



January 24, 2024
AVO 37449

Ms. Ramie Hammonds
Development Services Director/Building Official
City of Sanger
201 Bolivar Street
P.O. Box 1729
Sanger, Texas 76266

Re: **Marley Meadows – Drainage Study in support of the Final Plat**
3rd Review

Dear Ms. Hammonds,

Halff Associates, Inc. was requested by the City of Sanger to provide a review of the drainage study and downstream assessment in support of the Preliminary Plat for the Marley Meadows development. The drainage study was prepared by iCivil Engineering and is dated January 2023. Comments were provided February 7, 2023. A second submittal was provided May 16, 2023 and comments were provided May 30, 2023. A third submittal was received June 28, 2023. A fourth submittal was received September 14, 2023. Please refer to the Denton County Subdivision Rules and Regulations dated July 2009 for drainage criteria; hereafter referred to as Criteria Manual.

We have completed our review. **The drainage study is acceptable for preliminary platting.** Please address the comments below with the drainage study in support of the final plat/construction plans.

General:

1. **1st – 5th Review Comment:** Plans and plat are reviewed separately. Please note an accepted drainage study is required prior to plat acceptance.
2. **1st – 5th Review Comment:** Please address comments on attached markups and provide **annotated responses on markups.**
3. Please provide minimum finished floor elevations 2' above fully developed 100-yr water surface elevation for lots adjacent to proposed channels/roadside ditches on the plat.
1st Review Response: No Response.
2nd Review Comment: Address comments on preliminary plat.
2nd Review Response: Noted
3rd Review Comment: It appears the Ultimate 100yr WSEL's used to determine the min FFE do not match the Ultimate Conditions RAS model at some locations.
 - a. Please reconcile WSEL's on Grading Sheets with the RAS model.
 - b. Please provide the reference cross section on the Grading Sheet.
 - c. Please show all RAS cross sections on the Hydraulic Workmap/s.**4th & 5th Review Comment:** Please update all relevant information based of any changes due to comments.
4. **1st - 3rd Review Comment:** Please note, additional comments may result once models and additional info is provided.
4th & 5th Review Comment: Please note, additional comments may result once final drainage study/construction plans/ final plats are provided.

Hydrology and Hydraulics:

5. Please apply the existing conditions C values to the proposed conditions runoff calculations for the offsite areas; for a pre- and post- development analysis, the offsite runoff stays constant. Please

update the outfall discharge summaries according to the changes in the calculated existing and proposed runoff. Verify any flow increases.

1st Review Response: Offsite modeled using UH method

2nd Review Comment: Addressed.

6. It appears proposed flow is increased at the south outfall (DP "C"), please extend the hydrologic and hydraulic analysis through the zone of influence per the 10% rule and demonstrate no adverse impacts to downstream properties (no significant increases in water surface elevation and velocities). A proposed development of 19.65 acres will require an overall analysis of 196.5 acres.

1st Review Response: With UH method, no increase in peak discharge at the d/s.

2nd Review Comment: Please include onsite drainage area maps showing the flowpaths in greater detail. Please include the time of concentration parameters, calculations, and assumptions. Reconcile with HMS model.

2nd Review Response: HMS Reconciled, Calculation added

3rd Review Comment: Noted.

7. Please provide a pre- and post- HEC-RAS analysis for receiving creek thru the zone of influence and demonstrate no significant increase in water surface elevation and velocity in existing channels. Also, verify no increases to the backwater at upstream culvert. Include RAS model with next submittal.

1st Review Response: With SCS UH method, no increase in peak discharge at the d/s. RAS model included

2nd Review Comment: Noted. Verify after addressing HMS comments.

2nd Review Response: Updated.

3rd Review Comment: Noted

8. Please provide an Ultimate Conditions Drainage Area Map. Provide calculated runoff for a fully developed condition and design the channel going through the site to contain the fully developed 100-year flow with 1-ft. freeboard. Provide an ultimate conditions RAS model as well.

1st Review Response: HEC-RAS model included for existing, proposed and ultimate condition

2nd Review Comment: It appears that only existing and proposed RAS models were included in the submittal. Please include Ultimate Conditions Flows with Proposed Geometry.

2nd Review Response: ULTIMATE CONDITION ADDED TO MODELS.

3rd Review Comment: Addressed. Address comments on the RAS workmaps and provide annotated responses.

4th Review Comment: Addressed

9. Please provide channel cross sections with hydraulic parameters for proposed channels. Please note, a HEC-RAS model is required to confirm water surface profiles in channels, roadside ditches and culverts. Please provide RAS model and verify proposed channels contain the fully developed 100-yr flow with 1' freeboard. Use $n=0.04$ for earthen channel. Include a RAS workmap or add RAS cross sections to the grading plans.

1st Review Response: HEC RAS model included for channels, roadside ditch and culverts

2nd Review Comment: Noted.

10. Channels must be designed to standards. Please refer to criteria manual Section IV-B and section IV3.4 (trapezoidal, 4:1 SS, 1' freeboard from 100-yr fully developed water surface elevation to top of bank, etc). Provide drainage easements with adequate access; include 10' beyond top of bank on both sides.

1st Review Response: Revised the slopes to 4:1

2nd Review Comment: Please address comments on channel profile sheets and hydraulic workmap.

2nd Review Response: Addressed.

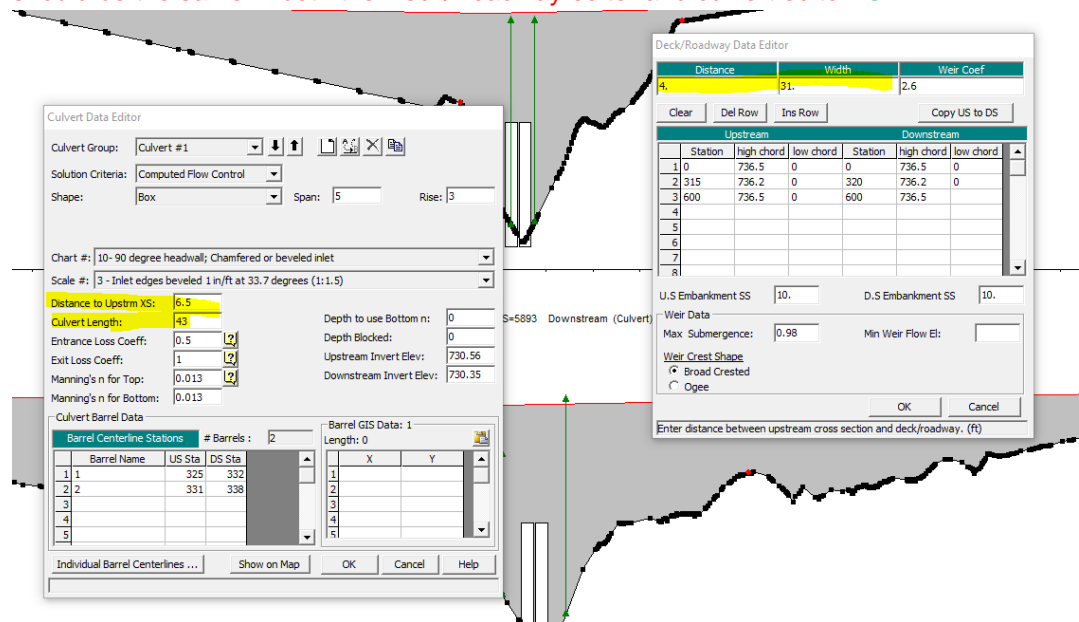
3rd Review Comment: Please address comments on hydraulic workmap and grading plan.

4th Review Comment: Please address comment on Sheet 12-8

5th Review Comment: Addressed

11. Provide RAS model for all proposed roadside ditches (Criteria Manual Section IV.3.4) including Sam Bass Road. Include proposed culverts and driveway culverts and verify the 100-yr fully developed flow is contained within the right of way. If not contained within ROW, additional DE must be dedicated to contain the fully developed 100-yr water surface elevation.
1st Review Response: HEC RAS model included for channels, roadside ditch and culverts
2nd Review Comment: Noted.
12. Please ensure side yard swales contain the 100yr WSEL and do not drain to the adjacent lots. Provide a typical section with hydraulic parameters. Ensure the typical section is feasible in each of the lots according to the grading plan.
1st Review Response: side ditch sized to contain 100 yr discharge
2nd Review Comment: Address side yard swales comment on grading sheets (sheet 8)
2nd Review Response:
3rd Review Comment: Addressed.
13. Verify the roadside ditch on Sam Bass Road does not drain to the proposed Street A roadside ditch.
1st Review Response: Samross culvert does not drain to the proposed street, flow is only 1.23 cfs
2nd Review Comment: Noted.
14. Show and label proposed culvert crossing on street plan and profile. Include 100-yr HGL. Please use a min of 18". Design culvert to pass the fully developed 100-yr flood event with 1' freeboard. Use RAS to evaluate backwater and tailwater at proposed culvert.
1st Review Response: culvert crossing is included in plan set
2nd Review Comment: Noted.
15. Provide Plan and profile for all proposed channels. Show and label the fully developed 100-yr water surface profile and left and right top of bank; verify 1' freeboard. Include culverts and verify 1' freeboard to top of road.
1st Review Response: Channel profile with 100 yr wse is included in plan set
2nd Review Comment: Please use the Ultimate 100yr flow to design the channels.
2nd Review Response: Ultimate Condition Utilized.
3rd Review Comment: (a) It appears the flow change at cross section 5551 does not match the HMS model. Please verify, reconcile and revise. (b) Address comments on sheet 9 and 13 and provide annotated responses.
4th Review Comment: a) Addressed b) Please address comments on Sheets 7, 9, 12-8, and 13B
5th Review Comment: Addressed
16. The proposed infrastructure (ie inlets, SD, swales, driveway culverts, channels, etc.) included in the drainage study to support the preliminary plat will be reviewed again once the construction plans are available. Update calculations as necessary to correspond to plans.
1st Review Response: All proposed infrastructure calculation are included in plan set
2nd Review Comment: Addressed.
17. 4th Review Comment: Please review and revise HEC-RAS models for the following comments DCSRR IV.3.4:
 - a. Channel bank stations should be adjusted for all cross sections and all channels. OK
 - b. All cross sections must contain the computed water surface elevations.
 - i. 5th Review Comment - XS 2000 & 2200. Recommend cutting off HEC-RAS model approximately 1,000 ft downstream of project area.

- c. For Channel-A, why does the n-value decrease (0.04 to 0.035) when transitioning from engineered ditch to the natural, existing channel? Please review and revise as necessary for all HEC-RAS models. **OK**
- d. Ineffective flow areas should not be located within the conveyance area of the proposed culverts (Channel-A structure cross section 5893). **OK**
- e. Flow profiles should not cross (Channel-A 6473 – 6601) **OK**
- f. Cross sections should not curve (Channel-A 5866 and 5922). Please revise. **OK**
- g. Please review and revise all structure data in the HEC-RAS models. Distance and width should be the same in both the Deck/Roadway editor and culvert editor. **OK**



- h. **5th Review Comment-** N-values should be defined for the left overbank, channel, and right overbank at a minimum. One (1) n-value should not be used for the entire length of the cross section.

The Engineer shall revise the hydrologic study and/or plans in accordance with the above comments and/or provide a written response that addresses each comment. If you have any questions or need additional information, please do not hesitate to call me at (214) 937-3953.

Sincerely,
HALFF
TBPELS Firm No. 312

Parker C. Moore, P.E., CFM
Project Manager

Attachment:

- Plan Markups

CIVIL PLANS FOR MARLEY MEADOWS SAM BASS ROAD SANGER, TEXAS

SHEET INDEX

SHEET NO	DESCRIPTION
C.1	COVER SHEET
C.2	GENERAL NOTES
C.3	SURVEY AND PLAT
C.4	DEMOLITION PLAN
C.5	STREET PLAN
C.6	STREET PLAN
C.7	GRADING PLAN
C.8	GRADING PLAN
C.9	GRADING PLAN
C.10-A	PRE PROJECT TOC CALCULATION
C.10-B	PRE DEVELOPMENT DRAINAGE AREA MAP
C.11-A	POST AND ULTIMATE TOC CALCULATION
C.11-B	POST AND ULTIMATE DRAINAGE AREA MAP
C.12-A	DITCH AND CULVERT CALCULATIONS
C.12-B	DITCH AND CULVERT CALCULATIONS
C.13-A	HYDRAULIC WORK MAP
C.13-B	HYDRAULIC WORK MAP
C.13-C	HYDRAULIC WORK MAP
C.13-D	HYDRAULIC WORK MAP
C.14	CHANNEL PROFILE
C.15	CHANNEL PROFILE
C.16	CHANNEL PROFILE
C.17	CULVERT PLAN AND PROFILE
C.18	WATER MAIN PLAN
C.19	WATER MAIN PLAN
C.20	EROSION CONTROL PLAN
C.21	STANDARD DETAILS
C.22	STANDARD DETAILS
C.23	STANDARD DETAILS

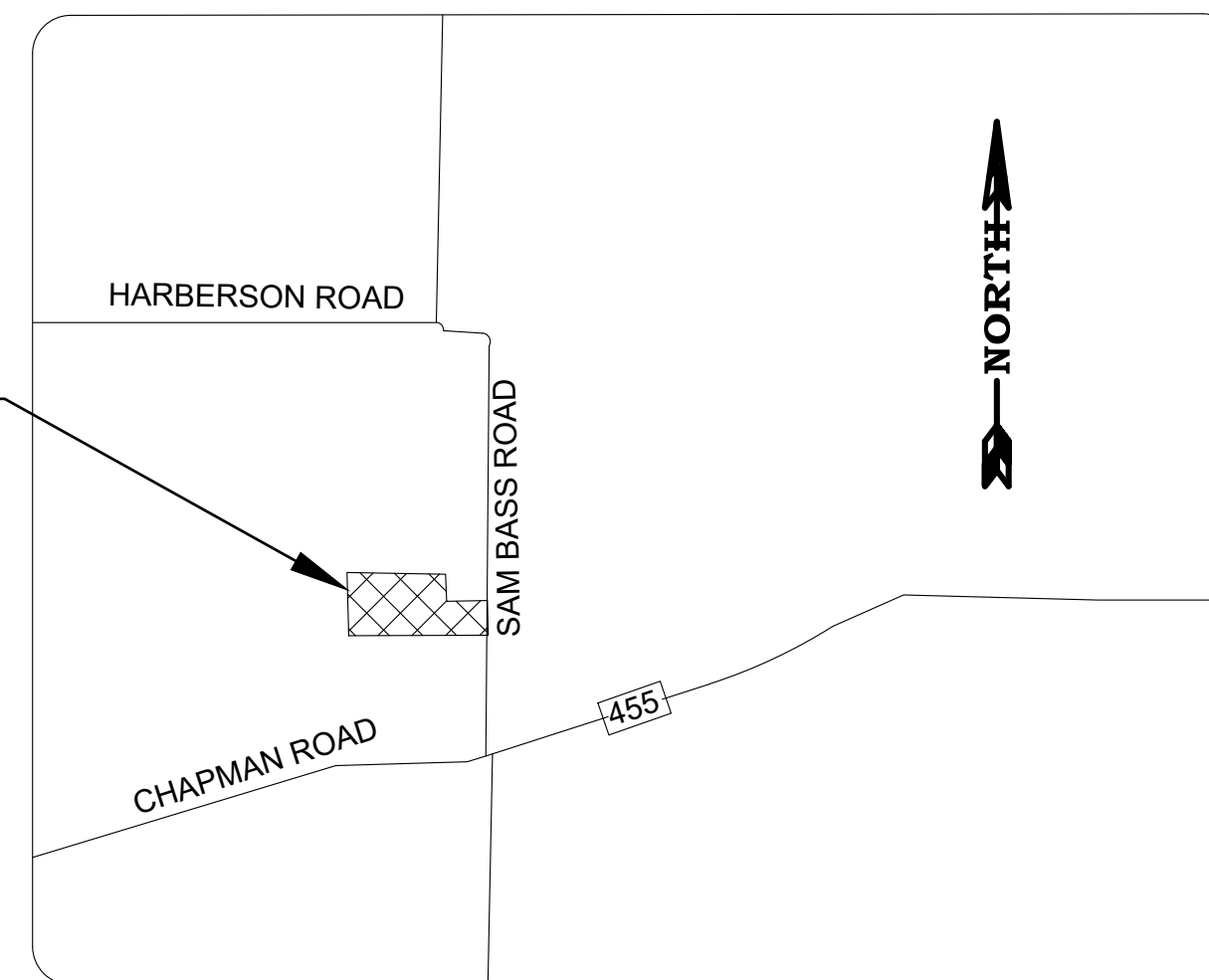
LEGEND

■ ■ ■ ■ ■	RETAINING WALL
--- 10 ---	EXIST. CONTOUR
— 10 —	PROPOSED CONTOUR
-X-X-	EXISTING FENCE
— W —	EXIST. WATER MAIN
— S —	EXIST. SEWER MAIN
— STM —	EXIST. STORM MAIN
▶	FLOW DIRECTION
▨	SAWCUT, REMOVE AND REPLACE
▩	PROP 6" RIP-RAP
▭	PROP PAVEMENT
▭	PROP LANDSCAPE

ABBREVIATION

TC	TOP OF CURB
TP	TOP OF PAVEMENT
FS	FINISH SURFACE
FG	FINISH GRADE
CF	CURB FACE
FL	FLOWLINE
HP	HIGH POINT
LP	LOW POINT
TG	TOP OF GRATE
GB	GRADE BREAK
P/L	PROPERTY LINE
R/W	RIGHT OF WAY
TRW	TOP OF RETAINING WALL
TF	TOP OF FOOTING
RH	RETAINED HEIGHT
SW	SIDEWALK
OHE.	OVERHEAD ELECTRICITY
WM	WATER METER
PP	POWER POLE
TOC	TOP OF CLEANOUT
SHLD	SHOULDER
UE	UTILITY EASEMENT
TOD	TOP OF DITCH
RCB	REINFORCED CONCRETE BLOCK
TOB	TOP OF BANK
DE	DRAINAGE EASEMENT
B.W.S.	BOLIVAR WATER SUPPLY

PROJECT SITE



VICINITY MAP

NOT TO SCALE

PROJECT OWNER:

REDEEMED ASSETS LLC
2701 WIND RIVER LN,
DENTON, TX, 76210-2965

PROPERTY ADDRESS:

8949 SAM BASS ROAD
SANGER, TX 76266

TOPOGRAPHIC SURVEY BY:

TRINITY LAND SURVEYING LLC
1222 GREENBRIAR ST.
DENTON, TX 76201
FIRM NO. :10194687
TEL. NO. (940) 293-3180

PREPARED BY:

iCIVIL ENGINEERING
1001 W EULESS BLVD, STE 412H
EULESS, TX 76040
TEL.(972) 523-5493
TBPE:F-19293
EMAIL:INFO@ICIVILENG.COM

BENCHMARK:

TBM#1 "X" SET ON A 15'RCP HEADWALL
8'± NORTH OF THE EASTERLEY SOUTH
PROPERTY LINE AND 18'± WEST OF THE
CENTERLINE OF SAM BASS ROAD.
ELEV: 735.46'

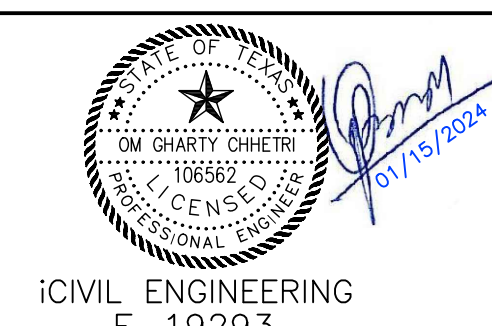
TBM#2 5/8" IRON ROD SET ON THE SOUTH
SIDE OF A GRAVEL ROAD, 37'± SOUTH OF
THE
NORTH PROPERTY LINE AND 654'± EAST OF
THE WEST PROPERTY LINE.
ELEV: 741.70'



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SANGER, TEXAS
COVER SHEET
FOR
MARLEY MEADOWS

PROJECT NO.
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GENERAL NOTES

1. ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE CURRENT CITY OF SANGER STANDARDS, DENTON COUNTY & TXDOT SPECIFICATIONS. A COPY OF THE CONTRACT DOCUMENTS AND PLANS SHALL BE AVAILABLE ON-SITE AT ALL TIMES BY THE CONTRACTOR.
2. ALL COMMUNICATION BETWEEN THE CITY AND THE CONTRACTOR SHALL BE THROUGH THE ENGINEERING CONSTRUCTION INSPECTOR AND ENGINEER OF RECORD ONLY. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO CONTACT THE APPROPRIATE DEPARTMENT FOR INSPECTIONS OF WORK NOT FALLING UNDER THE PUBLIC WORKS CONSTRUCTION PERMIT.
3. THE LOCATION AND DEPTH OF ALL UTILITIES SHOWN ON THE PLANS ARE APPROXIMATE AND THERE MAY BE OTHER UNKNOWN EXISTING UTILITIES NOT SHOWN ON THE PLANS. ALL EXISTING UTILITIES SHALL BE FIELD VERIFIED AND PROTECTED BY THE CONTRACTOR PRIOR TO THE START OF CONSTRUCTION. (ALSO SEE GENERAL NOTE NO. 4.4) THE CONTRACTOR SHALL CONTACT THE RESPECTIVE UTILITY COMPANIES 72 HOURS PRIOR TO DOING ANY WORK IN THE AREA:
4. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO PERFORM THE FOLLOWING:
 - 4.1. PREVENT ANY PROPERTY DAMAGE TO PROPERTY OWNER'S POLES, FENCES, SHRUBS, MAILBOXES, ETC
 - 4.2. LOCATE, VERIFY WORKING CONDITION AND PROTECT ALL EXISTING SPRINKLER SYSTEMS LINES AND HEADS (IF ANY) WITHIN AREAS DISTURBED BY CONSTRUCTION ACTIVITIES. REMOVE, ADJUST AND REINSTALL IN GOOD CONDITION EQUAL TO OR BETTER THAN EXISTING CONDITION; REPLACE, IF IN DIRECT CONFLICT, WITH THE SAME OR BETTER QUALITY MATERIAL AND APPURTENANCES, ALL AT THE CONTRACTOR'S OWN EXPENSE.
 - 4.3. PROVIDE ACCESS TO ALL DRIVES DURING CONSTRUCTION.
 - 4.4. PROTECT ALL UNDERGROUND AND OVERHEAD UTILITIES AND REPAIR ANY DAMAGES. (ALSO SEE GENERAL NOTE NO. 3.)
 - 4.5. NOTIFY ALL UTILITY COMPANIES AND VERIFY LOCATION OF ALL UTILITIES PRIOR TO THE START OF CONSTRUCTION.
 - 4.6. PROVIDE CONSTRUCTION STAKING OF PUBLIC IMPROVEMENTS CONSTRUCTED WITHIN ANY RIGHT-OF-WAY. STAKING SHALL BE PERFORMED BY A SURVEYOR LICENSED IN THE STATE OF TEXAS.
 - 4.7. COOPERATE WITH THE UTILITY COMPANIES WHERE UTILITIES ARE REQUIRED OR SPECIFIED TO BE RELOCATED.
 - 4.8. WORK IN CLOSE PROXIMITY TO AND PROTECT EXISTING UTILITY MAINS, TRAFFIC LIGHTS AND POLES.
 - 4.9. ANY ITEM NOT SPECIFICALLY CALLED OUT TO BE REMOVED SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER OF RECORD PRIOR TO REMOVING THAT ITEM OR IT SHALL BE REPLACED AT THE CONTRACTOR'S OWN EXPENSE.
 - 4.10. ANY TREE, SHRUB, OR GRASSED AREAS DAMAGED BY THE CONTRACTOR'S WORK SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE TO EXISTING OR BETTER CONDITION.
5. IN THE PREPARATION OF THE PLANS AND SPECIFICATIONS, THE ENGINEER OF RECORD HAS ENDEAVORED TO INDICATE THE LOCATION OF EXISTING UNDERGROUND UTILITIES. IT IS NOT GUARANTEED THAT ALL LINES OR STRUCTURES HAVE BEEN SHOWN ON THE PLANS. THE CONTRACTOR SHALL REQUEST FOR LINE LOCATES AS DIRECTED IN ITEM #3. THE ENGINEER OF RECORD SHALL BE NOTIFIED ABOUT ANY CONFLICTS TO PROVIDE WRITTEN DIRECTION AND REVISED PLANS AS REQUIRED.
6. VERIFICATION OF THE CONDITION OF EXISTING COUNTY UTILITIES PRIOR TO CONNECTIONS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR SHALL REQUEST FOR LINE LOCATES AS DIRECTED IN ITEM #3.
7. THE LOCATION FOR THE DISPOSAL OF CONSTRUCTION MATERIAL AND SPOILS SHALL BE ACCEPTED BY THE COUNTY PRIOR TO THE START OF CONSTRUCTION AS REFLECTED WITHIN THE STORMWATER POLLUTION PREVENTION PLAN.
8. ALL PHASES OF CONSTRUCTION MUST BE COORDINATED WITH THE ENGINEER OF RECORD. ALSO, THE CONTRACTOR IS REQUIRED TO COORDINATE WITH THE ADJACENT PROPERTY OWNERS AND THE COUNTY IN ORDER TO MINIMIZE CONFLICTS IN TRAFFIC FLOW OR OTHER OPERATIONS.
9. IT SHALL BE UNLAWFUL FOR ANY PERSON TO LAY, CONSTRUCT, BUILD, GRADE, GRAVEL, PAVE, SURFACE, EXCAVATE, RESURFACE, OR DO ANY WORK IN OR UPON ANY PUBLIC STREET, ALLEY, EASEMENT, THOROUGHFARE, PUBLIC PLACE, OR CONNECT TO PUBLIC WATER AND WASTEWATER MAINS WITHIN THE COUNTY, WITHOUT FIRST HAVING OBTAINED A PERMIT TO DO SUCH WORK FROM THE DIRECTOR OF PUBLIC WORKS, AND WITHOUT HAVING PAID A PERMIT FEE TO THE COUNTY. THE PERMITTEE SHALL NOTIFY THE COUNTY OF THE CONSTRUCTION STARTUP DATE AND AN EXPECTED COMPLETION DATE.
10. FIELD ADJUSTMENTS MAY BE NECESSARY AND SHALL BE CARRIED OUT AS DIRECTED IN WRITTEN FORM, AND REVISED PLANS AS NEEDED, BY THE ENGINEER OF RECORD. THE ADJUSTMENTS SHALL BE COORDINATED WITH THE CONTRACTOR AND THE ENGINEERING CONSTRUCTION INSPECTOR.
11. THE CONTRACTOR SHALL VERIFY, LOCATE, AND PROTECT EXISTING WATER, WASTEWATER, FIBER OPTIC CABLE/PATHWAYS (COUNTY AND FRANCHISE UTILITY), TRAFFIC SIGNALS AND APPURTENANCES, STORM DRAINAGE, NATURAL GAS, PETROLEUM PIPELINES, ELECTRIC AND TELEPHONE MAINS AND SERVICES AND RESTORE SERVICE IN CASE OF ANY DAMAGE.
12. THE PERMITTED CONTRACTOR MAKING CONNECTIONS/EXTENSIONS TO EXISTING PUBLIC UTILITIES SHALL BE SOLELY RESPONSIBLE FOR BACKFILL OF THE UTILITY TRENCH, AND ANY PAVING REPAIRS REQUIRED FOR COMPLETION OF THE CONNECTION/EXTENSION. ALL PAVING REPAIRS SHALL COMPLY WITH THE CURRENT COUNTY STANDARD DETAILS. THIRD PARTY WORK, NOT COVERED BY THE PERMITTEES PERMIT AND MAINTENANCE BOND, SHALL NOT BE ACCEPTED.
13. SHEETING, SHORING, AND BRACING: THE CONTRACTOR WILL ABIDE BY ALL APPLICABLE FEDERAL, STATE, AND LOCAL LAWS GOVERNING EXCAVATION. TRENCH'S SIDE SLOPES SHALL MEET OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) STANDARDS THAT ARE IN EFFECT AT THE TIME OF CONSTRUCTION. SHEETING SHORING AND BRACING SHALL BE REQUIRED IF SIDE SLOPE STANDARDS ARE NOT MET. A PULL BOX, MEETING OSHA STANDARDS, WILL BE ACCEPTABLE. THE CONTRACTOR SHALL SUBMIT SITE SPECIFIC, DETAILED PLANS AND SPECIFICATIONS FOR TRENCH SAFETY SYSTEMS THAT MEET OSHA STANDARDS HAT ARE IN EFFECT AT THE TIME OF DEVELOPMENT OF PROJECT WHEN TRENCH EXCAVATION WILL EXCEED A DEPTH OF FIVE (5) FEET. THESE PLANS WILL BE SEALED BY AN ENGINEER REGISTERED BY THE STATE OF TEXAS AND SUBMITTED TO THE COUNTY PRIOR TO OBTAINING RELEASE OF THE PUBLIC WORKS CONSTRUCTION PERMIT.
14. THE ROAD OR STREETS SHALL CONSIST OF AT LEAST 2" OF HOT-MIX ASPHALTIC CONCRETE OVERLAY.THE FLEXIBLE BASE SHALL BE MIN OF 22' WIDE AND BE TO A DEPTH OF 4" COMPACTED TO 95% OF STANDARD PROCTOR DENSITY.THE FLEXIBLE BASE SHALL BE EITHER:
 - A.COVERED WITH A PRIMER AT AN APPLICATION RATE OF 1/2 GALLON PER SQUARE YARD
15. THE CONTRACTOR SHALL SUBMIT MIX DESIGNS FOR REVIEW AND ACCEPTANCE BY THE COUNTY PRIOR TO ANY PLACEMENT FOR ANY PUBLICLY DEDICATED INFRASTRUCTURE.
16. ALL EXISTING GRADES SHOWN ON THE PLANS ARE APPROXIMATE AND ARE BASED ON THE BEST INFORMATION AVAILABLE. GRADES SHALL BE VERIFIED AND ANY DISCREPANCY BROUGHT TO THE ATTENTION OF THE ENGINEER OF RECORD FOR EVALUATION AND ADJUSTMENTS AS NEEDED.
17. ALL BACKFILL FOR DITCH LINES ARE TO BE MECHANICALLY TAMPED TO 95% STD PROCTOR DENSITY (ASTM D698), AT A MOISTURE CONTENT NEAR OPTIMUM (-2% TO +2%, OR AS SPECIFIED BY THE ENGINEER OF RECORD). COSTS OF TESTING SERVICES FOR PRIVATE DEVELOPMENT, ON INFRASTRUCTURE THAT IS TO BE DEDICATED TO THE COUNTY, SHALL BE PAID BY THE DEVELOPER/CONTRACTOR. TESTING SHALL COMPLY WITH THE COUNTY STANDARDS AND THE CURRENT STANDARD DETAILS. ALL TEST REPORTS FOR PUBLIC INFRASTRUCTURE SHALL BE PROVIDED TO THE COUNTY IN A TIMELY MANNER. COSTS FOR RE-TESTING AFTER NOTED FAILURES SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
18. CONTRACTOR TO FILL ALL VOIDS UNDER EXISTING PAVEMENT WHEN INSTALLING NEW LINE. ALSO ALL DITCH LINES MUST BE FILLED AT THE END OF EACH DAY'S WORK. CONTRACTOR SHALL OBTAIN APPROVAL FROM THE PROPER COUNTY DEPARTMENTS FOR ANY TRENCHES THAT ARE TO LEFT OPEN OVERNIGHT AND SHALL PROPERLY MARK AND PROTECT THE TRENCH.
19. ALL PIPES SHALL BE KEPT FREE OF TRASH AND DIRT AT ALL TIME. AT THE END OF EACH DAY, THE PIPE SHALL BE TEMPORARILY SEALED/CONNECTED. ALL PIPE INSTALLATION SHALL BE PERFORMED AS RECOMMENDED PER THE PIPE MANUFACTURER.
20. THE CONTRACTOR SHALL KEEP THE EXISTING FIRE HYDRANT(S), IF ANY IN SERVICE AT ALL TIMES, TO THE EXTENT POSSIBLE. THE CONTRACTOR SHALL BAG OR MARK FIRE HYDRANTS PROPERTY AND NOTIFY THE FIRE DEPARTMENT UPON REMOVING ANY HYDRANT FROM SERVICE. CONSTRUCTION THAT CAUSES THE INTERRUPTION OF WATER SUPPLY FOR FIRE SUPPRESSION MAY REQUIRE A FIRE WATCH TO BE PERFORMED BY THE FIRE DEPARTMENT. COSTS FOR FIRE WATCH SERVICES ARE AT THE CONTRACTOR'S EXPENSE.
21. THE CONTRACTOR SHALL MAINTAIN THE EXISTING WATER MAINS IN SERVICE DURING ALL PHASES OF CONSTRUCTION. LEAKS CAUSED BY THE CONTRACTOR SHALL BE REPAIRED IMMEDIATELY AT THE CONTRACTOR'S EXPENSE. LEAKS ALONG THE EXISTING WATER MAIN CLOSE TO THE WORKING AREA, CAUSED BY VIBRATION, ETC. (DURING WORKING HOURS) SHALL BE REPAIRED BY THE CONTRACTOR WITH THE COUNTY ONLY PROVIDING THE REQUIRED PARTS. THE COUNTY WILL REPAIR ALL LEAKS IF THE CONTRACTOR IS NOT ON THE JOB-SITE (PRIMARILY AFTER WORKING HOURS); IF THE LEAK IS DIRECTLY CAUSED BY THE CONTRACTOR AND NOT REPAIRED, ALL CHARGES INCURRED SHALL BE BILLED TO THE CONTRACTOR.
22. ALL CUTTING AND PLUGGING OF THE EXISTING WATER MAIN, WHERE SPECIFIED ON THE PLANS, SHALL INCLUDE ALL LABOR, FITTINGS AND APPURTENANCES REQUIRED TO PERFORM THIS WORK.
23. THE CONTRACTOR SHALL CONTACT THE ASSIGNED INSPECTOR FOR THE OPERATION OF ALL WATER VALVES & SCHEDULING OF SERVICES BY WATER/WASTEWATER.
24. THE CONTRACTOR SHALL MAINTAIN THE EXISTING WATER MAINS AND SERVICES IN OPERATION WHEN INSTALLING NEW WATER MAINS. THIS SHALL INCLUDE ANY TEMPORARY CONNECTIONS, IF REQUIRED.
25. THE CONTRACTOR MUST NOTIFY EACH PROPERTY OWNER A MINIMUM OF 24 HOURS PRIOR TO SHUTTING OFF WATER FOR CONNECTION TO NEW MAIN. THE CONTRACTOR SHALL NOTIFY THE ENGINEERING CONSTRUCTION INSPECTOR A MINIMUM OF 72 HOURS IN ADVANCE FOR ALL WATER OR WASTEWATER LOCATES OR SHUT OFFS OF WATER. THE LENGTH OF TIME FOR WATER SHUTDOWNS SHALL BE LIMITED TO AS NEEDED TO PERFORM THE REQUIRED WORK.
26. THE CONTRACTOR SHALL MAINTAIN THE EXISTING WASTEWATER MAINS AND SERVICES IN OPERATION WHEN INSTALLING NEW WASTEWATER MAINS. THIS SHALL INCLUDE ANY TEMPORARY CONNECTIONS, IF REQUIRED.
27. THE MAXIMUM DEFLECTION OF PIPE JOINTS SHALL NOT EXCEED THAT RECOMMENDED BY THE PIPE MANUFACTURE. IF IT IS NECESSARY TO DEFLECT THE PIPE (GREATER THAT THE RECOMMENDED AMOUNT) THE CONTRACTOR SHALL PROVIDE FITTINGS AS NEEDED.
28. PRIOR TO THE START OF CONSTRUCTION, COUNTY WATER/WASTEWATER REPRESENTATIVE AND THE CONTRACTOR SHALL MAKE A DRY RUN TO THE SYSTEM TO INSURE, TO THE EXTENT POSSIBLE, THAT THE UTILITY CAN BE FOUND AND SECURED. ANY ISSUES SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER OF RECORD TO PROVIDE WRITTEN DIRECTION AND PROVIDE REVISED PLANS AS NEEDED.
29. TRAFFIC CONTROL PLANS SHALL BE SUBMITTED TO THE COUNTY. THE TRAFFIC CONTROL PLAN AND BARRICADES SHALL MAINTAIN TRAFFIC FLOW AND SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE TMTUCD AND PREPARED BY A WORK ZONE CERTIFIED TECHNICIAN. TRAFFIC CONTROL PLANS SHALL BE SUBMITTED A MINIMUM OF TWO WEEKS IN ADVANCE OF WORK COMMENCING. TEMPORARY STREET CLOSURE REQUESTS SHALL BE SUBMITTED IN WRITING.
30. ALL PAVEMENT MARKINGS, INCLUDING RAISED PAVEMENT MARKERS, LANE STRIPING, TRANSVERSE MARKINGS, SIGNS AND OTHER TRAFFIC CONTROL DEVICES, DISTURBED DURING CONSTRUCTION SHALL BE MAINTAINED, REPAIRED OR REPLACED AT THE CONTRACTOR'S EXPENSE.
31. SEED/SOD SHALL BE FURNISHED TO ESTABLISH GROUND COVER OVER ALL DISTURBED AREAS AS AN EROSION CONTROL MEASURE. THE CONTRACTOR SHALL NOT WAIT UNTIL THE COMPLETION OF THE ENTIRE PROJECT BEFORE DOING THIS WORK.
32. ALL SANITARY SEWER AND WATER MAIN CONSTRUCTION WITHIN PUBLIC RIGHT-OF-WAY OR EASEMENT SHALL CONFORM TO THE REQUIREMENTS OF THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY (TCEQ) GUIDELINES FOR CONSTRUCTION OF PUBLIC WATER AND SEWER SYSTEMS. CONTRACTOR SHALL MAINTAIN A COPY OF THE DESIGN DOCUMENTS AT THE JOBSITE AT ALL TIMES.
33. THE CONTRACTOR SHALL INSTALL AND MAINTAIN EROSION CONTROL MEASURES IN ACCORDANCE WITH THE DEVELOPMENT PLANS RELEASED FOR CONSTRUCTION. THE CONTRACTOR SHALL INSURE THAT ALL EROSION CONTROL MEASURES ARE MAINTAINED AT ALL TIMES IN A CONDITION ACCEPTABLE TO THE PUBLIC WORKS ENGINEERING INSPECTOR.
34. THE CONTRACTOR SHALL NOT ALLOW SOIL AND DEBRIS TO ENTER EXISTING INLETS. ALL INLETS SHALL BE PROTECTED DURING CONSTRUCTION.
35. THE CONTRACTOR SHALL NOT DISPOSE OF WASTE OR ANY OTHER MATERIALS INTO STREAMS OR WATERWAYS. EXCESS MATERIAL SHALL BE HAULED OFF-SITE EACH DAY AND WILL NOT BE ALLOWED TO ACCUMULATE.
36. THE CONTRACTOR SHALL NOT BURY RUBBISH OR WASTE MATERIALS ON-SITE. BURNING MATERIALS WILL NOT BE ALLOWED WITHOUT PROPER WRITTEN AUTHORIZATION FROM THE RUSK FIRE DEPARTMENT.
37. THE CONTRACTOR SHALL WET DOWN THE CONSTRUCTION SITE AS DIRECTED BY THE COUNTY TO PREVENT BLOWING DUST.
38. THE CONTRACTOR SHALL CLEAN STREETS ADJACENT TO THE CONSTRUCTION SITE TO REMOVE MATERIALS DEPOSITED BY CONSTRUCTION VEHICLES ENTERING AND LEAVING THE CONSTRUCTION SITE.
39. THE CONTRACTOR SHALL BE REQUIRED TO PROVIDE AND MONITOR ALL WARNING AND SAFETY DEVICES (FLASHING LIGHTS, BARRICADES, SIGNS, ETC.) AS DEEMED NECESSARY BY THE COUNTY. WARNING AND SAFETY DEVICES SHALL CONFORM TO THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.
40. THE LOCATIONS OF EXISTING UTILITIES SHOWN ON THE PLANS ARE APPROXIMATE. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO LOCATE AND VERIFY IN THE FIELD THE LOCATIONS, ELEVATIONS AND SIZES OF CONFLICTING AND / OR ADJACENT UTILITIES IN ADVANCE OF BEGINNING CONSTRUCTION.
41. THE COUNTY STANDARD DETAILS SHALL SUPERSEDE ANY DETAILS CONTAINED WITHIN THE PLAN SET.
42. THE CONTRACTOR SHALL COMPLY TO RULES AND REGULATIONS OF NEW SUBDIVISIONS IN DENTON COUNTY, TEXAS EFFECTIVE AS OF APRIL 24, 2018.

