MEYER RANCH UNIT 16

COMAL COUNTY, TEXAS

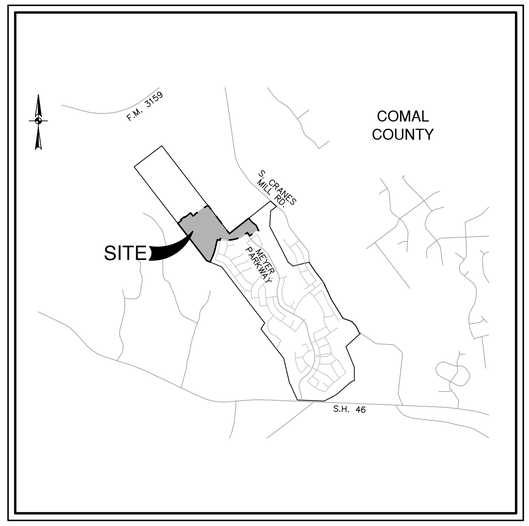
CIVIL CONSTRUCTION PLANS

SHEET INDEX

NOTES:

- ALL RESPONSIBILITY FOR THE ADEQUACY OF THESE PLANS LIES WITH THE ENGINEER WHO PREPARED THEM. IN REVIEWING AND APPROVING THESE PLANS, MEYER RANCH MUD MUST RELY ON THE SUFFICIENCY OF THE DESIGN. APPROVAL DOES NOT CONSTITUTE VERIFICATION OF DATA, CALCULATIONS, OR DESIGN.

APPROVED BY: MEYER RANCH MUD.



LOCATION MAP

NOT-TO-SCALE

PREPARED FOR:

CCD MEYER RANCH LAND, LLC.
1751A W. DIEHL RD.
NAPERVILLE, IL 60563

DECEMBER 2024

PAPE-DAWSON ENGINEERS

1672 INDEPENDENCE DR, STE 102 I NEW BRAUNFELS, TX 78132 I 830.632.5633

TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

SHEET INDEX

STATE OF TEXAS
TODD W. BLACKMON
89208
LICENSED
PROFESSIONAL ENGINEER
1-10-2025

SHEET C0.00

PD JOB NO. 30010-27 MEYER RANCH UNIT 16

FOR PERMIT

PROPOSED CONSTRUCTION SEQUENCE

1. PRE–CONSTRUCTION CONFERENCE
2. INSTALL TEMPORARY STORMWATER EROSION CONTROL MEASURES IN AFFECTED CONSTRUCTION AREAS AND STABILIZED CONSTRUCTION ENTRANCES/EXITS.
3. INSTALL TREE PRESERVATION MEASURES, IF REQUIRED.
4. EXCAVATE STREETS.
5. CONSTRUCT DRAINAGE.
6. CONSTRUCT WASTEWATER SYSTEM.
7. CONSTRUCT WATER SYSTEM.
8. CONSTRUCT SUBGRADE AND BASE FOR STREETS.
9. CONSTRUCT CURBS FOR STREETS.
10. CONSTRUCT ASPHALT PAVEMENT FOR STREETS.
11. ESTABLISH SITE STABILIZATION.
12. REMOVE ALL TEMPORARY STORMWATER EROSION CONTROL MEASURES.

NOTES

1. SOME ITEMS ABOVE WILL OCCUR SIMULTANEOUSLY OR MAY OCCUR OUT OF SEQUENCE INDICATED.
2. ALL SEQUENCES SUBJECT TO CHANGE.

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY WATER POLLUTION ABATEMENT PLAN GENERAL CONSTRUCTION NOTES

1. A WRITTEN NOTICE OF CONSTRUCTION MUST BE SUBMITTED TO THE TCEQ REGIONAL OFFICE AT LEAST 48 HOURS PRIOR TO THE START OF ANY REGULATED ACTIVITIES. THIS NOTICE MUST INCLUDE:
   – THE NAME OF THE APPROVED PROJECT;
   – THE ACTIVITY START DATE; AND
   – THE CONTACT INFORMATION OF THE PRIME CONTRACTOR.

2. ALL CONTRACTORS CONDUCTING REGULATED ACTIVITIES ASSOCIATED WITH THIS PROJECT MUST BE PROVIDED WITH COMPLETE COPIES OF THE APPROVED WATER POLLUTION ABATEMENT PLAN (WPAP) AND THE TCEQ LETTER INDICATING THE SPECIFIC CONDITIONS OF ITS APPROVAL. DURING THE COURSE OF THESE REGULATED ACTIVITIES, THE CONTRACTORS ARE REQUIRED TO KEEP ON–SITE COPIES OF THE APPROVED PLAN AND APPROVAL LETTER.

3. IF ANY SENSITIVE FEATURE(S) (CAVES, SOLUTION CAVITY, SINK HOLE, ETC.) IS DISCOVERED DURING CONSTRUCTION, ALL REGULATED ACTIVITIES NEAR THE SENSITIVE FEATURE MUST BE SUSPENDED IMMEDIATELY. THE APPROPRIATE TCEQ REGIONAL OFFICE MUST BE IMMEDIATELY NOTIFIED OF ANY SENSITIVE FEATURES ENCOUNTERED DURING CONSTRUCTION. CONSTRUCTION ACTIVITIES MAY NOT BE RESUMED UNTIL THE TCEQ HAS REVIEWED AND APPROVED THE APPROPRIATE PROTECTIVE MEASURES IN ORDER TO PROTECT ANY SENSITIVE FEATURE AND THE EDWARDS AQUIFER FROM POTENTIALLY ADVERSE IMPACTS TO WATER QUALITY.

4. NO TEMPORARY OR PERMANENT HAZARDOUS SUBSTANCE STORAGE TANK SHALL BE INSTALLED WITHIN 150 FEET OF A WATER SUPPLY SOURCE, DISTRIBUTION SYSTEM, WELL, OR SENSITIVE FEATURE.

5. PRIOR TO BEGINNING ANY CONSTRUCTION ACTIVITY, ALL TEMPORARY EROSION AND SEDIMENTATION (E&S) CONTROL MEASURES MUST BE PROPERLY INSTALLED AND MAINTAINED IN ACCORDANCE WITH THE APPROVED PLANS AND MANUFACTURERS SPECIFICATIONS. IF INSPECTIONS INDICATE A CONTROL HAS BEEN USED INAPPROPRIATELY, OR INCORRECTLY, THE APPLICANT MUST REPLACE OR MODIFY THE CONTROL FOR SITE SITUATIONS. THESE CONTROLS MUST REMAIN IN PLACE UNTIL THE DISTURBED AREAS HAVE BEEN PERMANENTLY STABILIZED.

6. ANY SEDIMENT THAT ESCAPES THE CONSTRUCTION SITE MUST BE COLLECTED AND PROPERLY DISPOSED OF BEFORE THE NEXT RAIN EVENT TO ENSURE IT IS NOT WASHED INTO SURFACE STREAMS, SENSITIVE FEATURES, ETC.

7. SEDIMENT MUST BE REMOVED FROM THE SEDIMENT TRAPS OR SEDIMENTATION BASINS NOT LATER THAN WHEN IT OCCUPIES 50% OF THE BASIN'S DESIGN CAPACITY.

8. LITTER, CONSTRUCTION DEBRIS, AND CONSTRUCTION CHEMICALS EXPOSED TO STORMWATER SHALL BE PREVENTED FROM BEING DISCHARGED OFFSITE.

9. ALL SPOILS (EXCAVATED MATERIAL) GENERATED FROM THE PROJECT SITE MUST BE STORED ON–SITE WITH PROPER E&S CONTROLS. FOR STORAGE OR DISPOSAL OF SPOILS AT ANOTHER SITE ON THE EDWARDS AQUIFER RECHARGE ZONE, THE OWNER OF THE SITE MUST RECEIVE APPROVAL OF A WATER POLLUTION ABATEMENT PLAN FOR THE PLACEMENT OF FILL MATERIAL OR MASS GRADING PRIOR TO THE PLACEMENT OF SPOILS AT THE OTHER SITE.

10. IF PORTIONS OF THE SITE WILL HAVE A TEMPORARY OR PERMANENT CEASE IN CONSTRUCTION ACTIVITY LASTING LONGER THAN 14 DAYS, SOIL STABILIZATION IN THOSE AREAS SHALL BE INITIATED AS SOON AS POSSIBLE PRIOR TO THE 14TH DAY OF INACTIVITY. IF ACTIVITY WILL RESUME PRIOR TO THE 21ST DAY, STABILIZATION MEASURES ARE NOT REQUIRED. IF DROUGHT CONDITIONS OR INCLEMENT WEATHER PREVENT ACTION BY THE 14TH DAY, STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS POSSIBLE.

11. THE FOLLOWING RECORDS SHALL BE MAINTAINED AND MADE AVAILABLE TO THE TCEQ UPON REQUEST:
   – THE DATES WHEN MAJOR GRADING ACTIVITIES OCCUR;
   – THE DATES WHEN CONSTRUCTION ACTIVITIES TEMPORARILY OR PERMANENTLY CEASE ON A PORTION OF THE SITE; AND
   – THE DATES WHEN STABILIZATION MEASURES ARE INITIATED.

12. THE HOLDER OF ANY APPROVED EDWARD AQUIFER PROTECTION PLAN MUST NOTIFY THE APPROPRIATE REGIONAL OFFICE IN WRITING AND OBTAIN APPROVAL FROM THE EXECUTIVE DIRECTOR PRIOR TO INITIATING ANY OF THE FOLLOWING:

   A. ANY PHYSICAL OR OPERATIONAL MODIFICATION OF ANY WATER POLLUTION ABATEMENT STRUCTURE(S), INCLUDING BUT NOT LIMITED TO PONDS, DAMS, BERMS, SEWAGE TREATMENT PLANTS, AND DIVERSIONARY STRUCTURES;
   B. ANY CHANGE IN THE NATURE OR CHARACTER OF THE REGULATED ACTIVITY FROM THAT WHICH WAS ORIGINALLY APPROVED OR A CHANGE WHICH WOULD SIGNIFICANTLY IMPACT THE ABILITY OF THE PLAN TO PREVENT POLLUTION OF THE EDWARDS AQUIFER;
   C. ANY DEVELOPMENT OF LAND PREVIOUSLY IDENTIFIED AS UNDEVELOPED IN THE ORIGINAL WATER POLLUTION ABATEMENT PLAN.

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

GENERAL NOTES

1. IF CONSTRUCTION HAS NOT COMMENCED WITHIN ONE YEAR OF COUNTY APPROVAL FOR CONSTRUCTION INSPECTION THAT APPROVAL IS NOT LONGER VALID.

2. THE MOST CURRENT EDITIONS OF COMAL COUNTY STANDARD SPECIFICATIONS AND THE TEXAS DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR CONSTRUCTION OF HIGHWAYS, STREETS, AND BRIDGES SHALL BE FOLLOWED FOR ALL CONSTRUCTION EXCEPT AS AMENDED BY THE CITY OF NEW BRAUNFELS STANDARD DETAILS.

3. PRIOR TO THE START OF CONSTRUCTION THE CONTRACTOR SHALL CONTACT COMAL COUNTY TO SET A PRECONSTRUCTION MEETING. A 48–HOUR NOTIFICATION IS REQUIRED FOR ALL INSPECTION AND MEETING REQUESTS.

4. IT IS THE CONTRACTOR'S RESPONSIBILITY TO SEE THAT ALL TEMPORARY AND PERMANENT TRAFFIC CONTROL DEVICES ARE PROPERLY INSTALLED AND MAINTAINED IN ACCORDANCE WITH THE PLANS AND THE LATEST EDITION OF THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES. IF, IN THE OPINION OF THE ENGINEERING REPRESENTATIVE AND THE CONSTRUCTION INSPECTOR, THE BARRICADES AND SIGNS DO NOT CONFORM TO THE ESTABLISHED STANDARDS OR ARE INCORRECTLY PLACED OR ARE INSUFFICIENT IN QUALITY TO PROTECT THE GENERAL PUBLIC, THE CONSTRUCTION INSPECTOR SHALL HAVE OPTION TO STOP OPERATIONS UNTIL SUCH TIME AS THE CONDITIONS ARE CORRECTED. IF THE NEED ARISES, ADDITIONAL TEMPORARY TRAFFIC CONTROL DEVICES MAY BE ORDERED BY THE ENGINEERING REPRESENTATIVE AT THE CONTRACTOR'S EXPENSE.

5. A TXDOT TYPE II B–B BLUE REFLECTIVE RAISED PAVEMENT MARKER SHALL BE INSTALLED IN THE CENTER OF THE ROADWAY ADJACENT TO ALL FIRE HYDRANTS. THE RAISED PAVEMENT MARKER SHALL MEET TXDOT MATERIAL, EPOXY, AND ADHESIVE SPECIFICATIONS.

6. COMAL COUNTY WILL INSPECT DRAINAGE AND ROADWAY. UTILITY INSPECTIONS BY UTILITY PROVIDER.

7. SIDEWALKS ADJACENT TO SINGLE FAMILY LOTS ARE TO BE CONSTRUCTED WITH EACH SINGLE FAMILY HOUSE.

SIGNING AND PAVEMENT MARKING PLAN NOTES

1. COMAL COUNTY WILL INSTALL COUNTY ROAD SIGNS AND INVOICE THE OWNER. THE CONTRACTOR IS TO INSTALL PAVEMENT MARKINGS. ALL ROAD SIGNS AND PAVEMENT MARKINGS SHALL BE INSTALLED IN ACCORDANCE WITH THE APPROVED ENGINEERING PLANS. THE COUNTY WILL INSPECT ALL SIGNS AT FINAL INSPECTION.

2. THE CONTRACTOR SHALL INSTALL ALL PAVEMENT MARKINGS IN ACCORDANCE WITH APPROVED ENGINEERING PLANS. THE CONTRACTOR SHALL NOTIFY THE COUNTY AT LEAST 24 HOURS PRIOR TO THE INSTALLATION OF ALL SEALER AND FINAL MARKINGS. THE COUNTY WILL INSPECT ALL MARKINGS AT FINAL APPLICATION.

NO.	REVISION	DATE

12 - 27 - 2024
STATE OF TEXAS
TODD W. BLACKMON
89208
LICENSED
PROFESSIONAL ENGINEER

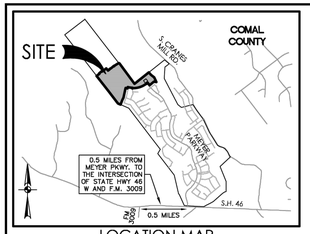
PAPE-DAWSON ENGINEERS
1672 INDEPENDENCE DR, STE 102 | NEW BRAUNFELS, TX 78132 | 830.632.5633
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

MEYER RANCH UNIT 16
COMAL COUNTY, TEXAS
CONSTRUCTION NOTES

PLAT NO.
JOB NO. 30010–27
DATE DECEMBER 2024
DESIGNER CL
CHECKED HF DRAWN BH
SHEET C0.01

Date: Dec 17, 2024, 10:55am User ID: ALeddy
File: P:\300\10\27\Design\Civil\CN–300027.dwg

FOR PERMIT



LOCATION MAP

NOT-TO-SCALE

LEGEND

AC	ACRE(S)	VOL	VOLUME
BSL	BUILDING SETBACK LINE	PG	PAGE(S)
DED	DEDICATION	ROW	RIGHT-OF-WAY
DOC	DOCUMENT NUMBER	*	REPETITIVE BEARING AND/OR DISTANCE
MPRCCT	MAP AND PLAT RECORDS OF COMAL COUNTY, TEXAS	●	FOUND 1/2" IRON ROD (UNLESS NOTED OTHERWISE)
OPRCCT	OFFICIAL PUBLIC RECORDS (OFFICIAL PUBLIC RECORDS OF REAL PROPERTY) OF COMAL COUNTY, TEXAS	(SURVEYOR)	
		○	SET 1/2" IRON ROD (PD)
		○	SET 1/2" IRON ROD (PD) ROW

— 1140 — EXISTING CONTOURS
═ ═ ═ FEMA 100-YR FLOOD/PLAIN ZONE "A"
— — — BUILDING SETBACK LINE

1. 15' BUILDING SETBACK
2. 20' BUILDING SETBACK
3. 15' PUBLIC UTILITY EASEMENT
4. 20' PUBLIC UTILITY EASEMENT
5. VARIABLE WIDTH DRAINAGE AND SANITARY SEWER EASEMENT
1. 7.349 AC VARIABLE WIDTH DRAINAGE AND SANITARY SEWER EASEMENT (DOC 202206019261, OPRCCT)
2. 1.052 AC VARIABLE WIDTH WATER EASEMENT (DOC 202206007105, OPRCCT)
3. 47.479 AC VARIABLE WIDTH DRAINAGE AND SANITARY SEWER EASEMENT (DOC 202106004359, OPRCCT)
4. 20' BUILDING SETBACK (DOC 202206018241, OPRCCT)
5. 15' PUBLIC UTILITY EASEMENT (DOC 202206018241, OPRCCT)
6. 0.049 AC VARIABLE WIDTH DRAINAGE AND SANITARY SEWER EASEMENT (DOC 202206007098, OPRCCT)
7. 20' PUBLIC UTILITY EASEMENT (DOC 202206018241, OPRCCT)
8. 20' PUBLIC UTILITY EASEMENT (DOC 202306025526, OPRCCT)
9. _____ AC VARIABLE WIDTH DRAINAGE AND SANITARY SEWER EASEMENT (DOC 202_060_____, OPRCCT)
10. 15' PUBLIC UTILITY EASEMENT (DOC 202306025526, OPRCCT)
11. 20' BUILDING SETBACK (DOC 202306025526, OPRCCT)
12. 5.551 AC VARIABLE WIDTH DRAINAGE AND SANITARY SEWER EASEMENT (DOC 202306019260, OPRCCT)
13. VARIABLE WIDTH DRAINAGE AND SANITARY SEWER EASEMENT (DOC 2024060_____, OPRCCT)
14. 0.126 AC VARIABLE WIDTH DRAINAGE AND SANITARY SEWER EASEMENT (DOC 202306019255, OPRCCT)
15. _____ AC VARIABLE WIDTH DRAINAGE AND SANITARY SEWER EASEMENT (DOC 202_060_____, OPRCCT)
16. _____ AC 48'X120' DRAINAGE AND SANITARY SEWER EASEMENT (DOC 202_060_____, OPRCCT)
17. 10' WATER EASEMENT (DOC 202_060_____, OPRCCT)
18. 10' WATER EASEMENT (DOC 202_060_____, OPRCCT)
19. 30' DRAINAGE AND SANITARY SEWER EASEMENT (DOC 202_060_____, OPRCCT)
20. 10' WATER EASEMENT (DOC 202_060_____, OPRCCT)
21. 10' WATER EASEMENT (DOC 202_060_____, OPRCCT)
22. _____ AC VARIABLE WIDTH DRAINAGE AND SANITARY SEWER EASEMENT (DOC 202_060_____, OPRCCT)
1. MEYER RANCH UNIT 11 (DOC 202206018241, OPRCCT)
2. MEYER RANCH UNIT 13 (DOC 202306025526, OPRCCT)
3. HERITAGE OAKS - UNIT 2, LOT 15 DOC. NO. 423378
4. HEIMER HOUSE DESIGNATION (DOC 201606024051, OPRCCT)

STATE OF TEXAS
COUNTY OF COMAL

I HEREBY CERTIFY THAT THIS PLAT IS TRUE AND CORRECT AND WAS PREPARED FROM AN ACTUAL SURVEY OF THE PROPERTY MADE UNDER MY SUPERVISION ON THE GROUND.

KEITH W. WOOLEY
REGISTERED PROFESSIONAL LAND SURVEYOR #5463
PAPE-DAWSON ENGINEERS
1672 INDEPENDENCE DR SUITE 102
NEW BRAUNFELS, TEXAS 78132

SWORN TO AND SUBSCRIBED BEFORE ME THIS THE _____ DAY OF

_____, _____.

NOTARY PUBLIC IN AND FOR THE STATE OF TEXAS

GENERAL NOTES:

1. THIS SUBDIVISION DOES NOT LIE WITHIN THE EXTRATERRITORIAL JURISDICTION OF A MUNICIPALITY.
2. THIS PROPERTY WILL BE SERVED BY A STATE CERTIFIED PUBLIC WATER SUPPLY SYSTEM.
3. THIS PROPERTY WILL BE SERVED BY PUBLIC WASTEWATER TREATMENT FACILITIES, PERMIT # WQ0015314001.
4. NO PORTION OF THE SUBDIVISION LIES WITHIN THE EDWARDS AQUIFER RECHARGE ZONE.
5. COMAL COUNTY REQUIRES A MINIMUM 25' BUILDING SET-BACK LINE FROM THE ROAD FRONTAGE, EXCEPT WHERE OTHERWISE NOTED ON PLAT DRAWING.
6. A PORTION OF THIS PROPERTY DOES LIE WITHIN A SPECIAL FLOOD HAZARD AREA, ZONE "AE," THE 100-YEAR FLOOD ZONE, AS DEFINED BY THE FLOOD INSURANCE RATE MAP FOR COMAL COUNTY, TEXAS ON COMMUNITY PANEL NO. 48091C0245F, EFFECTIVE DATE SEPTEMBER 2, 2009, AS PREPARED BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY.
7. PROPERTY OWNERS ARE ADVISED THAT THEY ARE RESPONSIBLE FOR MAINTENANCE OF DEDICATED EASEMENTS ON THEIR PROPERTY AND MAY NOT UTILIZE THESE EASEMENTS FOR ANY PURPOSE DETRIMENTAL TO THEIR INTENDED USE (I.E., NO STRUCTURES, SEPTIC TANK FIELDS, ETC.) GRANTEES OF SAID DEDICATED EASEMENTS RESERVE THE RIGHT OF ACCESS TO SUCH EASEMENTS.
8. 10.415 ACRES, 8,923 LINEAR FEET ARE BEING DEDICATED TO THE PUBLIC AS RIGHT-OF-WAY.
9. THIS PLAT CONTAINS 160 LOTS, BEING 71.109 ACRES.
10. A DRAINAGE ANALYSIS HAS BEEN COMPLETED FOR THIS PLAT AND IS AVAILABLE FOR REVIEW AT THE COMAL COUNTY ENGINEER'S OFFICE. AREAS IDENTIFIED BY THE STUDY AS BEING INUNDATED DURING CERTAIN STORM EVENTS HAVE BEEN PLACED WITHIN BUILDING SET-BACKS. THE CONSTRUCTION OF BUILDINGS WITHIN BUILDING SET-BACKS REQUIRES COMMISSIONERS COURT APPROVAL.
11. NO HABITABLE STRUCTURES SHALL BE ALLOWED ON 900-908 LOTS.
12. A WATER POLLUTION ABATEMENT PLAN (WPAP) HAS BEEN CREATED BY PAPE DAWSON ENGINEERS FOR THIS PLAT. LETTERS OF APPROVAL FROM TEXAS COMMISSION ON ENVIRONMENTAL QUALITY (TCEQ) ARE RECORDED IN DOC. NO. 202506008126 OF THE OFFICIAL PUBLIC RECORDS OF COMAL COUNTY, TEXAS. LOT OWNERS SHOULD REFER TO THE WPAP ON FILE AT THE COMAL COUNTY ENGINEER'S OFFICE. FOR ADDITIONAL INFORMATION AND RESTRICTIONS.
13. LIENHOLDER: CCF FINANCE LLC, AN ILLINOIS LIMITED LIABILITY COMPANY
222 NORTH LA SALLE STREET, SUITE 2000
CHICAGO, ILLINOIS 60601
DEED OF TRUST DOC. NO. 201706028110, O.P.R.C.C.T.
LIENHOLDER ACKNOWLEDGMENT
DOC. NO. _____, O.P.R.C.C.T.
14. DRIVEWAY ACCESS IS PROHIBITED ALONG ROAD FRONTAGE SIDES OF LOTS WHERE BUILDING SET-BACK IS LESS THAN 20 FEET.
15. AN EASEMENT IS HEREBY GRANTED FOR THE USE OF PUBLIC UTILITIES, BEING 15 FEET ALONG THE ROAD FRONTAGE LOT LINE OF EACH LOT AND FIVE FEET ALONG THE SIDE AND BACK LOT LINES OF EACH LOT, EXCEPT WHERE OTHERWISE NOTED ON PLAT DRAWING.
16. DRAINAGE EASEMENTS SHALL "REMAIN FREE OF ALL OBSTRUCTIONS."
17. LOTS 900 - 908 SHALL BE OWNED AND MAINTAINED BY THE MEYER RANCH PROPERTY OWNERS ASSOCIATION.
18. IT IS HEREBY UNDERSTOOD AND AGREED THAT NON-EXCLUSIVE, PERPETUAL EASEMENTS ARE RESERVED FOR THE INSTALLATION AND MAINTENANCE OF PUBLIC UTILITIES AND ALL NECESSARY APPURTENANCES, WHETHER THESE IMPROVEMENTS ARE INSTALLED UNDERGROUND, OVERHEAD AND/OR ON THE SURFACE OF THE GROUND WITHIN THE PUBLIC UTILITY EASEMENTS DEDICATED ON THIS PLAT. NOTHING SHALL BE PLACED OR PERMITTED TO REMAIN IN A PUBLIC UTILITY EASEMENT AREA WHICH MAY DAMAGE OR INTERFERE WITH THE INSTALLATION AND MAINTENANCE OF SAID PUBLIC UTILITIES. THE PUBLIC UTILITY EASEMENT AREA OF EACH LOT AND ALL IMPROVEMENTS WITHIN IT SHALL BE MAINTAINED BY THE OWNER OF THE LOT, EXCEPT FOR THOSE FACILITIES FOR WHICH AN AUTHORITY OR PUBLIC UTILITY PURVEYOR IS RESPONSIBLE. PUBLIC UTILITY PURVEYORS AND THEIR EMPLOYEES SHALL HAVE ALL OF THE RIGHTS AND BENEFITS NECESSARY FOR THE FULL ENJOYMENT OF THE RIGHTS HEREIN GRANTED, INCLUDING BUT NOT LIMITED TO INGRESS AND EGRESS FROM PRIVATE ROADS AND EASEMENTS, AND THE RIGHT FROM TIME TO TIME TO CUT ANY AND ALL TREES, UNDERGROWTH, AND OTHER OBSTRUCTIONS THAT MAY CAUSE INTERFERENCE WITH THE OPERATION OF SAID PUBLIC UTILITY FACILITIES.
THIS PROPERTY LIES WITHIN THE FOLLOWING PUBLIC UTILITY SERVICE AREA(S):
- ELECTRIC: NEW BRAUNFELS UTILITIES
- TELEPHONE: GUADALUPE VALLEY TELEPHONE COOPERATIVE, INC.
- WATER: TEXAS WATER SERVICE COMPANY
- SEWER: MEYER RANCH MUNICIPAL UTILITY DISTRICT

SURVEYOR'S NOTES:

1. MONUMENTS WERE FOUND OR SET AT EACH CORNER OF THE SURVEY BOUNDARY OF THE SUBDIVISION AS NOTED. MONUMENTS AND LOT MARKERS WILL BE SET WITH 1/2" IRON ROD WITH CAP MARKED "PAPE-DAWSON" OR MAG NAIL WITH DISK MARKED "PAPE-DAWSON" AFTER THE COMPLETION OF UTILITY INSTALLATION AND STREET CONSTRUCTION UNLESS NOTED OTHERWISE.
2. COORDINATES SHOWN ARE BASED ON THE NORTH AMERICAN DATUM OF 1983 NAD83 (NA2011) EPOCH 2010.00 FROM THE TEXAS COORDINATE SYSTEM ESTABLISHED FOR THE SOUTH CENTRAL ZONE, DISPLAYED IN GRID VALUES DERIVED FROM THE NGS COOPERATIVE CORS NETWORK.
3. DIMENSIONS SHOWN ARE SURFACE IN US SURVEY FEET, WITH SURFACE ADJUSTMENT FACTOR: 1.00016
4. BEARINGS ARE BASED ON THE NORTH AMERICAN DATUM OF 1983 NAD83 (NA2011) EPOCH 2010.00, FROM THE TEXAS COORDINATE SYSTEM ESTABLISHED FOR THE SOUTH CENTRAL ZONE.

VACATE AND REPLAT OF LOT 903, MEYER RANCH UNIT 13, ESTABLISHING LOTS 1-162, 900-908 OF MEYER RANCH UNIT 16

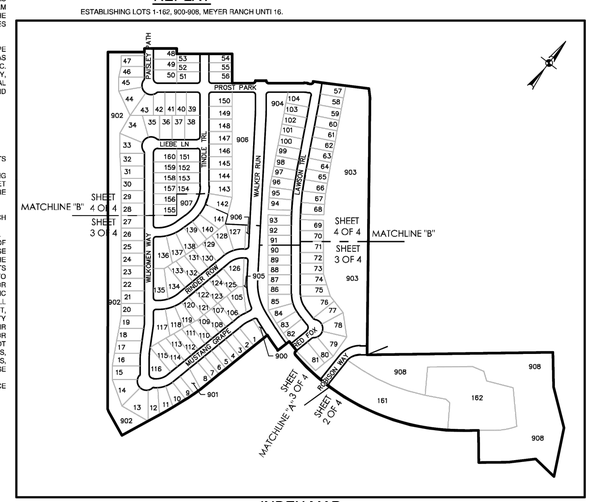
A 71.109 ACRE TRACT OF LAND OUT OF THE 691.451 ACRE TRACT RECORDED IN DOCUMENT NO. 201606024066 OF THE OFFICIAL PUBLIC RECORDS OF COMAL COUNTY, TEXAS, OUT OF THE J.H. PLEASANT SURVEY NO. 389, ABSTRACT 475, COMAL COUNTY, TEXAS.

PUBLIC UTILITY PLAT NOTES:

1. NEW BRAUNFELS UTILITIES (NBU) IS THE ELECTRIC SERVICE PROVIDER FOR THE PLATTED PROPERTY AND MAY BE CONTACTED AT 830-629-8400 FOR FURTHER ASSISTANCE.
2. MAINTENANCE OF DEDICATED PUBLIC UTILITY EASEMENTS IS THE RESPONSIBILITY OF THE PROPERTY OWNER. ANY USE OF A PUBLIC UTILITY EASEMENT, OR ANY PORTION OF IT, INCLUDING LANDSCAPING OR DRAINAGE FEATURES, IS SUBJECT TO AND SHALL NOT CONFLICT WITH THE TERMS AND CONDITIONS OF THE PUBLIC UTILITY EASEMENT, AND MUST NOT ENDANGER OR INTERFERE WITH THE RIGHTS GRANTED BY THE PUBLIC UTILITY EASEMENT TO PUBLIC UTILITY PROVIDERS. THE PROPERTY OWNER MUST OBTAIN, IN ADVANCE, WRITTEN AGREEMENT WITH THE PUBLIC UTILITY PROVIDERS TO UTILIZE THE PUBLIC UTILITY EASEMENT, OR ANY PART OF IT.
3. PUBLIC UTILITY PROVIDERS WILL POSSESS A 5-FOOT WIDE PUBLIC UTILITY SERVICE EASEMENT TO THE BUILDING STRUCTURE ALONG THE SERVICE LINE TO THE SERVICE ENTRANCE. THIS SERVICE EASEMENT WILL VARY DEPENDING UPON THE LOCATION OF BUILDING STRUCTURE AND SERVICE.
4. PUBLIC UTILITY PROVIDERS SHALL HAVE ACCESS TO THE METER LOCATIONS FROM THE FRONT YARD, AND METER LOCATIONS SHALL NOT BE LOCATED WITHIN A FENCED AREA.
5. DO NOT COMBINE ANY NEW PUBLIC UTILITY EASEMENTS (PUE) WITH DRAINAGE EASEMENTS (DE) OR MAKE CHANGES IN GRADE WITHIN PUBLIC UTILITY EASEMENTS WITHOUT WRITTEN APPROVAL FROM THE PUBLIC UTILITY PROVIDERS.

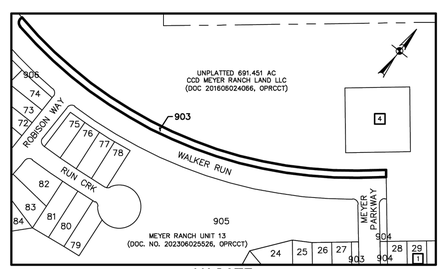
REPLAT

ESTABLISHING LOTS 1-162, 900-908, MEYER RANCH UNTI 16.



INDEX MAP

SCALE: 1"= 400'



VACATE

SCALE: 1" = 200'

PLAT VACATING LOT 903 OF THE MEYER RANCH UNIT 13 SUBDIVISION PLAT, RECORDED IN DOC. NO. 202306025526 OF THE OFFICIAL PUBLIC RECORDS OF COMAL COUNTY, TEXAS.

PLAT NOTES APPLY TO EVERY PAGE OF THIS MULTIPLE PAGE PLAT

CURVE AND LINE DATA ON SHEET 2 OF 4

SHEET 1 OF 4

PAPE-DAWSON ENGINEERS

1672 INDEPENDENCE DR, STE 102 I NEW BRAUNFELS, TX 78132 I 830.632.5633
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

DATE OF PREPARATION: April 24, 2025

STATE OF TEXAS
COUNTY OF COMAL

KNOW ALL MEN BY THESE PRESENTS:
THE OWNERS OF THE LAND SHOWN ON THIS PLAT WHOSE NAMES ARE SUBSCRIBED HERETO, AND IN PERSON OR THROUGH A DULY AUTHORIZED AGENT, HEREBY DEDICATE TO THE USE OF THE PUBLIC FOREVER ALL STREETS, PARKS, WATER COURSES, DRAINS, EASEMENTS, AND PUBLIC PLACES THEREON SHOWN FOR THE PURPOSES AND CONSIDERATIONS THEREIN EXPRESSED.

_____
GRANTOR: CCD MEYER RANCH LAND LLC, A DELAWARE LIMITED LIABILITY COMPANY
BY: HC AUSTIN MEYER LLC, A DELAWARE LIMITED LIABILITY COMPANY, AS MANAGER
BY: HC AUSTIN LLC, A DELAWARE LIMITED LIABILITY COMPANY, ITS SOLE MEMBER
BY: JAMES WILSON, AUTHORIZED AGENT
1751 A WEST DIEHL RD
NAPERVILLE, IL 60563-1840

STATE OF TEXAS
COUNTY OF COMAL

BEFORE ME, THE UNDERSIGNED AUTHORITY ON THIS DAY PERSONALLY APPEARED _____ KNOWN TO ME TO BE THE PERSON WHOSE NAME IS SUBSCRIBED TO THE FOREGOING INSTRUMENT OF WRITING, AND ACKNOWLEDGED TO ME THAT HE EXECUTED THE SAME FOR THE PURPOSES AND CONSIDERATIONS THEREIN EXPRESSED AND IN THE CAPACITY THEREIN STATED. GIVEN UNDER MY HAND AND SEAL OF OFFICE THIS _____ DAY OF _____, A.D. 20_____.

_____
NOTARY PUBLIC, STATE OF TEXAS

_____
PRINT NOTARY'S NAME

THIS PLAT OF MEYER RANCH UNIT 16 HAS BEEN SUBMITTED TO AND CONSIDERED BY THE COMMISSIONERS COURT OF COMAL COUNTY, TEXAS AND IS HEREBY APPROVED FOR FILING BY SAID COURT ON THIS _____ DAY OF _____, 20_____.

DATED THIS _____ DAY OF _____, A.D. 20_____.

_____
BY: COUNTY JUDGE

_____
ATTEST: COUNTY CLERK - DEPUTY

STATE OF TEXAS
COUNTY OF COMAL

I, _____, COUNTY CLERK OF COMAL COUNTY, DO HEREBY CERTIFY THAT THIS PLAT WAS FILED FOR RECORD IN MY OFFICE ON THE _____ DAY OF _____, A.D. 20_____, AT_____M. AND DULY RECORDED THE _____ DAY OF _____, A.D. 20_____, IN THE RECORDS OF MAPS AND PLATS IN SAID OFFICE, OF SAID COUNTY, IN DOCUMENT # _____. IN TESTIMONY WHEREOF WITNESS MY HAND AND OFFICIAL SEAL OF OFFICE THIS _____ DAY OF _____, A.D., 20_____.

_____
COUNTY CLERK, COMAL COUNTY, TEXAS
BY: _____ DEPUTY

MEYER RANCH UNIT 16

Date: Apr 24, 2025, 11:22am User ID: matthew.duke
File: P:\300\10\27\Design\Civil\PLAT-3001027.dwg

NO.	REVISION	DATE

4-24-2025
STATE OF TEXAS
TODD W. BLACKMON
89208
LICENSED
PROFESSIONAL ENGINEER

PAPE-DAWSON ENGINEERS
1672 INDEPENDENCE DR, STE 102 I NEW BRAUNFELS, TX 78132 I 830.632.5633
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

MEYER RANCH UNIT 16

COMAL COUNTY, TEXAS

PLAT (1 OF 4)

PLAT NO. _____
JOB NO. 30010-27
DATE DECEMBER 2024
DESIGNER CL
CHECKED HF DRAWN BH
SHEET C0.02

FOR PERMIT

MEYER RANCH UNIT 16

Civil Job No. 30010-27; Survey Job No. 30010-27

CURVE TABLE					
CURVE #	RADIUS	DELTA	CHORD BEARING	CHORD	LENGTH
C1	1225.00'	49°50'42"	S76°23'05"W	1032.41'	1065.70'
C2	15.00'	91°53'40"	N32°44'45"W	21.56'	24.06'
C3	1205.00'	3°05'00"	N76°26'44"W	64.84'	64.84'
C4	1285.00'	4°35'05"	N72°36'42"W	102.79'	102.82'
C5	15.00'	90°00'00"	N7°15'28"E	21.21'	23.56'
C6	15.00'	90°00'00"	S82°44'32"E	21.21'	23.56'
C7	150.00'	8°23'00"	N56°26'58"E	21.93'	21.95'
C8	15.00'	91°10'10"	N15°03'23"E	21.43'	23.87'
C9	1285.00'	0°15'16"	N70°11'32"W	5.71'	5.71'
C10	15.00'	84°36'41"	S67°37'45"W	20.19'	22.15'
C11	175.00'	12°07'19"	S19°15'45"W	36.96'	37.02'
C12	150.00'	39°03'23"	S32°43'47"W	100.28'	102.25'
C13	15.00'	38°52'15"	S32°49'21"W	9.98'	10.18'
C14	50.00'	167°44'30"	N82°44'32"W	99.43'	146.38'
C15	15.00'	38°52'15"	N18°18'24"W	9.98'	10.18'
C16	225.00'	7°45'36"	N33°51'44"W	30.45'	30.47'
C17	175.00'	7°45'36"	N33°51'44"W	23.68'	23.70'
C18	15.00'	38°52'15"	N57°10'39"W	9.98'	10.18'
C19	50.00'	167°44'30"	N7°15'28"E	99.43'	146.38'
C20	15.00'	38°52'15"	N71°41'36"E	9.98'	10.18'
C21	15.00'	90°00'00"	N7°15'28"E	21.21'	23.56'
C22	15.00'	90°00'00"	N82°44'32"W	21.21'	23.56'
C23	15.00'	38°52'15"	S32°49'21"W	9.98'	10.18'
C24	50.00'	167°44'30"	N82°44'32"W	99.43'	146.38'
C25	15.00'	38°52'15"	N18°18'24"W	9.98'	10.18'
C26	25.00'	90°00'00"	S82°44'32"E	35.36'	39.27'
C27	15.00'	90°00'00"	N7°15'28"E	21.21'	23.56'
C28	15.00'	90°00'00"	S82°44'32"E	21.21'	23.56'
C29	2025.00'	3°37'39"	S28°42'52"E	128.19'	128.21'
C30	1475.00'	10°50'29"	S32°19'17"E	278.68'	279.10'
C31	125.00'	39°03'23"	S57°16'13"E	83.57'	85.21'
C32	15.00'	38°52'15"	N83°45'58"E	9.98'	10.18'
C33	50.00'	167°44'30"	S31°47'55"E	99.43'	146.38'
C34	15.00'	38°52'15"	S32°38'13"W	9.98'	10.18'
C35	25.00'	90°00'00"	N31°47'55"W	35.36'	39.27'
C36	175.00'	39°03'23"	N57°16'13"W	116.99'	119.29'
C37	1525.00'	10°50'29"	N32°19'17"W	288.13'	288.56'
C38	1975.00'	1°17'20"	N27°32'42"W	44.42'	44.42'
C39	15.00'	91°10'10"	N73°46'27"W	21.43'	23.87'
C40	155.00'	8°23'00"	S56°26'58"W	22.66'	22.68'
C41	15.00'	90°00'00"	S7°15'28"W	21.21'	23.56'
C42	365.00'	2°54'20"	S36°17'22"E	18.51'	18.51'
C43	310.00'	35°13'42"	S52°27'03"E	187.62'	190.60'
C44	1225.00'	4°50'20"	S72°29'05"E	103.43'	103.46'
C45	15.00'	90°00'00"	S7°15'28"W	21.21'	23.56'
C46	225.00'	39°45'43"	S32°22'36"W	153.03'	156.15'
C47	125.00'	42°40'03"	S33°49'46"W	90.95'	93.09'
C48	15.00'	90°00'00"	N79°50'12"W	21.21'	23.56'
C49	370.00'	23°52'34"	N46°46'29"W	153.07'	154.19'
C50	15.00'	84°02'11"	N16°41'41"W	20.08'	22.00'
C51	225.00'	12°07'19"	N19°15'45"E	47.51'	47.60'
C52	100.00'	39°03'23"	N32°43'47"E	66.85'	68.17'
C53	25.00'	90°00'00"	S82°44'32"E	35.36'	39.27'
C54	175.00'	7°45'36"	S33°51'44"E	23.68'	23.70'
C55	225.00'	7°45'36"	S33°51'44"E	30.45'	30.47'
C56	15.00'	90°00'00"	S7°15'28"W	21.21'	23.56'
C57	225.00'	36°31'10"	S33°59'53"W	141.00'	143.41'
C58	250.00'	53°28'50"	S11°00'07"E	224.97'	233.35'
C59	15.00'	90°00'00"	S7°15'28"W	21.21'	23.56'
C60	15.00'	90°00'00"	N82°44'32"W	21.21'	23.56'
C61	315.00'	2°54'20"	N36°17'22"W	15.97'	15.97'
C62	15.00'	90°00'00"	N10°09'48"E	21.21'	23.56'
C63	175.00'	42°40'03"	N33°49'46"E	127.33'	130.32'
C64	175.00'	39°45'43"	N32°22'36"E	119.02'	121.45'
C65	15.00'	90°00'00"	S82°44'32"E	21.21'	23.56'
C66	15.00'	90°00'00"	S82°44'32"E	21.21'	23.56'
C67	25.00'	90°00'00"	S7°15'28"W	35.36'	39.27'
C68	15.00'	90°00'00"	N82°44'32"W	21.21'	23.56'
C69	200.00'	53°28'50"	N11°00'07"W	179.98'	186.68'
C70	175.00'	36°31'10"	N33°59'53"E	109.66'	111.54'
C71	150.00'	50°31'28"	S26°15'18"W	128.03'	132.27'
C72	100.00'	50°31'28"	S26°15'18"W	85.35'	88.18'
C73	15.00'	91°53'40"	N46°56'24"E	21.56'	24.06'
C74	15.00'	91°53'40"	S44°57'16"E	21.56'	24.06'
C75	370.00'	19°29'44"	N41°42'52"E	125.29'	125.90'
C76	1045.00'	26°14'05"	S76°30'30"W	474.32'	478.49'

LINE TABLE		
LINE #	BEARING	LENGTH
L1	N38°32'16"W	178.90'
L2	S51°27'44"W	80.13'
L3	N13°12'05"E	4.60'
L4	S15°05'45"W	80.00'
L5	S17°42'37"W	88.35'
L6	S20°54'10"W	135.00'
L7	N54°57'47"W	15.43'
L8	N37°44'32"W	21.60'
L9	S37°44'32"E	30.00'
L10	N52°15'28"E	115.00'
L11	N52°15'28"E	60.00'
L12	N60°38'28"E	13.44'
L13	S44°33'10"E	51.92'
L14	S25°19'25"W	38.57'
L15	S52°15'28"W	12.83'
L16	S60°38'28"W	9.41'
L17	S52°15'28"W	13.90'
L18	S55°09'48"W	6.38'

LINE TABLE		
LINE #	BEARING	LENGTH
L19	N25°19'25"E	38.59'
L20	N52°15'28"E	14.23'
L21	S37°44'32"E	54.22'
L22	S52°15'28"W	10.24'
L23	S15°44'18"W	61.77'
L24	N55°09'48"E	6.38'
L25	N52°15'28"E	13.90'
L26	S37°44'32"E	405.00'
L27	N15°44'18"E	61.77'
L28	N52°15'28"E	10.24'
L29	S86°58'50"E	28.67'
L30	S50°00'50"W	25.60'
L31	N52°15'28"E	60.00'
L32	N25°00'59"W	61.51'
L33	N37°44'32"W	60.00'
L34	S37°44'32"E	65.00'
L35	N51°31'02"E	40.98'
L36	N51°31'02"E	39.75'

SCALE: 1"= 100'

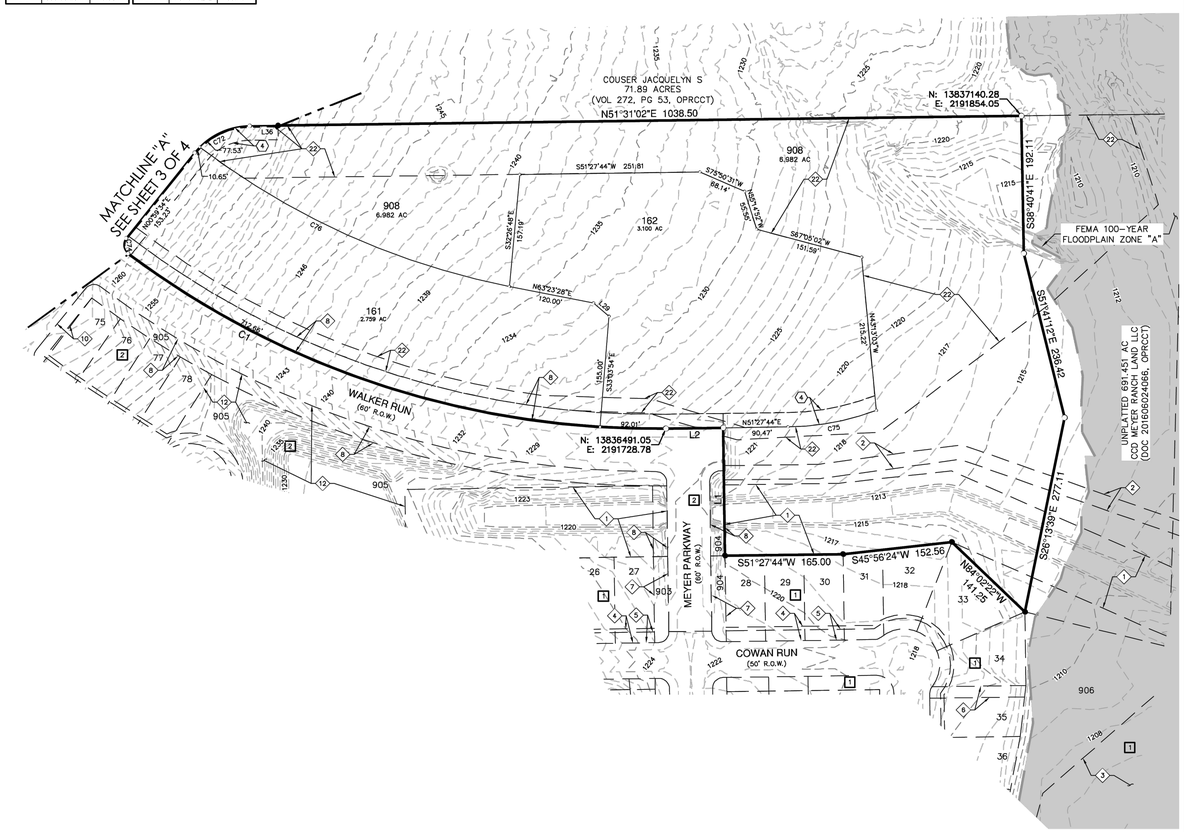
0' 100' 200' 300'

PAPE-DAWSON ENGINEERS

1672 INDEPENDENCE DR, STE 102 I NEW BRAUNFELS, TX 78132 I 830.632.5633

TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

DATE OF PREPARATION: April 24, 2025



PLAT NOTES APPLY TO EVERY PAGE OF THIS MULTIPLE PAGE PLAT

CURVE AND LINE DATA ON THIS SHEET

SHEET 2 OF 4

MEYER RANCH UNIT 16

Civil Job No. 30010-27; Survey Job No. 30010-27

NO.	REVISION	DATE

STATE OF TEXAS
TODD W. BLACKMON
89208
LICENSED
PROFESSIONAL ENGINEER
4-24-2025

PAPE-DAWSON ENGINEERS

1672 INDEPENDENCE DR, STE 102 I NEW BRAUNFELS, TX 78132 I 830.632.5633

TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

MEYER RANCH UNIT 16

COMAL COUNTY, TEXAS

PLAT (2 OF 4)

PLAT NO. _____

JOB NO. 30010-27

DATE DECEMBER 2024

DESIGNER CL

CHECKED HF DRAWN BH

SHEET C0.03

FOR PERMIT

Date: Apr 24, 2025, 11:22am User ID: matthew.duke
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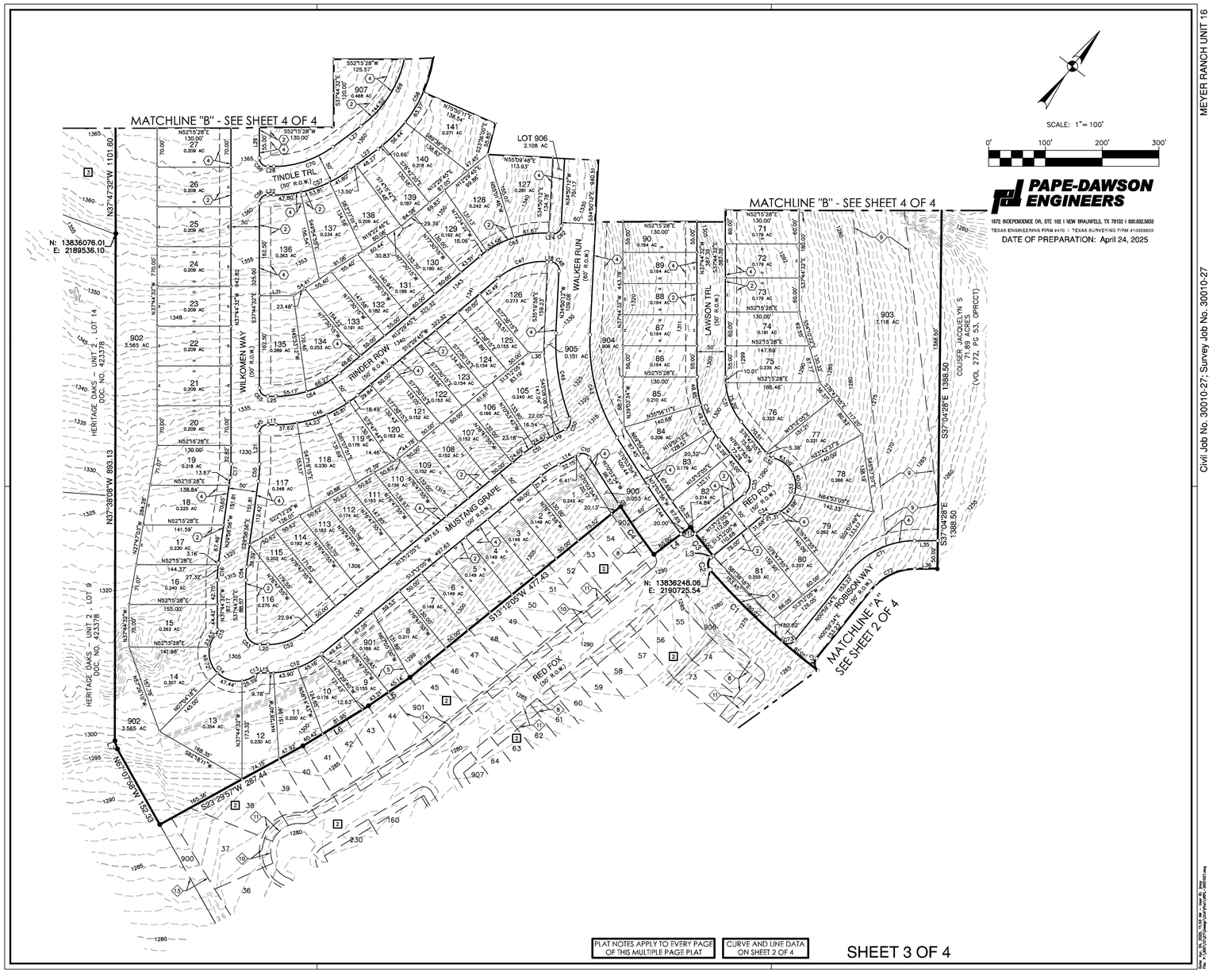

MEYER RANCH UNIT 16

Civil Job No. 30010-27; Survey Job No. 30010-27

NO.	REVISION	DATE

STATE OF TEXAS
TODD W. BLACKMON
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PAPE-DAWSON ENGINEERS
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TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

MEYER RANCH UNIT 16

COMAL COUNTY, TEXAS

PLAT (3 OF 4)

PLAT NO. _____
JOB NO. 30010-27
DATE DECEMBER 2024
DESIGNER CL
CHECKED HF DRAWN BH
SHEET C0.04

FOR PERMIT

Date: Apr 24, 2025, 11:22am User ID: matthew.duke
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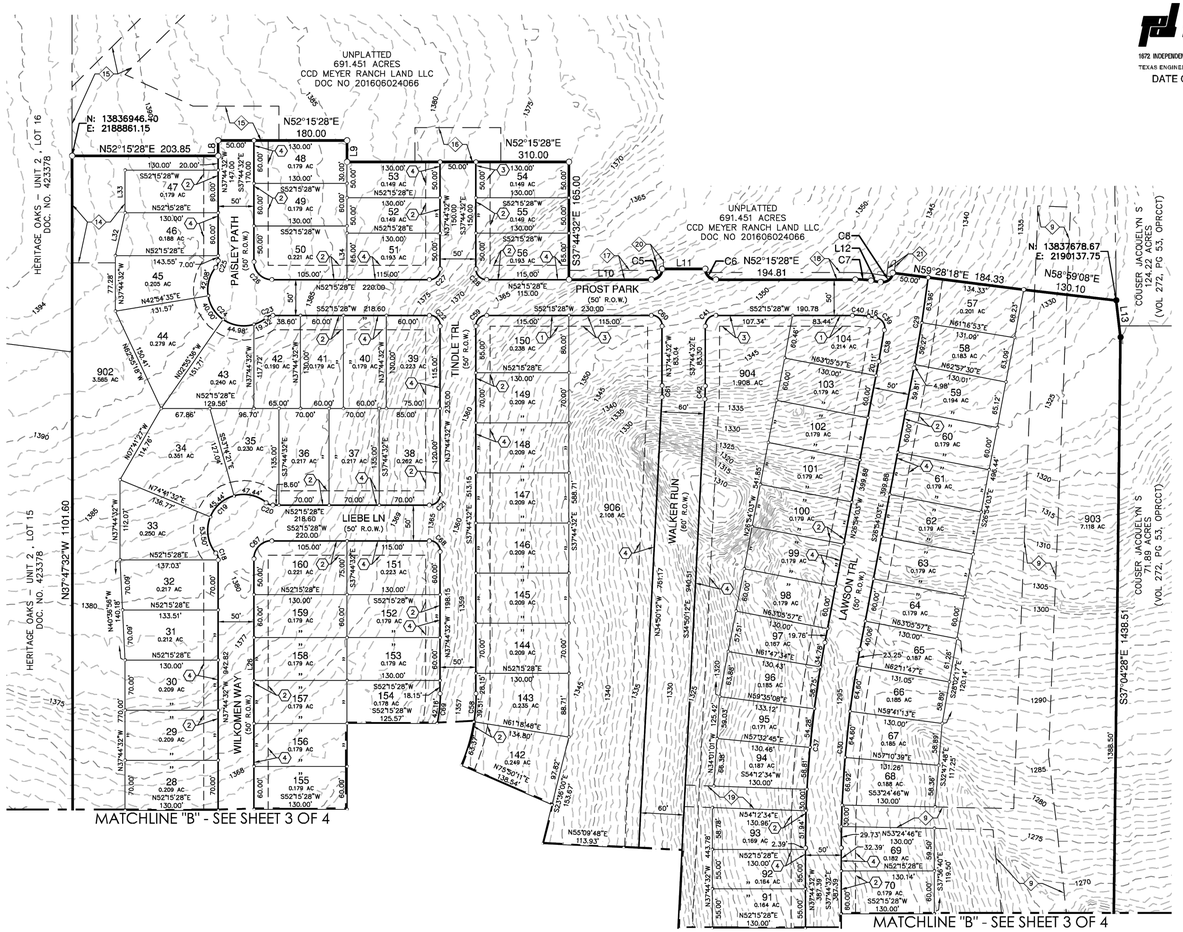

SCALE: 1"= 100'

0' 100' 200' 300'

PAPE-DAWSON ENGINEERS

1672 INDEPENDENCE DR, STE 102 I NEW BRAUNFELS, TX 78132 I 830.632.5633

TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

DATE OF PREPARATION: April 24, 2025

PLAT NOTES APPLY TO EVERY PAGE OF THIS MULTIPLE PAGE PLAT

CURVE AND LINE DATA ON SHEET 2 OF 4

SHEET 4 OF 4

MEYER RANCH UNIT 16

Civil Job No. 30010-27; Survey Job No. 30010-27

NO.	REVISION	DATE

STATE OF TEXAS
TODD W. BLACKMON
89208
LICENSED
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4-24-2025

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1672 INDEPENDENCE DR, STE 102 I NEW BRAUNFELS, TX 78132 I 830.632.5633

TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

MEYER RANCH UNIT 16

COMAL COUNTY, TEXAS

PLAT (4 OF 4)

PLAT NO. _____

JOB NO. 30010-27

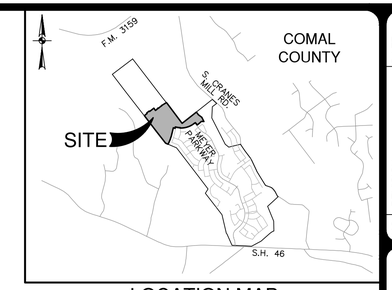
DATE DECEMBER 2024

DESIGNER CL

CHECKED HF DRAWN BH

SHEET C0.05

FOR PERMIT



LOCATION MAP

NOT-TO-SCALE

SCALE: 1"= 200'

0' 200' 400' 600'

