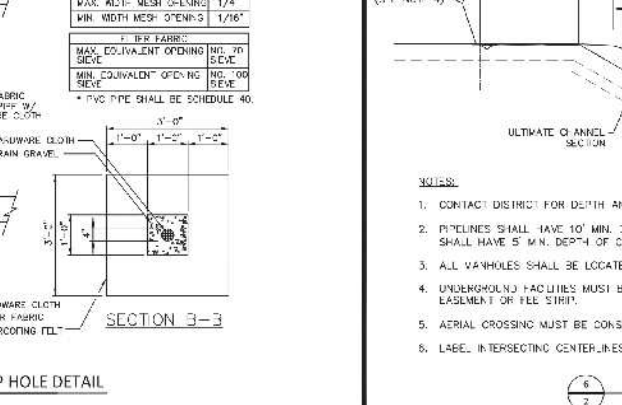
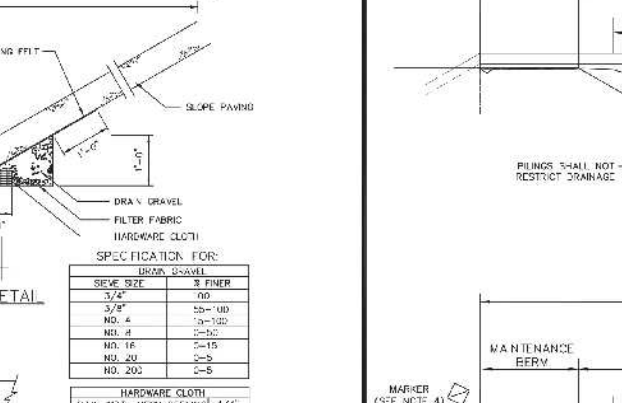
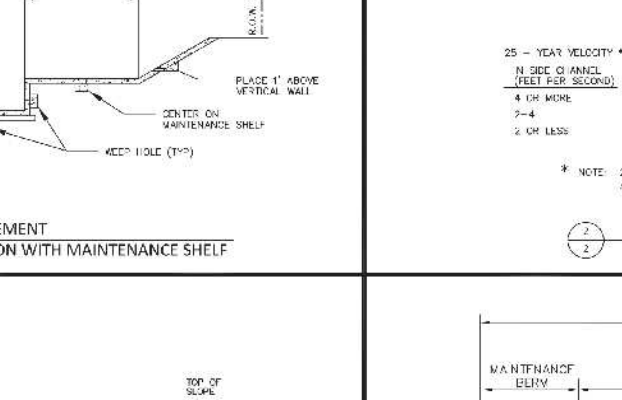
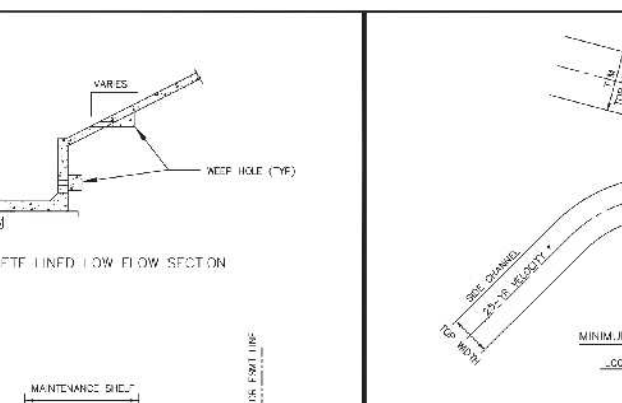
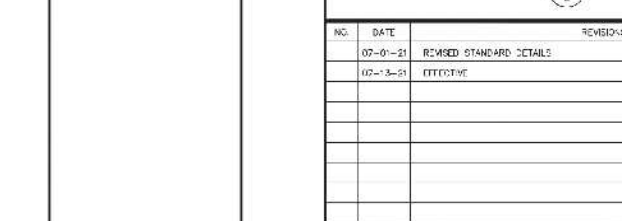
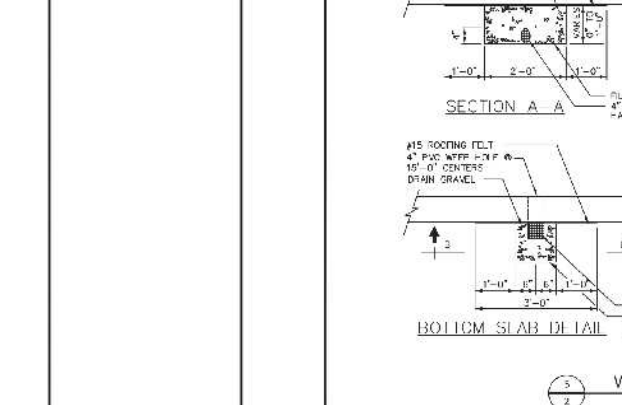
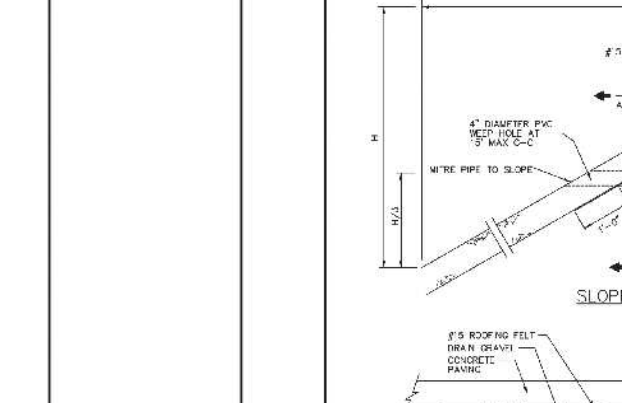
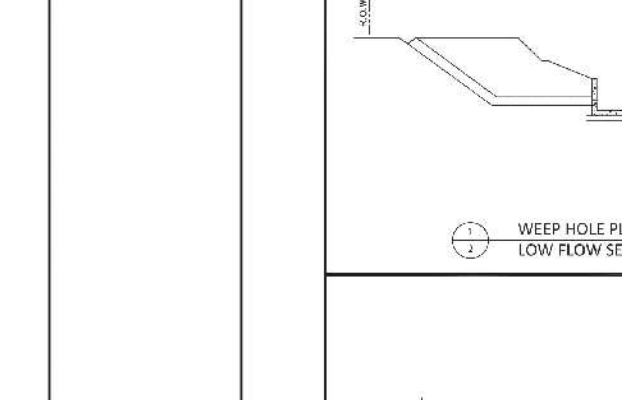
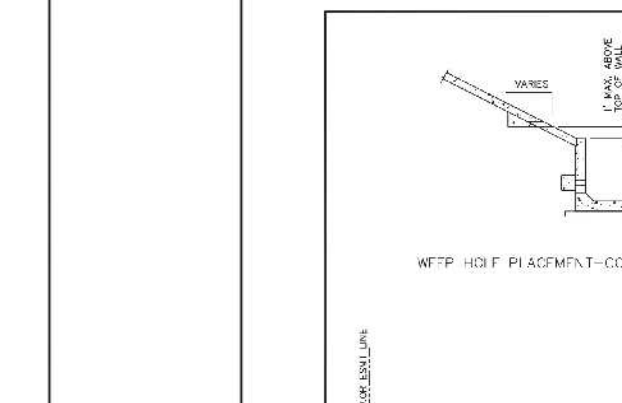
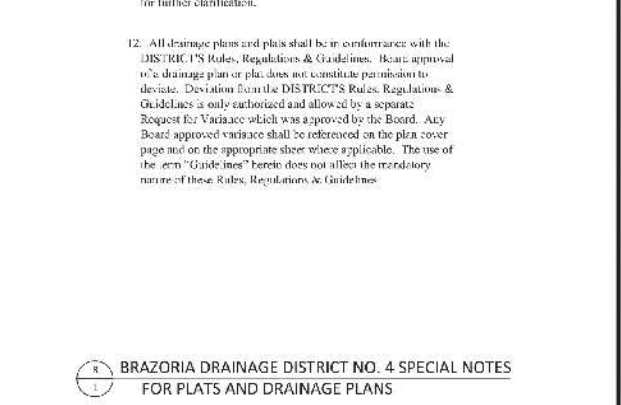
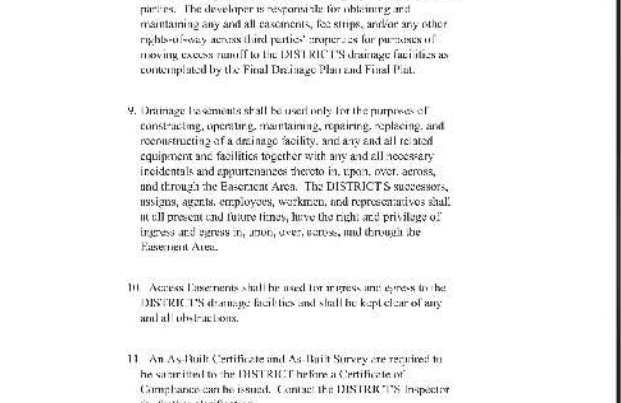
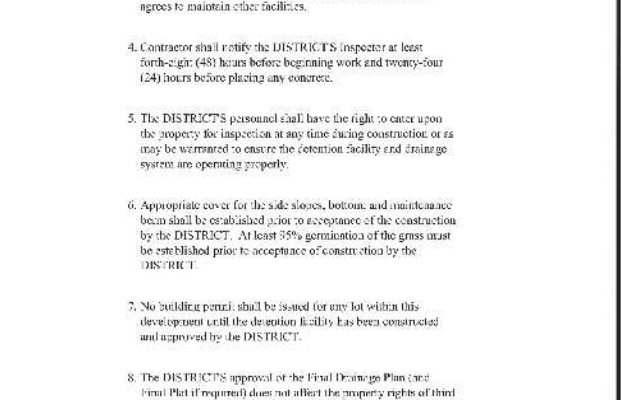
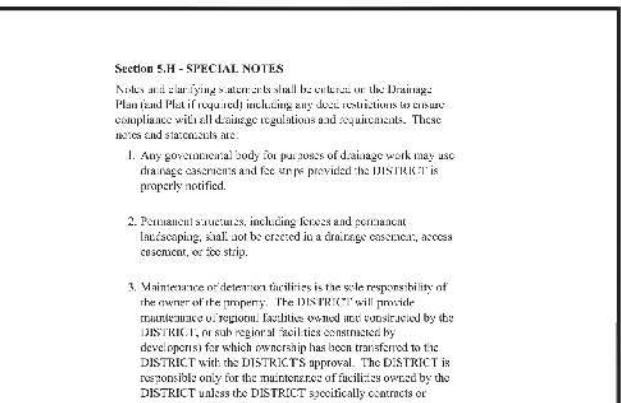
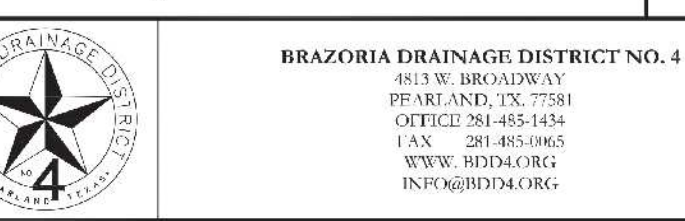