WATER GENERAL NOTES

1. UNLESS OTHERWISE NOTED ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO THE APPLICABLE SPECIFICATIONS AND STANDARDS OF THE BOLIVER WATER SUPPLY CORPORATION.
2. ALL WATER MAIN CONSTRUCTION WITHIN PUBLIC RIGHT-OF-WAY OR EASEMENT SHALL CONFORM TO THE REQUIREMENTS OF THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY (TCEQ) GUIDELINES FOR CONSTRUCTION OF PUBLIC WATER AND SEWER SYSTEMS. CONTRACTOR SHALL MAINTAIN A COPY OF THE DESIGN DOCUMENTS AT THE JOBSITE AT ALL TIMES.
3. CONTRACTOR SHALL MAINTAIN EXISTING WATER SERVICE AT ALL TIMES DURING CONSTRUCTION.
4. THE LOCATIONS, ELEVATIONS AND DIMENSIONS OF EXISTING UTILITIES SHOWN ON THE PLANS WERE OBTAINED FROM AVAILABLE CITY AND UTILITY COMPANY RECORDS AND PLANS, AND ARE CONSIDERED APPROXIMATE. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO VERIFY ALL LOCATIONS, ELEVATIONS AND DIMENSIONS OF ADJACENT AND/OR CONFLICTING UTILITIES SUFFICIENTLY IN ADVANCE OF CONSTRUCTION IN ORDER THAT ADJUSTMENTS CAN BE MADE TO PROVIDE ADEQUATE CLEARANCES. THE CONTRACTOR SHALL PRESERVE AND PROTECT PUBLIC UTILITIES AT ALL TIMES DURING CONSTRUCTION. ANY DAMAGE TO UTILITIES RESULTING FROM CONTRACTOR'S OPERATIONS SHALL BE RESTORED AT HIS EXPENSE. THE CITY OF SANGER ENGINEERING DEPARTMENT SHALL BE NOTIFIED WHEN PROPOSED WATER LINE GRADES CONFLICT WITH EXISTING UTILITY LINES. AT LEAST FORTY-EIGHT (48) HOURS PRIOR TO BEGINNING CONSTRUCTION IN THE VICINITY OF EXISTING UTILITIES, THE CONTRACTOR SHALL NOTIFY UTILITY COMPANIES TO LOCATE ALL UNDERGROUND UTILITIES.
5. ALL DIMENSIONS SHOWN ARE TO CENTERLINE OF PIPE UNLESS NOTED OTHERWISE
6. ALL WATER MAINS SHALL BE C-900, DR-14 PVC PIPE.
7. THE CONTRACTOR SHALL PROVIDE A TRENCH SAFETY PLAN PRIOR TO BEGINNING HIS WORK.
8. ALL WATER MAINS SHALL HAVE A MINIMUM COVER OF FORTY-EIGHT INCHES (48") TO THE TOP OF PIPE.
9. ALL WATER MAIN FITTINGS SHALL BE MECHANICAL AND SHALL BE POLYWRAPPED.
10. ALL PROPOSED WATER MAINS SHALL BE PRESSURE TESTED, FLUSHED AND STERILIZED AND MEET ALL FEDERAL AND STATE TESTING REQUIREMENTS.



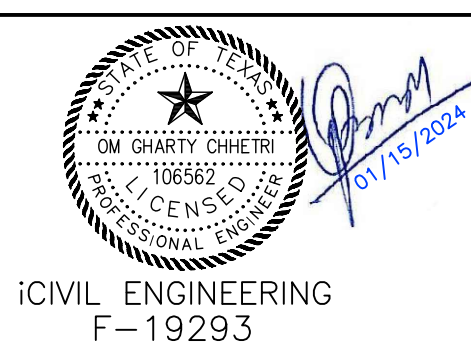
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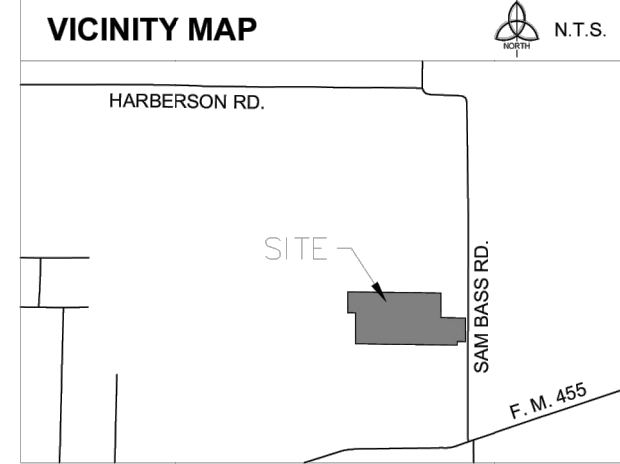
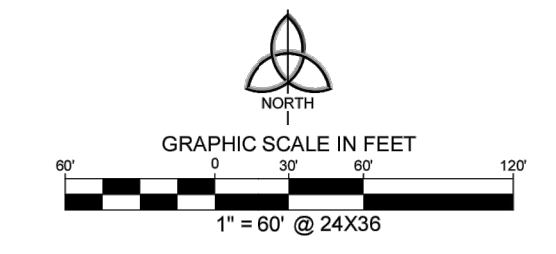
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JAN 2024



SANGER, TEXAS
GENERAL NOTES
FOR
MARLEY MEADOWS

PROJECT NO.

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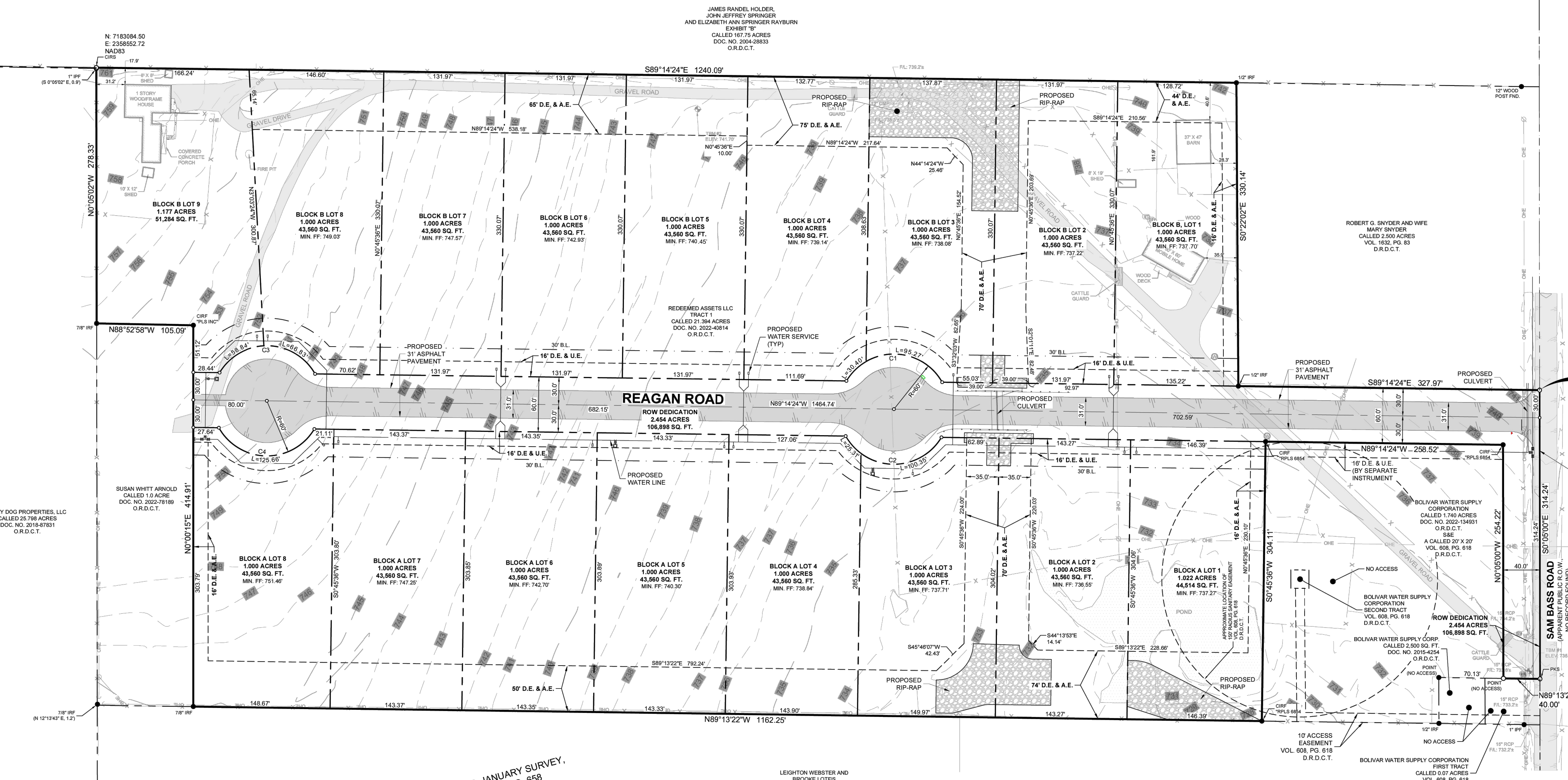


LEGEND

TV	CABLE TV BOX	TBM	TEMPORARY BENCHMARK
EM	ELEVATION BENCHMARK	ELEV	ELEVATION
GA	GAS TANK	FL	FLOW LINE
T	TELEPHONE BOX	RCP	REINFORCED CONCRETE PIPE
TV	TELEPHONE VAULT	CMF	CORROSIATE METAL PIPE
EA	ELECTRIC ANCHOR	MON	MONUMENT FOUND
EM	ELECTRIC METER	CMF	CONCRETE METAL PIPE
UP	UTILITY POLE	IPF	IRON PIPE FOUND
AG	AG LANT	IPF	IRON ROD FOUND
MB	MAIL BOX	P.C.B.	POINT OF BEGINNING
SI	SANITARY SEWER CLEANOUT	O.R.D.C.T.	OFFICIAL RECORDS DENTON COUNTY TEXAS
ST	SANITARY SEWER SEPTIC TANK	O.R.D.C.T.	DEED RECORDS DENTON COUNTY TEXAS
FM	FIRE HYDRANT	O.R.D.C.T.	DEED RECORDS DENTON COUNTY TEXAS
WM	WATER METER	VOL	VOLUME
WV	WATER VALVE	PG	PAGE
WP	WATER PUMP	PG	PAGE
IPV	IRRIGATION VALVE	U.E.	UTILITY EASEMENT
SI	SIEN	D.E.	DRAINAGE EASEMENT

LINE TYPE LEGEND

---	BOUNDARY LINE
---	EASEMENT LINE
---	BUILDING LINE
---	STORM SEWER LINE
---	OVERHEAD UTILITY LINE
---	FENCE
---	CONCRETE PAVEMENT
---	ASPHALT PAVEMENT
---	BUILDING/HOUSE
---	COVERED AREA / OVERHANG



P.O.B.
Use N: 7182733.57
E: 2380122.76
NAD83

JUDY K. SELPH
DOC. NO. 201020944
O.R.D.C.T.

MORRIS KNOWLES AND WIFE, JUEL
DEAN KNOWLES CALLED 214.7
ACRES VOL. 345, PG. 247, D.R.D.C.T.

W. G. HUDSON SURVEY,
ABSTRACT NO. 563

NOTICE:
Preliminary Plat for Review Purposes Only.

**PRELIMINARY PLAT
MARLEY MEADOWS
BLOCK A, LOTS 1-8 AND
BLOCK B, LOTS 1-9**

17 RESIDENTIAL LOTS
2.454 ACRES RIGHT-OF-WAY DEDICATION
BEING 19.653 ACRES OUT OF THE
JAMES B.P. JANUARY SURVEY, ABSTRACT NO. 658,
CITY OF SANGER E.T.J., DENTON COUNTY, TEXAS

TRINITY LAND SURVEYING LLC

1222 Greenbriar St., Denton, Texas 76201 FIRM # 10194687 Tel. No. (940) 293-3180

Scale	Drawn by	Checked by	Date	Project No.	Sheet No.
1" = 60'	MLB	TLS	08/21/2023	2022-014	1 OF 2

OWNER / APPLICANT:
Redeemed Assets LLC
2701 West River Ln.
Denton, Texas 76210
Ph: (940) 293-3180
Email: ben.burmesde@yahoo.com
Contact: Ben Burmesde

SURVEYOR:
Trinity Land Surveying, LLC
1222 Greenbriar St.
Denton, TX 76201
Ph: (940) 293-3180
Email: mlbaek@trinity-surveying.com
Contact: Michael Baek, RPLS

ENGINEER:
ICivil Engineering
1001 W. Euleless Blvd., Ste. 412h
Euleless, TX 76040
Ph: (972) 523-5493
Email: emrp@icivileng.com
Contact: Om Gharly Chhetri, P.E.

LOT TABLE

LOT NO.	ACRES	SQ. FT.
BLOCK A LOT 1	1.022	44,514
BLOCK A LOT 2	1.000	43,560
BLOCK A LOT 3	1.000	43,560
BLOCK A LOT 4	1.000	43,560
BLOCK A LOT 5	1.000	43,560
BLOCK A LOT 6	1.000	43,560
BLOCK A LOT 7	1.000	43,560
BLOCK A LOT 8	1.000	43,560
BLOCK B LOT 1	1.000	43,560
BLOCK B LOT 2	1.000	43,560
BLOCK B LOT 3	1.000	43,560
BLOCK B LOT 4	1.000	43,560
BLOCK B LOT 5	1.000	43,560
BLOCK B LOT 6	1.000	43,560
BLOCK B LOT 7	1.000	43,560
BLOCK B LOT 8	1.000	43,560
BLOCK B LOT 9	1.177	51,284
BOUNDARY	19.653	856,096
ROW DEDICATION	2.454	106,898

BENCH MARK LIST

TBM #1 15" SET ON A 15" ROP HEADWALL 8'± NORTH OF THE MOST EASTERLY SOUTH PROPERTY LINE AND 18'± WEST OF THE CENTERLINE OF SAM BASS ROAD. ELEV: 735.46'

TBM #2 5/8" IRON ROD SET ON THE SOUTH SIDE OF A GRAVEL ROAD, 37'± SOUTH OF THE NORTH PROPERTY LINE AND 654'± EAST OF THE WEST PROPERTY LINE. ELEV: 741.70'

SANITARY EASEMENT QUOTE, AS RECORDED IN VOLUME 608, PAGE 618, DEED RECORDS, DENTON COUNTY, TEXAS:

"Further, as part of the consideration herein, Grantor, Lois N. Wolters, agrees not to build or maintain any septic tank or open-jointed drain field therefrom, cess pool, privy, stock pen, dump ground, or any other facility which might create a danger of pollution of the water of any well which might be drilled upon Tract Two above described for a distance of 150 feet from the well as drilled and developed. This sanitary easement shall constitute a covenant running with the land and shall bind the undersigned, his successors and assigns, and this grant of Sanitary Easement is made to the said BOLIVAR WATER SUPPLY CORPORATION, its successors and assigns."

FLOOD STATEMENT:

According to Federal Emergency Management Agency's Flood Insurance Rate Map No. 48121C0205G, for Denton County, Texas and incorporated areas, dated April 18, 2011, this property is located within:

Zone X (unshaded) defined as "Areas determined to be outside the 0.2% annual chance floodplain"

If this site is not within an identified special flood hazard area, this flood statement does not imply that the property and/or the structures thereon will be free from flooding or flood damage. On rare occasions, greater floods can and will occur and flood heights may be increased by man-made or natural causes. This flood statement shall not create liability on the part of the surveyor.

CURVE TABLE

NO.	DELTA	RADIUS	LENGTH	CHORD BEARING	CHORD
C1	120°00'00"	60.00'	125.68'	S89°14'24"E	103.92'
C2	120°00'00"	60.00'	125.68'	N89°14'24"W	103.92'
C3	120°00'00"	60.00'	125.68'	N89°14'24"W	103.92'
C4	120°00'00"	60.00'	125.68'	N89°14'24"W	103.92'

JAMES B.P. JANUARY SURVEY,
ABSTRACT NO. 658

JAMES RANDEL HOLDER,
JOHN JEFFREY SPRINGER
AND ELIZABETH ANN SPRINGER RAYBURN
EXHIBIT 19
CALLED 167.75 ACRES
DOC. NO. 2004-28833
O.R.D.C.T.

GRAY DOG PROPERTIES, LLC
CALLED 25.78 ACRES
DOC. NO. 2018-87831
O.R.D.C.T.

SUSAN WHITT ARNOLD
CALLED 10.8 ACRES
DOC. NO. 2022-78189
O.R.D.C.T.

REDEEMED ASSETS LLC
CALLED 21.384 ACRES
DOC. NO. 2022-40814
O.R.D.C.T.

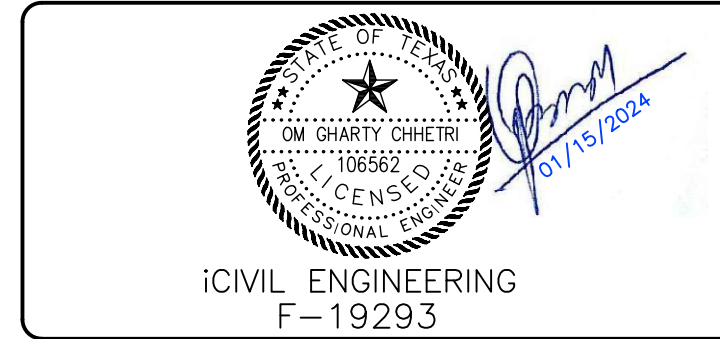
LEIGHTON WEBSTER AND
BROCKE LOTS
CALLED 12.50 ACRES
DOC. NO. 2022-119173
O.R.D.C.T.



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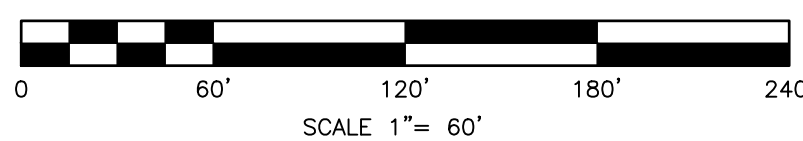
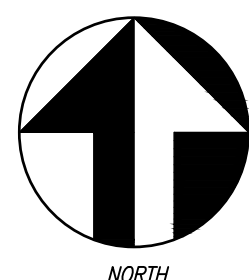
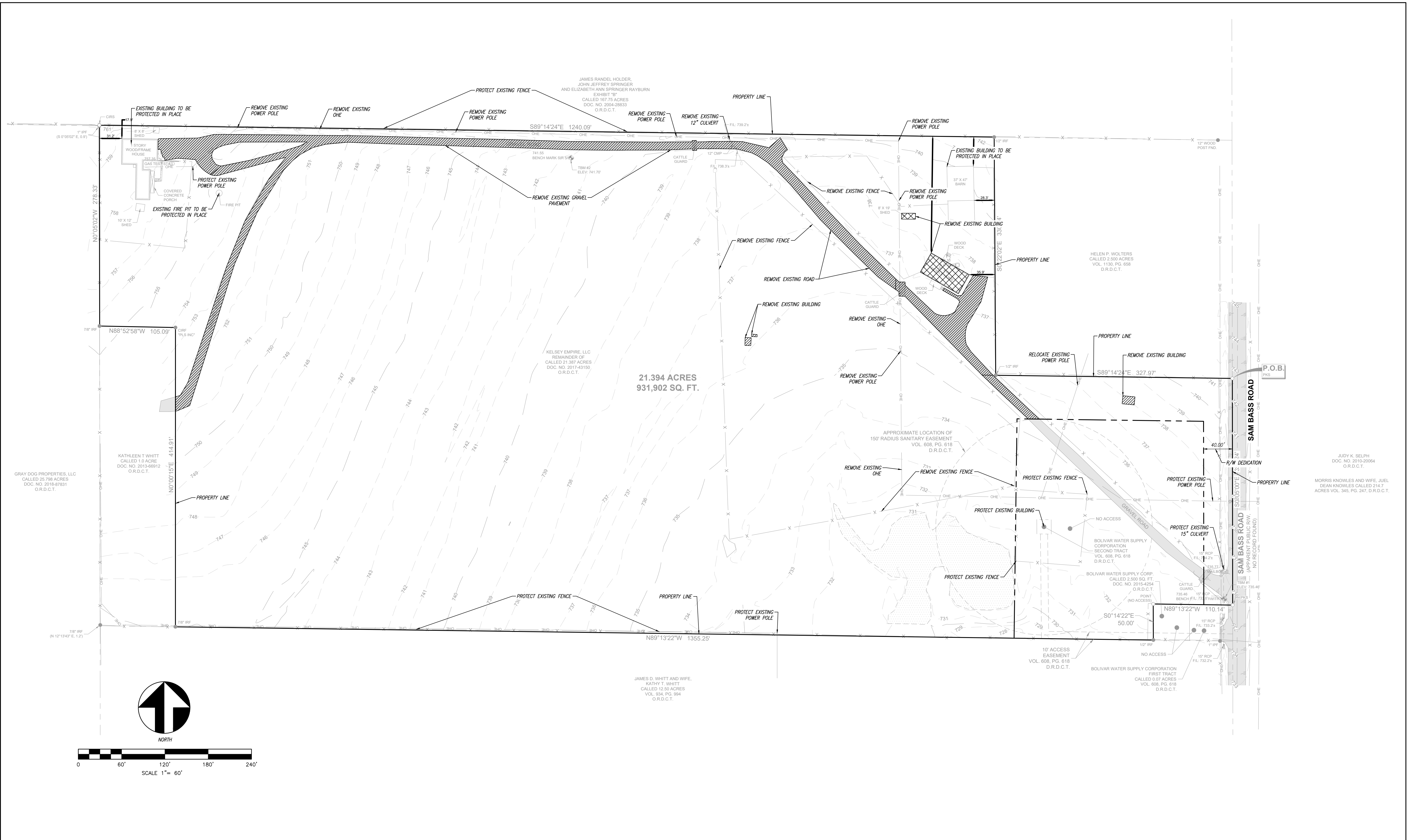
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JAN 2024



SANGER, TEXAS
SURVEY & PLAT
FOR
MARLEY MEADOWS

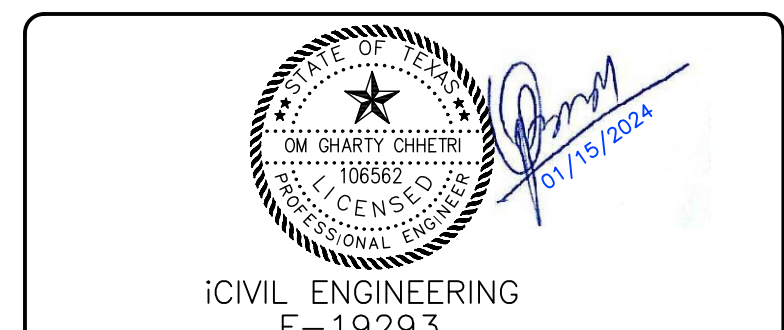
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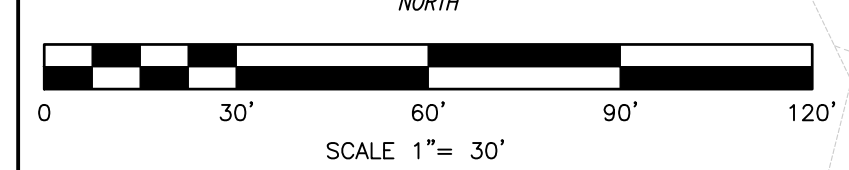
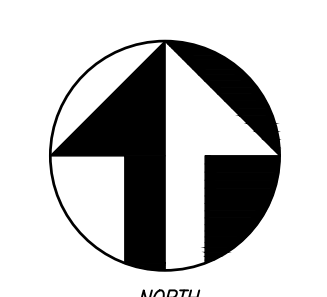
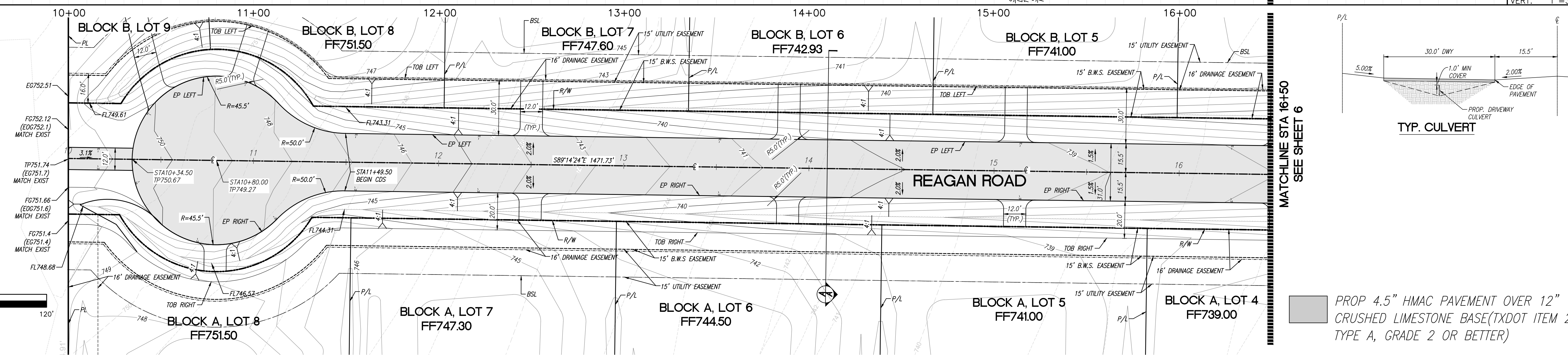
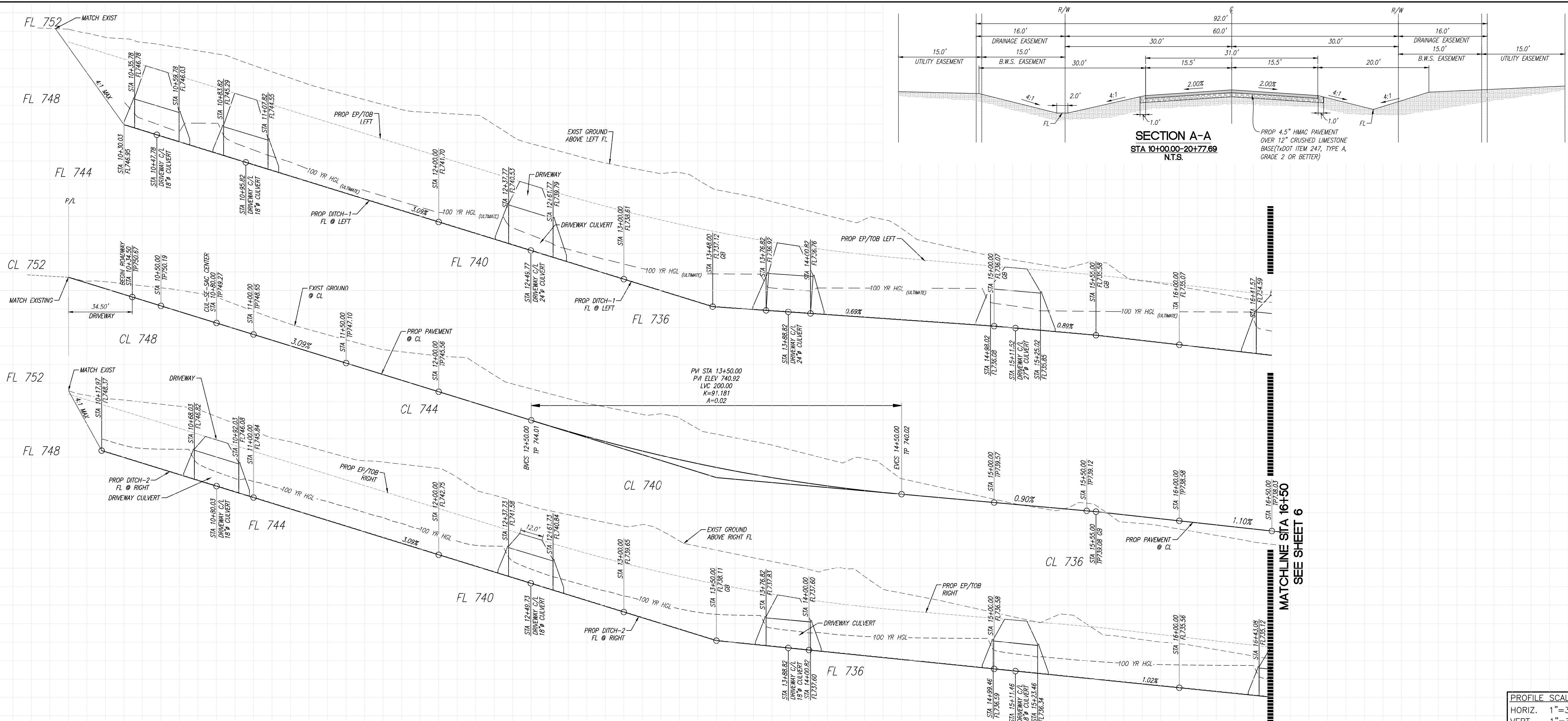
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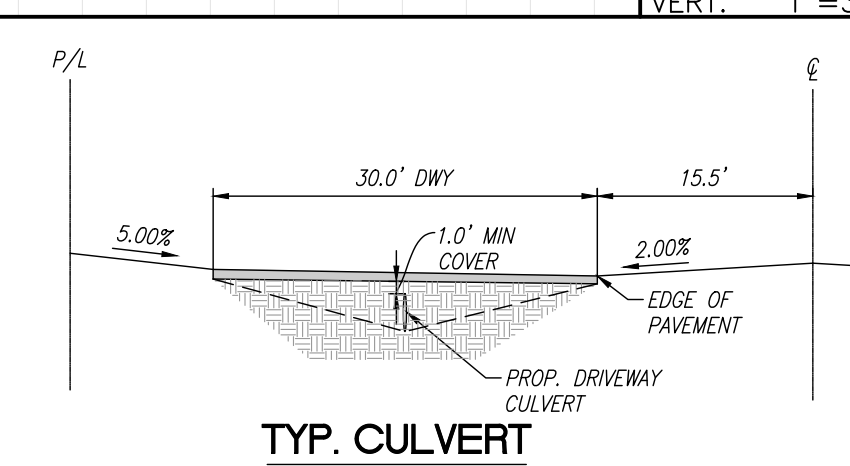


SANGER, TEXAS
DEMOLITION PLAN
 FOR
MARLEY MEADOWS

PROJECT NO.
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 23



KATHLEEN T WHITT
CALLED 10 ACRE
DOC. NO. 2003-86992
ORD.G.T.



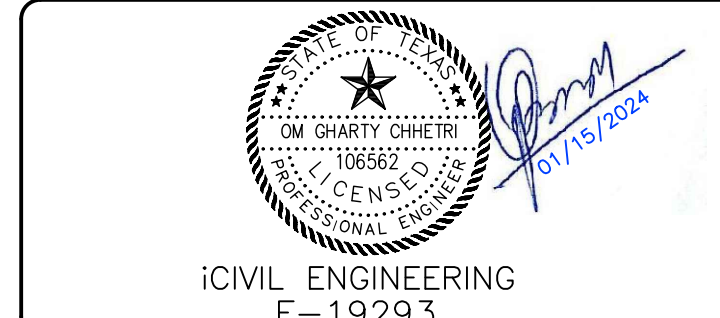
PROP 4.5" HMAc PAVEMENT OVER 12"
CRUSHED LIMESTONE BASE(TXDOT ITEM 247,
TYPE A, GRADE 2 OR BETTER)



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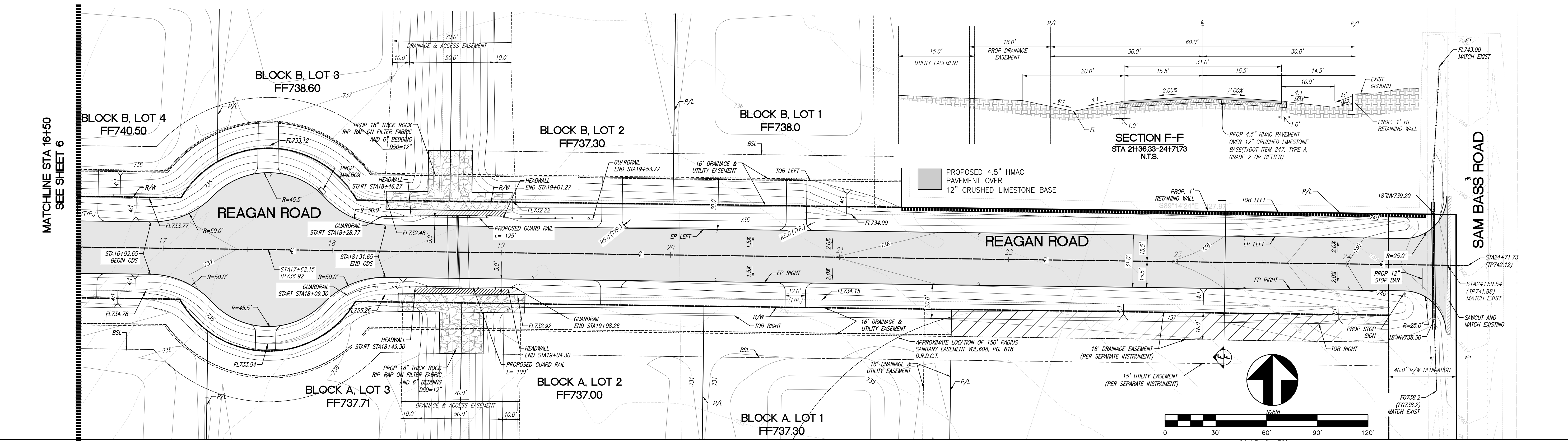
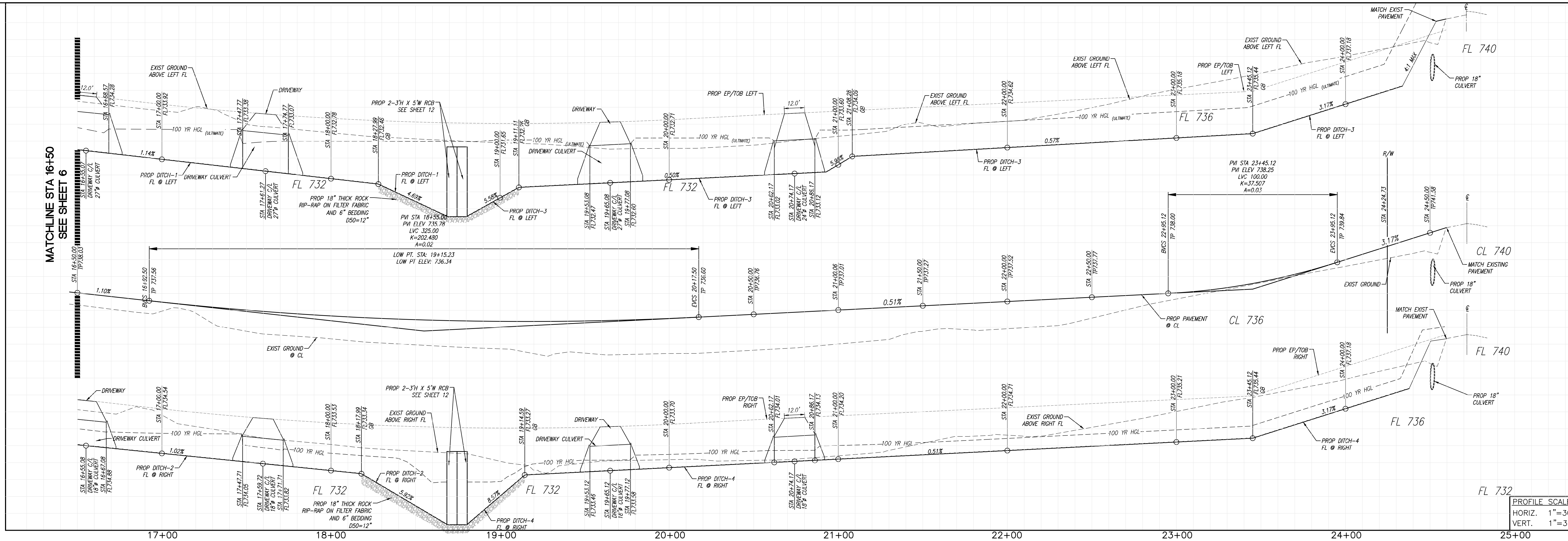
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SANGER, TEXAS
STREET PLAN
FOR
MARLEY MEADOWS

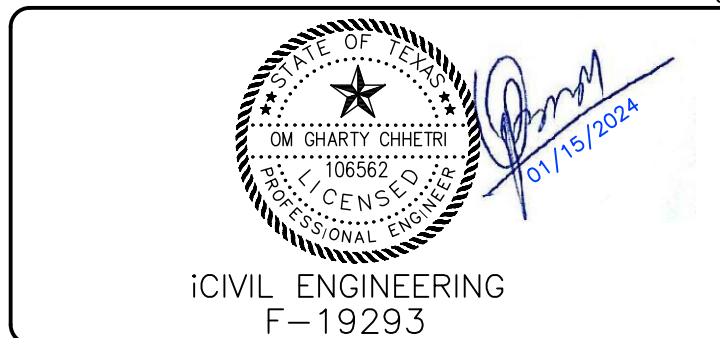
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SANGER, TEXAS
STREET PLAN
 FOR
MARLEY MEADOWS

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 23

SEE SHEET 7

SEE SHEET 7

MIN FF 749.03
PROP FF 751.50
BLOCK B, LOT 8

MIN FF 747.57
PROP FF 747.60
BLOCK B, LOT 7

MIN FF 742.93
PROP FF 742.93
BLOCK B, LOT 6

MIN FF 740.45
PROP FF 741.0
BLOCK B, LOT 5

MIN FF 739.14
PROP FF 740.50
BLOCK B, LOT 4

MIN FF 738.08
PROP FF 738.60
BLOCK B, LOT 3

KATHLEEN T WHITT
CALLED 10 ACRE
DOC. NO. 2013-66912
O.R.D.C.T.