MASTER DRAINAGE LEGEND

PROJECT LIMITS	
EXISTING CONTOUR	690
100 YR FLOODPLAIN	
RUNOFF FLOW PATH	
DRAINAGE AREA BOUNDARY	
FHA LOT GRADING TYPE	A,B,C
PROPOSED DIRECTION OF FLOW	
DRAINAGE CALCULATION POINT	11
DRAINAGE AREA	A
100-YR INUNDATION AREA	

POINT	STRUCTURE	WATERSHED	TOTAL AREA (ACRE)	COMPOSITE C VALUE				OVERLAND (SHEET) FLOW		SHALLOW CONCENTRATED FLOW		CHANNEL FLOW (@ FPS)		TIME OF CONCENTRATION	INTENSITY				FLOW				Curb Inlet			Curb Inlet			POINT
				C_2	C_{10}	C_{25}	C_{100}	LENGTH	TRAVEL TIME	LENGTH	TRAVEL TIME	LENGTH	TRAVEL TIME		I2	I10	I25	I100	Q2	Q10	Q25	Q100	Total Q25	Q Intercept	Q Bypass	Total Q100	Q Intercept	Q Bypass	
								FEET	MINUTES	FEET	MINUTES	FEET	MINUTES	MINUTES	INHR	INHR	INHR	INHR	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	
1	DRAIN A EARTHEN CHANNEL	A	2.19	0.25	0.30	0.34	0.41	100	8.67	280	2.00	440	1.20	10	5.04	7.45	9.03	11.60	3	5	7	10	7	-	-	10	-	-	1
2	INTERSECTION	B	5.25	0.50	0.56	0.61	0.69	100	8.67	80	0.60	870	2.40	10	5.04	7.45	9.03	11.60	13	22	29	42	29	19	10	42	24	18	2
3	DRAIN B1 ON-GRADE INLETS	C + B(BYPASS)	3.09	0.58	0.64	0.69	0.77	100	6.57	170	0.90	420	1.20	10	5.04	7.45	9.03	11.60	9	15	19	28	29	17	12	46	23	23	3
4	DRAIN B3 SUMP INLETS	D + C(BYPASS)	2.33	0.58	0.64	0.69	0.77	100	6.57	155	0.80	250	0.70	10	5.04	7.45	9.03	11.60	7	11	15	21	27	-	-	44	-	-	4
5	DRAIN B1	C + D + B(BYPASS)	5.42	0.58	0.64	0.69	0.77	100	6.57	170	0.90	670	1.90	10	5.04	7.45	9.03	11.60	16	26	34	48	44	-	-	66	-	-	5
6	DRAIN B2 ON-GRADE INLETS	E + B(INTERCEPT)	5.08	0.51	0.56	0.61	0.69	100	7.93	570	2.40	670	1.90	10	5.04	7.45	9.03	11.60	13	21	28	41	47	25	22	65	30	35	6
7	DRAIN B1 SUMP INLETS	F + E(BYPASS)	1.96	0.58	0.64	0.69	0.77	100	3.60	95	0.50	270	0.80	10	5.04	7.45	9.03	11.60	6	9	12	18	34	-	-	53	-	-	7
8	DRAIN B1 OUTFALL	B + C + D + E + F	17.71	0.54	0.60	0.65	0.73	100	8.67	280	2.00	2450	6.80	15	4.23	6.20	7.48	9.54	40	66	86	123	86	-	-	123	-	-	8
9	DRAIN C EARTHEN CHANNEL	G	4.92	0.52	0.58	0.63	0.70	100	4.98	535	2.30	850	2.40	10	5.04	7.45	9.03	11.60	13	21	28	40	28	-	-	40	-	-	9
10	DRAIN C EARTHEN CHANNEL	B + C + D + E + F + G + H	30.74	0.55	0.60	0.65	0.73	100	8.67	280	2.00	4050	11.30	20	4.23	6.20	7.48	9.54	72	114	149	214	149	-	-	214	-	-	10
11	DRAIN E	I	4.24	0.58	0.64	0.69	0.77	100	6.57	220	0.60	635	1.80	10	5.04	7.45	9.03	11.60	12	20	26	38	26	-	-	38	-	-	11
12	BASIN 1	B + C + D + E + F + G + H + I + J	40.04	0.55	0.61	0.66	0.74	100	8.67	280	2.00	4420	12.30	20	4.23	6.20	7.48	9.54	93	151	198	283	198	-	-	283	-	-	12
13	UNIT 13 DRAIN F ON GRADE INLETS	K	7.88	0.58	0.64	0.69	0.77	100	6.57	190	1.00	1510	4.20	10	5.04	7.45	9.03	11.60	23	38	49	70	49	33	16	70	40	31	13
14	DRAIN D1 ON-GRADE INLETS	L	6.40	0.58	0.64	0.69	0.77	100	8.67	190	1.00	740	2.10	10	5.04	7.45	9.03	11.60	19	31	40	57	40	19	21	57	24	33	14
15	DRAIN D1 ON-GRADE INLETS	M	2.01	0.58	0.64	0.69	0.77	100	6.57	190	1.00	310	0.90	10	5.04	7.45	9.03	11.60	6	10	13	18	13	11	2	18	12	6	15
16	DRAIN D2 ON-GRADE INLETS	N + L(BYPASS) + M(BYPASS)	6.43	0.58	0.64	0.69	0.77	100	8.67	45	0.30	1290	3.60	10	5.04	7.45	9.03	11.60	19	31	40	57	63	28	35	96	36	60	16
17	DRAIN D3 ON-GRADE INLETS	O	2.27	0.58	0.64	0.69	0.77	100	6.57	190	1.00	295	0.80	10	5.04	7.45	9.03	11.60	7	11	14	20	14	10	4	20	13	7	17
18	DRAIN D1 SUMP INLETS	P + N(BYPASS) + O(BYPASS)	1.88	0.58	0.64	0.69	0.77	100	6.57	195	1.00	135	0.40	10	5.04	7.45	9.03	11.60	5	9	12	17	51	-	-	84	-	-	18
19	DRAIN D1 OUTFALL	L + M + N + O + P	18.99	0.58	0.64	0.69	0.77	100	8.67	190	1.00	1950	5.40	15	4.23	6.20	7.48	9.54	47	75	98	139	98	-	-	139	-	-	19
20	UNIT 13 DRAIN D SUMP INLETS	Q + R(BYPASS)	2.80	0.58	0.64	0.69	0.77	100	6.57	165	0.60	390	1.10	10	5.04	7.45	9.03	11.60	8	13	17	25	21	-	-	30	-	-	20
21	UNIT 13 DRAIN D	L + M + N + O + P + Q + R(BYPASS)	21.79	0.58	0.64	0.69	0.77	100	8.67	190	1.00	2220	6.20	15	4.23	6.20	7.48	9.54	53	86	112	160	112	-	-	160	-	-	21
22	STREET INTERSECTION	R	1.34	0.58	0.64	0.69	0.77	100	6.57	105	0.50	162	0.50	10	5.04	7.45	9.03	11.60	4	6	8	12	8	4	4	12	7	5	22
23	UNIT 13 DRAIN C4	S + R(INTERCEPT)	2.46	0.58	0.64	0.69	0.77	100	6.57	105	0.50	490	1.40	10	5.04	7.45	9.03	11.60	7	12	15	22	19	13	6	29	18	11	23
24	UNIT 13 DRAIN C1	T	4.87	0.58	0.64	0.69	0.77	100	7.37	320	1.70	395	1.10	10	5.04	7.45	9.03	11.60	14	23	30	43	30	-	-	43	-	-	24
25	UNIT 13 DRAIN C1 & C3	U	1.03	0.58	0.64	0.69	0.77	85	7.61	0	0.00	230	0.60	10	5.04	7.45	9.03	11.60	3	5	6	9	6	-	-	9	-	-	25
26	UNIT 13 DRAIN C1	T + U	5.90	0.58	0.64	0.69	0.77	100	7.37	320	1.70	395	1.10	10	5.04	7.45	9.03	11.60	17	28	37	53	37	-	-	53	-	-	26
27	UNIT 13 DRAIN C2	V	4.11	0.58	0.64	0.69	0.77	100	6.57	200	0.80	500	1.40	10	5.04	7.45	9.03	11.60	12	20	26	37	26	18	8	37	22	15	27
28	UNIT 13 DRAIN C1	W + S(BYPASS) + V(BYPASS)	3.86	0.58	0.64	0.69	0.77	100	8.67	130	0.90	375	1.00	10	5.04	7.45	9.03	11.60	11	18	24	34	38	-	-	60	-	-	28
29	UNIT 13 DRAIN C1 OUTFALL	R(INTERCEPT) + S + T + U + V + W	16.33	0.58	0.64	0.69	0.77	100	7.37	350	1.80	785	2.20	10	5.04	7.45	9.03	11.60	48	78	102	146	106	-	-	153	-	-	29
30	UNIT 13 BASIN	L+M+N+O+P+Q+R+S+T+U+V+W +X+K(INTERCEPT)	54.79	0.54	0.59	0.64	0.72	100	8.67	190	1.00	3550	9.90	15	4.23	6.20	7.48	9.54	125	200	262	376	295	-	-	416	-	-	30

NO.	REVISION	DATE

STATE OF TEXAS
TODD W. BLACKMON
89208
LICENSED
PROFESSIONAL ENGINEER
4-24-2025

PAPE-DAWSON ENGINEERS
1672 INDEPENDENCE DR, STE 102 | NEW BRAUNFELS, TX 78132 | 830.632.5633
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

MEYER RANCH UNIT 16

COMAL COUNTY, TEXAS

MASTER DRAINAGE PLAN & INUNDATION MAP
PROPOSED CONDITIONS

PLAT NO.
JOB NO. 30010-27
DATE DECEMBER 2024
DESIGNER CL
CHECKED HF DRAWN BH
SHEET C1.00

FOR PERMIT

Date: Apr 24, 2025, 11:23am User ID: matthew.duke
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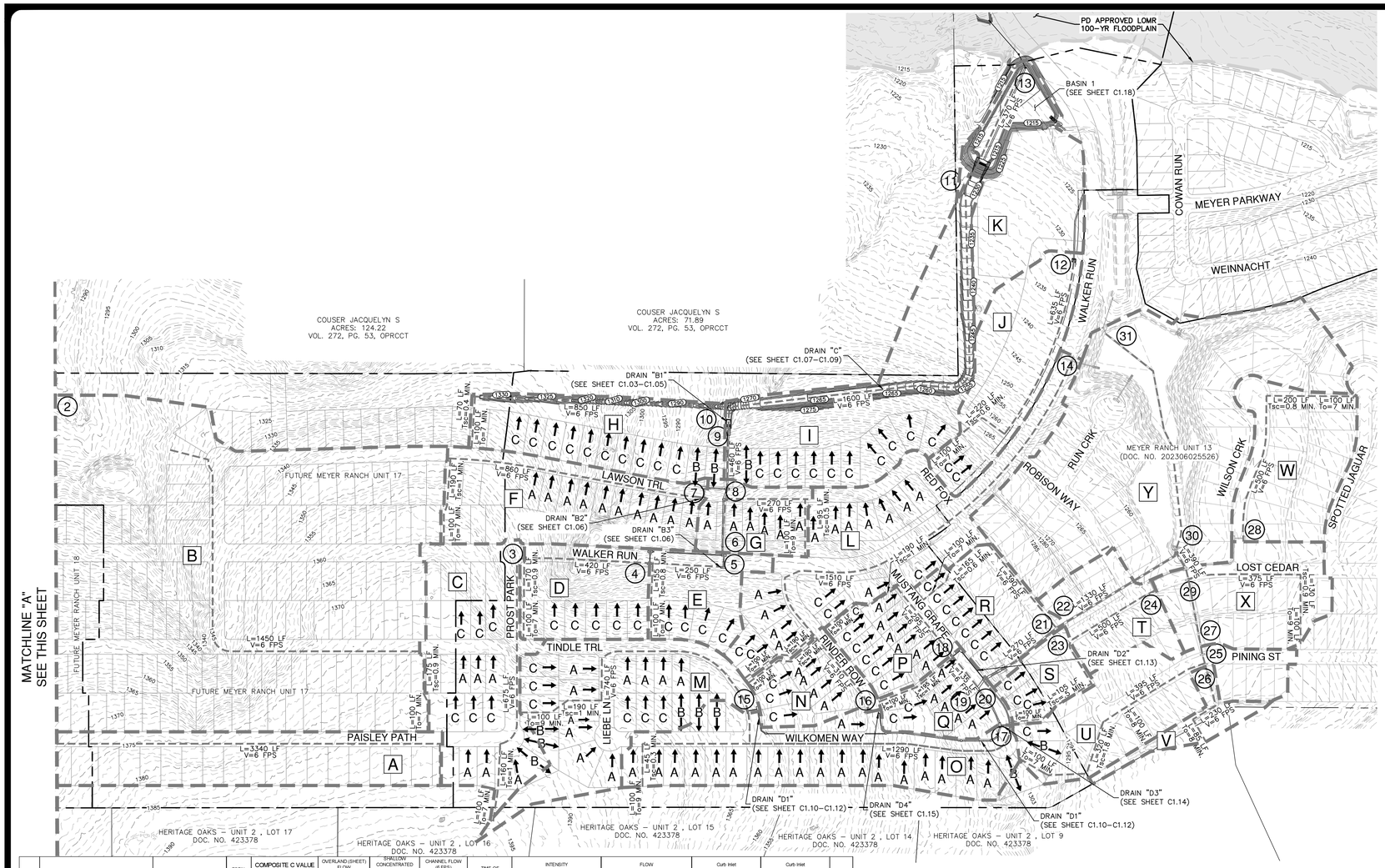
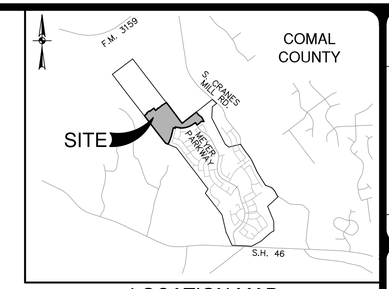




LOCATION MAP

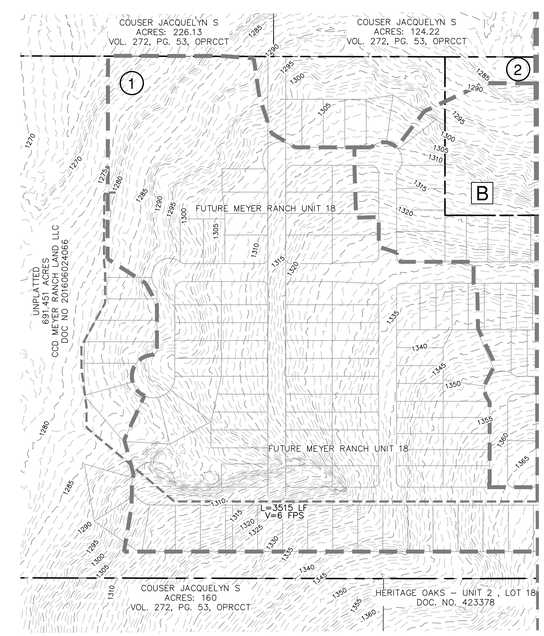
NOT–TO–SCALE

SCALE: 1"= 200'

0' 200' 400' 600'

MASTER DRAINAGE LEGEND

PROJECT LIMITS	
EXISTING CONTOUR	690
100 YR FLOODPLAIN	
RUNOFF FLOW PATH	
DRAINAGE AREA BOUNDARY	
FHA LOT GRADING TYPE	A,B,C
PROPOSED DIRECTION OF FLOW	
DRAINAGE CALCULATION POINT	11
DRAINAGE AREA	A
100–YR INUNDATION AREA	



POINT	STRUCTURE	WATERSHED	TOTAL AREA (ACRE)	COMPOSITE C VALUE				OVERLAND (SHEET) FLOW		SHALLOW CONCENTRATED FLOW		CHANNEL FLOW (@ FPS)		TIME OF CONCENTRATION	INTENSITY				FLOW				Curb Inlet			Curb Inlet			POINT
				C_2	C_{10}	C_{25}	C_{100}	LENGTH	TRAVEL TIME	LENGTH	TRAVEL TIME	LENGTH	TRAVEL TIME		I2	I10	I25	I100	Q2	Q10	Q25	Q100	Total Q25	Q intercept	Q Bypass	Total Q100	Q intercept	Q Bypass	
								FEET	MINUTES	FEET	MINUTES	FEET	MINUTES	MINUTES	INHR	INHR	INHR	INHR	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	
1	FUTURE UNIT 18 BASIN	A	31.89	0.58	0.64	0.69	0.77	100	8.67	40	0.30	3340	9.30	15	4.23	6.20	7.48	9.54	78	127	165	234	165	-	-	234	-	-	1
2	FUTURE UNIT 17 BASIN	B	36.54	0.58	0.64	0.69	0.77	100	6.57	175	0.90	1450	4.00	10	5.04	7.45	9.03	11.60	107	174	228	326	228	-	-	326	-	-	2
3	STREET INTERSECTION	C	6.23	0.58	0.64	0.68	0.76	100	7.93	160	1.00	665	1.80	10	5.04	7.45	9.03	11.60	18	30	38	55	38	22	16	55	27	28	3
4	DRAIN B1 ON-GRADE INLETS	D + C(BYPASS)	3.09	0.58	0.64	0.69	0.77	100	6.57	170	0.90	420	1.20	10	5.04	7.45	9.03	11.60	9	15	19	28	35	19	16	56	25	31	4
5	DRAIN B3 SUMP INLETS	E + D(BYPASS)	2.33	0.58	0.64	0.69	0.77	100	6.57	155	0.80	250	0.70	10	5.04	7.45	9.03	11.60	7	11	15	21	31	-	-	52	-	-	5
6	DRAIN B1	D + E + C(BYPASS)	5.42	0.58	0.64	0.69	0.77	100	6.57	170	0.90	670	1.90	10	5.04	7.45	9.03	11.60	16	26	34	48	50	-	-	76	-	-	6
7	DRAIN B2 ON-GRADE INLETS	F + C(INTERCEPT)	5.46	0.58	0.64	0.69	0.77	100	6.57	190	1.00	860	2.40	10	5.04	7.45	9.03	11.60	16	26	34	49	56	28	28	76	33	43	7
8	DRAIN B1 SUMP INLETS	G + F(BYPASS)	1.96	0.58	0.64	0.69	0.77	100	8.67	95	0.50	270	0.80	10	5.04	7.45	9.03	11.60	6	9	12	18	40	-	-	61	-	-	8
9	DRAIN B1 OUTFALL	C + D + E + F + G	19.07	0.58	0.64	0.69	0.77	100	6.57	160	0.80	1805	5.00	10	5.04	7.45	9.03	11.60	56	91	119	170	119	-	-	170	-	-	9
10	DRAIN C EARTHEN CHANNEL	H	4.56	0.58	0.64	0.69	0.77	100	6.57	70	0.40	850	2.40	10	5.04	7.45	9.03	11.60	13	22	28	41	28	-	-	41	-	-	10
11	DRAIN C EARTHEN CHANNEL	C + D + E + F + G + H + I	31.74	0.57	0.63	0.68	0.76	100	6.57	160	0.80	3405	9.50	15	4.23	6.20	7.48	9.54	77	124	161	230	161	-	-	230	-	-	11
12	Drain E	J	4.24	0.58	0.64	0.69	0.77	100	6.57	220	0.60	635	1.80	10	5.04	7.45	9.03	11.60	12	20	26	38	26	-	-	38	-	-	12
13	BASIN 1	C + D + E + F + G + H + I + J + K	41.04	0.57	0.63	0.68	0.76	100	6.57	160	0.80	3775	10.50	15	4.23	6.20	7.48	9.54	99	160	209	298	209	-	-	298	-	-	13
14	UNIT 13 DRAIN F ON GRADE INLETS	L	7.89	0.58	0.64	0.69	0.77	100	6.57	190	1.00	1510	4.20	10	5.04	7.45	9.03	11.60	23	38	49	70	49	33	16	70	40	31	14
15	DRAIN D1 ON-GRADE INLETS	M	6.40	0.58	0.64	0.69	0.77	100	8.67	190	1.00	740	2.10	10	5.04	7.45	9.03	11.60	19	31	40	57	40	19	21	57	24	33	15
16	DRAIN D1 ON-GRADE INLETS	N	2.01	0.58	0.64	0.69	0.77	100	6.57	190	1.00	310	0.90	10	5.04	7.45	9.03	11.60	6	10	13	18	13	11	2	18	12	6	16
17	DRAIN D3 ON-GRADE INLETS	O + M(BYPASS) + N(BYPASS)	6.43	0.58	0.64	0.69	0.77	100	8.67	45	0.30	1290	3.60	10	5.04	7.45	9.03	11.60	19	31	40	57	63	28	35	96	36	60	17
18	DRAIN D2 ON-GRADE INLETS	P	2.26	0.58	0.64	0.69	0.77	100	6.57	190	1.00	295	0.80	10	5.04	7.45	9.03	11.60	7	11	14	20	14	10	4	20	13	7	18
19	DRAIN D1 SUMP INLETS	Q + Q(BYPASS) + P(BYPASS)	1.88	0.58	0.64	0.69	0.77	100	6.57	195	1.00	135	0.40	10	5.04	7.45	9.03	11.60	5	9	12	17	51	-	-	84	-	-	19
20	DRAIN D1 OUTFALL	M + N + O + P + Q	18.98	0.58	0.64	0.69	0.77	100	8.67	190	1.00	1950	5.40	15	4.23	6.20	7.48	9.54	47	75	98	139	98	-	-	139	-	-	20
21	UNIT 13 DRAIN D SUMP INLETS	R + S(BYPASS)	2.80	0.58	0.64	0.69	0.77	100	6.57	165	0.60	390	1.10	10	5.04	7.45	9.03	11.60	8	13	17	25	21	-	-	30	-	-	21
22	UNIT 13 DRAIN D	M + N + O + P + Q + R + S(BYPASS)	21.78	0.58	0.64	0.69	0.77	100	8.67	190	1.00	2220	6.20	15	4.23	6.20	7.48	9.54	53	86	112	160	116	-	-	165	-	-	22
23	STREET INTERSECTION	S	1.34	0.58	0.64	0.69	0.77	100	6.57	105	0.50	162	0.50	10	5.04	7.45	9.03	11.60	4	6	8	12	8	4	4	12	7	5	23
24	UNIT 13 DRAIN C4	T + S(INTERCEPT)	2.46	0.58	0.64	0.69	0.77	100	6.57	105	0.50	490	1.40	10	5.04	7.45	9.03	11.60	7	12	15	22	19	13	6	29	18	11	24
25	UNIT 13 DRAIN C1	U	4.87	0.58	0.64	0.69	0.77	100	7.37	350	1.80	395	1.10	10	5.04	7.45	9.03	11.60	14	23	30	43	30	-	-	43	-	-	25
26	UNIT 13 DRAIN C1 & C3	V	1.03	0.58	0.64	0.69	0.77	85	7.61	0	0.00	230	0.60	10	5.04	7.45	9.03	11.60	3	5	6	9	6	-	-	9	-	-	26
27	UNIT 13 DRAIN C1	U + V	5.90	0.58	0.64	0.69	0.77	100	7.37	350	1.80	395	1.10	10	5.04	7.45	9.03	11.60	17	28	37	53	37	-	-	53	-	-	27
28	UNIT 13 DRAIN C2	W	4.11	0.58	0.64	0.69	0.77	100	6.57	200	0.80	500	1.40	10	5.04	7.45	9.03	11.60	12	20	26	37	26	18	8	37	22	15	28
29	UNIT 13 DRAIN C1	X + T(BYPASS) + W(BYPASS)	3.86	0.58	0.64	0.69	0.77	100	8.67	130	0.90	375	1.00	10	5.04	7.45	9.03	11.60	11	18	24	34	38	-	-	60	-	-	29
30	UNIT 13 DRAIN C1 OUTFALL	S(INTERCEPT) + T + U + V + W + X	16.33	0.58	0.64	0.69	0.77	100	7.37	350	1.80	785	2.20	10	5.04	7.45	9.03	11.60	48	78	102	146	106	-	-	153	-	-	30
31	UNIT 13 BASIN	M+N+O+P+Q+R+S+T+U+V+W+X +Y+L(INTERCEPT)	54.78	0.54	0.59	0.64	0.72	100	8.67	190	1.00	3550	9.90	15	4.23	6.20	7.48	9.54	125	200	262	376	295	-	-	416	-	-	31

NO.	REVISION	DATE

4–24–2025

STATE OF TEXAS
TODD W. BLACKMON
89208
LICENSED
PROFESSIONAL ENGINEER

PAPE-DAWSON ENGINEERS
1672 INDEPENDENCE DR, STE 102 I NEW BRAUNFELS, TX 78132 I 830.632.5633
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

MEYER RANCH UNIT 16

COMAL COUNTY, TEXAS

MASTER DRAINAGE PLAN & INUNDATION MAP
ULTIMATE CONDITIONS

PLAT NO.
JOB NO. 30010–27
DATE DECEMBER 2024
DESIGNER CL
CHECKED HF DRAWN BH
SHEET C1.01

FOR PERMIT

Date: Apr 24, 2025, 11:41am User ID: matthew.duke
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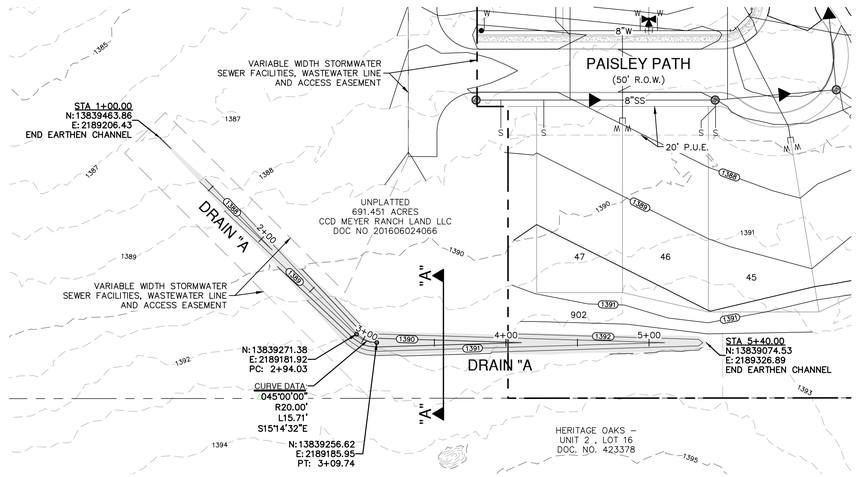
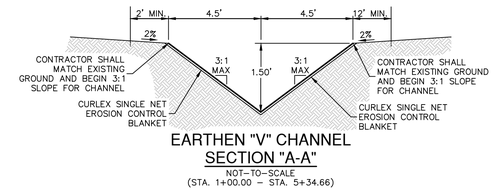




EARTHEN "V" CHANNEL
SECTION "A-A"
NOT-TO-SCALE
(STA. 1+00.00 – STA. 5+34.66)

SCALE: 1"= 50'
0' 50' 100' 150'

DRAINAGE LEGEND

- PROJECT LIMITS
- 100 YR FLOODPLAIN
- EXISTING CONTOUR (690)
- PROPOSED CONTOUR (690)
- EXISTING FIRE HYDRANT
- EXISTING WATER (W)
- EXISTING UNDERGROUND ELECTRIC (UGE)
- EXISTING GAS (G)
- EXISTING SEWER (SS)
- PROPOSED SEWER (SS) MANHOLE
- PROPOSED WATER (W) FIRE HYDRANT
- PROPOSED STORM DRAIN
- EXISTING STORM DRAIN
- PROPOSED GAS (G)
- PROPOSED UNDERGROUND ELECTRIC (UGE)
- FLOW ARROW
- CURLEX SINGLE NET EROSION CONTROL BLANKETS

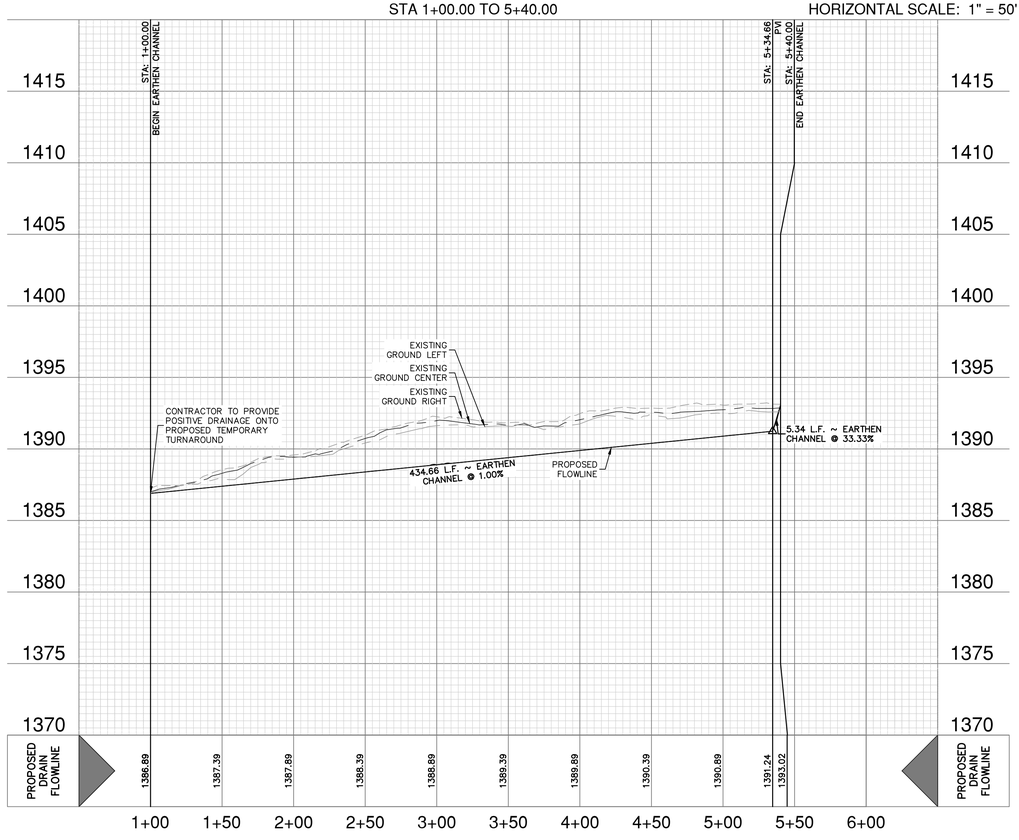
HYDRAULIC CALCULATIONS EARTH CHANNEL

STA. 1+00.00 TO 5+40.00

Q_{25}	=	7 CFS
Bw	=	0 FT
n	=	0.035
S	=	1.00%
dn	=	0.97 FT
VN	=	2.48 FPS
dn+FrBd	=	1.47 FT

DRAIN "A"
STA 1+00.00 TO 5+40.00

VERTICAL SCALE: 1" = 5'
HORIZONTAL SCALE: 1" = 50'



DRAINAGE & GRADING NOTES:

1. THE CONTRACTOR WILL BE RESPONSIBLE FOR DETERMINING EXACT LOCATION OF ALL UTILITIES AND DRAINAGE STRUCTURES WHETHER SHOWN ON THE PLANS OR NOT. THE CONTRACTOR SHALL UNCOVER EXISTING UTILITIES PRIOR TO CONSTRUCTION TO VERIFY SIZE, GRADE, AND LOCATION. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY OF ANY DEVIATIONS FROM PLANS PRIOR TO BEGINNING CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES, WHETHER SHOWN ON THE PLANS OR NOT, SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO REPAIR, AT HIS EXPENSE.
2. ALL CONCRETE FOR TXDOT DRAINAGE STRUCTURES SHALL MEET TXDOT SPECIFICATIONS. ALL OTHER CONCRETE SHALL BE CLASS "A" 3000 PSI CYLINDER STRENGTH IN 28 DAYS.
3. REFERENCE DRAINAGE DETAILS FOR PIPE TRENCH DETAILS, BOX CULVERT, HEADWALL, AND WINGWALL CONSTRUCTION DETAILS, AND BOX CULVERT BEDDING AND EXCAVATION LIMITS.
4. CONTRACTOR SHALL GROUT ALL CURB INLETS AND JUNCTION BOXES TO PROVIDE FOR POSITIVE DRAINAGE.
5. EARTHEN CHANNELS WILL BE VEGETATED BY SEEDING OR SODDING. 85% OF THE CHANNEL SURFACE MUST HAVE ESTABLISHED VEGETATION BEFORE COMAL COUNTY WILL ACCEPT.
6. CONTRACTOR SHALL MATCH TOP OF CHANNEL TO NATURAL GROUND AND MAINTAIN A MINIMUM CHANNEL DEPTH OF "D" AS SHOWN IN THE PROFILE.

TRENCH EXCAVATION SAFETY PROTECTION:

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

CAUTION!!

CONTRACTOR SHALL BE REQUIRED TO LOCATE ALL PUBLIC OR PRIVATE UTILITIES INCLUDING BUT NOT LIMITING TO: WATER, SEWER, TELEPHONE AND FIBER OPTIC LINES, SITE LIGHTING ELECTRIC, SECONDARY ELECTRIC, PRIMARY ELECTRICAL DUCTBANKS, LANDSCAPE IRRIGATION FACILITIES, AND GAS LINES. ANY UTILITY CONFLICTS THAT ARISE SHOULD BE COMMUNICATED TO THE ENGINEER IMMEDIATELY AND PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL CONTACT 1-800-DIG-TESS A MINIMUM OF 48 HOURS PRIOR TO THE START OF CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND THE REPAIR SHALL BE AT CONTRACTOR'S SOLE EXPENSE WHETHER THE UTILITY IS SHOWN ON THESE PLANS OR NOT.

NO.	REVISION	DATE

STATE OF TEXAS
TODD W. BLACKMON
89208
LICENSED PROFESSIONAL ENGINEER
12 - 27 - 2024

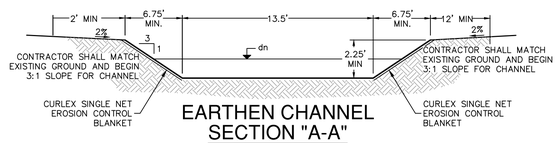
PAPE-DAWSON ENGINEERS
1672 INDEPENDENCE DR, STE 102 I NEW BRAUNFELS, TX 78132 I 830.632.5633
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

MEYER RANCH UNIT 16
COMAL COUNTY, TEXAS

DRAIN A - PLAN & PROFILE
STA 1+00.00 TO 5+40.00

PLAT NO.
JOB NO. 30010-27
DATE DECEMBER 2024
DESIGNER CL
CHECKED HF DRAWN BH
SHEET C1.02

FOR PERMIT



EARTHEN CHANNEL SECTION "A-A"

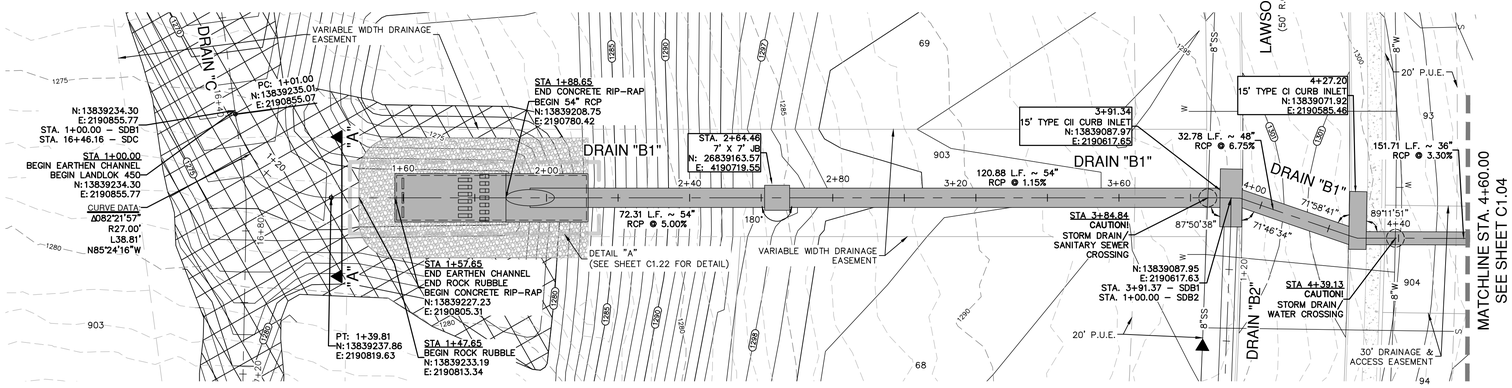
NOT-TO-SCALE
(STA. 1+00.00 – STA. 1+88.65)

SCALE: 1"= 20'
0' 20' 40' 60'

DRAINAGE LEGEND

PROJECT LIMITS	
100 YR FLOODPLAIN	
EXISTING CONTOUR	690
PROPOSED CONTOUR	690
EXISTING WATER	W
EXISTING UNDERGROUND ELECTRIC	UGE
EXISTING GAS	G
EXISTING SEWER	SS
PROPOSED SEWER	SS
PROPOSED WATER	W
PROPOSED STORM DRAIN	
EXISTING STORM DRAIN	
PROPOSED GAS	G
PROPOSED UNDERGROUND ELECTRIC	UGE
FLOW ARROW	
CURLEX SINGLE NET EROSION CONTROL BLANKETS	
LANDLOK 450 EROSION CONTROL MAT	

EXISTING FIRE HYDRANT
MANHOLE
FIRE HYDRANT



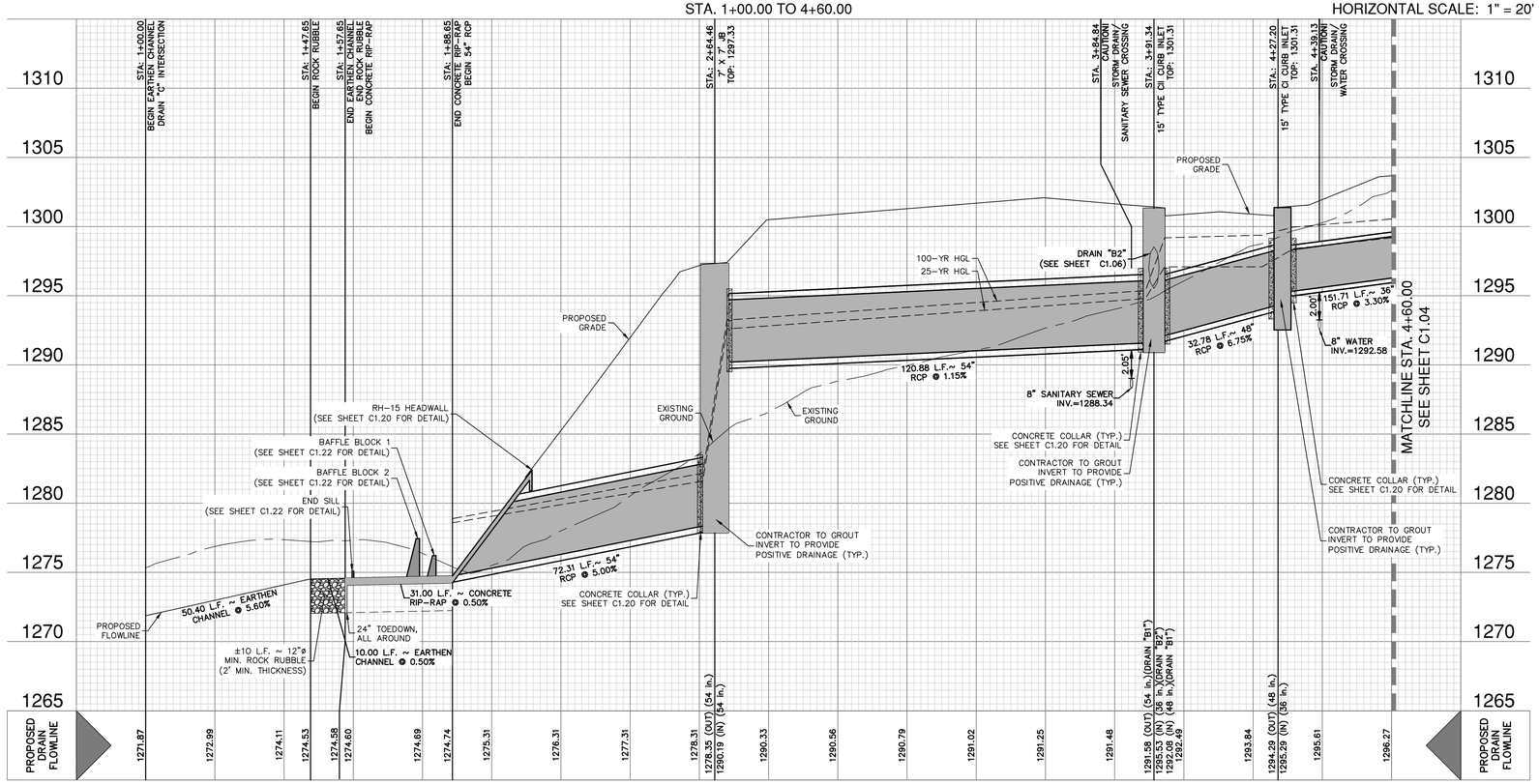
HYDRAULIC CALCULATIONS EARTH CHANNEL

STA. 1+00.00 TO 1+88.65

Qzs	=	119 CFS
Bw	=	13.5 FT
n	=	0.035
S	=	0.50%
dn	=	1.75 FT
VN	=	3.63 FPS
dn+FrBd	=	2.25 FT

DRAIN "B1"
STA. 1+00.00 TO 4+60.00

VERTICAL SCALE: 1" = 5'
HORIZONTAL SCALE: 1" = 20'



HYDRAULIC CALCULATIONS STORM DRAIN "B1"

STA. 1+88.65 TO 2+64.46

Q25	=	119 CFS
S	=	5.00%
Sf	=	0.37%
dn	=	3.85 FT
V	=	8.21 FPS
n	=	0.013
D	=	4.5 FT

HYDRAULIC CALCULATIONS STORM DRAIN "B1"

STA. 2+64.46 TO 3+91.34

Q25	=	119 CFS
S	=	1.15%
Sf	=	0.37%
dn	=	2.42 FT
V	=	13.67 FPS
n	=	0.013
D	=	4.5 FT

HYDRAULIC CALCULATIONS STORM DRAIN "B1"

STA. 3+91.34 TO 4+27.20

Q25	=	70 CFS
S	=	6.75%
Sf	=	0.24%
dn	=	4.0 FT
V	=	5.57 FPS
n	=	0.013
D	=	4.0 FT

HYDRAULIC CALCULATIONS STORM DRAIN "B1"

STA. 4+27.20 TO 5+84.58

Q25	=	50 CFS
S	=	3.30%
Sf	=	0.56%
dn	=	3.00 FT
V	=	7.07 FPS
n	=	0.013
D	=	3.0 FT

HYDRAULIC CALCULATIONS – 15' CURB INLET

$Q_{25}/2 = 40/2 = 20$ CFS

$Q_{25}/2 = \sqrt{CA}\,\sqrt{2gh}$ (ORIFICE FLOW EQN.)

A = L(0.52), h = 0.54, g = 32.2, c = 0.67

$$L = \frac{20 \text{ CFS}}{(0.67)\ (0.52)\sqrt{2}\ (32.2)\ (0.54)}$$

L = 9.73 FT USE 15 FT

CHECK WITH WEIR FORMULA

$$h = \left(\frac{Q}{(CL)}\right)^{2/3} = \left(\frac{20}{(3.087)\ (15)}\right)^{2/3} = 0.57 \text{ FT.}$$

h = 0.57' < 0.79' OK

DRAINAGE & GRADING NOTES:

1. THE CONTRACTOR WILL BE RESPONSIBLE FOR DETERMINING EXACT LOCATION OF ALL UTILITIES AND DRAINAGE STRUCTURES WHETHER SHOWN ON THE PLANS OR NOT. THE CONTRACTOR SHALL UNCOVER EXISTING UTILITIES PRIOR TO CONSTRUCTION TO VERIFY SIZE, GRADE, AND LOCATION. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY OF ANY DEVIATIONS FROM PLANS PRIOR TO BEGINNING CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES, WHETHER SHOWN ON THE PLANS OR NOT, SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO REPAIR, AT HIS EXPENSE.
2. ALL CONCRETE FOR TXDOT DRAINAGE STRUCTURES SHALL MEET TXDOT SPECIFICATIONS. ALL OTHER CONCRETE SHALL BE CLASS "A" 3000 PSI CYLINDER STRENGTH IN 28 DAYS.
3. REFERENCE DRAINAGE DETAILS FOR PIPE TRENCH DETAILS, BOX CULVERT, HEADWALL, AND WINGWALL CONSTRUCTION DETAILS, AND BOX CULVERT BEDDING AND EXCAVATION LIMITS.
4. CONTRACTOR SHALL GROUT ALL CURB INLETS AND JUNCTION BOXES TO PROVIDE FOR POSITIVE DRAINAGE.
5. EARTHEN CHANNELS WILL BE VEGETATED BY SEEDING OR SODDING. 85% OF THE CHANNEL SURFACE MUST HAVE ESTABLISHED VEGETATION BEFORE COMAL COUNTY WILL ACCEPT.
6. CONTRACTOR SHALL MATCH TOP OF CHANNEL TO NATURAL GROUND AND MAINTAIN A MINIMUM CHANNEL DEPTH OF "D" AS SHOWN IN THE PROFILE.

CAUTION!!

CONTRACTOR SHALL BE REQUIRED TO LOCATE ALL PUBLIC OR PRIVATE UTILITIES INCLUDING BUT NOT LIMITING TO: WATER, SEWER, TELEPHONE AND FIBER OPTIC LINES, SITE LIGHTING ELECTRIC, SECONDARY ELECTRIC, PRIMARY ELECTRICAL DUCTBANKS, LANDSCAPE IRRIGATION FACILITIES, AND GAS LINES. ANY UTILITY CONFLICTS THAT ARISE SHOULD BE COMMUNICATED TO THE ENGINEER IMMEDIATELY AND PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL CONTACT "TEXAS 811" A MINIMUM OF 48 HOURS PRIOR TO THE START OF CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND THE REPAIR SHALL BE AT CONTRACTOR'S SOLE EXPENSE WHETHER THE UTILITY IS SHOWN ON THESE PLANS OR NOT.

TRENCH EXCAVATION SAFETY PROTECTION:

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

NO.	REVISION	DATE

STATE OF TEXAS
TODD W. BLACKMON
89208
LICENSED PROFESSIONAL ENGINEER
4-24-2025

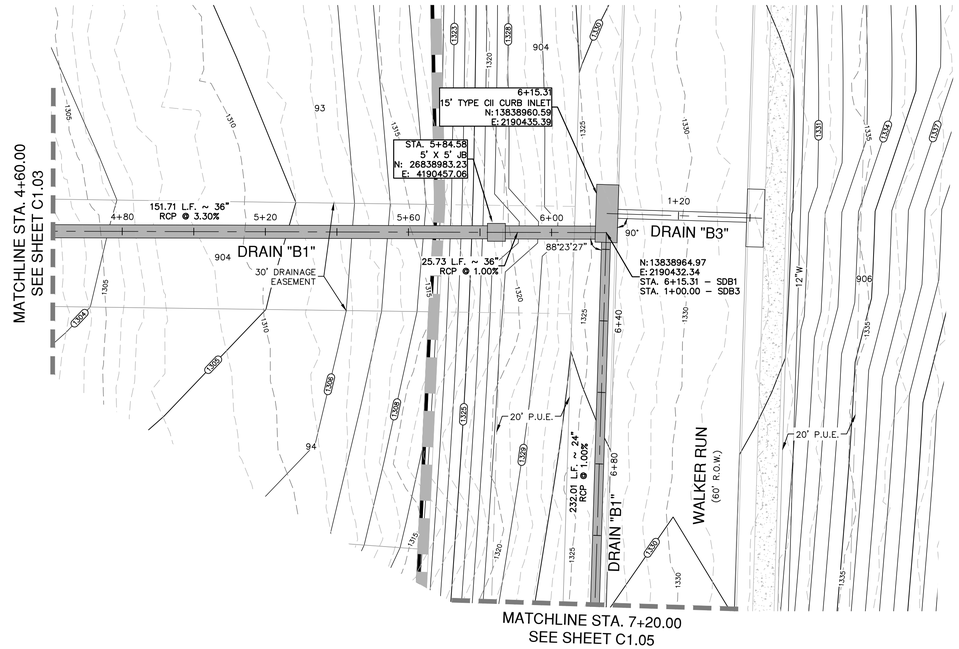
PAPE-DAWSON ENGINEERS
1672 INDEPENDENCE DR, STE 102 I NEW BRAUNFELS, TX 78132 I 830.632.5633
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

MEYER RANCH UNIT 16
COMAL COUNTY, TEXAS

DRAIN B1 - PLAN & PROFILE
STA. 1+00.00 TO 4+60.00

PLAT NO.
JOB NO. 30010-27
DATE DECEMBER 2024
DESIGNER CL
CHECKED HF DRAWN CA
SHEET C1.03

FOR PERMIT



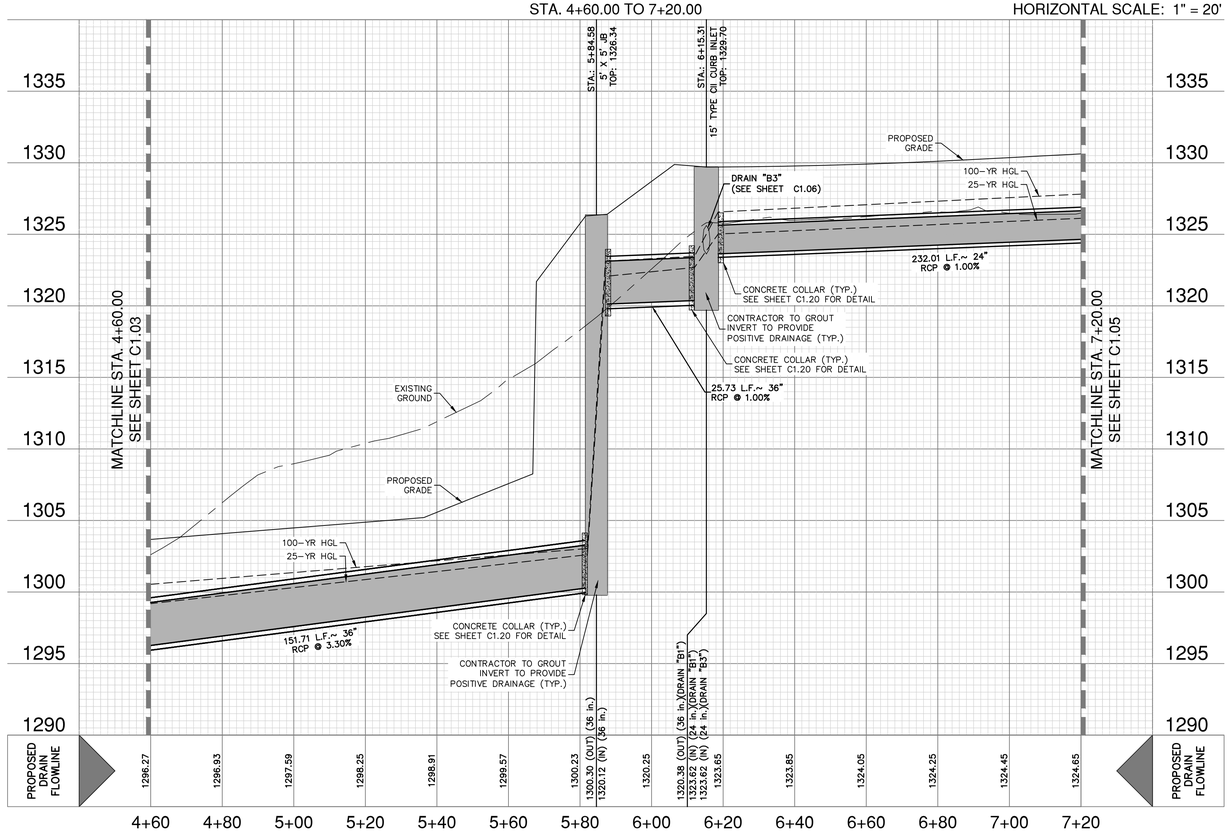
SCALE: 1"= 20'
0' 20' 40' 60'

DRAINAGE LEGEND

- PROJECT LIMITS
- 100 YR FLOODPLAIN
- EXISTING CONTOUR (690)
- PROPOSED CONTOUR (690)
- EXISTING FIRE HYDRANT
- EXISTING WATER (W)
- EXISTING UNDERGROUND ELECTRIC (UGE)
- EXISTING GAS (G)
- EXISTING SEWER (SS)
- PROPOSED SEWER (SS) MANHOLE
- PROPOSED WATER (W) FIRE HYDRANT
- PROPOSED STORM DRAIN
- EXISTING STORM DRAIN
- PROPOSED GAS (G)
- PROPOSED UNDERGROUND ELECTRIC (UGE)
- FLOW ARROW
- CURLEX SINGLE NET EROSION CONTROL BLANKETS

DRAIN "B1"
STA. 4+60.00 TO 7+20.00

VERTICAL SCALE: 1" = 5'
HORIZONTAL SCALE: 1" = 20'



HYDRAULIC CALCULATIONS STORM DRAIN "B1" STA. 4+27.20 TO 5+84.58	HYDRAULIC CALCULATIONS STORM DRAIN "B1" STA. 5+84.58 TO 6+15.31	HYDRAULIC CALCULATIONS STORM DRAIN "B1" STA. 6+15.31 TO 8+56.98
Q25 = 50 CFS	Q25 = 50 CFS	Q25 = 19 CFS
S = 3.30%	S = 1.00%	S = 1.00%
Sf = 0.56%	Sf = 0.56%	Sf = 0.71%
dn = 3.00 FT	dn = 1.94 FT	dn = 1.40 FT
V = 7.07 FPS	V = 10.32 FPS	V = 8.06 FPS
n = 0.013	n = 0.013	n = 0.013
D = 3.0 FT	D = 3.0 FT	D = 2.0 FT

HYDRAULIC CALCULATIONS – 15' CURB INLET

$Q_{25}/2 = 31/2 = 15.5$ CFS

$Q_{25}/2 = \sqrt{CA}\ 2gh$ (ORIFICE FLOW EQN.)