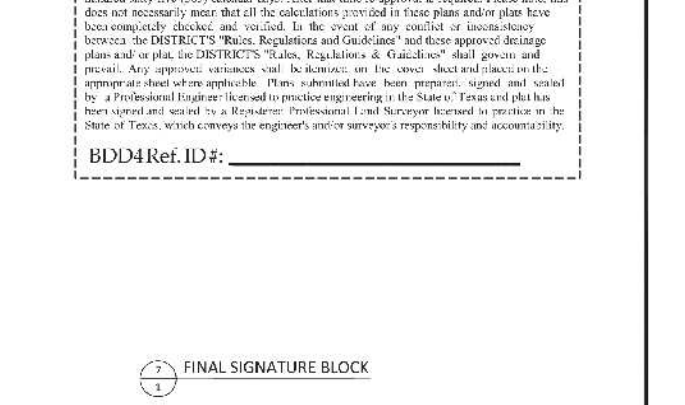
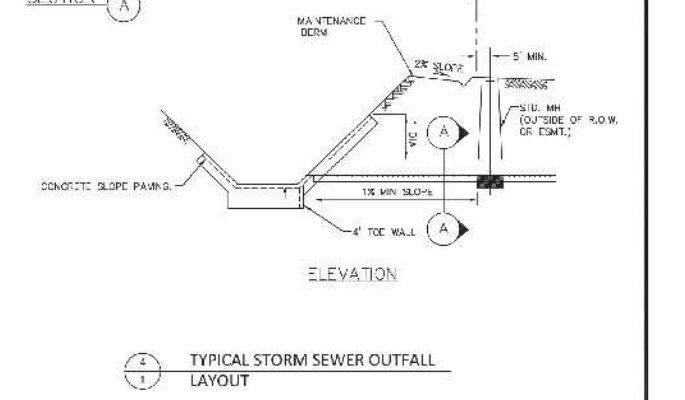
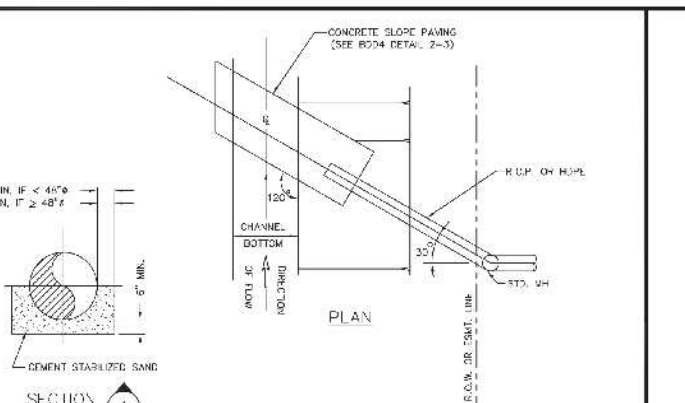
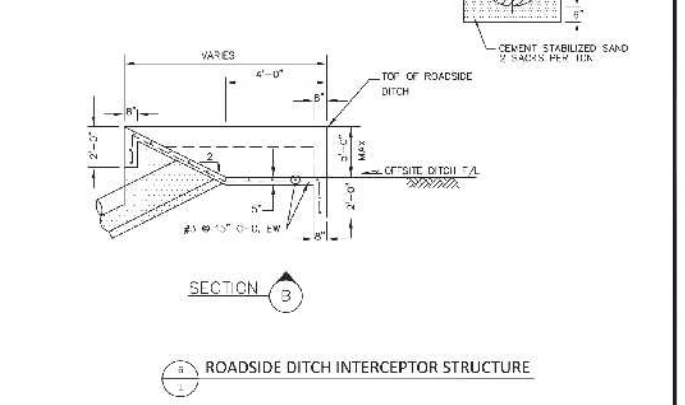
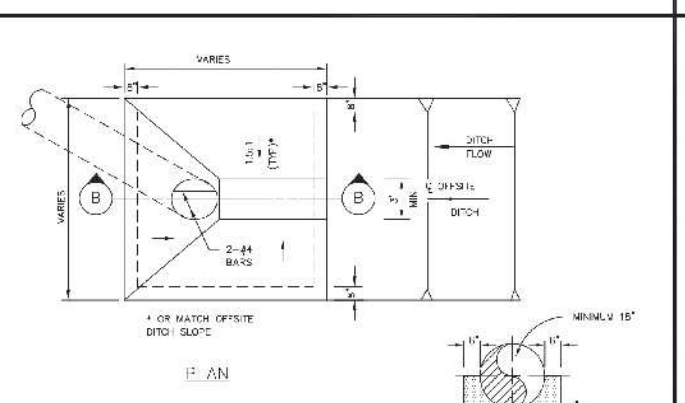
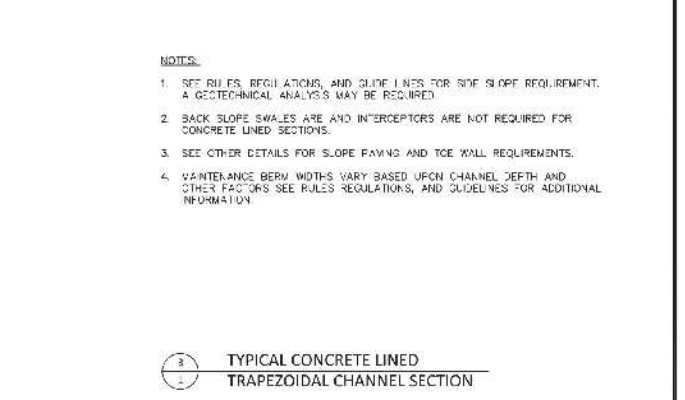
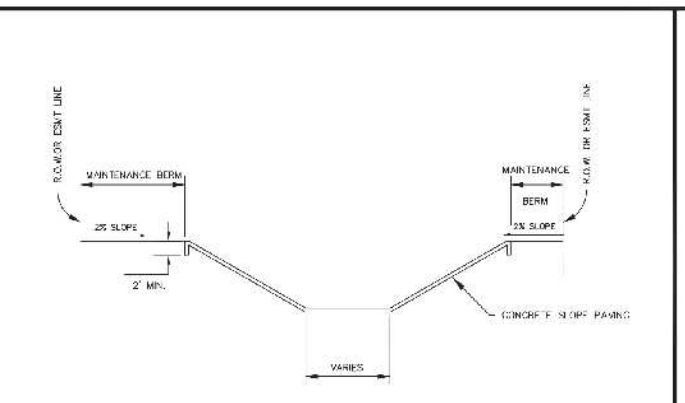
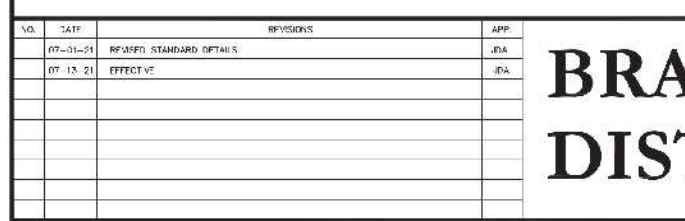
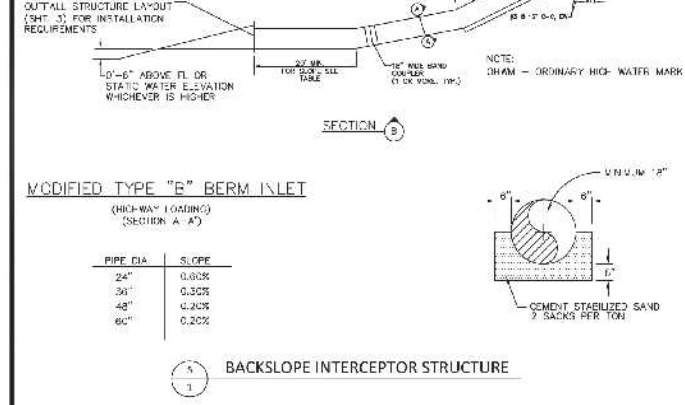
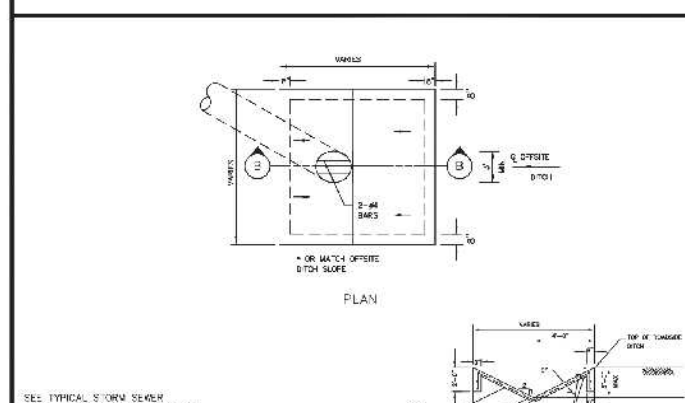
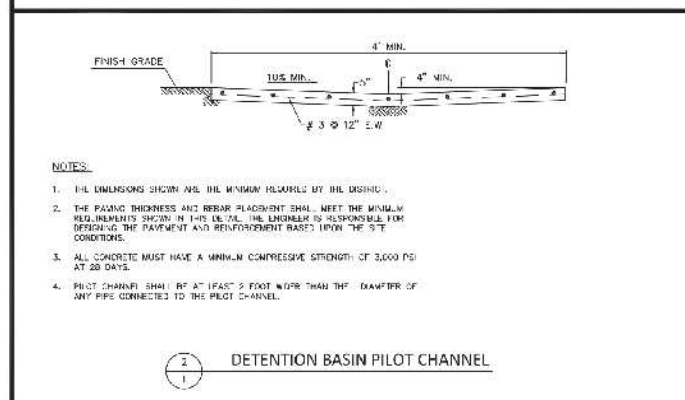
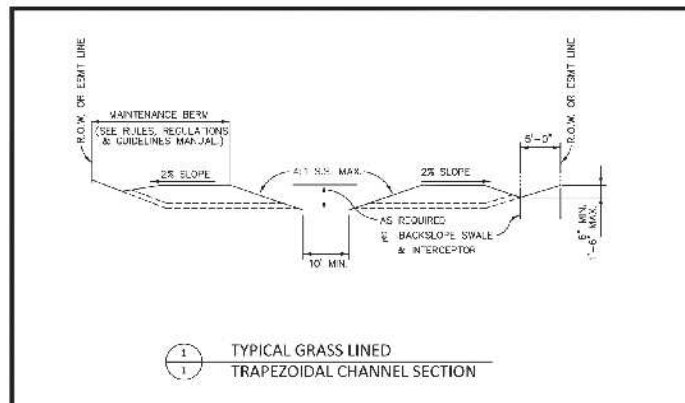
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NOTE:

02/23/2022

Plan/Plan approvals expire after 365 days

C5.2



## BRAZORIA DRAINAGE DISTRICT NO. 4



BRAZORIA DRAINAGE DISTRICT NO. 4  
4813 W. BROADWAY  
PEARLAND, TX 77581  
OFFICE 281-485-1434  
FAX 281-485-1405  
WWW.BDD4.ORG  
INFO@BDD4.ORG

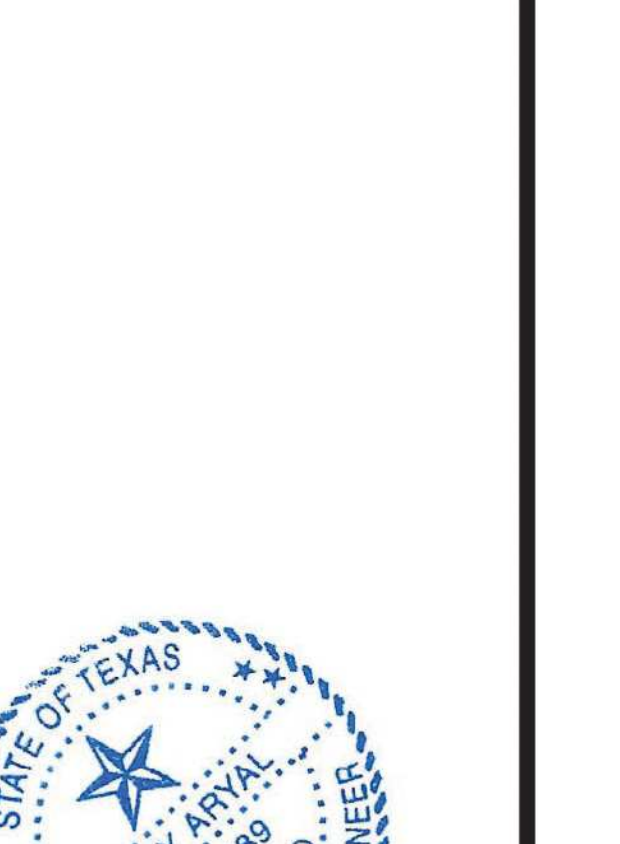
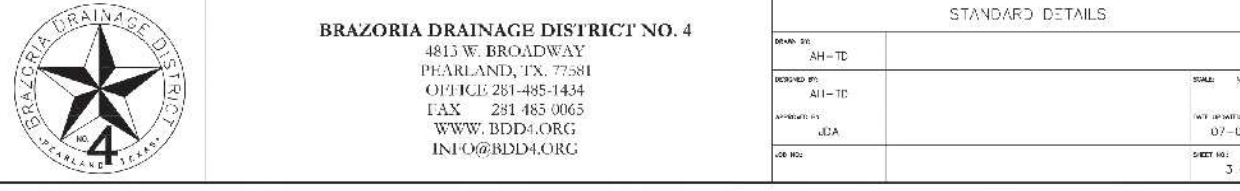
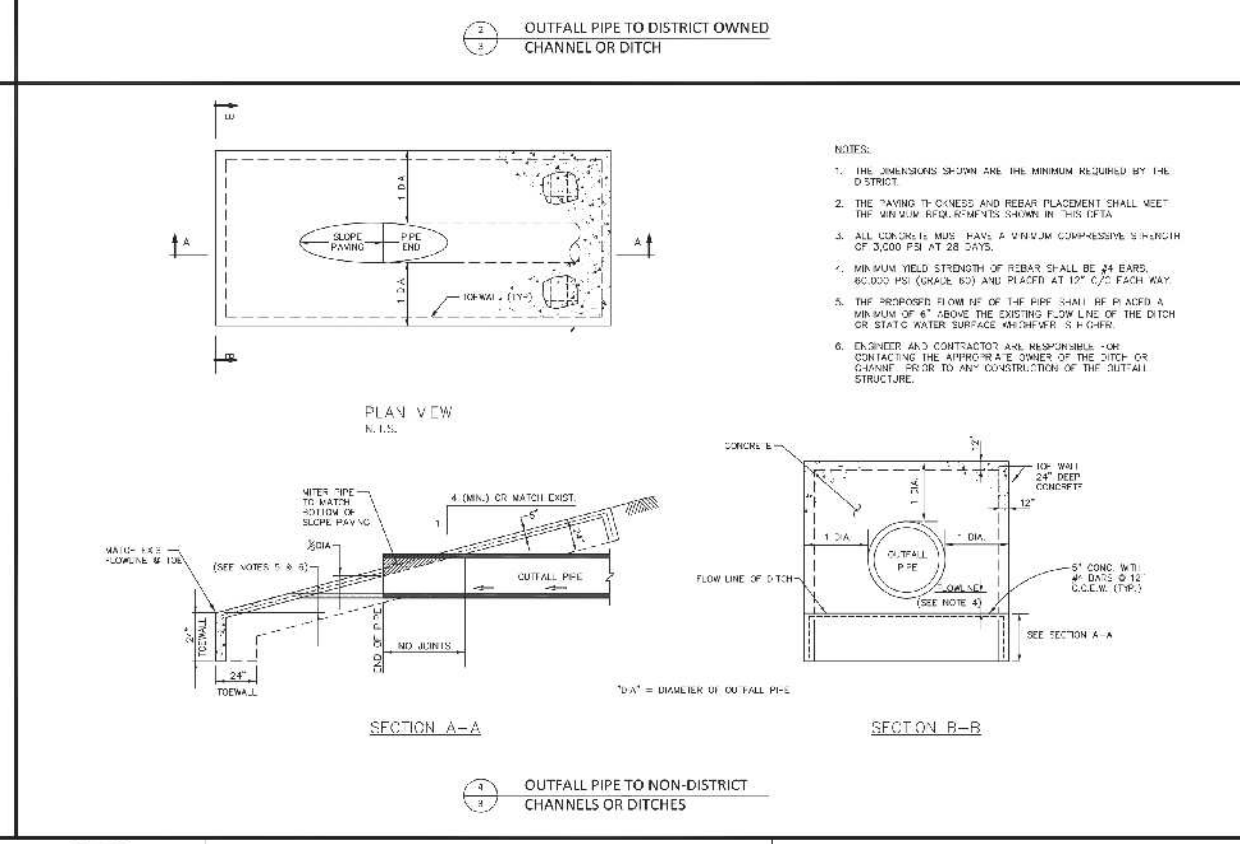
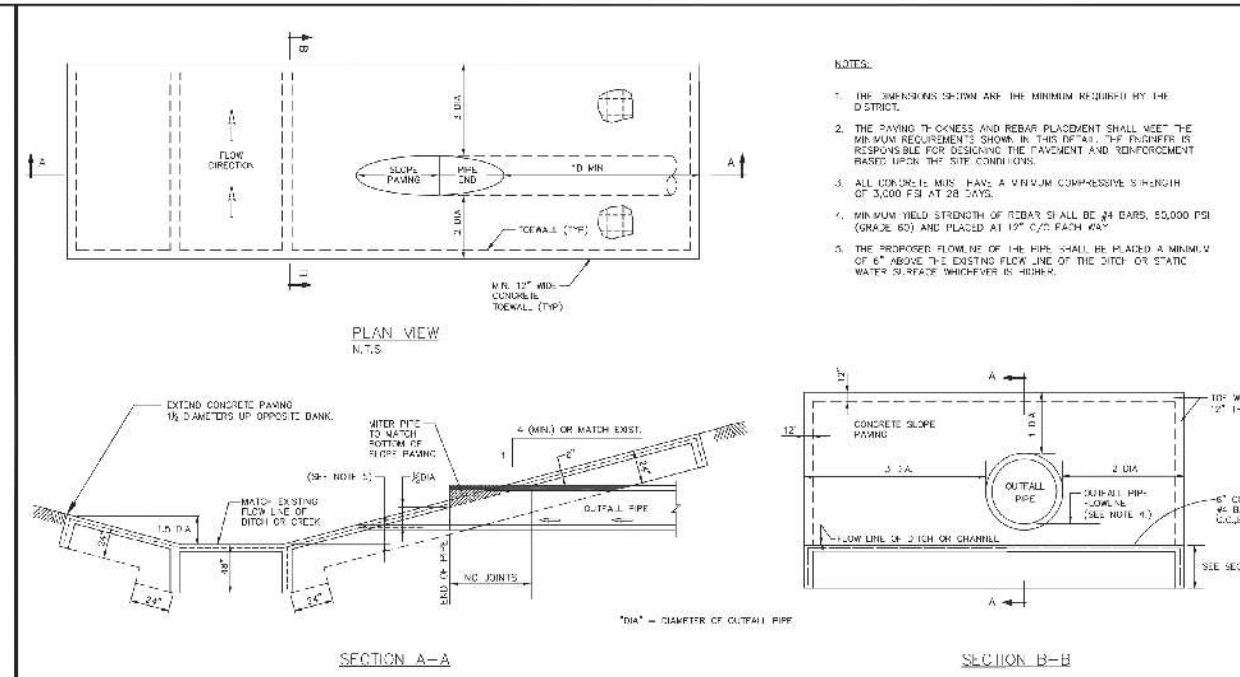
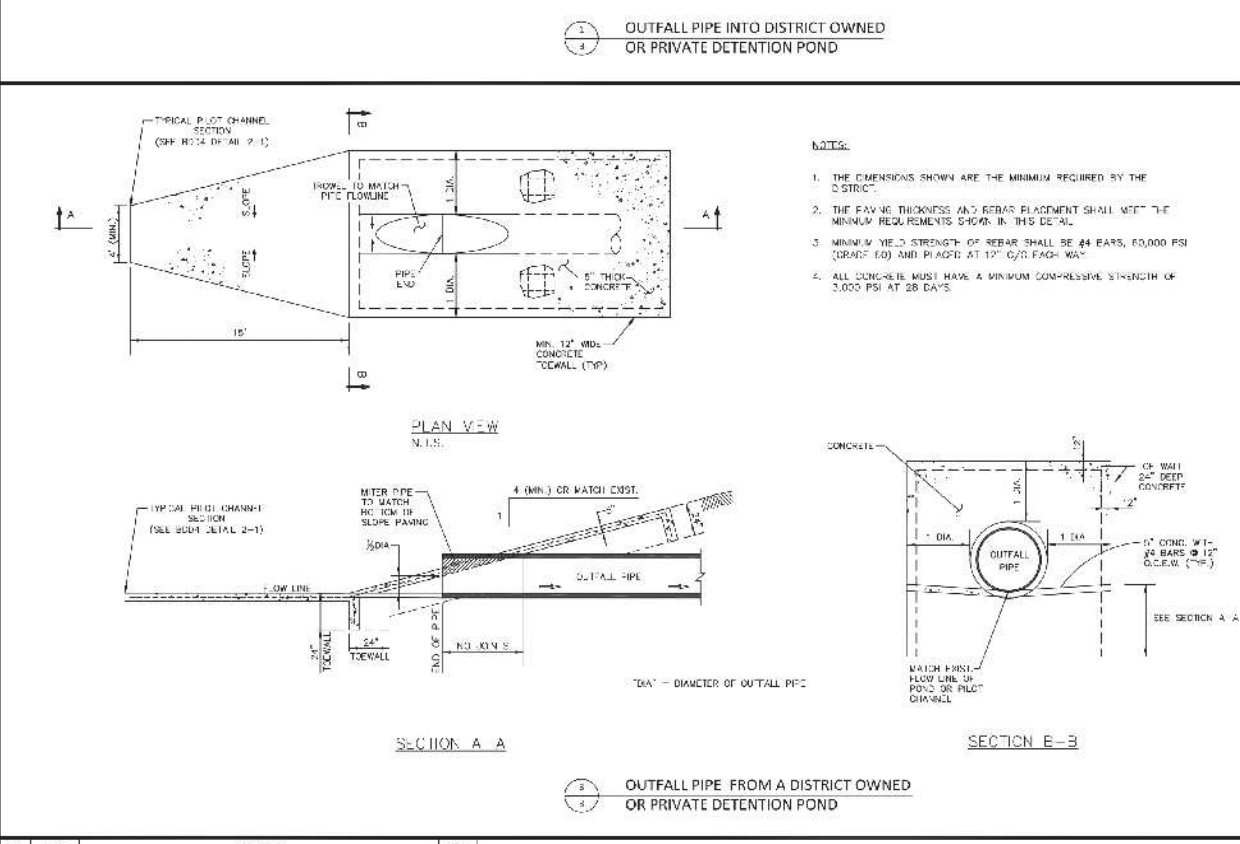
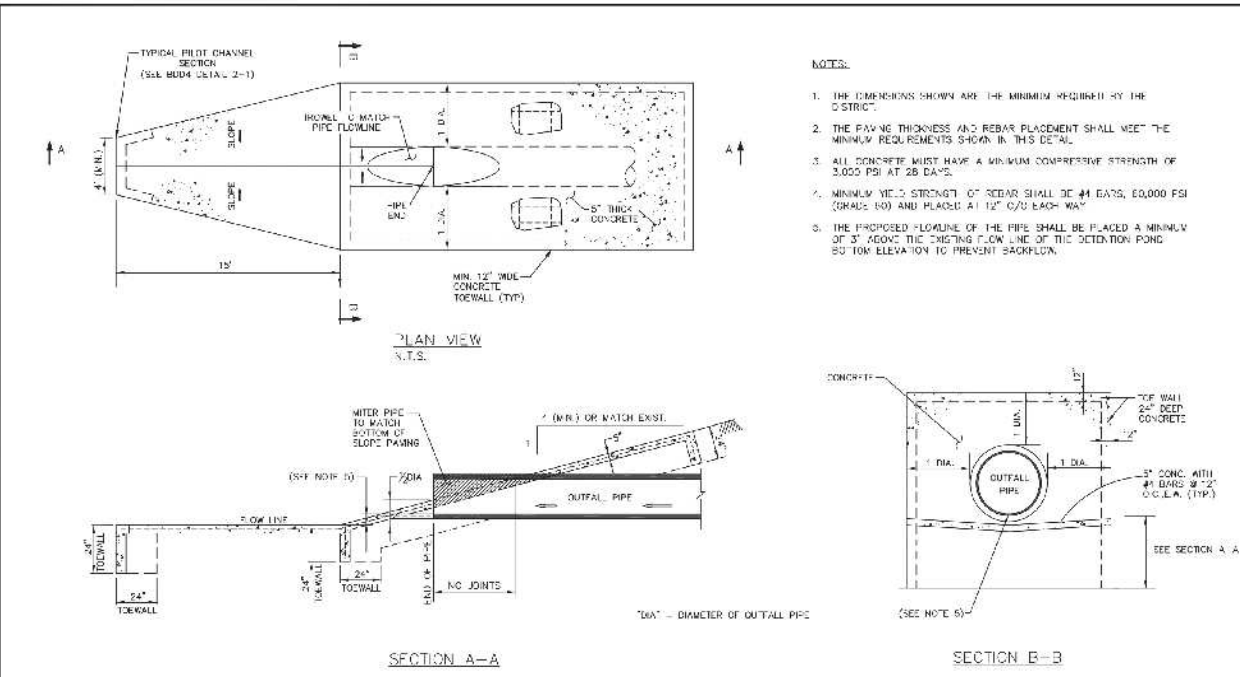
STANDARD DETAILS  
DATE: 11-12-2021  
DRAWN BY: RA  
CHKD BY: NH  
REV# 1  
DATE: 11-12-2021