REAGAN ROAD
(PUBLIC)

(SEE STREET PLANS)

MIN FF 751.46
PROP FF 751.50
BLOCK A, LOT 8

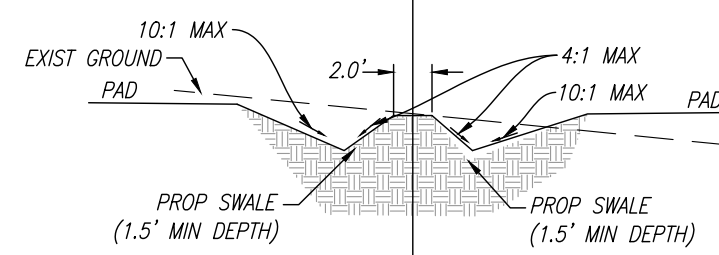
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PROP FF 747.30
BLOCK A, LOT 7

MIN FF 742.70
PROP FF 744.50
BLOCK A, LOT 6

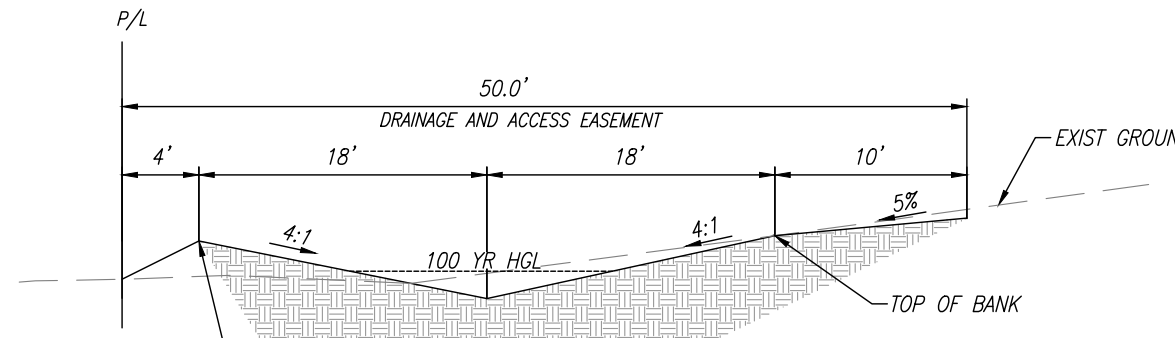
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PROP FF 741.0
BLOCK A, LOT 5

MIN FF 738.84
PROP FF 739.0
BLOCK A, LOT 4

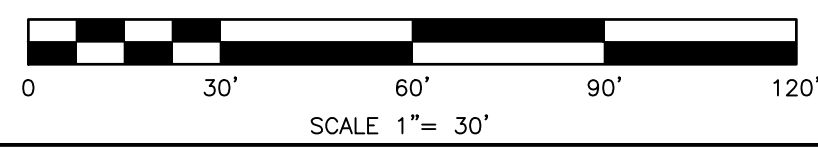
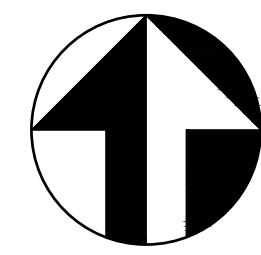
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PROP FF 737.71
BLOCK A, LOT 3



SECTION D-D
NTS



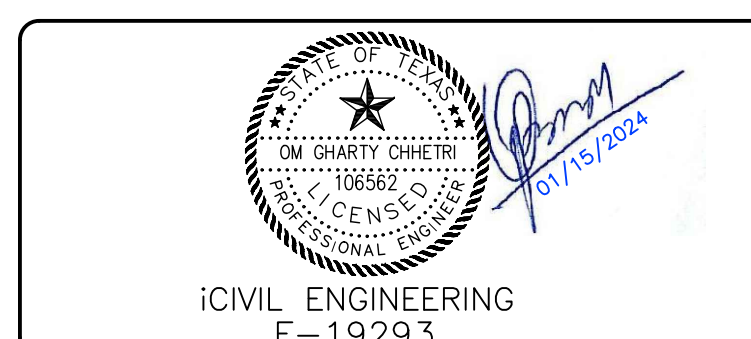
SECTION E-E
NTS



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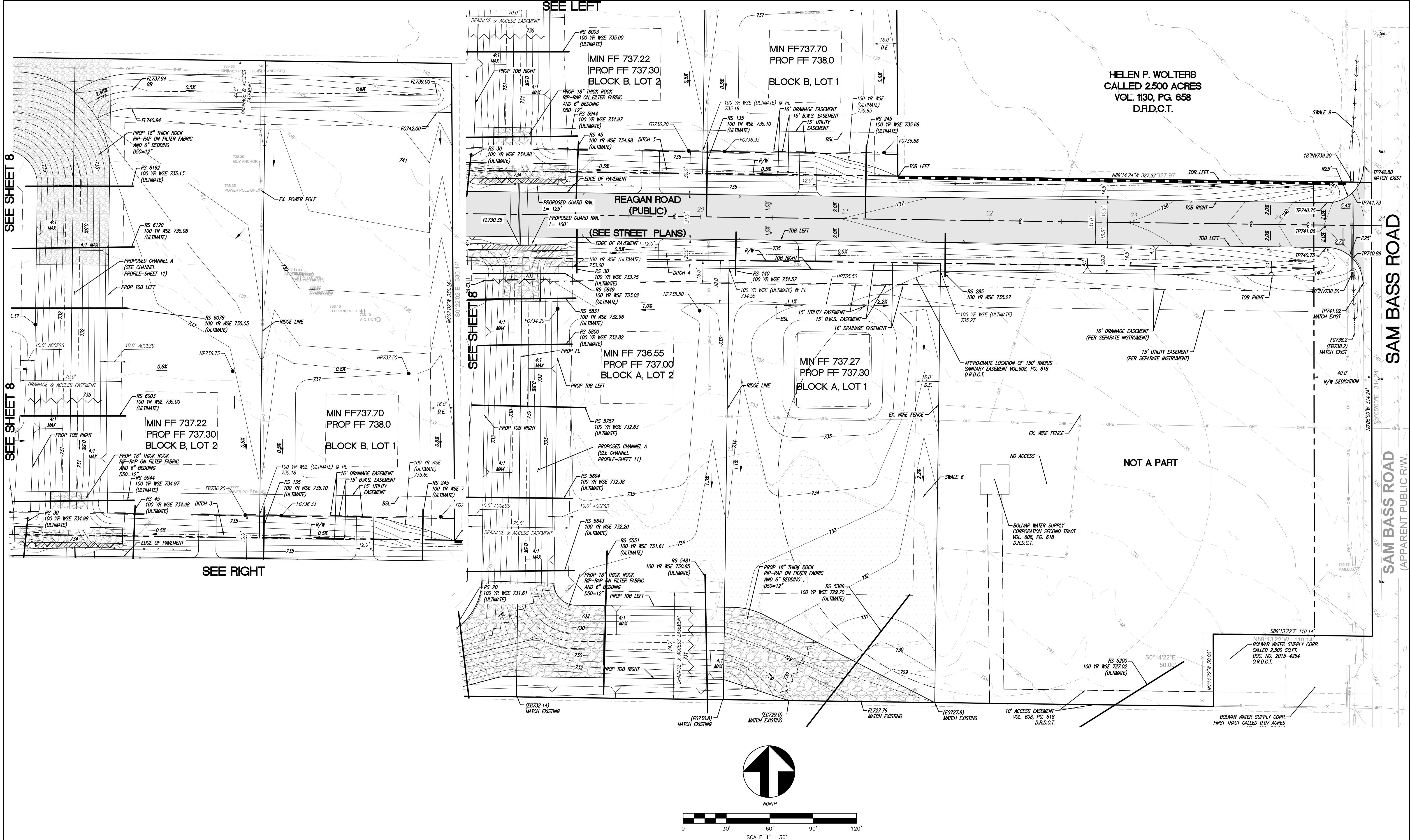
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SANGER, TEXAS
GRADING PLAN
FOR
MARLEY MEADOWS

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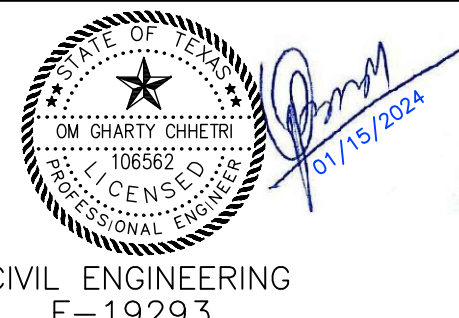


HELEN P. WOLTERS
CALLED 2.500 ACRES
VOL. 1130, PG. 658
D.R.D.C.T.

SAM BASS ROAD
(APPARENT PUBLIC R/W)

NOT A PART

BOLINAR WATER SUPPLY CORP.
CALLED 2,500 SQ.FT.
DOC. NO. 2015-4254
O.R.D.C.T.

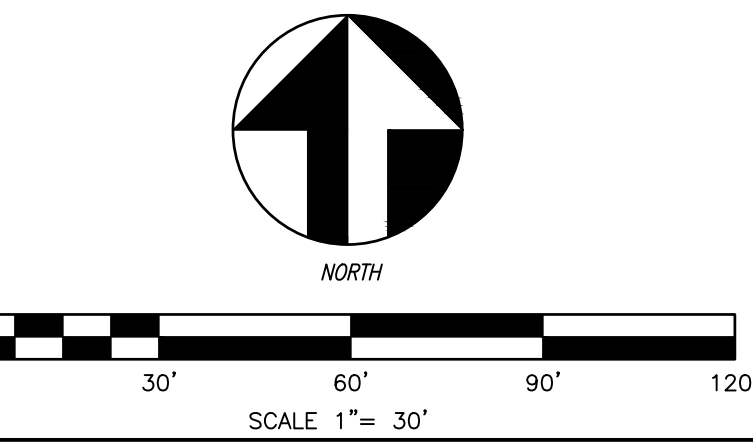


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F-19293

SANGER, TEXAS
GRADING PLAN
FOR
MARLEY MEADOWS

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date	JAN 2024



SEE SHEET 8

SEE SHEET 8

SEE SHEET 8

SEE RIGHT

SEE LEFT

TIME OF CONCENTRATION CALCULATION (PRE-PROJECT)																				
AREA CODE	SHEET FLOW						SHALLOW CONCENTRATED FLOW						CHANNEL FLOW						TOC (TOTAL) (Min.)	LAG TIME (min.)
	LENGTH (ft)	MANNINGS'S N	P2 (inc.)	SLOPE (ft/ft)	TIME(hr.)	TIME(Min.)	HIGH ELEV	LOW ELEV	LENGTH(ft)	SLOPE(ft/ft)	VEL.(fps)	TOC(hr)	TOC(Min.)	VEL.(fps)	LENGTH	TOC(hr)	TOC(Min.)			
Sub-Basin 1	100	0.15	3.36	0.01	0.21	12.62	756.0	750.0	660	0.01	1.60	0.11	6.88	3.12	1100.00	0.10	5.88	25.37	15.22	

NOTE:
 1. VALUE OF MANNING'S N FOR SHEET FLOW = 0.15 (FROM DENTON COUNTY SUBDIVISION RULES & REGULATIONS, PAGE 56, TABLE IV.1-6)
 2. VELOCITY FOR SHALLOW CONCENTRATED FLOW IS TAKEN FROM TR 55 FIGURE 3-1
 3. P2=3.36 FROM DENTON COUNTY SUBDIVISION RULES & REGULATIONS, PAGE 49, TABLE IV.1-3

TIME OF CONCENTRATION CALCULATION (PRE-PROJECT)															
AREA CODE	SHEET FLOW						SHALLOW CONCENTRATED FLOW						TOC (TOTAL)	LAG TIME (min.)	
	LENGTH (ft)	MANNINGS'S N	P2 (inc.)	SLOPE (ft/ft)	TIME(hr.)	TIME(Min.)	HIGH ELEV	LOW ELEV	LENGTH(ft)	SLOPE(ft/ft)	VEL.(fps)	TOC(hr)			TOC(Min.)
Sub-Basin 2 (Pre)	100	0.15	3.36	0.01	0.21	12.62	756.0	729.0	1282	0.021	2.60	0.14	8.22	20.83	12.50

NOTE:
 1. VALUE OF MANNING'S N FOR SHEET FLOW = 0.15 (FROM DENTON COUNTY SUBDIVISION RULES & REGULATIONS, PAGE 56, TABLE IV.1-6)
 2. VELOCITY FOR SHALLOW CONCENTRATED FLOW IS TAKEN FROM TR 55 FIGURE 3-1
 3. P2=3.36 FROM DENTON COUNTY SUBDIVISION RULES & REGULATIONS, PAGE 49, TABLE IV.1-3

TIME OF CONCENTRATION CALCULATION (PRE-PROJECT)																			
AREA CODE	SHEET FLOW						SHALLOW CONCENTRATED FLOW						CHANNEL FLOW			TOC (TOTAL) (Min.)	LAG TIME (min.)		
	LENGTH (ft)	MANNINGS'S N	P2 (inc.)	SLOPE (ft/ft)	TIME(hr.)	TIME(Min.)	HIGH ELEV	LOW ELEV	LENGTH(ft)	SLOPE(ft/ft)	VEL.(fps)	TOC(hr)	TOC(Min.)	VEL.(fps)	LENGTH			TOC(hr)	TOC(Min.)
Sub-Basin 3	100	0.15	3.36	0.02	0.16	9.56	743.0	724.0	1060	0.02	2.20	0.13	8.03	3.12	5092.00	0.45	27.20	44.793	26.88

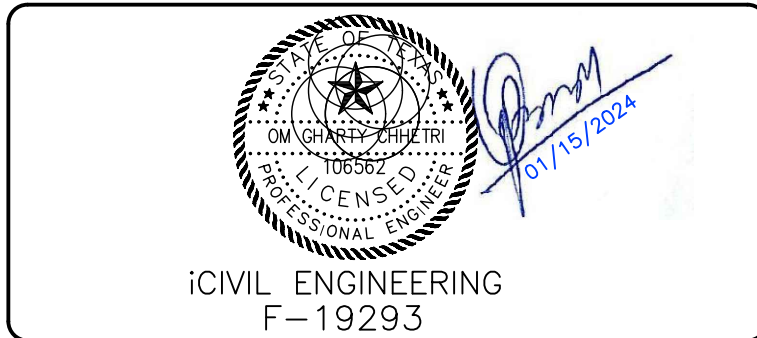
NOTE:
 1. VALUE OF MANNING'S N FOR SHEET FLOW = 0.15 (FROM DENTON COUNTY SUBDIVISION RULES & REGULATIONS, PAGE 56, TABLE IV.1-6)
 2. VELOCITY FOR SHALLOW CONCENTRATED FLOW IS TAKEN FROM TR 55 FIGURE 3-1
 3. P2=3.36 FROM DENTON COUNTY SUBDIVISION RULES & REGULATIONS, PAGE 49, TABLE IV.1-3



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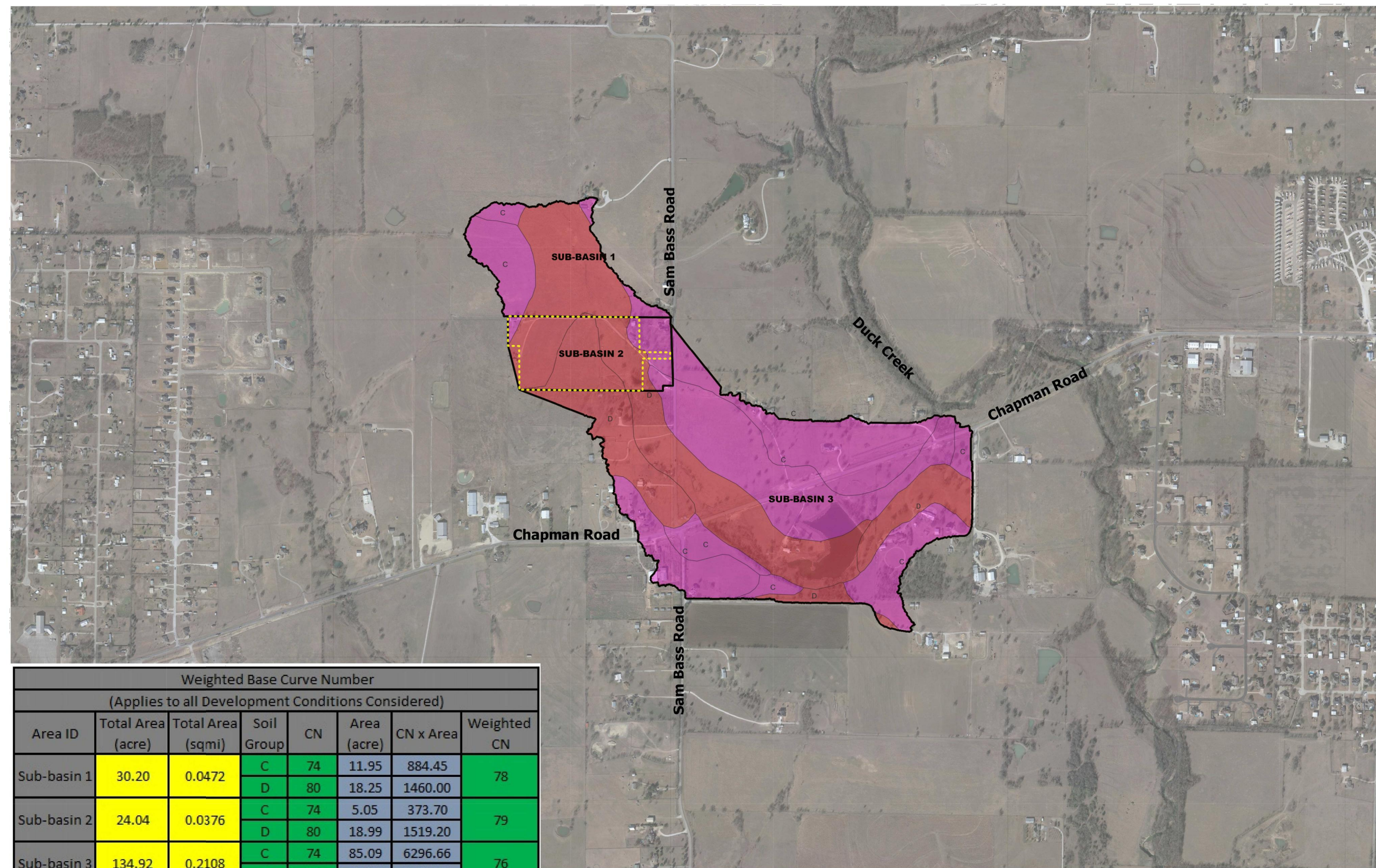
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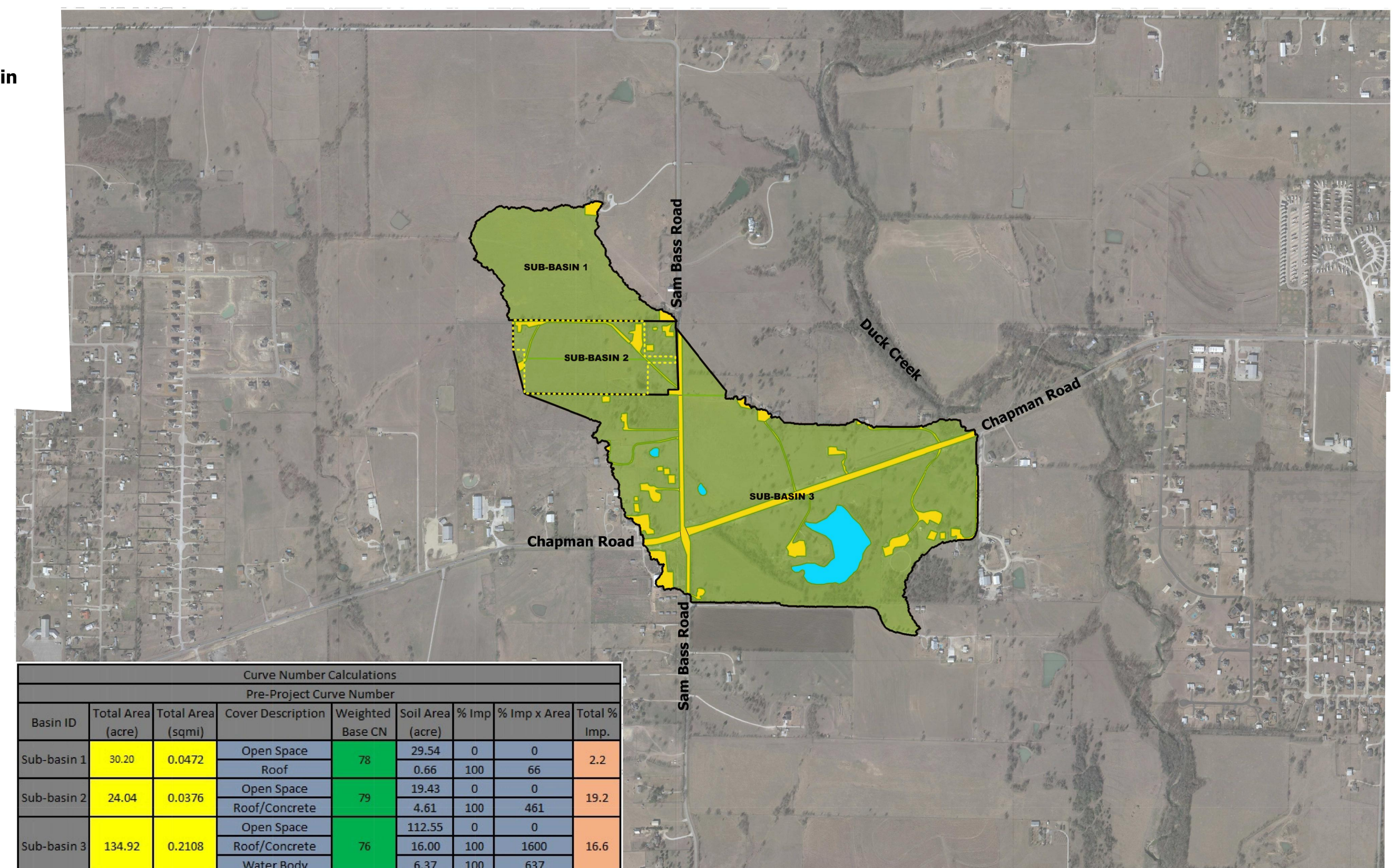
SANGER, TEXAS
PRE-PROJECT TIME OF CONCENTRATION CALCULATION
 FOR
MARLEY MEADOWS

PROJECT NO.
 sheet
 10-A
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 23



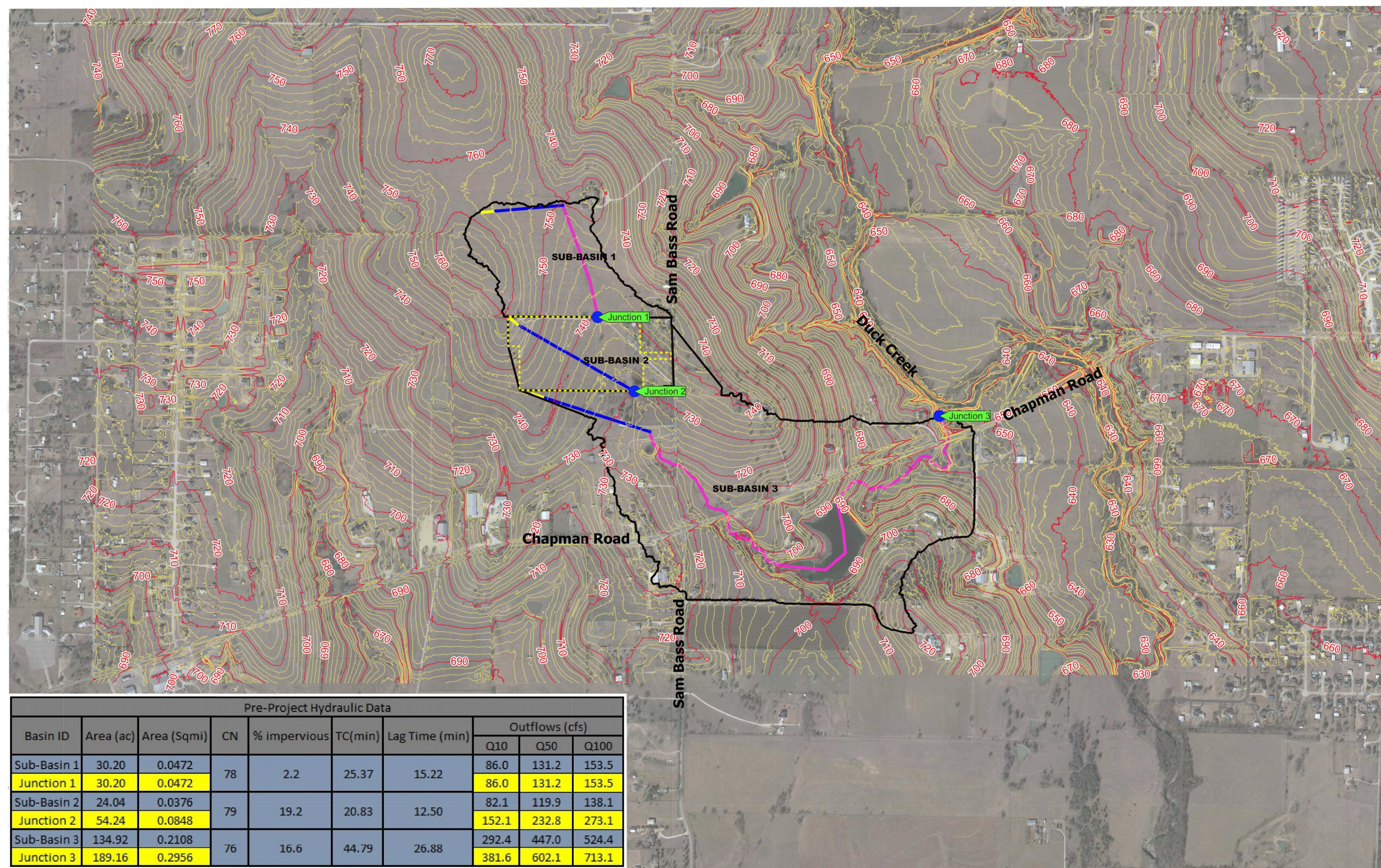
Weighted Base Curve Number (Applies to all Development Conditions Considered)							
Area ID	Total Area (acre)	Total Area (sqmi)	Soil Group	CN	Area (acre)	CN x Area	Weighted CN
Sub-basin 1	30.20	0.0472	C	74	11.95	884.45	78
			D	80	18.25	1460.00	
Sub-basin 2	24.04	0.0376	C	74	5.05	373.70	79
			D	80	18.99	1519.20	
Sub-basin 3	134.92	0.2108	C	74	85.09	6296.66	76
			D	80	49.83	3986.40	

- Legends**
- Project Boundary
 - Pre-Project Sub-Basin
 - Soils Group
 - C
 - D



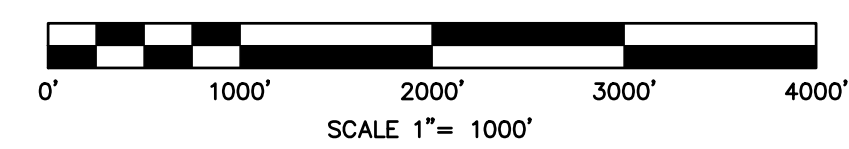
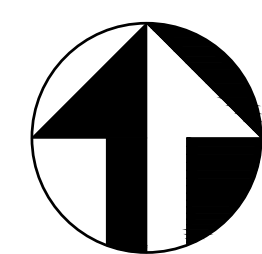
Curve Number Calculations								
Pre-Project Curve Number								
Basin ID	Total Area (acre)	Total Area (sqmi)	Cover Description	Weighted Base CN	Soil Area (acre)	% Imp	% Imp x Area	Total % Imp.
Sub-basin 1	30.20	0.0472	Open Space	78	29.54	0	0	2.2
			Roof	78	0.66	100	66	
Sub-basin 2	24.04	0.0376	Open Space	79	19.43	0	0	19.2
			Roof/Concrete	79	4.61	100	461	
Sub-basin 3	134.92	0.2108	Open Space	76	112.55	0	0	16.6
			Roof/Concrete	76	16.00	100	1600	
			Water Body	76	6.37	100	637	

- Legends**
- Project Boundary
 - Pre-Project Sub-Basin
 - Pervious Area
 - Pre-Project Land Use
 - Roof/Concrete
 - Water Body



Pre-Project Hydraulic Data									
Basin ID	Area (ac)	Area (Sqmi)	CN	% Impervious	TC (min)	Lag Time (min)	Outflows (cfs)		
							Q10	Q50	Q100
Sub-Basin 1	30.20	0.0472	78	2.2	25.37	15.22	86.0	131.2	153.5
Junction 1	30.20	0.0472	78	2.2	25.37	15.22	86.0	131.2	153.5
Sub-Basin 2	24.04	0.0376	79	19.2	20.83	12.50	82.1	119.9	138.1
Junction 2	54.24	0.0848	79	19.2	20.83	12.50	152.1	232.8	273.1
Sub-Basin 3	134.92	0.2108	76	16.6	44.79	28.88	292.4	447.0	524.4
Junction 3	189.16	0.2956	76	16.6	44.79	28.88	381.6	602.1	713.1

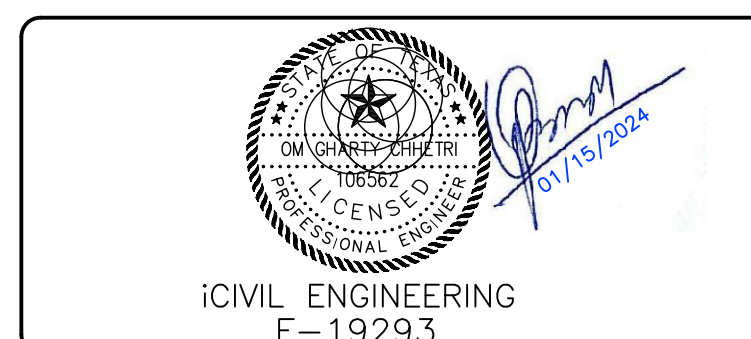
- Legends**
- Project Boundary
 - Pre-Project Junction Point
 - Pre-Project Sub-Basin
 - Contours
 - 10-Ft Interval
 - 2-Ft Interval
 - TC Flowpath
 - Sheet Flow
 - Shallow Conc. Flow
 - Channel Flow



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SANGER, TEXAS
 PRE DAM
 FOR
MARLEY MEADOWS

PROJECT NO.
 sheet
 10-B
 of
 23

TIME OF CONCENTRATION CALCULATION (POST-PROJECT & ULTIMATE DEVELOPMENT)																			
AREA CODE	SHEET FLOW						SHALLOW CONCENTRATED FLOW						CHANNEL FLOW				TOC (TOTAL) (Min.)	LAG TIME (min.)	
	LENGTH (ft)	MANNINGS'S N	P2 (inc.)	SLOPE (ft/ft)	TIME(hr.)	TIME(Min.)	HIGH ELEV	LOW ELEV	LENGTH(ft)	SLOPE(ft/ft)	VEL.(fps)	TOC(hr)	TOC(Min.)	VEL.(fps)	LENGTH	TOC(hr)			TOC(Min.)
Sub-Basin 1	100	0.15	3.36	0.01	0.21	12.62	756.0	750.0	660	0.01	1.60	0.11	6.88	3.12	1100.00	0.10	5.88	25.37	15.22

NOTE:
 1. VALUE OF MANNING'S N FOR SHEET FLOW = 0.15 (FROM DENTON COUNTY SUBDIVISION RULES & REGULATIONS, PAGE 56, TABLE IV.1-6)
 2. VELOCITY FOR SHALLOW CONCENTRATED FLOW IS TAKEN FROM TR 55 FIGURE 3-1
 3. P2=3.36 FROM DENTON COUNTY SUBDIVISION RULES & REGULATIONS, PAGE 49, TABLE IV.1-3

TIME OF CONCENTRATION CALCULATION (POST-PROJECT & ULTIMATE DEVELOPMENT)												
AREA CODE	SHEET FLOW					CHANNEL FLOW			TOC (TOTAL) (Min.)	LAG TIME (min.)		
	LENGTH (ft)	MANNINGS'S N	P2 (inc.)	SLOPE (ft/ft)	TIME(hr.)	TIME(Min.)	VEL.(fps)	LENGTH			TOC(hr)	TOC(Min.)
Sub-Basin 2A	100	0.15	3.36	0.03	0.14	8.13	7.85	731	0.03	1.55	9.68	5.81

NOTE:
 1. VALUE OF MANNING'S N FOR SHEET FLOW = 0.15 (FROM DENTON COUNTY SUBDIVISION RULES & REGULATIONS, PAGE 56, TABLE IV.1-6)
 2. VELOCITY FOR SHALLOW CONCENTRATED FLOW IS TAKEN FROM TR 55 FIGURE 3-1
 3. P2=3.36 FROM DENTON COUNTY SUBDIVISION RULES & REGULATIONS, PAGE 49, TABLE IV.1-3

TIME OF CONCENTRATION CALCULATION (POST-PROJECT & ULTIMATE DEVELOPMENT)																			
AREA CODE	SHEET FLOW						SHALLOW CONCENTRATED FLOW						CHANNEL FLOW				TOC (TOTAL) (Min.)	LAG TIME (min.)	
	LENGTH (ft)	MANNINGS'S N	P2 (inc.)	SLOPE (ft/ft)	TIME(hr.)	TIME(Min.)	HIGH ELEV	LOW ELEV	LENGTH(ft)	SLOPE(ft/ft)	VEL.(fps)	TOC(hr)	TOC(Min.)	VEL.(fps)	LENGTH	TOC(hr)			TOC(Min.)
Sub-Basin 2B	100	0.15	3.36	0.02	0.16	9.56	756.0	751.5	276	0.02	1.60	0.05	2.88	7.85	825	0.03	1.75	14.19	8.51

NOTE:
 1. VALUE OF MANNING'S N FOR SHEET FLOW = 0.15 (FROM DENTON COUNTY SUBDIVISION RULES & REGULATIONS, PAGE 56, TABLE IV.1-6)
 2. VELOCITY FOR SHALLOW CONCENTRATED FLOW IS TAKEN FROM TR 55 FIGURE 3-1
 3. P2=3.36 FROM DENTON COUNTY SUBDIVISION RULES & REGULATIONS, PAGE 49, TABLE IV.1-3