A = L(0.52), h = 0.54, g = 32.2, c = 0.67

$$L = \frac{15.5\ CFS}{(0.67)\ (0.52)\sqrt{2\ (32.2)\ (0.54)}}$$

L = 7.54 FT USE 15 FT

CHECK WITH WEIR FORMULA

$$h = \left(\frac{Q}{(CL)}\right)^{2/3} = \left(\frac{15.5}{(3.087)\ (15)}\right)^{2/3} = 0.47\ \text{FT.}$$

h = 0.48' < 0.79' OK

DRAINAGE & GRADING NOTES:

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NO.	REVISION	DATE

12 - 27 - 2024
STATE OF TEXAS
TODD W. BLACKMON
89208
LICENSED
PROFESSIONAL ENGINEER

PAPE-DAWSON ENGINEERS
1672 INDEPENDENCE DR, STE 102 I NEW BRAUNFELS, TX 78132 I 830.632.5633
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

MEYER RANCH UNIT 16
COMAL COUNTY, TEXAS

DRAIN B1 - PLAN & PROFILE
STA. 4+60.00 TO 7+20.00

PLAT NO.
JOB NO. 30010-27
DATE DECEMBER 2024
DESIGNER CL
CHECKED HF DRAWN CA
SHEET C1.04

FOR PERMIT

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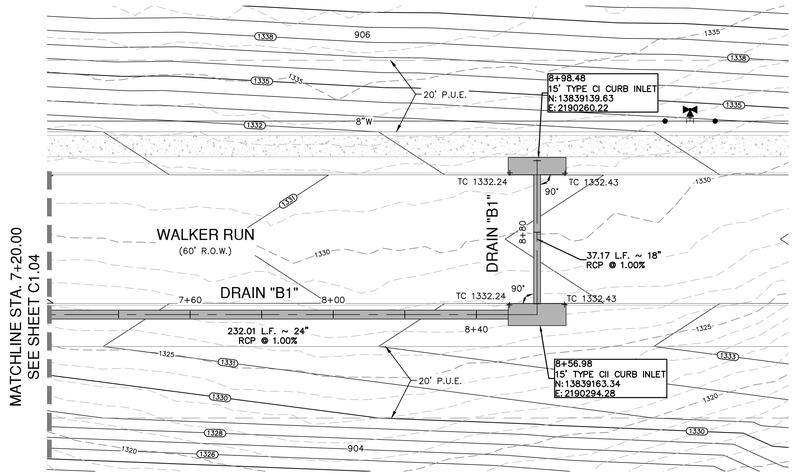
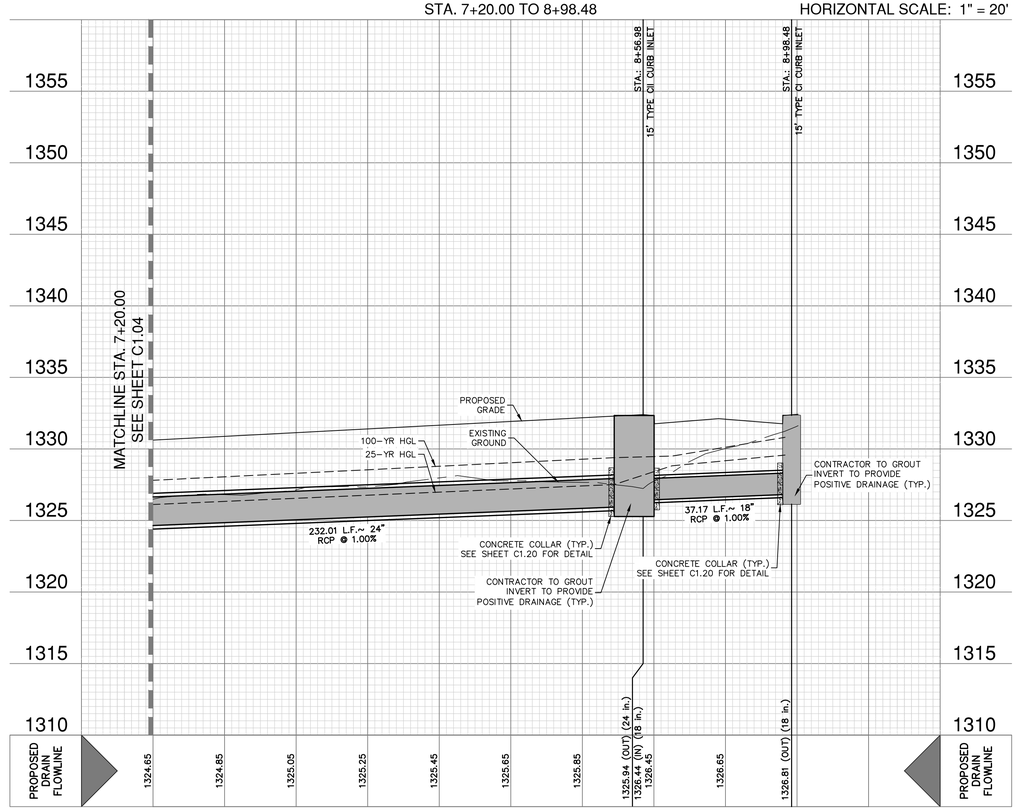


DRAINAGE LEGEND

- PROJECT LIMITS
- 100 YR FLOODPLAIN
- EXISTING CONTOUR — 690
- PROPOSED CONTOUR — 690
- EXISTING FIRE HYDRANT
- EXISTING WATER — W
- EXISTING UNDERGROUND ELECTRIC — UGE
- EXISTING GAS — G
- EXISTING SEWER — SS
- PROPOSED SEWER — SS — MANHOLE
- PROPOSED WATER — W — FIRE HYDRANT
- PROPOSED STORM DRAIN
- EXISTING STORM DRAIN
- PROPOSED GAS — G
- PROPOSED UNDERGROUND ELECTRIC — UGE
- FLOW ARROW
- CURLEX SINGLE NET EROSION CONTROL BLANKETS

DRAIN "B1"
STA. 7+20.00 TO 8+98.48

VERTICAL SCALE: 1" = 5'
HORIZONTAL SCALE: 1" = 20'



DRAIN "B1" STA. 8+56.98 & 8+98.48
ON-GRADE INLET
HYDRAULIC CALCULATIONS
CURB INLET TABLE POINT U3

Q_{25} /2 = 35/2 = 17.5 CFS
S = 1.30%
L = 15' INLET
$Q_{CAPTURED}$ = 9.5 CFS
Q_{BYPASS} = 8 CFS

HYDRAULIC CALCULATIONS STORM DRAIN "B1" STA. 6+15.31 TO 8+56.98	
Q25	= 19 CFS
S	= 1.00%
Sf	= 0.71%
dn	= 1.40 FT
V	= 8.06 FPS
n	= 0.013
D	= 2.0 FT

HYDRAULIC CALCULATIONS STORM DRAIN "B1" STA. 8+56.98 TO 8+98.48	
Q25	= 9.5 CFS
S	= 1.00%
Sf	= 0.82%
dn	= 1.50 FT
V	= 5.38 FPS
n	= 0.013
D	= 1.5 FT

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NO.	REVISION	DATE

12 - 27 - 2024
STATE OF TEXAS
TODD W. BLACKMON
89208
LICENSED
PROFESSIONAL ENGINEER

PAPE-DAWSON ENGINEERS
1672 INDEPENDENCE DR, STE 102 I NEW BRAUNFELS, TX 78132 I 830.632.5633
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

MEYER RANCH UNIT 16
COMAL COUNTY, TEXAS

DRAIN B1 - PLAN & PROFILE
STA. 7+20.00 TO 8+98.48

PLAT NO.
JOB NO. 30010-27
DATE DECEMBER 2024
DESIGNER CL
CHECKED HF DRAWN CA
SHEET C1.05

FOR PERMIT

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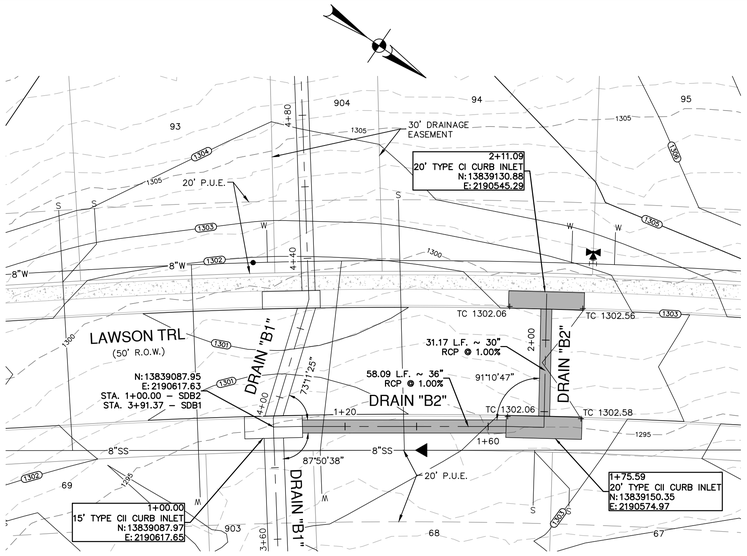
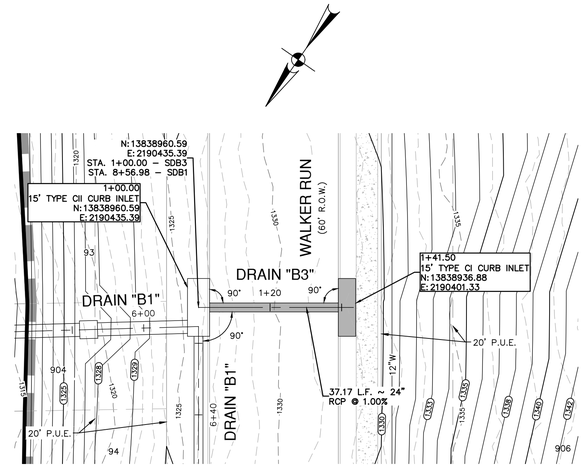




SCALE: 1"= 20'

0' 20' 40' 60'

DRAINAGE LEGEND

- PROJECT LIMITS
- 100 YR FLOODPLAIN
- EXISTING CONTOUR — 690
- PROPOSED CONTOUR — 690
- EXISTING WATER — W
- EXISTING UNDERGROUND ELECTRIC — UGE
- EXISTING GAS — G
- EXISTING SEWER — SS
- PROPOSED SEWER — SS
- PROPOSED WATER — W
- PROPOSED STORM DRAIN
- EXISTING STORM DRAIN
- PROPOSED GAS — G
- PROPOSED UNDERGROUND ELECTRIC — UGE
- FLOW ARROW
- CURLEX SINGLE NET EROSION CONTROL BLANKETS

EXISTING FIRE HYDRANT
MANHOLE
FIRE HYDRANT

HYDRAULIC CALCULATIONS STORM DRAIN "B2"

STA. 1+00.00 TO 1+75.59

Q25 = 28 CFS
S = 1.00%
Sf = 0.18%
dn = 1.55 FT
V = 7.63 FPS
n = 0.013
D = 3.0 FT

HYDRAULIC CALCULATIONS STORM DRAIN "B2"

STA. 1+75.59 TO 2+11.09

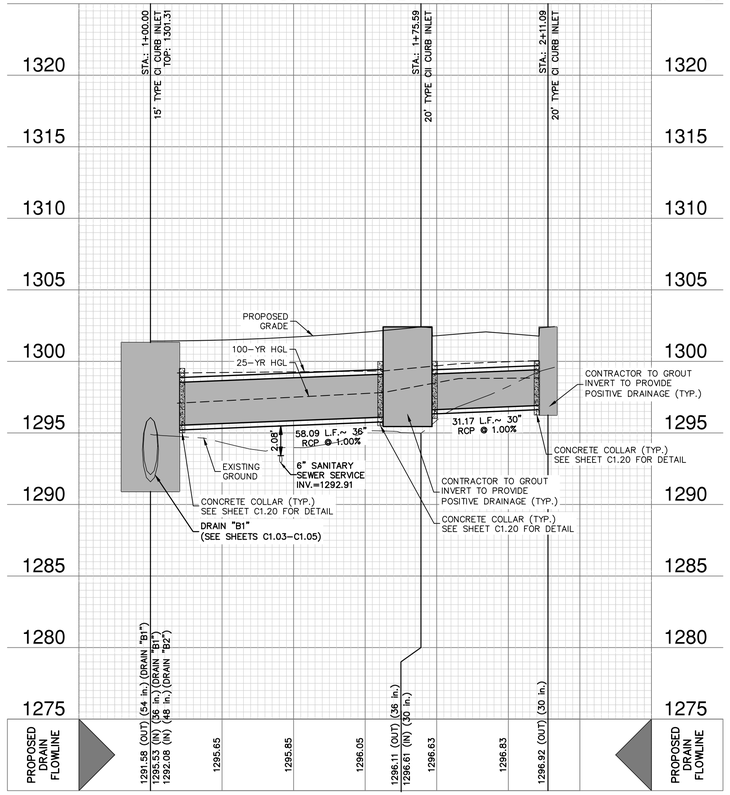
Q25 = 14 CFS
S = 1.00%
Sf = 0.12%
dn = 2.18 FT
V = 3.08 FPS
n = 0.013
D = 2.5 FT

DRAIN "B2" STA. 1+75.59 & STA. 2+11.09
ON-GRADE INLET
HYDRAULIC CALCULATIONS
CURB INLET TABLE POINT U6

Q_{25} /2 = 56/2 = 28 CFS
S = 2.60%
L = 20' INLET
$Q_{CAPTURED}$ = 14 CFS
Q_{BYPASS} = 14 CFS

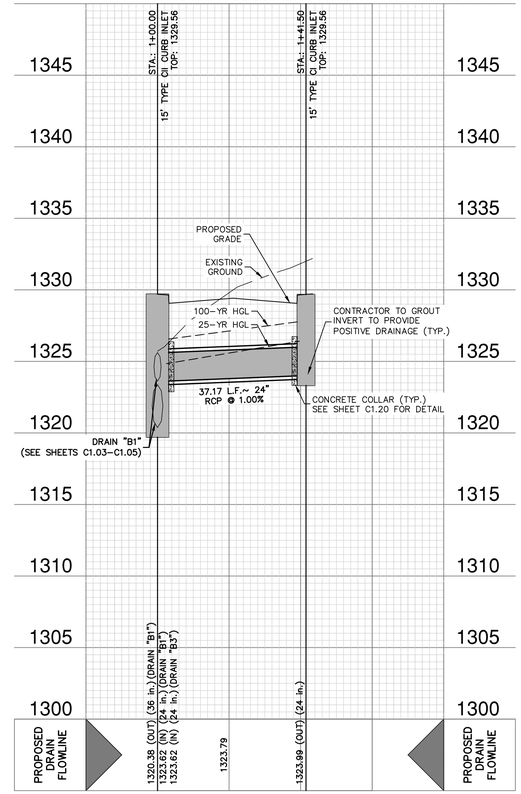
DRAIN "B2"
STA. 1+00.00 TO 2+11.09

VERTICAL SCALE: 1" = 5'
HORIZONTAL SCALE: 1" = 20'



DRAIN "B3"
STA. 1+00.00 TO 1+41.50

VERTICAL SCALE: 1" = 5'
HORIZONTAL SCALE: 1" = 20'



HYDRAULIC CALCULATIONS STORM DRAIN "B3"

STA. 1+00.00 TO 1+41.50

Q25 = 15.5 CFS
S = 1.00%
Sf = 0.47%
dn = 1.22 FT
V = 7.74 FPS
n = 0.013
D = 2.0 FT

HYDRAULIC CALCULATIONS – 15' CURB INLET

Q_{25} /2 = 31/2 = 15.5 CFS

Q_{25} /2 = $\sqrt{CA}$ 2gh (ORIFICE FLOW EQN.)

A = L(0.52), h = 0.54, g = 32.2, c = 0.67

$$L = \frac{15.5 \text{ CFS}}{(0.67)\ (0.52)\sqrt{2\ (32.2)\ (0.54)}}$$

L = 7.54 FT USE 15 FT

CHECK WITH WEIR FORMULA

$$h = \left(\frac{Q}{(CL)}\right)^{2/3} = \left(\frac{15.5}{(3.087)\ (15)}\right)^{2/3} = 0.48 \text{ FT.}$$

h = 0.48' < 0.79' OK

DRAINAGE & GRADING NOTES:

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TRENCH EXCAVATION SAFETY PROTECTION:

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

NO.	REVISION	DATE

STATE OF TEXAS
TODD W. BLACKMON
89208
LICENSED
PROFESSIONAL ENGINEER
12 - 27 - 2024

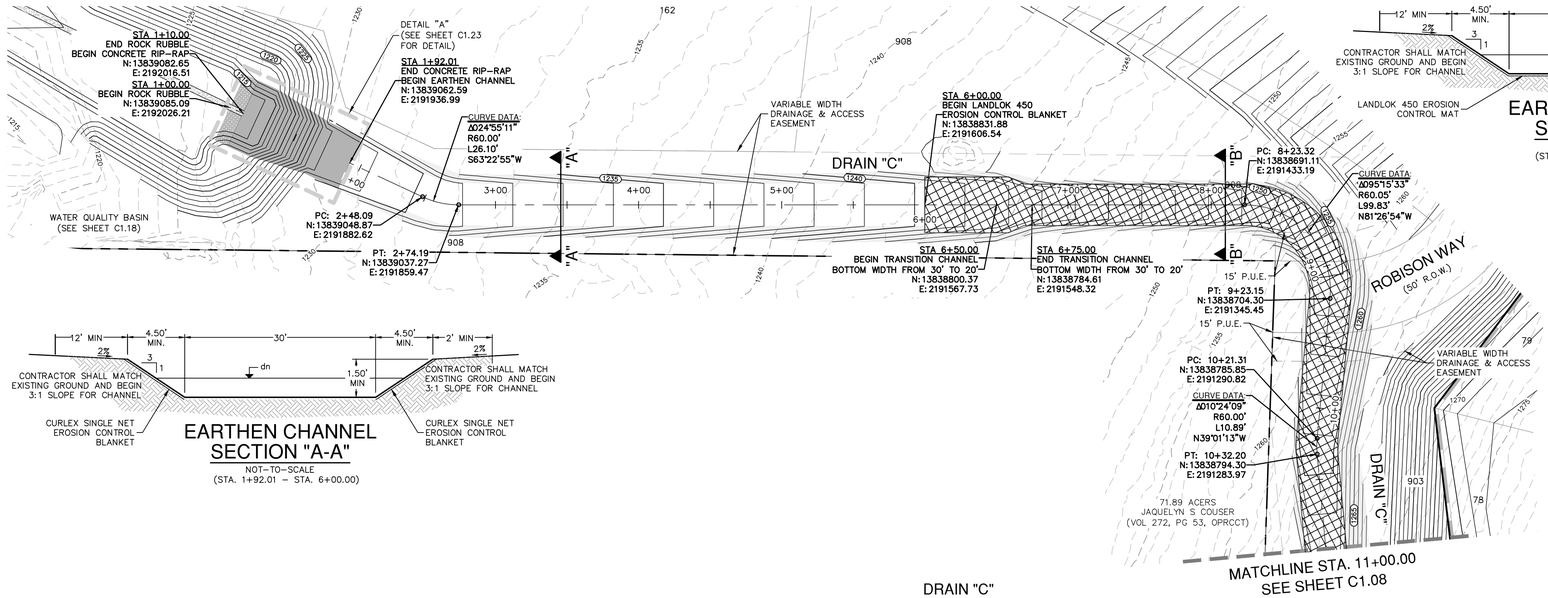
PAPE-DAWSON ENGINEERS
1672 INDEPENDENCE DR, STE 102 I NEW BRAUNFELS, TX 78132 I 830.632.5633
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

MEYER RANCH UNIT 16
COMAL COUNTY, TEXAS

DRAIN B2 & B3 - PLAN & PROFILE

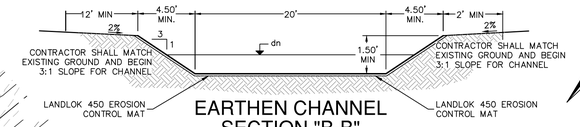
PLAT NO.
JOB NO. 30010-27
DATE DECEMBER 2024
DESIGNER CL
CHECKED HF DRAWN CA
SHEET C1.06

FOR PERMIT



EARTHEN CHANNEL SECTION "A-A"

NOT-TO-SCALE
(STA. 1+92.01 – STA. 6+00.00)



EARTHEN CHANNEL SECTION "B-B"

NOT-TO-SCALE
(STA. 6+75.00 – STA. 11+50.00)

SCALE: 1"= 50'
0' 50' 100' 150'

DRAINAGE LEGEND

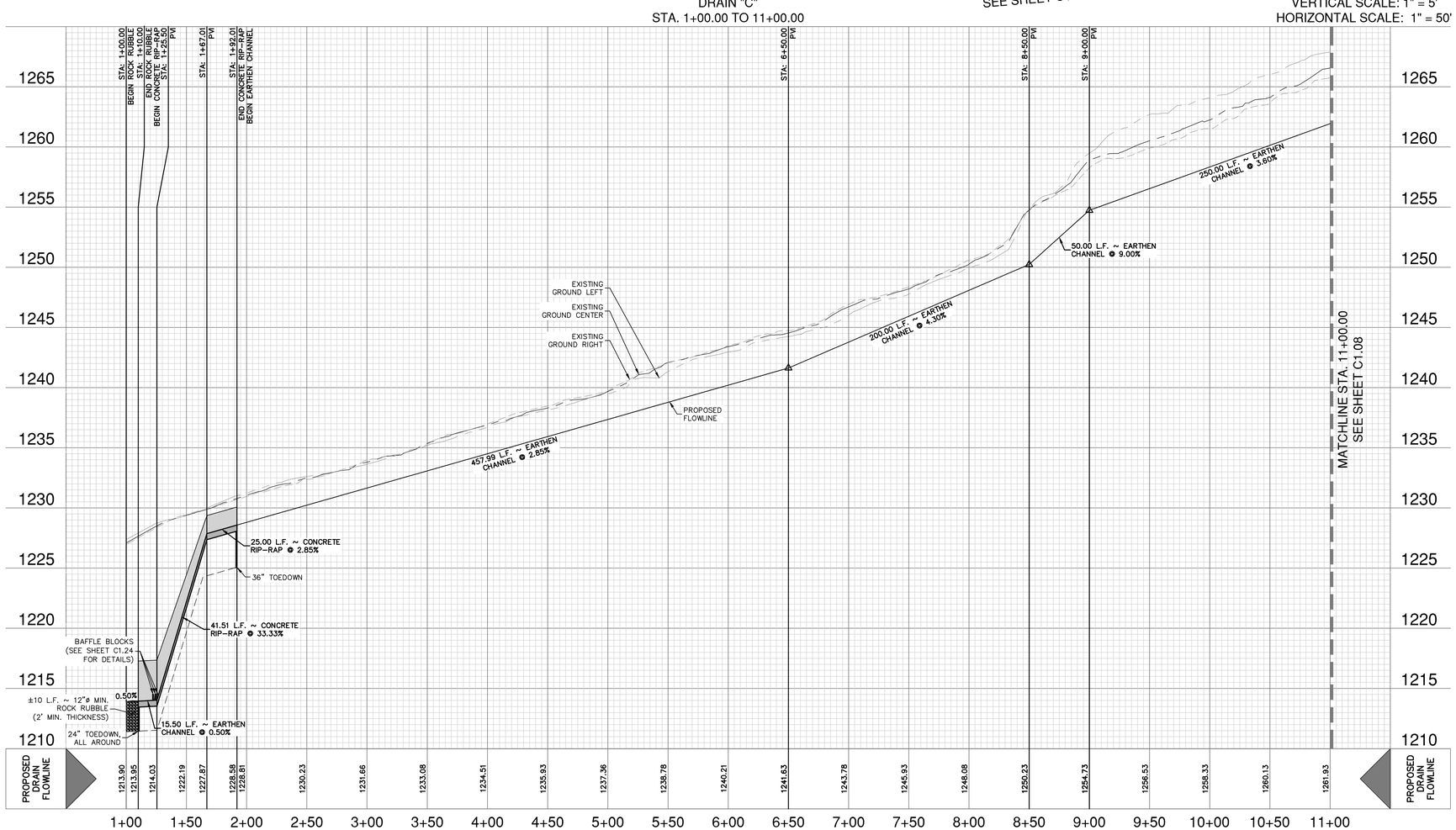
- PROJECT LIMITS
- 100 YR FLOODPLAIN
- EXISTING CONTOUR (690)
- PROPOSED CONTOUR (690)
- EXISTING WATER (EXISTING FIRE HYDRANT)
- EXISTING UNDERGROUND ELECTRIC (UGE)
- EXISTING GAS (G)
- EXISTING SEWER (SS, MANHOLE)
- PROPOSED SEWER (SS)
- PROPOSED WATER (FIRE HYDRANT, W)
- PROPOSED STORM DRAIN
- EXISTING STORM DRAIN
- PROPOSED GAS (G)
- PROPOSED UNDERGROUND ELECTRIC (UGE)
- FLOW ARROW
- CURLEX SINGLE NET EROSION CONTROL BLANKETS
- LANDLOK 450 EROSION CONTROL MAT

HYDRAULIC CALCULATIONS EARTH CHANNEL	
STA. 1+92.01 TO 6+50.00	
Q_{25}	= 161 CFS
Bw	= 30 FT
n	= 0.035
S	= 2.85%
dn	= 0.83 FT
VN	= 5.97 FPS
dn+FrBd	= 1.33 FT

HYDRAULIC CALCULATIONS EARTH CHANNEL	
STA. 6+50.00 TO 8+50.00	
Q_{25}	= 161 CFS
Bw	= 20 FT
n	= 0.035
S	= 4.30%
dn	= 0.93 FT
VN	= 7.60 FPS
dn+FrBd	= 1.43 FT

HYDRAULIC CALCULATIONS EARTH CHANNEL	
STA. 8+50.00 TO 9+00.00	
Q_{25}	= 161 CFS
Bw	= 20 FT
n	= 0.035
S	= 9.00%
dn	= 0.75 FT
VN	= 9.65 FPS
dn+FrBd	= 1.25 FT

HYDRAULIC CALCULATIONS EARTH CHANNEL	
STA. 9+00.00 TO 11+50.00	
Q_{25}	= 161 CFS
Bw	= 20 FT
n	= 0.035
S	= 3.60%
dn	= 0.98 FT
VN	= 7.16 FPS
dn+FrBd	= 1.48 FT



DRAINAGE & GRADING NOTES:

1. THE CONTRACTOR WILL BE RESPONSIBLE FOR DETERMINING EXACT LOCATION OF ALL UTILITIES AND DRAINAGE STRUCTURES WHETHER SHOWN ON THE PLANS OR NOT. THE CONTRACTOR SHALL UNCOVER EXISTING UTILITIES PRIOR TO CONSTRUCTION TO VERIFY SIZE, GRADE, AND LOCATION. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY OF ANY DEVIATIONS FROM PLANS PRIOR TO BEGINNING CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES, WHETHER SHOWN ON THE PLANS OR NOT, SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO REPAIR, AT HIS EXPENSE.
2. ALL CONCRETE FOR TXDOT DRAINAGE STRUCTURES SHALL MEET TXDOT SPECIFICATIONS. ALL OTHER CONCRETE SHALL BE CLASS "A" 3000 PSI CYLINDER STRENGTH IN 28 DAYS.
3. REFERENCE DRAINAGE DETAILS FOR PIPE TRENCH DETAILS, BOX CULVERT, HEADWALL, AND WINGWALL CONSTRUCTION DETAILS, AND BOX CULVERT BEDDING AND EXCAVATION LIMITS.
4. CONTRACTOR SHALL GROUT ALL CURB INLETS AND JUNCTION BOXES TO PROVIDE FOR POSITIVE DRAINAGE.
5. EARTHEN CHANNELS WILL BE VEGETATED BY SEEDING OR SODDING. 85% OF THE CHANNEL SURFACE MUST HAVE ESTABLISHED VEGETATION BEFORE COMAL COUNTY WILL ACCEPT.
6. CONTRACTOR SHALL MATCH TOP OF CHANNEL TO NATURAL GROUND AND MAINTAIN A MINIMUM CHANNEL DEPTH OF "D" AS SHOWN IN THE PROFILE.

CAUTION!!

CONTRACTOR SHALL BE REQUIRED TO LOCATE ALL PUBLIC OR PRIVATE UTILITIES INCLUDING BUT NOT LIMITING TO: WATER, SEWER, TELEPHONE AND FIBER OPTIC LINES, SITE LIGHTING ELECTRIC, SECONDARY ELECTRIC, PRIMARY ELECTRICAL DUCTBANKS, LANDSCAPE IRRIGATION FACILITIES, AND GAS LINES. ANY UTILITY CONFLICTS THAT ARISE SHOULD BE COMMUNICATED TO THE ENGINEER IMMEDIATELY AND PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL CONTACT "TEXAS 811" A MINIMUM OF 48 HOURS PRIOR TO THE START OF CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND THE REPAIR SHALL BE AT CONTRACTOR'S SOLE EXPENSE WHETHER THE UTILITY IS SHOWN ON THESE PLANS OR NOT.

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NO.	REVISION	DATE

STATE OF TEXAS
TODD W. BLACKMON
89208
LICENSED
PROFESSIONAL ENGINEER
4-24-2025

PAPE-DAWSON ENGINEERS
1672 INDEPENDENCE DR, STE 102 | NEW BRAUNFELS, TX 78132 | 830.632.5633
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

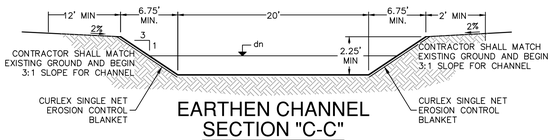
MEYER RANCH UNIT 16

COMAL COUNTY, TEXAS

DRAIN C - PLAN & PROFILE
STA. 1+00.00 TO 11+00.00

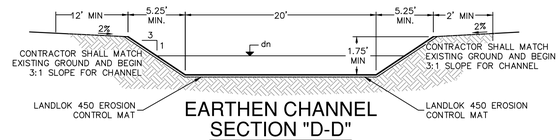
PLAT NO. ____
JOB NO. 30010-27
DATE DECEMBER 2024
DESIGNER CL
CHECKED HF DRAWN CA
SHEET C1.07

FOR PERMIT



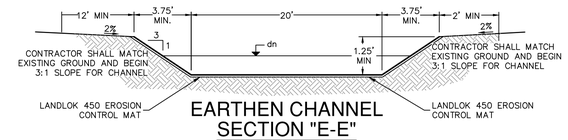
EARTHEN CHANNEL SECTION "C-C"

NOT-TO-SCALE
(STA. 11+60.00 – STA. 15+00.00)



EARTHEN CHANNEL SECTION "D-D"

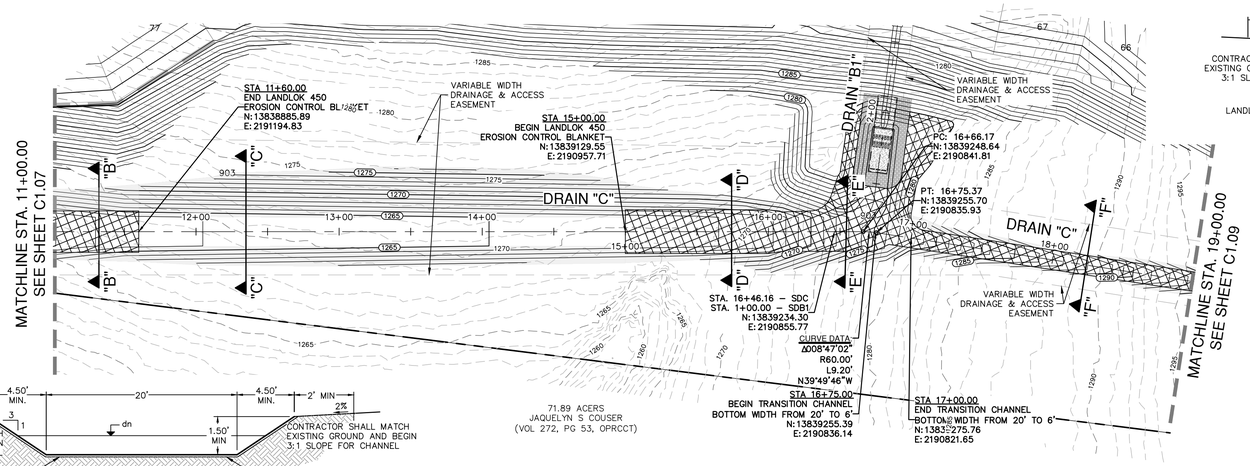
NOT-TO-SCALE
(STA. 15+50.00 – STA. 16+00.00)

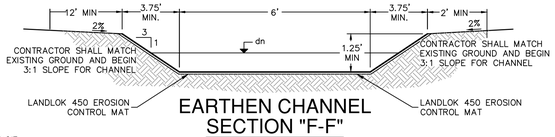


EARTHEN CHANNEL SECTION "E-E"

NOT-TO-SCALE
(STA. 16+00.00 – STA. 16+85.00)

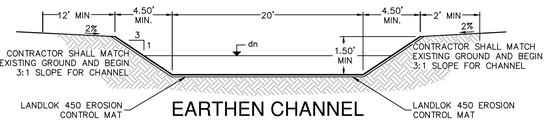
SCALE: 1"= 50'
0' 50' 100' 150'





EARTHEN CHANNEL SECTION "F-F"

NOT-TO-SCALE
(STA. 17+00.00 – STA. 21+50.00)



EARTHEN CHANNEL SECTION "B-B"

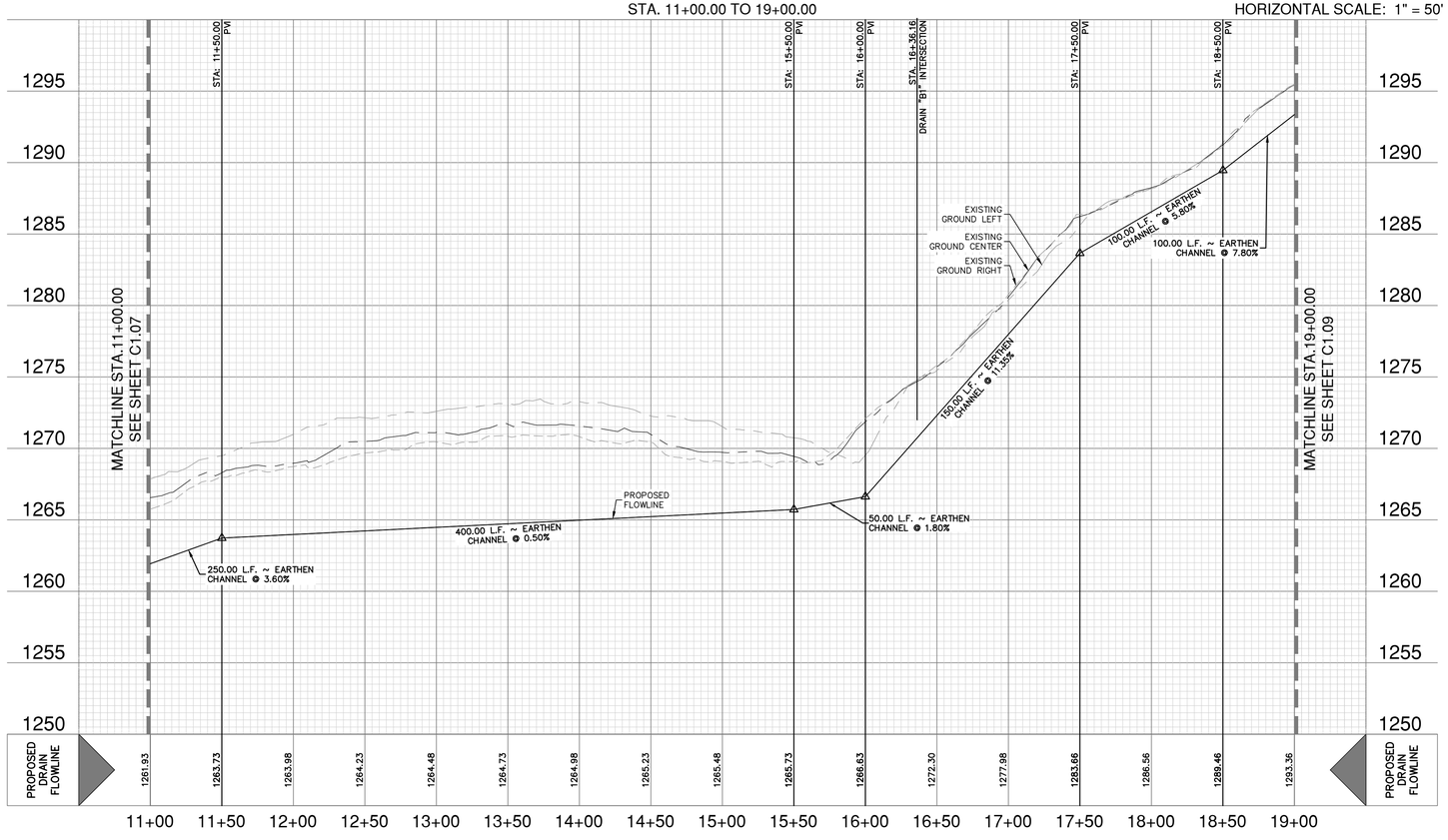
NOT-TO-SCALE
(STA. 6+75.00 – STA. 11+50.00)

DRAINAGE LEGEND

- PROJECT LIMITS
- 100 YR FLOODPLAIN
- EXISTING CONTOUR (690)
- PROPOSED CONTOUR (690)
- EXISTING WATER (EXISTING FIRE HYDRANT, W)
- EXISTING UNDERGROUND ELECTRIC (UGE)
- EXISTING GAS (G)
- EXISTING SEWER (SS, MANHOLE)
- PROPOSED SEWER (SS)
- PROPOSED WATER (FIRE HYDRANT, W)
- PROPOSED STORM DRAIN
- EXISTING STORM DRAIN
- PROPOSED GAS (G)
- PROPOSED UNDERGROUND ELECTRIC (UGE)
- FLOW ARROW
- CURLEX SINGLE NET EROSION CONTROL BLANKETS
- LANDLOK 450 EROSION CONTROL MAT

DRAIN "C"
STA. 11+00.00 TO 19+00.00

VERTICAL SCALE: 1" = 5'
HORIZONTAL SCALE: 1" = 50'



HYDRAULIC CALCULATIONS EARTH CHANNEL
STA. 9+00.00 TO 11+50.00

Q_{25}	=	161 CFS
Bw	=	20 FT
n	=	0.035
S	=	3.60%
dn	=	0.98 FT
VN	=	7.16 FPS
dn+FrBd	=	1.48 FT

HYDRAULIC CALCULATIONS EARTH CHANNEL
STA. 11+50.00 TO 15+50.00

Q_{25}	=	161 CFS
Bw	=	20 FT
n	=	0.035
S	=	0.50%
dn	=	1.71 FT
VN	=	3.75 FPS
dn+FrBd	=	2.21 FT

HYDRAULIC CALCULATIONS EARTH CHANNEL
STA. 15+50.00 TO 16+00.00

Q_{25}	=	161 CFS
Bw	=	20 FT
n	=	0.035
S	=	1.80%
dn	=	1.19 FT
VN	=	5.74 FPS
dn+FrBd	=	1.69 FT

HYDRAULIC CALCULATIONS EARTH CHANNEL
STA. 16+00.00 TO 16+85.00

Q_{25}	=	161 CFS
Bw	=	20 FT
n	=	0.035
S	=	11.35%
dn	=	0.70 FT
VN	=	10.41 FPS
dn+FrBd	=	1.20 FT

HYDRAULIC CALCULATIONS EARTH CHANNEL
STA. 16+85.00 TO 17+50.00

Q_{25}	=	28 CFS
Bw	=	6 FT
n	=	0.035
S	=	11.35%
dn	=	0.49 FT
VN	=	7.65 FPS
dn+FrBd	=	0.99 FT

HYDRAULIC CALCULATIONS EARTH CHANNEL
STA. 17+50.00 TO 18+50.00

Q_{25}	=	28 CFS
Bw	=	6 FT
n	=	0.035
S	=	5.80%
dn	=	0.59 FT
VN	=	6.11 FPS
dn+FrBd	=	1.09 FT

HYDRAULIC CALCULATIONS EARTH CHANNEL
STA. 18+50.00 TO 19+50.00

Q_{25}	=	28 CFS
Bw	=	6 FT
n	=	0.035
S	=	7.80%
dn	=	0.54 FT
VN	=	6.80 FPS
dn+FrBd	=	1.04 FT

DRAINAGE & GRADING NOTES:

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3. REFERENCE DRAINAGE DETAILS FOR PIPE TRENCH DETAILS, BOX CULVERT, HEADWALL, AND WINGWALL CONSTRUCTION DETAILS, AND BOX CULVERT BEDDING AND EXCAVATION LIMITS.
4. CONTRACTOR SHALL GROUT ALL CURB INLETS AND JUNCTION BOXES TO PROVIDE FOR POSITIVE DRAINAGE.
5. EARTHEN CHANNELS WILL BE VEGETATED BY SEEDING OR SODDING. 85% OF THE CHANNEL SURFACE MUST HAVE ESTABLISHED VEGETATION BEFORE COMAL COUNTY WILL ACCEPT.
6. CONTRACTOR SHALL MATCH TOP OF CHANNEL TO NATURAL GROUND AND MAINTAIN A MINIMUM CHANNEL DEPTH OF "D" AS SHOWN IN THE PROFILE.

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NO.	REVISION	DATE

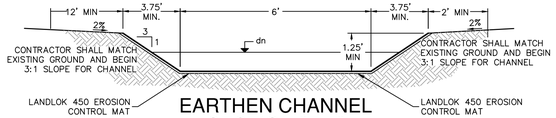
STATE OF TEXAS
TODD W. BLACKMON
89208
LICENSED PROFESSIONAL ENGINEER
12 - 27 - 2024

PAPE-DAWSON ENGINEERS
1672 INDEPENDENCE DR, STE 102 I NEW BRAUNFELS, TX 78132 I 830.632.5633
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

MEYER RANCH UNIT 16
COMAL COUNTY, TEXAS
DRAIN C - PLAN & PROFILE
STA. 11+00.00 TO 19+00.00

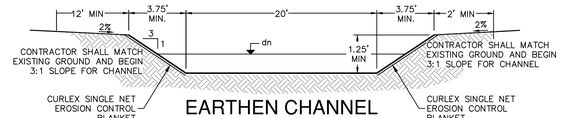
PLAT NO. ____
JOB NO. 30010-27
DATE DECEMBER 2024
DESIGNER CL
CHECKED HF DRAWN CA
SHEET C1.08

FOR PERMIT



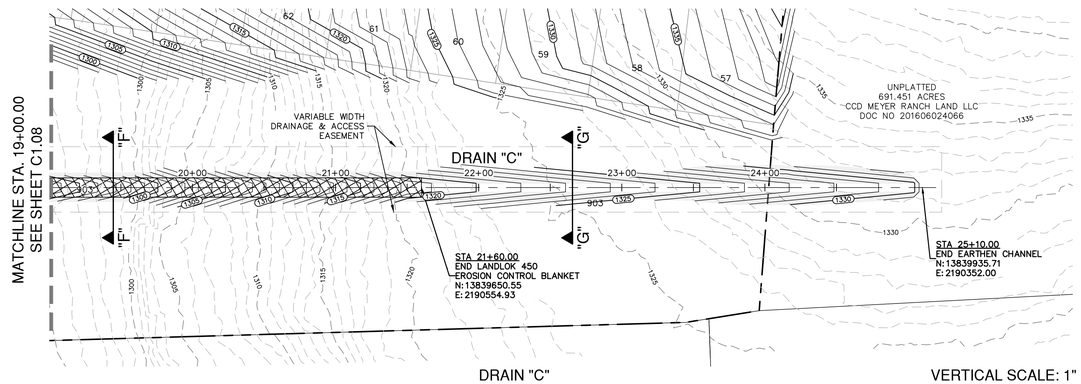
EARTHEN CHANNEL SECTION "F-F"

NOT-TO-SCALE
(STA. 17+00.00 – STA. 21+50.00)



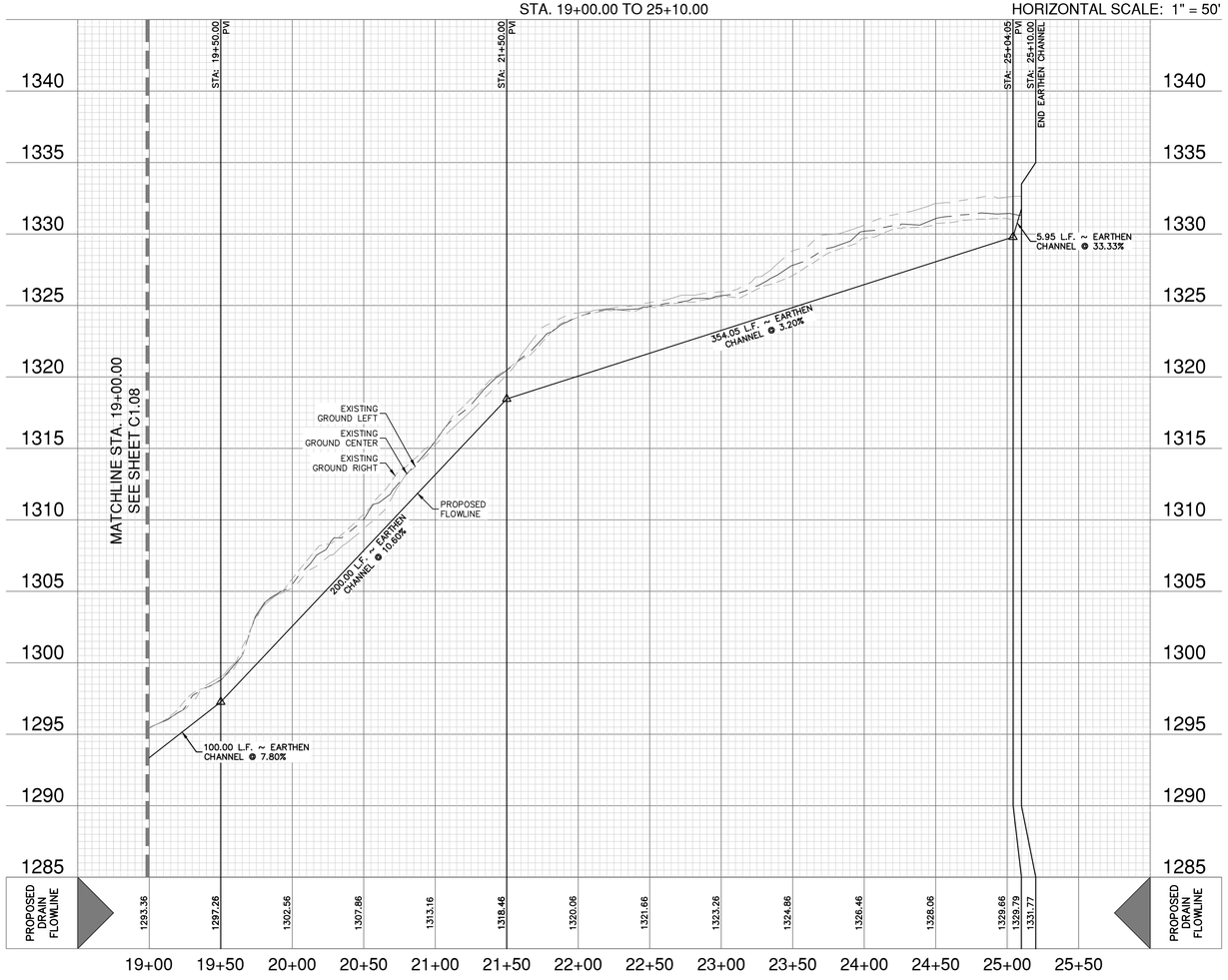
EARTHEN CHANNEL SECTION "G-G"

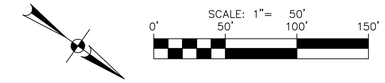
NOT-TO-SCALE
(STA. 21+50.00 – STA. 25+10.00)



DRAIN "C"
STA. 19+00.00 TO 25+10.00

VERTICAL SCALE: 1" = 5'
HORIZONTAL SCALE: 1" = 50'





DRAINAGE LEGEND

- PROJECT LIMITS
- 100 YR FLOODPLAIN
- EXISTING CONTOUR (690)
- PROPOSED CONTOUR (690)
- EXISTING FIRE HYDRANT
- EXISTING WATER (W)
- EXISTING UNDERGROUND ELECTRIC (UGE)
- EXISTING GAS (G)
- EXISTING SEWER (SS) MANHOLE
- PROPOSED SEWER (SS)
- FIRE HYDRANT
- PROPOSED WATER (W)
- PROPOSED STORM DRAIN
- EXISTING STORM DRAIN
- PROPOSED GAS (G)
- PROPOSED UNDERGROUND ELECTRIC (UGE)
- FLOW ARROW
- CURLEX SINGLE NET EROSION CONTROL BLANKETS
- LANDLOK 450 EROSION CONTROL MAT

HYDRAULIC CALCULATIONS EARTH CHANNEL
STA. 18+50.00 TO 19+50.00

Q25	=	28 CFS
Bw	=	6 FT
n	=	0.035
S	=	7.80%
dn	=	0.54 FT
VN	=	6.80 FPS
dn+FrBd	=	1.04 FT

HYDRAULIC CALCULATIONS EARTH CHANNEL
STA. 19+50.00 TO 21+50.00

Q25	=	28 CFS
Bw	=	6 FT
n	=	0.035
S	=	10.60%
dn	=	0.50 FT
VN	=	7.47 FPS
dn+FrBd	=	1.00 FT

HYDRAULIC CALCULATIONS EARTH CHANNEL
STA. 21+50.00 TO 25+10.00

Q25	=	28 CFS
Bw	=	6 FT
n	=	0.035
S	=	3.20%
dn	=	0.70 FT
VN	=	4.94 FPS
dn+FrBd	=	1.20 FT

DRAINAGE & GRADING NOTES:

1. THE CONTRACTOR WILL BE RESPONSIBLE FOR DETERMINING EXACT LOCATION OF ALL UTILITIES AND DRAINAGE STRUCTURES WHETHER SHOWN ON THE PLANS OR NOT. THE CONTRACTOR SHALL UNCOVER EXISTING UTILITIES PRIOR TO CONSTRUCTION TO VERIFY SIZE, GRADE, AND LOCATION. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY OF ANY DEVIATIONS FROM PLANS PRIOR TO BEGINNING CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES, WHETHER SHOWN ON THE PLANS OR NOT, SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO REPAIR, AT HIS EXPENSE.
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6. CONTRACTOR SHALL MATCH TOP OF CHANNEL TO NATURAL GROUND AND MAINTAIN A MINIMUM CHANNEL DEPTH OF "D" AS SHOWN IN THE PROFILE.

CAUTION!!

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TRENCH EXCAVATION SAFETY PROTECTION:

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

NO.	REVISION	DATE

STATE OF TEXAS
TODD W. BLACKMON
89208
LICENSED
PROFESSIONAL ENGINEER
12 - 27 - 2024

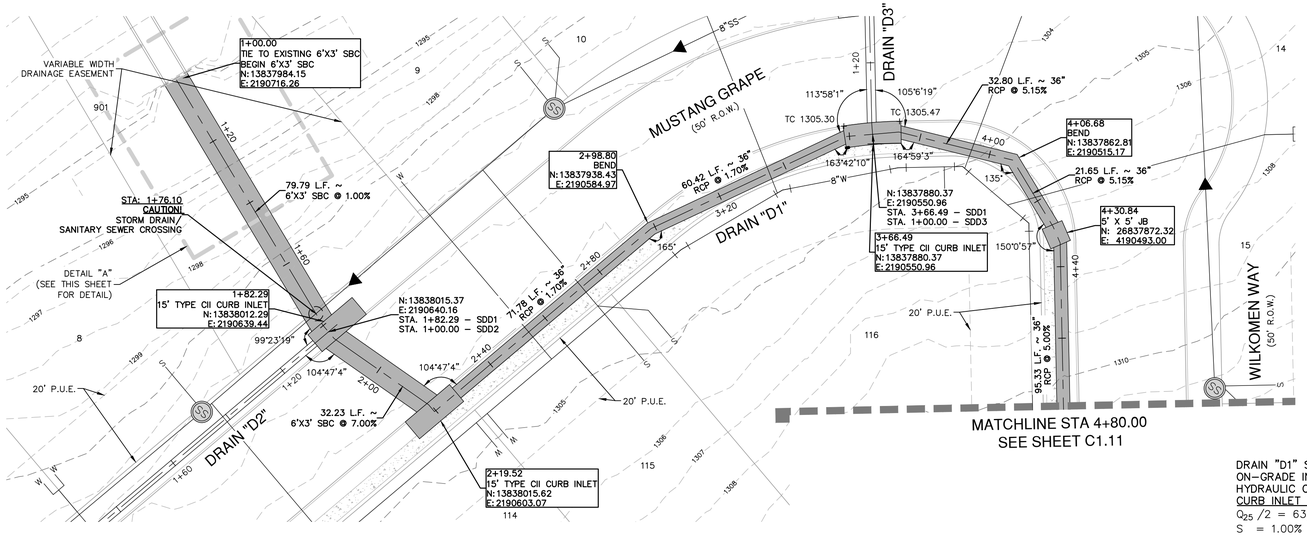
PAPE-DAWSON ENGINEERS
1672 INDEPENDENCE DR, STE 102 I NEW BRAUNFELS, TX 78132 I 830.632.5633
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

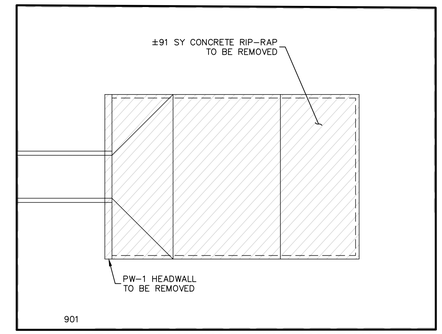
MEYER RANCH UNIT 16
COMAL COUNTY, TEXAS

DRAIN C - PLAN & PROFILE
STA. 19+00.00 TO 25+10.00

PLAT NO. ____
JOB NO. 30010-27
DATE DECEMBER 2024
DESIGNER CL
CHECKED HF DRAWN CA
SHEET C1.09

FOR PERMIT





DETAIL "A": EXISTING DRAIN DEMOLITION

SCALE: 1" = 30'

SCALE: 1"= 20'

0' 20' 40' 60'

DRAINAGE LEGEND

PROJECT LIMITS
100 YR FLOODPLAIN
EXISTING CONTOUR — 690
PROPOSED CONTOUR — 690
EXISTING FIRE HYDRANT
EXISTING WATER — W
EXISTING UNDERGROUND ELECTRIC — UGE
EXISTING GAS — G
EXISTING SEWER — SS
PROPOSED SEWER — SS — MANHOLE
FIRE HYDRANT
PROPOSED WATER — W
PROPOSED STORM DRAIN
EXISTING STORM DRAIN
PROPOSED GAS — G
PROPOSED UNDERGROUND ELECTRIC — UGE
FLOW ARROW
CURLEX SINGLE NET EROSION CONTROL BLANKETS

HYDRAULIC CALCULATIONS – 15' CURB INLET
STA. 1+82.29 & STA. 2+19.52

$Q_{25}/2 = 51/2 = 25.5$ CFS

$Q_{25}/2 = \sqrt{CA}\ 2gh$ (ORIFICE FLOW EQN.)