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STANDARD DETAILS  
DATE: 11-12-2021  
DRAWN BY: RA  
CHKD BY: NH  
REV# 1  
DATE: 11-12-2021





File Name: C6 - UTILITY PLAN.dwg, Last Plotted: February 21, 2022 2:48 PM

**FIF ENGINEERING**  
1526 KATY GAP RD. SUITE #804 KATY, TX 77494  
PHONE: 346-800-4343  
WWW.FIFENGINEERING.COM

**FIRM #**  
**F-17870**

PROJECT ADDRESS:

7933 CR 48  
IOWA COLONY, TX 77583

DRAWING TITLE:

UTILITY PLAN

DRAWN BY:

RA

SCALE:

1" = 20'

CHKD. BY:

NH

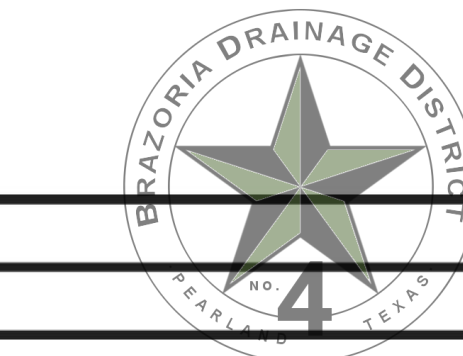
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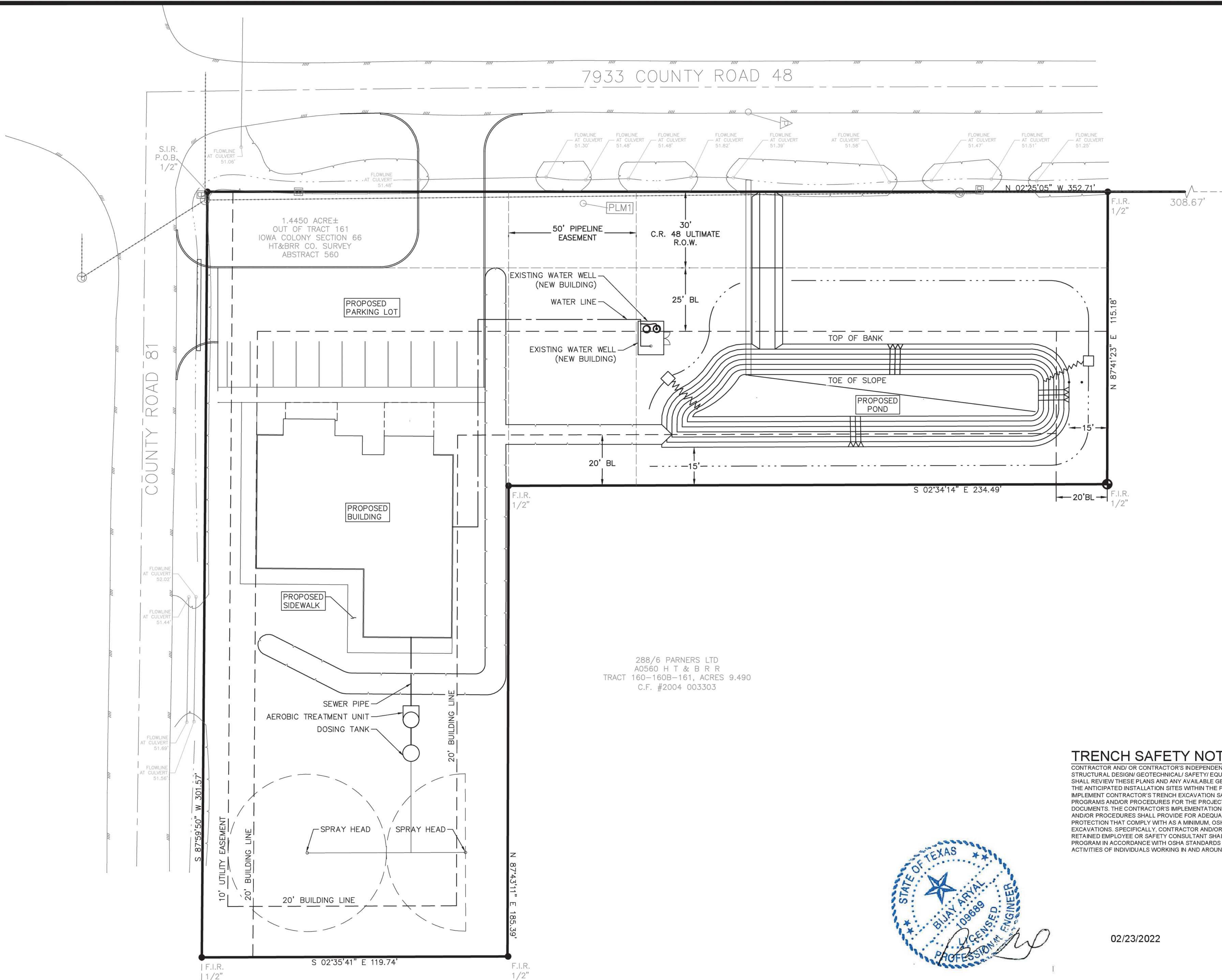
DATE:

NOTE:



Plan/Plan approvals expire after 365 days

C6



## LEGEND

|  |                                          |
|--|------------------------------------------|
|  | PROPERTY LINE                            |
|  | ADJACENT PROPERTY LINE                   |
|  | EXISTING CURB                            |
|  | EXISTING EASEMENT LINE                   |
|  | EXISTING OVERHEAD ELECTRIC               |
|  | PROPOSED BUILDING OVERHANG               |
|  | PROPOSED FENCE LINE                      |
|  | PROPOSED 6-INCH CURB                     |
|  | PROPOSED CONCRETE SIDEWALK               |
|  | PROPOSED SITE LANDSCAPING                |
|  | PROPOSED STORM SEWER CATCH BASIN         |
|  | PROPOSED CONCRETE WHEELSTOP              |
|  | PROPOSED WATER METER AND BACKFLOW DEVICE |
|  | EXISTING SANITARY SEWER MANHOLE          |
|  | EXISTING STORM SEWER MANHOLE             |
|  | EXISTING TELECOM STRUCTURE               |
|  | EXISTING WATER VALVE                     |
|  | EXISTING UTILITY POLE                    |
|  | NUMBER OF PARKING SPACES                 |