TIME OF CONCENTRATION CALCULATION (POST-PROJECT & ULTIMATE DEVELOPMENT)																
AREA CODE	SHEET FLOW						CHANNEL FLOW 1				CHANNEL FLOW 2				TOC (TOTAL) (Min.)	LAG TIME (min.)
	LENGTH (ft)	MANNINGS'S N	P2 (inc.)	SLOPE (ft/ft)	TIME(hr.)	TIME(Min.)	VEL.(fps)	LENGTH	TOC(hr)	TOC(Min.)	VEL.(fps)	LENGTH	TOC(hr)	TOC(Min.)		
Sub-Basin 2C	100	0.15	3.36	0.05	0.11	6.63	7.85	900.00	0.03	1.91	5.38	462	0.02	1.43	9.97	5.98

NOTE:
 1. VALUE OF MANNING'S N FOR SHEET FLOW = 0.15 (FROM DENTON COUNTY SUBDIVISION RULES & REGULATIONS, PAGE 56, TABLE IV.1-6)
 2. VELOCITY FOR SHALLOW CONCENTRATED FLOW IS TAKEN FROM TR 55 FIGURE 3-1
 3. P2=3.36 FROM DENTON COUNTY SUBDIVISION RULES & REGULATIONS, PAGE 49, TABLE IV.1-3

TIME OF CONCENTRATION CALCULATION (POST-PROJECT & ULTIMATE DEVELOPMENT)																			
AREA CODE	SHEET FLOW						SHALLOW CONCENTRATED FLOW						CHANNEL FLOW				TOC (TOTAL) (Min.)	LAG TIME (min.)	
	LENGTH (ft)	MANNINGS'S N	P2 (inc.)	SLOPE (ft/ft)	TIME(hr.)	TIME(Min.)	HIGH ELEV	LOW ELEV	LENGTH(ft)	SLOPE(ft/ft)	VEL.(fps)	TOC(hr)	TOC(Min.)	VEL.(fps)	LENGTH	TOC(hr)			TOC(Min.)
Sub-Basin 3	100	0.15	3.36	0.02	0.16	9.56	743.0	724.0	1060	0.02	2.20	0.13	8.03	3.12	5092.00	0.45	27.20	44.793	26.88

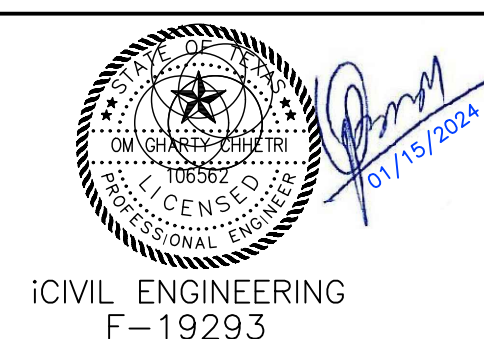
NOTE:
 1. VALUE OF MANNING'S N FOR SHEET FLOW = 0.15 (FROM DENTON COUNTY SUBDIVISION RULES & REGULATIONS, PAGE 56, TABLE IV.1-6)
 2. VELOCITY FOR SHALLOW CONCENTRATED FLOW IS TAKEN FROM TR 55 FIGURE 3-1
 3. P2=3.36 FROM DENTON COUNTY SUBDIVISION RULES & REGULATIONS, PAGE 49, TABLE IV.1-3



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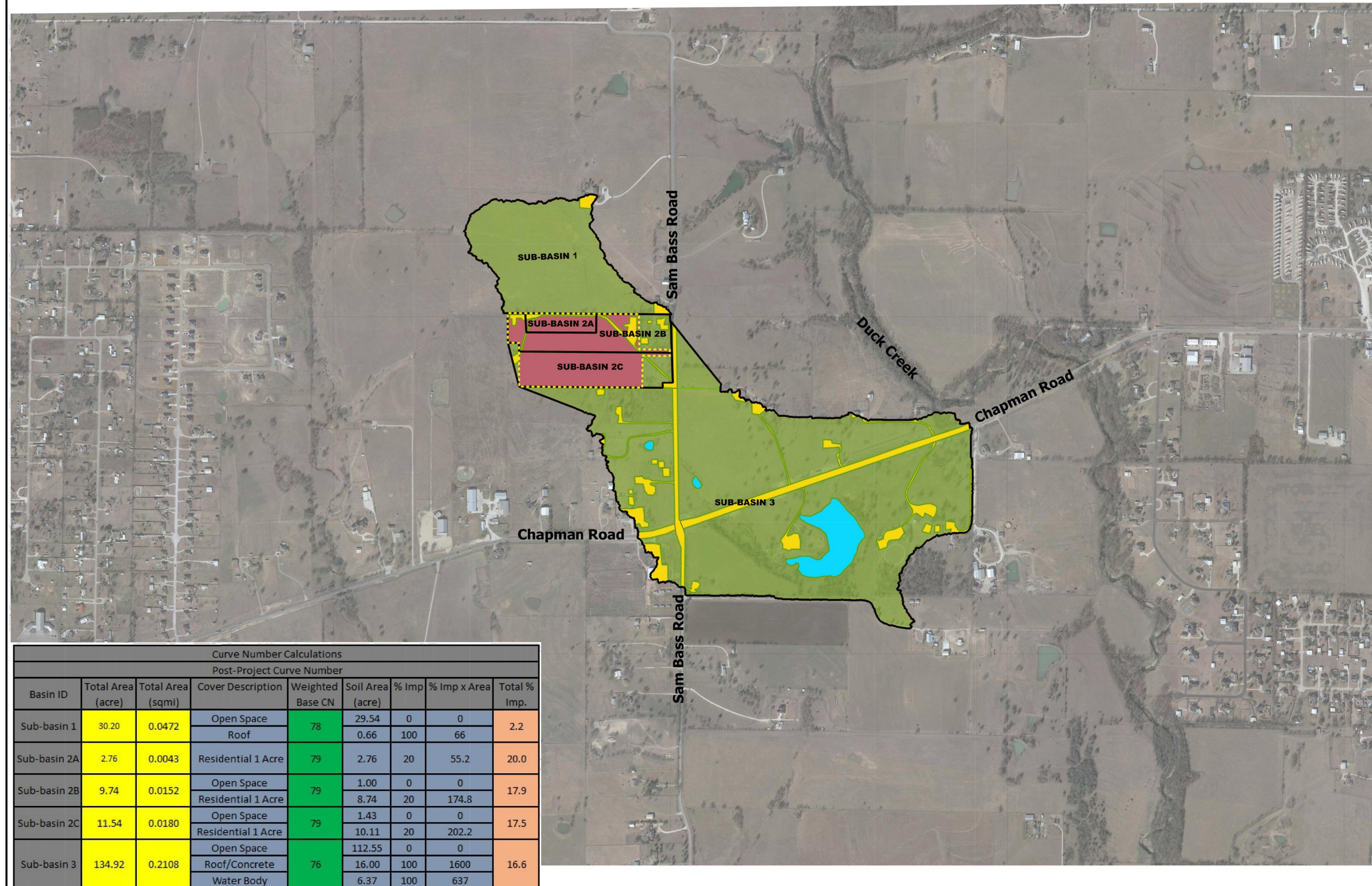
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SANGER, TEXAS
POST-PROJECT & ULT. DEV. TIME OF CONCENTRATION
 FOR
MARLEY MEADOWS

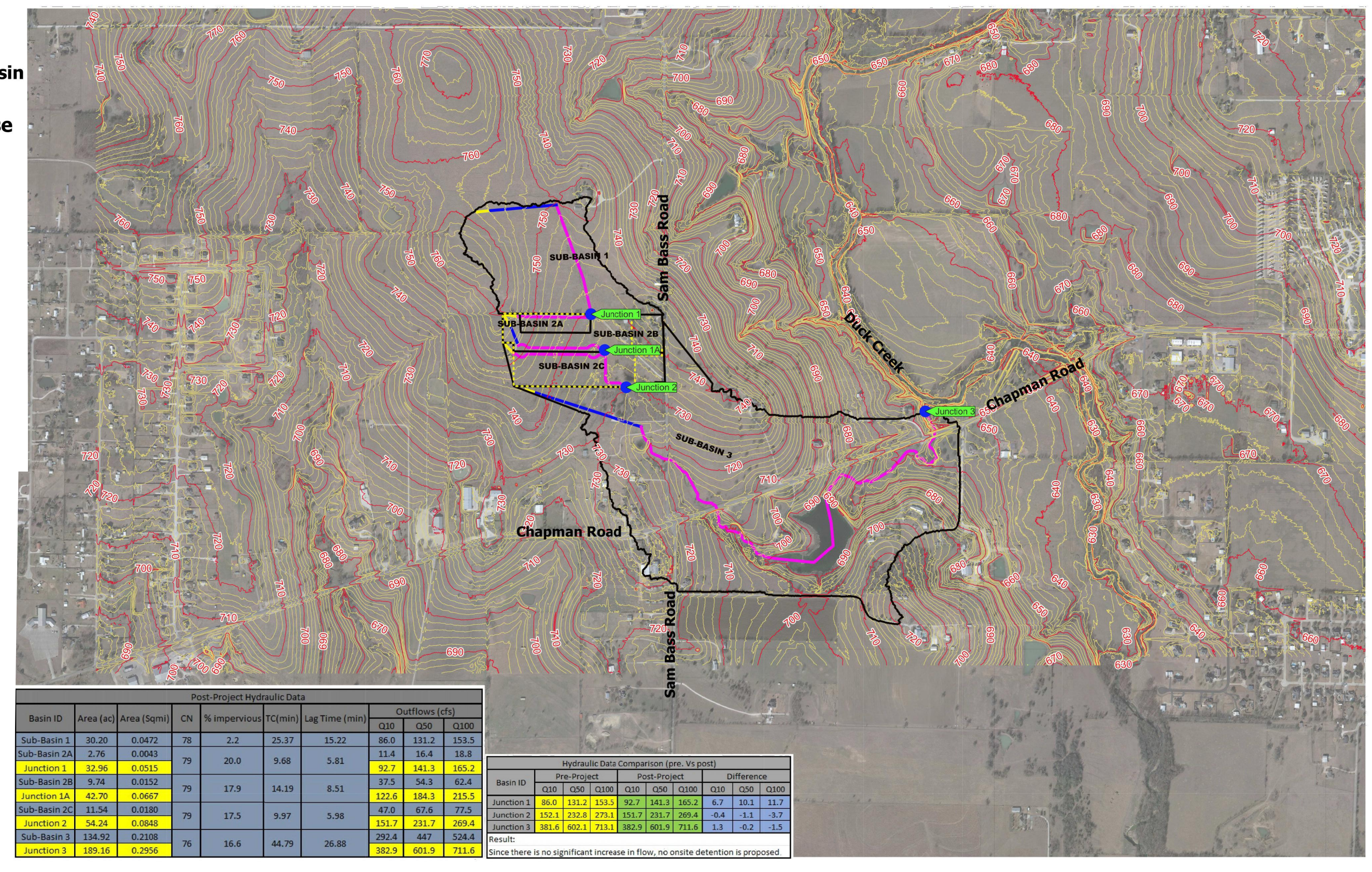
PROJECT NO.
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Curve Number Calculations
Post-Project Curve Number

Basin ID	Total Area (acre)	Total Area (sqmi)	Cover Description	Weighted Base CN	Soil Area (acre)	% Imp	% Imp x Area	Total % Imp.
Sub-basin 1	30.20	0.0472	Open Space Roof	76	29.54 0.66	0 100	0 66	2.2
Sub-basin 2A	2.76	0.0043	Residential 1 Acre	79	2.76	20	55.2	20.0
Sub-basin 2B	9.74	0.0152	Open Space	79	1.00	0	0	17.9
Sub-basin 2C	11.54	0.0180	Open Space Residential 1 Acre	79	1.43 10.11	0 20	0 202.2	17.5
Sub-basin 3	134.92	0.2108	Open Space Roof/Concrete Water Body	76	112.55 16.00 6.37	0 100 100	0 1600 637	16.6

- Legends**
- Project Boundary
 - Post-Project Sub-Basin
 - Pervious Area
- Post-Project Land Use**
- Roof/Concrete
 - Water Body
 - Residential 1 Acre



Post-Project Hydraulic Data

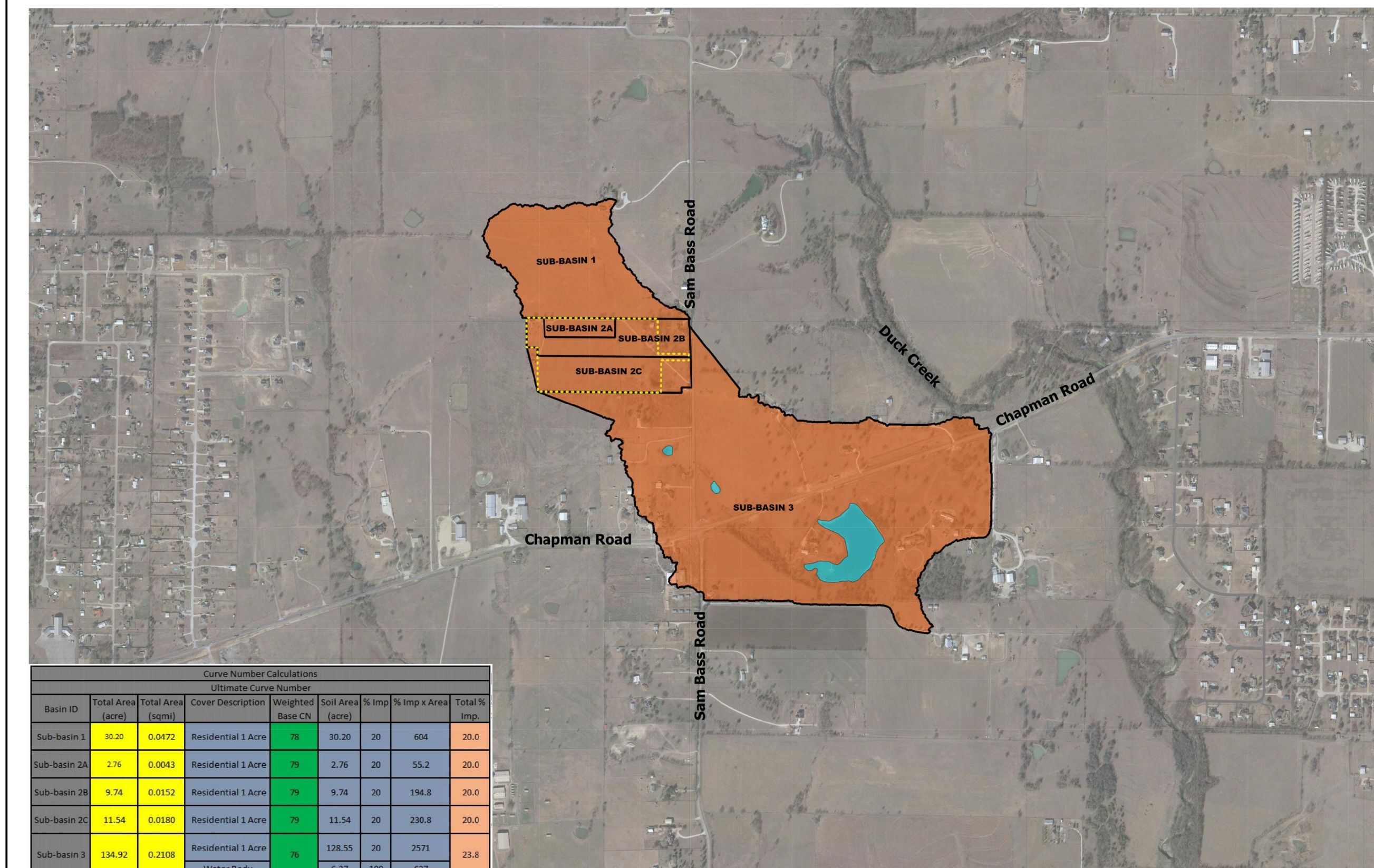
Basin ID	Area (ac)	Area (Sqmi)	CN	% Impervious	TC(min)	Lag Time (min)	Outflows (cfs)
							Q10 Q50 Q100
Sub-Basin 1	30.20	0.0472	78	2.2	25.37	15.22	86.0 131.2 153.3
Sub-Basin 2A	2.76	0.0043	79	20.0	9.68	5.81	11.4 16.4 18.8
Junction 1	32.96	0.0515	79	20.0	9.68	5.81	92.7 147.3 165.2
Sub-Basin 2B	9.74	0.0152	79	17.9	14.19	8.51	37.5 54.3 62.4
Junction 1A	42.70	0.0667	79	20.0	14.19	8.51	122.6 184.3 215.5
Sub-Basin 2C	11.54	0.0180	79	17.5	9.97	5.98	47.0 67.6 77.5
Junction 2	54.24	0.0848	79	20.0	9.97	5.98	151.7 231.7 269.4
Sub-Basin 3	134.92	0.2108	76	23.8	44.79	26.88	292.4 447.1 534.8
Junction 3	189.16	0.2956	76	23.8	44.79	26.88	382.9 601.9 711.6

Hydraulic Data Comparison (pre- vs post)

Basin ID	Pre-Project	Post-Project	Difference
	Q10 Q50 Q100	Q10 Q50 Q100	Q10 Q50 Q100
Junction 1	88.9 131.2 153.3	92.7 147.3 165.2	3.7 36.1 11.7
Junction 2	232.1 232.8 275.1	151.7 231.7 269.4	-80.4 -11.1 -3.7
Junction 3	381.6 602.1 713.1	382.9 601.9 711.6	1.3 -0.2 -1.5

Result:
Since there is no significant increase in flow, no onsite detention is proposed.

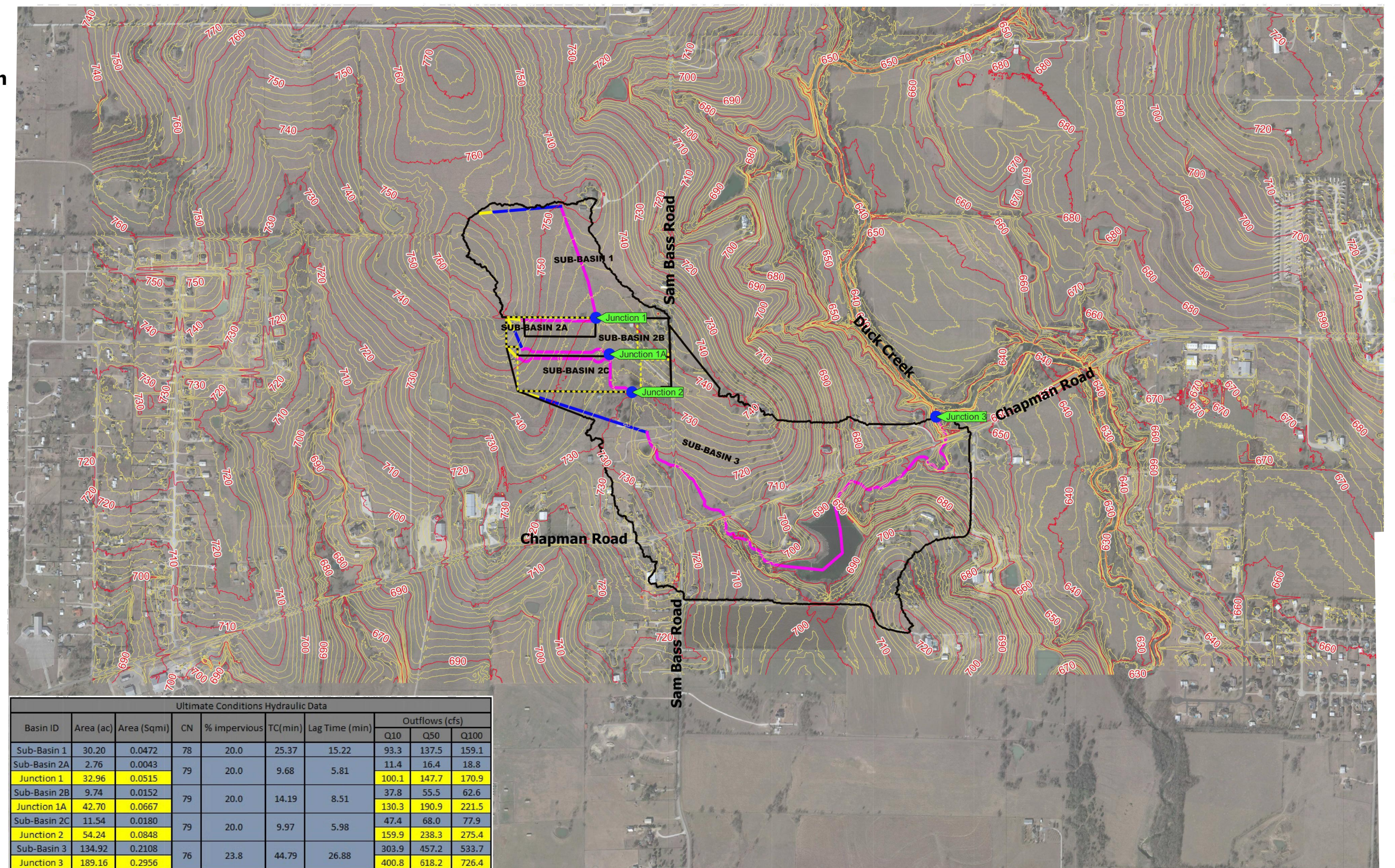
- Legends**
- Post-Project Junction Point
 - Project Boundary
 - Post-Project Sub-Basin
- Contours**
- 10-Ft Interval
 - 2-Ft Interval
- Post Project TC Flowpath**
- Sheet Flow
 - Shallow Conc. Flow
 - Channel Flow



Curve Number Calculations
Ultimate Curve Number

Basin ID	Total Area (acre)	Total Area (sqmi)	Cover Description	Weighted Base CN	Soil Area (acre)	% Imp	% Imp x Area	Total % Imp.
Sub-basin 1	30.20	0.0472	Residential 1 Acre	76	30.20	20	604	20.0
Sub-basin 2A	2.76	0.0043	Residential 1 Acre	79	2.76	20	55.2	20.0
Sub-basin 2B	9.74	0.0152	Residential 1 Acre	79	9.74	20	194.8	20.0
Sub-basin 2C	11.54	0.0180	Residential 1 Acre	79	11.54	20	230.8	20.0
Sub-basin 3	134.92	0.2108	Residential 1 Acre Water Body	76	128.55 6.37	20 100	2571 637	23.8

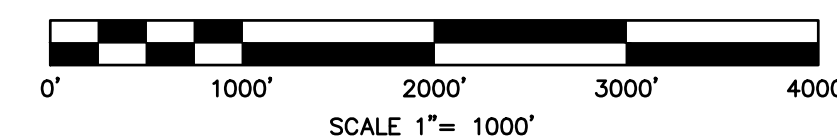
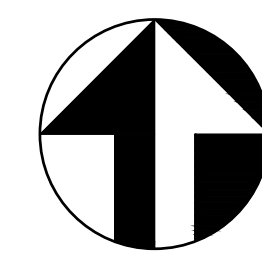
- Legends**
- Project Boundary
 - Ultimate Sub-Basin
 - Ultimate Land Use
 - Residential 1 Acre
 - Water Body



Ultimate Conditions Hydraulic Data

Basin ID	Area (ac)	Area (Sqmi)	CN	% Impervious	TC(min)	Lag Time (min)	Outflows (cfs)
							Q10 Q50 Q100
Sub-Basin 1	30.20	0.0472	78	20.0	25.37	15.22	93.3 137.5 159.1
Sub-Basin 2A	2.76	0.0043	79	20.0	9.68	5.81	11.4 16.4 18.8
Junction 1	32.96	0.0515	79	20.0	9.68	5.81	106.1 147.7 170.9
Sub-Basin 2B	9.74	0.0152	79	20.0	14.19	8.51	37.8 55.5 62.6
Junction 1A	42.70	0.0667	79	20.0	14.19	8.51	130.3 190.9 221.5
Sub-Basin 2C	11.54	0.0180	79	20.0	9.97	5.98	47.4 68.0 77.8
Junction 2	54.24	0.0848	79	20.0	9.97	5.98	159.9 238.3 275.4
Sub-Basin 3	134.92	0.2108	76	23.8	44.79	26.88	303.9 457.2 533.7
Junction 3	189.16	0.2956	76	23.8	44.79	26.88	400.6 618.2 726.4

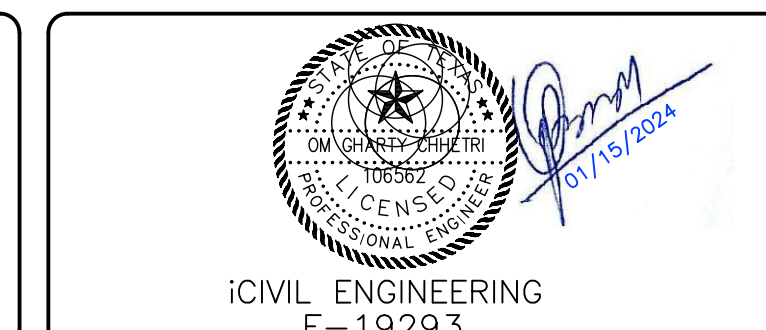
- Legends**
- Post-Project Junction Point
 - Project Boundary
 - Ultimate Sub-Basin
- Contours**
- 10-Ft Interval
 - 2-Ft Interval
- Post Project TC Flowpath**
- Sheet Flow
 - Shallow Conc. Flow
 - Channel Flow



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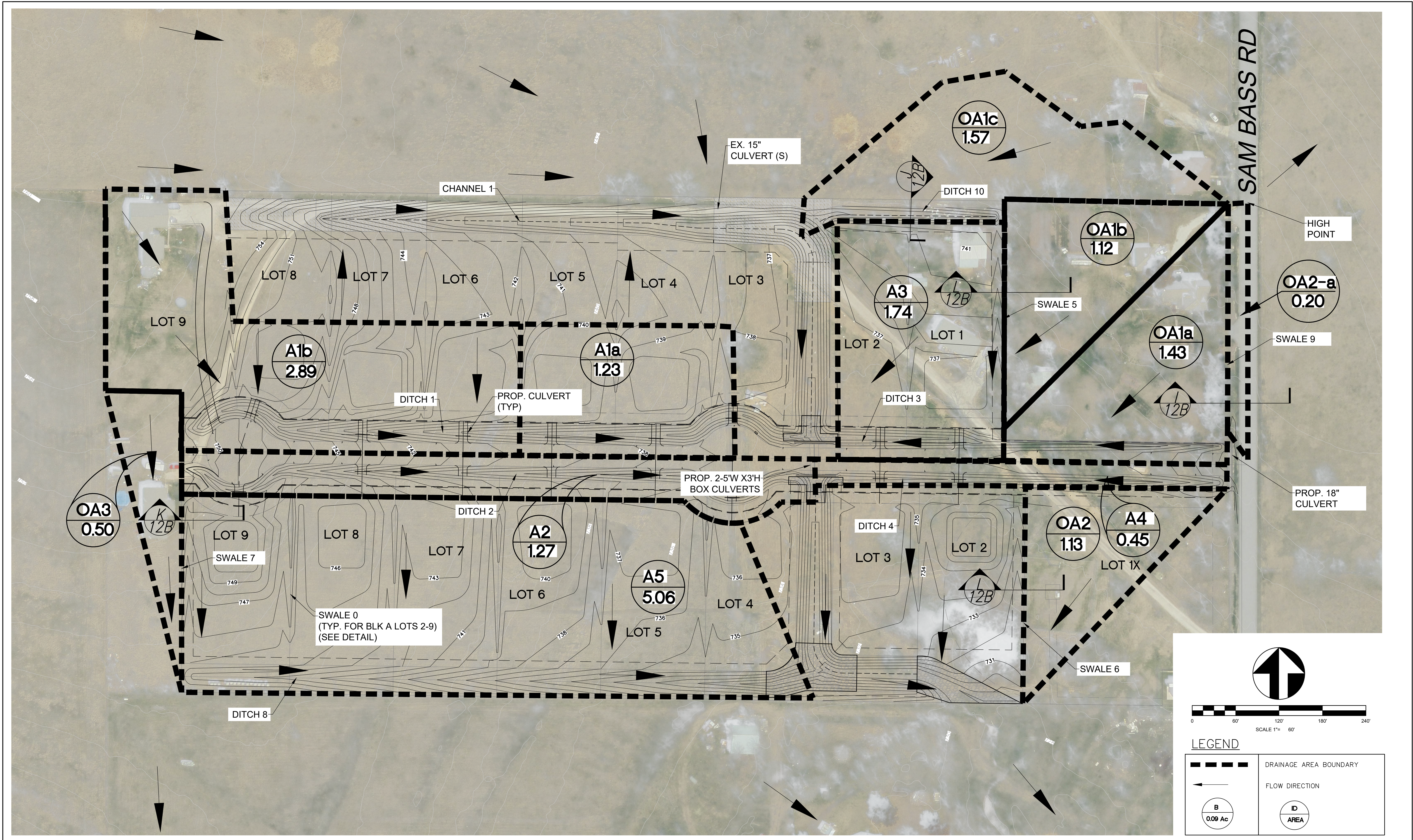
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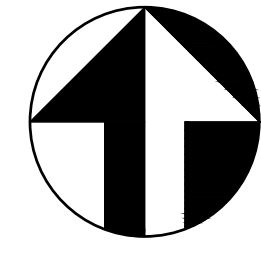
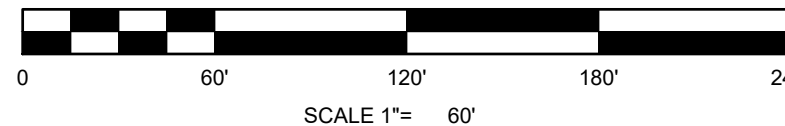

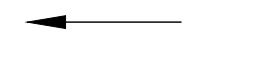
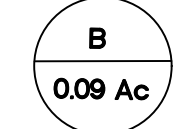

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SANGER, TEXAS
POST AND ULTIMATE DAM
FOR
MARLEY MEADOWS

PROJECT NO.
sheet
11-B
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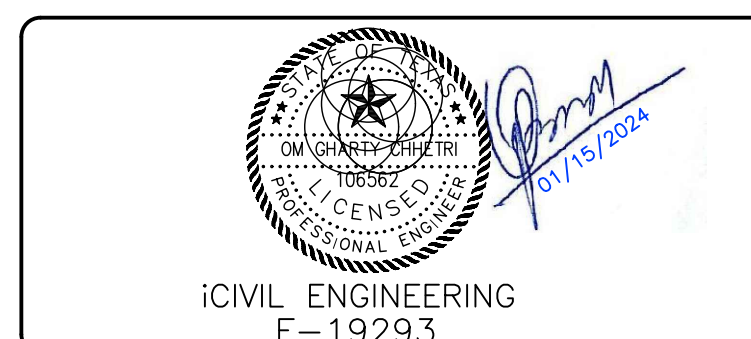


LEGEND
 DRAINAGE AREA BOUNDARY
 FLOW DIRECTION
 **B**
0.09 Ac
 **D**
AREA



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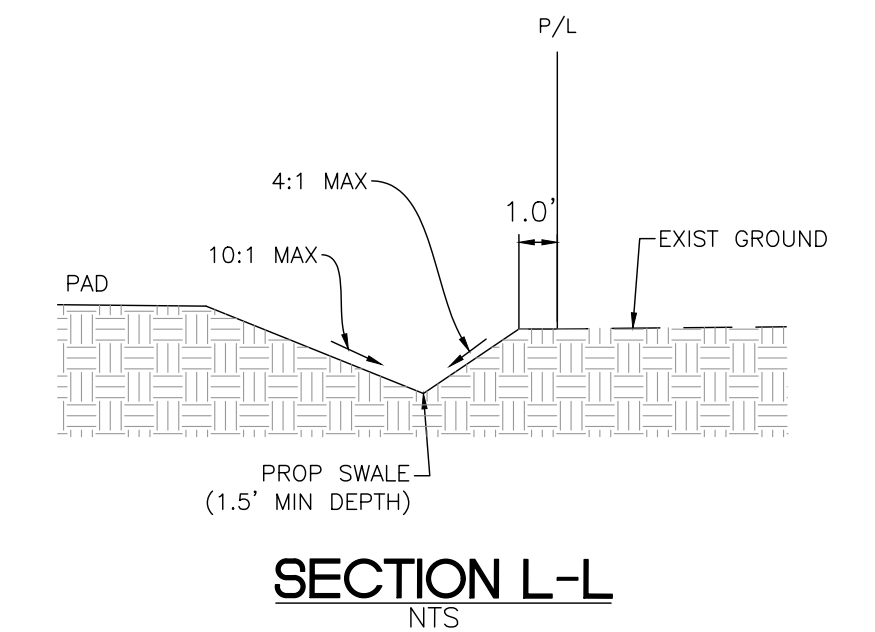
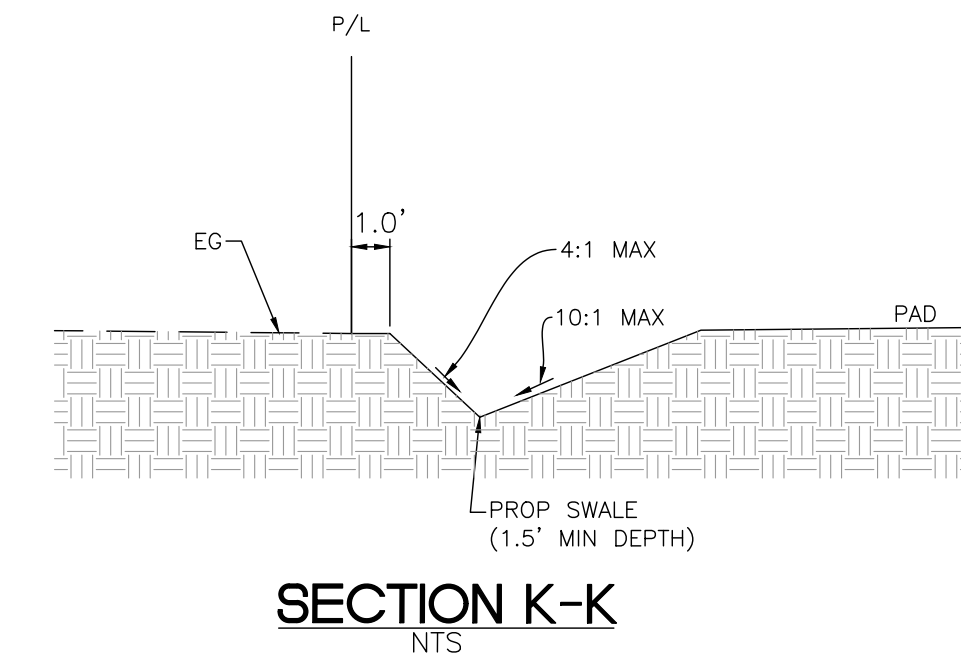
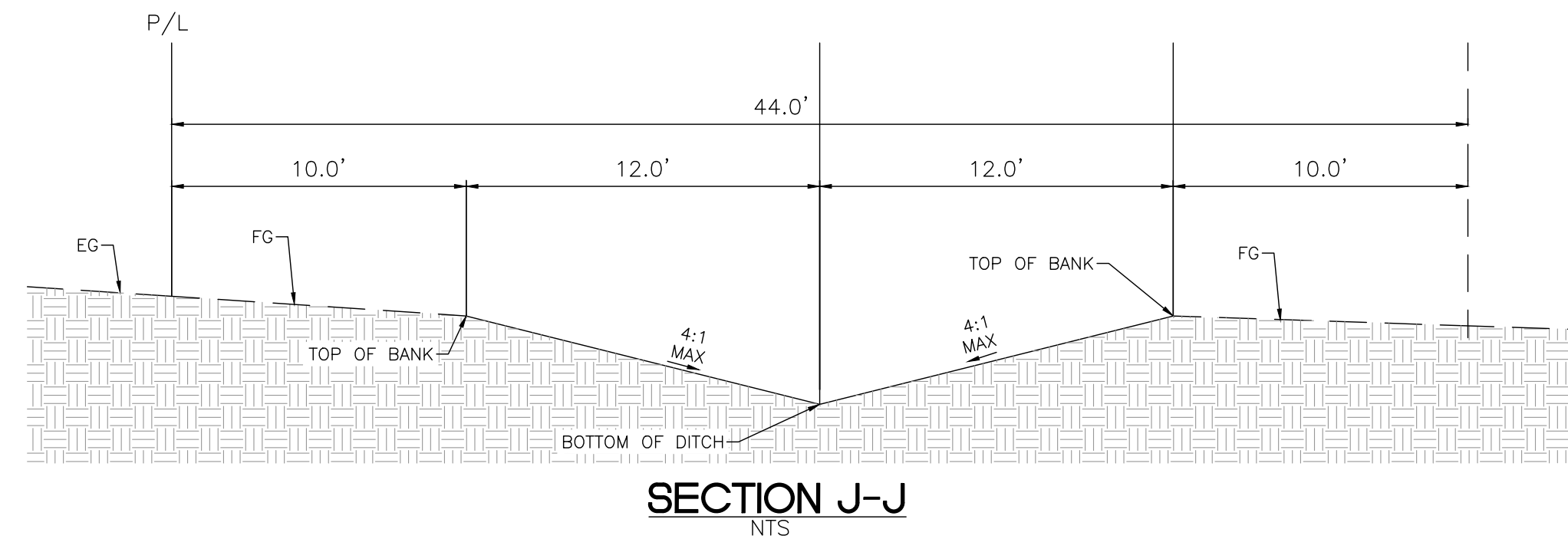
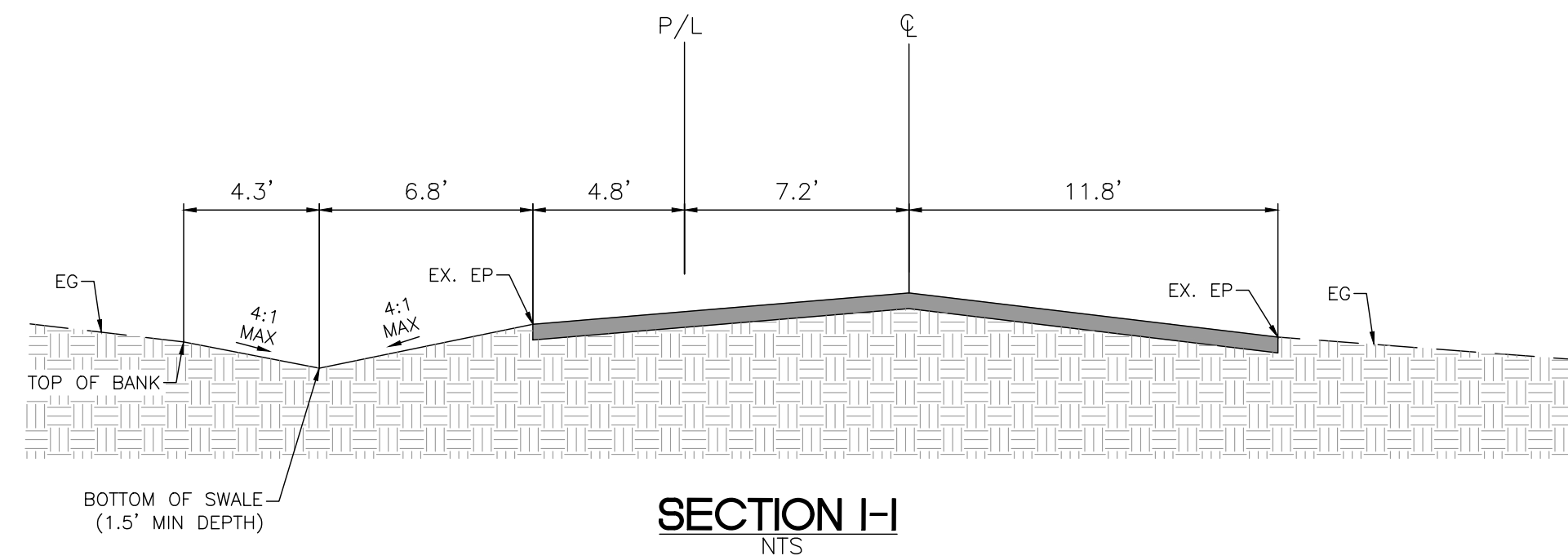
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SANGER, TEXAS
DITCH AND CULVERT CALCULATIONS
 FOR
MARLEY MEADOWS