A = L(0.52), h = 0.54, g = 32.2, c = 0.67

$$L = \frac{25.5\ \text{CFS}}{(0.67)\ (0.52)\sqrt{2\ (32.2)\ (0.54)}}$$

L = 12.41 FT USE 15 FT

CHECK WITH WEIR FORMULA

$$h = \left(\frac{Q}{(CL)}\right)^{2/3} = \left(\frac{25.5}{(3.087)\ (15)}\right)^{2/3} = 0.67\ \text{FT.}$$

h = 0.67' < 0.79' OK

DRAIN "D1" STA. 3+66.49
ON-GRADE INLET
HYDRAULIC CALCULATIONS
CURB INLET TABLE POINT U15

$Q_{25}/2 = 63/2 = 31.5$ CFS
S = 1.00%
L = 15' INLET
$Q_{CAPTURED}$ = 14 CFS
Q_{BYPASS} = 17.5 CFS

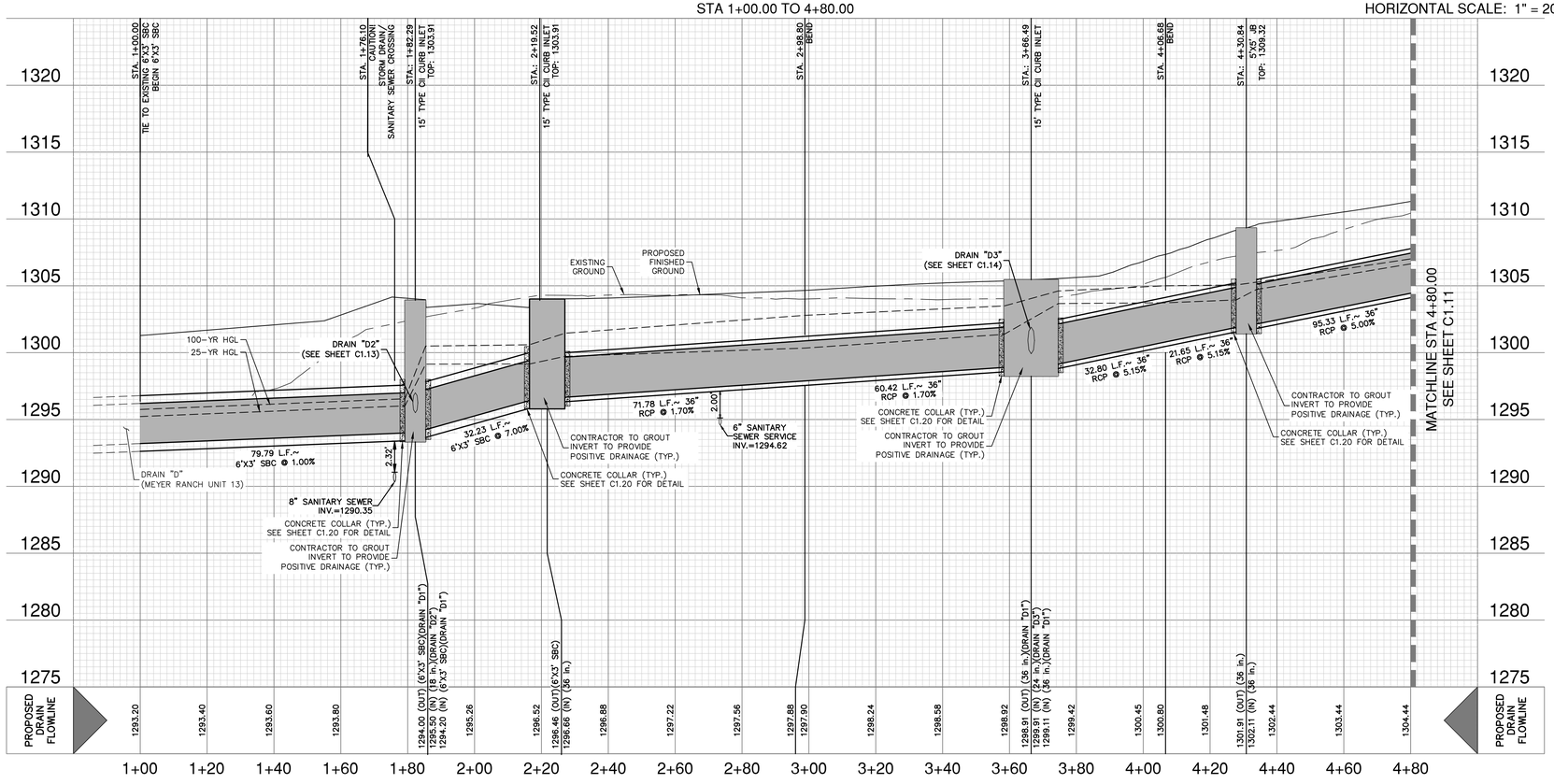
HYDRAULIC CALCULATIONS STORM DRAIN "D1" STA. 1+00.00 TO 1+82.29	HYDRAULIC CALCULATIONS STORM DRAIN "D1" STA. 1+82.29 TO 2+19.52	HYDRAULIC CALCULATIONS STORM DRAIN "D1" STA. 2+19.52 TO 2+98.80
Q25 = 98 CFS	Q25 = 83.5 CFS	Q25 = 58 CFS
S = 1.00%	S = 7.00%	S = 1.70%
Sf = 0.23%	Sf = 0.17%	Sf = 0.76%
dn = 2.02 FT	dn = 3.00 FT	dn = 3.00 FT
V = 8.07 FPS	V = 4.64 FPS	V = 8.21 FPS
n = 0.013	n = 0.013	n = 0.013
D = 3.0 FT	D = 3.0 FT	D = 3.0 FT

HYDRAULIC CALCULATIONS STORM DRAIN "D1" STA. 2+98.80 TO 3+66.49	HYDRAULIC CALCULATIONS STORM DRAIN "D1" STA. 3+66.49 TO 4+06.64	HYDRAULIC CALCULATIONS STORM DRAIN "D1" STA. 4+06.64 TO 4+30.84
Q25 = 58 CFS	Q25 = 30 CFS	Q25 = 30 CFS
S = 1.70%	S = 5.15%	S = 5.15%
Sf = 0.76%	Sf = 0.20%	Sf = 0.20%
dn = 2.46 FT	dn = 3.00 FT	dn = 3.00 FT
V = 9.34 FPS	V = 4.24 FPS	V = 4.24 FPS
n = 0.013	n = 0.013	n = 0.013
D = 3.0 FT	D = 3.0 FT	D = 3.0 FT

HYDRAULIC CALCULATIONS STORM DRAIN "D1" STA. 4+30.84 TO 5+31.17
Q25 = 30 CFS
S = 5.00%
Sf = 0.20%
dn = 2.62 FT
V = 4.58 FPS
n = 0.013
D = 3.0 FT

DRAIN "D1"
STA 1+00.00 TO 4+80.00

VERTICAL SCALE: 1" = 5'
HORIZONTAL SCALE: 1" = 20'



DRAINAGE & GRADING NOTES:

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2. ALL CONCRETE FOR TXDOT DRAINAGE STRUCTURES SHALL MEET TXDOT SPECIFICATIONS. ALL OTHER CONCRETE SHALL BE CLASS "A" 3000 PSI CYLINDER STRENGTH IN 28 DAYS.
3. REFERENCE DRAINAGE DETAILS FOR PIPE TRENCH DETAILS, BOX CULVERT, HEADWALL, AND WINGWALL CONSTRUCTION DETAILS, AND BOX CULVERT BEDDING AND EXCAVATION LIMITS.
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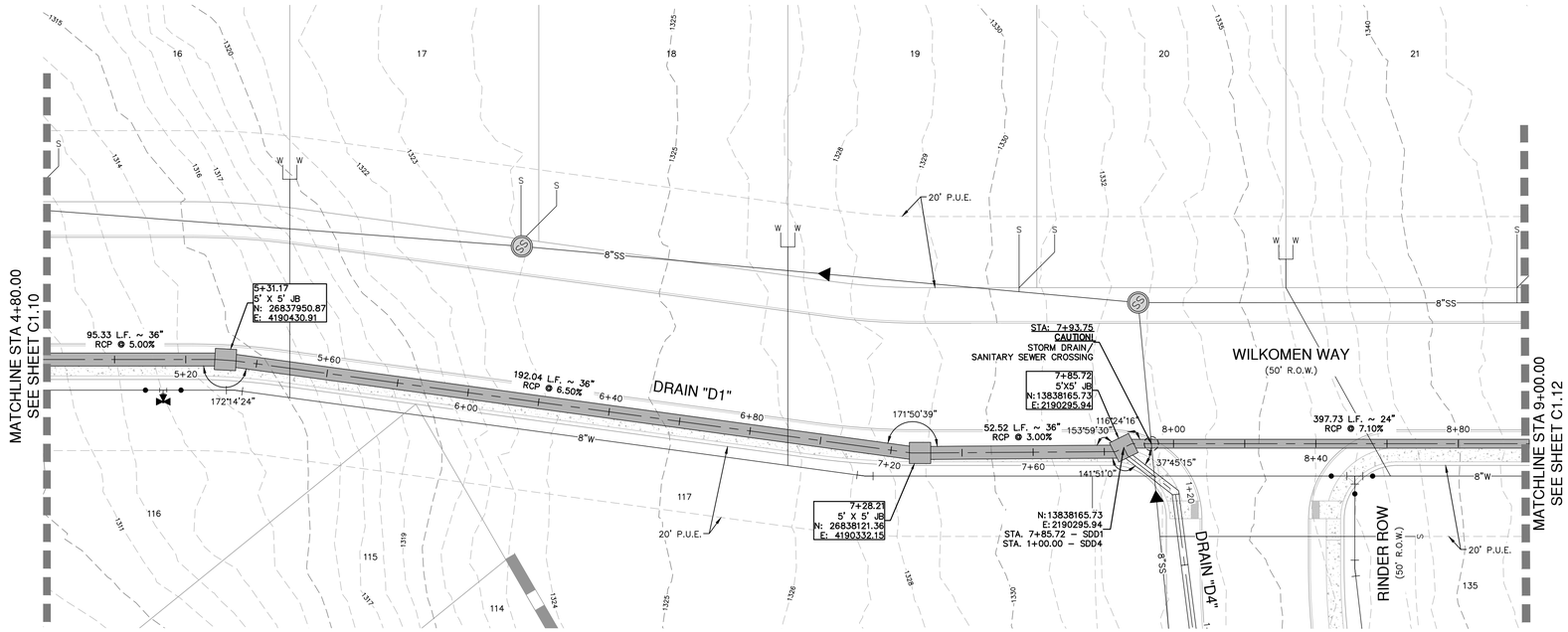
MEYER RANCH UNIT 16
COMAL COUNTY, TEXAS

DRAIN D1 - PLAN & PROFILE
STA 1+00.00 TO 4+80.00

PLAT NO.
JOB NO. 30010-27
DATE DECEMBER 2024
DESIGNER CL
CHECKED HF DRAWN JM
SHEET C1.10

FOR PERMIT



SCALE: 1"= 20'
0' 20' 40' 60'

DRAINAGE LEGEND

- PROJECT LIMITS
- 100 YR FLOODPLAIN
- EXISTING CONTOUR (690)
- PROPOSED CONTOUR (690)
- EXISTING FIRE HYDRANT
- EXISTING WATER (W)
- EXISTING UNDERGROUND ELECTRIC (UGE)
- EXISTING GAS (G)
- EXISTING SEWER (SS) MANHOLE
- PROPOSED SEWER (SS)
- FIRE HYDRANT
- PROPOSED WATER (W)
- PROPOSED STORM DRAIN
- EXISTING STORM DRAIN
- PROPOSED GAS (G)
- PROPOSED UNDERGROUND ELECTRIC (UGE)
- FLOW ARROW
- CURLEX SINGLE NET EROSION CONTROL BLANKETS

HYDRAULIC CALCULATIONS STORM DRAIN "D1"
STA. 4+30.84 TO 5+31.17

Q25 = 30 CFS
S = 5.00%
Sf = 0.20%
dn = 2.62 FT
V = 4.58 FPS
n = 0.013
D = 3.0 FT

HYDRAULIC CALCULATIONS STORM DRAIN "D1"
STA. 5+31.17 TO 7+28.21

Q25 = 30 CFS
S = 6.50%
Sf = 0.20%
dn = 2.61 FT
V = 4.59 FPS
n = 0.013
D = 3.0 FT

HYDRAULIC CALCULATIONS STORM DRAIN "D1"
STA. 7+28.21 TO 7+85.72

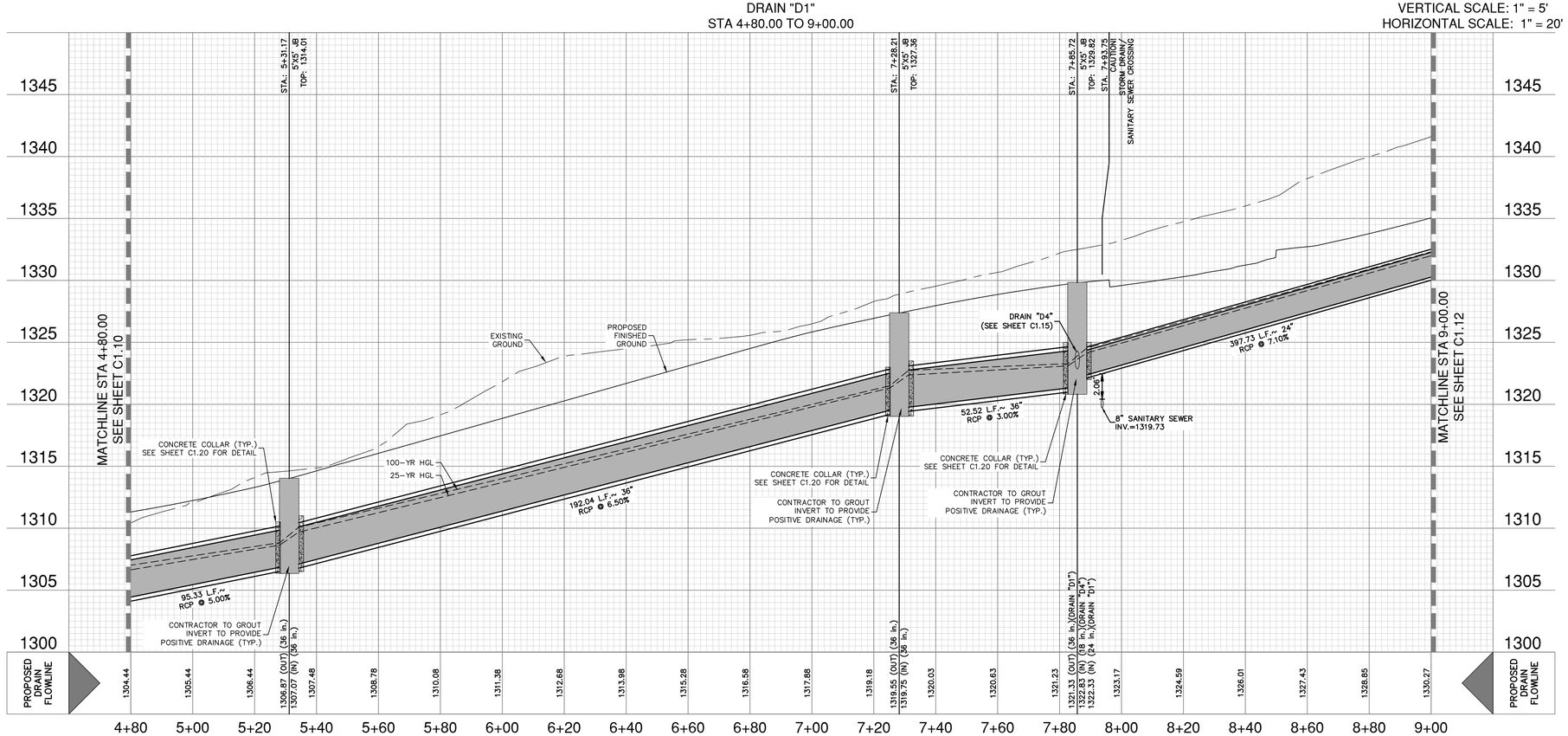
Q25 = 30 CFS
S = 3.00%
Sf = 0.20%
dn = 2.61 FT
V = 4.59 FPS
n = 0.013
D = 3.0 FT

HYDRAULIC CALCULATIONS STORM DRAIN "D1"
STA. 7+85.72 TO 11+87.95

Q25 = 19 CFS
S = 7.10%
Sf = 0.71%
dn = 1.81 FT
V = 6.35 FPS
n = 0.013
D = 2.0 FT

DRAIN "D1"
STA 4+80.00 TO 9+00.00

VERTICAL SCALE: 1" = 5'
HORIZONTAL SCALE: 1" = 20'



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STATE OF TEXAS
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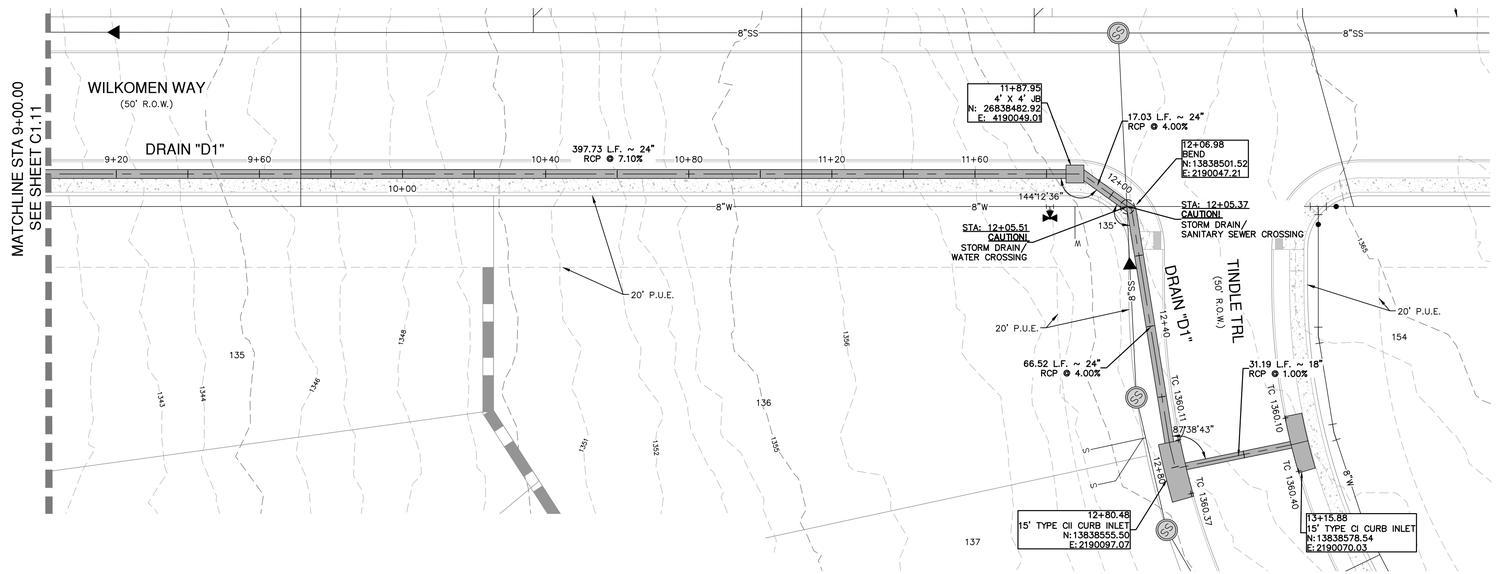
MEYER RANCH UNIT 16
COMAL COUNTY, TEXAS

DRAIN D1 - PLAN & PROFILE
STA 4+80.00 TO 9+00.00

PLAT NO.
JOB NO. 30010-27
DATE DECEMBER 2024
DESIGNER CL
CHECKED HF DRAWN JM
SHEET C1.11

FOR PERMIT



DRAINAGE LEGEND

PROJECT LIMITS
100 YR FLOODPLAIN
EXISTING CONTOUR — 690
PROPOSED CONTOUR — 690
EXISTING FIRE HYDRANT
EXISTING WATER — W
EXISTING UNDERGROUND ELECTRIC — UGE
EXISTING GAS — G
EXISTING SEWER — SS
MANHOLE
PROPOSED SEWER — SS
FIRE HYDRANT
PROPOSED WATER — W
PROPOSED STORM DRAIN
EXISTING STORM DRAIN
PROPOSED GAS — G
PROPOSED UNDERGROUND ELECTRIC — UGE
FLOW ARROW
CURLEX SINGLE NET EROSION CONTROL BLANKETS

DRAIN "D1" STA. 12+80.48 & STA. 13+15.88
ON-GRADE INLET
HYDRAULIC CALCULATIONS
CURB INLET TABLE POINT U13
Q_{25} /2 = 40/2 = 20 CFS
S = 1.85%
L = 15' INLET
$Q_{CAPTURED}$ = 9.5 CFS
Q_{BYPASS} = 10.5 CFS

HYDRAULIC CALCULATIONS STORM DRAIN "D1"
STA. 7+85.72 TO 11+87.95

Q25 = 19 CFS
S = 7.10%
Sf = 0.71%
dn = 1.81 FT
V = 6.35 FPS
n = 0.013
D = 2.0 FT

HYDRAULIC CALCULATIONS STORM DRAIN "D1"
STA. 11+87.95 TO 12+06.98

Q25 = 19 CFS
S = 4.00%
Sf = 0.71%
dn = 2.00 FT
V = 6.05 FPS
n = 0.013
D = 2.0 FT

HYDRAULIC CALCULATIONS STORM DRAIN "D1"
STA. 12+06.98 TO 12+80.48

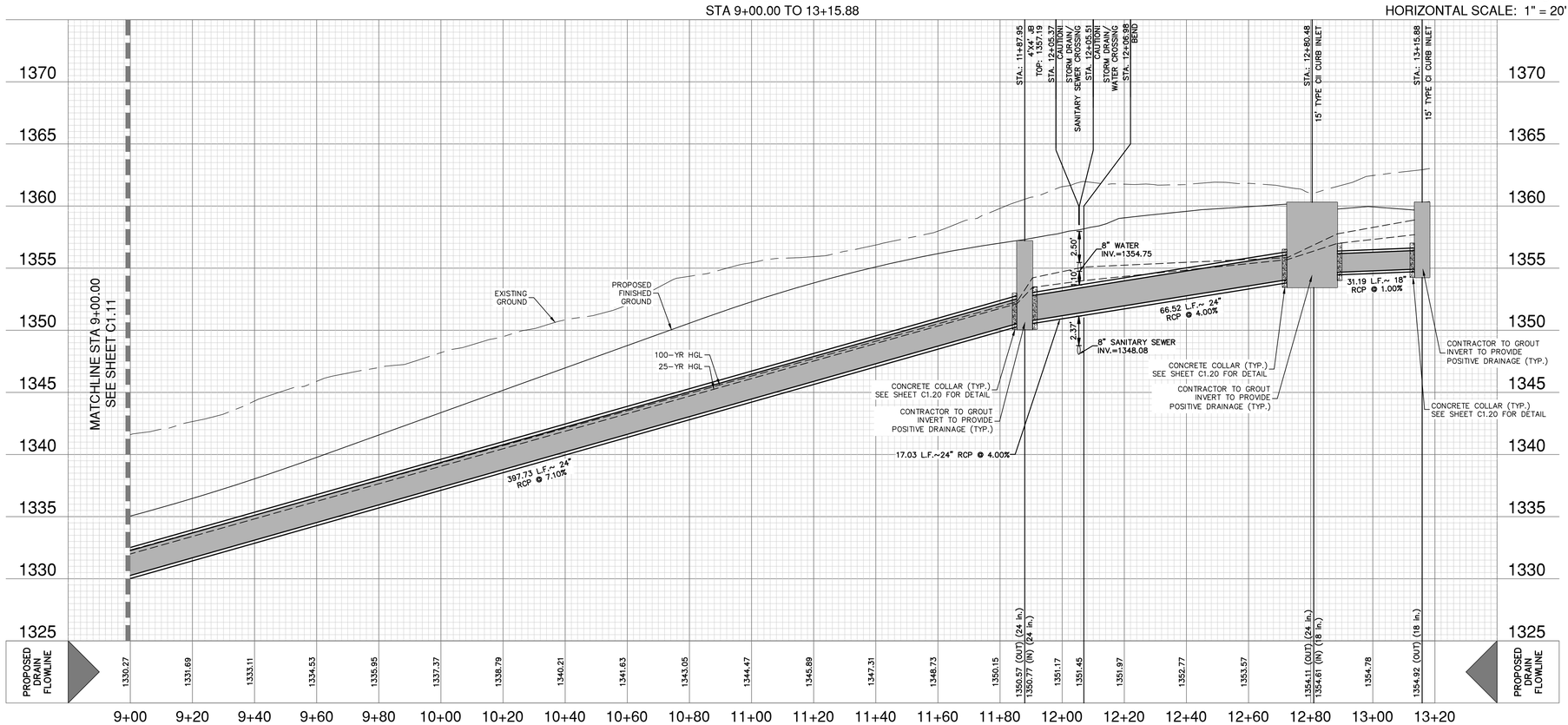
Q25 = 19 CFS
S = 4.00%
Sf = 0.71%
dn = 2.00 FT
V = 6.05 FPS
n = 0.013
D = 2.0 FT

HYDRAULIC CALCULATIONS STORM DRAIN "D1"
STA. 12+80.48 TO 13+15.88

Q25 = 9.5 CFS
S = 1.00%
Sf = 0.82%
dn = 1.50 FT
V = 5.38 FPS
n = 0.013
D = 1.5 FT

DRAIN "D1"
STA 9+00.00 TO 13+15.88

VERTICAL SCALE: 1" = 5'
HORIZONTAL SCALE: 1" = 20'



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DRAIN D1 - PLAN & PROFILE
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PLAT NO.
JOB NO. 30010-27
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DESIGNER CL
CHECKED HF DRAWN JM
SHEET C1.12

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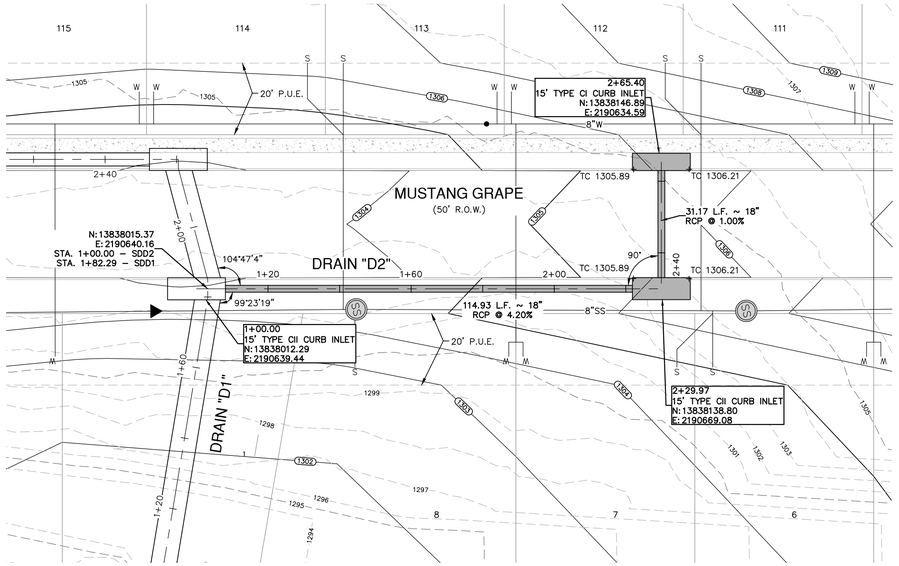
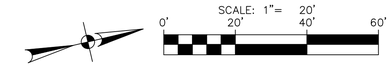




DRAINAGE LEGEND

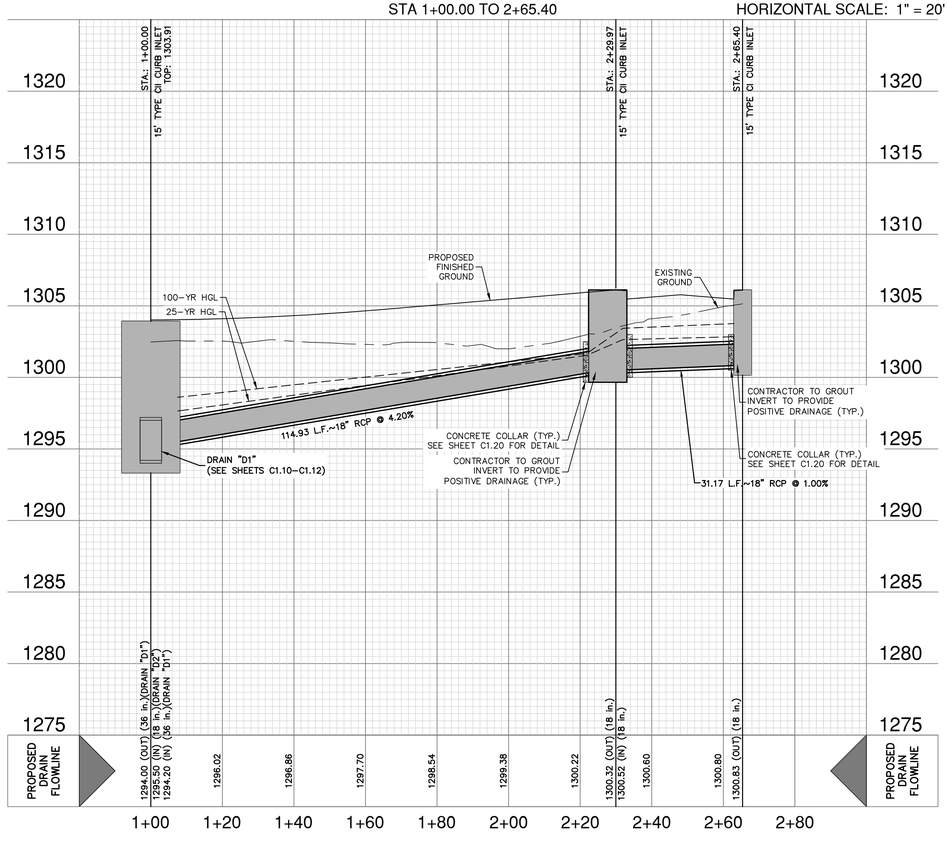
- PROJECT LIMITS
- 100 YR FLOODPLAIN
- EXISTING CONTOUR (690)
- PROPOSED CONTOUR (690)
- EXISTING FIRE HYDRANT
- EXISTING WATER (W)
- EXISTING UNDERGROUND ELECTRIC (UGE)
- EXISTING GAS (G)
- EXISTING SEWER (SS)
- PROPOSED SEWER (SS) — MANHOLE
- PROPOSED WATER (W) — FIRE HYDRANT
- PROPOSED STORM DRAIN
- EXISTING STORM DRAIN
- PROPOSED GAS (G)
- PROPOSED UNDERGROUND ELECTRIC (UGE)
- FLOW ARROW
- CURLEX SINGLE NET EROSION CONTROL BLANKETS

DRAIN "D2" STA. 2+29.93 & STA. 2+71.48
ON-GRADE INLET
HYDRAULIC CALCULATIONS
CURB INLET TABLE POINT U16
$Q_{25}/2 = 14/2 = 7$ CFS
S = 2.10%
L = 15' INLET
$Q_{CAPTURED}$ = 5 CFS
Q_{BYPASS} = 2 CFS

HYDRAULIC CALCULATIONS STORM DRAIN "D2" STA. 1+00.00 TO 2+29.93	HYDRAULIC CALCULATIONS STORM DRAIN "D2" STA. 2+29.93 TO 2+71.48
Q25 = 10 CFS	Q25 = 5 CFS
S = 4.20%	S = 1.00%
Sf = 0.91%	Sf = 0.23%
dn = 1.50 FT	dn = 1.50 FT
V = 5.66 FPS	V = 2.83 FPS
n = 0.013	n = 0.013
D = 1.5 FT	D = 1.5 FT

DRAIN "D2"
STA 1+00.00 TO 2+65.40

VERTICAL SCALE: 1" = 5'
HORIZONTAL SCALE: 1" = 20'



DRAINAGE & GRADING NOTES:

1. THE CONTRACTOR WILL BE RESPONSIBLE FOR DETERMINING EXACT LOCATION OF ALL UTILITIES AND DRAINAGE STRUCTURES WHETHER SHOWN ON THE PLANS OR NOT. THE CONTRACTOR SHALL UNCOVER EXISTING UTILITIES PRIOR TO CONSTRUCTION TO VERIFY SIZE, GRADE, AND LOCATION. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY OF ANY DEVIATIONS FROM PLANS PRIOR TO BEGINNING CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES, WHETHER SHOWN ON THE PLANS OR NOT, SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO REPAIR, AT HIS EXPENSE.
2. ALL CONCRETE FOR TXDOT DRAINAGE STRUCTURES SHALL MEET TXDOT SPECIFICATIONS. ALL OTHER CONCRETE SHALL BE CLASS "A" 3000 PSI CYLINDER STRENGTH IN 28 DAYS.
3. REFERENCE DRAINAGE DETAILS FOR PIPE TRENCH DETAILS, BOX CULVERT, HEADWALL, AND WINGWALL CONSTRUCTION DETAILS, AND BOX CULVERT BEDDING AND EXCAVATION LIMITS.
4. CONTRACTOR SHALL GROUT ALL CURB INLETS AND JUNCTION BOXES TO PROVIDE FOR POSITIVE DRAINAGE.
5. EARTHEN CHANNELS WILL BE VEGETATED BY SEEDING OR SODDING. 85% OF THE CHANNEL SURFACE MUST HAVE ESTABLISHED VEGETATION BEFORE COMAL COUNTY WILL ACCEPT.
6. CONTRACTOR SHALL MATCH TOP OF CHANNEL TO NATURAL GROUND AND MAINTAIN A MINIMUM CHANNEL DEPTH OF "D" AS SHOWN IN THE PROFILE.

CAUTION!!

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TRENCH EXCAVATION SAFETY PROTECTION:

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NO.	REVISION	DATE

12 - 27 - 2024
STATE OF TEXAS
TODD W. BLACKMON
89208
LICENSED
PROFESSIONAL ENGINEER

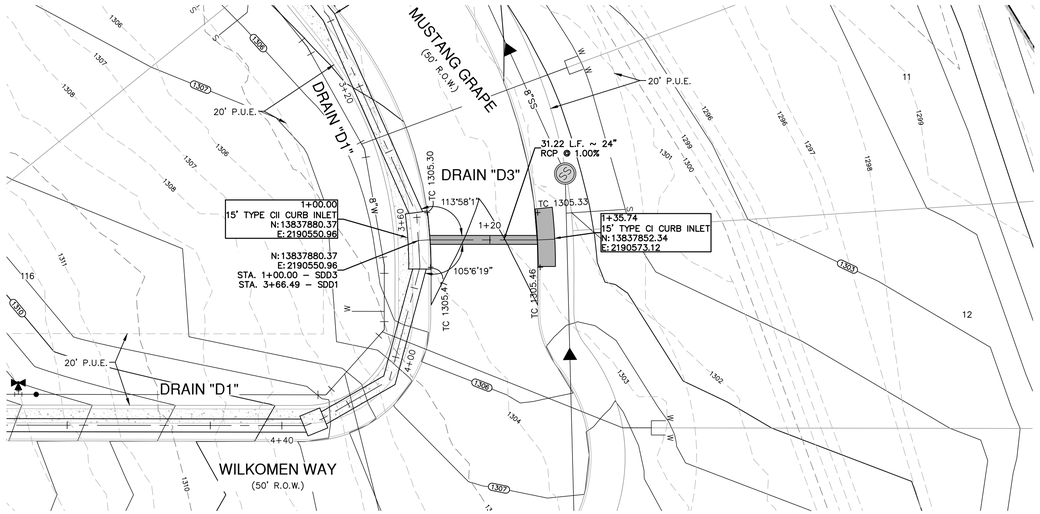
PAPE-DAWSON ENGINEERS
1672 INDEPENDENCE DR, STE 102 I NEW BRAUNFELS, TX 78132 I 830.632.5633
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

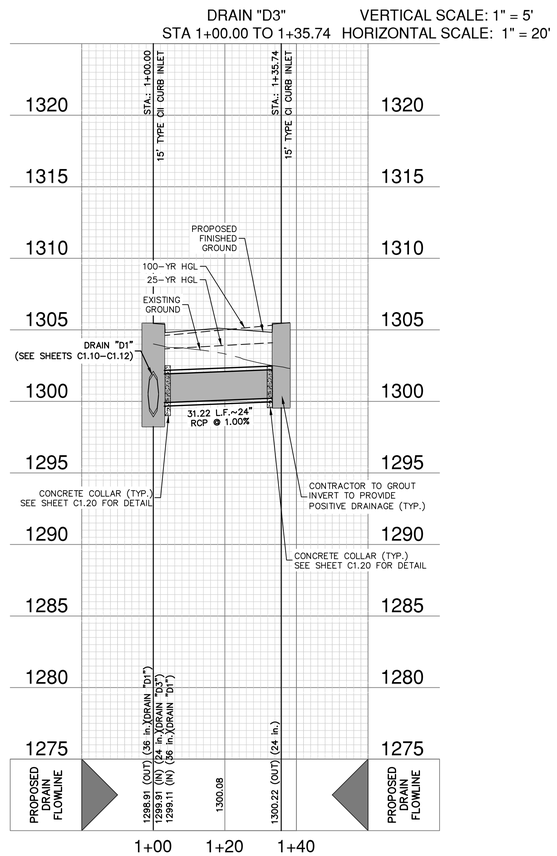
MEYER RANCH UNIT 16
COMAL COUNTY, TEXAS

DRAIN D2 - PLAN & PROFILE
STA 1+00.00 TO 2+65.40

PLAT NO.
JOB NO. 30010-27
DATE DECEMBER 2024
DESIGNER CL
CHECKED HF DRAWN JM
SHEET C1.13

FOR PERMIT





SCALE: 1"= 20'
0' 20' 40' 60'

DRAINAGE LEGEND

- PROJECT LIMITS
- 100 YR FLOODPLAIN
- EXISTING CONTOUR (690)
- PROPOSED CONTOUR (690)
- EXISTING FIRE HYDRANT
- EXISTING WATER (W)
- EXISTING UNDERGROUND ELECTRIC (UGE)
- EXISTING GAS (G)
- EXISTING SEWER (SS)
- PROPOSED SEWER (SS) MANHOLE
- FIRE HYDRANT
- PROPOSED WATER (W)
- PROPOSED STORM DRAIN
- EXISTING STORM DRAIN
- PROPOSED GAS (G)
- PROPOSED UNDERGROUND ELECTRIC (UGE)
- FLOW ARROW
- CURLEX SINGLE NET EROSION CONTROL BLANKETS

DRAIN "D3" 1+35.74
ON-GRADE INLET
HYDRAULIC CALCULATIONS
CURB INLET TABLE POINT U15
$Q_{25}/2$ = 63/2 = 31.5 CFS
S = 1.00%
L = 15' INLET
$Q_{CAPTURED}$ = 14 CFS
Q_{BYPASS} = 17.5 CFS

HYDRAULIC CALCULATIONS STORM DRAIN "D3" STA. 1+00.00 TO 1+35.74
Q25 = 14 CFS
S = 1.00%
Sf = 0.38%
dn = 2.00 FT
V = 4.46 FPS
n = 0.013
D = 2.0 FT

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NO.	REVISION	DATE

STATE OF TEXAS
TODD W. BLACKMON
89208
LICENSED
PROFESSIONAL ENGINEER
12 - 27 - 2024

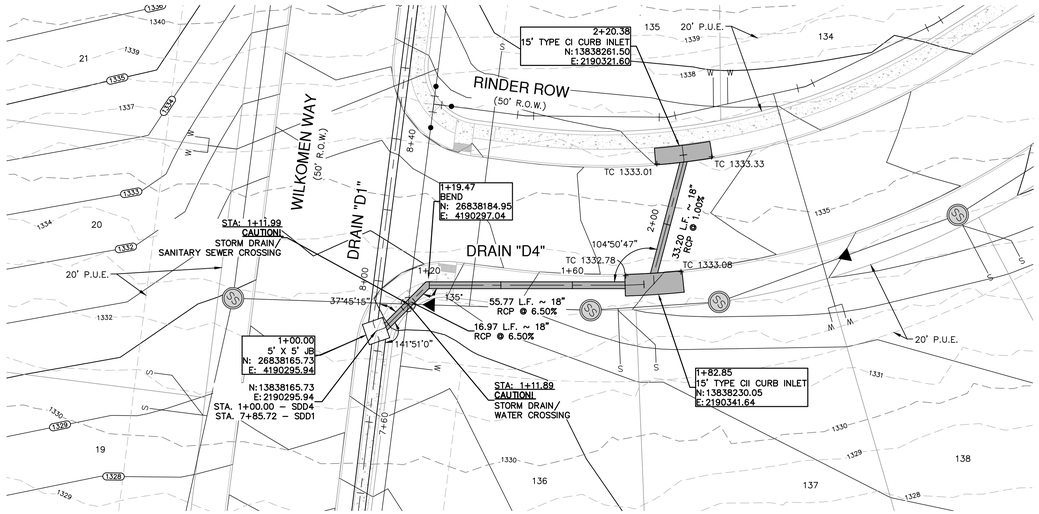
PAPE-DAWSON ENGINEERS
1672 INDEPENDENCE DR, STE 102 I NEW BRAUNFELS, TX 78132 I 830.632.5633
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

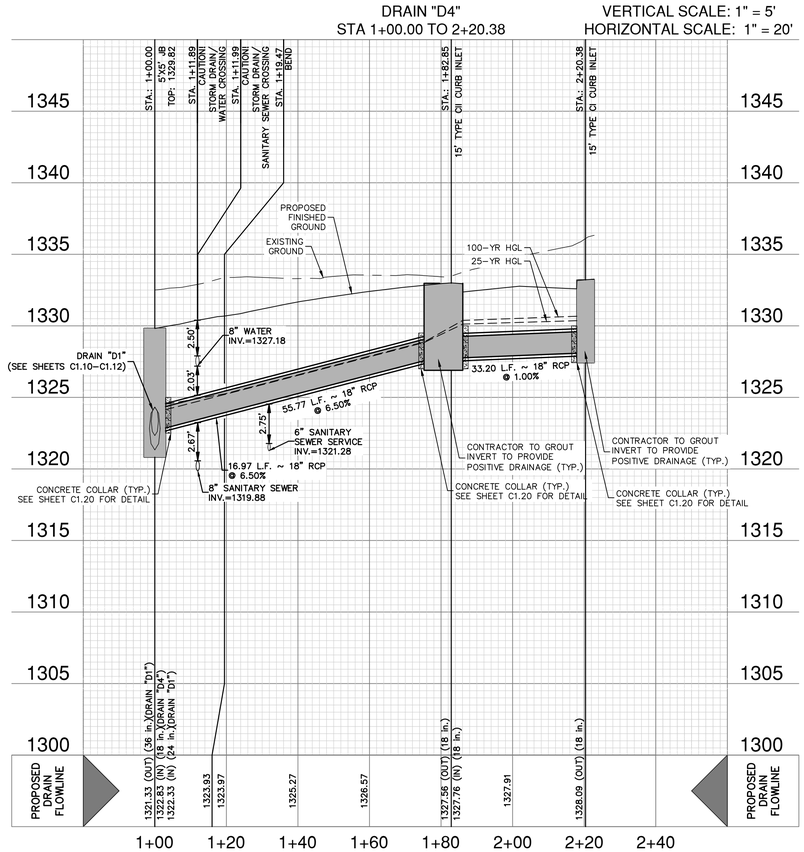
MEYER RANCH UNIT 16
COMAL COUNTY, TEXAS

DRAIN D3 - PLAN & PROFILE
STA 1+00.00 TO 1+35.74

PLAT NO.
JOB NO. 30010-27
DATE DECEMBER 2024
DESIGNER CL
CHECKED HF DRAWN JM
SHEET C1.14

FOR PERMIT





SCALE: 1"= 20'

0' 20' 40' 60'

DRAINAGE LEGEND

- PROJECT LIMITS
- 100 YR FLOODPLAIN
- EXISTING CONTOUR — 690
- PROPOSED CONTOUR — 690
- EXISTING FIRE HYDRANT
- EXISTING WATER — W
- EXISTING UNDERGROUND ELECTRIC — UGE
- EXISTING GAS — G
- EXISTING SEWER — SS — MANHOLE
- PROPOSED SEWER — SS
- FIRE HYDRANT
- PROPOSED WATER — W
- PROPOSED STORM DRAIN
- EXISTING STORM DRAIN
- PROPOSED GAS — G
- PROPOSED UNDERGROUND ELECTRIC — UGE
- FLOW ARROW
- CURLEX SINGLE NET EROSION CONTROL BLANKETS

DRAIN "D4"
ON-GRADE INLETS
HYDRAULIC CALCULATIONS
CURB INLET TABLE POINT U14

Q_{25} /2 = 13/2 = 6.5 CFS
S = 1.95%
L = 15' INLET
$Q_{CAPTURED}$ = 5.5 CFS
Q_{BYPASS} = 1 CFS

HYDRAULIC CALCULATIONS STORM DRAIN "D4" STA. 1+00.00 TO 1+19.47	HYDRAULIC CALCULATIONS STORM DRAIN "D4" STA. 1+19.47 TO 1+82.85	HYDRAULIC CALCULATIONS STORM DRAIN "D4" STA. 1+82.85 TO 2+20.38
Q25 = 11 CFS	Q25 = 11 CFS	Q25 = 5.5 CFS
S = 6.50%	S = 6.50%	S = 1.00%
Sf = 1.10%	Sf = 1.10%	Sf = 0.27%
dn = 1.31 FT	dn = 1.27 FT	dn = 1.50 FT
V = 6.71 FPS	V = 6.90 FPS	V = 3.11 FPS
n = 0.013	n = 0.013	n = 0.013
D = 1.5 FT	D = 1.5 FT	D = 1.5 FT

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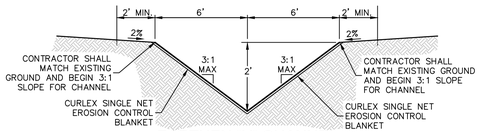
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

MEYER RANCH UNIT 16
COMAL COUNTY, TEXAS

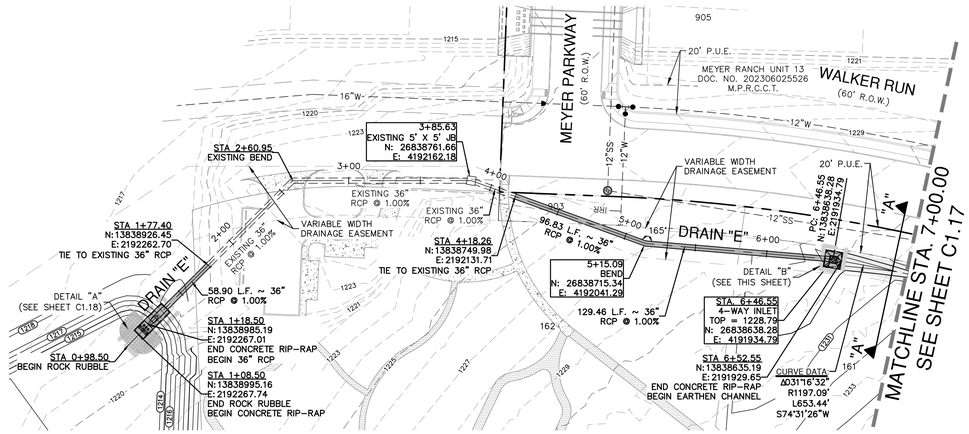
DRAIN D4 - PLAN & PROFILE
STA 1+00.00 TO 2+20.38

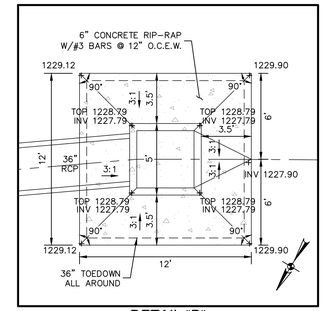
PLAT NO.
JOB NO. 30010-27
DATE DECEMBER 2024
DESIGNER CL
CHECKED HF DRAWN JM
SHEET C1.15

FOR PERMIT



EARTHEN "V" CHANNEL
SECTION "A-A"
NOT-TO-SCALE
(STA. 6+52.56 – STA. 9+50.00)





DETAIL "B"
1" = 5'

SCALE: 1"= 50'
0' 50' 100' 150'

DRAINAGE LEGEND

PROJECT LIMITS
100 YR FLOODPLAIN
EXISTING CONTOUR — 690
PROPOSED CONTOUR — 690
EXISTING FIRE HYDRANT
EXISTING WATER — W
EXISTING UNDERGROUND ELECTRIC — UGE
EXISTING GAS — G
EXISTING SEWER — SS
PROPOSED SEWER — SS — MANHOLE
PROPOSED WATER — W — FIRE HYDRANT
PROPOSED STORM DRAIN
EXISTING STORM DRAIN
PROPOSED GAS — G
PROPOSED UNDERGROUND ELECTRIC — UGE
FLOW ARROW
CURLEX SINGLE NET EROSION CONTROL BLANKETS

HYDRAULIC CALCULATIONS STORM DRAIN "E"
STA. 1+18.50 TO 2+60.95

Q25 = 26 CFS
S = 1.00%
Sf = 0.15%
dn = 3.00 FT
V = 3.68 FPS
n = 0.013
D = 3.0 FT

HYDRAULIC CALCULATIONS STORM DRAIN "E"
STA. 2+60.95 TO 3+85.63

Q25 = 26 CFS
S = 1.00%
Sf = 0.15%
dn = 1.64 FT
V = 6.55 FPS
n = 0.013
D = 3.0 FT

HYDRAULIC CALCULATIONS STORM DRAIN "E"
STA. 3+85.63 TO 5+15.09

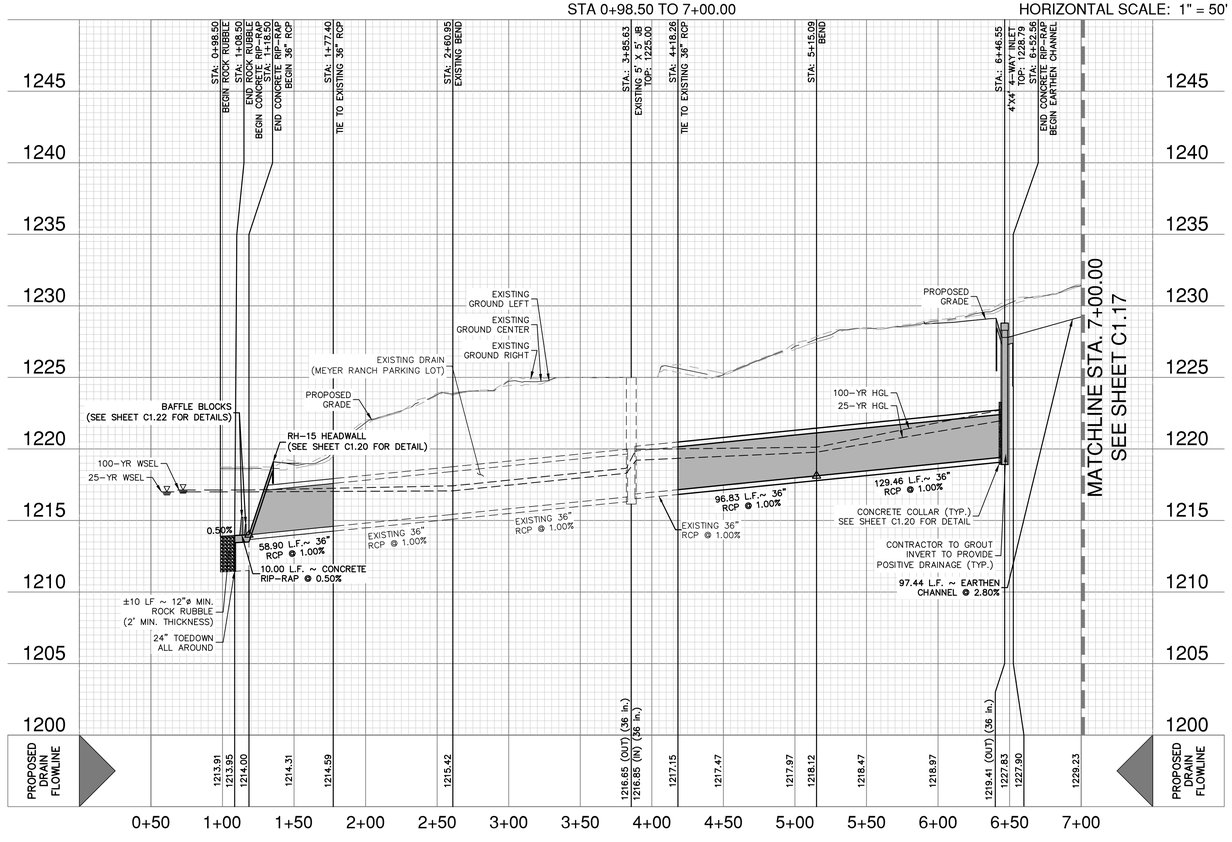
Q25 = 26 CFS
S = 1.00%
Sf = 0.15%
dn = 2.36 FT
V = 4.36 FPS
n = 0.013
D = 3.0 FT

HYDRAULIC CALCULATIONS STORM DRAIN "E"
STA. 5+15.09 TO 6+46.55

Q25 = 26 CFS
S = 1.00%
Sf = 0.15%
dn = 1.64 FT
V = 6.55 FPS
n = 0.013
D = 3.0 FT

DRAIN "E"
STA 0+98.50 TO 7+00.00

VERTICAL SCALE: 1" = 5'
HORIZONTAL SCALE: 1" = 50'



HYDRAULIC CALCULATIONS – 4'X4' – 4WAY INLET

Q_{25} = 26 CFS

$Q_{25} = CA\sqrt{2gh}$ (ORIFICE FLOW EQN.)

A = L(0.50), h = 0.50, g = 32.2, c = 0.67

$$L = \frac{26\ \text{CFS}}{(0.67)\ (0.50)\sqrt{2\ (32.2)\ (0.50)}}$$

L = 13.67 FT USE 1 ~ 4 FT OPENING EACH SIDE

CHECK WITH WEIR FORMULA

$$h = \left(\frac{Q}{(CL)}\right)^{2/3} = \left(\frac{26}{(3.087)\ (16)}\right)^{2/3} = 0.65\ \text{FT.}$$

h = 0.65' < 1.0' OK

HYDRAULIC CALCULATIONS EARTH CHANNEL
STA. 6+52.56 TO 7+50.00

Q_{25} = 26 CFS
Bw = 0 FT
n = 0.035
S = 2.80%
dn = 1.30 FT
VN = 5.13 FPS
dn+FrBd = 1.80 FT

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6. CONTRACTOR SHALL MATCH TOP OF CHANNEL TO NATURAL GROUND AND MAINTAIN A MINIMUM CHANNEL DEPTH OF "D" AS SHOWN IN THE PROFILE.

CAUTION!!

CONTRACTOR SHALL BE REQUIRED TO LOCATE ALL PUBLIC OR PRIVATE UTILITIES INCLUDING BUT NOT LIMITING TO: WATER, SEWER, TELEPHONE AND FIBER OPTIC LINES, SITE LIGHTING ELECTRIC, SECONDARY ELECTRIC, PRIMARY ELECTRICAL DUCTBANKS, LANDSCAPE IRRIGATION FACILITIES, AND GAS LINES. ANY UTILITY CONFLICTS THAT ARISE SHOULD BE COMMUNICATED TO THE ENGINEER IMMEDIATELY AND PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL CONTACT "TEXAS 811" A MINIMUM OF 48 HOURS PRIOR TO THE START OF CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND THE REPAIR SHALL BE AT CONTRACTOR'S SOLE EXPENSE WHETHER THE UTILITY IS SHOWN ON THESE PLANS OR NOT.

TRENCH EXCAVATION SAFETY PROTECTION:

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

NO.	REVISION	DATE

STATE OF TEXAS
TODD W. BLACKMON
89208
LICENSED
PROFESSIONAL ENGINEER
12 - 27 - 2024

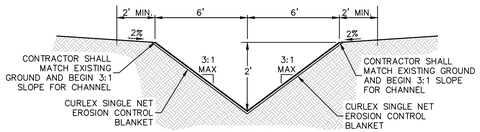
PAPE-DAWSON ENGINEERS
1672 INDEPENDENCE DR, STE 102 I NEW BRAUNFELS, TX 78132 I 830.632.5633
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

MEYER RANCH UNIT 16
COMAL COUNTY, TEXAS

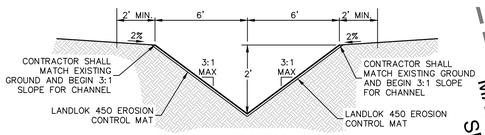
DRAIN E - PLAN & PROFILE
STA 0+98.50 TO 7+00.00

PLAT NO.
JOB NO. 30010-27
DATE DECEMBER 2024
DESIGNER CL
CHECKED HF DRAWN JM
SHEET C1.16

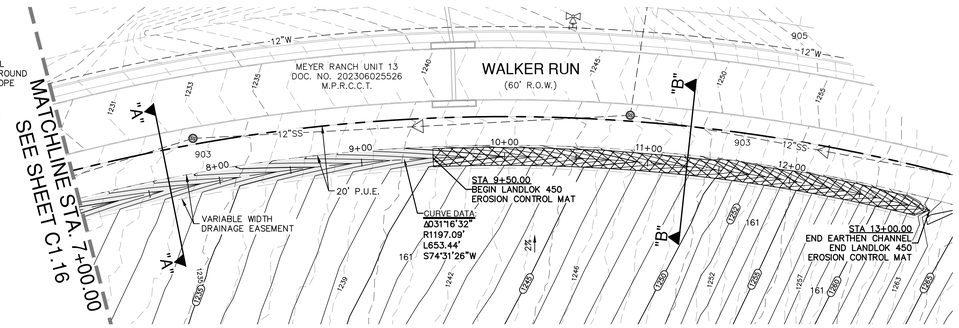
FOR PERMIT



EARTHEN "V" CHANNEL
SECTION "A-A"
NOT-TO-SCALE
(STA. 6+52.56 – STA. 9+50.00)



EARTHEN "V" CHANNEL
SECTION "B-B"
NOT-TO-SCALE
(STA. 9+50.00 – STA. 13+00.00)



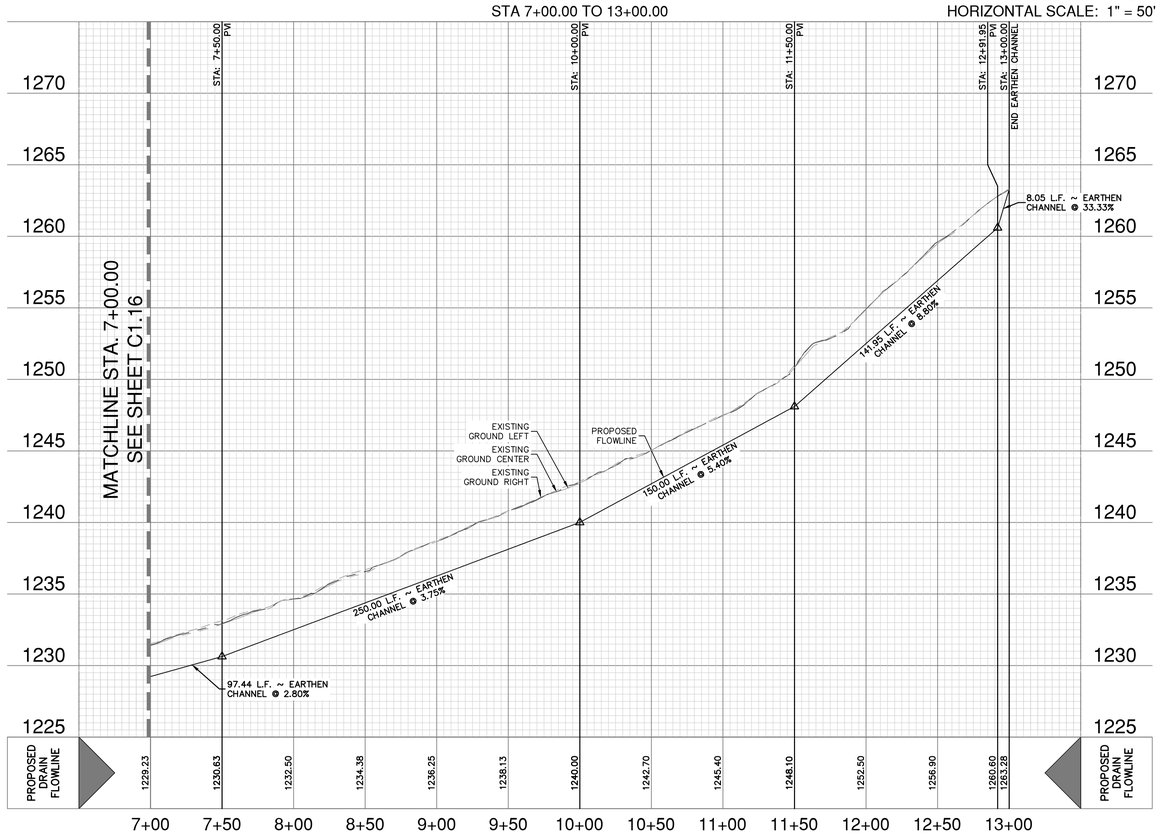
SCALE: 1"= 50'
0' 50' 100' 150'

DRAINAGE LEGEND

PROJECT LIMITS	
100 YR FLOODPLAIN	
EXISTING CONTOUR	690
PROPOSED CONTOUR	690
EXISTING WATER	EXISTING FIRE HYDRANT, W
EXISTING UNDERGROUND ELECTRIC	UGE
EXISTING GAS	G
EXISTING SEWER	SS, MANHOLE
PROPOSED SEWER	SS
PROPOSED WATER	FIRE HYDRANT, W
PROPOSED STORM DRAIN	
EXISTING STORM DRAIN	
PROPOSED GAS	G
PROPOSED UNDERGROUND ELECTRIC	UGE
FLOW ARROW	
CURLEX SINGLE NET EROSION CONTROL BLANKETS	
LANDLOK 450 EROSION CONTROL MAT	

DRAIN "E"
STA 7+00.00 TO 13+00.00

VERTICAL SCALE: 1" = 5'
HORIZONTAL SCALE: 1" = 50'



HYDRAULIC CALCULATIONS EARTH CHANNEL

STA. 6+52.56 TO 7+50.00

Q_{25}	=	26 CFS
Bw	=	0 FT
n	=	0.035
S	=	2.80%
dn	=	1.30 FT
VN	=	5.13 FPS
dn+FrBd	=	1.80 FT

HYDRAULIC CALCULATIONS EARTH CHANNEL

STA. 7+50.00 TO 10+00.00

Q_{25}	=	26 CFS
Bw	=	0 FT
n	=	0.035
S	=	3.75%
dn	=	1.23 FT
VN	=	5.73 FPS
dn+FrBd	=	1.73 FT

HYDRAULIC CALCULATIONS EARTH CHANNEL

STA. 10+00.00 TO 11+50.00

Q_{25}	=	26 CFS
Bw	=	0 FT
n	=	0.035
S	=	5.40%
dn	=	1.15 FT
VN	=	6.55 FPS
dn+FrBd	=	1.65 FT

HYDRAULIC CALCULATIONS EARTH CHANNEL

STA. 11+50.00 TO 12+91.95

Q_{25}	=	26 CFS
Bw	=	0 FT
n	=	0.035
S	=	8.80%
dn	=	1.05 FT
VN	=	7.86 FPS
dn+FrBd	=	1.55 FT

DRAINAGE & GRADING NOTES:

1. THE CONTRACTOR WILL BE RESPONSIBLE FOR DETERMINING EXACT LOCATION OF ALL UTILITIES AND DRAINAGE STRUCTURES WHETHER SHOWN ON THE PLANS OR NOT. THE CONTRACTOR SHALL UNCOVER EXISTING UTILITIES PRIOR TO CONSTRUCTION TO VERIFY SIZE, GRADE, AND LOCATION. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY OF ANY DEVIATIONS FROM PLANS PRIOR TO BEGINNING CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES, WHETHER SHOWN ON THE PLANS OR NOT, SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO REPAIR, AT HIS EXPENSE.
2. ALL CONCRETE FOR TXDOT DRAINAGE STRUCTURES SHALL MEET TXDOT SPECIFICATIONS. ALL OTHER CONCRETE SHALL BE CLASS "A" 3000 PSI CYLINDER STRENGTH IN 28 DAYS.
3. REFERENCE DRAINAGE DETAILS FOR PIPE TRENCH DETAILS, BOX CULVERT, HEADWALL, AND WINGWALL CONSTRUCTION DETAILS, AND BOX CULVERT BEDDING AND EXCAVATION LIMITS.
4. CONTRACTOR SHALL GROUT ALL CURB INLETS AND JUNCTION BOXES TO PROVIDE FOR POSITIVE DRAINAGE.
5. EARTHEN CHANNELS WILL BE VEGETATED BY SEEDING OR SODDING. 85% OF THE CHANNEL SURFACE MUST HAVE ESTABLISHED VEGETATION BEFORE COMAL COUNTY WILL ACCEPT.
6. CONTRACTOR SHALL MATCH TOP OF CHANNEL TO NATURAL GROUND AND MAINTAIN A MINIMUM CHANNEL DEPTH OF "D" AS SHOWN IN THE PROFILE.

CAUTION!!

CONTRACTOR SHALL BE REQUIRED TO LOCATE ALL PUBLIC OR PRIVATE UTILITIES INCLUDING BUT NOT LIMITING TO: WATER, SEWER, TELEPHONE AND FIBER OPTIC LINES, SITE LIGHTING ELECTRIC, SECONDARY ELECTRIC, PRIMARY ELECTRICAL DUCTBANKS, LANDSCAPE IRRIGATION FACILITIES, AND GAS LINES. ANY UTILITY CONFLICTS THAT ARISE SHOULD BE COMMUNICATED TO THE ENGINEER IMMEDIATELY AND PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL CONTACT "TEXAS 811" A MINIMUM OF 48 HOURS PRIOR TO THE START OF CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND THE REPAIR SHALL BE AT CONTRACTOR'S SOLE EXPENSE WHETHER THE UTILITY IS SHOWN ON THESE PLANS OR NOT.