## GENERAL SITE NOTES

- CONTRACTOR SHALL BE RESPONSIBLE FOR ACQUIRING ALL NECESSARY PERMITS BEFORE BEGINNING CONSTRUCTION.
- ALL DIMENSIONS ARE TO FACE OF CURB, TO CENTER OF PAINT STRIPING, OR PERPENDICULAR TO THE PROPERTY LINE. ALL RADII AND OTHER DIMENSIONS ARE TO BACK OF CURB.
- COORDINATE CONTROL IS AS SHOWN. NO OFFSETS FROM FACE OF CURB OR BUILDINGS ARE GIVEN.
- CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER OF ANY QUESTIONS THAT MAY ARISE CONCERNING THE INTENT, PLACEMENT, OR LIMITS OF DIMENSIONS NECESSARY FOR CONSTRUCTION OF THE PROJECT.
- CONTRACTOR SHALL BE RESPONSIBLE FOR RESTORING TO ITS ORIGINAL OR BETTER CONDITION ANY DAMAGE DONE TO EXISTING UTILITIES, FENCES, PAVEMENT, CURBS, DRIVEWAYS, SIDEWALKS, OR SIGNS.
- CONTRACTOR SHALL PRESERVE ALL PROPERTY CORNER PINS/RODS, CONTROL POINTS, AND BENCHMARKS. IF ANY ARE DESTROYED OR REMOVED BY THE CONTRACTOR OR HIS EMPLOYEES, THEY SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE.
- FIELD SURVEY COMPLETED BY GRULLER SURVEYING, LLC ON APRIL 5, 2011.
- THE BOUNDARY/TOPO SURVEY SHALL BE CONSIDERED A PART OF THE CONTRACT DOCUMENTS.
- ALL CURBS ARE 6" HIGH, UNLESS OTHERWISE NOTED.
- ALL MATERIALS AND CONSTRUCTION PROCEDURES WITHIN THE SCOPE OF THIS CONTRACT SHALL CONFORM TO ALL APPLICABLE CITY OF HOUSTON SPECIFICATIONS.
- THE CONTRACTOR SHALL VERIFY THE EXACT LOCATION OF EXISTING UTILITIES PRIOR TO CONSTRUCTION. ANY UTILITIES, WHETHER SHOWN ON THE PLANS OR NOT, DAMAGED BY THE CONTRACTOR SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CONSTRUCTION STAKING.
- DIMENSIONAL CONTROL POINTS ARE PROVIDED AS NEEDED. ADDITIONAL POINTS MAY BE AVAILABLE UPON REQUEST.
- ALL PAVEMENT MARKINGS AND SIGNAGE OF ACCESSIBLE PARKING AREAS SHALL BE IN ACCORDANCE WITH THE MOST CURRENT T&S AND ADA STANDARDS.
- ALL GROUND-MOUNTED OR BUILDING-MOUNTED EQUIPMENT TO SERVE A BUILDING, INCLUDING MECHANICAL, UTILITY METERBANKS, AND HEATING OR COOLING EQUIPMENT MUST BE SCREENED FROM PUBLIC VIEW WITH LANDSCAPING OR ARCHITECTURAL TREATMENT. REFER TO ARCHITECT AND LANDSCAPE PLANS FOR DETAILS.
- NOT FIELD VERIFIED IS DENOTED N.F.V. IN PLAN.

## TRENCH SAFETY NOTE

CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/ GEOTECHNICAL/ SAFETY/ EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND ANY AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITES WITHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S TRENCH EXCAVATION SAFETY PROTECTION SYSTEMS, PROGRAMS AND/OR PROCEDURES FOR THE PROJECT DESCRIBED IN THE CONTRACT DOCUMENTS. THE CONTRACTOR'S IMPLEMENTATION OF THESE SYSTEMS, PROGRAMS AND/OR PROCEDURES SHALL PROVIDE FOR ADEQUATE TRENCH EXCAVATION SAFETY PROTECTION THAT COMPLY WITH AS A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATIONS. SPECIFICALLY, CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.



02/23/2022



SYSTEM CALCULATIONS

SYSTEM 1:

LOADING NOTES

1. DANCE STUDIO (5 DAYS/WEEK)  
= DAILY FLOW 15 GPD FOR 20 PATRONS = 300 GPD  
2. OFFICE WORKERS (5 DAYS/WEEK)  
= DAILY FLOW 5 GPD FOR 4 EMPLOYEES = 20 GPD

TOTAL

= 320 GPD (5 DAYS/WEEK)

TOTAL W/ WATER SAVING DEVICES

= 256 GPD (5 DAYS/WEEK)

BOD CALCULATIONS:

FLOW = 256 GPD  
BOD EQUALS 300 MG/L FOR OFFICE USE  
0.000256 x 8.32 x 300 MG/L = 0.638976 LBS PER DAY  
BOD LOADING CAPACITY FOR 500GPD ATU = 1.25 LBS

GENERAL NOTES

1. INSTALLATION WILL BE IN ACCORDANCE WITH TAC 285 AND BRAZORIA COUNTY RULES AND REGULATIONS.  
2. PRIVATE WATER SUPPLY PROVIDED BY PRIVATE WATER WELL LOCATED ON-SITE.  
3. PROVIDE SLEEVES FOR ALL SANITARY SEWER PIPE CROSSING UNDER PAVED AREAS. SLEEVE DIAMETER SHALL BE TWO NOMINAL SIZES GREATER THAN THE CARRIER PIPE AND SHALL EXTEND 2' BEYOND THE EDGE OF PAVEMENT.  
4. PROVIDE SLEEVES FOR ALL SANITARY SEWER PIPE CROSSING WATER LINES. SLEEVE DIAMETER SHALL BE TWO NOMINAL SIZES GREATER THAN THE CARRIER PIPE. SLEEVES SHALL BE A MINIMUM OF 20 FEET IN LENGTH AND CENTERED AT THE WATERLINE CROSSING.  
5. ALL POPULATION VALUES PROVIDED BY THE CLIENT.  
6. APPROPRIATE CLEANOUTS SHALL BE INSTALLED EVERY 100'.  
7. INSTALL SWPPP MEASURES AS NEEDED.

SPRAY AREA CALCULATIONS

1. RI FOR BRAZORIA COUNTY FROM TAC 285 TABLE 1 = 0.41  
2. DAILY FLOW FROM ATU = 256 GPD (5 DAYS/WEEK)  
3. DAILY FLOW FROM PUMP TANK = 182.86 GPD (7 DAYS/WEEK)  
4. SPRAY AREA REQUIRED = 182.86/0.41 = 4,460.00 SQ.FT.  
5. USE WEATHERMATIC 2.5LA OR EQUIVALENT 31" RADIUS SPRAY HEADS.

SYSTEM 1 COMPONENTS

- 1 ~ 500 GALLON AEROBIC TREATMENT UNIT  
1 ~ 1,000 GALLON PUMP TANK

SYSTEM 1 PUMP SETTINGS

- 1 ~ 1,000 GALLON PUMP TANK MODEL NO. PCAS-1000 AS MANUFACTURED BY PARK ENVIRONMENTAL EQUIPMENT OR APPROVED EQUAL.

TANK INTERIOR DIAMETER = 72"

TANK CAPACITY HEIGHT = 54"

TANK CAPACITY VOLUME = 951.75 GAL = 17.62 GAL/IN

PUMP OFF SETTING = 11"

PUMP ON SETTING = 15"

ALARM ON SETTING = 43"

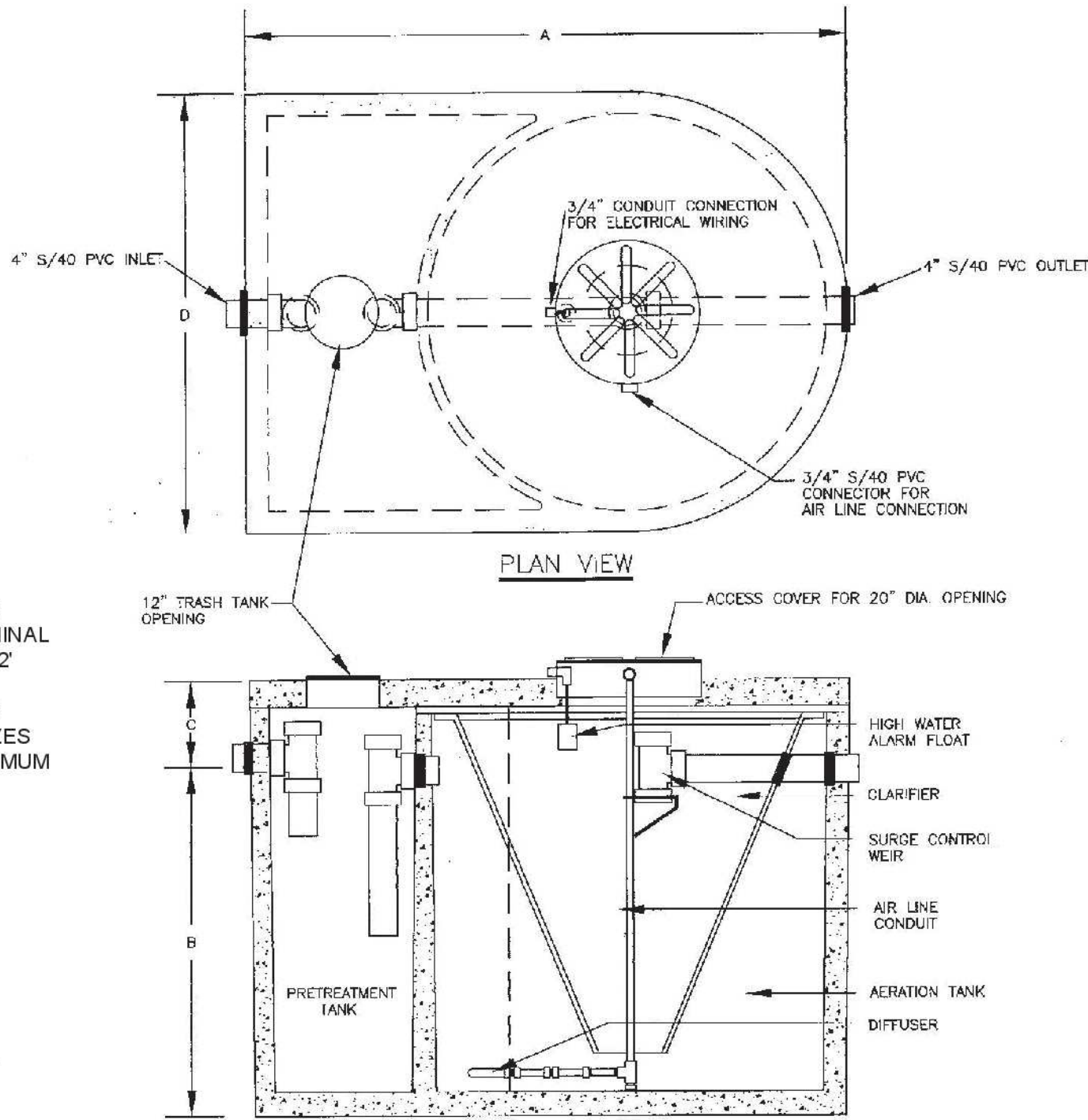
SYSTEM 1 SPRAY FIELD TIMER SETTINGS

- NUMBER OF ZONES = 1  
GALLONS PER MINUTE = 4.20 GPM  
TOTAL FLOW PER ZONE = 182.86 GAL  
NUMBER OF DOSES PER DAY = 3  
MINUTES PER DOSE = 14.51 MIN

DOSE SPRAY FIELD FOR 15 MINUTES EVERY 8 HOURS.