PROJECT NO.
 sheet
 12-A
 of
 23



AREA CODE	TIME OF CONCENTRATION CALCULATION																		
	SHEET FLOW						SHALLOW CONCENTRATED FLOW					CHANNEL FLOW				TOC (TOTAL) (Min.)	TOC USED		
	LENGTH (ft)	MANNING'S N	P2 (in.)	SLOPE (ft/ft)	TIME(hr.)	TIME(Min.)	HIGH ELEV	LOW ELEV	LENGTH(ft)	SLOPE(ft/ft)	VEL.(fps)	TOC(hr)	TOC(Min.)	VEL.(fps)	LENGTH (ft)			TOC(hr)	TOC(Min.)
A1a & A1b	100	0.15	3.36	0.02	0.16	9.56	753.0	751.0	185	0.01	1.60	0.03	1.93	7.85	825	0.03	1.75	13.24	15.00

- NOTE:
1. VALUE OF MANNING'S N FOR SHEET FLOW = 0.15 (FROM DENTON COUNTY SUBDIVISION RULES & REGULATIONS, PAGE 56, TABLE IV.1-6)
 2. VELOCITY FOR SHALLOW CONCENTRATED FLOW IS TAKEN FROM TR 55 FIGURE 3-1
 3. P2 = 3.36 FROM DENTON COUNTY SUBDIVISION RULES & REGULATIONS TABLE IV. 1-3

AREA CODE	TIME OF CONCENTRATION CALCULATION																
	SHEET FLOW						CHANNEL FLOW 1					CHANNEL FLOW 2				TOC (TOTAL) (Min.)	TOC USED
	LENGTH (ft)	MANNING'S N	P2 (in.)	SLOPE (ft/ft)	TIME(hr.)	TIME(Min.)	VEL.(fps)	LENGTH (ft)	TOC(hr)	TOC(Min.)	VEL.(fps)	LENGTH (ft)	TOC(hr)	TOC(Min.)			
A2	100	0.15	3.36	0.05	0.11	6.63	7.85	900.00	0.03	1.91	5.38	462	0.02	1.43	9.97	15.00	

- NOTE:
1. VALUE OF MANNING'S N FOR SHEET FLOW = 0.15 (FROM DENTON COUNTY SUBDIVISION RULES & REGULATIONS, PAGE 56, TABLE IV.1-6)
 2. VELOCITY FOR SHALLOW CONCENTRATED FLOW IS TAKEN FROM TR 55 FIGURE 3-1
 3. P2 = 3.36 FROM DENTON COUNTY SUBDIVISION RULES & REGULATIONS TABLE IV. 1-3

RUNOFF CALCULATION														COMMENTS
Area ID	DITCH ID	Area (acres)	C	CA	TC (min.)	I1 (in./hr.)	I5 (in./hr.)	I10 (in./hr.)	I100 (in./hr.)	Q1 (cfs)	Q5 (cfs)	Q10 (cfs)	Q100 (cfs)	
SIDE YARD SWALE	SWALE 0	0.75	0.45	0.34	15	3.31	4.85	5.50	7.91	1.12	1.64	1.86	2.67	SWALE BETWEEN ANY TWO LOTS (TYP. FOR BLK A LOT 2-9 SEE DETAILS)
A1a & A1b	DITCH 1	4.12	0.55	2.27	15	3.31	4.85	5.50	7.91	7.50	10.99	12.46	17.92	HALF OF THE LOT DRAINS TO CHANNEL 1
A2	DITCH 2	1.27	0.71	0.90	15	3.31	4.85	5.50	7.91	2.98	4.37	4.96	7.13	COMPOSITE C=0.71 (CALCULATION PROVIDED ON THIS SHEET)
OA1a, OA1b & A3	DITCH 3	4.29	0.45	1.93	15	3.31	4.85	5.50	7.91	6.39	9.36	10.62	15.27	AREA A3+OA1a+OA1b DRAINS TO DITCH 3
A4	DITCH 4	0.45	0.75	0.34	15	3.31	4.85	5.50	7.91	1.12	1.64	1.86	2.67	COMPOSITE C=0.71 (CALCULATION PROVIDED ON THIS SHEET)
OA1b	SWALE 5	1.12	0.45	0.50	15	3.31	4.85	5.50	7.91	1.67	2.44	2.77	3.99	SWALE FOR OFFSITE AREA DRAINAGE
OA2	SWALE 6	0.96	0.45	0.43	15	3.31	4.85	5.50	7.91	1.43	2.10	2.38	3.42	SWALE FOR OFFSITE AREA DRAINAGE
OA3	SWALE 7	0.50	0.55	0.28	15	3.31	4.85	5.50	7.91	0.91	1.33	1.51	2.18	SWALE FOR OFFSITE AREA DRAINAGE
OA3 & A5	DITCH 8	5.56	0.45	2.50	15	3.31	4.85	5.50	7.91	8.28	12.13	13.76	19.79	1 ACRE LOTS
OA2-a	SWALE 9	0.20	0.78	0.16	15	3.31	4.85	5.50	7.91	0.52	0.76	0.86	1.23	ROADSIDE SWALE
OA1c	DITCH 10	1.57	0.30	0.47	15	3.31	4.85	5.50	7.91	1.56	2.28	2.59	3.73	DITCH FOR OFFSITE AREA DRAINAGE

- NOTE:
- C VALUE FOR SINGLE FAMILY RESIDENTIAL 1 ACRE LOTS = 0.45 (DENTON COUNTY SUBDIVISION RULES & REGULATIONS TABLE IV.1-4)
 - C VALUE FOR SINGLE FAMILY RESIDENTIAL 1/2 ACRE LOTS = 0.55 (DENTON COUNTY SUBDIVISION RULES & REGULATIONS TABLE IV.1-4)
 - C VALUE FOR STREET = 0.95 (DENTON COUNTY SUBDIVISION RULES & REGULATIONS TABLE IV.1-4)
 - C VALUE FOR CLAYEY SOIL, AVERAGE, 5-10% = 0.60 (DENTON COUNTY SUBDIVISION RULES & REGULATIONS TABLE IV.1-4)
- THE VALUE FOR RAINFALL INTENSITY IS TAKEN FROM DENTON COUNTY SUBDIVISION RULES & REGULATIONS, PAGE 47-48-49, TABLE IV.1-3

V-DITCH & SWALE CAPACITY CALCULATION							
DITCH ID	Q100 (cfs)	AVERAGE SLOPE (ft/ft)	MANNING'S N	WATER DEPTH (ft.)	VELOCITY (fps)	TOTAL DITCH/SWALE DEPTH (ft)	SECTION DETAILS
DITCH 1	17.92	0.020	0.040	0.91	3.47	3.5	SHEET 5 SECTION A-A
DITCH 2	7.13	0.020	0.040	0.80	2.77	2.5	SHEET 5 SECTION A-A
DITCH 3	15.27	0.020	0.040	1.07	3.32	2.5	SHEET 6 SECTION F-F
DITCH 4	2.67	0.020	0.040	0.55	2.07	2.5	SHEET 6 SECTION F-F
SWALE 5	3.99	0.005	0.040	0.70	1.25	1.5	SHEET 12-B SECTION L-L
SWALE 6	3.42	0.005	0.040	0.66	1.20	1.5	SHEET 12-B SECTION L-L
SWALE 7	2.18	0.005	0.040	0.56	1.06	1.5	SHEET 12-B SECTION K-K
DITCH 8	19.79	0.015	0.040	1.24	3.20	4.5	SHEET 8 SECTION E-E
SWALE 9	1.23	0.005	0.040	0.37	0.80	1.5	SHEET 12-B SECTION I-I
DITCH 10	3.73	0.0068	0.040	0.77	1.56	3.0	SHEET 12-B SECTION J-J

WEIGHTED RUNOFF COEFFICIENT (DITCH-2)			
LAND USE	TOTAL LAND AREA	RUNOFF COEF.	WEIGHTED RUNOFF COEF.
ASPHALT/CONCRETE	0.41	0.95	0.71
CLAYEY SOIL 5-10%	0.86	0.60	

WEIGHTED RUNOFF COEFFICIENT (DITCH-4)			
LAND USE	TOTAL LAND AREA	RUNOFF COEF.	WEIGHTED RUNOFF COEF.
ASPHALT/CONCRETE	0.19	0.95	0.75
CLAYEY SOIL 5-10%	0.26	0.60	

WEIGHTED RUNOFF COEFFICIENT (DITCH-9)			
LAND USE	TOTAL LAND AREA	RUNOFF COEF.	WEIGHTED RUNOFF COEF.
ASPHALT/CONCRETE	0.10	0.95	0.78
CLAYEY SOIL 5-10%	0.10	0.60	

DRIVEWAY CULVERT DATA FOR BLK B LOT 3 TO 9							
STREET STATION	CORRESPONDING LOT AREA	Q100	Q100 TOTAL	CONTRIBUTING LOTS/AREA	CULVERT SIZE*	UPSTREAM INV.	DOWNSTREAM INV.
10+47.78	0.97	4.22	4.22	LOT 9	18"	746.78	746.03
10+95.82	0.81	3.52	7.74	LOT 8 & 9	18"	745.29	744.55
12+49.77	0.55	2.39	10.14	LOT 7, 8 & 9	24"	740.53	739.79
13+88.82	0.55	2.39	12.53	LOT 6, 7, 8 & 9	24"	736.92	736.76
15+11.52	0.55	2.39	14.92	LOT 5, 6, 7, 8 & 9	27"	736.08	735.85
16+55.07	0.55	2.39	17.31	LOT 4, 5, 6, 7, 8 & 9	27"	734.59	734.28
17+61.27	0.14	0.61	17.92	LOT 3, 4, 5, 6, 7, 8 & 9	27"	733.38	733.07

* CULVERT LENGTH=24', MATERIAL=RPC

DRIVEWAY CULVERT DATA FOR BLK B LOT 1 & 2 CULVERTS							
STREET STATION	CORRESPONDING LOT AREA	Q100	Q100 TOTAL	CONTRIBUTING LOTS/AREA	CULVERT SIZE*	UPSTREAM INV.	DOWNSTREAM INV.
20+74.17	2.55	9.08	9.08	LOT 1, OA1a & OA1b	18"	734.11	734.01
19+65.12	1.74	6.19	15.27	LOT 1, 2 & OA1a, OA1b & A3	24"	733.58	733.46

* CULVERT LENGTH=24', MATERIAL=RPC

DRIVEWAY CULVERT DATA FOR BLK A LOT 3 TO 8 CULVERTS							
STREET STATION	CORRESPONDING LOT AREA	Q100	Q100 TOTAL	CONTRIBUTING LOTS/AREA	CULVERT SIZE*	UPSTREAM INV.	DOWNSTREAM INV.
10+80.03	0.21	1.18	1.18	LOT 9	18"	746.82	746.08
12+49.73	0.21	1.18	2.36	LOT 8 & 9	18"	741.58	740.84
13+88.82	0.21	1.18	3.54	LOT 7, 8 & 9	18"	737.83	737.60
15+11.46	0.21	1.18	4.72	LOT 6, 7, 8 & 9	18"	736.59	736.34
16+55.08	0.21	1.18	5.90	LOT 5, 6, 7, 8 & 9	18"	735.12	734.88
17+59.72	0.22	1.24	7.13	LOT 4, 5, 6, 7, 8 & 9	18"	734.05	733.82

* CULVERT LENGTH=24', MATERIAL=RPC

DRIVEWAY CULVERT DATA FOR BLK A LOT 1 & 2 CULVERTS							
STREET STATION	CORRESPONDING LOT AREA	Q100	Q100 TOTAL	CONTRIBUTING LOTS/AREA	CULVERT SIZE*	UPSTREAM INV.	DOWNSTREAM INV.
20+74.17	0.29	1.62	1.62	A4	18"	734.13	734.01
19+65.12	0.16	0.89	2.51	A4	18"	733.58	733.46

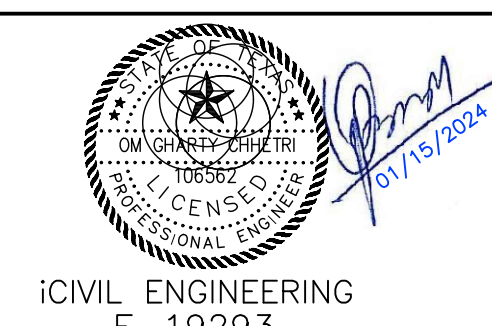
* CULVERT LENGTH=24', MATERIAL=RPC



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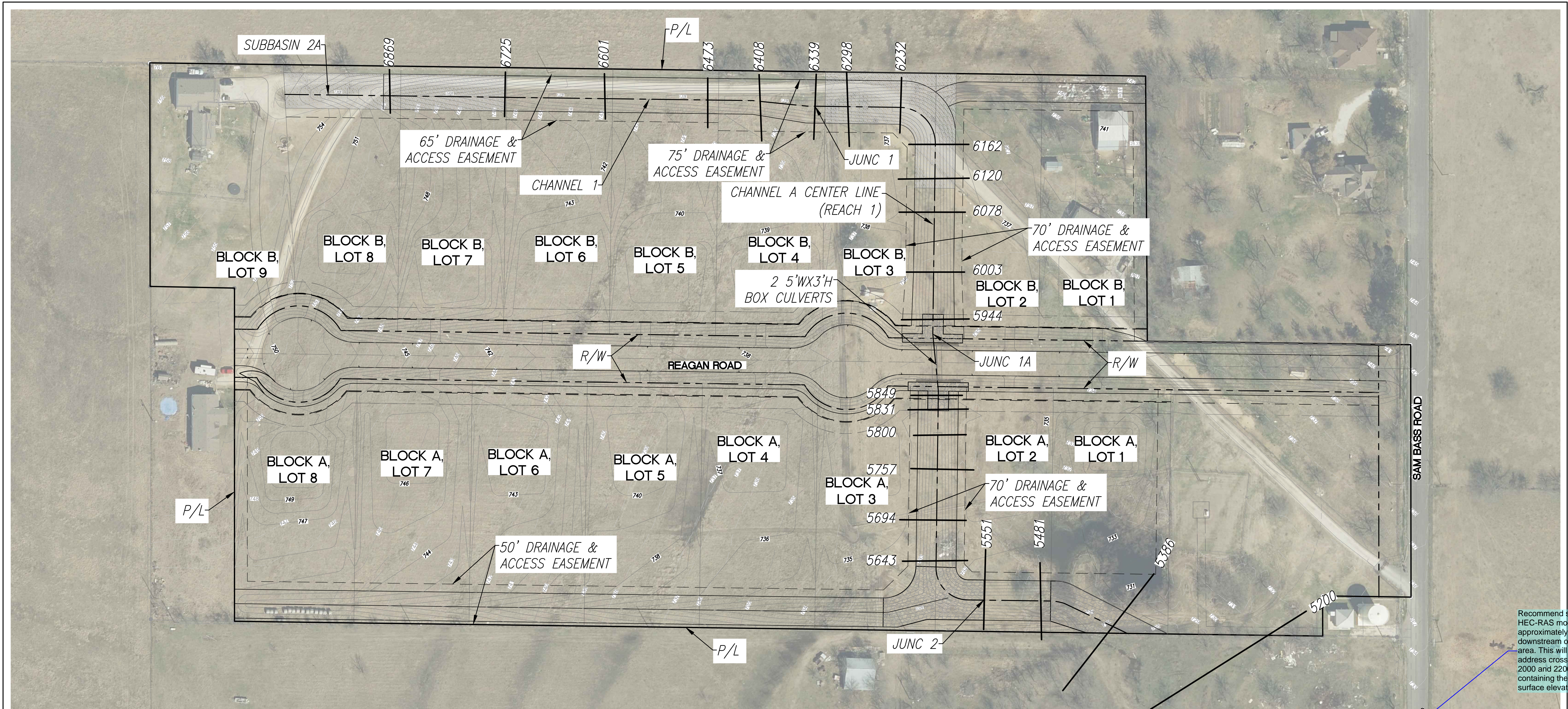
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JAN 2024



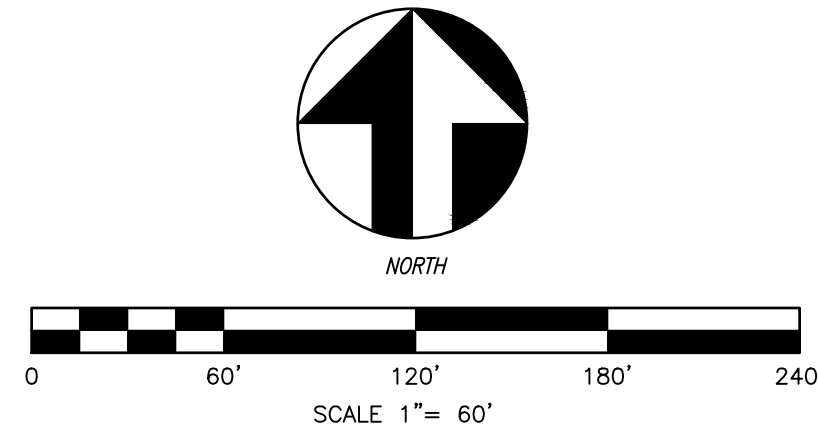
SANGER, TEXAS
DITCH AND CULVERT CALCULATIONS
 FOR
MARLEY MEADOWS

PROJECT NO.
 sheet
 12-B
 of
 23



Recommend starting HEC-RAS model approximately 1,000 ft downstream of project area. This will also address cross sections 2000 and 2200 not containing the water surface elevation.

HEC-RAS model: N-values should be defined for the left overbank, channel, and right overbank at a minimum. One (1) n-value should not be used for the entire length of the cross section.



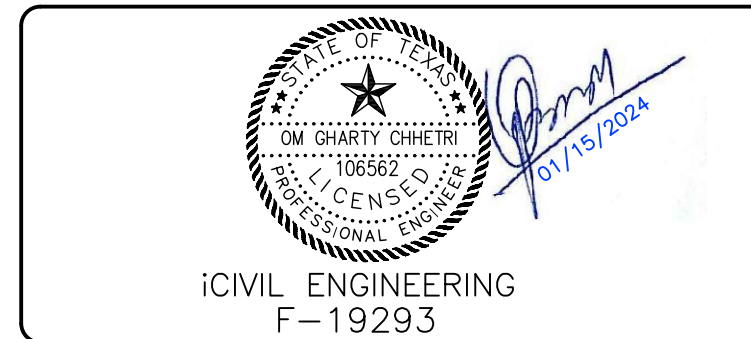
LEGENDS
 123 RAS CROSS SECTION LINE



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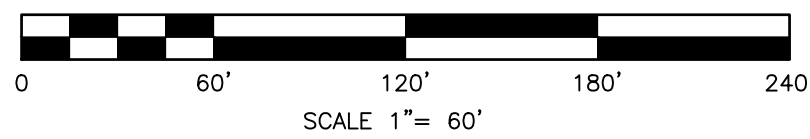
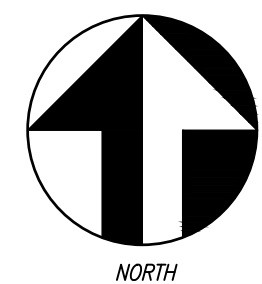
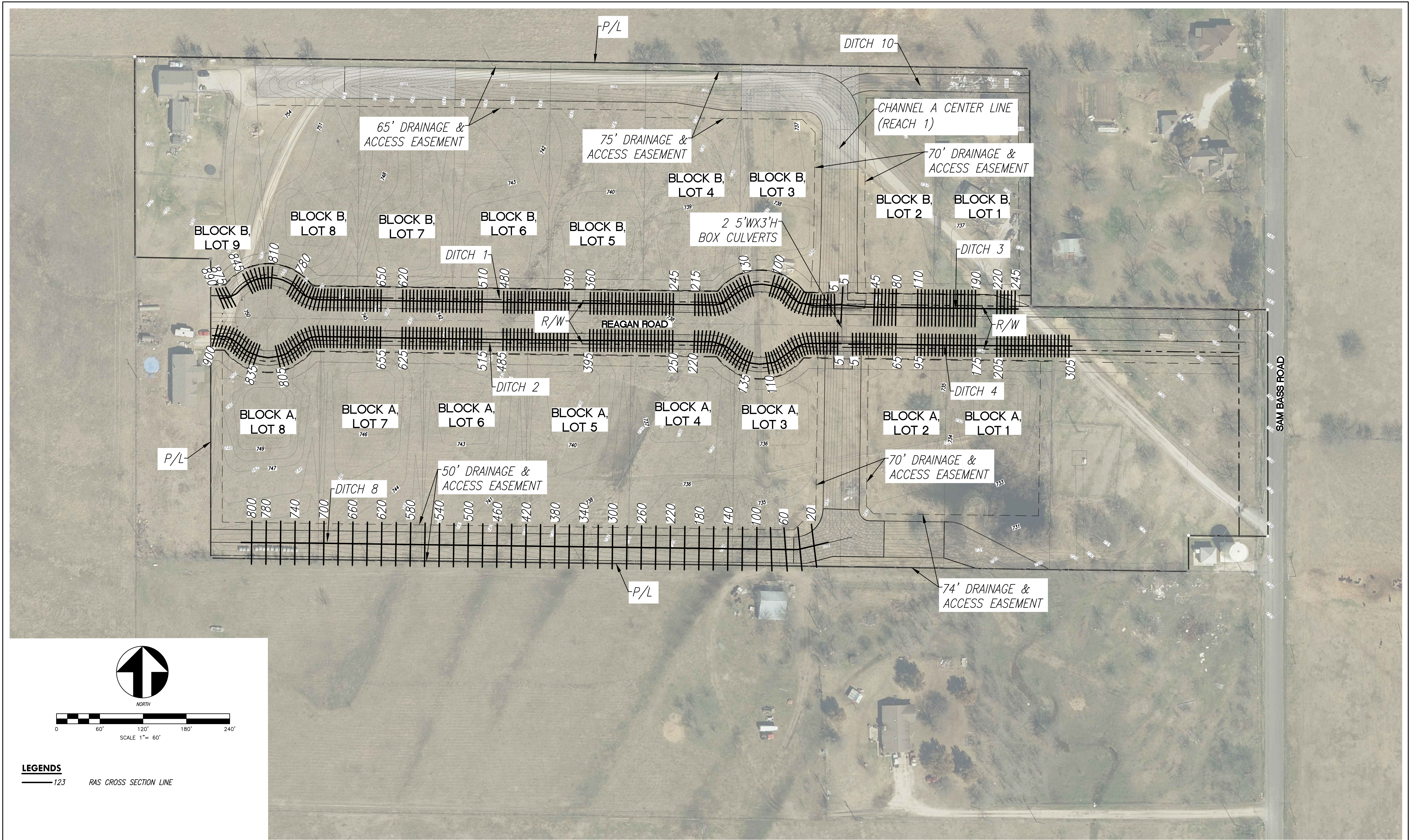
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SANGER, TEXAS
HYDRAULIC WORK MAP
 FOR
MARLEY MEADOWS

PROJECT NO.
 sheet
 13-A
 of
 23

HEC-RAS Plan: CHANNEL-A EXISTING CONDITION														River: CHANNEL-A														Reach: CHANNEL-A													
Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	Max Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	Max Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl														
CHANNEL-A	6000	Q10	86.00	736.34	736.90	736.73	736.93	736.93	0.005559	1.45	59.50	192.80	0.46	CHANNEL-A	6889	Q10	11.40	745.10	745.92	745.92	745.13	745.13	0.033460	3.70	3.09	7.51	1.02														
CHANNEL-A	6000	Q50	131.20	735.94	736.99	736.81	737.03	737.03	0.005833	1.98	78.03	208.94	0.49	CHANNEL-A	6889	Q50	16.40	745.10	746.05	746.05	746.26	746.26	0.031747	3.84	4.16	8.83	1.01														
CHANNEL-A	6000	Q100	153.50	736.34	737.03	736.85	737.08	737.08	0.006003	1.77	86.94	221.07	0.50	CHANNEL-A	6889	Q100	18.80	745.10	746.10	746.10	746.36	746.36	0.031190	4.04	4.65	9.39	1.01														
CHANNEL-A	5800	Q10	86.00	734.34	734.61	734.61	734.69	734.69	0.032273	2.30	37.36	230.53	1.01	CHANNEL-A	6889	Q100 (ULT)	18.80	745.10	746.10	746.10	746.36	746.36	0.031190	4.04	4.65	9.39	1.01														
CHANNEL-A	5800	Q50	131.20	734.34	734.66	734.66	734.77	734.77	0.030944	2.63	48.82	236.50	1.01	CHANNEL-A	6725	Q10	11.40	739.88	740.72	740.86	741.02	741.02	0.021357	3.09	3.69	8.45	0.82														
CHANNEL-A	5800	Q100	153.50	734.34	734.69	734.69	734.80	734.80	0.028546	2.74	55.98	237.45	1.01	CHANNEL-A	6725	Q50	16.40	739.88	740.84	741.02	741.02	0.021480	3.38	4.85	9.71	0.84															
CHANNEL-A	5600	Q10	86.00	731.35	732.04	732.06	732.06	0.020222	1.18	72.69	199.83	0.31	CHANNEL-A	6725	Q100	18.80	739.88	740.90	741.09	741.09	0.021484	3.49	5.38	10.25	0.85																
CHANNEL-A	5600	Q50	131.20	731.35	732.21	732.24	732.24	0.020267	1.30	102.64	181.28	0.31	CHANNEL-A	6725	Q100 (ULT)	18.80	739.88	740.90	741.09	741.09	0.021484	3.49	5.38	10.25	0.85																
CHANNEL-A	5600	Q100	153.50	731.35	732.28	732.31	732.31	0.020206	1.35	114.08	191.63	0.31	CHANNEL-A	6601	Q10	11.40	738.05	738.49	738.57	738.57	0.019839	2.25	5.06	13.84	0.65																
CHANNEL-A	5400	Q10	151.10	729.92	730.67	730.76	730.76	0.018444	2.43	62.20	227.42	0.82	CHANNEL-A	6601	Q50	16.40	738.05	738.59	738.69	738.69	0.019783	2.54	6.47	14.47	0.67																
CHANNEL-A	5400	Q50	232.80	729.92	730.73	730.71	730.71	0.022417	3.01	77.23	236.50	0.93	CHANNEL-A	6601	Q100	18.80	738.05	738.63	738.74	738.74	0.019737	2.65	7.10	14.82	0.68																
CHANNEL-A	5400	Q100	273.10	729.92	730.75	730.75	730.92	0.025389	3.31	82.43	240.47	1.00	CHANNEL-A	6601	Q100 (ULT)	18.80	738.05	738.63	738.74	738.74	0.019737	2.65	7.10	14.82	0.68																
CHANNEL-A	5200	Q10	151.10	725.94	726.81	726.77	727.01	0.018929	3.57	42.28	88.33	0.91	CHANNEL-A	6473	Q10	11.40	736.30	736.73	736.81	736.81	0.019869	2.28	5.05	13.65	0.65																
CHANNEL-A	5200	Q50	232.80	725.94	727.24	727.24	727.24	0.020114	3.01	55.85	95.63	0.86	CHANNEL-A	6473	Q50	16.40	736.30	736.85	736.94	736.94	0.019204	2.45	6.69	16.52	0.64																
CHANNEL-A	5200	Q100	273.10	725.94	727.11	727.14	727.34	0.013320	3.89	70.21	99.20	0.82	CHANNEL-A	6473	Q100	18.80	736.30	736.95	737.03	737.03	0.008890	2.28	8.23	15.47	0.55																
CHANNEL-A	5000	Q10	151.10	723.81	724.99	725.07	725.07	0.005728	2.23	67.62	116.54	0.82	CHANNEL-A	6408	Q10	11.40	735.39	736.18	736.20	736.20	0.001673	1.12	10.20	15.98	0.26																
CHANNEL-A	5000	Q50	232.80	723.81	725.13	725.13	725.25	0.009944	2.75	84.79	123.96	0.92	CHANNEL-A	6408	Q50	16.40	735.39	736.59	736.81	736.81	0.000734	0.95	17.34	18.71	0.17																
CHANNEL-A	5000	Q100	273.10	723.81	725.18	725.18	725.32	0.007586	2.99	91.31	126.33	0.82	CHANNEL-A	6408	Q100	18.80	735.39	736.77	736.79	736.79	0.005073	0.90	20.79	18.88	0.16																
CHANNEL-A	4800	Q10	151.10	722.76	723.33	723.42	0.012913	2.35	64.32	189.27	0.71	CHANNEL-A	6408	Q100 (ULT)	18.80	735.39	736.81	736.81	0.005073	0.97	21.58	20.14	0.15																		
CHANNEL-A	4800	Q50	232.80	722.76	723.47	723.42	0.011817	2.51	62.68	206.48	0.96	CHANNEL-A	6338	Q10	92.70	734.44	735.80	736.11	0.014857	4.47	20.72	20.76	0.79																		
CHANNEL-A	4800	Q100	273.10	722.76	723.54	723.64	0.009224	2.58	105.71	209.57	0.94	CHANNEL-A	6338	Q50	141.20	734.44	736.13	736.52	0.014882	5.05	27.88	23.40	0.81																		
CHANNEL-A	4600	Q10	151.10	719.32	720.87	720.67	0.010237	3.88	39.94	45.24	0.74	CHANNEL-A	6338	Q100	141.20	734.44	736.13	736.52	0.014882	5.25	31.45	24.86	0.82																		
CHANNEL-A	4600	Q50	232.80	719.32	721.15	720.95	0.010886	4.41	52.79	52.79	0.78	CHANNEL-A	6338	Q50	141.20	734.44	736.13	736.52	0.014882	5.25	31.45	24.86	0.82																		
CHANNEL-A	4600	Q100	273.10	719.32	721.26	721.07	0.011124	4.65	58.76	55.58	0.80	CHANNEL-A	6338	Q100	141.20	734.44	736.13	736.52	0.014882	5.25	31.45	24.86	0.82																		
CHANNEL-A	4400	Q10	151.10	718.93	717.95	717.95	718.25	0.011204	4.43	34.14	58.28	1.00	CHANNEL-A	6298	Q10	165.20	733.84	735.69	736.10	0.013465	5.15	32.08	24.80	0.80																	
CHANNEL-A	4400	Q50	232.80	718.93	717.18	718.18	0.020514	4.79	48.59	69.35	1.01	CHANNEL-A	6298	Q50	165.20	733.84	735.69	736.10	0.013465	5.18	32.08	25.09	0.80																		
CHANNEL-A	4400	Q100	273.10	718.93	718.27	718.27	0.020165	4.95	55.15	73.93	1.01	CHANNEL-A	6298	Q100	165.20	733.84	735.69	736.10	0.013465	5.18	32.08	25.09	0.80																		
CHANNEL-A	4200	Q10	151.10	712.33	714.04	714.20	0.005175	3.22	48.94	43.17	0.81	CHANNEL-A	6232	Q10	92.70	732.84	734.21	734.51	0.013995	4.38	21.17	20.97	0.77																		
CHANNEL-A	4200	Q50	232.80	712.33	714.33	714.36	0.006997	3.88	60.03	47.20	0.64	CHANNEL-A	6232	Q50	141.20	732.84	734.62	734.97	0.010924	4.51	31.28	24.53	0.70																		
CHANNEL-A	4200	Q100	273.10	712.33	714.45	714.42	0.009397	4.13	65.18	49.13	0.63	CHANNEL-A	6232	Q100	165.20	732.84	735.18	735.37	0.005614	3.70	44.64	28.55	0.52																		
CHANNEL-A	4000	Q10	151.10	711.17	712.02	712.02	0.023992	3.89	38.84	85.29	1.02	CHANNEL-A	6232	Q100 (ULT)	165.20	732.84	735.23	735.44	0.005325	3.66	46.85	29.11	0.51																		
CHANNEL-A	4000	Q50	232.80	711.17	712.19	712.19	0.021520	4.33	53.76	92.62	1.00	CHANNEL-A	6162	Q10	92.70	731.78	733.72	733.83	0.003814	2.69	34.43	25.53	0.41																		
CHANNEL-A	4000	Q100	273.10	711.17	712.26	712.26	0.021395	4.56	59.86	95.03	1.01	CHANNEL-A	6162	Q50	141.20	731.78	734.38	734.49	0.002559	2.66	53.04	30.82	0.36																		
CHANNEL-A	3800	Q10	151.10	709.70	707.92	707.82	0.013607	3.62	41.78	66.87	0.81	CHANNEL-A	6162	Q100	165.20	731.78	735.05	735.12	0.001341	2.19	79.47	36.18	0.27																		
CHANNEL-A	3800	Q50	232.80	709.70	708.10	708.10	0.015127	4.31	54.01	71.94	0.88	CHANNEL-A	6162	Q100	165.20	731.78	735.05	735.12	0.001109	2.04	80.05	37.39	0.24																		
CHANNEL-A	3800	Q100	273.10	709.70	708.17	708.10	0.015874	4.59	59.45	73.90	0.90	CHANNEL-A	6162	Q100 (ULT)	165.20	731.78	735.13	735.20	0.001302	2.18	78.25	36.79	0.26																		
CHANNEL-A	3600	Q10	151.10	703.42	704.31	704.31	704.53	0.024748	3.81	39.64	91.88	1.02	CHANNEL-A	6108	Q10	92.70	730.59	733.46	733.55	0.002752	2.44	37.87	26.61	0.34																	
CHANNEL-A	3600	Q50	232.80	703.42	704.46	704.46	0.022248	4.34	53.62	94.36	1.02	CHANNEL-A	6108	Q50	141.20	731.38	734.21	734.29	0.001800	2.34	60.33	32.64	0.30																		
CHANNEL-A	3600	Q100	273.10	703.42	704.52	704.52	0.021975	4.57	59.81	95.36	1.02	CHANNEL-A	6108	Q100	165.20	731.38	734.97	735.02	0.000961	1.89	87.37	38.70	0.22																		
CHANNEL-A	3400	Q10	151.10	699.17	700.35	700.26	0.012046	3.05	49.51	93.22	0.74	CHANNEL-A	6078	Q10	92.70	731.38	735.05	735.10	0.000879	1.89	90.43	39.33	0.22																		
CHANNEL-A	3400	Q50	232.80	699.17	700.52	700.40	0.011820	3.55	65.55	95.05	0.75	CHANNEL-A	6078	Q50	141.20	731.38	734.97	735.02	0.000961	1.89	87.37	38.70	0.22																		
CHANNEL-A	3400	Q100	273.10	699.17	700.58	700.45	0.011811	3.80	71.82	95.78	0.77	CHANNEL-A	6078	Q100	165.20	731.38	735.05	735.10	0.000879	1.89	90.43	39.33	0.22																		
CHANNEL-A	3200	Q10	151.10	695.64	697.14	697.12</																																			