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NO.	REVISION	DATE

12 - 27 - 2024
STATE OF TEXAS
TODD W. BLACKMON
89208
LICENSED
PROFESSIONAL ENGINEER

PAPE-DAWSON ENGINEERS
1672 INDEPENDENCE DR, STE 102 | NEW BRAUNFELS, TX 78132 | 830.632.5633
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

MEYER RANCH UNIT 16
COMAL COUNTY, TEXAS

DRAIN E - PLAN & PROFILE
STA 7+00.00 TO 13+00.00

PLAT NO. ____
JOB NO. 30010-27
DATE DECEMBER 2024
DESIGNER CL
CHECKED HF DRAWN JM
SHEET C1.17

FOR PERMIT

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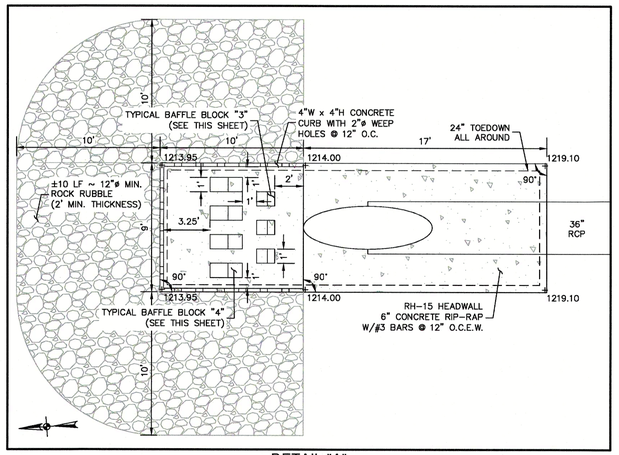
NOTES

1. UPON COMPLETION OF CONSTRUCTION, AND IN ACCORDANCE WITH TCEQ REGULATIONS, ALL PERMANENT BMP'S MUST BE CERTIFIED BY A REGISTERED PROFESSIONAL ENGINEER.
2. ALL AREAS DISTURBED AS PART OF CONSTRUCTION OF BASIN SHALL BE REVEGETATED PRIOR TO COMPLETION.
3. BASIN HAS BEEN DESIGNED USING TSS REMOVAL AND BMP SIZING CALCULATIONS AS PER THE TCEQ TGM RG-348 (2005).
4. BASIN PLAN DEPICTS MINIMUM INTERIOR DIMENSIONS (LENGTH, WIDTH & HEIGHT FOR TCEQ REVIEW & APPROVAL.
5. BASIN DRAWDOWN IS CONTROLLED BY THE 6" PVC PIPE. BASIN DRAWDOWN WILL OCCUR IN APPROXIMATELY 29 HOURS.

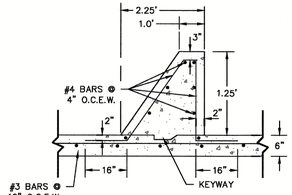
SEQUENCE OF OPERATION

1. UPON ACTIVATION OF FLOAT SWITCH, DDC CONTROLLER TO START DETENTION TIMER #1.
2. DETENTION TIMER #1 TO BE MANUALLY SET TO 12 HOURS AND TO BE USER ADJUSTABLE VALUE.
3. WHEN DETENTION TIMER #1 HAS ELAPSED, A 6" BUTTERFLY VALVE IS TO OPEN AND RELEASE DETAINED WATER BASIN.
4. UPON DEACTIVATION OF FLOAT SWITCH, DDC CONTROLLER TO START DETENTION TIMER #2.
5. DETENTION TIMER #2 TO BE MANUALLY SET TO 29 HOURS MINIMUM AND 48 HOURS MAXIMUM AND TO BE USER ADJUSTABLE.
6. WHEN DETENTION TIMER #2 HAS ELAPSED, THE 6" BUTTERFLY VALVE IS TO CLOSE.
7. VALVE TO BE ACTUATED PERIODICALLY TO SHOW ACTIVE REGARDLESS OF FLOAT SWITCH OPERATION.

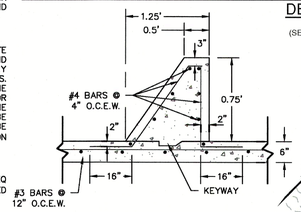
M.A.S NOTE:
STAGING AREA REQUIREMENT (800 SQ.FT.) IS SATISFIED BY UTILIZING THE AREA ADJACENT TO THE BASIN AS DESIGNATED IN THE PLAN VIEW ABOVE.



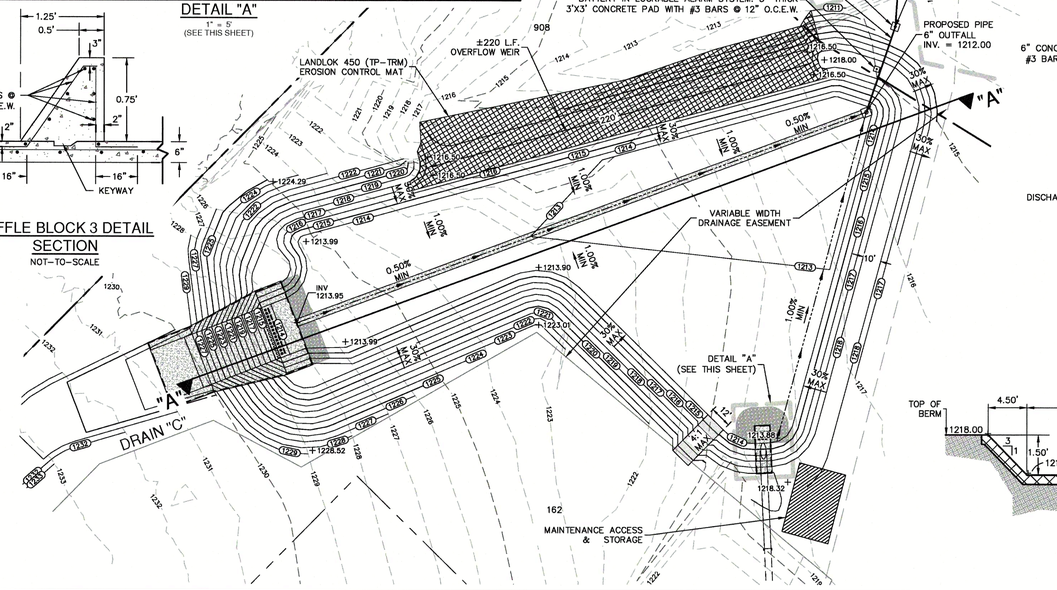
DETAIL "A"
1" = 5'
(SEE THIS SHEET)



BAFFLE BLOCK 4 DETAIL
SECTION
NOT-TO-SCALE

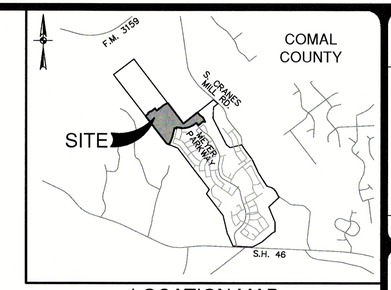


BAFFLE BLOCK 3 DETAIL
SECTION
NOT-TO-SCALE



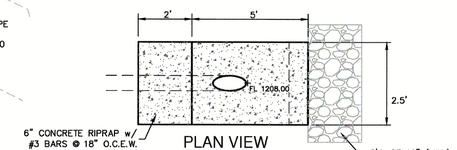
DRAINAGE LEGEND

PROJECT LIMITS	
100 YR FLOODPLAIN	
EXISTING CONTOUR	690
PROPOSED CONTOUR	690
PROPOSED WATER	W
PROPOSED SEWER	SS
PROPOSED STORM DRAIN	
FLOW ARROW	
GAS, ELECTRIC, TELEPHONE & CABLE TELEVISION EASEMENT	P.U.E.
CURLEX SINGLE NET EROSION CONTROL BLANKETS	
LANDLOK 450 EROSION CONTROL MAT	

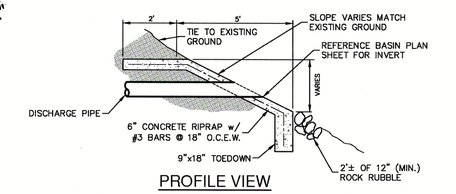


LOCATION MAP
NOT-TO-SCALE

SCALE: 1"= 40'
0' 40' 80' 120'

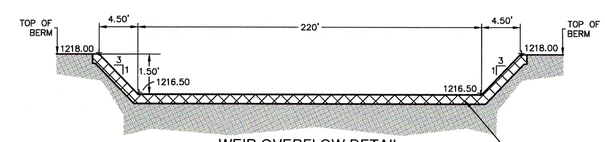


PLAN VIEW



PROFILE VIEW

DISCHARGE HEADWALL DETAIL
NOT-TO-SCALE



WEIR OVERFLOW DETAIL
NOT-TO-SCALE

OVERFLOW WEIR CALCULATIONS

Q_{25}	=	$(Cw)(L)(h)^{3/2}$
Q_{25}	=	209 cfs
C	=	2.70
L	=	220 ft
209	=	$(2.70)(220)(h)^{3/2}$
h	=	0.50 ft

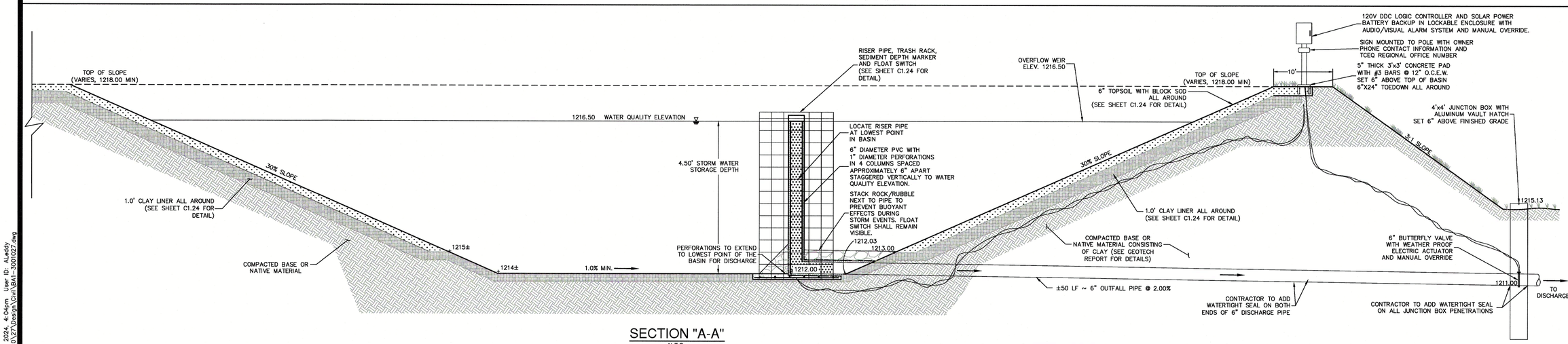
BASIN (PROPOSED) DESIGN DATA

BASIN WATERSHED AREA	=	1,744,142 SF (40.04 AC.)
RUN OFF DEPTH	=	1.38 IN
REQUIRED CAPTURE VOLUME	=	97,930 CF
BASIN STORM WATER DEPTH	=	4.50 FT
BASIN CAPTURE VOLUME	=	114,726 CF

BASIN (ULTIMATE) DESIGN DATA

BASIN WATERSHED AREA	=	1,787,702 SF (41.04 AC.)
RUN OFF DEPTH	=	1.38 IN
REQUIRED CAPTURE VOLUME	=	110,671 CF
BASIN STORM WATER DEPTH	=	4.50 FT
BASIN CAPTURE VOLUME	=	114,726 CF

BASIN NOTE:
BASIN 1 HAS BEEN DESIGNED FOR ULTIMATE DEVELOPMENT.



SECTION "A-A"
N.T.S.

THE ENGINEERING SEAL HAS BEEN AFFIXED TO THIS SHEET ONLY FOR THE PURPOSE OF DEMONSTRATING COMPLIANCE WITH THE POLLUTION ABATEMENT SIZING AND TREATMENT REQUIREMENTS OF THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY'S EDWARDS AQUIFER TECHNICAL GUIDANCE MANUAL.

THIS SHEET HAS BEEN PREPARED FOR PURPOSES OF POLLUTION ABATEMENT ONLY. ALL OTHER CIVIL ENGINEERING RELATED INFORMATION SHOULD BE ACQUIRED FROM THE APPROPRIATE SHEET IN THE CIVIL IMPROVEMENT PLANS.

EXHIBIT 5

FOR PERMIT

NO.	REVISION	DATE

STATE OF TEXAS
TODD W. BLACKMON
89208
LICENSED
PROFESSIONAL ENGINEER
12-5-2024

PAPE-DAWSON ENGINEERS
1672 INDEPENDENCE DR, STE 102 | NEW BRAUNFELS, TX 78132 | 830.625.8333
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

MEYER RANCH UNIT 16
COMAL COUNTY, TEXAS
BASIN 1 PLAN

PLAT NO.
JOB NO. 30010-27
DATE DECEMBER 2024
DESIGNER CL
CHECKED HF DRAWN BH
SHEET C1.18

Date: Dec 05, 2024, 4:04pm User ID: ALeddy
File: P:\30010\27\Design\Civil\BA1-3001027.dwg

American Excelsior Company®
Earth Science Division

Proud Participant in NTPEP and Proud Member of:

Product Participant of:

CURLEX® EROSION CONTROL BLANKETS INSTALLATION GUIDELINES

Before installing Curlex blankets, the seedbed shall be inspected by the Owner's Representative to ensure it has been properly compacted and fine graded to remove any existing rills. It shall be free of obstructions, such as tree roots, projections such as stones, and other foreign objects. The contractor shall proceed when satisfactory conditions are present. After the area has been properly shaped, seeded, fertilized, and compacted, remove the Curlex protective cover. Next, locate the start of the roll, making sure the roll is facing toward the area to be covered, and then roll out the product. The product shall be rolled out flat, even, and smooth without stretching the material then anchored to the subgrade.

Slopes: It is recommended the blankets be installed vertically on the slope; however, on short slopes it may be more practical to install horizontally across the width of the application when agreed upon by the Engineer prior to installation. If more than one width is required, simply abut the edges of the vertically installed blankets together and secure them with a common row of staples. Overlapping adjacent sides of Curlex blankets is not required when installed vertically on slopes. Curlex blankets shall be trenched at the head of the slope if the blanket cannot be extended three feet over the slope crest or if overland flow is anticipated from upslope areas.

Channels: Curlex blankets shall be centered to offset a seam in the middle of the waterway. They shall be installed in the same direction as the water flow. The adjoining blankets shall be installed away from the center of channel and overlapped. Curlex blanket installation should continue up the side slopes three feet above the anticipated high water elevation. Flanks exposed to runoff, or sheet flow, must be protected by a check slot or trenched. Curlex blankets shall be trenched at the start of the channel. Curlex blankets shall be anchored using a staggered staple pattern at end of roll overlaps and end of roll terminations.

Disclaimer: Curlex is a system for erosion control and revegetation on slopes and channels. American Excelsior Company (AEC) believes that the information contained herein to be reliable and accurate for use in erosion control and re-vegetation applications. However, since physical conditions vary from job site to job site and even within a given job site, AEC makes no performance guarantees and assumes no obligation or liability for the reliability or accuracy of information contained herein for the results, safety, or suitability of using Curlex, or for damages occurring in connection with the installation of any erosion control product whether or not made by AEC or its affiliates, except as separately and specifically made in writing. These guidelines are subject to change without notice.

850 Avenue H East | Arlington, Texas 76011
Phone 1-800-777-SOIL | Fax 817-385-3585 | www.Curlex.com

W0315R1116

American Excelsior Company®
Earth Science Division

Proud Participant in NTPEP and Proud Member of:

Product Participant of:

MATERIAL SPECIFICATIONS CURLEX® I

Materials:

Great Lakes Aspen (naturally seed free)
Polypropylene Netting
Stitching Thread
QuickGRASS® (green excelsior – optional)

Typical Roll Sizes:

Width:	4.0 ft (1.2 m)	8.0 ft (2.4 m)	16.0 ft (4.9 m)
Length:	112.5 ft (34.29 m)	112.5 ft (34.29 m)	112.5 ft (34.29 m)
Area:	50.0 yd^2 (41.8 m^2)	100.0 yd^2 (83.6 m^2)	200.0 yd^2 (167.2 m^2)
Weight:	36.5 lb (16.6 kg)	73.0 lb (33.1 kg)	146.0 lb (66.2 kg)

Description:

Curlex I erosion control blanket (ECB) is a natural, stitched excelsior blanket that provides a temporary organic cover to reduce erosion, protect seeds, enhance germination, and hasten re-vegetation. Curlex I is furnished in rolls with polyethylene wrapping to protect against the elements prior to installation, and may be ordered in Master-Paks of fifteen rolls banded together to minimize material handling requirements. Curlex I is also available as QuickGRASS (green pigment). Curlex I shall be manufactured in the U.S.A.

Curlex I has a design soil loss ratio (event-based RUSLE C factor) of .018 and is typically suitable for slopes up to 2H:1V. Curlex I is rated for channel flows up to 7.0 ft/s (2.1 m/s) and 1.75 lb/ft^2 (84 Pa) shear stress.

Physical Properties:

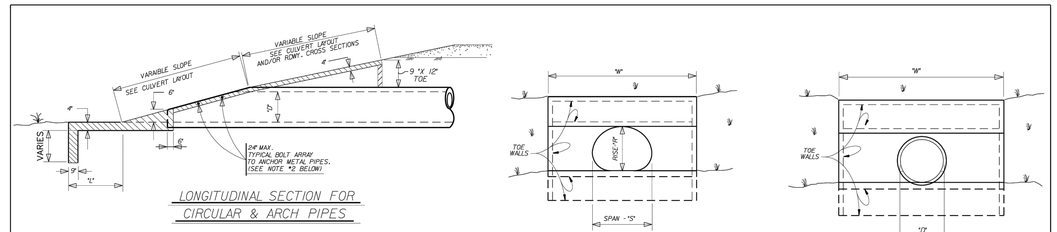
Fiber: Great Lakes Aspen (naturally seed free)
Curled, interlocking fibers with barbed edges
Fiber Size: 80% of fibers a minimum of 6 in (15.2 cm) long
0.038 in ± 0.008 in wide x 0.018 in ± 0.003 in thick
(0.97 mm ± 0.20 mm wide x 0.46 mm ± 0.08 mm thick)
Weight[A]: 0.73 lb/yd^2 (0.40 kg/m^2) ± 10% @ 22% Moisture
Thread Pattern: No more than 4.0 in (10.2 cm) transverse stitch spacing
Net Material: Polypropylene (green with oxo-biodegrader and UV degrader additives or white with UV degrader additive)
Net Openings: 1.0 in wide x 2.0 in long (25.4 mm wide x 50.8 mm long)
Net Configuration: Top side only

[A] Weight is based on a dry fiber weight basis at time of manufacture. Baseline moisture content of Great Lakes Aspen excelsior is 22%.

MADE IN U.S.A.

850 Avenue H East | Arlington, Texas 76011
Phone 1-800-777-SOIL | Fax 817-385-3585 | www.Curlex.com

W0516R1116



LONGITUDINAL SECTION FOR CIRCULAR & ARCH PIPES

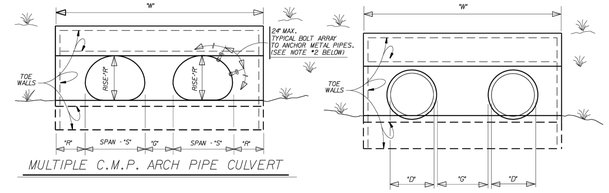
SINGLE C.M.P. ARCH PIPE CULVERT

SINGLE CIRCULAR PIPE CULVERT (CMP or RCP)

DIMENSIONS FOR CIRCULAR (CMP and RCP) PIPE CULVERTS

"D" INSIDE DIA. of PIPE	"L"	"S"		SINGLE	DOUBLE	TRIPLE	QUADRUPLE
		CGM	RCP	"W"			
18"	2'-0"	1'-2"	0'-9"	4'-6"	7'-2"	9'-10"	12'-6"
21"	2'-6"	1'-3"	0'-10"	5'-3"	8'-4"	11'-4"	13'-4"
24"	3'-0"	1'-5"	0'-11"	6'-0"	9'-5"	12'-10"	16'-3"
30"	4'-0"	1'-8"	1'-1"	7'-6"	11'-8"	15'-10"	20'-0"
36"	5'-0"	1'-11"	1'-3"	9'-0"	13'-11"	18'-10"	23'-9"
42"	6'-0"	2'-2"	1'-5"	10'-6"	16'-2"	21'-10"	27'-6"
48"	7'-0"	2'-5"	1'-7"	12'-0"	18'-5"	24'-10"	31'-3"
54"	8'-0"	2'-8"	1'-11"	13'-6"	20'-10"	28'-2"	35'-6"
60"	9'-0"	1'-2"	2'-0"	15'-0"	23'-2"	31'-4"	39'-6"

"S" IS MEASURED BETWEEN THE OUTER SURFACES OF THE PIPES.



MULTIPLE C.M.P. ARCH PIPE CULVERT

MULTIPLE CIRCULAR PIPE CULVERT (CMP or RCP)

DIMENSIONS FOR C.M.P. ARCH PIPE CULVERTS

DESIGN SIZE	APPROX. ARCH DIM. SPAN "S"	RISE "H"	"L"	"S"	SINGLE	DOUBLE	TRIPLE	QUADRUPLE
					"W"			
2	21"	15"	2'-0"	1'-2"	4'-3"	7'-2"	10'-1"	13'-0"
3	28"	20"	3'-0"	1'-5"	5'-8"	9'-5"	13'-2"	16'-11"
4	35"	24"	4'-0"	1'-8"	6'-11"	11'-8"	16'-1"	20'-6"
5	42"	29"	5'-0"	1'-11"	8'-4"	13'-9"	19'-2"	24'-7"
6	49"	33"	6'-0"	2'-2"	9'-7"	15'-10"	22'-1"	28'-4"
7	57"	38"	7'-0"	2'-5"	11'-1"	18'-3"	25'-5"	32'-7"
8	64"	43"	8'-0"	2'-10"	12'-5"	20'-8"	28'-10"	37'-0"
9	71"	47"	9'-0"	3'-2"	13'-9"	22'-10"	31'-11"	41'-0"

BASED ON 2-2/3"X 1/2" CORRUGATION
"D" IS MEASURED BETWEEN THE OUTER SURFACES OF THE PIPES.

NOTES:

1.) FOR RIPRAP QUANTITIES AND SLOPES, SEE CULVERT LAYOUT SHEET. CONCRETE SHALL BE CLASS B UNLESS OTHERWISE SHOWN IN THE PLANS.

2.) ALL METAL PIPES (CIRCULAR AND/OR ARCH) SHALL HAVE 5/8" X 6" GALVANIZED BOLTS WITH 2 HEX NUTS AT 24" CENTERS TO ANCHOR THE PIPE TO THE CONCRETE. THIS WORK WILL BE SUBSIDIARY TO THE RIPRAP HEADWALL.

3.) FOR CONCRETE ARCH PIPES, THE CMP ARCH PIPE CULVERT DIMENSIONS WILL HAVE TO BE ADJUSTED FOR THE PIPE WALL THICKNESS.

4.) FOR PIPES LARGER THAN SHOWN, USE THE CLEAR DISTANCE BETWEEN PIPES SHOWN IN ITEMS 460 AND/OR 464.

5.) IF THE SIDES OF THE HEADWALL IS ADJACENT TO A RIPRAP SLOPE AND IF THE TOP OF THE HEADWALL IS ADJACENT TO THE ROADWAY FOUNDATION OR RIPRAP SLOPE, THE SIDE AND TOP TOE WALLS MAY BE ELIMINATED IF APPROVED BY THE ENGINEER.

SAN ANTONIO DISTRICT STANDARD
RIPRAP HEADWALL

FED.RD. DIV. NO.	PROJECT NO.			SHEET NO.
6				
STATE	STATE DIST.	COUNTY		
TEXAS	SAT			
CONT.	SECT.	JOB	HIGHWAY NO.	

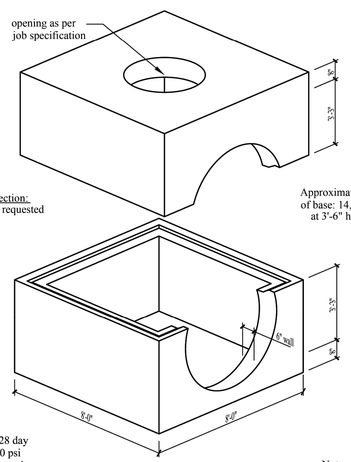
10/95

DATE
NO. REVISION

12 - 27 - 2024
STATE OF TEXAS
TODD W. BLACKMON
89208
LICENSED
PROFESSIONAL ENGINEER

PAPE-DAWSON ENGINEERS
1672 INDEPENDENCE DR, STE 102 I NEW BRAUNFELS, TX 78132 I 830.632.5633
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

7' x 7' x var Junction Box



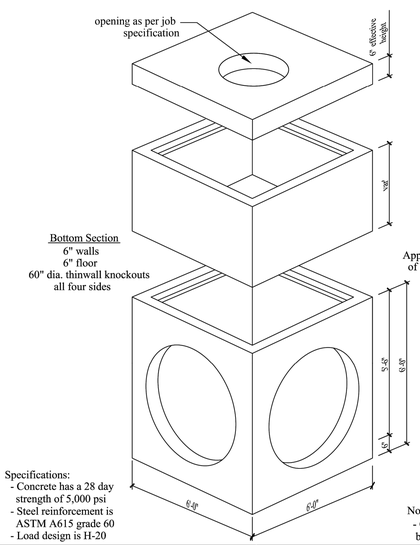
Specifications:
- Concrete has a 28 day strength of 5,000 psi
- Steel reinforcement is ASTM A615 grade 60
- Load design is H-20

Notes:
- Consult manufacturer before handling

CAPITAL PRECAST, INC.
6905 SOUTH OLD BASTROP HWY
SAN MARCOS, TEXAS 78666
PH. (830) 606-6200

FOR 7' x 7' x var Junction Box			
JOB			
DRAWN RW	DATE 12/1/2015	Rev. No.	SHEET 1 OF 1
FILE catalog/junction boxes/7x7JB			

5' x 5' x var Junction Box

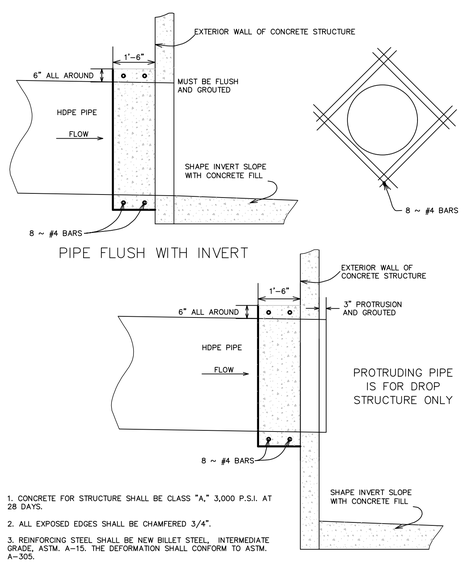


Specifications:
- Concrete has a 28 day strength of 5,000 psi
- Steel reinforcement is ASTM A615 grade 60
- Load design is H-20

Notes:
- Consult manufacturer before handling

CAPITAL PRECAST, INC.
6905 SOUTH OLD BASTROP HWY
SAN MARCOS, TEXAS 78666
PH. (830) 606-6200

FOR 5' x 5' x var Junction Box			
JOB			
DRAWN RW	DATE 12/1/2015	Rev. No.	SHEET 1 OF 1
FILE catalog/junction boxes/5x5JB			



1. CONCRETE FOR STRUCTURE SHALL BE CLASS "A," 3,000 P.S.I. AT 28 DAYS.

2. ALL EXPOSED EDGES SHALL BE CHAMFERED 3/4".

3. REINFORCING STEEL SHALL BE NEW BILLET STEEL, INTERMEDIATE GRADE, ASTM. A-15. THE DEFORMATION SHALL CONFORM TO ASTM. A-305.

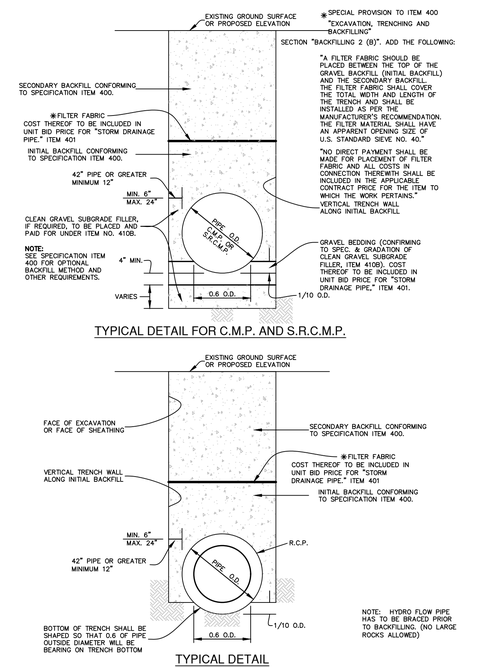
4. ALL DIMENSIONS RELATING TO REINFORCING STEEL ARE TO CENTER OF BARS.

5. ALL BARS INTERCEPTING MANHOLE OPENING AND REINFORCED CONCRETE PIPE SHALL BE FIELD-CUT.

6. WHERE LAPPING OF BARS IS REQUIRED, A MINIMUM LAP OF 33 DIAMETERS SHALL BE USED.

7. INVERT OF JUNCTION BOX TO BE SHAPED WITH CONCRETE FILL (3,000 P.S.I. MIN.) TO EFFECT DRAINAGE TO OUTLET PIPE. COST SUBSIDIARY TO CLASS "A" CONCRETE (JUNCTION BOXES).

CONCRETE COLLAR DETAIL
NOT TO SCALE



TYPICAL DETAIL FOR C.M.P. AND S.R.C.M.P.

TYPICAL DETAIL

PIPE BEDDING AND BACKFILL DETAILS
NOT-TO-SCALE

MEYER RANCH UNIT 16
COMAL COUNTY, TEXAS
DRAINAGE DETAILS

PLAT NO.	
JOB NO.	30010-27
DATE	DECEMBER 2024
DESIGNER	CL
CHECKED HF	DRAWN BH
SHEET	C1.20

FOR PERMIT

Date: Dec 17, 2024, 11:14am User ID: ALeddy
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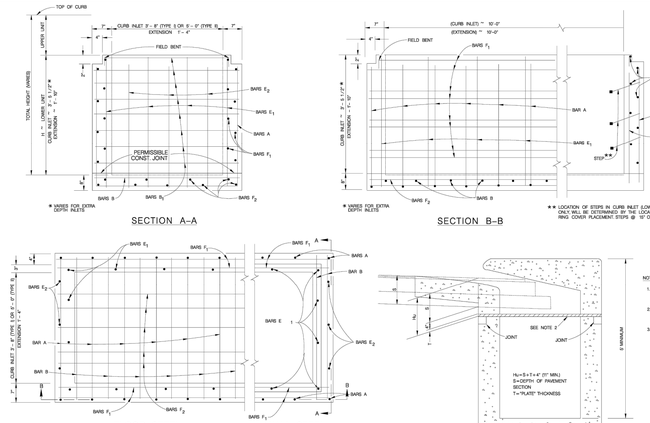


REINFORCING STEEL

LOWER UNIT 10' X 3' – 8" (TYPE I)

BAR	NO.	SIZE	SPAC.	LENGTH
A	12	#4	12"	VARIES
B	11	#4	12"	4'-6"
B_1	VARIES	#4	12"	4'-6"
E_1	20	#4	18"±	VARIES
E_2	6	#4	18"±	VARIES
F_1	VARIES	#4	12"±	10'-10"
F_2	9	#4	—	10'-10"

LOWER UNIT 10' X 5' – 0" (TYPE II)

BAR	NO.	SIZE	SPAC.	LENGTH
A	12	#4	12"	VARIES
B	11	#4	12"	5'-10"
B_1	VARIES	#4	12"	5'-10"
E_1	22	#4	18"±	VARIES
E_2	8	#4	18"±	VARIES
F_1	VARIES	#4	12"±	10'-10"
F_2	11	#4	—	10'-10"

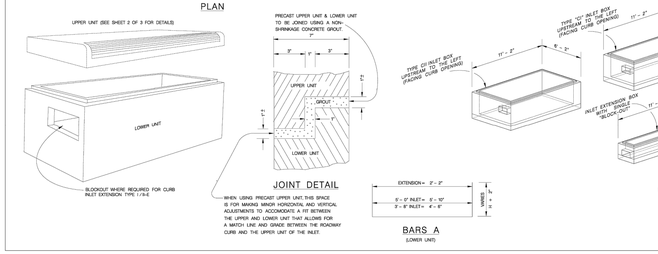
GENERAL NOTES

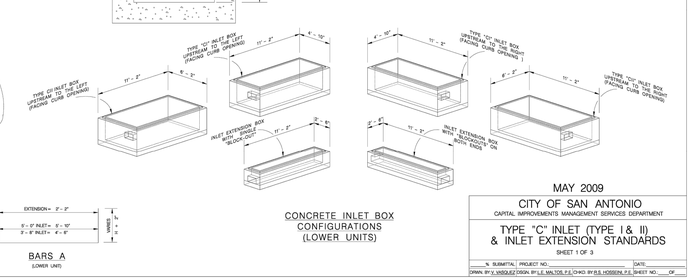
1. 5' INLETS AND 5' EXTENSIONS MUST BE IN ACCORDANCE WITH THE LATEST TXDOT CURB INLET TYPE "C" AND EXTENSION TYPE E (5–C).
2. TYPE C-4 INLET TO BE USED ONLY WHEN STORM DRAIN PIPE IS IN-LINE WITH CURB INLET AND APPROVED BY THE ENGINEER.
3. QUANTITIES SHOWN ARE FOR CONTRACTOR'S INFORMATION ONLY.
4. CONCRETE FOR STRUCTURES SHALL BE CLASS "A", 3000 PSI IN 28 DAYS.
5. ALL DIMENSIONS RELATING TO REINFORCING STEEL ARE TO CENTER OF BARS.
6. ALL REINFORCING STEEL SHALL HAVE A MINIMUM COVER OF 1 1/2".
7. ALL REINFORCING STEEL SHALL CONFORM TO A.S.T.M. A-615, GRADE 60 REQUIREMENTS.
8. ALL EXPOSED CORNERS SHALL BE CHAMFERED 3 / 4".
9. DEPRESSION SLAB SHALL RECEIVE A WOOD FLOAT FINISH.
10. FACE OF INLET TO CONFORM TO FACE OF CURB LINE.
11. ALL BARS INTERCEPTING MANHOLE RING & COVER SHALL BE CUT OR BENT.
12. PAYMENT FOR ALL EXCAVATION, BACK-FILLING, CONCRETE, REINFORCING STEEL, RING AND COVER, CURB ARMOR AND STEPS SHALL BE INCLUDED IN THE UNIT COST OF ITEM 403 "STORM SEWER JUNCTION BOXES AND INLETS".
13. CAST IRON MANHOLE RING AND COVER TO BE PLACED NEXT TO OUTLET PIPE, EXCEPT FOR VERTICAL OUTLET PIPE IN WHICH CASE MANHOLE RING AND COVER WILL BE OFFSET.
14. GALVANIZED BOLTS, NUTS, WASHERS, PLATES AND GASKETS ARE SUBSIDIARY TO INLETS.
15. THE CONTRACTOR SHALL PROVIDE AN ADEQUATE MEANS TO LIFT AND PLACE THE INLETS, WHEN USING PRECAST UNITS.
16. ALL BARS AT PIPE BLOCKOUT LOCATIONS SHALL BE CUT OR BENT.
17. ALL LOWER UNITS SHALL RECEIVE INVERT MORTAR SHAPING.
18. PIPE BLOCKOUTS IN INLET WALLS SHOULD NOT EXCEED 3' BEYOND THE OUTER SHELL OF THE PIPE, TAKING INTO ACCOUNT THE SKEW OF THE PIPE AS NECESSARY. CONSTRUCTION JOINT MAY BE INSERTED A MINIMUM OF 6".

PHASE CONSTRUCTION

NOTES FOR PHASE CONSTRUCTION (WHEN DIRECTED BY THE ENGINEER):

1. THE CURB INLET AND EXTENSION SHALL BE CONSTRUCTED TO A DEPTH "Hu" BELOW THE INLET AND EXTENSION GUTTER LINE ELEVATION.
2. CAP THE CURB INLET AND EXTENSION WITH A STEEL PLATE APPROVED BY THE ENGINEER AND CONSTRUCT THE ROADWAY OVER THE PLATE.
3. AFTER THE ROADWAY IS COMPLETED, BUT PRIOR TO THE FINAL HMAC OVERLAY, SAW CUT THE PAVEMENT, REMOVE THE PLATE AND COMPLETE THE UPPER PORTION OF THE CURB INLET AND / OR EXTENSION.





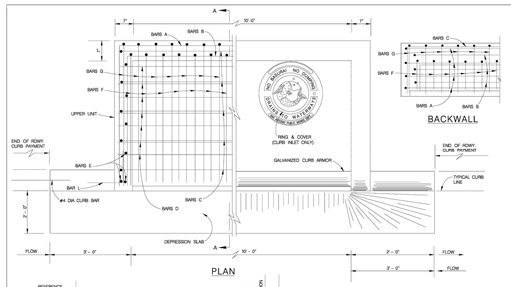
CONCRETE INLET BOX CONFIGURATIONS (LOWER UNITS)

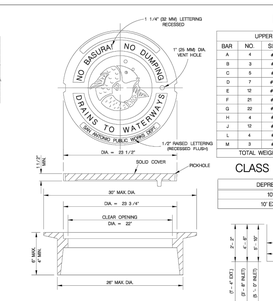
MAY 2009

CITY OF SAN ANTONIO
CAPITAL IMPROVEMENTS MANAGEMENT SERVICES DEPARTMENT

TYPE "C" INLET (TYPE I & II) & INLET EXTENSION STANDARDS
SHEET 1 OF 3

% SUBMITTAL | PROJECT NO: | DATE:
DRWN. BY: V. VASQUEZ DSGN. BY: L.E. MALTOS, P.E. CHKD. BY: B.S. HOSSEINI, P.E. SHEET NO.: ___ OF ___





MANHOLE LID & RING DETAIL (ITEM 409)

NOTES FOR MANHOLE LID AND RING

1. FOR LID DESIGN OUTSIDE OF CITY OF SAN ANTONIO, DELETE "SAN ANTONIO PUBLIC WORKS DEPT.".
2. CASTING NUMBER AND MANUFACTURER'S I.D. ON LID AND RING.
3. LOAD BEARING CAPABILITY OF HS-20 MINIMUM.
4. THE LOAD BEARING SURFACES SHALL BE MACHINE GROUND.
5. THE COMBINED WEIGHT OF THE MANHOLE RING AND COVER MUST BE AT LEAST 260 LBS.

SEE SHEET 1 OF 3 FOR GENERAL NOTES.

REINFORCING STEEL (FOR Hu = 11")

UPPER UNIT 10' X 3'-8" (TYPE I)

BAR	NO.	SIZE	SPAC.	LENGTH	WEIGHT
A	4	#4	—	19'-10"	53
B	3	#4	—	16'-10"	38
C	5	#4	11"	13'-2"	44
D	7	#4	6"	10'-10"	51
E	12	#4	11"	7'-2"	9
F	21	#6	6"	4'-8"	147
G	22	#6	6"	5'-6"	187
H	4	#4	—	10'-10"	29
J	12	#4	12"	3'-6"	28
L	4	#4	—	3'-6"	5
M	3	#4	—	14'-8"	29
TOTAL WEIGHT					620 LBS.

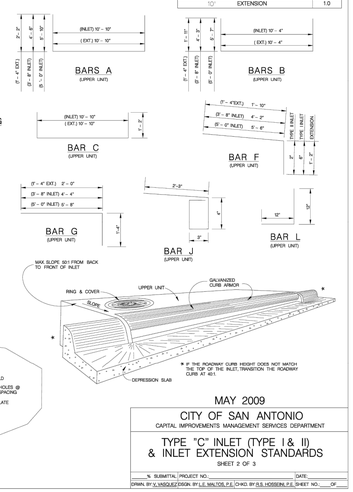
UPPER UNIT 10' X 5' (TYPE II)

BAR	NO.	SIZE	SPAC.	LENGTH	WEIGHT
A	4	#4	—	22'-6"	60
B	3	#4	—	21'-6"	43
C	7	#4	11"	13'-2"	62
D	11	#4	6"	10'-10"	80
E	16	#4	11"	7'-2"	13
F	21	#6	6"	5'-8"	179
G	22	#6	6"	7'-0"	239
H	4	#4	—	10'-10"	29
J	12	#4	12"	3'-6"	28
L	4	#4	—	3'-6"	5
M	3	#4	—	14'-8"	29
TOTAL WEIGHT					759 LBS.

CLASS "A" CONCRETE QUANTITIES (FOR Hu = 11")

DEPRESSION SLAB	C.Y.
10' INLET	0.7
10' EXTENSION	0.7

UPPER UNIT (ONLY)	C.Y.
10' X 3'-8" CURB INLET	1.9
10' X 5'-0" CURB INLET	2.7
EXTENSION	1.0

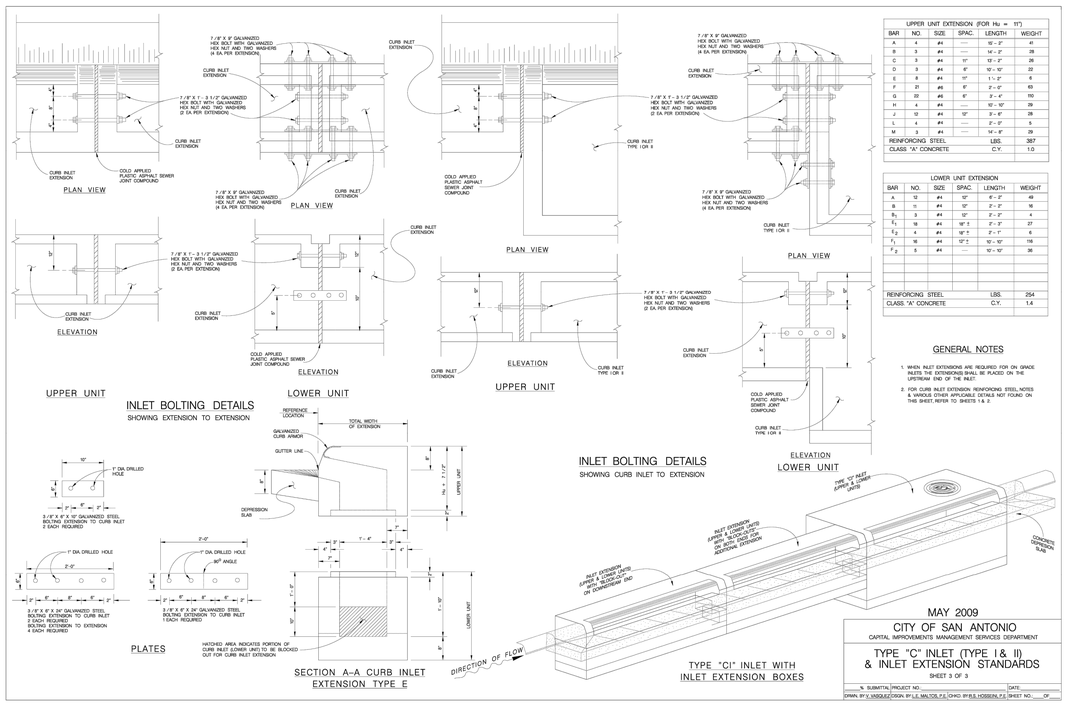


MAY 2009

CITY OF SAN ANTONIO
CAPITAL IMPROVEMENTS MANAGEMENT SERVICES DEPARTMENT

TYPE "C" INLET (TYPE I & II) & INLET EXTENSION STANDARDS
SHEET 2 OF 3

% SUBMITTAL | PROJECT NO: | DATE:
DRWN. BY: V. VASQUEZ DSGN. BY: L.E. MALTOS, P.E. CHKD. BY: B.S. HOSSEINI, P.E. SHEET NO.: ___ OF ___



UPPER UNIT EXTENSION (FOR Hu = 11")					
BAR	NO.	SIZE	SPAC.	LENGTH	WEIGHT
A	4	#4	—	10' – 2"	21
B	3	#4	—	14' – 2"	28
C	3	#4	10"	12' – 2"	26
D	3	#4	6"	10' – 10"	22
E	8	#4	10"	1'– 2"	6
F	21	#6	6"	2' – 0"	63
G	22	#6	6"	3' – 4"	110
H	4	#4	—	10' – 10"	29
J	12	#4	12"	3' – 6"	28
L	4	#4	—	2' – 0"	5
M	3	#4	—	14' – 8"	29
REINFORCING STEEL				LBS.	387
CLASS "A" CONCRETE				C.Y.	1.0

LOWER UNIT EXTENSION					
BAR	NO.	SIZE	SPAC.	LENGTH	WEIGHT
A	12	#4	12"	6' – 2"	49
B	11	#4	12"	2' – 2"	16
B_1	3	#4	12"	2' – 2"	4
E_1	18	#4	18" ±	2' – 2"	27
E_2	4	#4	18" ±	2' – 1"	6
F_1	16	#4	12" ±	10' – 10"	116
F_2	5	#4	—	10' – 10"	36
REINFORCING STEEL				LBS.	254
CLASS "A" CONCRETE				C.Y.	1.4

GENERAL NOTES

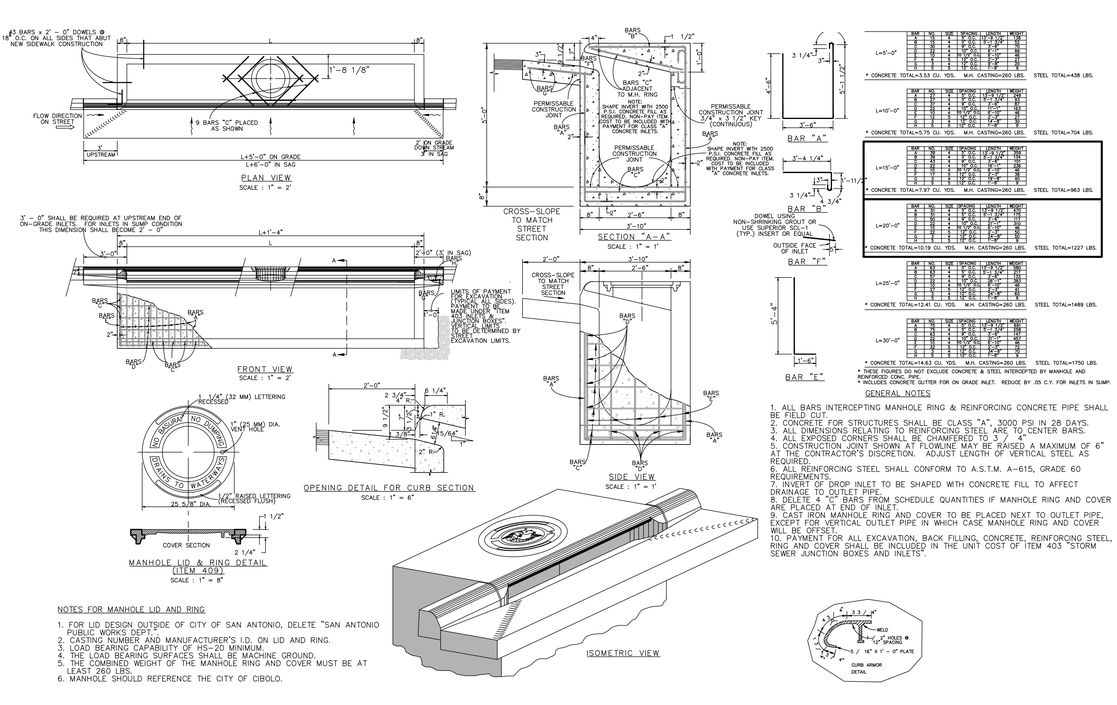
1. WHEN INLET EXTENSIONS ARE REQUIRED FOR ON GRADE INLETS THE EXTENSIONS SHALL BE PLACED ON THE UPSTREAM END OF THE INLET.
2. FOR CURB INLET EXTENSION REINFORCING STEEL, NOTES & WHOLE OTHER APPLICABLE DETAILS NOT FOUND ON THIS SHEET, REFER TO SHEETS 1 & 2.

MAY 2009

CITY OF SAN ANTONIO
CAPITAL IMPROVEMENTS MANAGEMENT SERVICES DEPARTMENT

TYPE "C" INLET (TYPE I & II) & INLET EXTENSION STANDARDS
SHEET 3 OF 3

% SUBMITTAL | PROJECT NO: | DATE:
DRWN. BY: V. VASQUEZ DSGN. BY: L.E. MALTOS, P.E. CHKD. BY: B.S. HOSSEINI, P.E. SHEET NO.: ___ OF ___



NOTES FOR MANHOLE LID AND RING

1. FOR LID DESIGN OUTSIDE OF CITY OF SAN ANTONIO, DELETE "SAN ANTONIO PUBLIC WORKS DEPT.".
2. CASTING NUMBER AND MANUFACTURER'S I.D. ON LID AND RING.
3. LOAD BEARING CAPABILITY OF HS-20 MINIMUM.
4. THE LOAD BEARING SURFACES SHALL BE MACHINE GROUND.
5. THE COMBINED WEIGHT OF THE MANHOLE RING AND COVER MUST BE AT LEAST 260 LBS.
6. MANHOLE SHOULD REFERENCE THE CITY OF CIBOLO.

TYPE "C" INLET STANDARDS

BAR	NO.	SIZE	SPACING	LENGTH	WEIGHT
A	10	#4	6"	5'-10"	39
B	10	#4	6"	5'-10"	39
C	5	#4	12"	3'-6"	12
D	5	#4	12"	3'-6"	12
E	5	#4	12"	3'-6"	12
F	5	#4	12"	3'-6"	12
G	5	#4	12"	3'-6"	12
H	5	#4	12"	3'-6"	12
J	5	#4	12"	3'-6"	12
K	5	#4	12"	3'-6"	12
L	5	#4	12"	3'-6"	12
M	5	#4	12"	3'-6"	12
N	5	#4	12"	3'-6"	12
O	5	#4	12"	3'-6"	12

L=5'-0"

* CONCRETE TOTAL=3.53 CU. YDS. M.H. CASTING=260 LBS. STEEL TOTAL=438 LBS.

BAR	NO.	SIZE	SPACING	LENGTH	WEIGHT
A	10	#4	6"	5'-10"	39
B	10	#4	6"	5'-10"	39
C	5	#4	12"	3'-6"	12
D	5	#4	12"	3'-6"	12
E	5	#4	12"	3'-6"	12
F	5	#4	12"	3'-6"	12
G	5	#4	12"	3'-6"	12
H	5	#4	12"	3'-6"	12
J	5	#4	12"	3'-6"	12
K	5	#4	12"	3'-6"	12
L	5	#4	12"	3'-6"	12
M	5	#4	12"	3'-6"	12
N	5	#4	12"	3'-6"	12
O	5	#4	12"	3'-6"	12

L=10'-0"

* CONCRETE TOTAL=5.75 CU. YDS. M.H. CASTING=260 LBS. STEEL TOTAL=704 LBS.

BAR	NO.	SIZE	SPACING	LENGTH	WEIGHT
A	14	#4	6"	5'-10"	54
B	14	#4	6"	5'-10"	54
C	7	#4	12"	3'-6"	16
D	7	#4	12"	3'-6"	16
E	7	#4	12"	3'-6"	16
F	7	#4	12"	3'-6"	16
G	7	#4	12"	3'-6"	16
H	7	#4	12"	3'-6"	16
J	7	#4	12"	3'-6"	16
K	7	#4	12"	3'-6"	16
L	7	#4	12"	3'-6"	16
M	7	#4	12"	3'-6"	16
N	7	#4	12"	3'-6"	16
O	7	#4	12"	3'-6"	16

L=15'-0"

* CONCRETE TOTAL=7.97 CU. YDS. M.H. CASTING=260 LBS. STEEL TOTAL=963 LBS.

BAR	NO.	SIZE	SPACING	LENGTH	WEIGHT
A	19	#4	6"	5'-10"	74
B	19	#4	6"	5'-10"	74
C	10	#4	12"	3'-6"	23
D	10	#4	12"	3'-6"	23
E	10	#4	12"	3'-6"	23
F	10	#4	12"	3'-6"	23
G	10	#4	12"	3'-6"	23
H	10	#4	12"	3'-6"	23
J	10	#4	12"	3'-6"	23
K	10	#4	12"	3'-6"	23
L	10	#4	12"	3'-6"	23
M	10	#4	12"	3'-6"	23
N	10	#4	12"	3'-6"	23
O	10	#4	12"	3'-6"	23

L=20'-0"

* CONCRETE TOTAL=10.19 CU. YDS. M.H. CASTING=260 LBS. STEEL TOTAL=1227 LBS.

BAR	NO.	SIZE	SPACING	LENGTH	WEIGHT
A	24	#4	6"	5'-10"	94
B	24	#4	6"	5'-10"	94
C	12	#4	12"	3'-6"	28
D	12	#4	12"	3'-6"	28
E	12	#4	12"	3'-6"	28
F	12	#4	12"	3'-6"	28
G	12	#4	12"	3'-6"	28
H	12	#4	12"	3'-6"	28
J	12	#4	12"	3'-6"	28
K	12	#4	12"	3'-6"	28
L	12	#4	12"	3'-6"	28
M	12	#4	12"	3'-6"	28
N	12	#4	12"	3'-6"	28
O	12	#4	12"	3'-6"	28

L=25'-0"

* CONCRETE TOTAL=12.41 CU. YDS. M.H. CASTING=260 LBS. STEEL TOTAL=1489 LBS.

BAR	NO.	SIZE	SPACING	LENGTH	WEIGHT
A	29	#4	6"	5'-10"	114
B	29	#4	6"	5'-10"	114
C	15	#4	12"	3'-6"	35
D	15	#4	12"	3'-6"	35
E	15	#4	12"	3'-6"	35
F	15	#4	12"	3'-6"	35
G	15	#4	12"	3'-6"	35
H	15	#4	12"	3'-6"	35
J	15	#4	12"	3'-6"	35
K	15	#4	12"	3'-6"	35
L	15	#4	12"	3'-6"	35
M	15	#4	12"	3'-6"	35
N	15	#4	12"	3'-6"	35
O	15	#4	12"	3'-6"	35

L=30'-0"

* CONCRETE TOTAL=14.63 CU. YDS. M.H. CASTING=260 LBS. STEEL TOTAL=1750 LBS.

* THESE FIGURES DO NOT EXCLUDE CONCRETE & STEEL INTERCEPTED BY MANHOLE AND REQUIRED TO BE CUT.
* INCLUDES CONCRETE GUTTER FOR ON GRADE INLET. REDUCE BY .05 C.Y. FOR INLETS IN SUMP.

GENERAL NOTES

1. ALL BARS INTERCEPTING MANHOLE RING & REINFORCING CONCRETE PIPE SHALL BE FIELD CUT.
2. CONCRETE FOR STRUCTURES SHALL BE CLASS "A", 3000 PSI IN 28 DAYS.
3. ALL DIMENSIONS RELATING TO REINFORCING STEEL ARE TO CENTER BARS.
4. ALL EXPOSED CORNERS SHALL BE CHAMFERED TO 3 / 4".
5. CONSTRUCTION JOINT SHOWN AT FLOWLINE MAY BE RAISED A MAXIMUM OF 6" AT THE CONTRACTOR'S DISCRETION. ADJUST LENGTH OF VERTICAL STEEL AS REQUIRED.
6. ALL REINFORCING STEEL SHALL CONFORM TO A.S.T.M. A–615, GRADE 60 REQUIREMENTS.
7. INVERT OF DROP INLET TO BE SHAPED WITH CONCRETE FILL TO AFFECT DRAINAGE TO OUTLET PIPE.
8. DELETE 4 "C" BARS FROM SCHEDULE QUANTITIES IF MANHOLE RING AND COVER ARE PLACED AT END OF INLET.
9. CAST IRON MANHOLE RING AND COVER TO BE PLACED NEXT TO OUTLET PIPE, EXCEPT FOR VERTICAL OUTLET PIPE IN WHICH CASE MANHOLE RING AND COVER WILL BE OFFSET.
10. PAYMENT FOR ALL EXCAVATION, BACK FILLING, CONCRETE, REINFORCING STEEL, RING AND COVER SHALL BE INCLUDED IN THE UNIT COST OF ITEM 403 "STORM SEWER JUNCTION BOXES AND INLETS".

MEYER RANCH UNIT 16
COMAL COUNTY, TEXAS
DRAINAGE DETAILS

NO.	REVISION	DATE

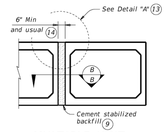
STATE OF TEXAS
TODD W. BLACKMON
89208
LICENSED
PROFESSIONAL ENGINEER
12 - 27 - 2024

PAPE-DAWSON ENGINEERS
1672 INDEPENDENCE DR, STE 102 I NEW BRAUNFELS, TX 78132 I 830.632.5633
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

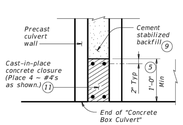
PLAT NO. ___
JOB NO. 30010–27
DATE DECEMBER 2024
DESIGNER CL
CHECKED HF DRAWN BH
SHEET C1.21

FOR PERMIT

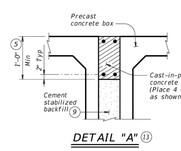
Date: Dec 17, 2024, 11:14am User ID: ALeddy
File: P:\30010\27\Design\Civil\SDDT-001027.dwg



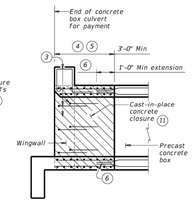
MULTIPLE UNIT PLACEMENT



SECTION B-B

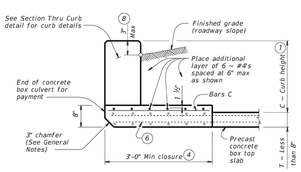


DETAIL "A" (13)

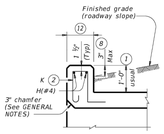


WINGWALL CONNECTION

(Also applies to safety end treatment.)



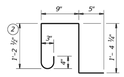
SECTION THRU TOP SLABS LESS THAN 8"



SECTION THRU CURB

QUANTITIES PER FOOT OF CURB (10)	
Reinforcing Steel	4.12 Lb
Concrete	0.037 CY

BARS C (#4)
(Spa = 1'-0" Max)



BARS K (#4)
(Spa = 1'-0" Max)
(Length = 4'-2")

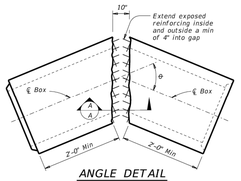
1. 0" Min to 5'-0" Max. Estimated curb heights are shown elsewhere in the plans. For structures with pedestrian rail, bicycle rail, or curbs taller than 1'-0, refer to the Extended Curb Details (ECD) standard sheet. For structures with T631 or T631LS bridge rail, refer to the Mounting Details for T631 & T631LS Rails (T631-CM) standard sheet. Refer to the Box Culvert Rail Mounting Details (RAC) standard sheet for structures with bridge rail other than T631 or T631LS.
2. For curbs less than 1'-0" high, tilt Bars K or reduce bar height as necessary to maintain cover. For curbs less than 3" high, Bars K may be omitted.
3. Extend curb, wingwall, or safety end treatment reinforcing into concrete closure. Bend or trim, as necessary, any reinforcing that does not fit into closure area.
4. Provide a 3'-0" Min cast-in-place concrete closure. Break back boxes in the field or cast boxes short. Provide bands of reinforcing in the closure that are the same size and spacing as in the precast box section. Provide #4 longitudinal reinforcement spaced at 12 inches Max within the closure. Except where shown otherwise, construct the cast-in-place closure flush with the inside and outside faces of the precast box section.
5. For multiple unit placements, adjust the length of the closure for the interior walls as necessary. Provide a 3'-0" Min cast-in-place closure in the top slab, bottom slab, and exterior wall. See Section B-B detail when interior walls are cast full length.
6. Extend precast box reinforcing a minimum of 1'-0" into concrete closure (Typ).
7. Place bands of reinforcing matching the inside and outside face reinforcing in the gaps of the top and bottom slabs. Place a band matching the outside face reinforcing of the wall in the gaps of the walls (placed in the outside face only). Tack weld the bands to the exposed reinforcing at each point of contact.
8. For vehicle safety, the following requirements must be met:
   - For structures without bridge rail, construct curbs no more than 3" above finished grade.
   - For structures with bridge rail, construct curbs flush with finished grade.