AEROBIC TREATMENT UNIT DETAIL

AEROBIC TREATMENT UNIT TO BE 500 GPD MODELS NO. 500NC2 AS MANUFACTURED BY CLEARSTREAM OR APPROVED EQUAL.



MODEL NC2

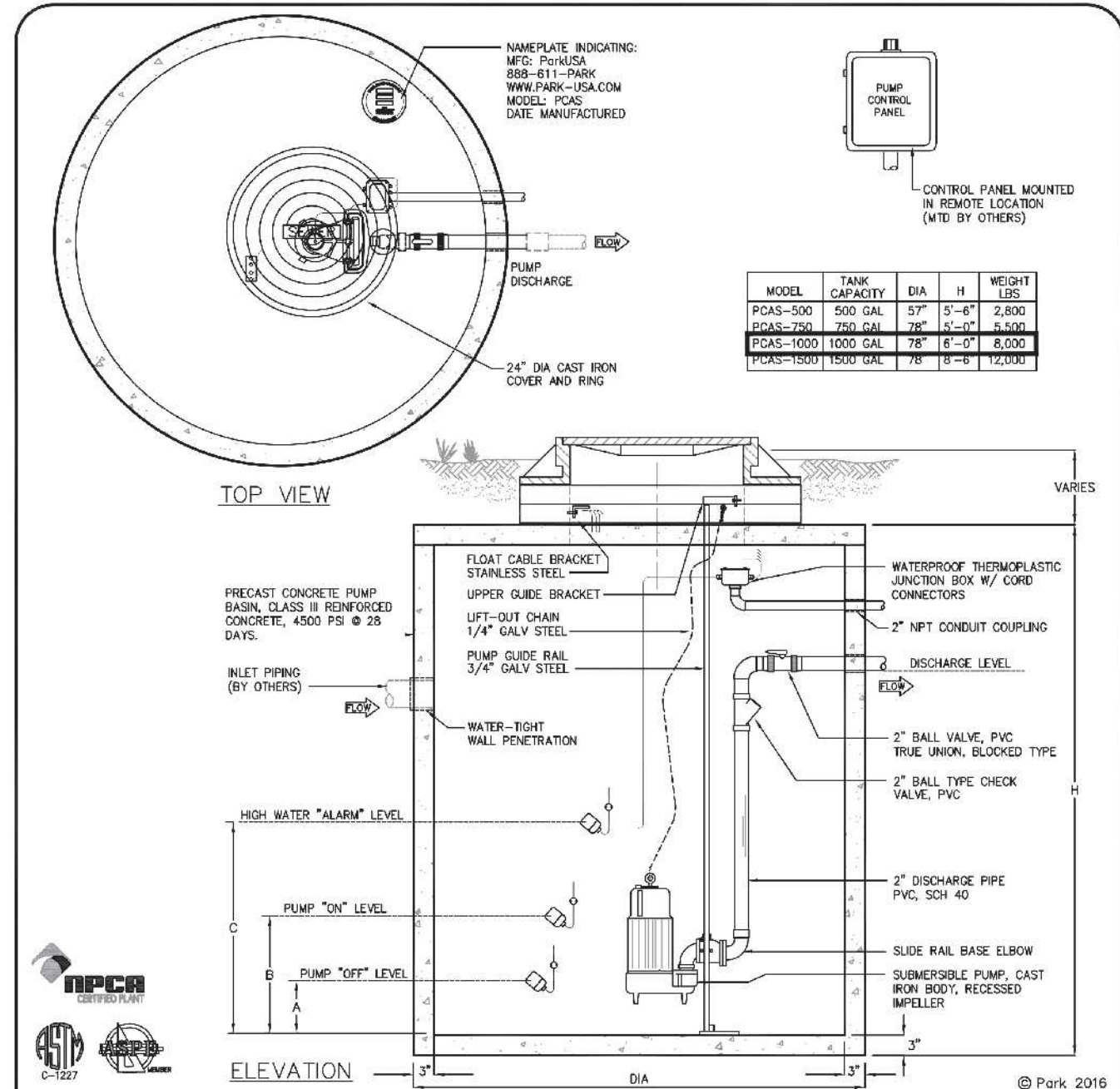
SECTION

DIMENSIONAL DATA

| MODEL   | A    | B   | C       | D   |
|---------|------|-----|---------|-----|
| 500 NC2 | 104" | 60" | 10-1/2" | 75" |
| 600 NC2 | 107" | 60" | 10-1/2" | 82" |
| 750 NC2 | 107" | 70" | 10-1/2" | 82" |
| 800 NC2 | 107" | 72" | 8-1/2"  | 82" |

PUMP TANK DETAIL

PUMP TANK TO BE 1,000 GALLON MODEL PCAS-1000 AS MANUFACTURED BY PARK USA OR APPROVED EQUAL.



Specifications

PUMPS: Pumps shall be centrifugal solids handling type with submersible type motor. Pumps shall have a capacity as follows:

| PUMP No. | TYPE | GPM | TDH | RPM | HP | ELECTRICAL V | PH | Hz |
|----------|------|-----|-----|-----|----|--------------|----|----|
|----------|------|-----|-----|-----|----|--------------|----|----|

CONTROLS:

Pump controls shall be mounted inside a UL Listed NEMA-4X enclosure and include circuit breakers, alarm circuit fuse, IEC rated motor starter, pump HDA, and alternator relay. Panel shall have a visual alarm beacon. Panel is designed for remote mounting.

PUMP BASIN:

Pump Basin shall be manufactured from reinforced concrete, Class III 4500 PSI @ 28 Days. Tank shall be designed in conformance to ASTM C-1227.

PROJECT:

CUSTOMER:

ARCHITECT:

ENGINEER:

ORDER #:

DATE:

SYSTEM:



SIMPLEX SEPTIC PUMP SYSTEM  
MODEL PCAS

DATE

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SPRAY HEAD SPECIFICATIONS

USE 31" RADIUS SPRAY HEADS MODEL NO. 2.5LA AS MANUFACTURED BY WEATHERMATIC OR APPROVED EQUAL.  
RADIUS OF SPRAY HEAD = 31"  
FLOW PER SPRAY HEAD = 2.1 GPM  
PRESSURE REQUIREMENT = 30PSI



T35 DIMENSIONS

Height (closed): 8 1/2" (22.4 cm)

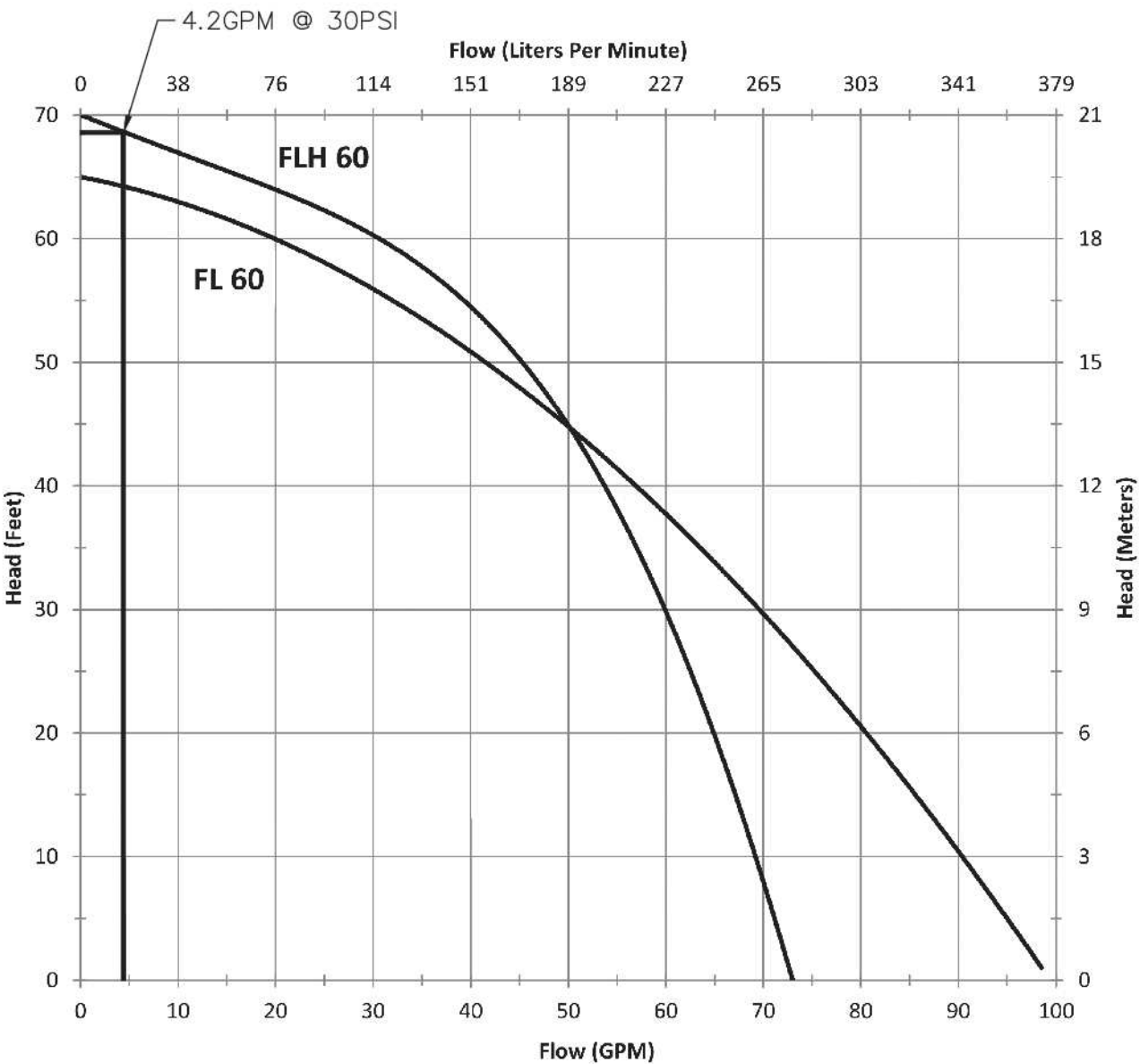
Pop-up Height: 4" (10.2 cm)