LEGENDS

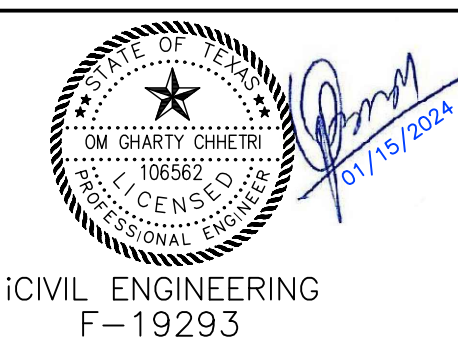
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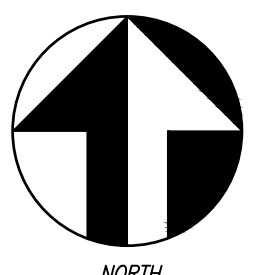
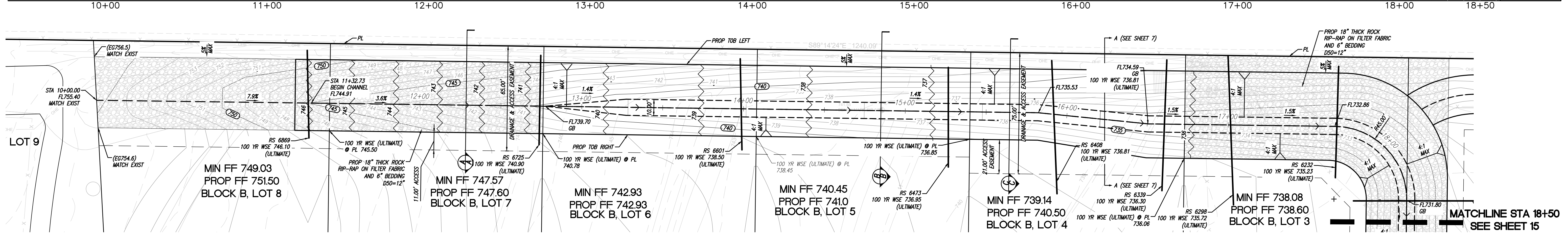
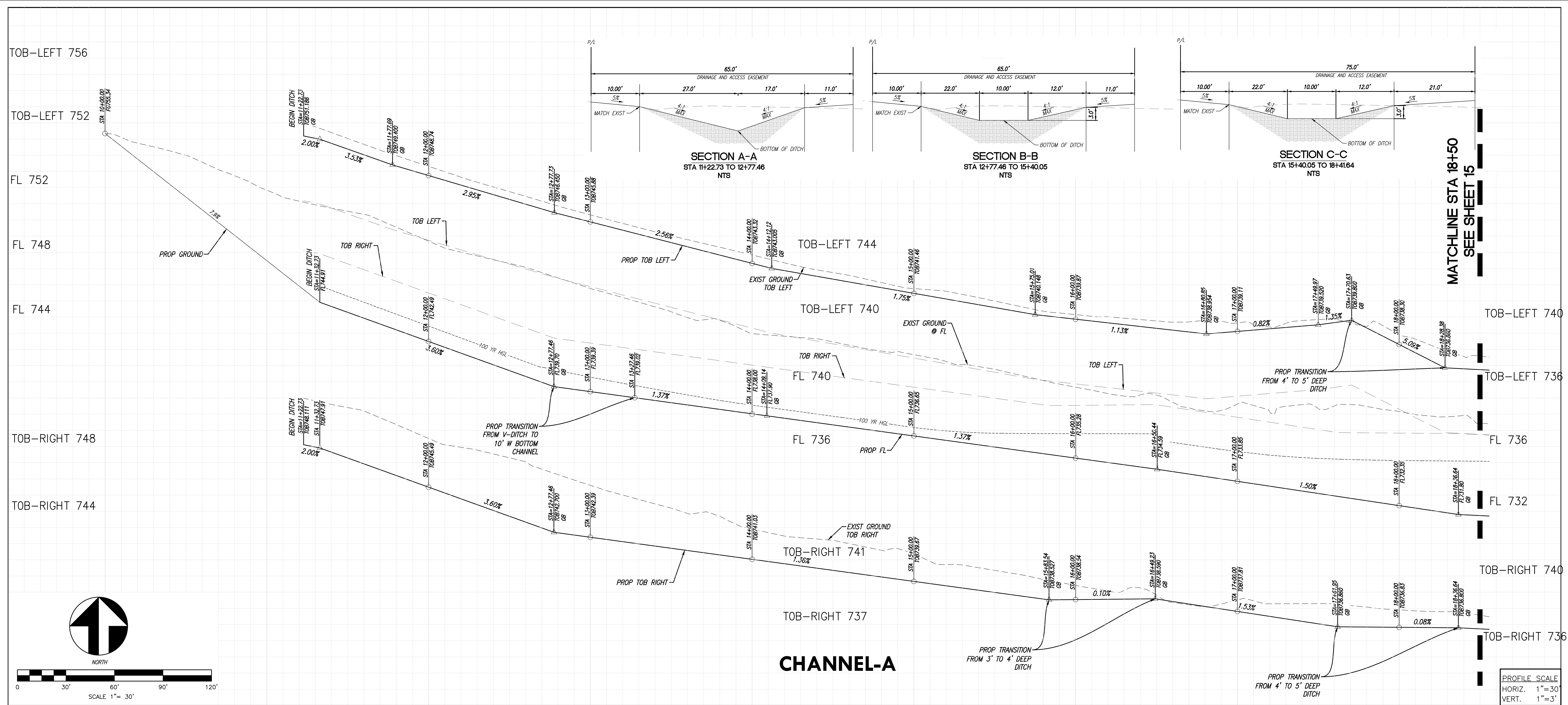
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SANGER, TEXAS
HYDRAULIC WORK MAP
 FOR
MARLEY MEADOWS

PROJECT NO.
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 13-C
 of
 23

HEC-RAS Plan	HEC-RAS Profile	River	DITCH-1	Reach	DITCH-1	Profile	Q Total	Min Ch Elevation	W.S. Elevation	Chl W.S. Elevation	E.G. Elevation	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
DITCH-1	850	Q100	4.22	749.92	750.23	750.33	750.33	0.041483	2.47	1.71	8.13	1.03				
DITCH-1	885	Q100	4.22	749.24	748.45	748.56	748.86	0.281809	5.12	0.82	8.22	2.48				
DITCH-1	885	Q100	4.22	748.82	748.82	748.82	0.078777	0.00	0.00	0.00	0.00	0.00				
DITCH-1	875	Q100	4.22	748.78	747.84	747.22	747.84	0.000503	0.82	6.79	10.22	1.13				
DITCH-1	860	Q100	4.22	748.04	747.04	747.05	747.05	0.001062	0.81	5.22	9.33	1.09				
DITCH-1	845	Q100	4.22	746.64	747.04	747.05	747.05	0.000000	0.00	0.00	0.00	0.00				
DITCH-1	840	Q100	4.22	746.03	747.04	747.05	747.05	0.000071	0.71	5.97	10.09	1.16				
DITCH-1	835	Q100	4.22	745.94	747.04	747.04	747.04	0.000469	0.59	7.11	10.95	1.13				
DITCH-1	830	Q100	4.22	745.82	747.04	747.04	747.04	0.000019	0.19	6.82	10.91	1.11				
DITCH-1	825	Q100	4.22	745.72	747.04	747.04	747.04	0.000213	0.44	9.51	12.54	1.09				
DITCH-1	820	Q100	4.22	745.62	747.04	747.04	747.04	0.000049	0.39	10.87	13.41	0.98				
DITCH-1	815	Q100	4.22	745.52	747.04	747.04	747.04	0.000011	0.11	10.20	13.20	0.91				
DITCH-1	810	Q100	4.22	745.29	747.03	746.90	747.04	0.000235	0.54	14.40	15.30	1.01				
DITCH-1	795	Q100	4.22	744.55	746.23	745.34	0.017660	2.88	2.89	7.19	9.74	1.04				
DITCH-1	770	Q100	4.22	744.53	745.14	745.25	0.010909	2.70	2.86	7.36	9.77	1.04				
DITCH-1	765	Q100	4.22	744.43	744.55	744.55	0.000000	0.00	0.00	0.00	0.00	0.00				
DITCH-1	760	Q100	4.22	744.31	744.75	744.75	0.003466	3.55	2.18	6.43	1.07	1.07				
DITCH-1	755	Q100	4.22	744.00	744.55	744.55	0.039870	3.50	2.21	6.33	1.04	1.04				
DITCH-1	750	Q100	4.22	743.88	744.38	744.38	0.000000	0.00	0.00	0.00	0.00	0.00				
DITCH-1	745	Q100	4.22	743.83	744.14	744.14	0.044366	3.76	2.06	6.14	1.14	1.14				
DITCH-1	740	Q100	4.22	743.82	743.98	744.16	0.034188	3.40	2.28	6.40	1.01	1.01				
DITCH-1	735	Q100	4.22	743.78	743.78	743.87	0.044020	3.72	2.30	6.32	1.01	1.01				
DITCH-1	730	Q100	4.22	743.69	743.59	743.63	0.051263	3.84	1.96	6.00	1.21	1.21				
DITCH-1	725	Q100	4.22	743.94	743.42	743.69	0.099803	4.20	1.84	5.83	1.32	1.32				
DITCH-1	720	Q100	4.22	743.29	743.29	743.05	0.069632	4.41	1.79	5.70	1.40	1.40				
DITCH-1	715	Q100	4.22	742.64	743.10	743.42	0.072897	4.49	1.72	5.63	1.43	1.43				
DITCH-1	710	Q100	4.22	742.49	742.95	743.27	0.077076	4.44	1.74	5.69	1.41	1.41				
DITCH-1	705	Q100	4.22	742.41	742.91	743.21	0.078501	4.42	1.73	5.67	1.42	1.42				
DITCH-1	700	Q100	4.22	742.21	742.87	743.16	0.071196	4.02	1.75	5.77	1.47	1.47				
DITCH-1	695	Q100	4.22	742.06	742.52	742.82	0.068899	4.38	1.77	5.84	1.39	1.39				
DITCH-1	690	Q100	4.22	741.92	742.05	742.32	0.066695	4.33	1.80	5.92	1.37	1.37				
DITCH-1	685	Q100	4.22	741.75	742.22	742.52	0.069188	4.38	1.77	5.84	1.39	1.39				
DITCH-1	680	Q100	4.22	741.68	742.25	742.55	0.074451	4.50	1.75	5.82	1.40	1.40				
DITCH-1	675	Q100	4.22	741.64	742.23	742.29	0.069692	4.30	1.80	6.36	0.48	0.48				
DITCH-1	670	Q100	4.22	741.28	742.23	742.26	0.030315	1.39	5.57	8.79	0.32	0.32				
DITCH-1	665	Q100	4.22	741.12	742.23	742.25	0.028584	1.10	7.07	10.82	0.14	0.14				
DITCH-1	660	Q100	4.22	740.97	742.23	742.24	0.000666	0.67	10.85	12.05	0.18	0.18				
DITCH-1	655	Q100	4.22	740.81	742.23	742.23	0.000000	0.00	0.00	0.00	0.00	0.00				
DITCH-1	650	Q100	4.22	740.50	742.23	741.18	0.242200	0.73	13.88	14.72	0.13	0.13				
DITCH-1	635	Q100	4.22	740.50	742.23	741.18	0.242200	0.73	13.88	14.72	0.13	0.13				
DITCH-1	620	Q100	4.22	739.75	740.39	740.59	0.032525	3.57	2.74	1.01	0.99	0.99				
DITCH-1	615	Q100	4.22	739.69	740.39	740.59	0.032525	3.57	2.74	1.01	0.99	0.99				
DITCH-1	610	Q100	4.22	739.67	740.10	740.30	0.028410	3.33	3.05	7.29	0.91	0.91				
DITCH-1	605	Q100	4.22	739.61	739.96	740.16	0.027319	3.37	3.01	7.24	0.92	0.92				
DITCH-1	600	Q100	4.22	739.49	739.82	740.02	0.027777	3.40	3.02	7.27	0.93	0.93				
DITCH-1	595	Q100	4.22	739.46	739.70	739.88	0.028861	3.43	2.95	7.23	0.95	0.95				
DITCH-1	590	Q100	4.22	739.41	739.59	739.75	0.028230	3.17	3.20	7.47	0.85	0.85				
DITCH-1	585	Q100	4.22	739.38	739.42	739.62	0.024865	3.11	3.12	7.33	0.90	0.90				
DITCH-1	580	Q100	4.22	739.34	739.29	739.50	0.024692	3.25	3.12	7.32	0.88	0.88				
DITCH-1	575	Q100	4.22	739.31	739.21	739.37	0.020666	3.25	3.12	7.32	0.88	0.88				
DITCH-1	570	Q100	4.22	739.11	739.11	739.26	0.020666	3.34	3.04	7.38	0.91	0.91				
DITCH-1	565	Q100	4.22	739.11	739.03	739.15	0.017338	2.86	3.54	7.85	0.75	0.75				
DITCH-1	560	Q100	4.22	739.08	738.99	739.01	0.000000	0.00	0.00	0.00	0.00	0.00				
DITCH-1	555	Q100	4.22	739.05	738.94	739.01	0.000000	0.00	0.00	0.00	0.00	0.00				
DITCH-1	550	Q100	4.22	737.97	738.92	738.97	0.000002	1.87	4.41	8.57	0.44	0.44				
DITCH-1	545	Q100	4.22	737.86	738.92	738.92	0.000000	0.00	0.00	0.00	0.00	0.00				
DITCH-1	540	Q100	4.22	737.75	738.90	738.93	0.002362	3.76	4.46	11.14	0.29	0.29				
DITCH-1	535	Q100	4.22	737.66	738.89	738.91	0.001445	1.19	8.53	11.90	0.25	0.25				
DITCH-1	530	Q100	4.22	737.66	738.89	738.91	0.001445	1.19	8.53	11.90	0.25	0.25				
DITCH-1	525	Q100	4.22	737.47	738.89	738.90	0.000000	0.00	0.00	0.00	0.00	0.00				
DITCH-1	520	Q100	4.22	737.27	738.89	738.90	0.000018	0.82	12.30	14.20	0.16	0.16				
DITCH-1	515	Q100	4.22	737.18	738.89	738.90	0.000000	0.00	0.00	0.00	0.00	0.00				
DITCH-1	510	Q100	4.22	736.83	738.88	737.74	0.088048	6.82	16.15	15.69	0.13	0.13				
DITCH-1	495	Q100	4.22	736.72	738.14	738.16	0.001381	1.18	10.65	13.23	0.23	0.23				
DITCH-1	475	Q100	4.22	736.68	738.13	738.15	0.001001	1.08	11.65	13.84	0.21	0.21				
DITCH-1	470	Q100	4.22	736.59	738.13	738.15	0.000000	0.00	12.47	14.31	0.19	0.19				
DITCH-1	465	Q100	4.22	736.53	738.12	738.12	0.000000	0.00	12.47	14.31	0.19	0.19				
DITCH-1	460	Q100	4.22	736.47	738.13	738.13	0.000032	0.88	14.20	15.27	0.16	0.16				
DITCH-1	455	Q100	4.22	736.41	738.12	738.13	0.000000	0.00	15.19	16.70	0.13	0.13				
DITCH-1	450	Q100	4.22	736.34	738.13	738.13	0.000070	1.19	15.63	16.10	0.14	0.14				
DITCH-1	445	Q100	4.22	736.31	738.12	738.13	0.000002	0.74	16.10	16.59	0.13	0.13				
DITCH-1	440	Q100	4.22	736.25	738.12	738.12	0.000000	0.00	16.10	16.59	0.13	0.13				
DITCH-1	435	Q100	4.22	736.22	738.12	738.13	0.000019	0.88	16.42	17.31	0.12	0.12				
DITCH-1	430	Q100	4.22	736.16	738.											



0 30' 60' 90' 120'
SCALE 1" = 30'

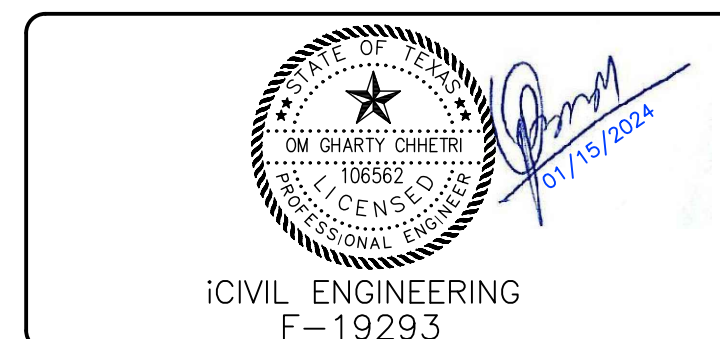
PROFILE SCALE
HORIZ. 1" = 30'
VERT. 1" = 3'



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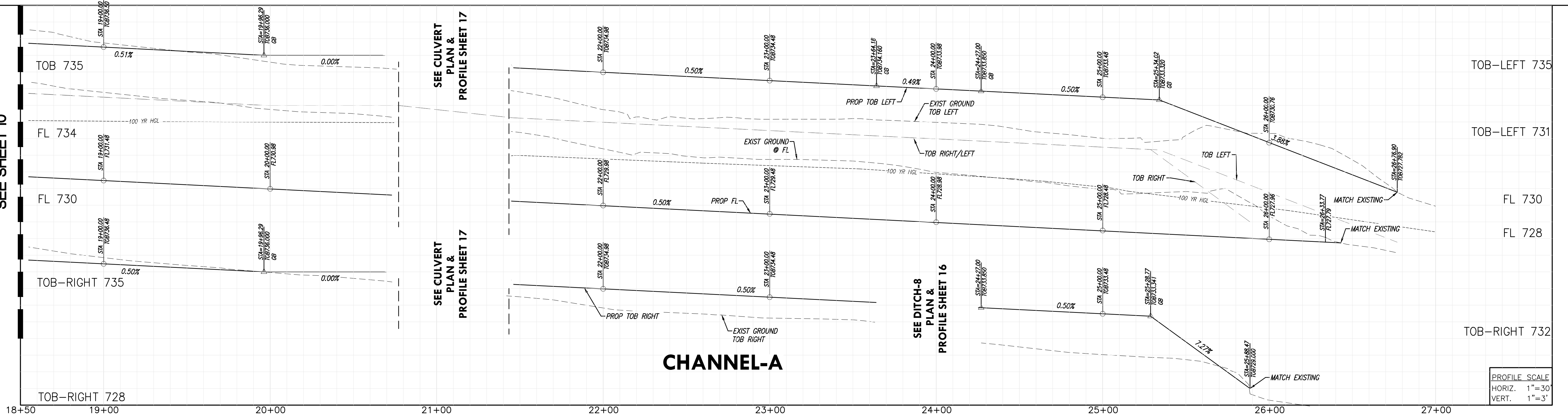
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SANGER, TEXAS
CHANNEL-A PLAN & PROFILE
FOR
MARLEY MEADOWS

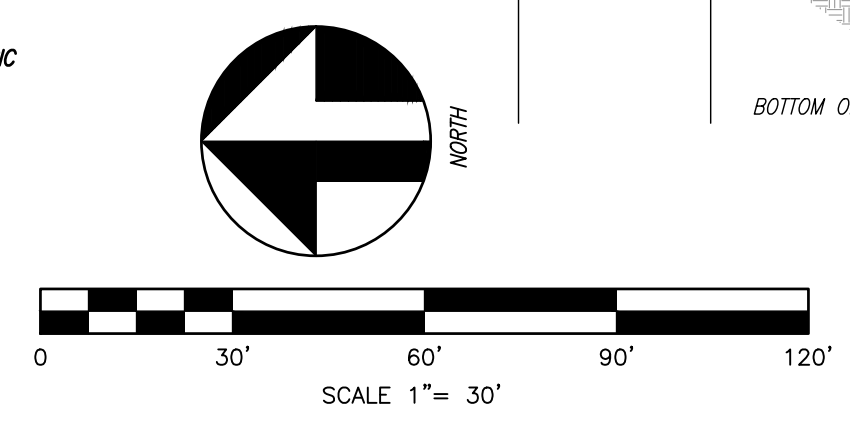
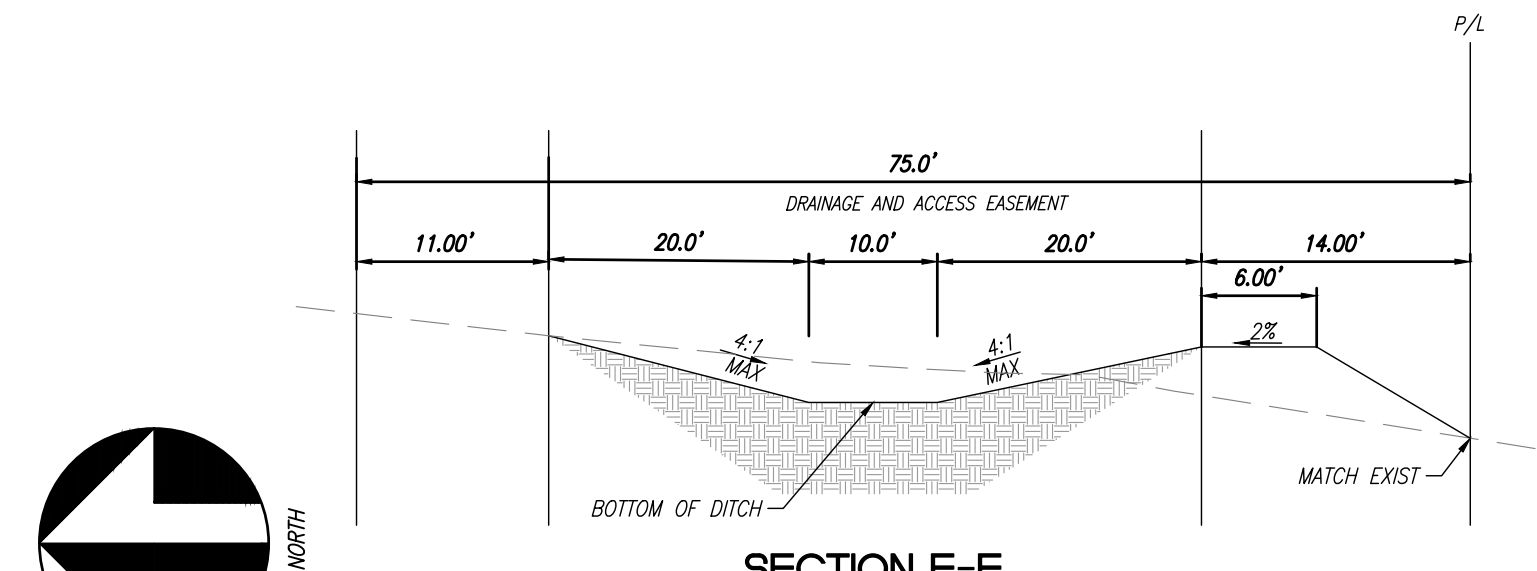
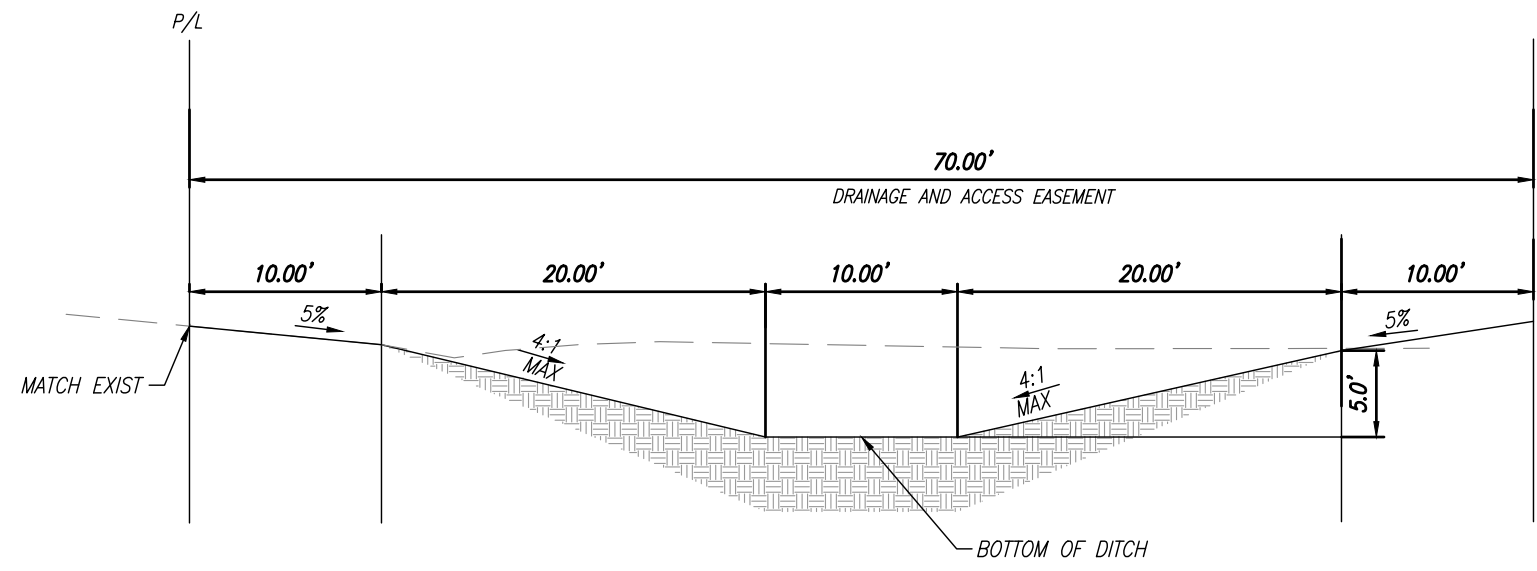
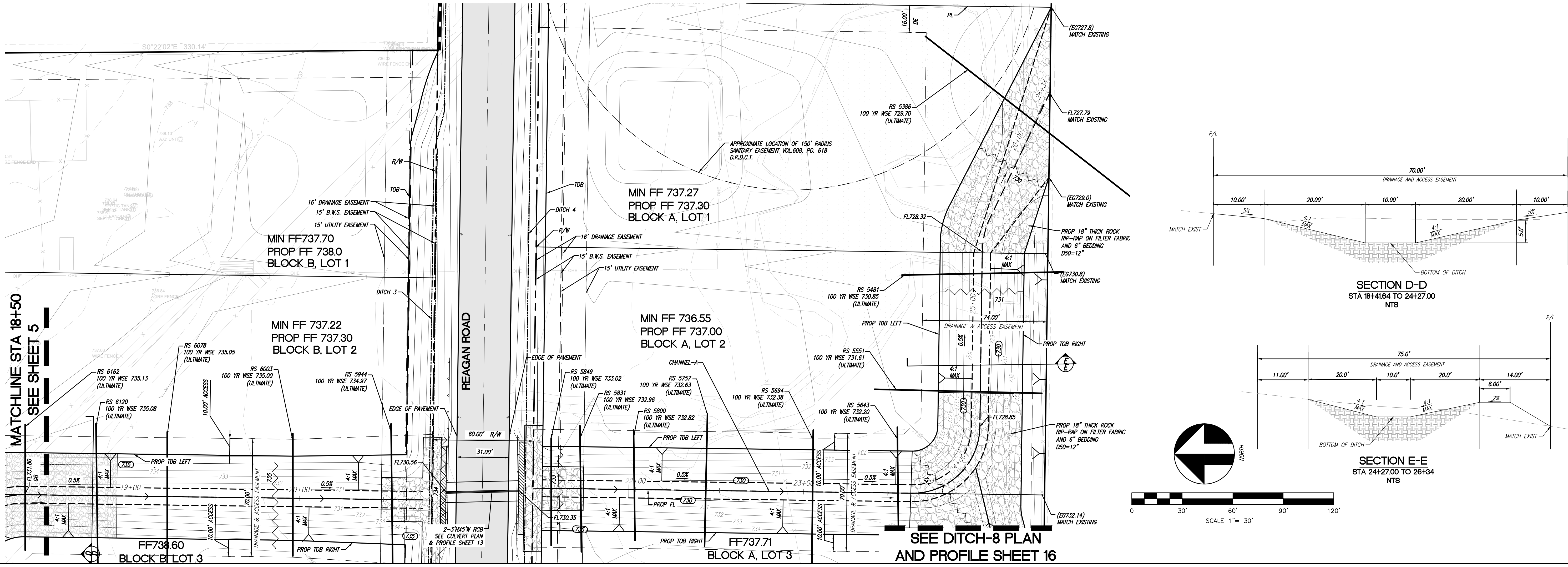
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MATCHLINE STA 18+50
SEE SHEET 10



CHANNEL-A

PROFILE SCALE
HORIZ. 1"=30'
VERT. 1"=3'



MATCHLINE STA 18+50
SEE SHEET 5

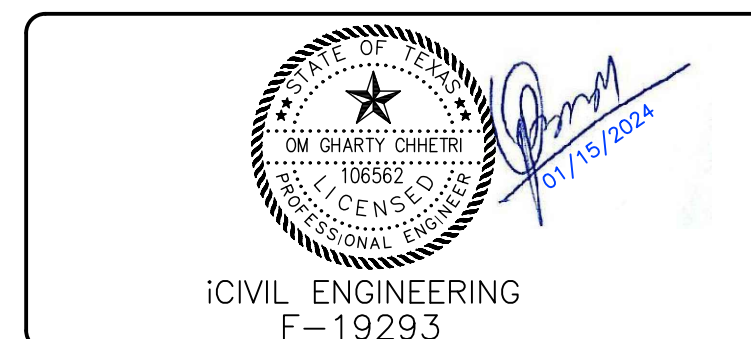
SEE DITCH-8 PLAN
AND PROFILE SHEET 16



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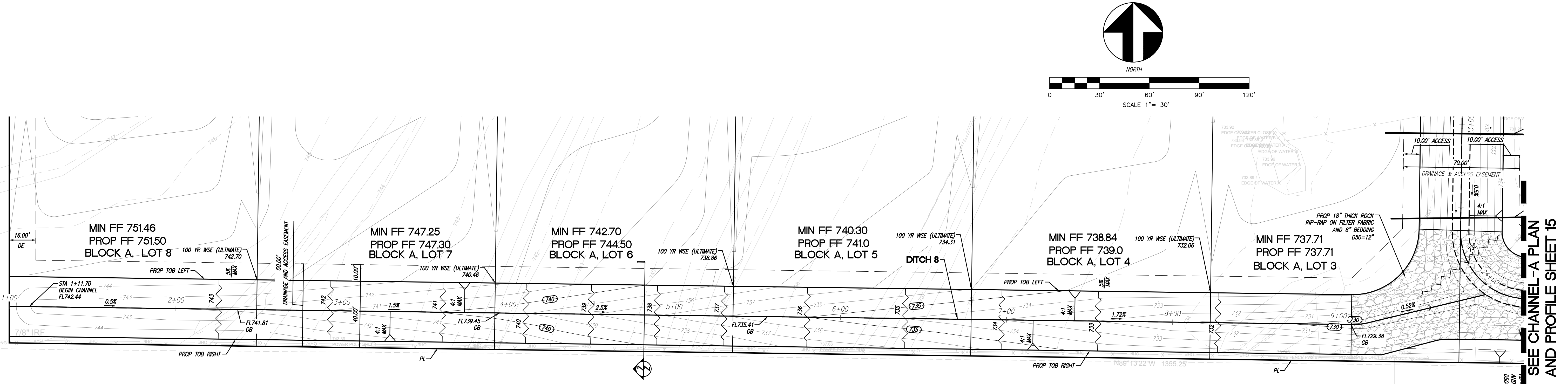
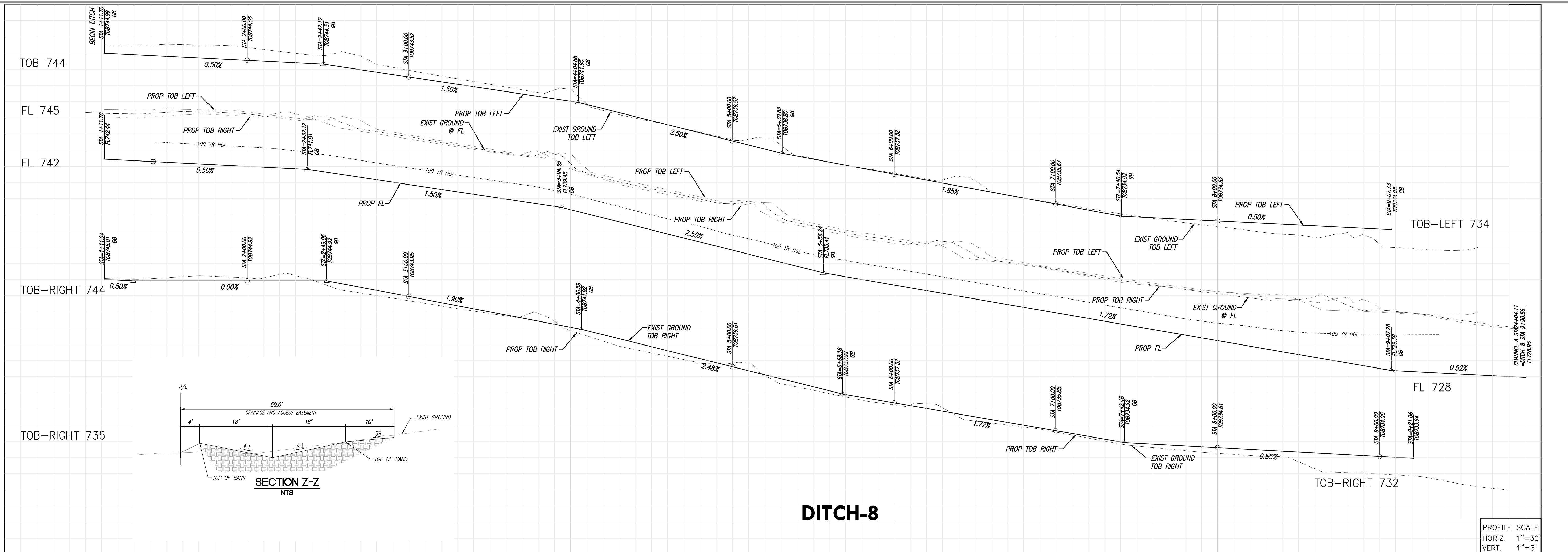
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CHANNEL-A PLAN & PROFILE
FOR
MARLEY MEADOWS

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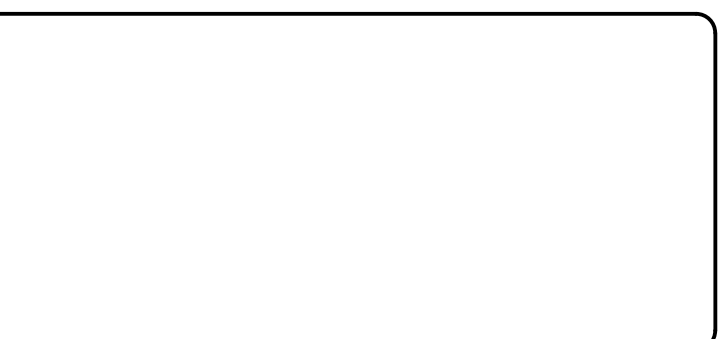
SEE CHANNEL-A PLAN AND PROFILE SHEET 15