   Reduce curb heights, if necessary, to meet the above requirements. No changes will be made in quantities and no additional compensation will be allowed for this work.
9. Cement stabilized backfill between boxes is considered part of the box culvert for payment.
10. All curb concrete and reinforcing is considered part of the box culvert for payment.
11. Any additional concrete and reinforcing required for the closures will be considered subsidiary to the box culvert for payment.
12. 1'-0" typical. 2'-3" when the Box Culvert Rail Mounting Details (RAC) standard sheet is referred to elsewhere in the plans.
13. For multiple unit placement with overlay, with 1 to 2 course surface treatment, or with the top slab as the final riding surface, provide wall closure as shown in Detail "A".
14. This dimension may be increased with approval of the Engineer to allow the precast boxes to be tunneled or jacked in accordance with Item 476, "Jacking, Boring, or Tunneling Pipe or Box." No payment will be made for any additional material in the gap between adjacent boxes.

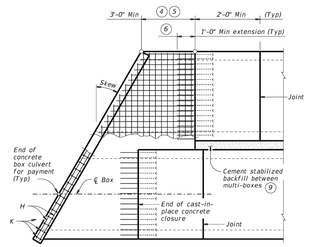
MATERIAL NOTES:
Provide Grade 60 reinforcing steel.
Provide ASTM A1064 welded wire reinforcement.
Provide Class C concrete (f'c = 3,600 psi) for the closures.
Provide cement stabilized backfill meeting the requirements of Item 400, "Excavation and Backfill for Structures."
Any additional concrete required for the closures will be considered subsidiary to the box culvert.

GENERAL NOTES:
Designed according to AASHTO LRFD Bridge Design Specifications.
Refer to the Single Box Culverts Precast (SCP) standard sheets for details and notes not shown.
Chamfer the bottom edge of the top slab closure 3 inches at culvert closure ends.

Cover dimensions are clear dimensions, unless noted otherwise.
Reinforcing bars dimensions are out-to-out of bars.

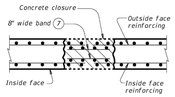


ANGLE DETAIL



PLAN OF SKEWED ENDS

(Showing multi-box placement.)



SECTION A-A

HL93 LOADING

Texas Department of Transportation — Bridge Division Standard

BOX CULVERTS
PRECAST
MISCELLANEOUS DETAILS

SCP-MD

FILE: CD-SCP-MD-20.dgn	DN: GAF	CK: LRW	DW: BBR/TxDOT	CK: GAF
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS				
	DIST		COUNTY	SHEET NO.

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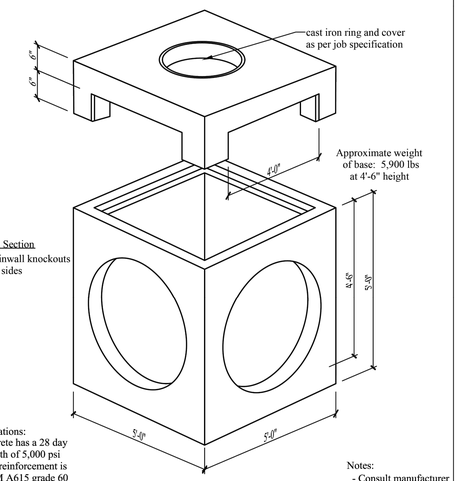
DATE:
FILE:

4' x 4' x var 4-Way Inlet



Specifications:
- Concrete has a 28 day strength of 5,000 psi
- Steel reinforcement is ASTM A615 grade 60
- Load design is H-20

Notes:
- Consult manufacturer before handling

Capital Precast

CAPITAL PRECAST, INC.
6905 SOUTH OLD BASTROP HWY
SAN MARCOS, TEXAS 78666
PH. (830) 606-6200

FOR	4' x 4' x var 4-Way Inlet			
JOB				
DRAWN RW	DATE 12/1/2015	Rev. No.	SHEET 1 OF 1	
FILE	catalog/areainlets/4x4 area inlet			

NO.	REVISION	DATE

STATE OF TEXAS
TODD W. BLACKMON
89208
LICENSED
PROFESSIONAL ENGINEER
12 - 27 - 2024

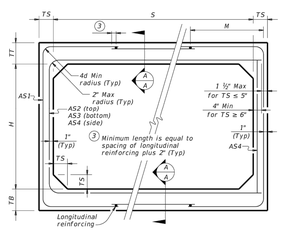
PAPE-DAWSON ENGINEERS
1672 INDEPENDENCE DR, STE 102 I NEW BRAUNFELS, TX 78132 I 830.632.5633
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

BOX DATA

SECTION DIMENSIONS S (ft.)	H (ft.)	TT (in.)	TB (in.)	TS (in.)	Fill Height (ft.)	M (Min) (in.)	REINFORCING (sq. in. / ft.) (2) AS1	AS2	AS3	AS4	AS5	AS7	AS8	(1) Lift Weight (tons)
6	2	8	7	7	< 2	-	0.23	0.27	0.19	0.17	0.19	0.19	0.17	7.2
6	2	7	7	7	< 2 < 3	43	0.25	0.21	0.17	0.17	-	-	-	6.8
6	2	7	7	7	3 - 5	43	0.20	0.17	0.17	0.17	-	-	-	6.8
6	2	7	7	7	10	39	0.20	0.17	0.17	0.17	-	-	-	6.8
6	2	7	7	7	15	39	0.26	0.20	0.20	0.17	-	-	-	6.8
6	2	7	7	7	20	39	0.34	0.26	0.26	0.17	-	-	-	6.8
6	2	7	7	7	25	39	0.43	0.32	0.32	0.17	-	-	-	6.8
6	2	7	7	7	30	39	0.52	0.38	0.39	0.17	-	-	-	6.8
6	3	8	7	7	< 2	-	0.20	0.31	0.22	0.17	0.19	0.19	0.17	7.9
6	3	7	7	7	< 2 < 3	43	0.21	0.24	0.19	0.17	-	-	-	7.5
6	3	7	7	7	3 - 5	39	0.17	0.18	0.17	0.17	-	-	-	7.5
6	3	7	7	7	10	39	0.17	0.18	0.19	0.17	-	-	-	7.5
6	3	7	7	7	15	38	0.22	0.24	0.24	0.17	-	-	-	7.5
6	3	7	7	7	20	38	0.28	0.31	0.31	0.17	-	-	-	7.5
6	3	7	7	7	25	38	0.35	0.38	0.39	0.17	-	-	-	7.5
6	3	7	7	7	30	38	0.42	0.46	0.46	0.17	-	-	-	7.5
6	4	8	7	7	< 2	-	0.19	0.34	0.25	0.17	0.19	0.19	0.17	8.6
6	4	7	7	7	< 2 < 3	43	0.19	0.27	0.21	0.17	-	-	-	8.2
6	4	7	7	7	3 - 5	39	0.17	0.21	0.19	0.17	-	-	-	8.2
6	4	7	7	7	10	39	0.17	0.20	0.21	0.17	-	-	-	8.2
6	4	7	7	7	15	38	0.18	0.27	0.27	0.17	-	-	-	8.2
6	4	7	7	7	20	38	0.24	0.34	0.35	0.17	-	-	-	8.2
6	4	7	7	7	25	38	0.29	0.43	0.42	0.17	-	-	-	8.2
6	4	7	7	7	30	38	0.35	0.51	0.52	0.17	-	-	-	8.2
6	5	8	7	7	< 2	-	0.19	0.37	0.28	0.17	0.19	0.19	0.17	9.3
6	5	7	7	7	< 2 < 3	43	0.17	0.30	0.24	0.17	-	-	-	8.9
6	5	7	7	7	3 - 5	43	0.17	0.23	0.21	0.17	-	-	-	8.9
6	5	7	7	7	10	39	0.17	0.22	0.23	0.17	-	-	-	8.9
6	5	7	7	7	15	38	0.17	0.28	0.29	0.17	-	-	-	8.9
6	5	7	7	7	20	38	0.20	0.37	0.38	0.17	-	-	-	8.9
6	5	7	7	7	25	38	0.25	0.45	0.46	0.17	-	-	-	8.9
6	5	7	7	7	30	38	0.30	0.54	0.55	0.17	-	-	-	8.9
6	6	8	7	7	< 2	-	0.19	0.38	0.30	0.17	0.19	0.19	0.17	10
6	6	7	7	7	< 2 < 3	52	0.17	0.32	0.26	0.17	-	-	-	9.6
6	6	7	7	7	3 - 5	52	0.17	0.24	0.22	0.17	-	-	-	9.6
6	6	7	7	7	10	43	0.17	0.23	0.24	0.17	-	-	-	9.6
6	6	7	7	7	15	39	0.17	0.29	0.31	0.17	-	-	-	9.6
6	6	7	7	7	20	39	0.18	0.38	0.39	0.17	-	-	-	9.6
6	6	7	7	7	25	38	0.23	0.46	0.48	0.17	-	-	-	9.6
6	6	7	7	7	30	38	0.27	0.55	0.57	0.17	-	-	-	9.6

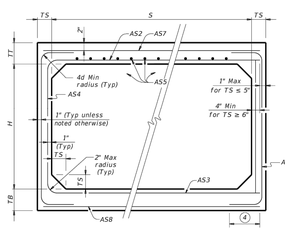
(1) For box length = 8'-0"

(2) AS1 thru AS4, AS7 and AS8 are minimum required areas of reinforcement per linear foot of box length. AS5 is minimum required area of reinforcement per linear foot of box width.



CORNER OPTION "A" CORNER OPTION "B"

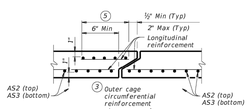
FILL HEIGHT 2 FT AND GREATER



CORNER OPTION "A" CORNER OPTION "B"

FILL HEIGHT LESS THAN 2 FT

(4) Length is equal to spacing of longitudinal reinforcing plus 2". (10" Min) (Typ)



SECTION A-A

(Showing top and bottom slab joint reinforcement.)

MATERIAL NOTES:
Provide 0.03 sq. in./ft. minimum longitudinal reinforcement at each face in slabs and walls. This minimum requirement may be met by the transverse wires when wire mesh reinforcement is used.
Provide Class H concrete (f'c = 5,000 psi).

GENERAL NOTES:
Designs shown conform to ASTM C1577. Refer to ASTM C1577 for information or details not shown.
See Box Culverts Precast Miscellaneous Details (SCP-MD) standard sheet for details and notes not shown.
In lieu of furnishing the designs shown on this sheet, the contractor may furnish an alternate design that is equal to or exceeds the box design for the design fill height in the table. Submit shop plans for alternate designs in accordance with Item "Precast Concrete Structural Members (Fabrication)."

HL93 LOADING

Texas Department of Transportation — Bridge Division Standard

SINGLE BOX CULVERTS
PRECAST
6'-0" SPAN

SCP-6

FILE: CD-SCP06-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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REVISIONS				
	DIST		COUNTY	SHEET NO.

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DATE:
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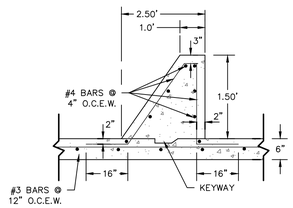
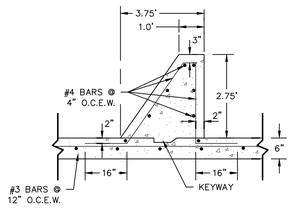
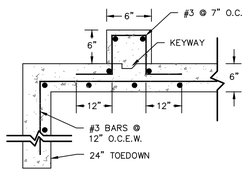


BAFFLE BLOCK 1 DETAIL
SECTION
NOT-TO-SCALE



BAFFLE BLOCK 2 DETAIL
SECTION
NOT-TO-SCALE



TYPICAL END SILL DETAIL
SECTION
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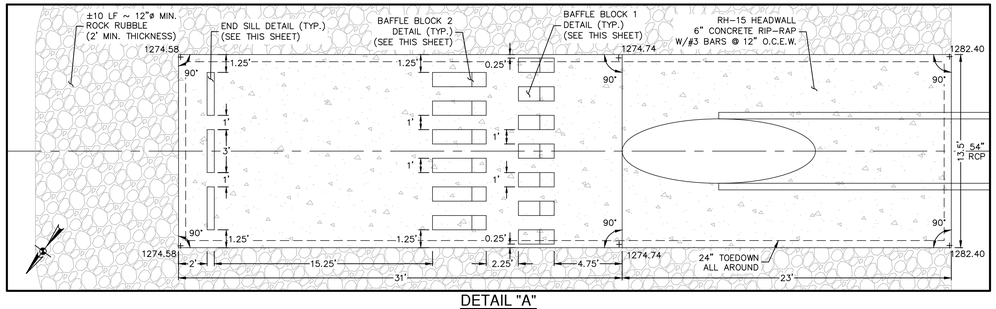


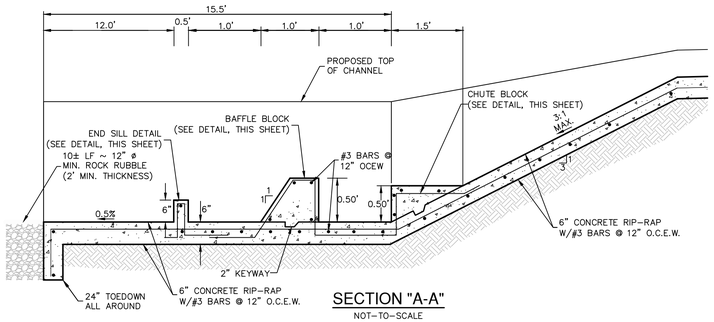
DETAIL "A"
1" = 5'
(DETAIL "A" - SEE SHEET C1.03)

MEYER RANCH UNIT 16
COMAL COUNTY, TEXAS
DRAINAGE DETAILS

PLAT NO.	
JOB NO.	30010-27
DATE	DECEMBER 2024
DESIGNER	CL
CHECKED HF	DRAWN BH
SHEET	C1.22

FOR PERMIT

Date: Dec 17, 2024, 11:14am User ID: ALeddy
File: P:\30010\27\Design\Civil\SDDT-20010227.dwg



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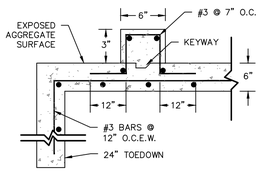
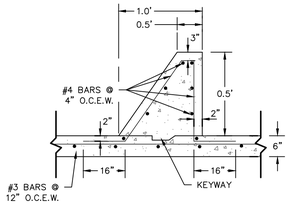


TYPICAL END SILL DETAIL

SECTION

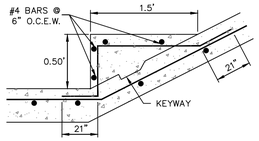
NOT-TO-SCALE



BAFFLE BLOCK DETAIL

SECTION

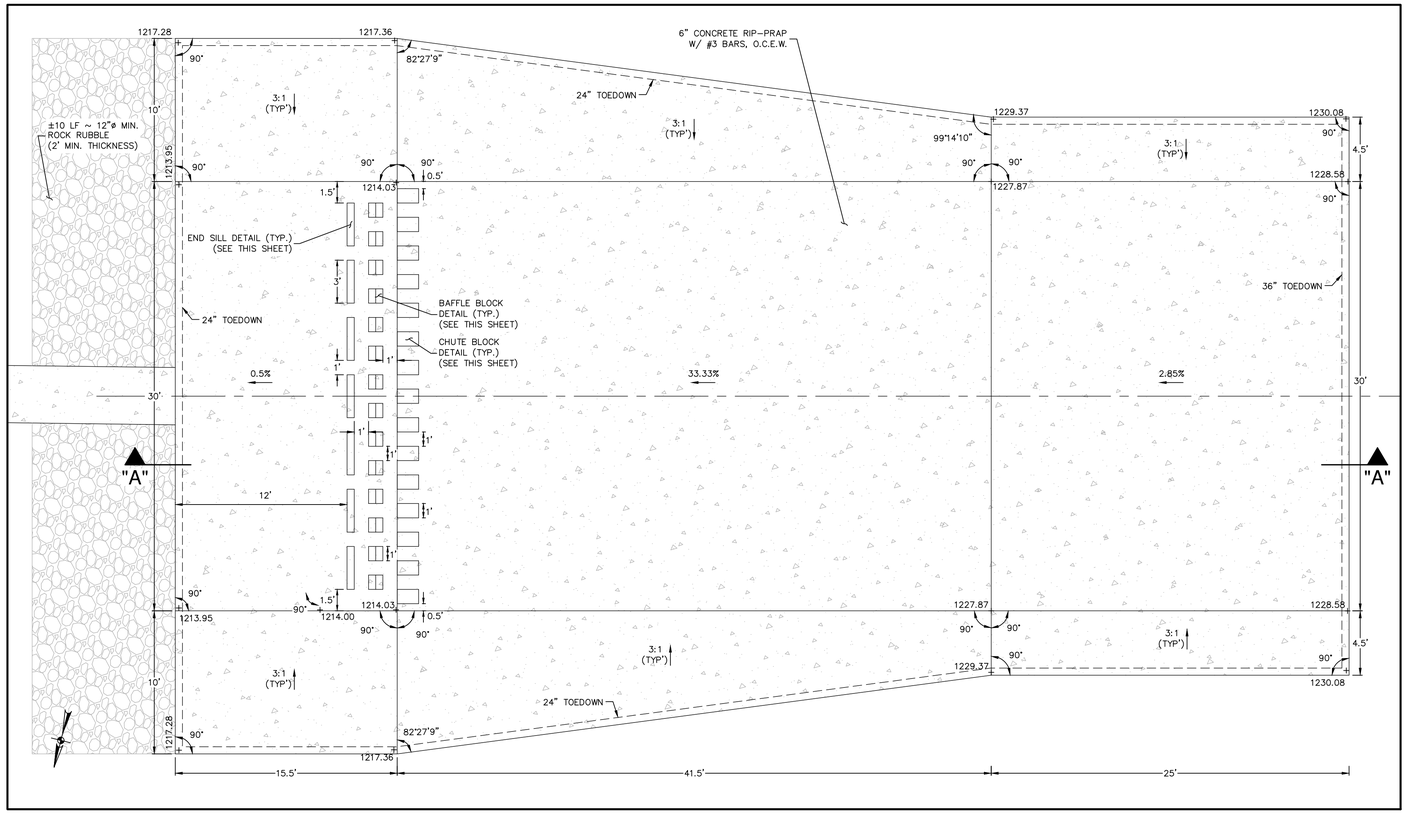
NOT-TO-SCALE



CHUTE BLOCK DETAIL

SECTION

NOT-TO-SCALE

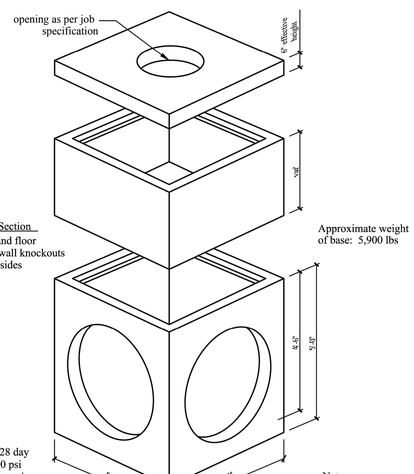


DETAIL "A"

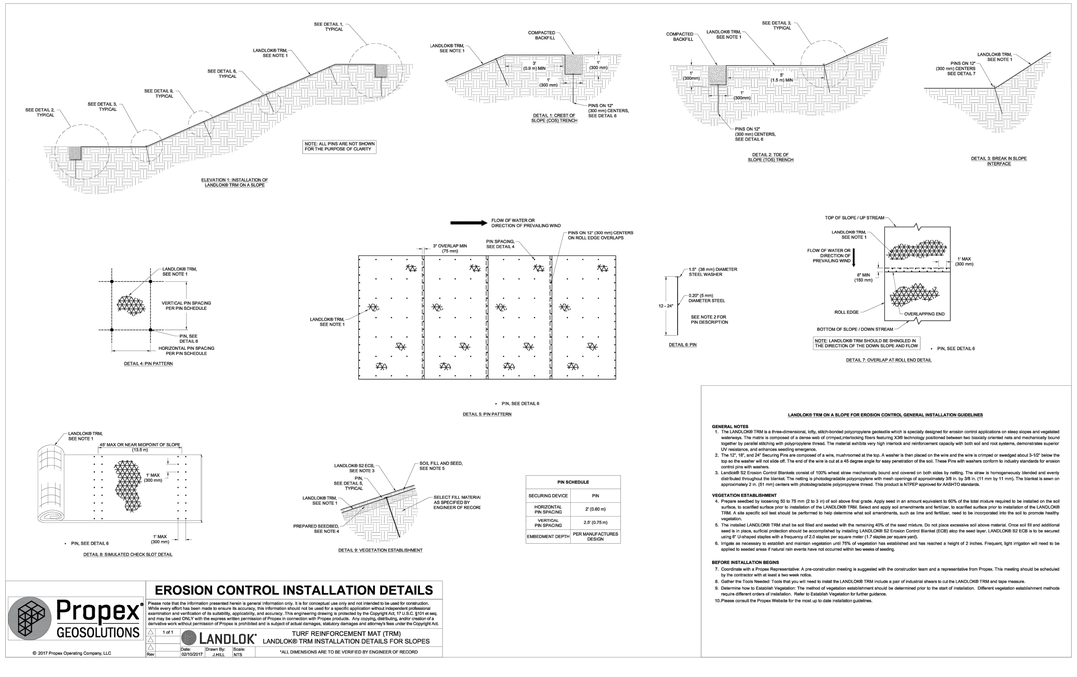
1" = 5'

(DETAIL "A" SEE SHEET C1.07)

4' x 4' x var Junction Box



Capital Precast	CAPITAL PRECAST, INC. 6905 SOUTH OLD BASTROP HWY SAN MARCOS, TEXAS 78666 PH. (830) 606-6200	FOR 4' x 4' x var Junction Box	
		JOB	
		DRAWN RW / DATE 12/1/2015 / Rev. No.	SHEET 1 OF 1
		FILE catalog/junction boxes/4x4JB	



LANDLOK TRM ON A SLOPE FOR EROSION CONTROL GENERAL INSTALLATION GUIDELINES

GENERAL NOTES

1. The LANDLOK® TRM is a three-dimensional, UV₁ stitch-bonded polypropylene geotextile which is specifically designed for erosion control applications on steep slopes and vegetated channels. The matrix is composed of a dense web of crimped,interlocking fibers featuring X3® technology positioned between two biaxially oriented nets and mechanically bound together by parallel stitching with polypropylene thread. The material exhibits very high interlock and reinforcement capacity with both soil and root systems, demonstrates superior UV resistance, and enhances seeding emergence.
2. The 12", 18", and 24" Securing Pins are composed of a wire, mushroomed at the top. A washer is then placed on the wire and the wire is crimped or swaged about 5-10" below the top so the washer will not slide off. The end of the wire is cut at a 45 degree angle for easy penetration of the soil. These Pins with washers conform to industry standards for erosion control securing devices.
3. Landlok® 52 Erosion Control Blanket consist of 100% wheat straw mechanically bound and covered on both sides by netting. The straw is homogeneously blended and evenly distributed throughout the blanket. The netting is photodegradable polypropylene with mesh openings of approximately 3/8 in. by 3/8 in. (11 mm by 11 mm). The blanket is sewn on approximately 2 in. (51 mm) centers with photodegradable polypropylene thread. This product is NTPEP approved for AASHTO standards.

VEGETATION ESTABLISHMENT

4. Procure seedbed by loosening 50 to 75 mm (2 to 3 in) of soil above final grade. Apply seed in an amount equivalent to 80% of the total mixture required to be installed on the soil surface, to scarified surface prior to installation of the LANDLOK® TRM. Select and apply soil amendments and fertilizer, to scarified surface prior to installation of the LANDLOK® TRM. A site-specific soil test should be performed to help determine what soil amendments, such as lime and fertilizer, need to be incorporated into the soil to promote healthy vegetation.
5. The installed LANDLOK® TRM shall be soil filled and seeded with the remaining 40% of the seed mixture. Do not place excessive soil above material. Once soil fill and additional seed is in place, surficial protection should be accomplished by installing LANDLOK® 52 Erosion Control Blanket (ECB) atop the seed layer. LANDLOK® 52 ECB is to be secured using 6" U-shaped staples with a frequency of 2.0 staples per square meter (1.7 staples per square yard).
6. Irrigate as necessary to establish and maintain vegetation until 75% of vegetation has established and has reached a height of 2 inches. Frequent, light irrigation will need to be applied to seeded areas if natural rain events have not occurred within two weeks of seeding.

BEFORE INSTALLATION BEGINS

7. Coordinate with a Propex Representative -A pre-construction meeting is suggested with the construction team and a representative from Propex. This meeting should be scheduled by the contractor with at least a two week notice.
8. Gather the Facts Needed: Tools that you will need to install the LANDLOK® TRM include a pair of industrial shears to cut the LANDLOK® TRM and tape measure.
9. Determine how to Establish Vegetation: The method of vegetation establishment should be determined prior to the start of installation. Different vegetation establishment methods require different orders of installation. Refer to Establish Vegetation for further guidance.
10. Please consult the Propex Website for the most up to date installation guidelines.

Propex GEOSOLUTIONS

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EROSION CONTROL INSTALLATION DETAILS

Please note that the information presented herein is general information only, it is for conceptual use only and not intended to be used for construction. While every effort has been made to ensure its accuracy, this information should not be used for a specific application without independent professional examination and verification of its suitability, applicability, and accuracy. This engineering drawing is protected by the Copyright Act, 17 U.S.C. §101 et seq. and is the property of Propex. It may not be altered or reproduced in whole or in part without the express written consent of Propex. Any unauthorized use of this drawing or any derivative work without permission of Propex is prohibited and is subject of actual damages, statutory damages and attorney's fees under the Copyright Act.

Rev	Date	Drawn By	Scale
1 of 1	02/15/2017	J.HILL	NTS

LANDLOK® TURF REINFORCEMENT MAT (TRM)
LANDLOK® TRM INSTALLATION DETAILS FOR SLOPES

*ALL DIMENSIONS ARE TO BE VERIFIED BY ENGINEER OF RECORD

LANDLOK® TRM

Product Data

LANDLOK® 450

LANDLOK® 450 turf reinforcement mat (TRM) features X3® technology that consists of a dense web of interlocking, multi-lobed polypropylene fibers positioned between two biaxially oriented nets and mechanically bound together by parallel stitching with polypropylene thread. The TRM is designed to accelerate seedling emergence, exhibit high resiliency, and possess strength and elongation properties to limit stretching in a saturated condition. Every component of LANDLOK® 450 is stabilized against chemical and ultraviolet degradation which are normally found in a natural soil environment. Furthermore, the TRM contains no biodegradable components.

LANDLOK® 450 conforms to the property values listed below[1] and is manufactured at a Propex facility having achieved ISO 9001:2008 certification. Propex performs internal Manufacturing Quality Control (MQC) tests that have been accredited by the Geosynthetic Accreditation Institute – Laboratory Accreditation Program (GAI-LAP).

PROPERTY	TEST METHOD	ENGLISH	METRIC
ORIGIN OF MATERIALS			
% U.S. Manufactured		100%	100%
PHYSICAL			
Mass/Unit Area [2]	ASTM D-6566	10.0 oz/yd²	339 g/m²
Thickness [2]	ASTM D-6525	0.50 in	12.7 mm
Light Penetration (% Passing) [2]	ASTM D-6567	20%	20%
Color	Visual	Green or Tan	
MECHANICAL			
Tensile Strength [2]	ASTM D-6818	425 x 350 lbs/ft	6.2 x 5.1 kN/m
Elongation [2]	ASTM D-6818	50%	50%
Resiliency [2]	ASTM D-6524	90%	90%
Flexibility [2]	ASTM D-6575	0.026 in-lb	30,000 mg-cm
ENDURANCE			
UV Resistance % Retained at 1,000 hrs [2]	ASTM D-4355	80%	80%
PERFORMANCE			
Velocity (Vegetated) [2, 3]	Large Scale	18 ft/sec	5.5 m/sec
Shear Stress (Vegetated) [2, 3]	Large Scale	10 lb/ft²	479 Pa
Manning's n (Unvegetated) [2, 4]	Calculated	0.025	0.025
Seedling Emergence [2]	ASTM D-7322	409%	409%
ROLL SIZES		8 ft x 140 ft 16 ft x 140 ft 16 ft x 348.75 ft	2.45 m x 42.7 m 4.88 m x 42.7 m 4.88 m x 106.3 m

NOTES:

1. The property values listed above are effective 01/22/2020 and are subject to change without notice.
2. Values represent testing at time of manufacture and are shown as typical values.
3. Maximum permissible velocity and shear stress has been obtained through vegetated testing programs featuring specific soil types, vegetation classes, flow conditions, and failure criteria. These conditions may not be relevant to every project nor are they replicated by other manufacturers. Please contact Propex for further information.
4. Calculated as typical values from large-scale flexible channel lining test programs with a flow depth of 6 to 12 inches.

Propex GEOSOLUTIONS

ENGINEERED EARTH SOLUTIONS™

www.propexglobal.com

Propex Operating Company, LLC · 4019 Industry Drive · Chattanooga, TN 37416 · ph 800 621 1273 · ph 423 855 1466

NO.	REVISION	DATE

12 - 27 - 2024

STATE OF TEXAS
TODD W. BLACKMON
89208
LICENSED
PROFESSIONAL ENGINEER

PAPE-DAWSON ENGINEERS
1672 INDEPENDENCE DR, STE 102 I NEW BRAUNFELS, TX 78132 I 830.632.5633
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

MEYER RANCH UNIT 16

COMAL COUNTY, TEXAS

DRAINAGE DETAILS

PLAT NO. _____

JOB NO. 30010-27

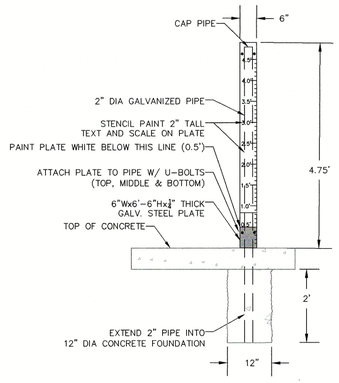
DATE DECEMBER 2024

DESIGNER CL

CHECKED HF DRAWN BH

SHEET C1.23

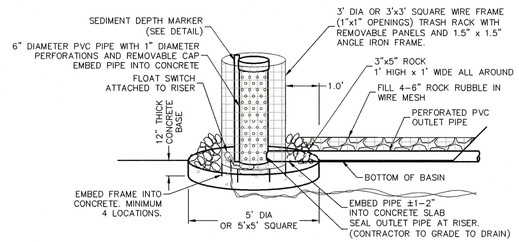
FOR PERMIT



SEDIMENT DEPTH MARKER

NOT TO SCALE

NOTE: ONCE SEDIMENT IS ABOVE THE 6" DESIGNATION, THE BASIN MUST BE CLEANED OUT TO DESIGN ELEVATIONS AND VOLUMES PER PLAN.



OUTLET STRUCTURE DETAIL WITH SURFACE OUTFALL PIPE

NOT-TO-SCALE

NOTES

1. CONTRACTOR IS ADVISED THAT TCEQ DOES NOT ALLOW CHANGES TO PERMANENT POLLUTION ABATEMENT MEASURES WITHOUT THEIR PRIOR APPROVAL.

2. CONTRACTOR SHALL NOTIFY CERTIFYING ENGINEER WHEN BASIN CONSTRUCTION HAS PROGRESSED TO THE FOLLOWING MILESTONES:

a. REINFORCING STEEL FOR BASIN OVERFLOW WALL OR RIPRAP PILOT CHANNEL HAS BEEN SET, CONCRETE HAS NOT BEEN PLACED AND DRAIN PIPE AND RISER PIPE IS IN PLACE, CONTRACTOR SHALL PROVIDE ENGINEER WITH SURVEY DATA WHICH DEMONSTRATES THE RISER PIPE HAS BEEN SET AT PROPER ELEVATION AND GRADE.

b. BASIN HAS BEEN COMPLETELY FINISHED INCLUDING SOD OR SEED PLACEMENT ON SIDE SLOPES (WHERE APPLICABLE).

3. WORK SHALL NOT CONTINUE ON THE BASIN UNTIL THE ENGINEER HAS HAD AN OPPORTUNITY TO OBSERVE THE STATUS OF CONSTRUCTION. CONTRACTOR SHALL PROVIDE ENGINEER A MINIMUM OF 24 HOURS ADVANCE NOTICE PRIOR TO TIME THE BASIN WILL BE AT THE REQUIRED STAGE.

4. UPON SUBSTANTIAL COMPLETION, OR AS REQUESTED BY ENGINEER, CONTRACTOR TO PROVIDE CERTIFYING ENGINEER WITH FIELD SHOTS VERIFYING ELEVATIONS OF THE FOLLOWING:

- TOP OF BANK/WALL AT EACH CORNER OF BASIN
- TOE OF SLOPE AT EACH CORNER OF BASIN (INSIDE BASIN TOE)
- SPLASH PAD/INLET PIPES
- OVERFLOW WEIRS

5. BEFORE FINAL ACCEPTANCE OF CONSTRUCTION BY THE OWNER, THE CONTRACTOR WILL REMOVE ALL TRASH, DEBRIS, AND ACCUMULATED SILT FROM THE BASINS AND REESTABLISH THEM TO THE PROPER OPERATING CONDITION.

6. THE MINIMUM DRAIN TIME FOR A FULL BASIN IS 29 HOURS. CONTRACTOR TO SET BUTTERFLY VALVE TO FULLY OPEN TO BE CONTROLLED DDC CONTROLLER.

CLAY LINER SPECIFICATIONS

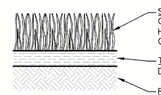
PROPERTY	TEST METHOD	UNIT	SPECIFICATION
PERMEABILITY	ASTM D-2434	CM/SEC	1×10^{-6}
PLASTICITY INDEX OF CLAY	ASTM D-423 & D-424	%	NOT LESS THAN 15
LIQUID LIMIT OF CLAY	ASTM D-2216	%	NOT LESS THAN 30
CLAY PARTICLES PASSING	ASTM D-422	%	NOT LESS THAN 30
CLAY COMPACTION	ASTM D-2216	%	95% OF STANDARD PROCTOR DENSITY

THE CLAY LINER SHALL HAVE A MINIMUM THICKNESS OF TWELVE (12) INCHES.

IF A GEOMEMBRANE LINER IS USED IT SHALL HAVE A MINIMUM THICKNESS OF FORTY (40) MILS. AND BE ULTRAVIOLET RESISTANT. A GEOTEXTILE FABRIC SHALL BE INSTALLED PER MANUFACTURER'S SPECIFICATIONS.

LAY SOD IN A STAGGERED PATTERN. BUTT THE STRIPS TIGHTLY AGAINST EACH OTHER. DO NOT LEAVE SPACES AND DO NOT OVERLAP. A SHARPENED MASON'S TROWEL IS A HANDY TOOL FOR TUCKING DOWN THE ENDS AND TRIMMING PIECES.

BUTTING – ANGLED ENDS CAUSED BY THE AUTOMATIC SOD CUTTER MUST BE MATCHED CORRECTLY.

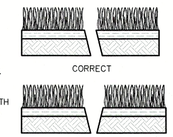


APPEARANCE OF GOOD SOD

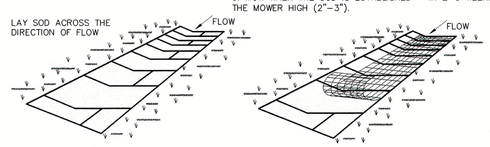
NOTES:
1. ROLL SOD IMMEDIATELY TO ACHIEVE FIRM CONTACT WITH THE SOIL.

2. WATER TO A DEPTH OF 4" AS NEEDED. WATER WELL AS SOON AS THE SOD IS LAID.

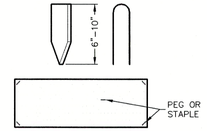
3. MOW WHEN THE SOD IS ESTABLISHED – IN 2-3 WEEKS. SET THE MOWER HIGH (2"-3").



SOD INSTALLATION



IN CRITICAL AREAS, SECURE SOD WITH NETTING. USE STAPLES.



USE PEGS OR STAPLES TO FASTEN SOD FIRMLY – AT THE ENDS OF STRIPS AND IN THE CENTER, OR EVERY 3-4 FEET IF THE STRIPS ARE LONG. WHEN READY TO MOW, DRIVE PEGS OR STAPLES FLUSH WITH THE GROUND.

MATERIALS

1. SOD SHOULD BE MACHINE CUT AT A UNIFORM SOIL THICKNESS OF 3/4" INCH (± 1/4" INCH) AT THE TIME OF CUTTING. THIS THICKNESS SHOULD EXCLUDE SHOOT GROWTH AND THATCH.

2. PIECES OF SOD SHOULD BE CUT TO THE SUPPLIER'S STANDARD WIDTH AND LENGTH, WITH A MAXIMUM ALLOWABLE DEVIATION IN ANY DIMENSION OF 5% TORN OR UNEVEN PADS SHOULD NOT BE ACCEPTABLE.

3. STANDARD SIZE SECTIONS OF SOD SHOULD BE STRONG ENOUGH TO SUPPORT THEIR OWN WEIGHT AND RETAIN THEIR SIZE AND SHAPE WHEN SUSPENDED FROM A FIRM GRASP ON ONE END OF THE SECTION.

4. SOD SHOULD BE HARVESTED, DELIVERED, AND INSTALLED WITHIN A PERIOD OF 36 HOURS.

SITE PREPARATION

1. PRIOR TO SOIL PREPARATION, AREAS TO BE SODDED SHOULD BE BROUGHT TO FINAL GRADE IN ACCORDANCE WITH THE APPROVED PLAN.

2. THE SURFACE SHOULD BE CLEARED OF ALL TRASH, DEBRIS AND OF ALL ROOTS, BRUSH, WIRE, GRADE STAKES AND OTHER OBJECTS THAT WOULD INTERFERE WITH PLANTING, FERTILIZING OR MAINTENANCE OPERATIONS.

3. FERTILIZE ACCORDING TO SOIL TESTS. FERTILIZER NEEDS CAN BE DETERMINED BY A SOIL TESTING LABORATORY OR REGIONAL RECOMMENDATIONS CAN BE MADE BY COUNTY AGRICULTURAL EXTENSION AGENTS. FERTILIZER SHOULD BE WORKED INTO THE SOIL TO A DEPTH OF 3 INCHES WITH A DISC, SPRINGTOOTH HARROW OR OTHER SUITABLE EQUIPMENT. ON SLOPING LAND, THE FINAL HARROWING OR DISCING OPERATION SHOULD BE ON THE CONTOUR.

INSTALLATION IN CHANNELS

1. SOD STRIPS IN WATERWAYS SHOULD BE LAID PERPENDICULAR TO THE DIRECTION OF FLOW. CARE SHOULD BE TAKEN TO BUTT ENDS OF STRIPS TIGHTLY (SEE FIGURE ABOVE).

2. AFTER ROLLING OR TAMPING, SOD SHOULD BE PEGGED OR STAPLED TO RESIST WASHOUT DURING THE ESTABLISHMENT PERIOD. MESH OR OTHER NETTING MAY BE PEGGED OVER THE SOD FOR EXTRA PROTECTION IN CRITICAL AREAS.

GENERAL INSTALLATION (VA. DEPT. OF CONSERVATION, 1992)

1. SOD SHOULD NOT BE CUT OR LAID IN EXCESSIVELY WET OR DRY WEATHER. SOD ALSO SHOULD NOT BE LAID ON SOIL SURFACES THAT ARE FROZEN.

2. DURING PERIODS OF HIGH TEMPERATURE, THE SOIL SHOULD BE LIGHTLY IRRIGATED IMMEDIATELY PRIOR TO LAYING THE SOD, TO COOL THE SOIL AND REDUCE ROOT BURNING AND DIEBACK.

3. THE FIRST ROW OF SOD SHOULD BE LAID IN A STRAIGHT LINE WITH SUBSEQUENT ROWS PLACED PARALLEL TO AND BUTTING TIGHTLY AGAINST EACH OTHER. LATERAL JOINTS SHOULD BE STAGGERED TO PROMOTE MORE UNIFORM GROWTH AND STRENGTH. CARE SHOULD BE EXERCISED TO ENSURE THAT SOD IS NOT STRETCHED OR OVERLAPPED AND THAT ALL JOINTS ARE BUTTED TIGHT IN ORDER TO PREVENT VOIDS WHICH WOULD CAUSE DRYING OF THE ROOTS (SEE FIGURE ABOVE).

4. ON SLOPES 3:1 OR GREATER, OR WHEREVER EROSION MAY BE A PROBLEM, SOD SHOULD BE LAID WITH STAGGERED JOINTS AND SECURED BY STAPLING OR OTHER APPROVED METHODS. SOD SHOULD BE INSTALLED WITH THE LENGTH PERPENDICULAR TO THE SLOPE (ON CONTOUR).

5. AS SODDING OF CLEARLY DEFINED AREAS IS COMPLETED, SOD SHOULD BE ROLLED OR TAMPED TO PROVIDE FIRM CONTACT BETWEEN ROOTS AND SOIL.

6. AFTER ROLLING, SOD SHOULD BE IRRIGATED TO A DEPTH SUFFICIENT THAT THE UNDERSIDE OF THE SOD PAD AND THE SOIL 4 INCHES BELOW THE SOD IS THOROUGHLY WET.

7. UNTIL SUCH TIME A GOOD ROOT SYSTEM BECOMES DEVELOPED, IN THE ABSENCE OF ADEQUATE RAINFALL, WATERING SHOULD BE PERFORMED AS OFTEN AS NECESSARY TO MAINTAIN MOIST SOIL TO A DEPTH OF AT LEAST 4 INCHES.

8. THE FIRST MOWING SHOULD NOT BE ATTEMPTED UNTIL THE SOD IS FIRMLY ROOTED, USUALLY 2-3 WEEKS. NOT MORE THAN ONE THIRD OF THE GRASS LEAF SHOULD BE REMOVED AT ANY ONE CUTTING.

INSPECTION AND MAINTENANCE GUIDELINES

1. SOD SHOULD BE INSPECTED WEEKLY AND AFTER EACH RAIN EVENT TO LOCATE AND REPAIR ANY DAMAGE.

2. DAMAGE FROM STORMS OR NORMAL CONSTRUCTION ACTIVITIES SUCH AS TIRE RUTS OR DISTURBANCE OF SWALE STABILIZATION SHOULD BE REPAIRED AS SOON AS PRACTICAL.

SOD INSTALLATION DETAIL

NOT-TO-SCALE

FILTER FABRIC SPECIFICATIONS

THE SEPARATION LAYER BETWEEN THE SAND FILTER AND GRAVEL LAYERS SHALL BE A DRAINAGE MATTING CONSISTING OF NON-WOVEN FILTER FABRIC MEETING THE FOLLOWING SPECIFICATIONS:

PROPERTY	TEST METHOD	SPECIFICATION
WEIGHT (OZ/SY)	ASTM D 5261	≥ 4.0
GRAB STRENGTH (LBS.)	ASTM D 4632	≥ 90
ELONGATIONS (%)	ASTM D 4632	≤ 55
TRAPEZOID TEAR (LBS)	ASTM D 4533	≥ 50
CBR PUNCTURE STRENGTH (LBS)	ASTM D 6241	≥ 300
UV RESISTANCE AFTER 500 HRS. (%)	ASTM D 4355	≥ 70
AOS (SIEVE #)	ASTM D 4751	70-80
FLOW RATE (GPM/SF)	ASTM D 4491	≥ 125

FABRIC OVERLAP SHALL BE A MINIMUM OF 24".
ALL OVERLAPS SHALL BE WIRE TIED AT A MAXIMUM OF 36" INTERVALS

NOTES:

1. CONTRACTOR SHALL INSTALL AND ESTABLISH VEGETATION IN BASINS PER BASIN DETAIL SHEET PRIOR TO SITE CLOSEOUT.

2. UPON COMPLETION OF CONSTRUCTION, AND IN ACCORDANCE WITH TCEQ REGULATIONS, ALL PERMANENT BMP'S (FILTERSTRIPS AND BASINS) MUST BE CERTIFIED BY A REGISTERED PROFESSIONAL ENGINEER.

3. ALL AREAS DISTURBED AS PART OF CONSTRUCTION OF BASINS SHALL BE REVEGATATED PRIOR TO COMPLETION.

THE ENGINEERING SEAL HAS BEEN AFFIXED TO THIS SHEET ONLY FOR THE PURPOSE OF DEMONSTRATING COMPLIANCE WITH THE POLLUTION ABATEMENT SIZING AND TREATMENT REQUIREMENTS OF THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY'S EDWARDS AQUIFER TECHNICAL GUIDANCE MANUAL.

THIS SHEET HAS BEEN PREPARED FOR PURPOSES OF POLLUTION ABATEMENT ONLY. ALL OTHER CIVIL ENGINEERING RELATED INFORMATION SHOULD BE ACQUIRED FROM THE APPROPRIATE SHEET IN THE CIVIL IMPROVEMENT PLANS.

EXHIBIT 6

FOR PERMIT

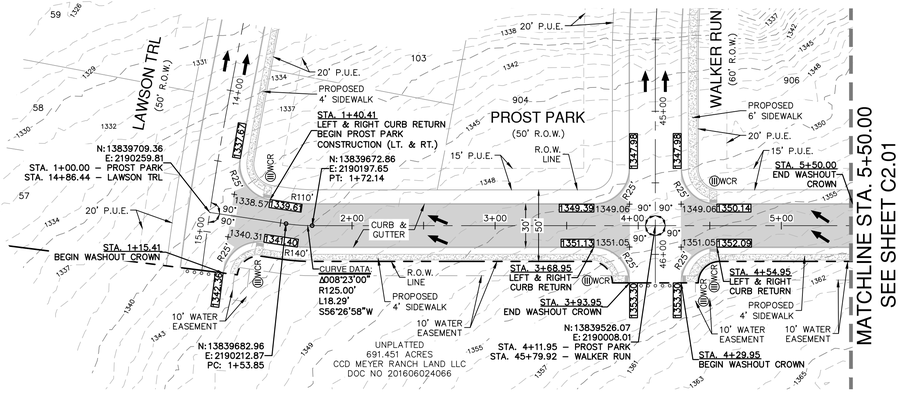
NO.	REVISION	DATE

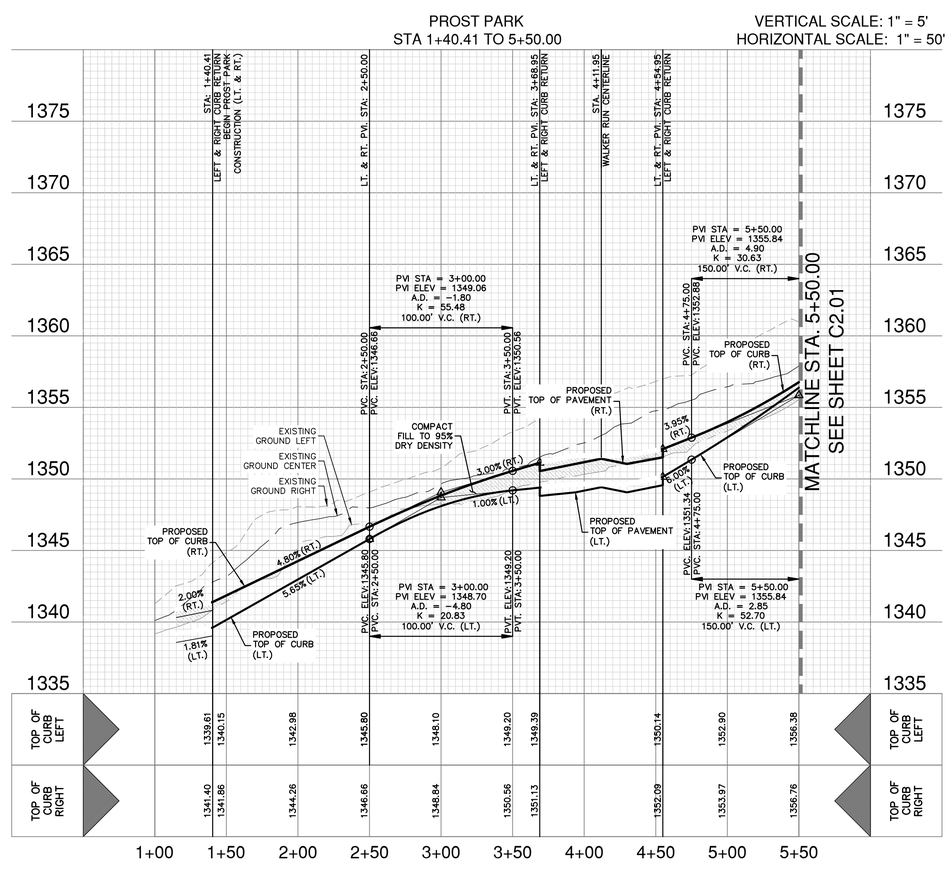
STATE OF TEXAS
TODD W. BLACKMON
89208
LICENSED PROFESSIONAL ENGINEER
12-5-2024

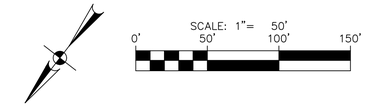
PAPE-DAWSON ENGINEERS
1672 INDEPENDENCE DR, STE 102 | NEW BRAUNFELS, TX 78132 | 830.632.5533
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

MEYER RANCH UNIT 16
COMAL COUNTY, TEXAS
BASIN DETAILS

PLAT NO.
JOB NO. 30010-27
DATE DECEMBER 2024
DESIGNER CL
CHECKED HF DRAWN BH
SHEET C1.24







STREET LEGEND

PROJECT LIMITS	
MAINTAIN GUTTER	
EXISTING CONTOUR	970
WHEELCHAIR RAMP	WCR
CENTERLINE	CL
RADIUS POINT	RP
POINT OF CURVATURE	PC
POINT OF TANGENCY	PT
RETURN	RET
DRAINAGE FLOW ARROW	
TOP OF CURB SPOT ELEVATION	857.30
PAVEMENT ELEVATION	857.00(P) ×
WASHOUT CROWN SECTION	
SIDEWALK (SEE SHEET C3.00 & C3.01 FOR DEVELOPER/HOMEBUILDER RESPONSIBILITY)	
DRIVEWAY	
PUBLIC UTILITY EASEMENT	P.U.E.

STREET NOTES:

1. CONTRACTOR SHALL MATCH EXISTING PAVEMENT AT TIE–IN. IF EXISTING PAVEMENT ELEVATION DIFFERS SIGNIFICANTLY, CONTRACTOR SHALL NOTIFY THE ENGINEER PRIOR TO CONTINUING WORK.
2. SIDEWALKS SHALL BE CONSTRUCTED 3–FT FROM THE BACK OF CURB FOR ALL LOCATIONS WHERE THE SIDEWALK IS SHOWN OFFSET. REFER TO STREET DETAIL SHEET FOR SIDEWALK AND RAMP DETAILS.
3. NO PERMANENT STRUCTURES HIGHER THAN 3 FEET, AND LOWER THAN 8 FEET ABOVE THE PAVEMENT, INCLUDING STRUCTURES, WALLS, FENCES, AND VEGETATION, SHALL BE CONSTRUCTED OR ALLOWED WITHIN THE CLEAR VISION EASEMENT. CONTRACTOR SHALL GRADE AREAS WITHIN CLEAR VISION EASEMENTS SUCH THAT THE ELEVATION WITHIN THE CLEAR VISION EASEMENT IS NOT HIGHER THAN 3 FEET ABOVE THE ADJACENT TOP OF PAVEMENT.
4. DRIVEWAYS SHOWN ON THIS PLAN ARE FOR THE SOLE PURPOSE OF INDICATING A POTENTIAL CONFLICT WITH CURB RAMP, DRAINAGE INFRASTRUCTURE, OR OTHER CONFLICT. DRIVEWAY LOCATION IS SUBJECT TO CHANGE BASED ON HOME SELECTION AND FINAL LOT DESIGN.
5. CHANGES IN THE SIDEWALK LOCATION FOR A MAXIMUM LINEAR DISTANCE OF TWO HUNDRED (200) FEET ARE PERMITTED TO BE APPROVED BY THE FIELD INSPECTOR WITHOUT AMENDING THE STREET PLAN OR UTILITY.

NO.	REVISION	DATE

STATE OF TEXAS
TODD W. BLACKMON
89208
LICENSED
PROFESSIONAL ENGINEER
12-27-2024

PAPE-DAWSON ENGINEERS
1672 INDEPENDENCE DR, STE 102 I NEW BRAUNFELS, TX 78132 I 830.632.5633
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

MEYER RANCH UNIT 16
COMAL COUNTY, TEXAS

PROST PARK - PLAN & PROFILE
STA 1+40.41 TO 5+50.00

PLAT NO. ____
JOB NO. 30010–27
DATE DECEMBER 2024
DESIGNER CL
CHECKED HF DRAWN BH
SHEET C2.00

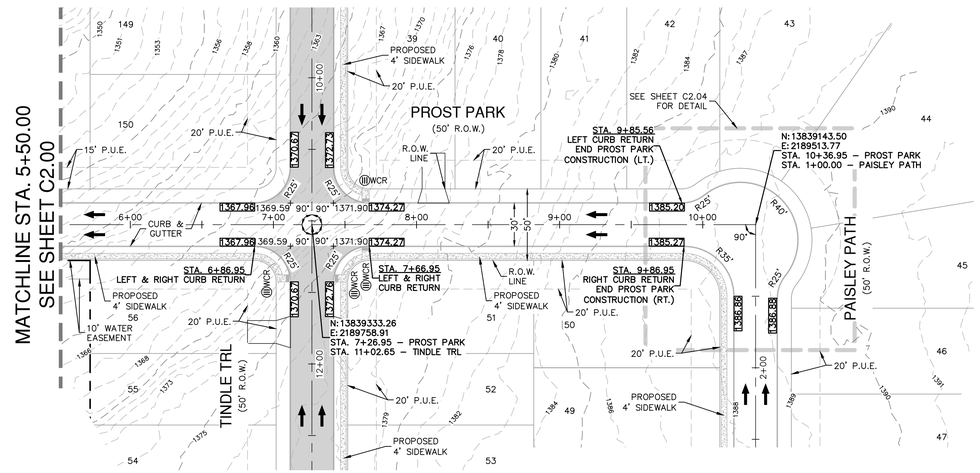
FOR PERMIT

SCALE: 1"= 50'

0' 50' 100' 150'

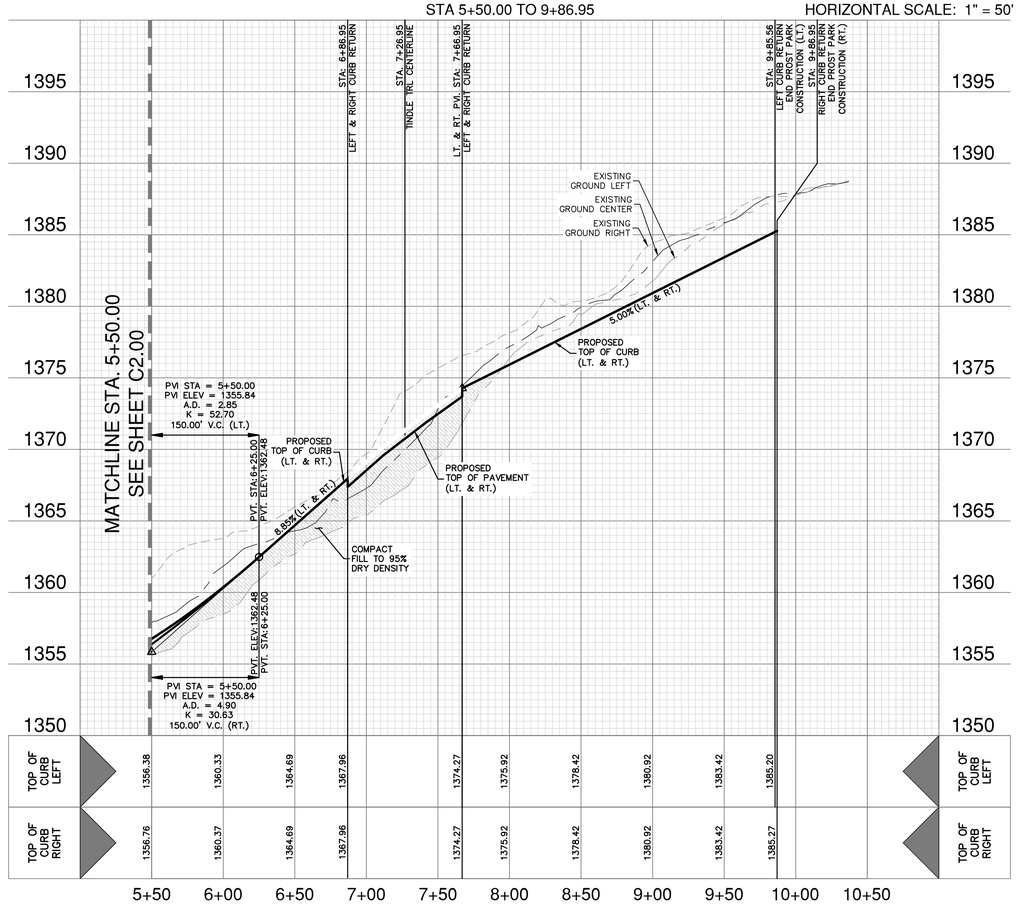
STREET LEGEND

PROJECT LIMITS	
MAINTAIN GUTTER	
EXISTING CONTOUR	970
WHEELCHAIR RAMP	WCR
CENTERLINE	CL
RADIUS POINT	RP
POINT OF CURVATURE	PC
POINT OF TANGENCY	PT
RETURN	RET
DRAINAGE FLOW ARROW	
TOP OF CURB SPOT ELEVATION	857.30
PAVEMENT ELEVATION	857.00(P) ×
WASHOUT CROWN SECTION	
SIDEWALK (SEE SHEET C3.00 & C3.01 FOR DEVELOPER/HOMEBUILDER RESPONSIBILITY)	
DRIVEWAY	
PUBLIC UTILITY EASEMENT	P.U.E.