Inlet: 1" IPS

| T3 / T35 Performance                |              |            |          |              |             |              |          |                  |              |              |              |
|-------------------------------------|--------------|------------|----------|--------------|-------------|--------------|----------|------------------|--------------|--------------|--------------|
| Nozzle                              | Pressure PSI | Radius ft. | Flow gpm | Presid. in/h | Presid. m/h | Pressure BAR | Radius m | Metric Flow m3/h | Presid. mm/h | Presid. mm/h | Presid. mm/h |
| Standard Angle 26° Trajectory       |              |            |          |              |             |              |          |                  |              |              |              |
| 1                                   | 30           | 28         | 0.7      | 0.17         | 0.20        | 2.1          | 8.5      | 0.16             | 4            | 5            | 5            |
|                                     | 40           | 32         | 0.8      | 0.16         | 0.17        | 2.8          | 9.8      | 0.18             | 4            | 4            | 4            |
|                                     | 50           | 33         | 0.9      | 0.16         | 0.19        | 3.4          | 10.1     | 0.20             | 4            | 5            | 5            |
|                                     | 60           | 35         | 1.0      | 0.18         | 0.20        | 4.1          | 10.1     | 0.23             | 4            | 5            | 5            |
| 15                                  | 30           | 31         | 1.0      | 0.20         | 0.23        | 2.1          | 9.4      | 0.23             | 5            | 6            | 6            |
|                                     | 40           | 35         | 1.4      | 0.18         | 0.22        | 2.8          | 10.7     | 0.27             | 5            | 6            | 6            |
|                                     | 50           | 36         | 1.6      | 0.24         | 0.27        | 3.4          | 11.0     | 0.36             | 6            | 7            | 7            |
|                                     | 60           | 36         | 1.8      | 0.27         | 0.31        | 4.1          | 11.0     | 0.41             | 7            | 8            | 8            |
| 2                                   | 30           | 28         | 1.2      | 0.29         | 0.34        | 2.1          | 8.5      | 0.27             | 7            | 9            | 9            |
|                                     | 40           | 35         | 1.4      | 0.22         | 0.25        | 2.8          | 10.7     | 0.32             | 6            | 6            | 6            |
|                                     | 50           | 35         | 1.9      | 0.30         | 0.34        | 3.4          | 10.7     | 0.43             | 8            | 9            | 9            |
|                                     | 60           | 35         | 2.3      | 0.36         | 0.42        | 4.1          | 10.7     | 0.52             | 9            | 11           | 11           |
| 3                                   | 30           | 30         | 1.7      | 0.36         | 0.42        | 2.1          | 9.1      | 0.39             | 9            | 11           | 11           |
|                                     | 40           | 38         | 2.0      | 0.27         | 0.31        | 2.8          | 11.6     | 0.45             | 7            | 8            | 8            |
|                                     | 50           | 39         | 2.4      | 0.30         | 0.35        | 3.4          | 11.9     | 0.55             | 8            | 9            | 9            |
|                                     | 60           | 41         | 2.8      | 0.32         | 0.37        | 4.1          | 12.6     | 0.64             | 8            | 9            | 9            |
| 3.5                                 | 40           | 41         | 3.5      | 0.40         | 0.46        | 2.8          | 12.5     | 0.79             | 10           | 12           | 12           |
|                                     | 50           | 42         | 3.7      | 0.40         | 0.47        | 3.4          | 12.6     | 0.84             | 10           | 12           | 12           |
|                                     | 60           | 43         | 4.3      | 0.45         | 0.52        | 4.1          | 13.1     | 0.98             | 11           | 13           | 13           |
|                                     | 40           | 44         | 4.0      | 0.40         | 0.46        | 2.8          | 13.4     | 0.91             | 10           | 12           | 12           |
| 4                                   | 50           | 45         | 4.3      | 0.41         | 0.47        | 3.4          | 13.7     | 0.98             | 10           | 12           | 12           |
|                                     | 60           | 46         | 5.0      | 0.45         | 0.53        | 4.1          | 14.0     | 1.14             | 11           | 13           | 13           |
|                                     | 40           | 45         | 5.5      | 0.52         | 0.60        | 2.8          | 13.7     | 1.25             | 15           | 15           | 15           |
|                                     | 50           | 46         | 6.3      | 0.57         | 0.66        | 3.4          | 14.0     | 1.43             | 15           | 17           | 17           |
| 6                                   | 60           | 47         | 6.9      | 0.60         | 0.69        | 4.1          | 14.3     | 1.57             | 15           | 18           | 18           |
|                                     | 40           | 45         | 6.3      | 0.60         | 0.69        | 2.8          | 13.7     | 1.43             | 15           | 18           | 18           |
|                                     | 50           | 47         | 7.5      | 0.65         | 0.75        | 3.4          | 14.3     | 1.70             | 17           | 19           | 19           |
|                                     | 60           | 51         | 8.1      | 0.60         | 0.69        | 4.1          | 15.5     | 1.84             | 15           | 18           | 18           |
| SmartAngle 13° Low angle Trajectory |              |            |          |              |             |              |          |                  |              |              |              |
| 30                                  | 29           | 1.6        | 0.37     | 0.42         | 2.1         | 8.8          | 0.36     | 9                | 11           | 11           | 11           |
| 2.0LA                               | 40           | 35         | 1.9      | 0.34         | 0.39        | 2.8          | 10.1     | 0.43             | 9            | 10           | 10           |
| 50                                  | 34           | 2.1        | 0.35     | 0.40         | 3.4         | 10.4         | 0.48     | 9                | 10           | 10           | 10           |
| 2.5LA                               | 30           | 31         | 2.1      | 0.42         | 0.49        | 2.1          | 9.4      | 0.48             | 11           | 12           | 12           |
| 40                                  | 35           | 2.6        | 0.41     | 0.47         | 2.8         | 10.7         | 0.59     | 10               | 12           | 12           | 12           |
| 50                                  | 36           | 2.9        | 0.43     | 0.50         | 3.4         | 11.0         | 0.66     | 11               | 13           | 13           | 13           |
| 30                                  | 31           | 2.7        | 0.54     | 0.62         | 2.1         | 9.4          | 0.61     | 14               | 16           | 16           | 16           |
| 40                                  | 35           | 3.2        | 0.50     | 0.58         | 2.8         | 10.7         | 0.73     | 13               | 15           | 15           | 15           |
| 50                                  | 37           | 3.5        | 0.49     | 0.57         | 3.4         | 11.3         | 0.79     | 13               | 14           | 14           | 14           |
| 30                                  | 33           | 3.0        | 0.55     | 0.61         | 2.1         | 10.1         | 0.68     | 15               | 16           | 16           | 16           |
| 4.5LA                               | 40           | 37         | 3.4      | 0.48         | 0.55        | 2.8          | 11.3     | 0.77             | 12           | 14           | 14           |
| 50                                  | 37           | 4.1        | 0.58     | 0.67         | 3.4         | 11.3         | 0.93     | 15               | 17           | 17           | 17           |
| Flow+ Nozzles 26° Trajectory        |              |            |          |              |             |              |          |                  |              |              |              |
| 50                                  | 50           | 9.5        | 0.73     | 0.84         | 3.4         | 15.2         | 2.16     | 19               | 21           | 21           | 21           |
| 9                                   | 60           | 54         | 10.8     | 0.71         | 0.82        | 4.1          | 16.5     | 2.45             | 18           | 21           | 21           |
| 70                                  | 55           | 11.7       | 0.74     | 0.86         | 4.8         | 16.8         | 2.66     | 19               | 22           | 22           | 22           |
| 50                                  | 57           | 12.4       | 0.73     | 0.85         | 3.4         | 17.4         | 2.82     | 19               | 22           | 22           | 22           |
| 60                                  | 59           | 13.8       | 0.76     | 0.88         | 4.1         | 18.0         | 3.13     | 19               | 22           | 22           | 22           |
| 70                                  | 61           | 14.9       | 0.77     | 0.89         | 4.8         | 18.6         | 3.38     | 20               | 23           | 23           | 23           |

PUMP SPECIFICATIONS

USE 610HP SOLIDS HANDLING SUBMERSIBLE PUMP MODEL NO. FL60 AS MANUFACTURED BY LIBERTY PUMPS OR APPROVED EQUAL.  
PUMP TYPE = SOLIDS HANDLING SUBMERSIBLE EFFLUENT PUMP  
FLOW REQUIREMENT = 4.2 GPM @ 30PSI



SPRAY FIELD PRESSURE REQUIREMENTS



C6.1

FIF ENGINEERING  
1526 KATY GAP RD. SUITE #804 KATY, TX 77494  
PHONE: 346-800-4343  
WWW.FIFENGINEERING.COM

FIRM #  
F-17870

PROJECT ADDRESS:

7933 CR 48  
IOWA COLONY, TX 77583

DRAWING TITLE:

ON-SITE SEWAGE FACILITY DETAILS

DRAWN BY:

RA

SCALE:

N.T.S.

CHKD. BY:

NH

DATE:

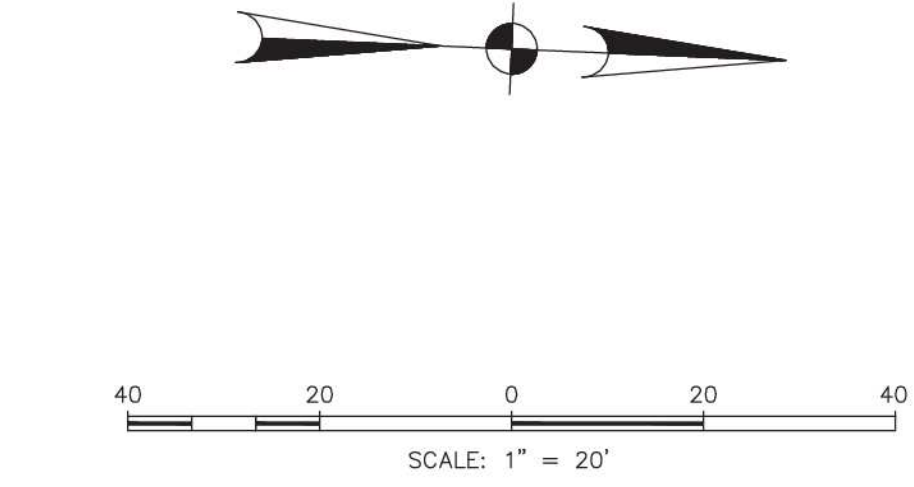
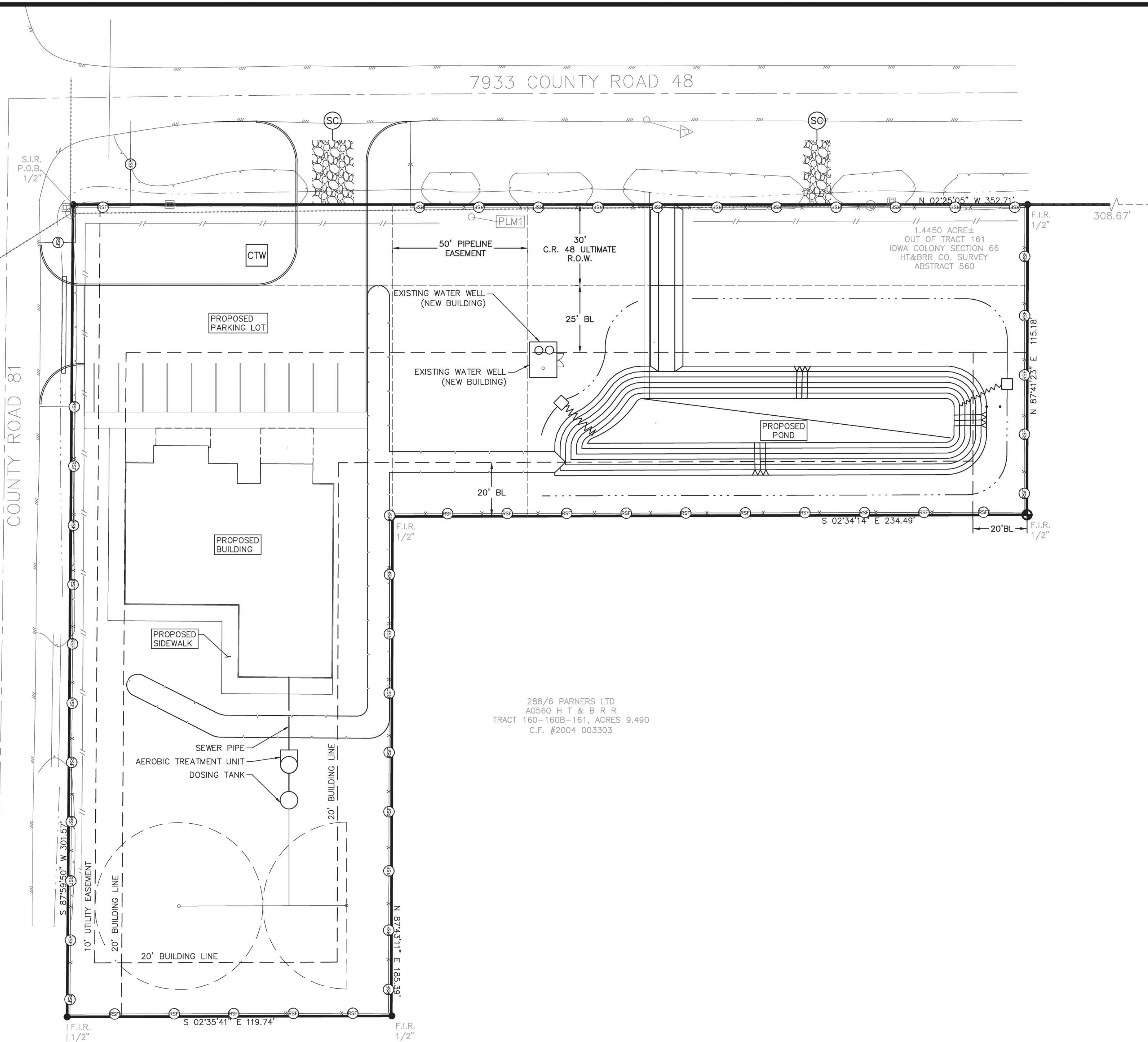
11-12-2021



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- SWPPP NOTES
- PRIOR TO START OF CONSTRUCTION CONTRACTOR SHALL INSTALL POLLUTION PREVENTION SYSTEMS AT LOCATION SHOWN ON PLANS.
  - IF POLLUTION PREVENTION SYSTEMS ARE EXISTING FROM PRIOR CONTRACTS, OWNER AND/OR OWNER'S REPRESENTATIVE WITH THE CONTRACTOR SHALL EXAMINE THE EXISTING POLLUTION PREVENTION SYSTEMS FOR DAMAGE PRIOR TO CONTRACTOR STARTING CONSTRUCTION OF THE CONTRACT. ANY DAMAGE NOTED AT THIS TIME SHALL BE REPAIRED AT OWNER'S EXPENSE.
  - CONTRACTOR SHALL INSPECT ALL POLLUTION PREVENTION SYSTEMS SPECIFIED HEREIN, AS REQUIRED IN THE PERMIT.
  - CONTRACTOR SHALL MAINTAIN, REPAIR AND/OR REPLACE DAMAGED EROSION AND SEDIMENTATION CONTROL SYSTEMS THROUGHOUT THE DURATION OF THE CONTRACT.
  - CONTRACTOR SHALL PROVIDE PROTECTED STORAGE AREAS FOR CHEMICALS, PAINTS, SOLVENTS, FERTILIZERS AND OTHER POTENTIALLY TOXIC MATERIALS.
  - CONTRACTOR SHALL LOCATE FUEL/MATERIAL STORAGE AREAS AWAY FROM STORM WATER CONVEYANCE SYSTEMS. CONTRACTOR SHALL USE A LINER UNDER ABOVE GROUND STORAGE TANKS. CONTRACTOR SHALL USE FILTER FABRIC FENCING, HAY BALES, OR BERMS AROUND FUEL STORAGE AREAS.
  - CONTRACTOR SHALL ADVISE OWNER IMMEDIATELY, VERBALLY, AND IN WRITING, OF ANY FUEL OR TOXIC MATERIAL SPILLS ONTO THE PROJECT/CONSTRUCTION AREA AND THE ACTIONS TAKEN TO REMEDY THE PROBLEM.
  - CONTRACTOR IS RESPONSIBLE FOR DISPOSING OF HIS FUELS, MATERIALS, AND CONTAMINATED EXCAVATIONS IN A LEGALLY APPROVED MANNER.
  - CONTRACTOR IS RESPONSIBLE FOR COMPLYING WITH ALL APPLICABLE ENVIRONMENTAL LAWS.
  - CONTRACTOR IS RESPONSIBLE FOR PROVIDING ADEQUATELY MAINTAINED SANITARY FACILITIES.
  - CONTRACTOR SHALL BE RESPONSIBLE FOR STREET CLEANING, ON A DAILY BASIS, ALL MUD AND DIRT DEPOSITED ON THE EXISTING PAVEMENT DUE TO HIS CONSTRUCTION ACTIVITY.
  - CONTRACTOR SHALL PROVIDE A STABILIZED CONSTRUCTION EXIT.
  - SEDIMENT WILL BE REMOVED FROM BEHIND THE FILTER FABRIC FENCE WHEN IT BECOMES ABOUT ONE-THIRD OF THE HEIGHT OF THE FENCE.
  - WHEN ALL CONSTRUCTION ACTIVITY IS COMPLETE AND THE SITE HAS BEEN ESTABLISHED, STRUCTURAL CONTROLS WILL BE REMOVED AND DISTURBED AREAS WILL BE RESTABILIZED.
  - AT COMPLETION OF THE CONTRACT, OWNER AND/OR OWNER'S REPRESENTATIVE AND THE CONTRACTOR SHALL EXAMINE THE POLLUTION PREVENTION SYSTEM BEFORE RELIEVING CONTRACTOR OF HIS MAINTENANCE RESPONSIBILITIES.
  - CONTRACTOR TO BE RESPONSIBLE FOR THE SUBMISSION OF HIS STORM WATER POLLUTION PREVENTION PLAN ITEMS INSPECTION REPORT WITH HIS PAYMENT REQUEST. FAILURE TO COMPLY MAY RESULT IN A DELAY IN PAYMENT.
  - TEXAS WATER CODE § 11.086 NO PERSON MAY DIVERT OR IMPOUND THE NATURAL FLOW OF SURFACE WATERS IN THIS STATE, OR PERMIT A DIVERSION OR IMPOUNDING BY HIM TO CONTINUE, IN A MANNER THAT DAMAGES THE PROPERTY OF ANOTHER BY THE OVERFLOW OF THE WATER DIVERTED OR IMPOUNDED.
  - ALL SUBCONTRACTORS WILL BE EDUCATED TO FOLLOW STORM WATER POLLUTION PREVENTION REQUIREMENTS.
  - ANY LAND CLEARING, CONSTRUCTION, DEVELOPMENT, OR OTHER ACTIVITIES INVOLVING THE MOVEMENT OF EARTH SHALL BE IN ACCORDANCE WITH THE SWPPP.
  - A SITE OPERATOR SHALL BE IN SITE ALL DAYS WHERE CONSTRUCTION OR GRADING ACTIVITY TAKES PLACE.
  - STRUCTURAL BMPs WILL BE INSPECTED AND MAINTAINED AT LEAST EVERY 14 DAYS AND AFTER ANY PRECIPITATION OR RUNOFF EVENT THAT CAUSES SURFACE EROSION, SEDIMENT TRANSPORT OR VEHICULAR TRACKING.
  - SCRAPING AND SWEEPING OF STREETS, SIDEWALKS AND FLOWLINES MUST BE CONDUCTED AT THE END OF EACH WORK DAY WHEN DIRT AND OTHER CONSTRUCTION MATERIAL HAS BEEN TRACKED ONTO STREETS.
  - EACH MATERIALS AND LANDSCAPE MATERIALS SUCH AS SOD, ROCK AND MULCH SHALL NOT BE STOCKPILED, PLACED OR STORED ON DRIVEWAYS, STREETS, SIDEWALKS OR IN STORM WATER FLOWLINES.
  - CONSTRUCTION SUPPLIES (E.G., TRUSSES AND LUMBER), ROLL OFF CONTAINERS, DUMPSTERS, PORTABLE TOILETS, TRAILERS, ETC., SHALL NOT BE STORED ON STREETS OR SIDEWALKS OR OTHER IMPERVIOUS SURFACES. THESE ITEMS SHALL BE STORED ON THE CONSTRUCTION SITE OR STAGING AREAS.
  - PORTABLE SANITARY FACILITIES SHALL BE LOCATED ON THE NATURAL GROUND AND AT LEAST 25 FEET FROM ANY STORM SEWER INLET OR WATER BODY AND SHALL BE SERVICED REGULARLY AS NEEDED.

COUNTY ROAD 81



- LEGEND
- REINFORCED FILTER FABRIC FENCE
  - INLET PROTECTION BARRIER
  - CONCRETE TRUCK WASHOUT
  - STABILIZED CONSTRUCTION ACCESS

**FIF ENGINEERING**  
1526 KATY GAP RD. SUITE #804 KATY, TX 77494  
PHONE: 346-800-4343  
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FIRM #  
F-17870

PROJECT ADDRESS:  
**7933 CR 48**  
**IOWA COLONY, TX 77583**

DRAWING TITLE:  
**STORMWATER POLLUTION PREVENTION PLAN**

|           |            |      |       |       |
|-----------|------------|------|-------|-------|
| DRAWN BY: | CHKD. BY:  | REV# | DATE: | NOTE: |
| RA        | NH         |      |       |       |
| SCALE:    | DATE:      |      |       |       |
| 1" = 20'  | 11-12-2021 |      |       |       |

02/23/2022



Plan/Plan approvals expire after 365 days

C7