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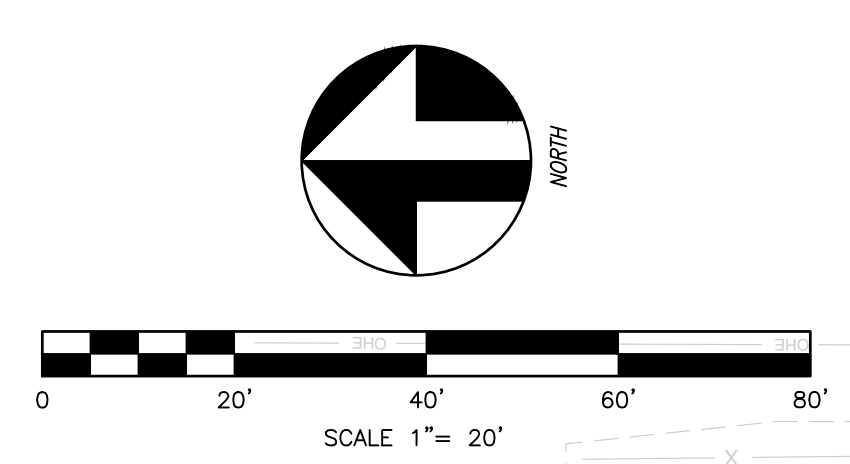
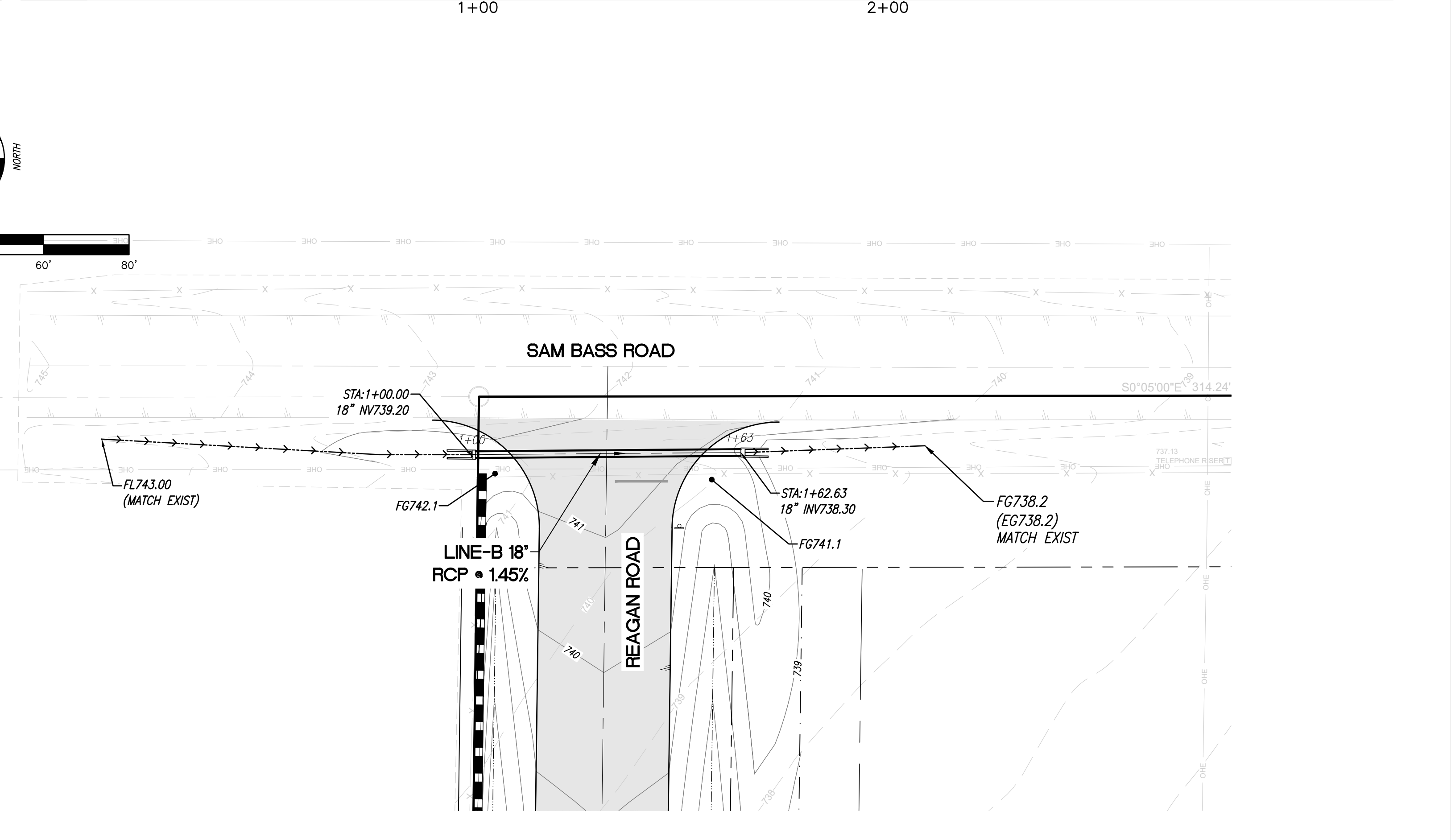
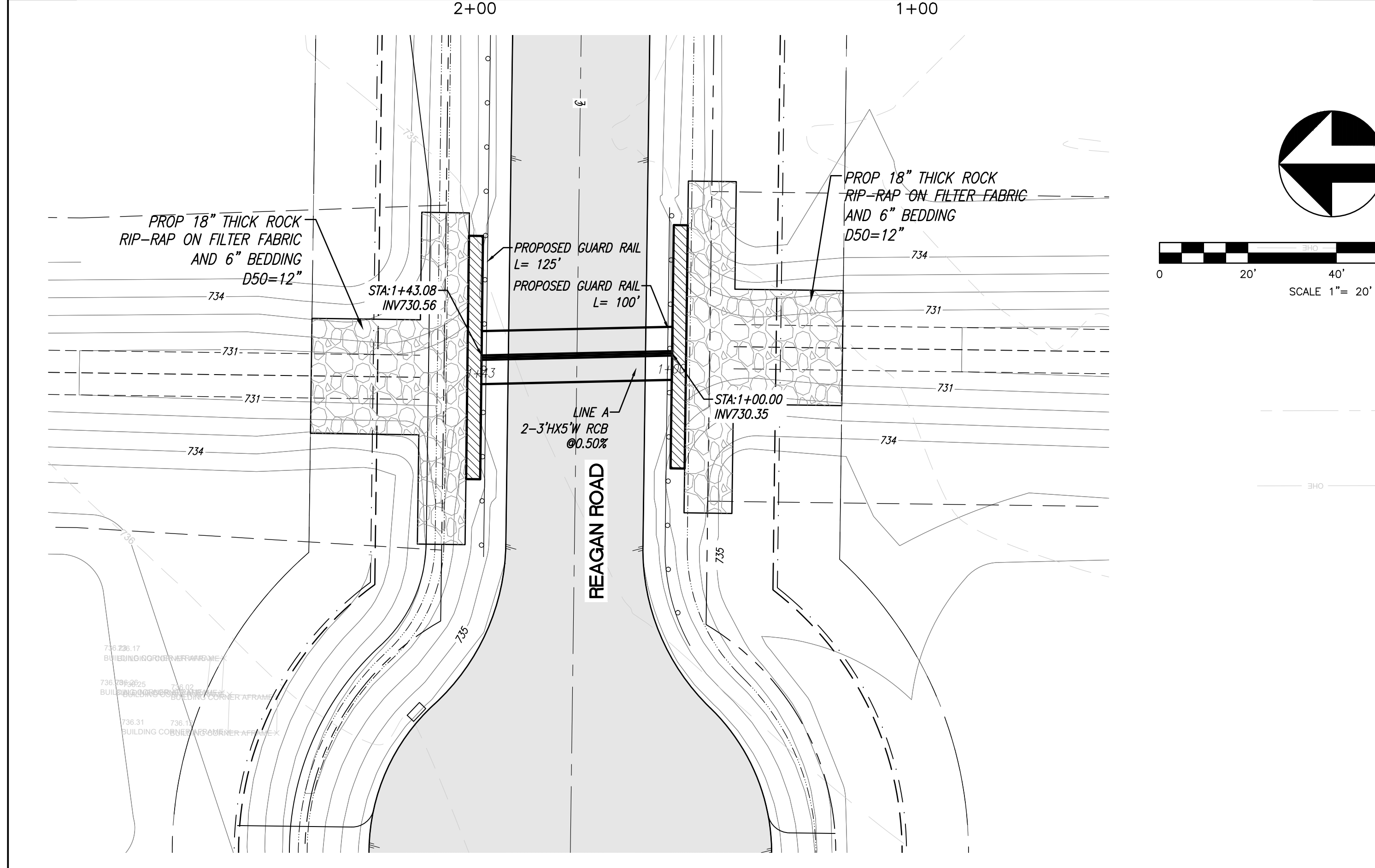
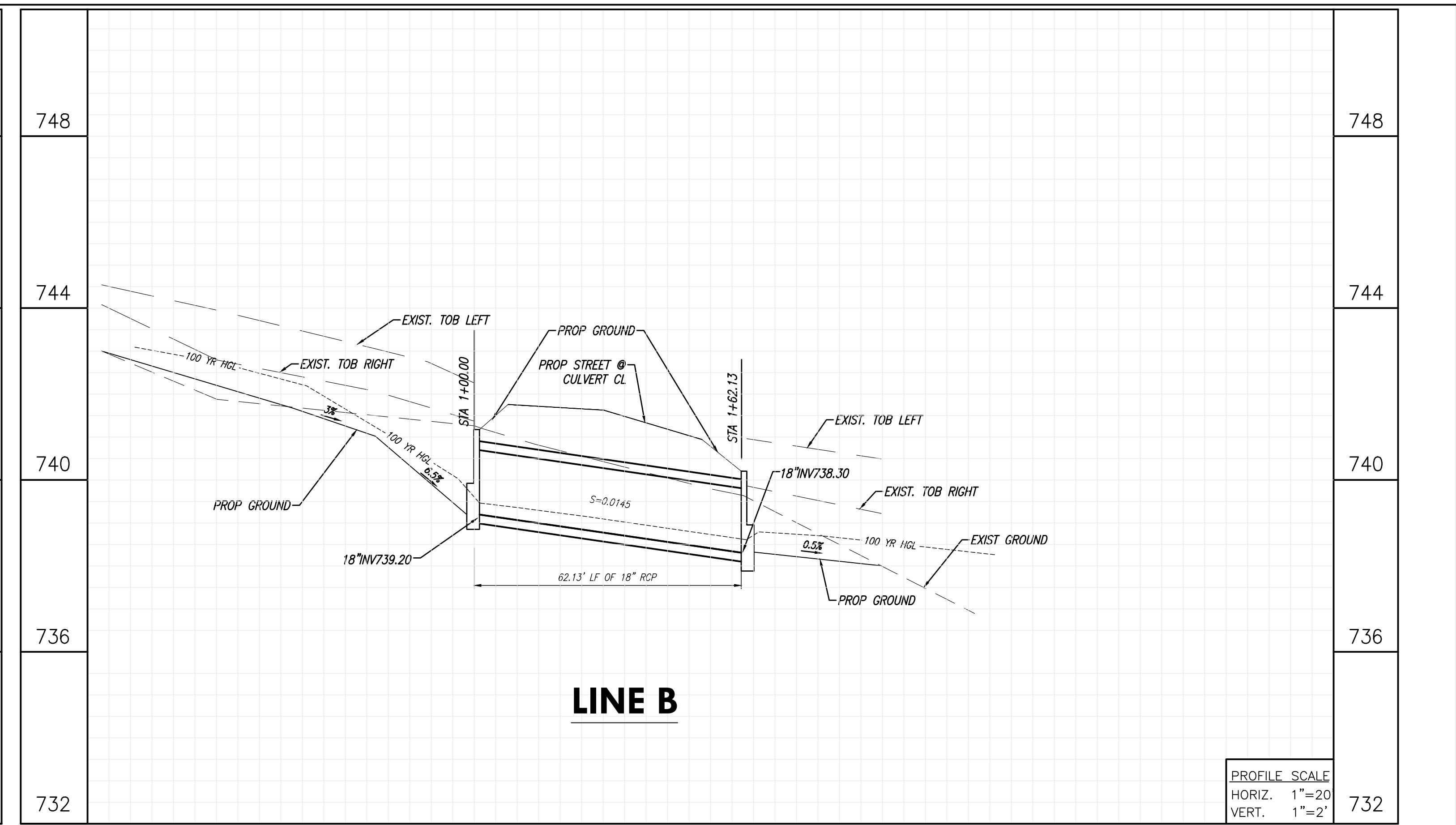
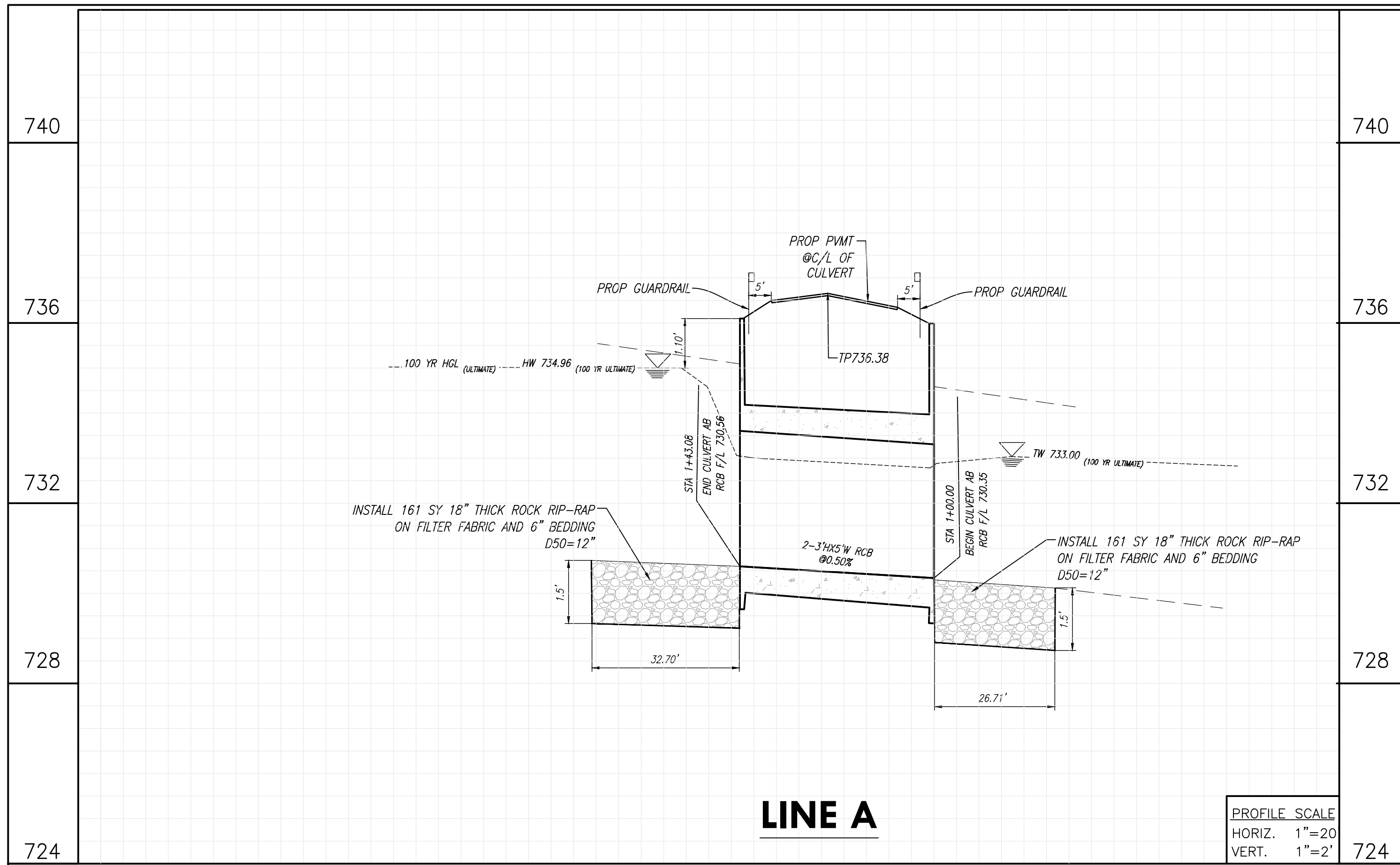
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DITCH-8 PLAN & PROFILE
 FOR
MARLEY MEADOWS

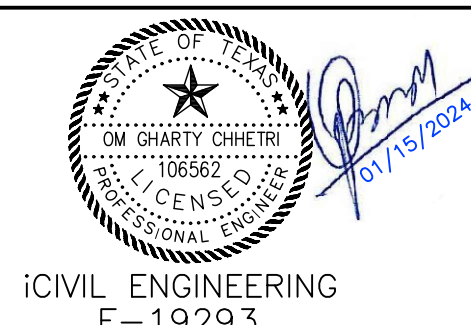
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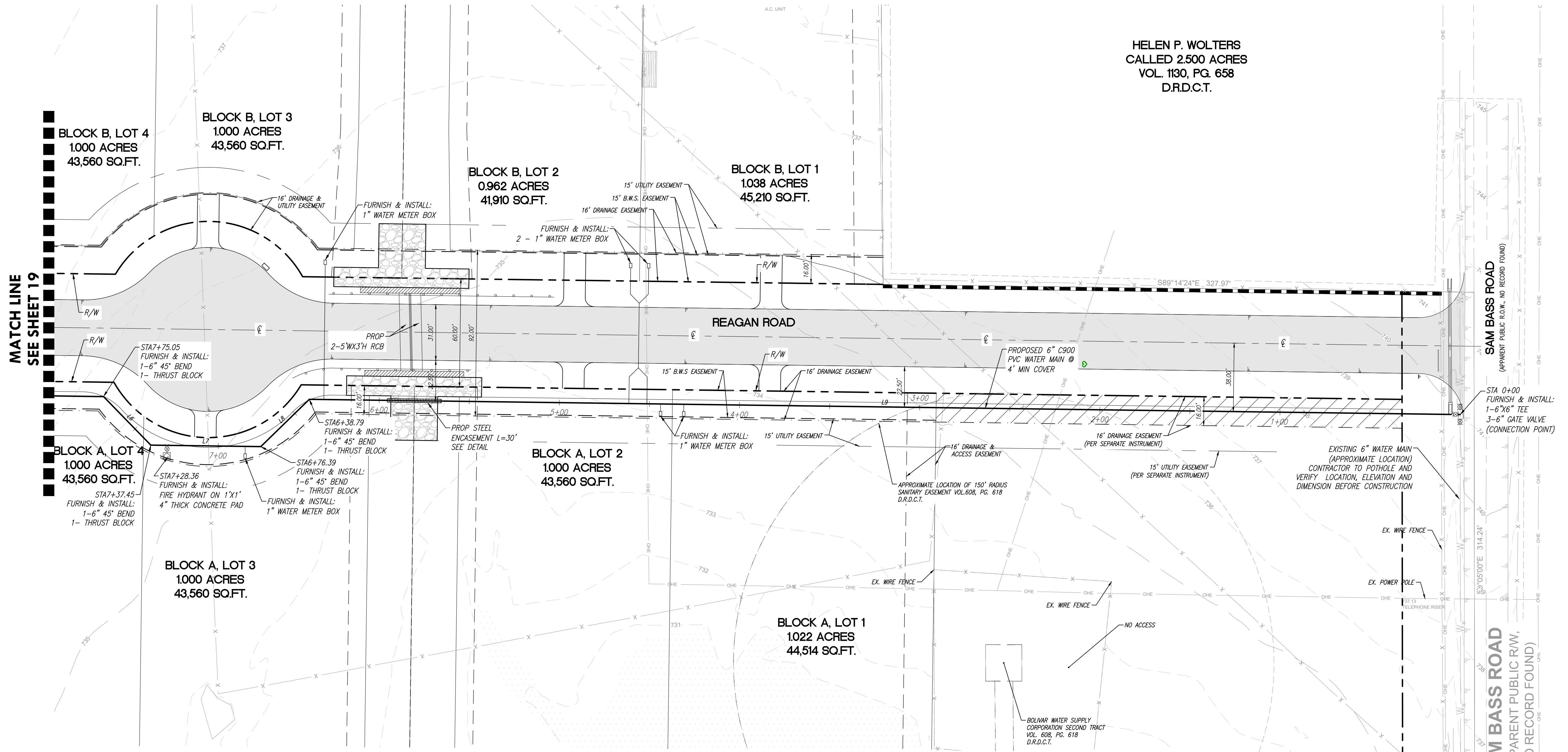
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JAN 2024



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CULVERT PLAN & PROFILE
 FOR
MARLEY MEADOWS

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 VOL. 1130, PG. 658
 D.R.D.C.T.

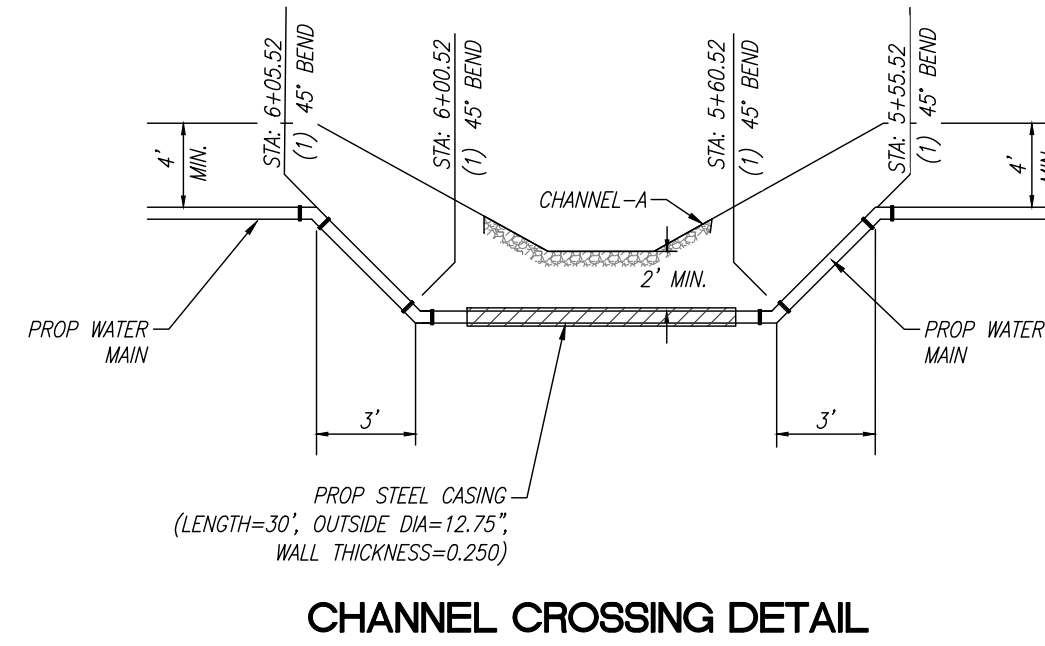
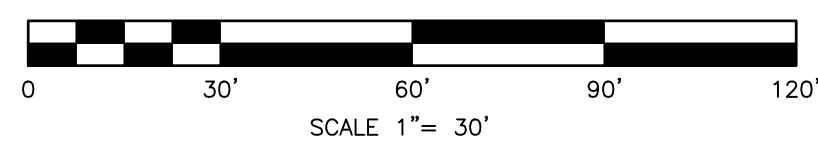
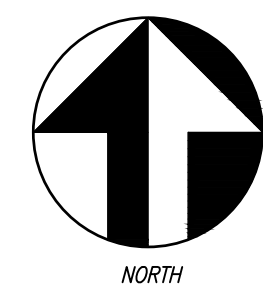


MATCH LINE
 SEE SHEET 19

SAM BASS ROAD
 (APPARENT PUBLIC R.O.W., NO RECORD FOUND)

M BASS ROAD
 (APPARENT PUBLIC R.O.W., NO RECORD FOUND)

SEWER = SEPTIC SYSTEM



Line #	Length	Direction
L6	37.60	S44° 14' 23.69"E
L7	61.05	S89° 14' 23.84"E
L8	37.60	N45° 45' 36.17"E
L9	638.79	S89° 14' 23.76"E

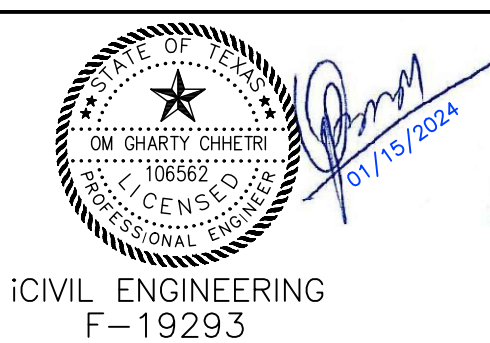
NOTE:
 THE LOCATION AND DEPTH OF ALL UTILITIES SHOWN ON THE PLANS ARE APPROXIMATE AND THERE MAY BE OTHER UNKNOWN EXISTING UTILITIES NOT SHOWN ON THE PLANS. ALL EXISTING UTILITIES SHALL BE FIELD VERIFIED AND PROTECTED BY THE CONTRACTOR PRIOR TO THE START OF CONSTRUCTION. THE CONTRACTOR SHALL CONTACT THE RESPECTIVE UTILITY COMPANIES 72 HOURS PRIOR TO DOING ANY WORK IN THE AREA.



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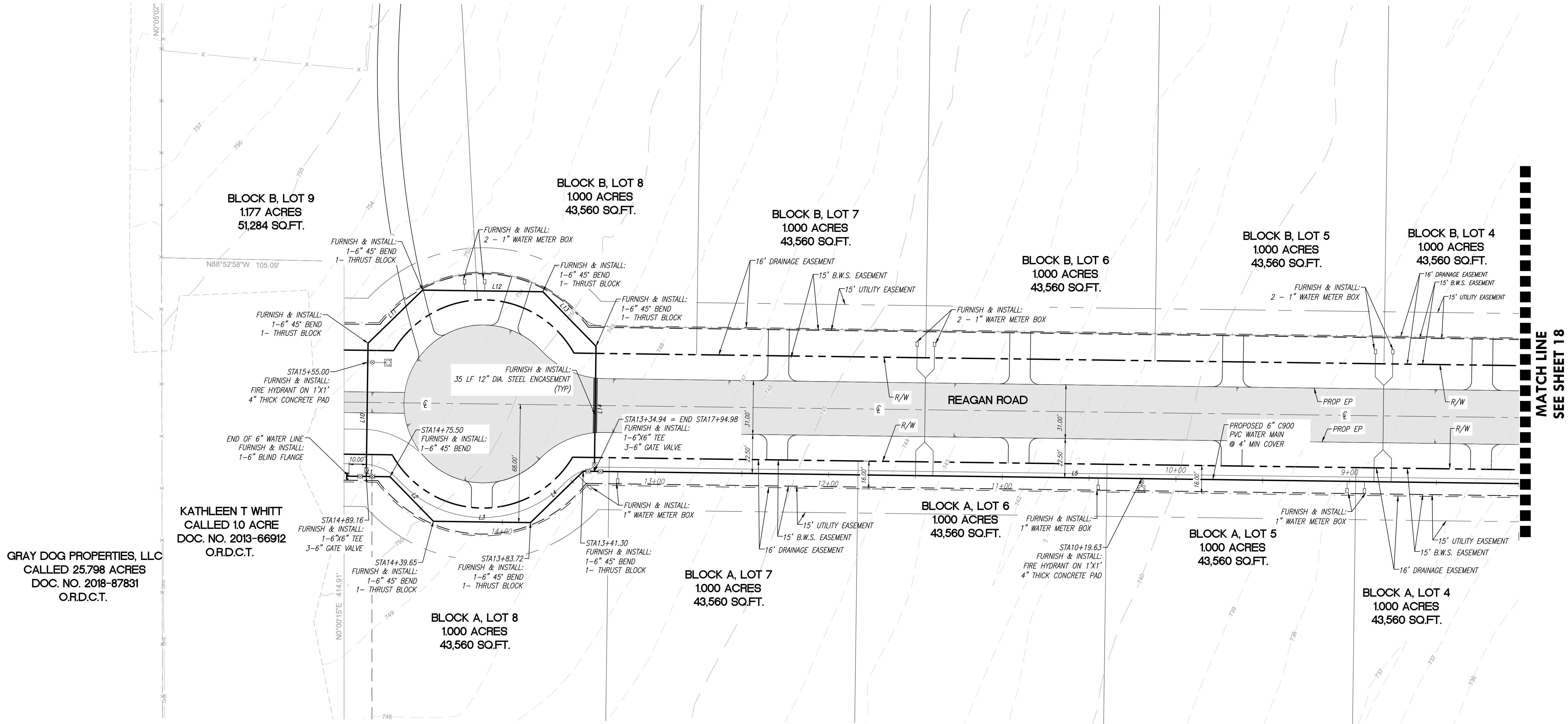
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SANGER, TEXAS
WATER PLAN
 FOR
MARLEY MEADOWS

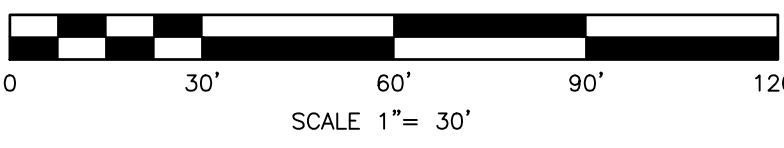
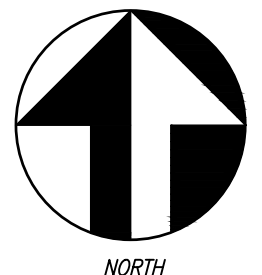
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MATCH LINE
SEE SHEET 18

GRAY DOG PROPERTIES, LLC
CALLED 25.798 ACRES
DOC. NO. 2018-87831
O.R.D.C.T.

KATHLEEN T WHITT
CALLED 1.0 ACRE
DOC. NO. 2013-66912
O.R.D.C.T.



Water Line Table

Line #	Length	Direction
L1	23.67	S89° 14' 23.68"E
L2	35.84	S44° 14' 23.69"E
L3	55.93	S89° 14' 23.76"E
L4	42.42	N45° 45' 36.17"E
L5	566.25	S89° 14' 23.76"E
L10	76.74	N0° 45' 36.38"E
L11	43.86	N45° 45' 36.17"E
L12	69.26	S89° 14' 23.76"E
L13	43.88	S44° 14' 23.69"E
L14	72.08	S0° 45' 36.31"W

SEWER = SEPTIC SYSTEM

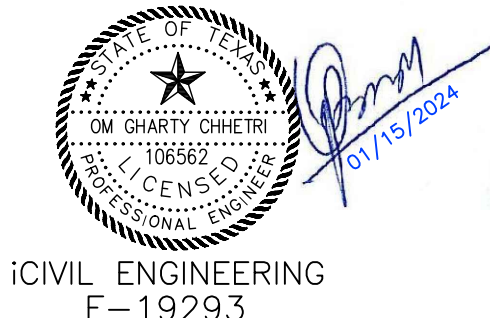
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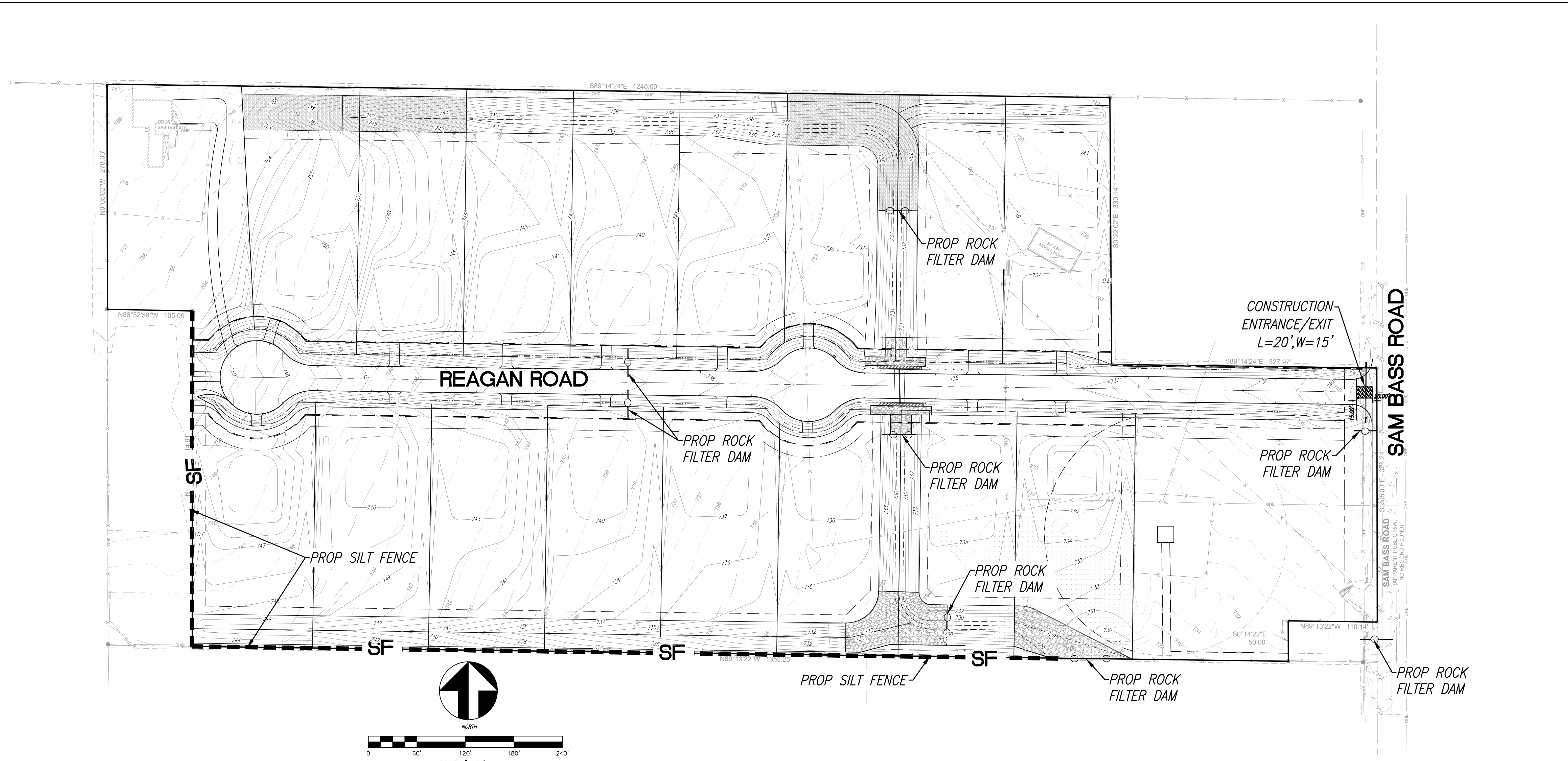
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LEGEND

- ROCK FILTER DAM
- SILT FENCE OR APPROVED EQUAL
- DRAINAGE FLOW DIRECTION
- CONSTRUCTION ENTRANCE/EXIT
- SODDING

PHASE	DESCRIPTION
1	INSTALL INITIAL BMPs
2	GRADING & DITCH/CHANNEL
3	UNDERGROUND UTILITY INSTALLATION
4	PAVING OPERATIONS
5	ESTABLISH PERMANENT GROUND COVER
6	REMOVE TEMPORARY BMPs

EROSION AND SEDIMENT CONTROL

1. SOIL STABILIZATION PRACTISES (T-TEMPORARY P-PERMANENT)

- BUFFER ZONE
- PLANTING
- SODDING
- RIPRAP AT OUTLET

2. STRUCTURAL PRACTISES

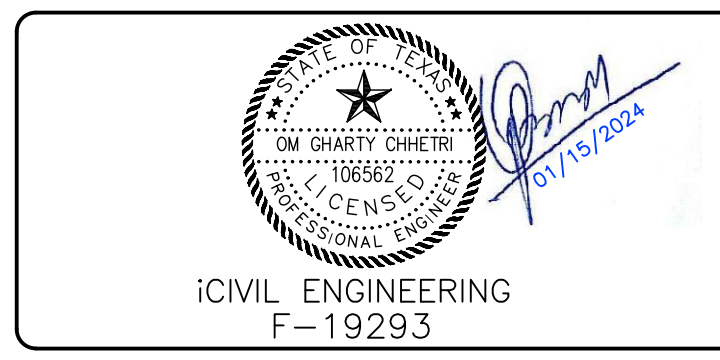
- SILT FENCE
- ROCK FILTER DAMS
- INLETS AND PIPES
- STORM INLET SEDIMENT TRAP
- PIPE SLOPE DRAINS
- STONE RIPRAP AT DISCHARGE POINT
- CULVERTS