PROST PARK
STA 5+50.00 TO 9+86.95

VERTICAL SCALE: 1" = 5'
HORIZONTAL SCALE: 1" = 50'



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NO.	REVISION	DATE

STATE OF TEXAS
TODD W. BLACKMON
89208
LICENSED
PROFESSIONAL ENGINEER
12-27-2024

PAPE-DAWSON ENGINEERS
1672 INDEPENDENCE DR, STE 102 | NEW BRAUNFELS, TX 78132 | 830.632.5633
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

MEYER RANCH UNIT 16

COMAL COUNTY, TEXAS

PROST PARK - PLAN & PROFILE
STA 5+50.00 TO 9+86.95

PLAT NO.
JOB NO. 30010–27
DATE DECEMBER 2024
DESIGNER CL
CHECKED HF DRAWN BH
SHEET C2.01

FOR PERMIT

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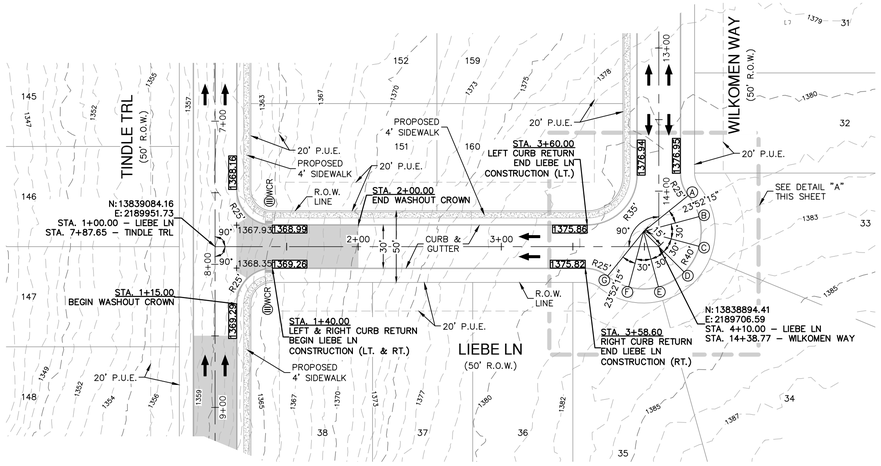
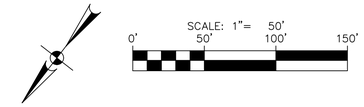
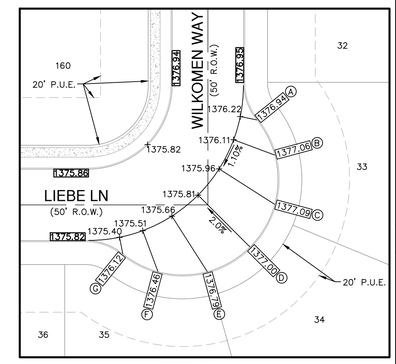




STREET LEGEND

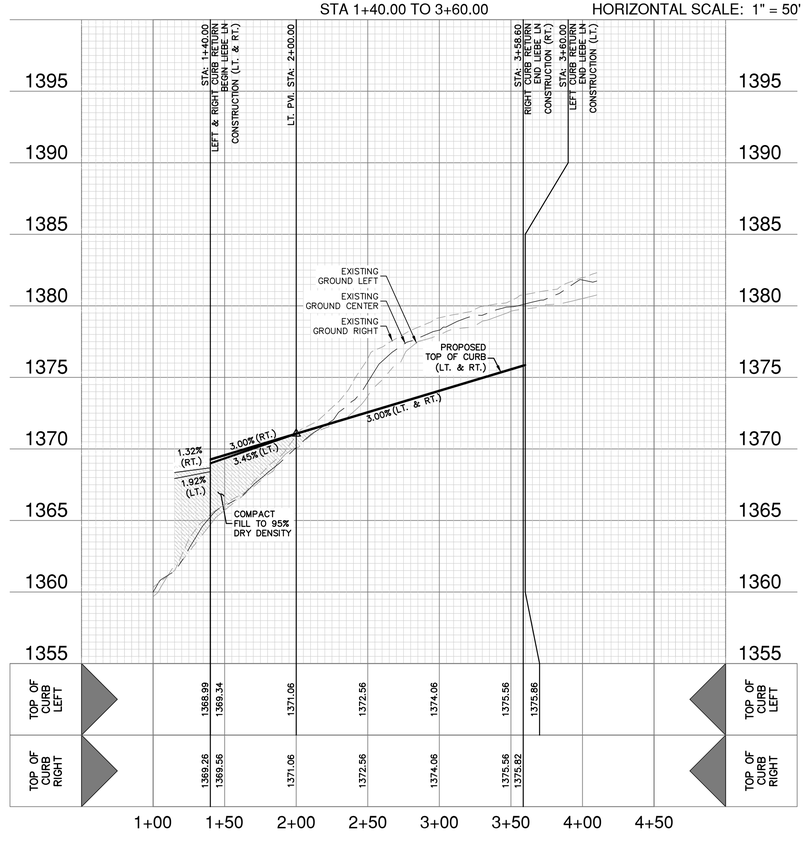
PROJECT LIMITS	
MAINTAIN GUTTER	
EXISTING CONTOUR	970
WHEELCHAIR RAMP	DWCR
CENTERLINE	CL
RADIUS POINT	RP
POINT OF CURVATURE	PC
POINT OF TANGENCY	PT
RETURN	RET
DRAINAGE FLOW ARROW	
TOP OF CURB SPOT ELEVATION	857.30
PAVEMENT ELEVATION	857.00(P) ×
WASHOUT CROWN SECTION	
SIDEWALK (SEE SHEET C3.00 & C3.01 FOR DEVELOPER/HOMEBUILDER RESPONSIBILITY)	
DRIVEWAY	
PUBLIC UTILITY EASEMENT	P.U.E.



DETAIL "A"
SCALE: 1" = 30'

LIEBE LN
STA 1+40.00 TO 3+60.00

VERTICAL SCALE: 1" = 5'
HORIZONTAL SCALE: 1" = 50'



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NO.	REVISION	DATE

STATE OF TEXAS
TODD W. BLACKMON
89208
LICENSED
PROFESSIONAL ENGINEER
12 - 27 - 2024

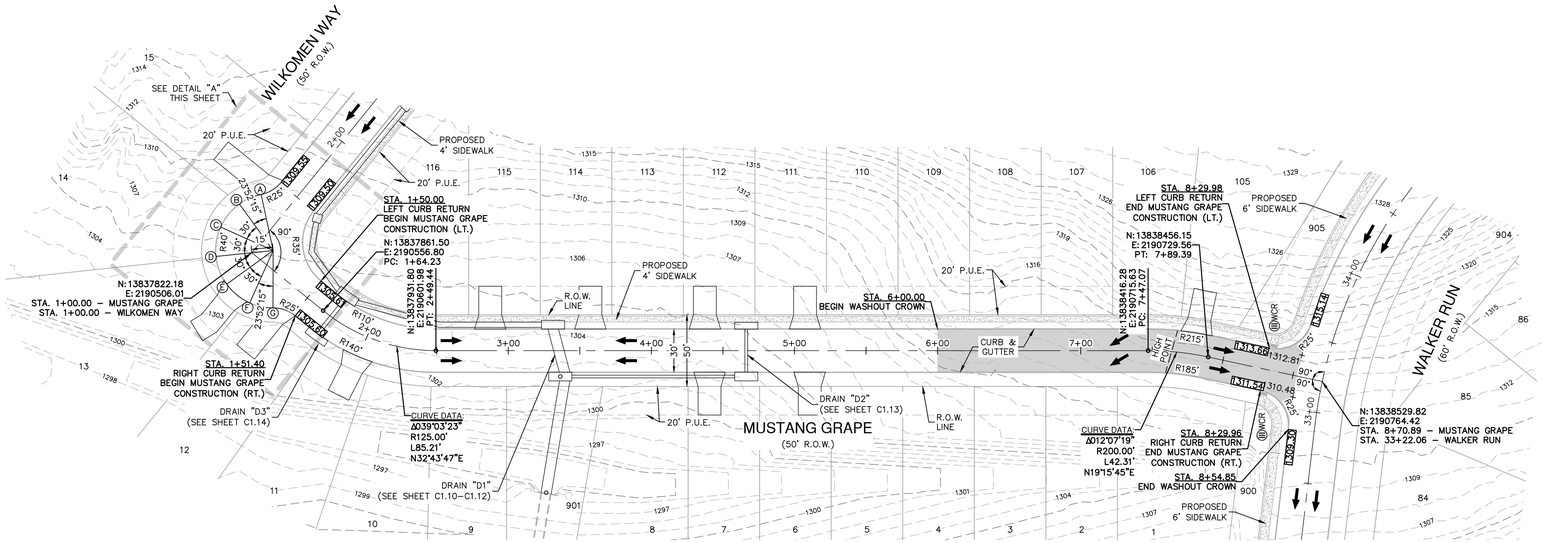
PAPE-DAWSON ENGINEERS
1672 INDEPENDENCE DR, STE 102 I NEW BRAUNFELS, TX 78132 I 830.632.5633
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

MEYER RANCH UNIT 16
COMAL COUNTY, TEXAS

LIEBE LN - PLAN & PROFILE
STA 1+40.00 TO 3+60.00

PLAT NO.
JOB NO. 30010–27
DATE DECEMBER 2024
DESIGNER CL
CHECKED HF DRAWN BH
SHEET C2.02

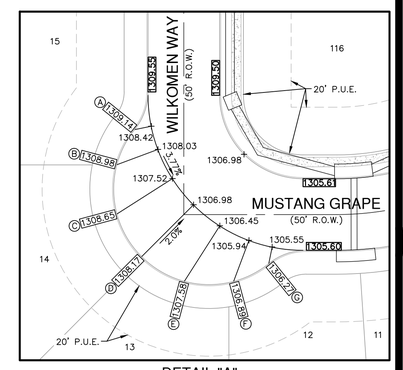
FOR PERMIT



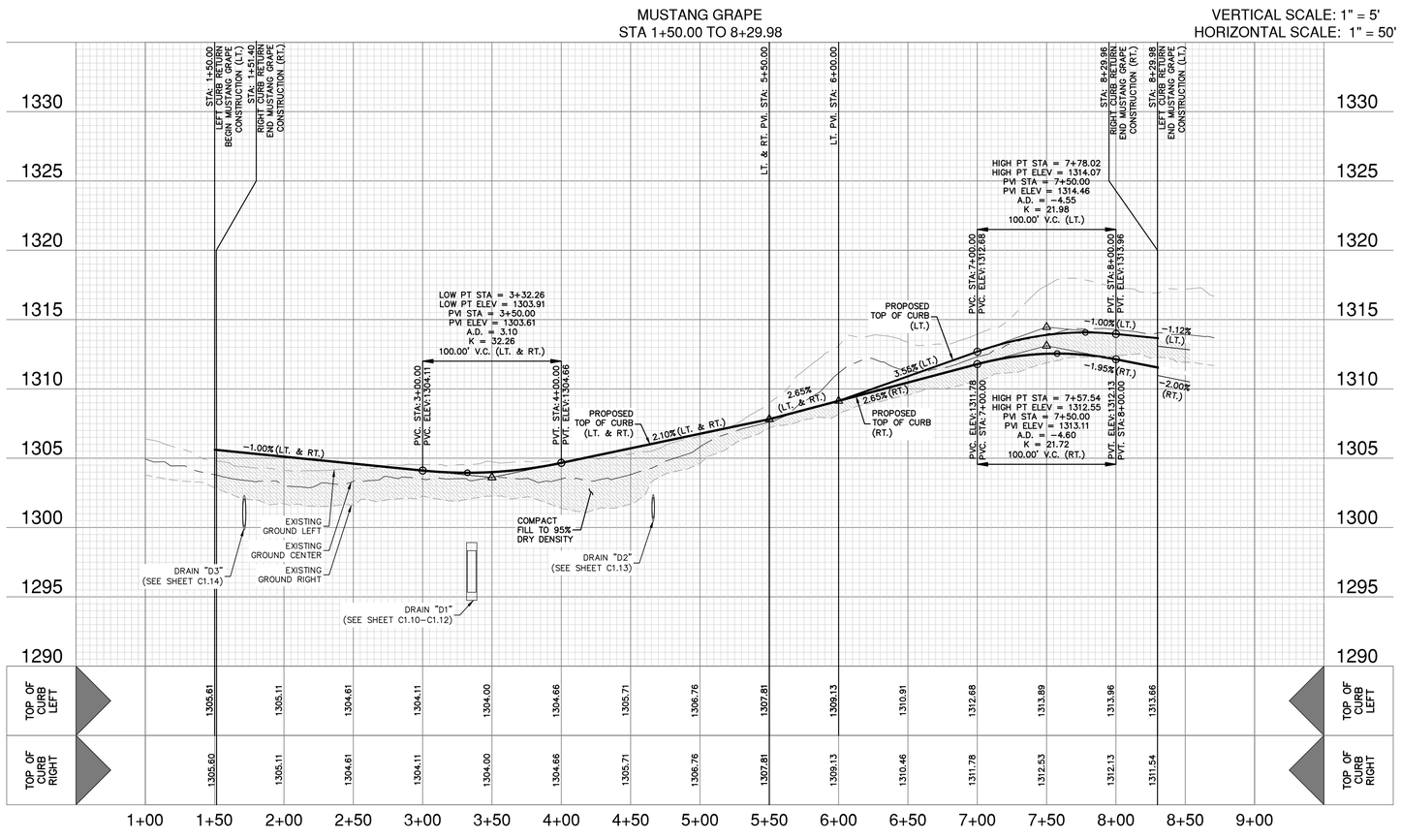
SCALE: 1"= 50'
0' 50' 100' 150'

STREET LEGEND

PROJECT LIMITS	
MAINTAIN GUTTER	
EXISTING CONTOUR	970
WHEELCHAIR RAMP	WCR
CENTERLINE	CL
RADIUS POINT	RP
POINT OF CURVATURE	PC
POINT OF TANGENCY	PT
RETURN	RET
DRAINAGE FLOW ARROW	
TOP OF CURB SPOT ELEVATION	857.30
PAVEMENT ELEVATION	857.00(P) ×
WASHOUT CROWN SECTION	
SIDEWALK (SEE SHEET C3.00 & C3.01 FOR DEVELOPER/HOMEBUILDER RESPONSIBILITY)	
DRIVEWAY	
PUBLIC UTILITY EASEMENT	P.U.E.



DETAIL "A"
SCALE: 1" = 30'



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NO.	REVISION	DATE

12 - 27 - 2024
STATE OF TEXAS
TODD W. BLACKMON
89208
LICENSED
PROFESSIONAL ENGINEER

PAPE-DAWSON ENGINEERS
1672 INDEPENDENCE DR, STE 102 I NEW BRAUNFELS, TX 78132 I 830.632.5633
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

MEYER RANCH UNIT 16
COMAL COUNTY, TEXAS

MUSTANG GRAPE - PLAN & PROFILE
STA 1+50.00 TO 8+29.98

PLAT NO.
JOB NO. 30010–27
DATE DECEMBER 2024
DESIGNER CL
CHECKED HF DRAWN BH
SHEET C2.03

FOR PERMIT

Date: Dec 17, 2024, 11:17am User ID: ALeddy
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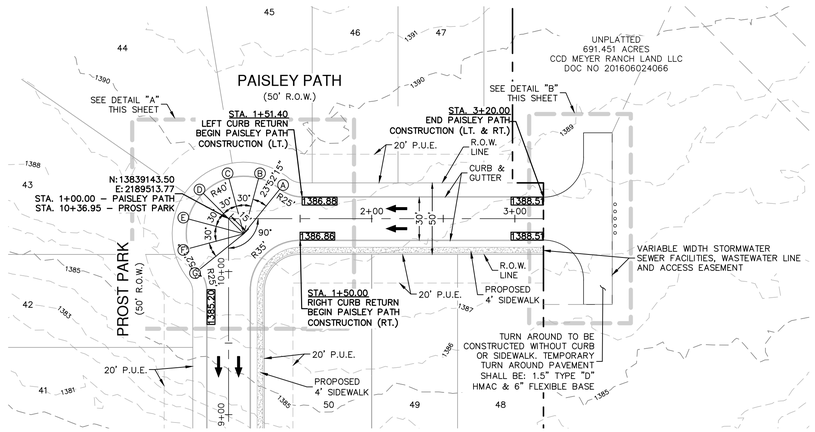
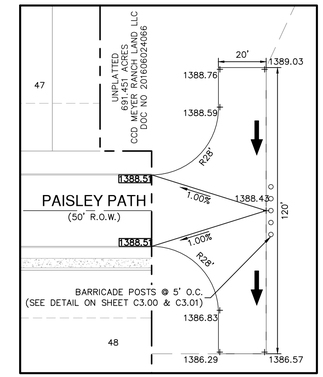
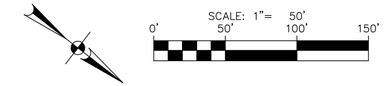




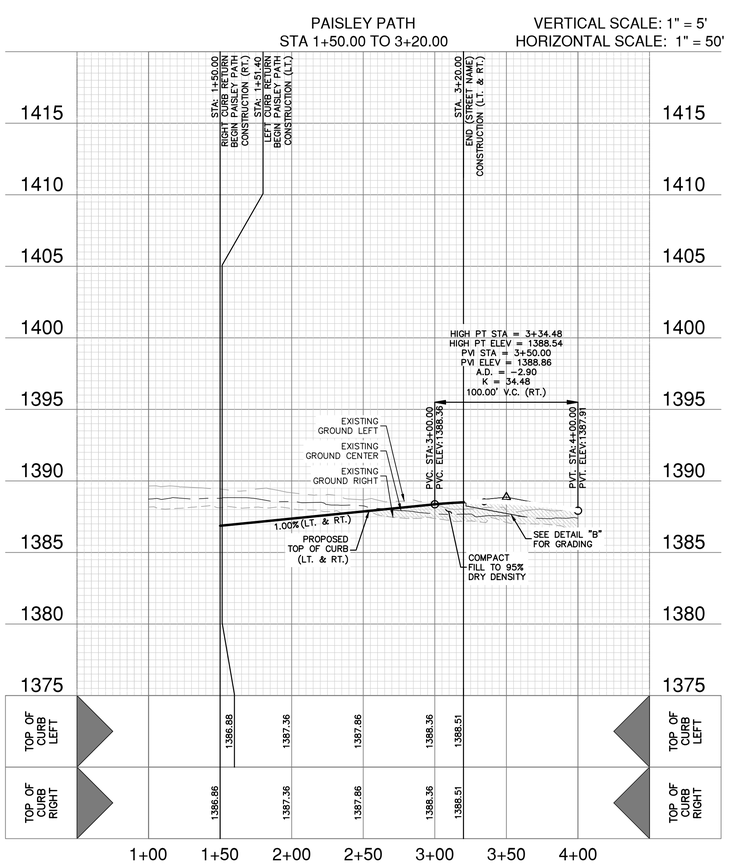
DETAIL "B"

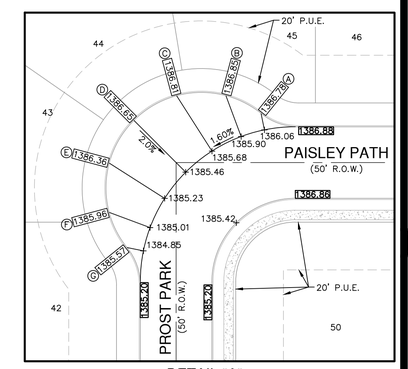
SCALE: 1" = 30'



STREET LEGEND

PROJECT LIMITS	
MAINTAIN GUTTER	
EXISTING CONTOUR	970
WHEELCHAIR RAMP	WCR
CENTERLINE	CL
RADIUS POINT	RP
POINT OF CURVATURE	PC
POINT OF TANGENCY	PT
RETURN	RET
DRAINAGE FLOW ARROW	
TOP OF CURB SPOT ELEVATION	857.30
PAVEMENT ELEVATION	857.00(P) ×
WASHOUT CROWN SECTION	
SIDEWALK (SEE SHEET C3.00 & C3.01 FOR DEVELOPER/HOMEBUILDER RESPONSIBILITY)	
DRIVEWAY	
PUBLIC UTILITY EASEMENT	P.U.E.





DETAIL "A"

SCALE: 1" = 30'

STREET NOTES:

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NO.	REVISION	DATE

STATE OF TEXAS
TODD W. BLACKMON
89208
LICENSED
PROFESSIONAL ENGINEER
12 - 27 - 2024

PAPE-DAWSON ENGINEERS
1672 INDEPENDENCE DR, STE 102 I NEW BRAUNFELS, TX 78132 I 830.632.5633
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

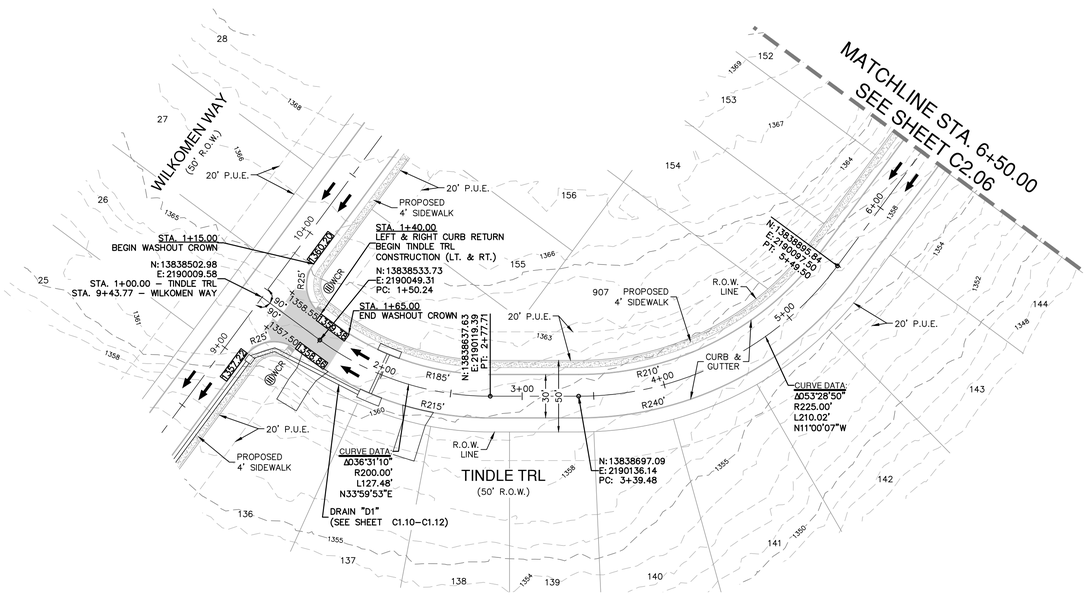
MEYER RANCH UNIT 16

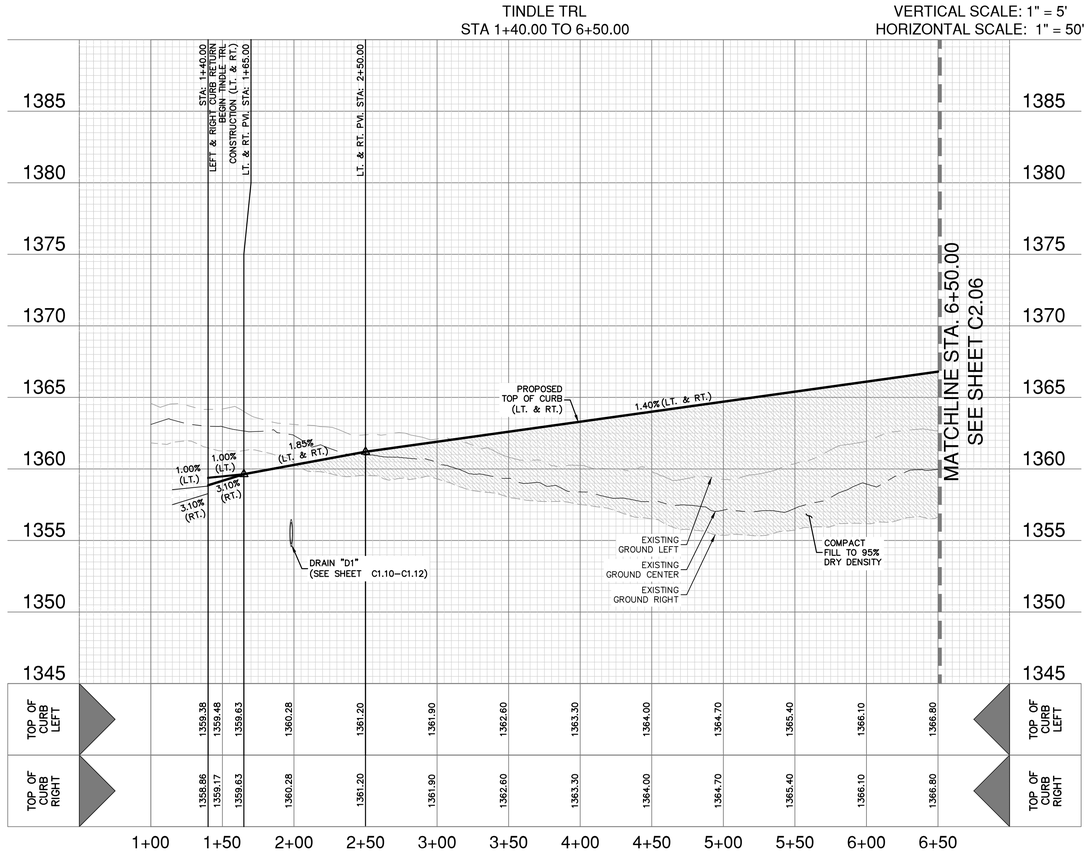
COMAL COUNTY, TEXAS

PAISLEY PATH - PLAN & PROFILE
STA 1+50.00 TO 3+20.00

PLAT NO.
JOB NO. 30010–27
DATE DECEMBER 2024
DESIGNER CL
CHECKED HF DRAWN BH
SHEET C2.04

FOR PERMIT





SCALE: 1"= 50'
0' 50' 100' 150'

STREET LEGEND

PROJECT LIMITS	
MAINTAIN GUTTER	
EXISTING CONTOUR	970
WHEELCHAIR RAMP	WCR
CENTERLINE	CL
RADIUS POINT	RP
POINT OF CURVATURE	PC
POINT OF TANGENCY	PT
RETURN	RET
DRAINAGE FLOW ARROW	
TOP OF CURB SPOT ELEVATION	857.30
PAVEMENT ELEVATION	857.00(P) ×
WASHOUT CROWN SECTION	
SIDEWALK (SEE SHEET C3.00 & C3.01 FOR DEVELOPER/HOMEBUILDER RESPONSIBILITY)	
DRIVEWAY	
PUBLIC UTILITY EASEMENT	P.U.E.

STREET NOTES:

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NO.	REVISION	DATE

12 - 27 - 2024
STATE OF TEXAS
TODD W. BLACKMON
89208
LICENSED
PROFESSIONAL ENGINEER

PAPE-DAWSON ENGINEERS
1672 INDEPENDENCE DR, STE 102 I NEW BRAUNFELS, TX 78132 I 830.632.5633
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

MEYER RANCH UNIT 16
COMAL COUNTY, TEXAS

TINDLE TRL - PLAN & PROFILE
STA 1+40.00 TO 6+50.00

PLAT NO.
JOB NO. 30010–27
DATE DECEMBER 2024
DESIGNER CL
CHECKED HF DRAWN BH
SHEET C2.05

FOR PERMIT

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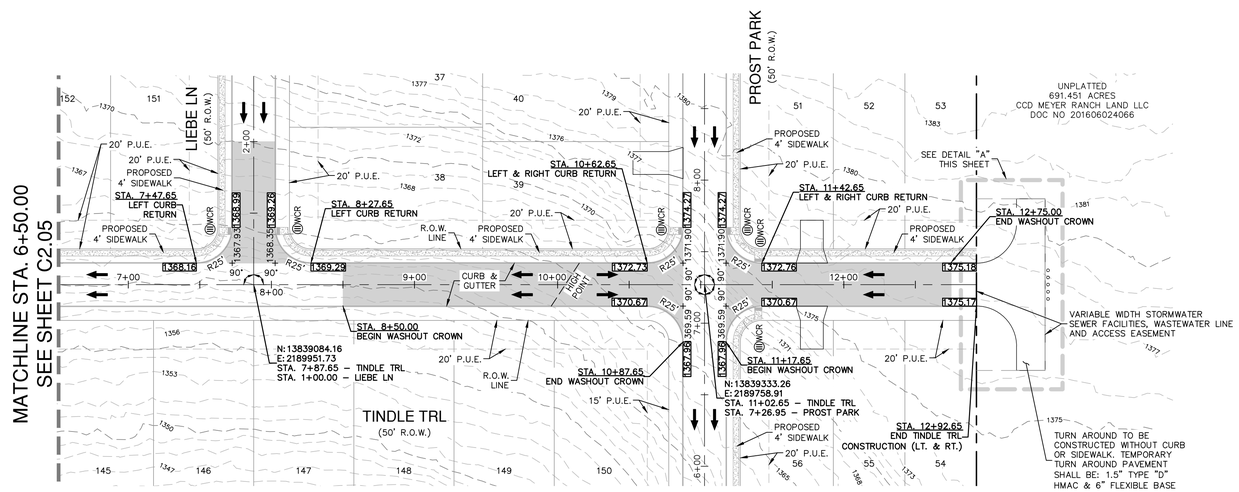
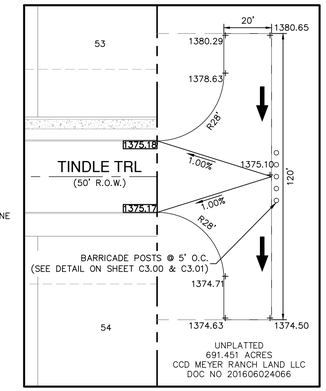




DETAIL "A"
SCALE: 1" = 30'

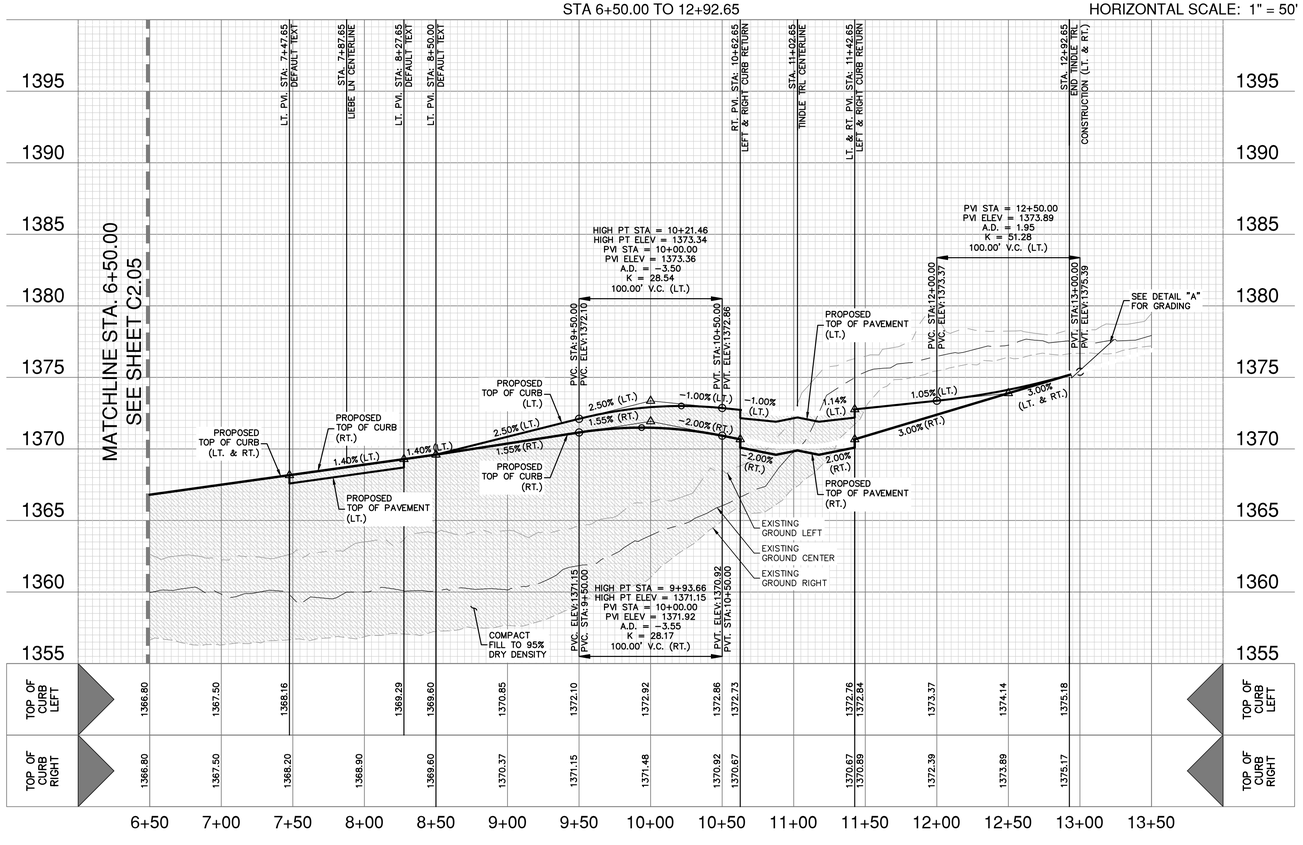
SCALE: 1"= 50'
0' 50' 100' 150'

STREET LEGEND

PROJECT LIMITS	
MAINTAIN GUTTER	
EXISTING CONTOUR	970
WHEELCHAIR RAMP	WCR
CENTERLINE	CL
RADIUS POINT	RP
POINT OF CURVATURE	PC
POINT OF TANGENCY	PT
RETURN	RET
DRAINAGE FLOW ARROW	
TOP OF CURB SPOT ELEVATION	857.30
PAVEMENT ELEVATION	857.00(P) ×
WASHOUT CROWN SECTION	
SIDEWALK (SEE SHEET C3.00 & C3.01 FOR DEVELOPER/HOMEBUILDER RESPONSIBILITY)	
DRIVEWAY	
PUBLIC UTILITY EASEMENT	P.U.E.

TINDLE TRL
STA 6+50.00 TO 12+92.65

VERTICAL SCALE: 1" = 5'
HORIZONTAL SCALE: 1" = 50'



STREET NOTES:

1. CONTRACTOR SHALL MATCH EXISTING PAVEMENT AT TIE–IN. IF EXISTING PAVEMENT ELEVATION DIFFERS SIGNIFICANTLY, CONTRACTOR SHALL NOTIFY THE ENGINEER PRIOR TO CONTINUING WORK.
2. SIDEWALKS SHALL BE CONSTRUCTED 3–FT FROM THE BACK OF CURB FOR ALL LOCATIONS WHERE THE SIDEWALK IS SHOWN OFFSET. REFER TO STREET DETAIL SHEET FOR SIDEWALK AND RAMP DETAILS.
3. NO PERMANENT STRUCTURES HIGHER THAN 3 FEET, AND LOWER THAN 8 FEET ABOVE THE PAVEMENT, INCLUDING STRUCTURES, WALLS, FENCES, AND VEGETATION, SHALL BE CONSTRUCTED OR ALLOWED WITHIN THE CLEAR VISION EASEMENT. CONTRACTOR SHALL GRADE AREAS WITHIN CLEAR VISION EASEMENTS SUCH THAT THE ELEVATION WITHIN THE CLEAR VISION EASEMENT IS NOT HIGHER THAN 3 FEET ABOVE THE ADJACENT TOP OF PAVEMENT.
4. DRIVEWAYS SHOWN ON THIS PLAN ARE FOR THE SOLE PURPOSE OF INDICATING A POTENTIAL CONFLICT WITH CURB RAMP, DRAINAGE INFRASTRUCTURE, OR OTHER CONFLICT. DRIVEWAY LOCATION IS SUBJECT TO CHANGE BASED ON HOME SELECTION AND FINAL LOT DESIGN.
5. CHANGES IN THE SIDEWALK LOCATION FOR A MAXIMUM LINEAR DISTANCE OF TWO HUNDRED (200) FEET ARE PERMITTED TO BE APPROVED BY THE FIELD INSPECTOR WITHOUT AMENDING THE STREET PLAN OR UTILITY.

NO.	REVISION	DATE

STATE OF TEXAS
TODD W. BLACKMON
89208
LICENSED
PROFESSIONAL ENGINEER
12 - 27 - 2024

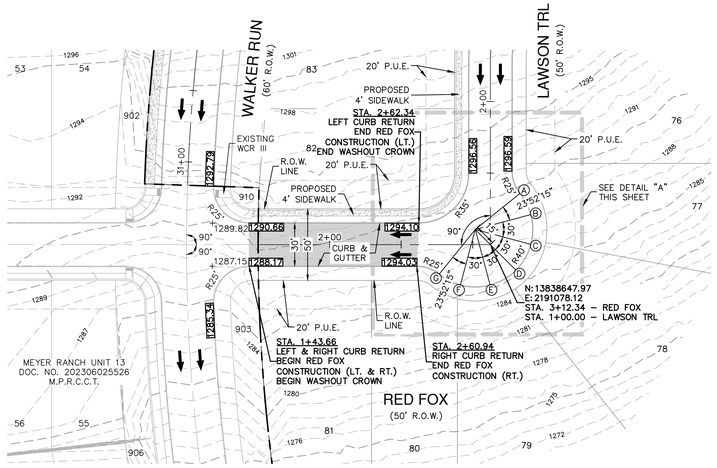
PAPE-DAWSON ENGINEERS
1672 INDEPENDENCE DR, STE 102 I NEW BRAUNFELS, TX 78132 I 830.632.5633
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

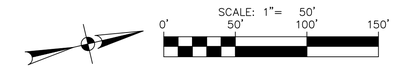
MEYER RANCH UNIT 16
COMAL COUNTY, TEXAS

TINDLE TRL - PLAN & PROFILE
STA 6+50.00 TO 12+92.65

PLAT NO. ____
JOB NO. 30010–27
DATE DECEMBER 2024
DESIGNER CL
CHECKED HF DRAWN BH
SHEET C2.06

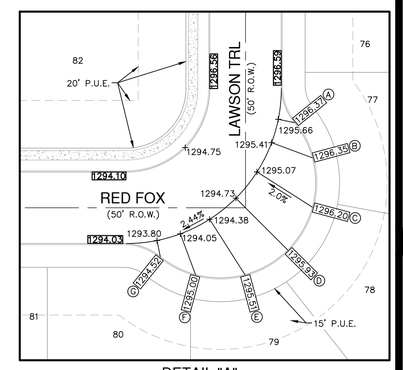
FOR PERMIT



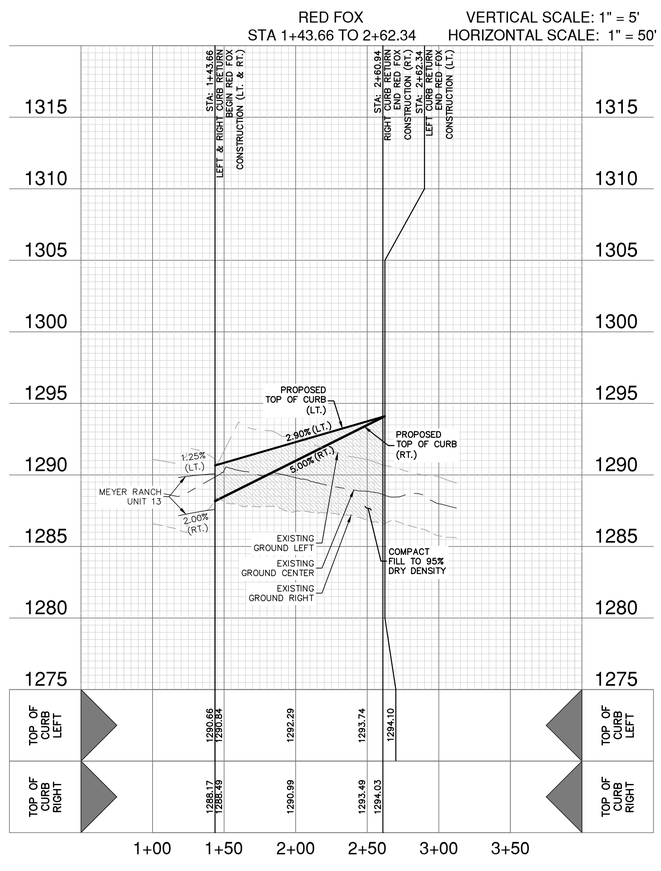


STREET LEGEND

PROJECT LIMITS	
MAINTAIN GUTTER	
EXISTING CONTOUR	970
WHEELCHAIR RAMP	WCR
CENTERLINE	CL
RADIUS POINT	RP
POINT OF CURVATURE	PC
POINT OF TANGENCY	PT
RETURN	RET
DRAINAGE FLOW ARROW	
TOP OF CURB SPOT ELEVATION	857.30
PAVEMENT ELEVATION	857.00(P) ×
WASHOUT CROWN SECTION	
SIDEWALK (SEE SHEET C3.00 & C3.01 FOR DEVELOPER/HOMEBUILDER RESPONSIBILITY)	
DRIVEWAY	
PUBLIC UTILITY EASEMENT	P.U.E.



DETAIL "A"
SCALE: 1" = 30'



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NO.	REVISION	DATE

12 - 27 - 2024
STATE OF TEXAS
TODD W. BLACKMON
89208
LICENSED
PROFESSIONAL ENGINEER

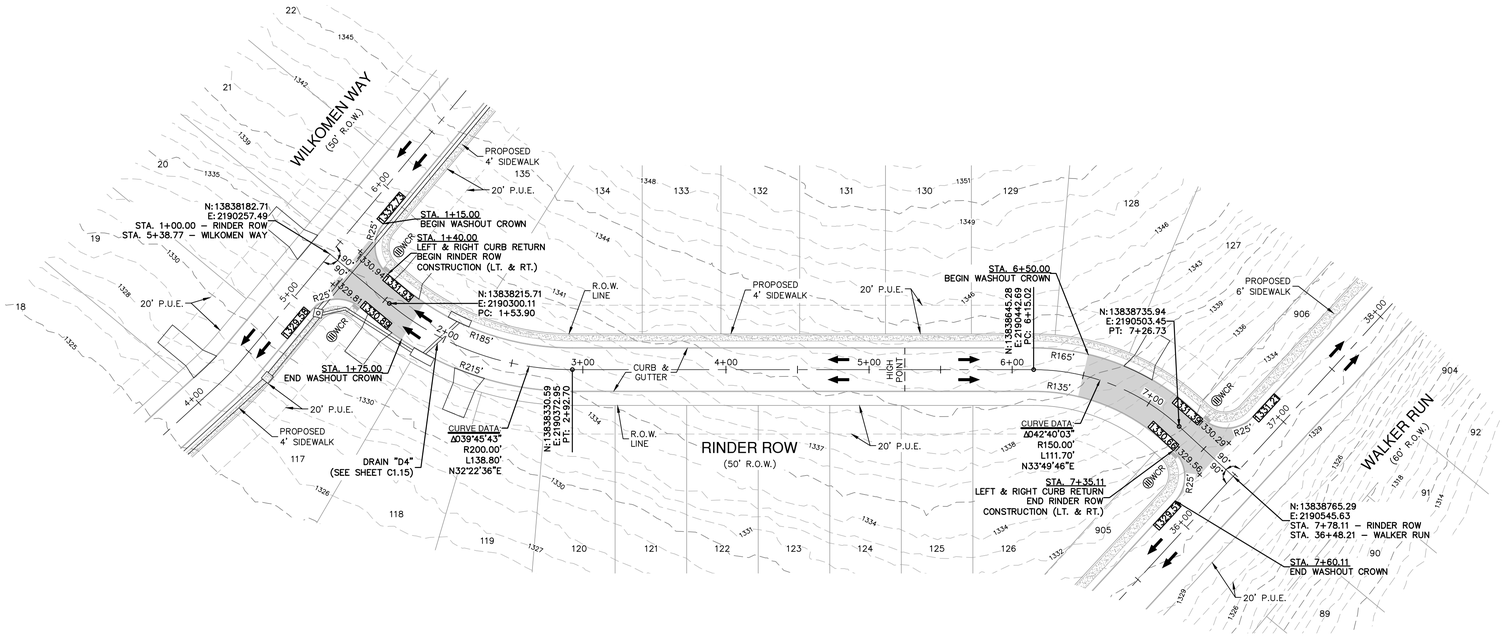
PAPE-DAWSON ENGINEERS
1672 INDEPENDENCE DR, STE 102 I NEW BRAUNFELS, TX 78132 I 830.632.5633
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

MEYER RANCH UNIT 16
COMAL COUNTY, TEXAS

RED FOX - PLAN & PROFILE
STA 1+43.66 TO 2+62.34

PLAT NO.
JOB NO. 30010–27
DATE DECEMBER 2024
DESIGNER CL
CHECKED HF DRAWN BH
SHEET C2.07

FOR PERMIT



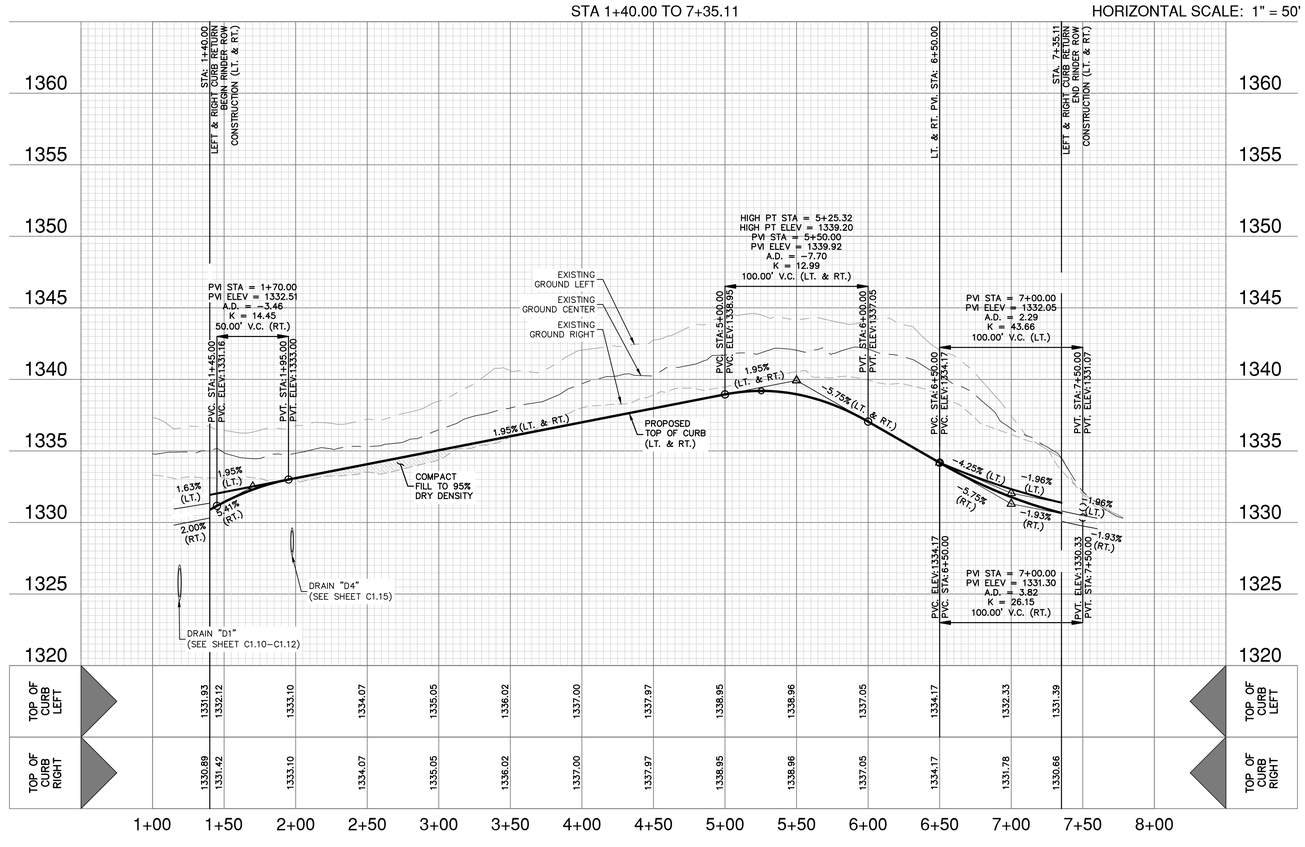
SCALE: 1"= 50'
0' 50' 100' 150'

STREET LEGEND

PROJECT LIMITS	
MAINTAIN GUTTER	
EXISTING CONTOUR	970
WHEELCHAIR RAMP	WCR
CENTERLINE	CL
RADIUS POINT	RP
POINT OF CURVATURE	PC
POINT OF TANGENCY	PT
RETURN	RET
DRAINAGE FLOW ARROW	
TOP OF CURB SPOT ELEVATION	857.30
PAVEMENT ELEVATION	857.00(P) ×
WASHOUT CROWN SECTION	
SIDEWALK (SEE SHEET C3.00 & C3.01 FOR DEVELOPER/HOMEBUILDER RESPONSIBILITY)	
DRIVEWAY	
PUBLIC UTILITY EASEMENT	P.U.E.

RINDER ROW
STA 1+40.00 TO 7+35.11

VERTICAL SCALE: 1" = 5'
HORIZONTAL SCALE: 1" = 50'



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NO.	REVISION	DATE

STATE OF TEXAS
TODD W. BLACKMON
89208
LICENSED
PROFESSIONAL ENGINEER
12 - 27 - 2024

PAPE-DAWSON ENGINEERS
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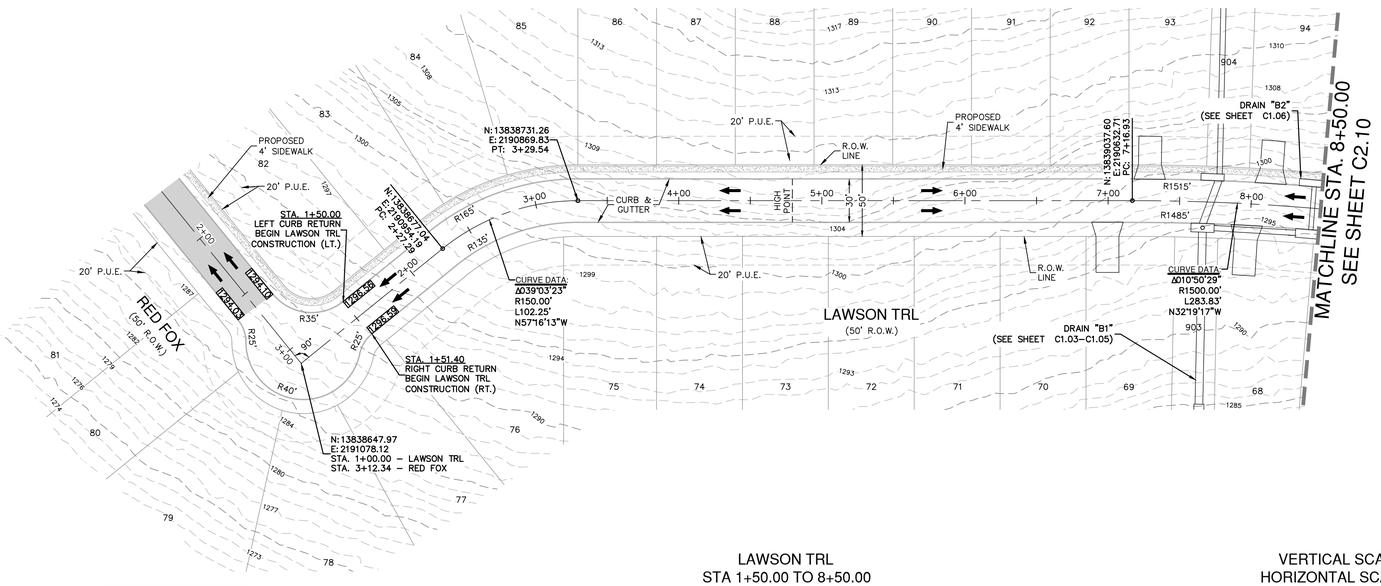
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

MEYER RANCH UNIT 16
COMAL COUNTY, TEXAS

RINDER ROW - PLAN & PROFILE
STA 1+40.00 TO 7+35.11

PLAT NO.
JOB NO. 30010–27
DATE DECEMBER 2024
DESIGNER CL
CHECKED HF DRAWN BH
SHEET C2.08

FOR PERMIT



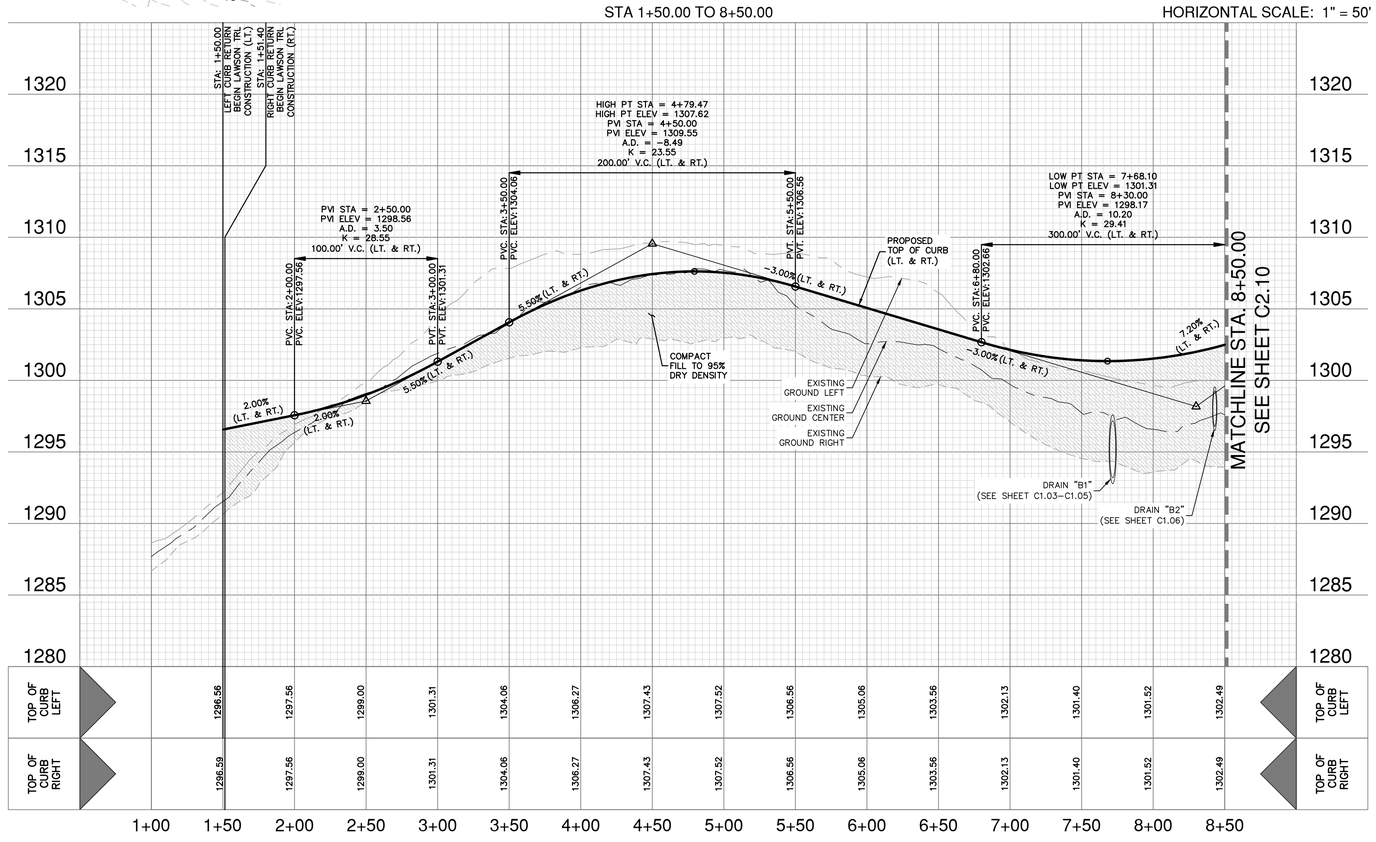
SCALE: 1"= 50'
0' 50' 100' 150'

STREET LEGEND

PROJECT LIMITS	
MAINTAIN GUTTER	
EXISTING CONTOUR	970
WHEELCHAIR RAMP	DWCR
CENTERLINE	CL
RADIUS POINT	RP
POINT OF CURVATURE	PC
POINT OF TANGENCY	PT
RETURN	RET
DRAINAGE FLOW ARROW	
TOP OF CURB SPOT ELEVATION	857.30
PAVEMENT ELEVATION	857.00(P) ×
WASHOUT CROWN SECTION	
SIDEWALK (SEE SHEET C3.00 & C3.01 FOR DEVELOPER/HOMEBUILDER RESPONSIBILITY)	
DRIVEWAY	
PUBLIC UTILITY EASEMENT	P.U.E.