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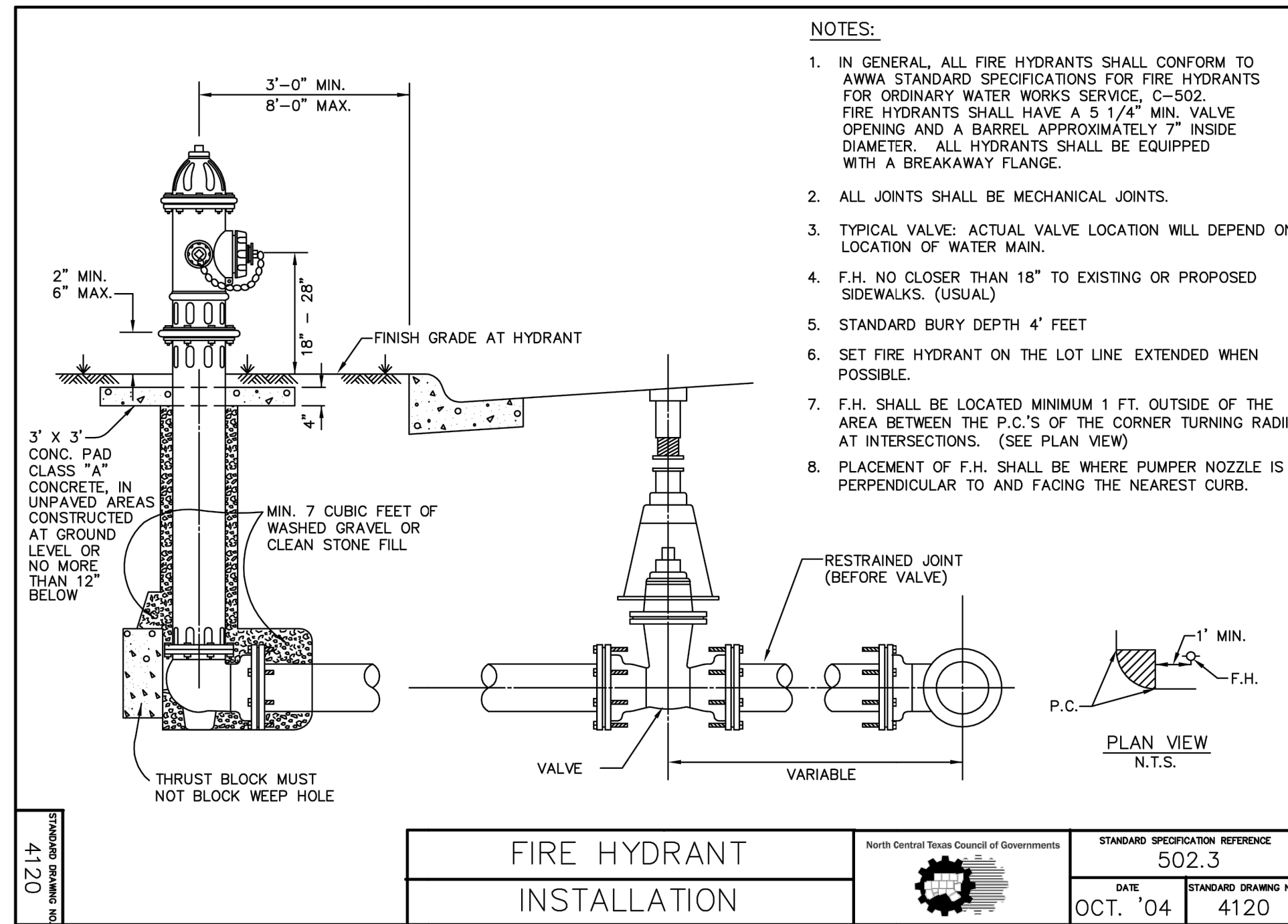
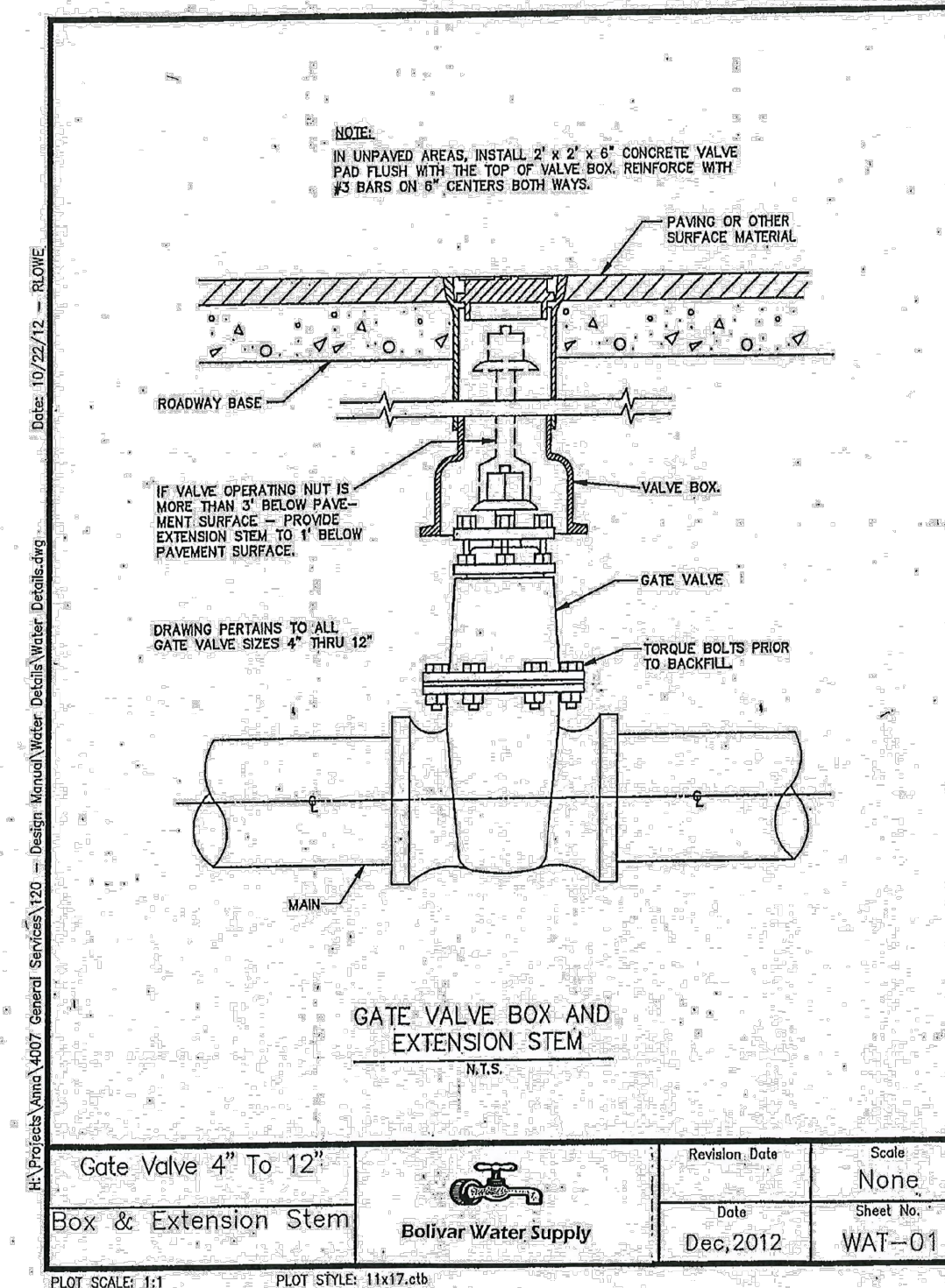
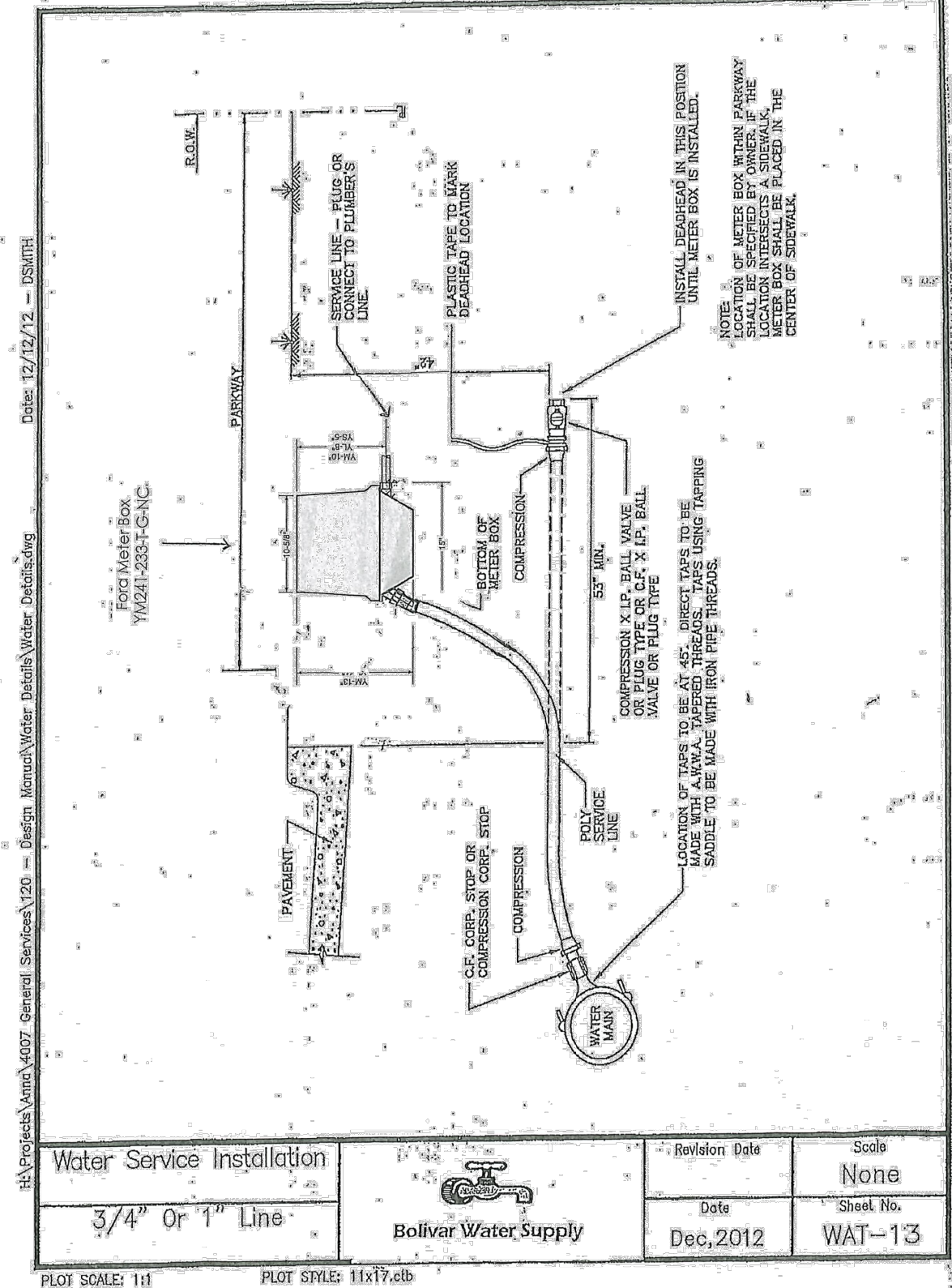
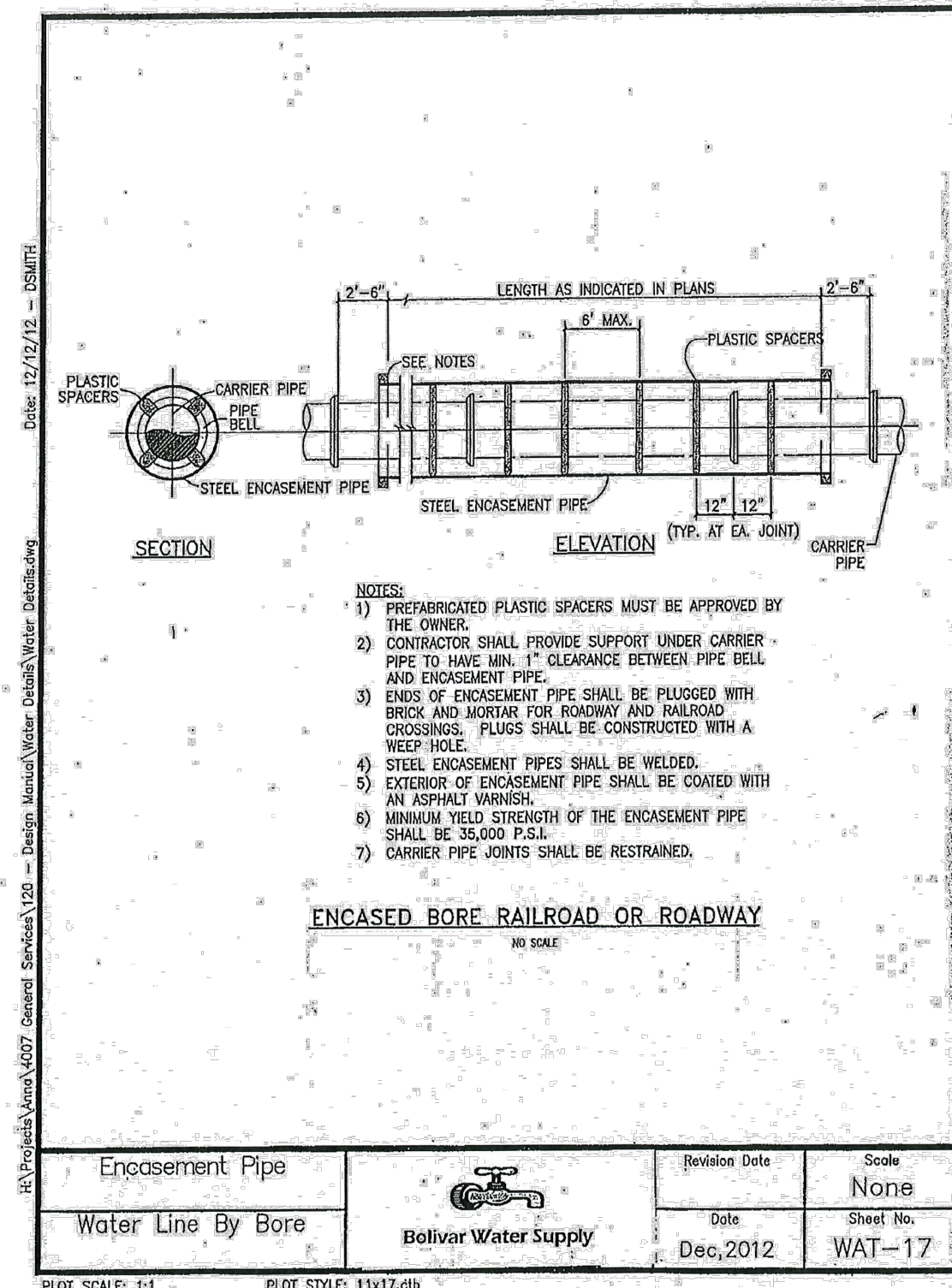
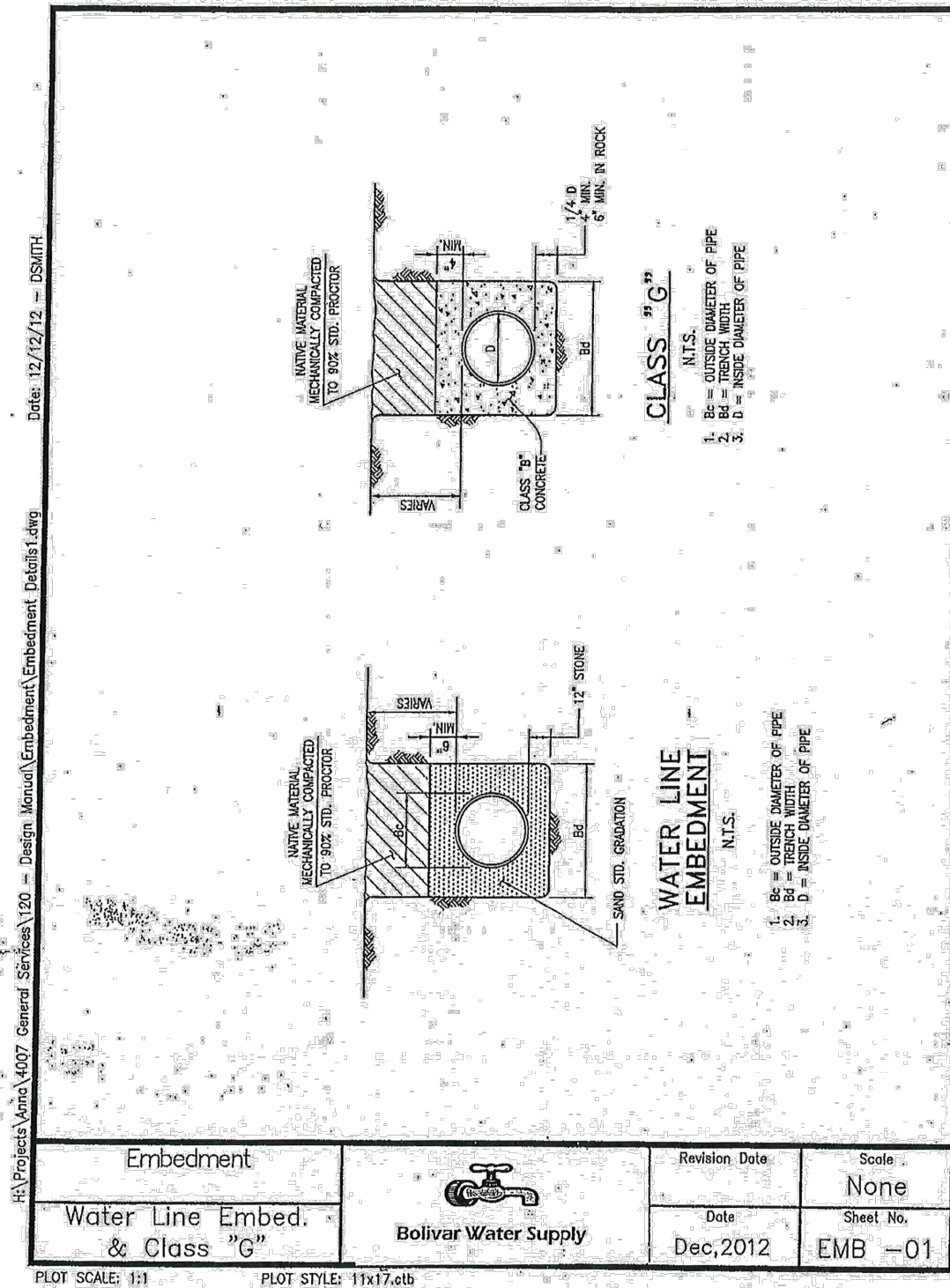
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SANGER, TEXAS
EROSION CONTROL PLAN
 FOR
MARLEY MEADOWS

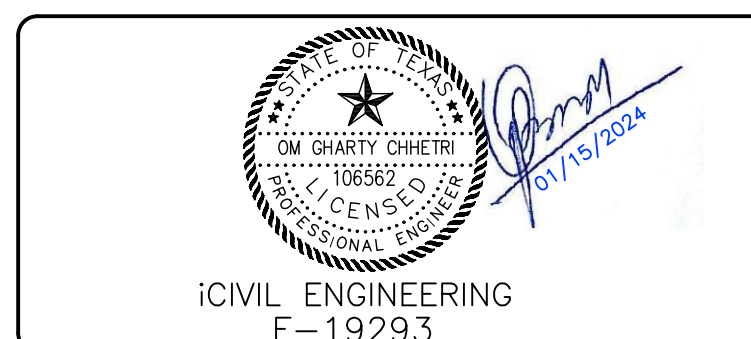
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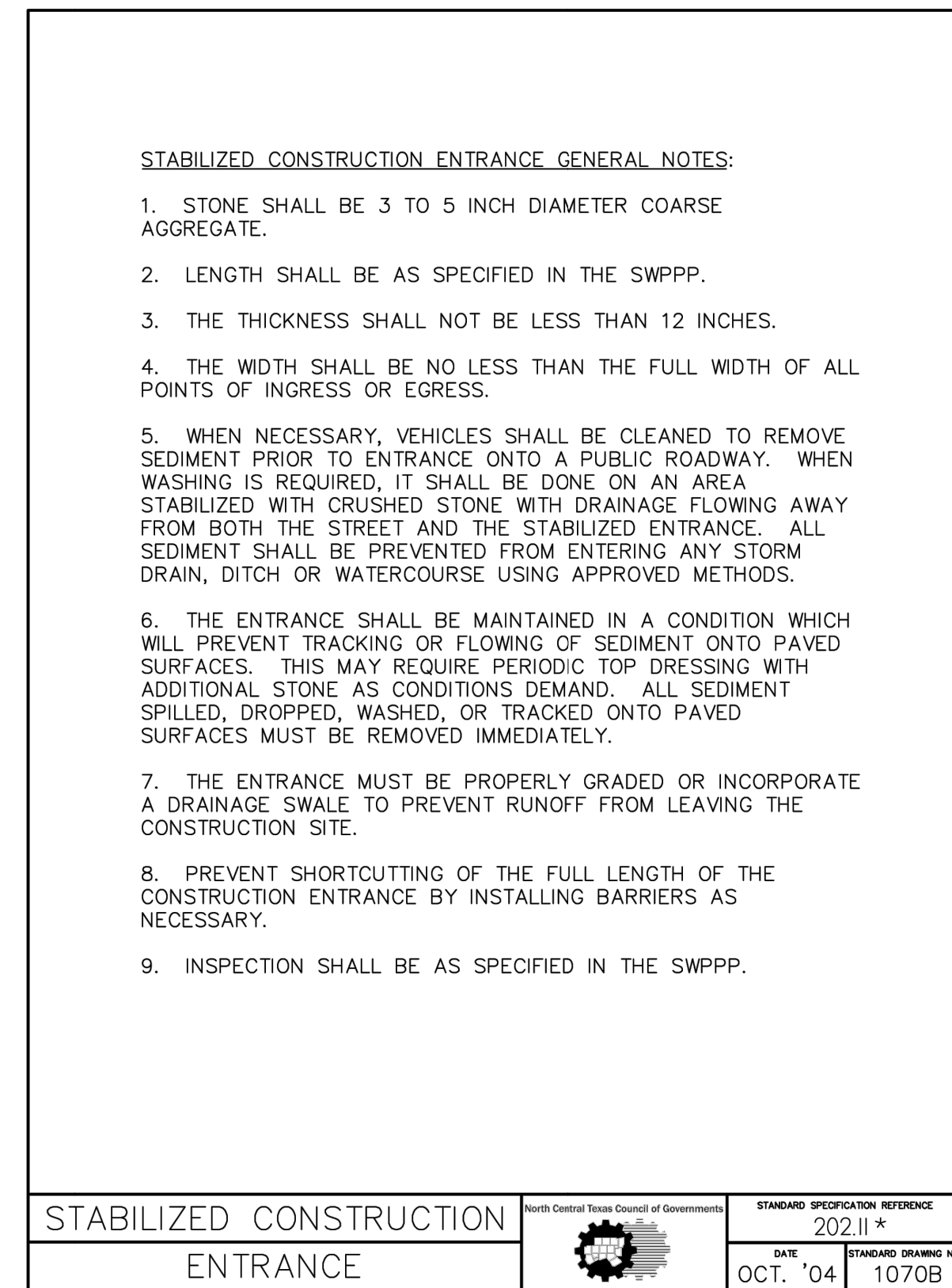
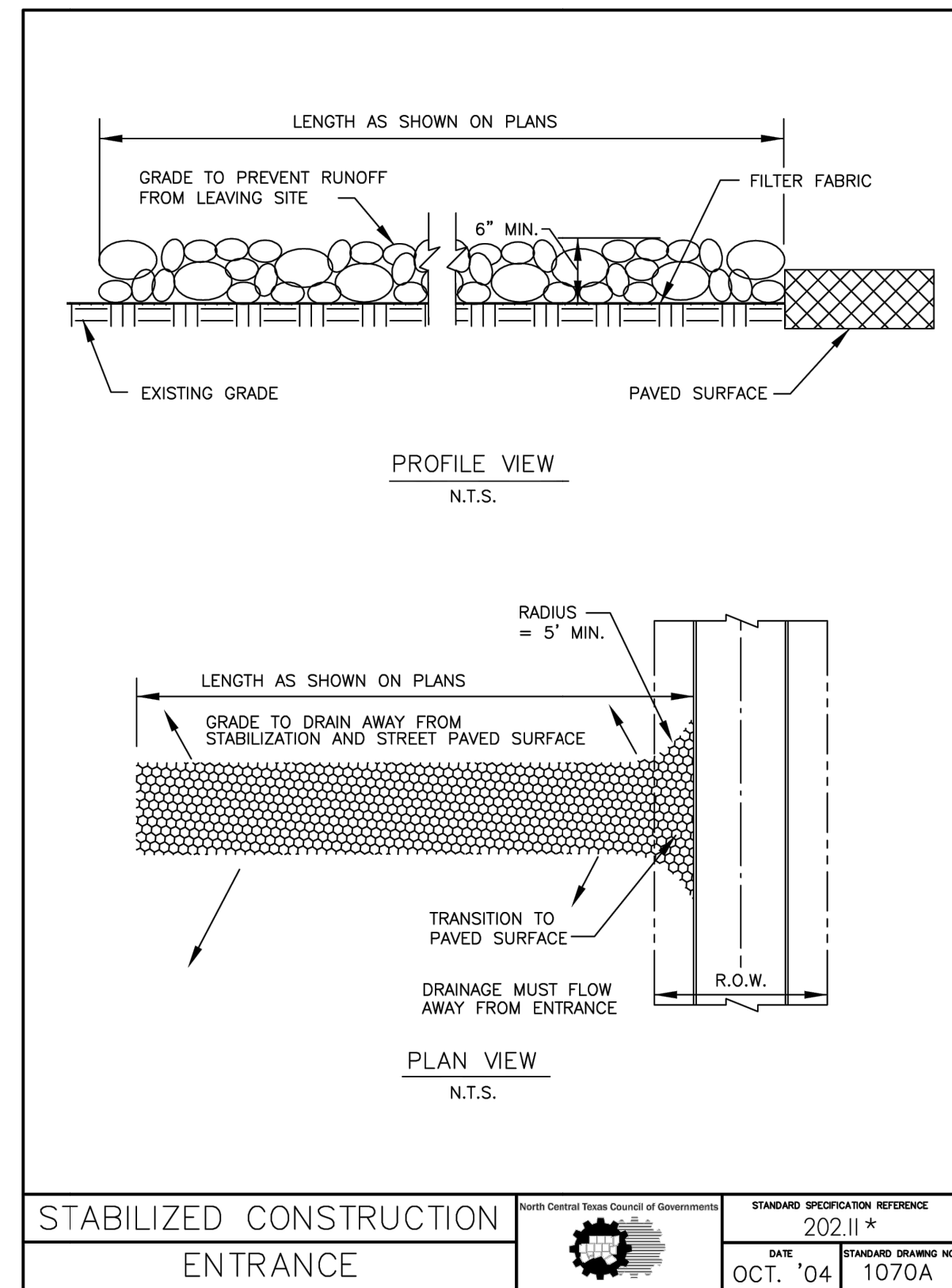
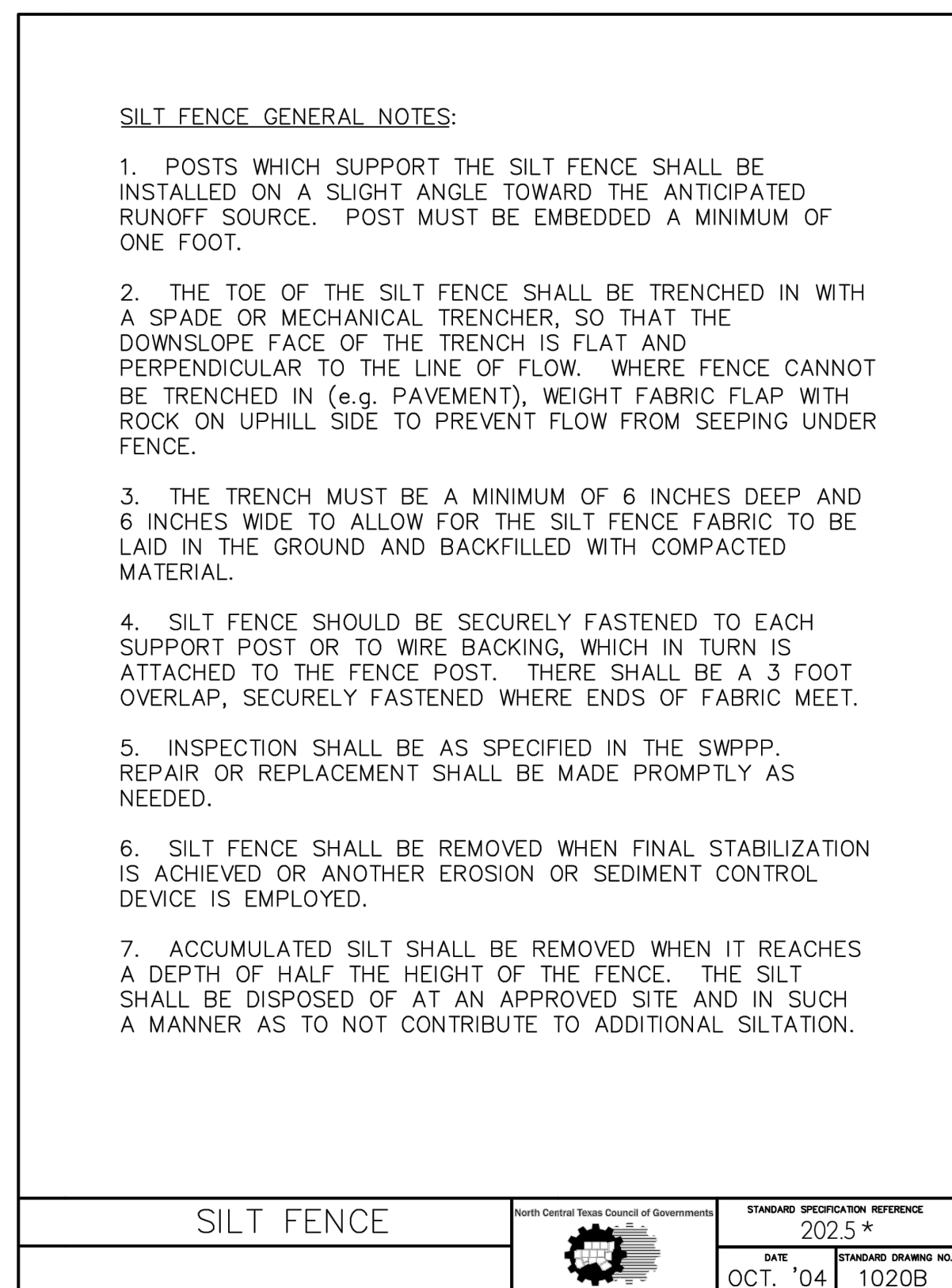
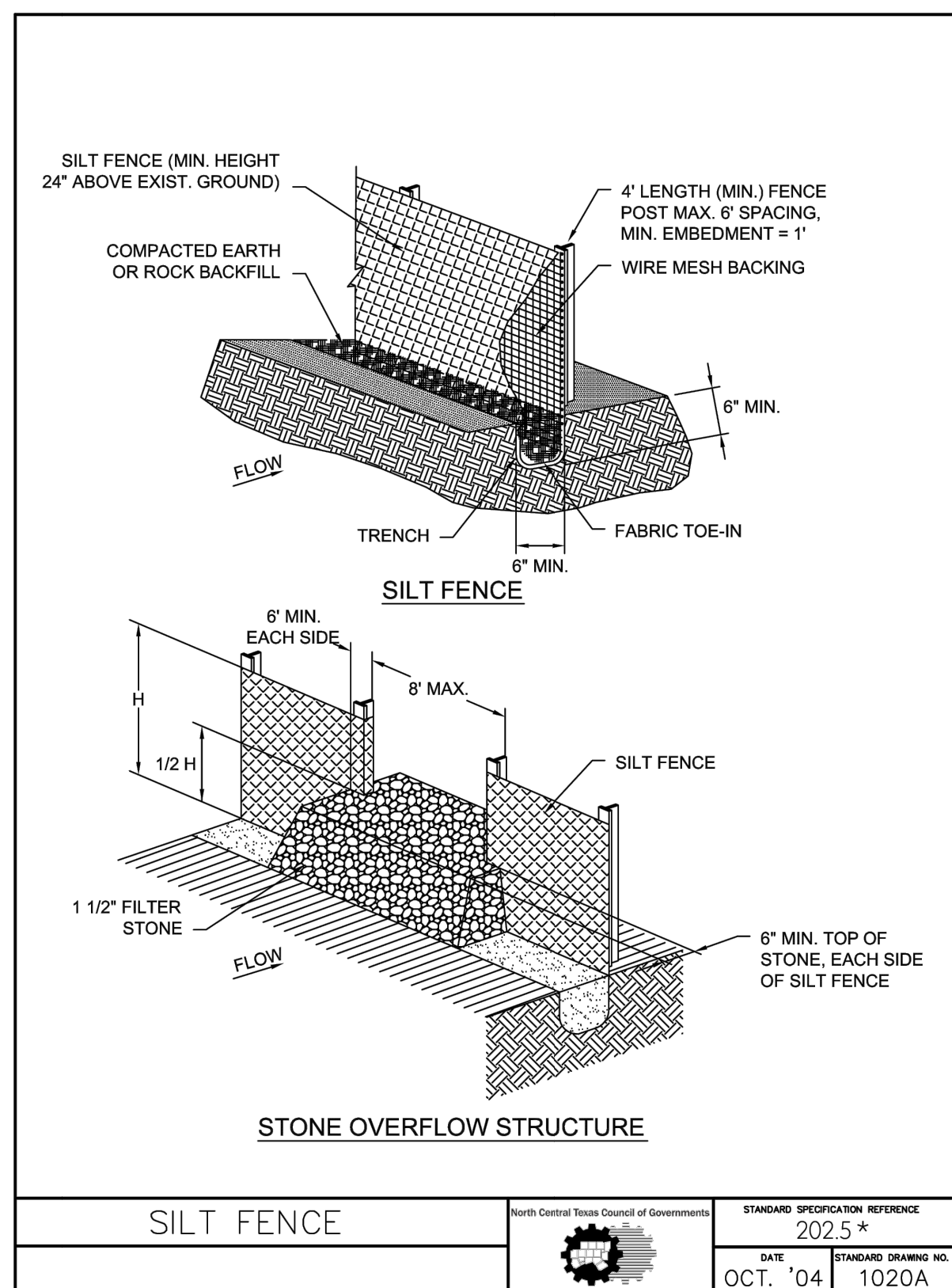
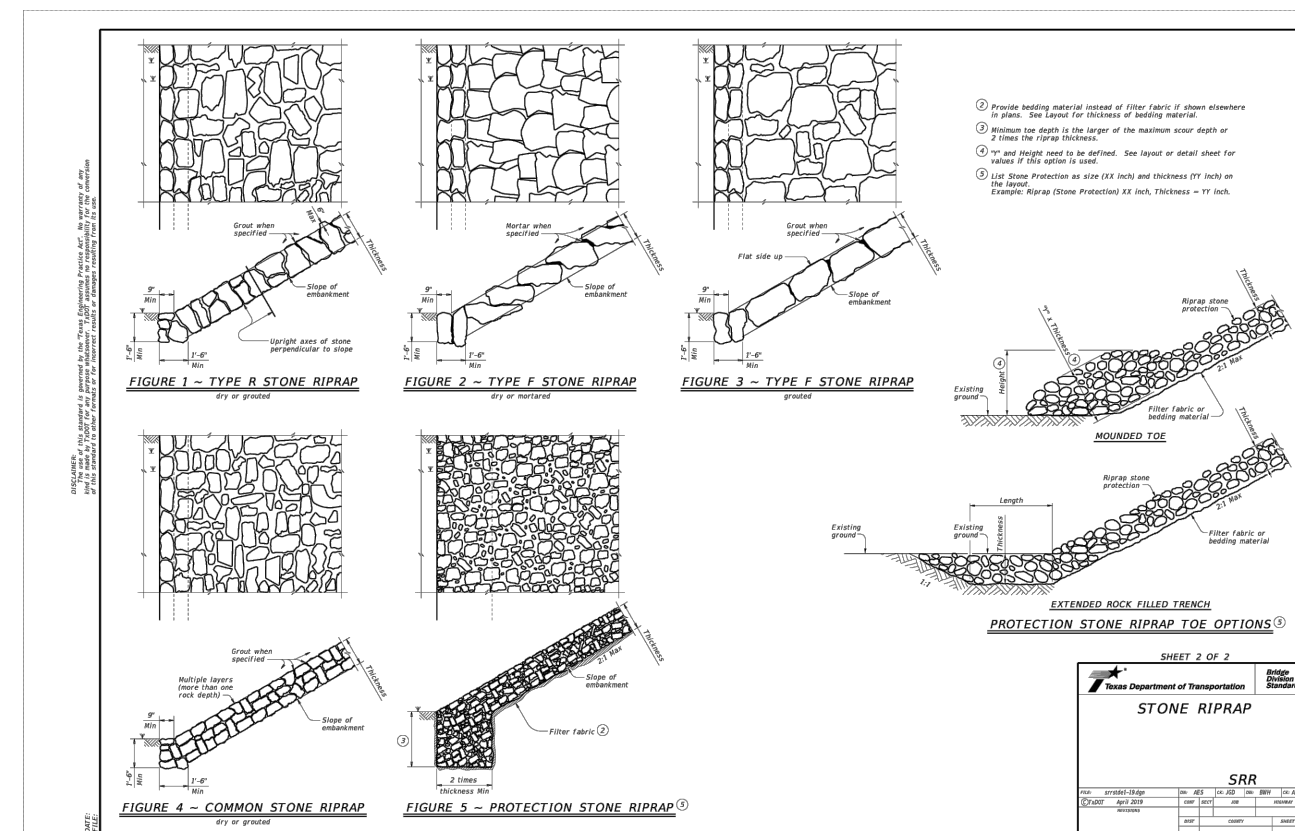
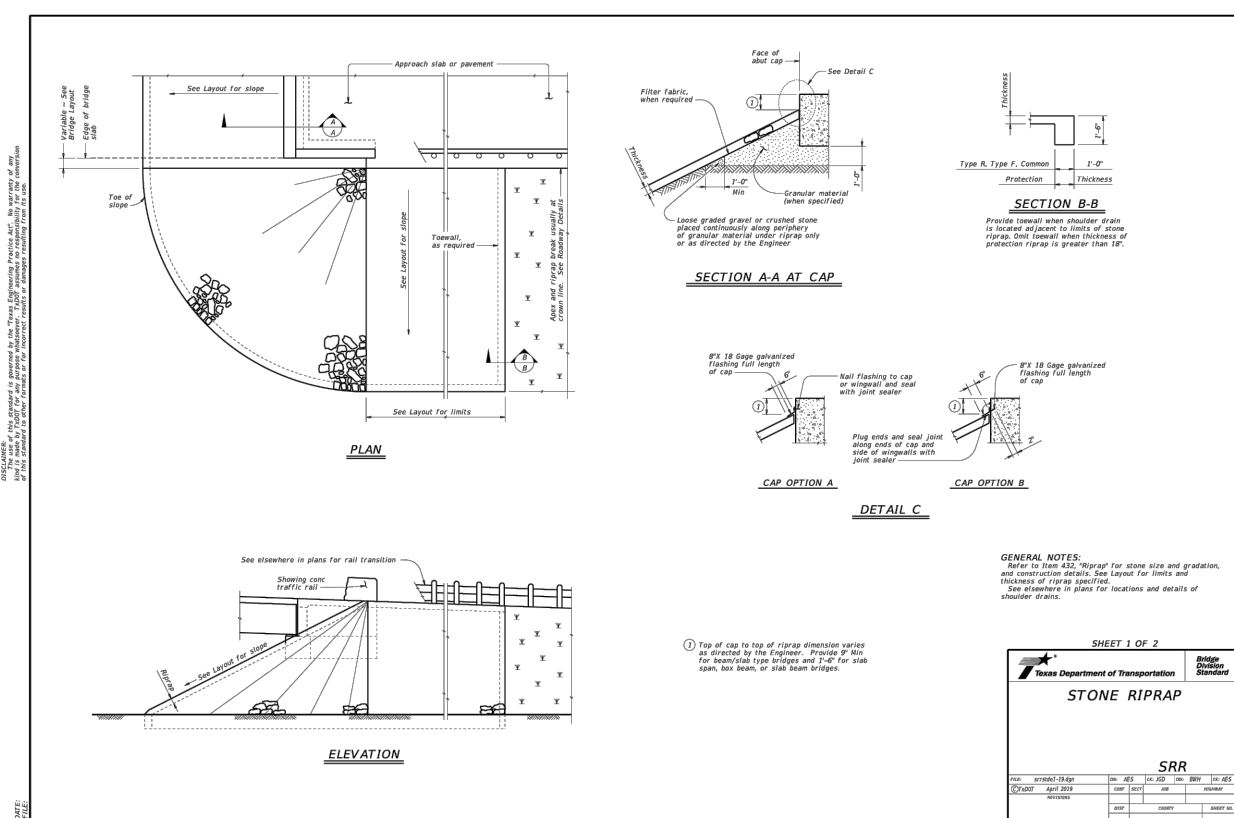
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SANGER, TEXAS
 DETAILS
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*Section II Standard Drawings as of October 2004. Reference number only has been updated for Fifth Edition Specifications. Public Works Construction Standards North Central Texas, Fifth Edition.

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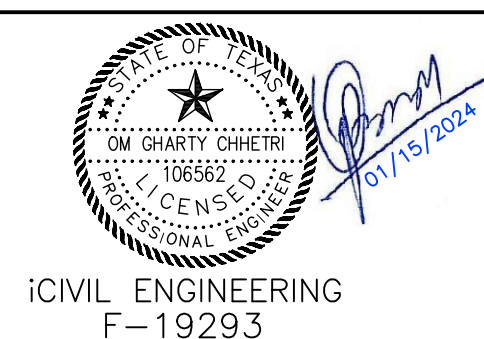
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