LAWSON TRL
STA 1+50.00 TO 8+50.00

VERTICAL SCALE: 1" = 5'
HORIZONTAL SCALE: 1" = 50'



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NO.	REVISION	DATE

STATE OF TEXAS
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LICENSED
PROFESSIONAL ENGINEER
12 - 27 - 2024

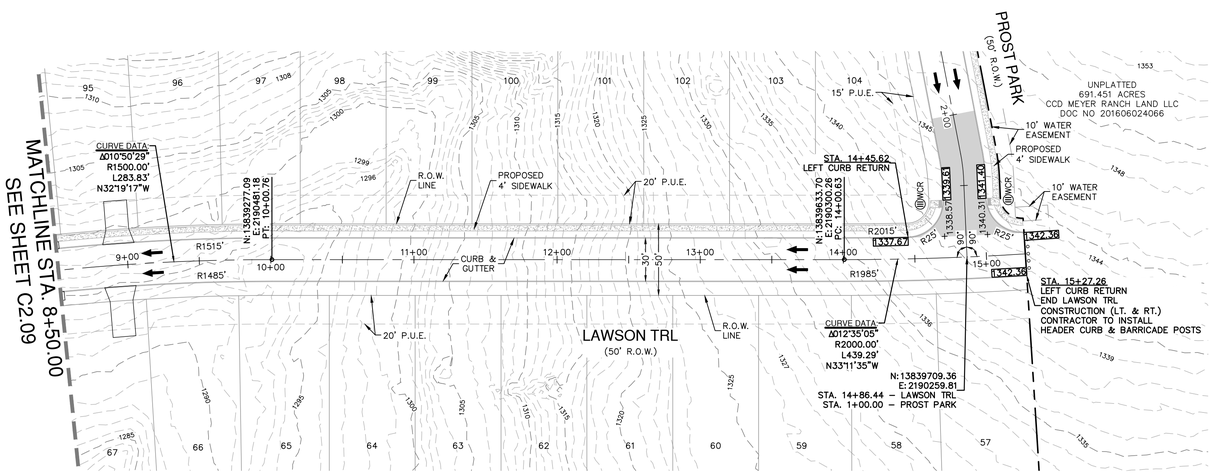
PAPE-DAWSON ENGINEERS
1672 INDEPENDENCE DR, STE 102 I NEW BRAUNFELS, TX 78132 I 830.632.5633
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

MEYER RANCH UNIT 16
COMAL COUNTY, TEXAS

LAWSON TRL - PLAN & PROFILE
STA 1+50.00 TO 8+50.00

PLAT NO.
JOB NO. 30010–27
DATE DECEMBER 2024
DESIGNER CL
CHECKED HF DRAWN BH
SHEET C2.09

FOR PERMIT



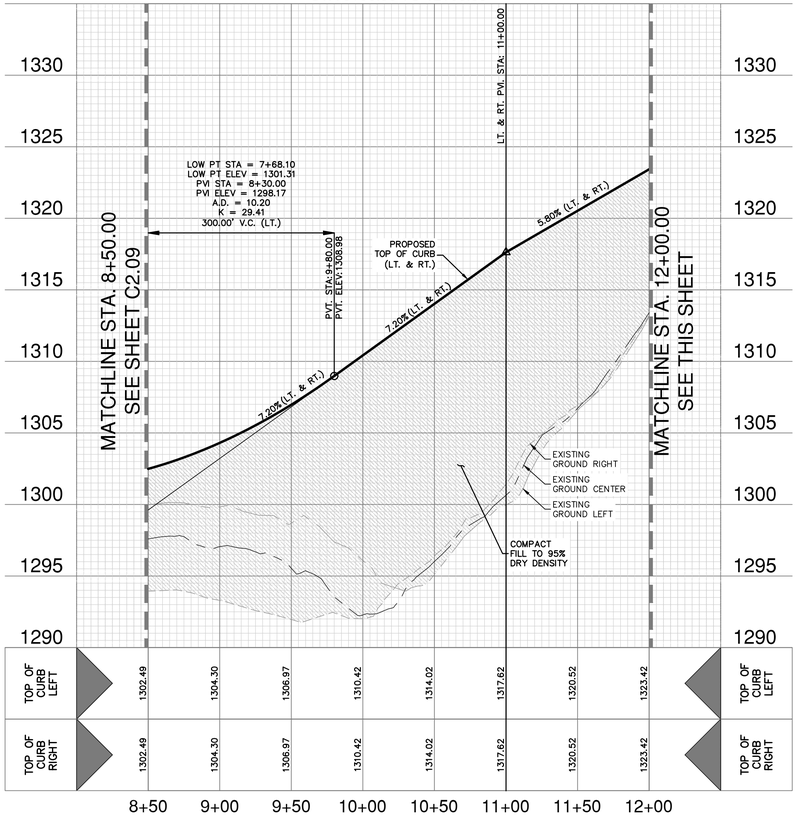
SCALE: 1"= 50'

0' 50' 100' 150'

STREET LEGEND

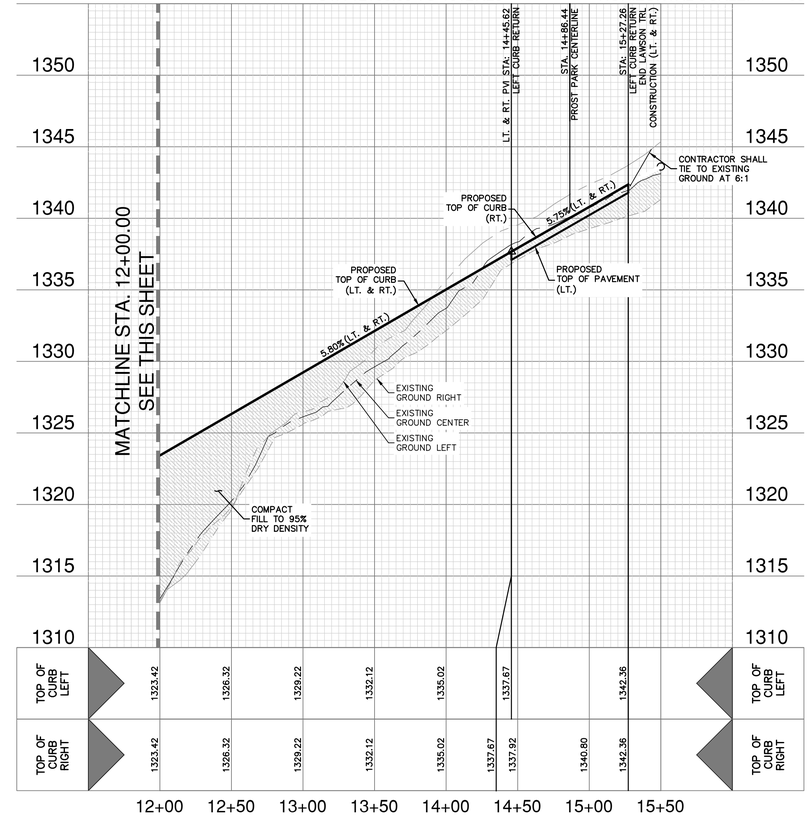
PROJECT LIMITS	
MAINTAIN GUTTER	
EXISTING CONTOUR	970
WHEELCHAIR RAMP	WCR
CENTERLINE	CL
RADIUS POINT	RP
POINT OF CURVATURE	PC
POINT OF TANGENCY	PT
RETURN	RET
DRAINAGE FLOW ARROW	
TOP OF CURB SPOT ELEVATION	857.30
PAVEMENT ELEVATION	857.00(P) ×
WASHOUT CROWN SECTION	
SIDEWALK (SEE SHEET C3.00 & C3.01 FOR DEVELOPER/HOMEBUILDER RESPONSIBILITY)	
DRIVEWAY	
PUBLIC UTILITY EASEMENT	P.U.E.

LAWSON TRL
STA 8+50.00 TO 12+00.00



LAWSON TRL
STA 12+00.00 TO 15+27.26

VERTICAL SCALE: 1" = 5'
HORIZONTAL SCALE: 1" = 50'



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NO.	REVISION	DATE

STATE OF TEXAS
TODD W. BLACKMON
89208
LICENSED
PROFESSIONAL ENGINEER
12-27-2024

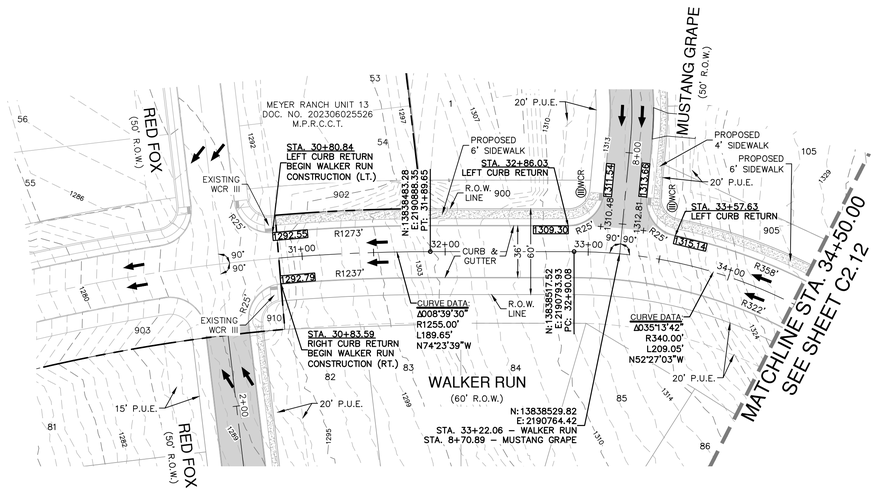
PAPE-DAWSON ENGINEERS
1672 INDEPENDENCE DR, STE 102 I NEW BRAUNFELS, TX 78132 I 830.632.5633
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

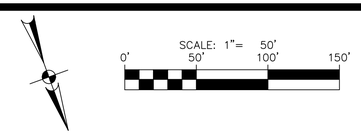
MEYER RANCH UNIT 16
COMAL COUNTY, TEXAS

LAWSON TRL - PLAN & PROFILE
STA 8+50.00 TO 15+27.26

PLAT NO.
JOB NO. 30010–27
DATE DECEMBER 2024
DESIGNER CL
CHECKED HF DRAWN BH
SHEET C2.10

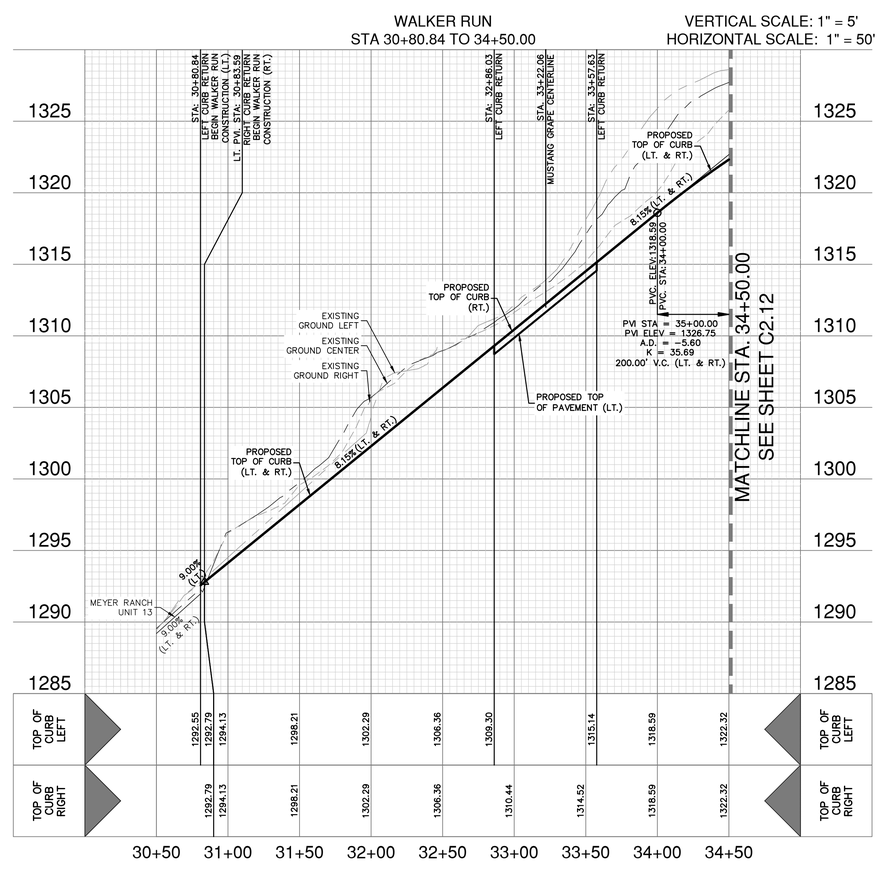
FOR PERMIT





STREET LEGEND

PROJECT LIMITS	
MAINTAIN GUTTER	
EXISTING CONTOUR	970
WHEELCHAIR RAMP	WCR
CENTERLINE	CL
RADIUS POINT	RP
POINT OF CURVATURE	PC
POINT OF TANGENCY	PT
RETURN	RET
DRAINAGE FLOW ARROW	
TOP OF CURB SPOT ELEVATION	857.30
PAVEMENT ELEVATION	857.00(P) ×
WASHOUT CROWN SECTION	
SIDEWALK (SEE SHEET C3.00 & C3.01 FOR DEVELOPER/HOMEBUILDER RESPONSIBILITY)	
DRIVEWAY	
PUBLIC UTILITY EASEMENT	P.U.E.



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NO.	REVISION	DATE

STATE OF TEXAS
TODD W. BLACKMON
89208
LICENSED
PROFESSIONAL ENGINEER
12 - 27 - 2024

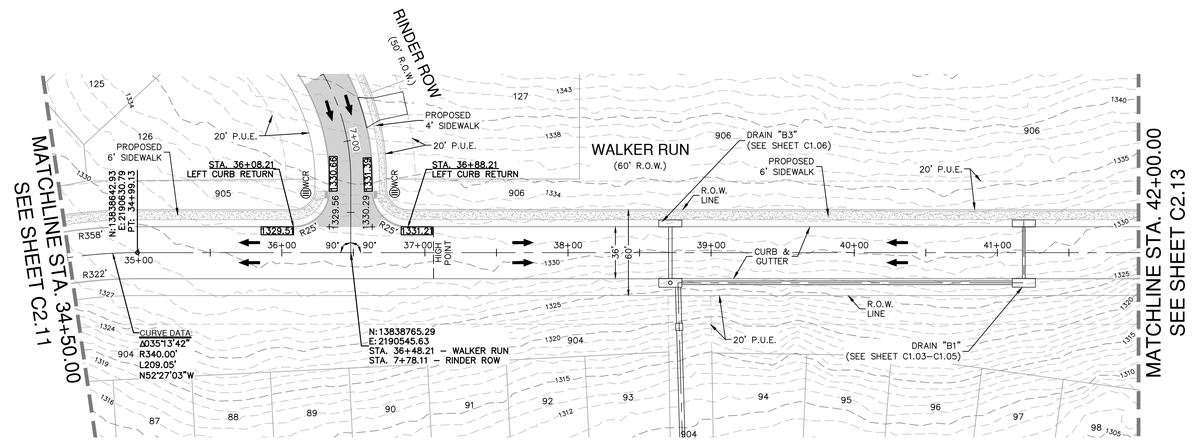
PAPE-DAWSON ENGINEERS
1672 INDEPENDENCE DR, STE 102 | NEW BRAUNFELS, TX 78132 | 830.632.5633
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

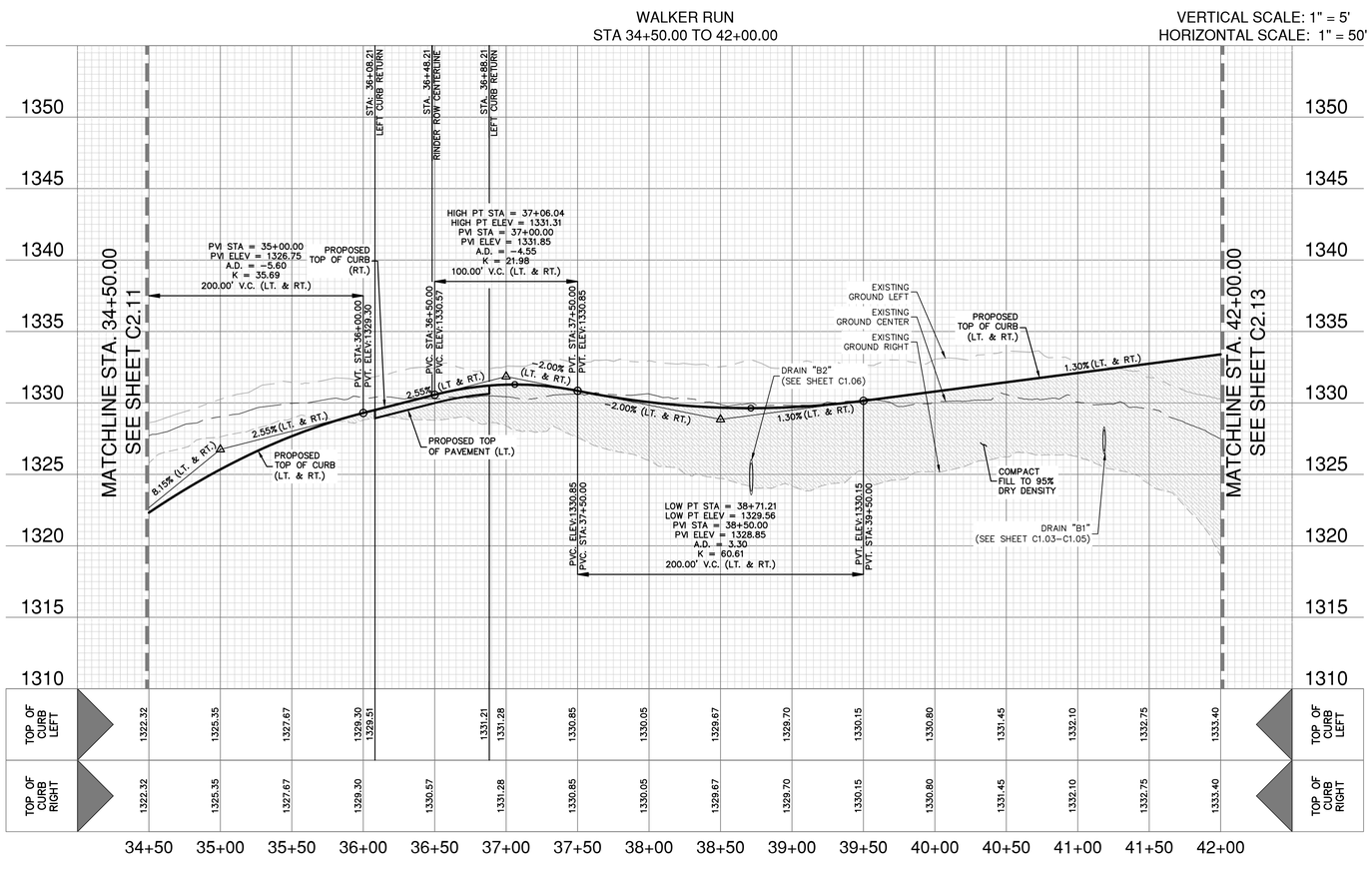
MEYER RANCH UNIT 16
COMAL COUNTY, TEXAS

WALKER RUN - PLAN & PROFILE
STA 30+80.84 TO 34+50.00

PLAT NO.
JOB NO. 30010–27
DATE DECEMBER 2024
DESIGNER CL
CHECKED HF DRAWN BH
SHEET C2.11

FOR PERMIT





SCALE: 1"= 50'
0' 50' 100' 150'

STREET LEGEND

PROJECT LIMITS	
MAINTAIN GUTTER	
EXISTING CONTOUR	970
WHEELCHAIR RAMP	WCR
CENTERLINE	CL
RADIUS POINT	RP
POINT OF CURVATURE	PC
POINT OF TANGENCY	PT
RETURN	RET
DRAINAGE FLOW ARROW	
TOP OF CURB SPOT ELEVATION	857.30
PAVEMENT ELEVATION	857.00(P) ×
WASHOUT CROWN SECTION	
SIDEWALK (SEE SHEET C3.00 & C3.01 FOR DEVELOPER/HOMEBUILDER RESPONSIBILITY)	
DRIVEWAY	
PUBLIC UTILITY EASEMENT	P.U.E.

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NO.	REVISION	DATE

STATE OF TEXAS
TODD W. BLACKMON
89208
LICENSED
PROFESSIONAL ENGINEER
12 - 27 - 2024

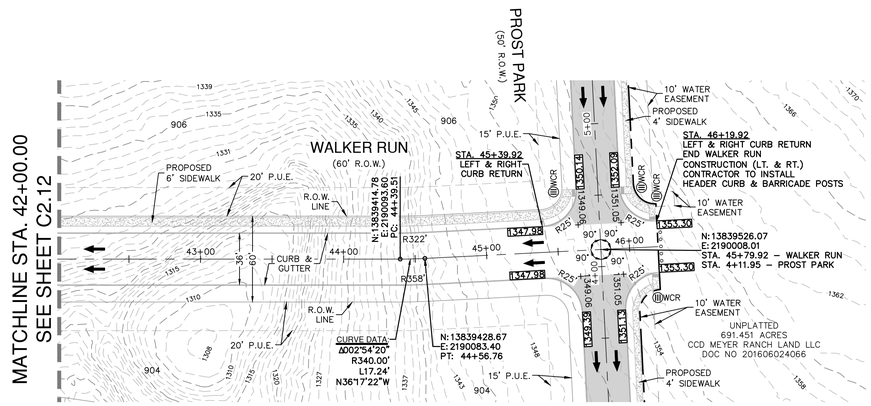
PAPE-DAWSON ENGINEERS
1672 INDEPENDENCE DR, STE 102 I NEW BRAUNFELS, TX 78132 I 830.632.5633
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

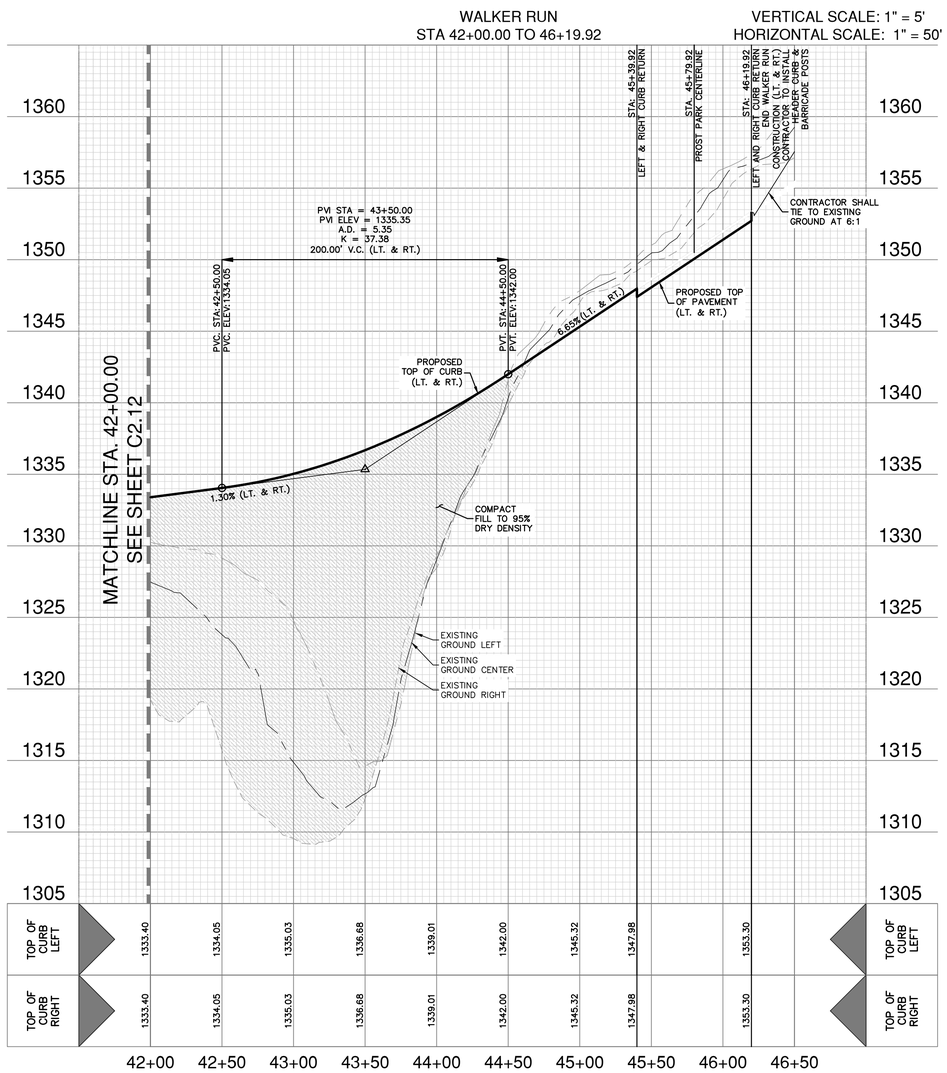
MEYER RANCH UNIT 16
COMAL COUNTY, TEXAS

WALKER RUN - PLAN & PROFILE
STA 34+50.00 TO 42+00.00

PLAT NO.
JOB NO. 30010–27
DATE DECEMBER 2024
DESIGNER CL
CHECKED HF DRAWN BH
SHEET C2.12

FOR PERMIT





SCALE: 1"= 50'
0' 50' 100' 150'

STREET LEGEND

PROJECT LIMITS	
MAINTAIN GUTTER	
EXISTING CONTOUR	970
WHEELCHAIR RAMP	WCR
CENTERLINE	CL
RADIUS POINT	RP
POINT OF CURVATURE	PC
POINT OF TANGENCY	PT
RETURN	RET
DRAINAGE FLOW ARROW	
TOP OF CURB SPOT ELEVATION	857.30
PAVEMENT ELEVATION	857.00(P) ×
WASHOUT CROWN SECTION	
SIDEWALK (SEE SHEET C3.00 & C3.01 FOR DEVELOPER/HOMEBUILDER RESPONSIBILITY)	
DRIVEWAY	
PUBLIC UTILITY EASEMENT	P.U.E.

STREET NOTES:

1. CONTRACTOR SHALL MATCH EXISTING PAVEMENT AT TIE–IN. IF EXISTING PAVEMENT ELEVATION DIFFERS SIGNIFICANTLY, CONTRACTOR SHALL NOTIFY THE ENGINEER PRIOR TO CONTINUING WORK.
2. SIDEWALKS SHALL BE CONSTRUCTED 3–FT FROM THE BACK OF CURB FOR ALL LOCATIONS WHERE THE SIDEWALK IS SHOWN OFFSET. REFER TO STREET DETAIL SHEET FOR SIDEWALK AND RAMP DETAILS.
3. NO PERMANENT STRUCTURES HIGHER THAN 3 FEET, AND LOWER THAN 8 FEET ABOVE THE PAVEMENT, INCLUDING STRUCTURES, WALLS, FENCES, AND VEGETATION, SHALL BE CONSTRUCTED OR ALLOWED WITHIN THE CLEAR VISION EASEMENT. CONTRACTOR SHALL GRADE AREAS WITHIN CLEAR VISION EASEMENTS SUCH THAT THE ELEVATION WITHIN THE CLEAR VISION EASEMENT IS NOT HIGHER THAN 3 FEET ABOVE THE ADJACENT TOP OF PAVEMENT.
4. DRIVEWAYS SHOWN ON THIS PLAN ARE FOR THE SOLE PURPOSE OF INDICATING A POTENTIAL CONFLICT WITH CURB RAMP, DRAINAGE INFRASTRUCTURE, OR OTHER CONFLICT. DRIVEWAY LOCATION IS SUBJECT TO CHANGE BASED ON HOME SELECTION AND FINAL LOT DESIGN.
5. CHANGES IN THE SIDEWALK LOCATION FOR A MAXIMUM LINEAR DISTANCE OF TWO HUNDRED (200) FEET ARE PERMITTED TO BE APPROVED BY THE FIELD INSPECTOR WITHOUT AMENDING THE STREET PLAN OR UTILITY.

NO.	REVISION	DATE

STATE OF TEXAS
TODD W. BLACKMON
89208
LICENSED
PROFESSIONAL ENGINEER
12–27–2024

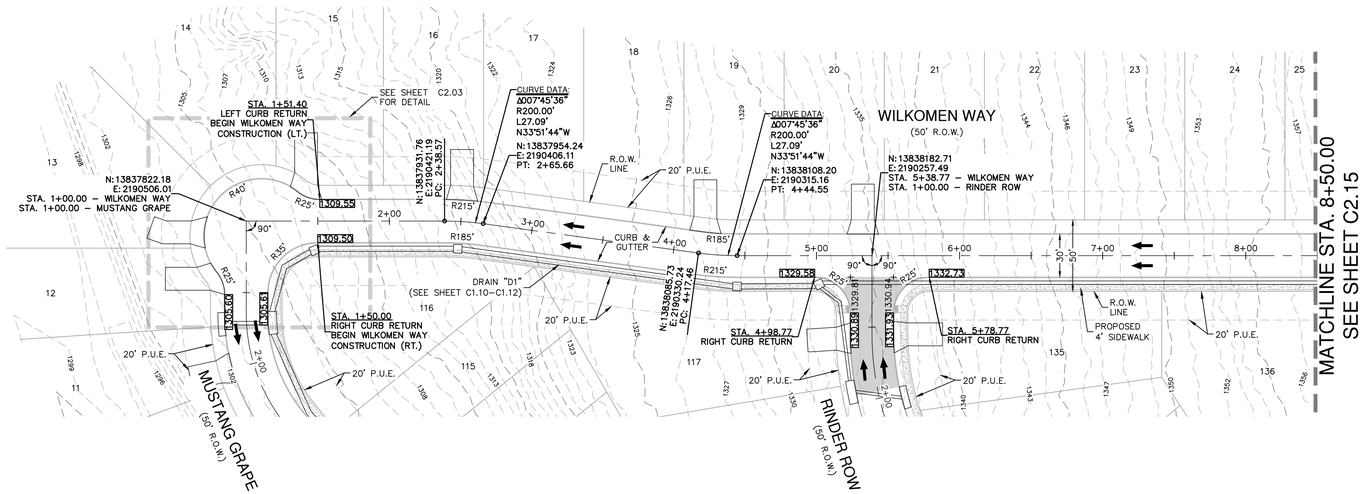
PAPE-DAWSON ENGINEERS
1672 INDEPENDENCE DR, STE 102 | NEW BRAUNFELS, TX 78132 | 830.632.5633
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

MEYER RANCH UNIT 16
COMAL COUNTY, TEXAS

WALKER RUN - PLAN & PROFILE
STA 42+00.00 TO 46+19.92

PLAT NO.
JOB NO. 30010–27
DATE DECEMBER 2024
DESIGNER CL
CHECKED HF DRAWN BH
SHEET C2.13

FOR PERMIT

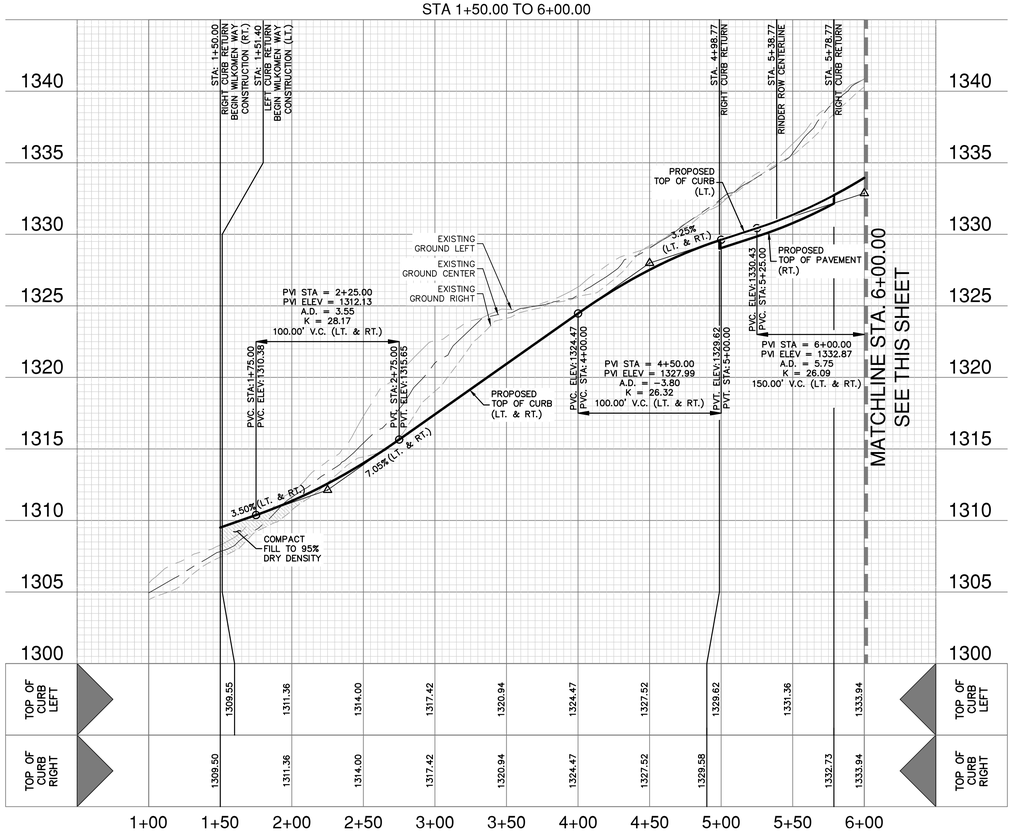


SCALE: 1"= 50'
0' 50' 100' 150'

STREET LEGEND

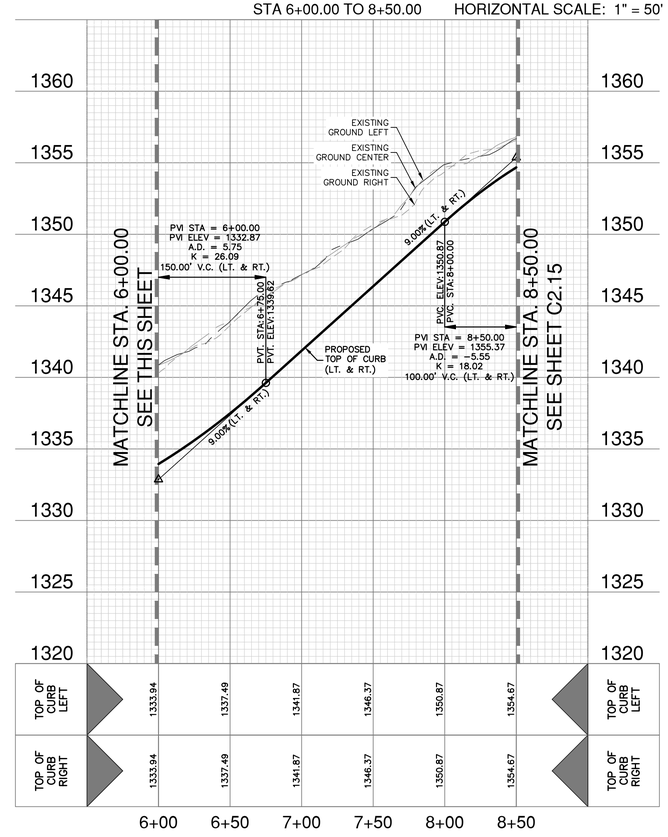
PROJECT LIMITS	
MAINTAIN GUTTER	
EXISTING CONTOUR	970
WHEELCHAIR RAMP	D WCR
CENTERLINE	CL
RADIUS POINT	RP
POINT OF CURVATURE	PC
POINT OF TANGENCY	PT
RETURN	RET
DRAINAGE FLOW ARROW	
TOP OF CURB SPOT ELEVATION	857.30
PAVEMENT ELEVATION	857.00(P) ×
WASHOUT CROWN SECTION	
SIDEWALK (SEE SHEET C3.00 & C3.01 FOR DEVELOPER/HOMEBUILDER RESPONSIBILITY)	
DRIVEWAY	
PUBLIC UTILITY EASEMENT	P.U.E.

WILKOMEN WAY
STA 1+50.00 TO 6+00.00



WILKOMEN WAY
STA 6+00.00 TO 8+50.00

VERTICAL SCALE: 1" = 5'
HORIZONTAL SCALE: 1" = 50'



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89208
LICENSED PROFESSIONAL ENGINEER
12 - 27 - 2024

PAPE-DAWSON ENGINEERS
1672 INDEPENDENCE DR, STE 102 I NEW BRAUNFELS, TX 78132 I 830.632.5633
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

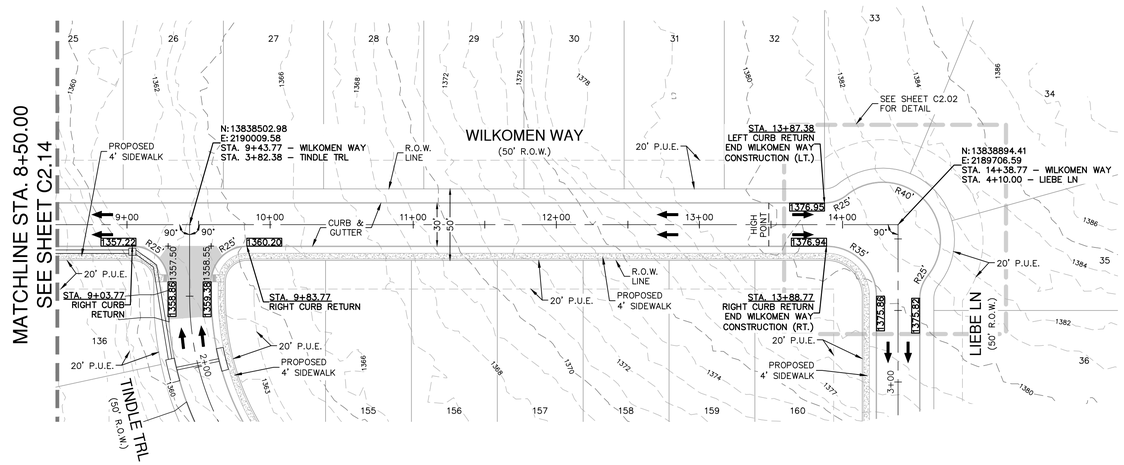
MEYER RANCH UNIT 16
COMAL COUNTY, TEXAS

WILKOMEN WAY - PLAN & PROFILE
STA 1+50.00 TO 8+50.00

PLAT NO.
JOB NO. 30010–27
DATE DECEMBER 2024
DESIGNER CL
CHECKED HF DRAWN BH
SHEET C2.14

FOR PERMIT

SCALE: 1"= 50'
0' 50' 100' 150'

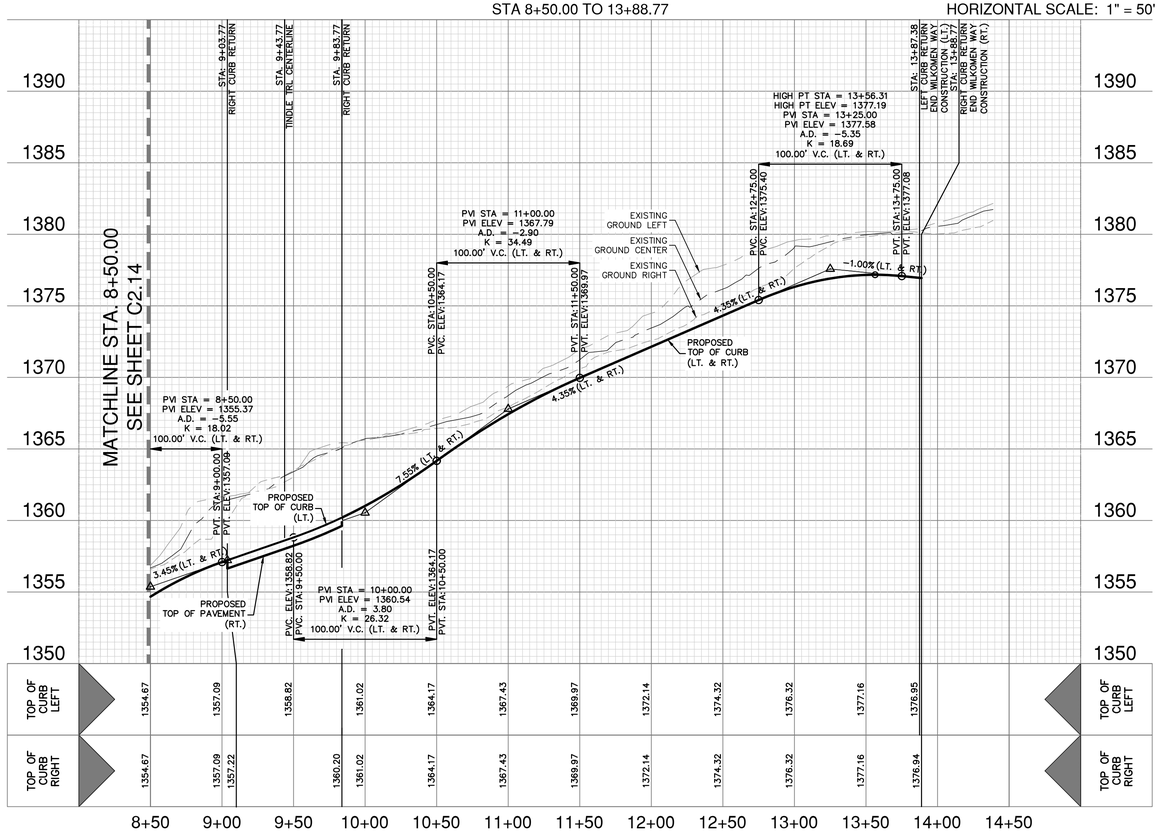


STREET LEGEND

PROJECT LIMITS	
MAINTAIN GUTTER	
EXISTING CONTOUR	970
WHEELCHAIR RAMP	DWCR
CENTERLINE	CL
RADIUS POINT	RP
POINT OF CURVATURE	PC
POINT OF TANGENCY	PT
RETURN	RET
DRAINAGE FLOW ARROW	
TOP OF CURB SPOT ELEVATION	857.30
PAVEMENT ELEVATION	857.00(P) ×
WASHOUT CROWN SECTION	
SIDEWALK (SEE SHEET C3.00 & C3.01 FOR DEVELOPER/HOMEBUILDER RESPONSIBILITY)	
DRIVEWAY	
PUBLIC UTILITY EASEMENT	P.U.E.

WILKOMEN WAY
STA 8+50.00 TO 13+88.77

VERTICAL SCALE: 1" = 5'
HORIZONTAL SCALE: 1" = 50'



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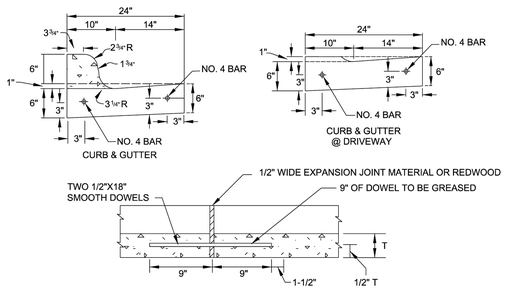
MEYER RANCH UNIT 16
COMAL COUNTY, TEXAS

WILKOMEN WAY - PLAN & PROFILE
STA 8+50.00 TO 13+88.77

PLAT NO.
JOB NO. 30010–27
DATE DECEMBER 2024
DESIGNER CL
CHECKED HF DRAWN BH
SHEET C2.15

FOR PERMIT

CURB AND GUTTER



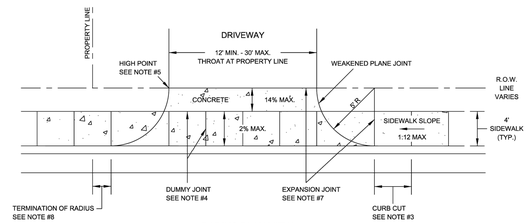
LONGITUDINAL SECTION THRU CURB AND GUTTER
SHOWING TYPICAL EXPANSION JOINT DETAILS.
REINFORCING STEEL SHALL NOT CROSS EXPANSION JOINTS.
STEEL SHALL BE TERMINATED 3" (+ OR -) 1" FROM FACE OF THE JOINT.

NOTES:

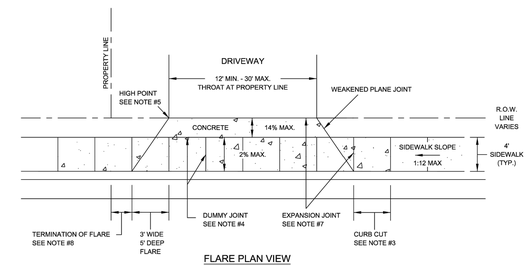
1. REINFORCING BARS SHALL BE LAPPED A MINIMUM OF 18".
2. CURB AND GUTTER SHALL HAVE FORMED TOOLED OR SAWED CONTRACTION JOINTS AT ± 10'. THE DEPTH OF THESE JOINTS SHALL BE SUFFICIENT TO ENSURE CRACKING AT THE JOINTS.
3. CURB OR CURB AND GUTTER SHALL HAVE EXPANSION JOINTS AT POINTS OF CURVATURE, AT INTERVALS NO GREATER THAN 100' AND AT ALL ADJACENT STRUCTURES.
4. UNLESS OTHERWISE SHOWN, TRANSITIONS BETWEEN CURBS OR CURBS AND GUTTER OF DIFFERING CROSS SECTION SHALL BE ACCOMPLISHED OVER A 10' LENGTH OR AS APPROVED BY THE CITY ENGINEER.
5. ALL CONCRETE TO BE CLASS "A" 3000 PSI CONCRETE.
6. ALL EXPOSED CONCRETE SURFACES TO BE BRUSHED SMOOTH AND UNIFORM.

DATE APPROVED: 07/2008	DWG. NO: ST-013	SCALE: N.T.S.	City of New Braunfels ENGINEERING DEPARTMENT
DRAWN BY: RAS	SHEET: 1 OF 1		
FILENAME: CURB & GUTTER			

DRIVEWAY APRON
(RESIDENTIAL - ONE OR TWO FAMILY)



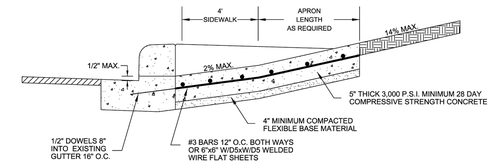
RADIUS PLAN VIEW



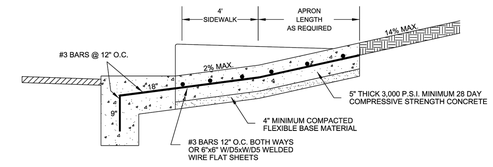
FLARE PLAN VIEW

DATE APPROVED: 04/2016	DWG. NO: ST-014.1	SCALE: N.T.S.	City of New Braunfels ENGINEERING DEPARTMENT
DRAWN BY: RAS	SHEET: 1 OF 2		
FILENAME: DRIVEWAY (RESIDENTIAL - ONE OR TWO FAMILY)			

DRIVEWAY APRON
(RESIDENTIAL - ONE OR TWO FAMILY)



STRUCTURAL SECTION



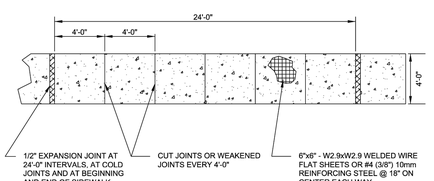
NO EXISTING CURB STRUCTURAL SECTION

NOTES:

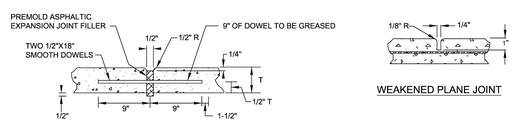
1. WHERE GUTTER DOES NOT EXIST DRIVEWAY APRON SHALL EXTEND TO EDGE OF ASPHALT AND SHALL HAVE A MINIMUM 6" WIDE 1' DEEP GRADE BEAM MONOLITHIC AND REINFORCED SIMILAR TO APRON.
2. PLACEMENT OF SIDEWALK SHOWN IS TYPICAL; HOWEVER, ALTERNATIVE SIDEWALK PLACEMENT COMMON TO DRIVEWAY APRON WILL BE CONSIDERED PROVIDED CROSS SLOPE OF SIDEWALK IS NO GREATER THAN 2%.
3. CURB CUT LENGTH NO GREATER THAN AS REQUIRED TO MATCH SLOPE OF ADJACENT SIDEWALK.
4. DUMMY JOINTS TO BE PROVIDED AT MINIMUM 4-FT. INTERVALS PERPENDICULAR TO THE CURB LINE WITHIN THE SIDEWALK AREA AND PARALLEL TO THE SIDEWALK AREA.
5. PROVIDE A MINIMUM 7" HIGH POINT. HIGH POINT HEIGHT SHALL BE MEASURED FROM THE GUTTER FLOW LINE TO THE DRIVEWAY APRON. NOTE HIGH POINT MAY OCCUR OUTSIDE OF ROW.
6. DRIVEWAY THROAT TRANSITION MAY OCCUR OUTSIDE OF ROW.
7. PROVIDE EXPANSION JOINTS AT ALL SIDEWALK AND DRIVEWAY THROAT JOINTS. EXPANSION JOINTS SHALL BE PLACED USING 1/2" ASPHALTIC MATERIAL WITH 1/2" DOWELS 16" O.C.
8. THE TANGENT POINT OF THE DRIVEWAY CURB RETURN AT THE PUBLIC ROADWAY LINE OR FLARE SHALL BE A MINIMUM DISTANCE OF 1' OFF THE PROPERTY PROJECTED PERPENDICULAR TO THE STREET CENTERLINE. EXCEPT SINGLE FAMILY OR ZERO LOT LINE LOTS. ON SINGLE FAMILY ZERO LOT LINE LOTS WHERE THE DRIVE IS ON THE ZERO LOT LINE, THE TANGENT POINT OR FLARE SHALL BE NO GREATER THAN 3' BEYOND THE ADJOINING PROPERTY LINE PROJECTED PERPENDICULAR TO THE STREET CENTERLINE.

DATE APPROVED: 04/2016	DWG. NO: ST-014.2	SCALE: N.T.S.	City of New Braunfels ENGINEERING DEPARTMENT
DRAWN BY: RAS	SHEET: 2 OF 2		
FILENAME: DRIVEWAY (RESIDENTIAL - ONE OR TWO FAMILY)			

SIDEWALK
(RESIDENTIAL)

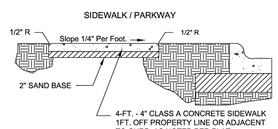


PLAN VIEW



EXPANSION JOINT

WEAKENED PLANE JOINT

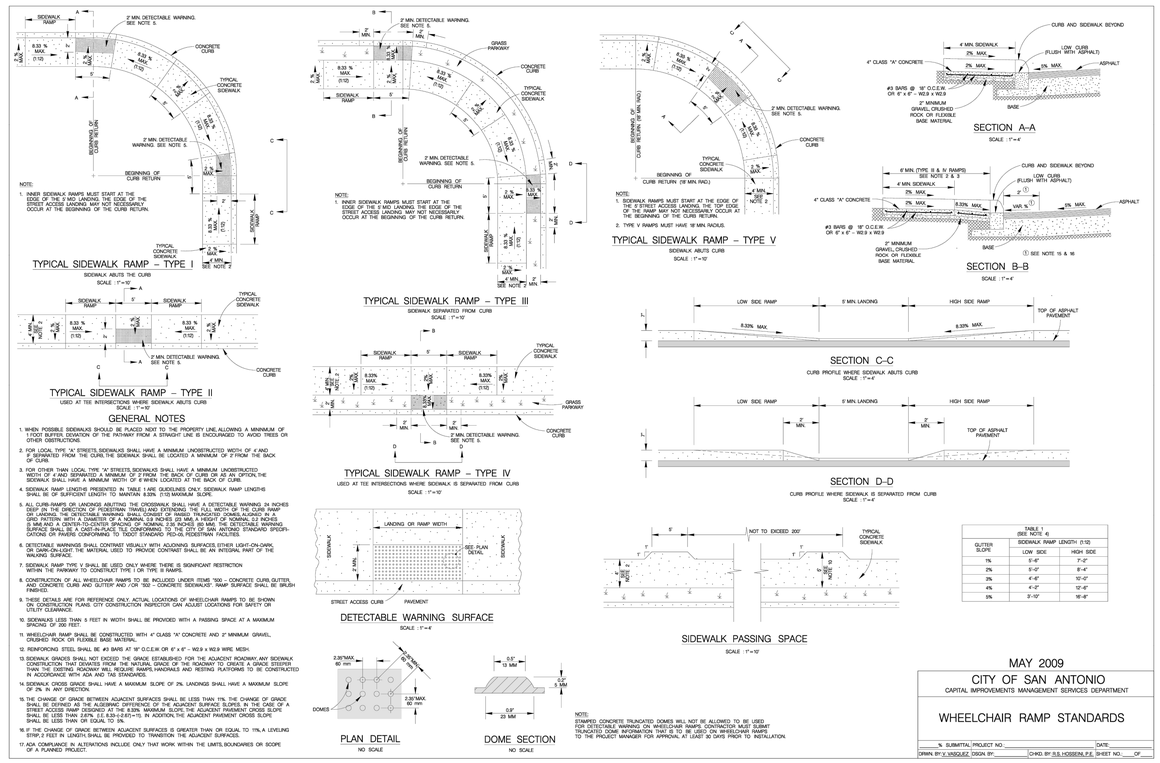


TYPICAL SECTION

NOTES:

1. EXPANSION JOINTS ARE TO BE USED BETWEEN CONCRETE DRIVEWAY AND SIDEWALK.
2. SCORED JOINTS DENOTE SIDEWALK ACROSS THE DRIVEWAY AND ARE TO BE PLACED AT LEAST 1/3 rd. THROUGH THE SLAB THICKNESS.
3. ALL SIDEWALK AND DRIVEWAY CONSTRUCTION SHALL MEET A.D.A. SPECIFICATIONS.

DATE APPROVED: 07/2008	DWG. NO: ST-016	SCALE: N.T.S.	City of New Braunfels ENGINEERING DEPARTMENT
DRAWN BY: RAS	SHEET: 1 OF 1		
FILENAME: SIDEWALK (RESIDENTIAL)			



NO.	REVISION	DATE

12 - 27 - 2024

STATE OF TEXAS
TODD W. BLACKMON
89208
LICENSED
PROFESSIONAL ENGINEER

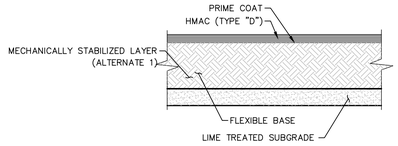
PAPE-DAWSON ENGINEERS
1672 INDEPENDENCE DR, STE 102 I NEW BRAUNFELS, TX 78132 I 830.632.5633
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

MEYER RANCH UNIT 16
COMAL COUNTY, TEXAS
STREET DETAILS

PLAT NO.
JOB NO. 30010–27
DATE DECEMBER 2024
DESIGNER CL
CHECKED HF DRAWN BH
SHEET C2.20

FOR PERMIT

Base Bid Pavement Section	Alternate 1 Pavement Section
3" Type D HMAC 7" Flexible Base 6" Lime Treated Subgrade	3" Type D HMAC 7" Mechanically Stabilized Layer 6" Lime Treated Subgrade
Total: 16" Structural No: 2.30	Total: 16" Structural No: 2.51



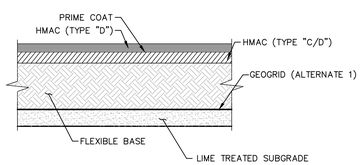
LOCAL TYPE A
CLAY SUBGRADE

NOT TO SCALE

PROST PARK – 1+40.41 TO 9+50.00
LEIBE LN – 1+40.00 TO 2+50.00
MUSTANG GRAPE – 1+50.00 TO END
TINDLE TRL – 1+40.00 TO 11+50.00
RED FOX – 1+43.66 TO END
RINDER ROW – 1+40.00 TO 4+00.00
LAWSON TRL – 1+50.00 TO END
WILKOMMEN WAY – 1+50.00 TO 5+00.00
PAISLEY PATH – 1+50.00 TO END

NOTE: ANY CHANGE IN PAVEMENT SECTION FROM THE STATIONING LISTED ABOVE MUST BE COORDINATED WITH GEOTECHNICAL ENGINEER.

Base Bid Pavement Section	Alternate 1 Pavement Section
2" Type D HMAC 2" Type C/D HMAC 14" Flexible Base 6" Lime Treated Subgrade	2" Type D HMAC 2" TYPE C/D HMAC 12" Mechanically Stabilized Layer 6" Lime Treated Subgrade
Total: 24" Structural No: 3.72	Total: 22" Structural No: 3.80



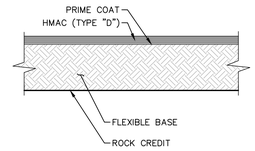
60' ROW
CLAY SUBGRADE

NOT TO SCALE

WALKER RUN – 30+80.84 TO 31+00.00
35+50.00 TO 45+00.00

NOTE: ANY CHANGE IN PAVEMENT SECTION FROM THE STATIONING LISTED ABOVE MUST BE COORDINATED WITH GEOTECHNICAL ENGINEER.

Base Bid Pavement Section
3" Type D HMAC 7" Flexible Base Rock Credit
Total: 10" Structural No: 2.78



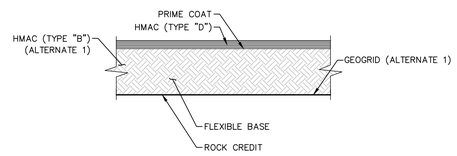
LOCAL A
ROCK SUBGRADE

NOT TO SCALE

PROST PARK – 9+50.00 TO END
LEIBE LN – 2+50.00 TO END
TINDLE TRL – 11+50.00 TO END
RINDER ROW – 4+00.00 TO END
WILKOMMEN WAY – 5+00.00 TO END

NOTE: ANY CHANGE IN PAVEMENT SECTION FROM THE STATIONING LISTED ABOVE MUST BE COORDINATED WITH GEOTECHNICAL ENGINEER.

Base Bid Pavement Section
3" Type D HMAC 8" Flexible Base Rock Credit
Total: 11" Structural No: 2.92

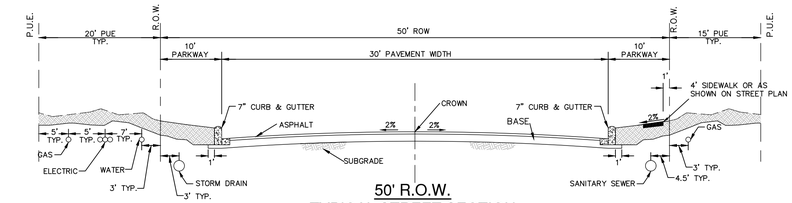


60' ROW
ROCK SUBGRADE

NOT TO SCALE

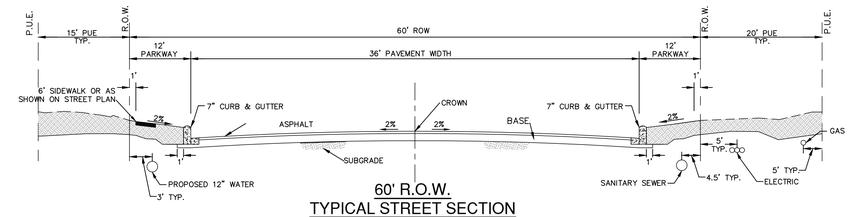
WALKER RUN – 31+00.00 TO 35+50.00
45+00.00 TO END

NOTE: ANY CHANGE IN PAVEMENT SECTION FROM THE STATIONING LISTED ABOVE MUST BE COORDINATED WITH GEOTECHNICAL ENGINEER.



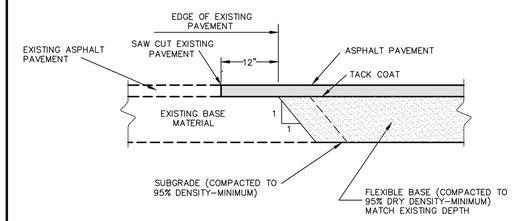
50' R.O.W.
TYPICAL STREET SECTION

NOT-TO-SCALE



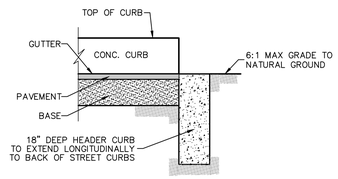
60' R.O.W.
TYPICAL STREET SECTION

NOT-TO-SCALE



PAVEMENT JUNCTURE DETAIL

NOT TO SCALE



HEADER CURB

NOT TO SCALE

NOTES:

PAVEMENT DESIGN THICKNESS BASED ON GEOTECHNICAL REPORTS BY RABA KISTNER CONSULTANTS, INC., PROJECT NO. ANA24–016–00, DATED JUNE 28, 2024 (MEYER RANCH UNIT 16 AND 16C) AND SUPPLEMENTAL LETTER DATED NOVEMBER 8, 2024.

1. REFERENCE PROJECT GEOTECHNICAL REPORT, PROJECT SPECIFICATIONS AND COMAL COUNTY SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS AND ALTERNATE PAVEMENT SECTIONS.

2. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING MATERIAL TESTING. TESTING TO BE PAID BY OWNER.

3. ALL THE CLAYS SHOULD BE REMOVED TO EXPOSE THE MARL TO LIMESTONE SUBGRADE. IF THICKER CLAYS ARE ENCOUNTERED AT THE FINISHED STREET SUBGRADE, THEN THE GEOTECHNICAL RECOMMENDATIONS PRESENTED FOR CLAY SUBGRADES SHOULD BE USED. CONTACT RABA KISTNER FOR FURTHER DIRECTION IF THICKER CLAYS ARE ENCOUNTERED.

4. SUBGRADE SOILS SHALL BE TESTED FOR SOLUBLE SULFATE CONTENT PRIOR TO LIME TREATMENT.

5. THE FOLLOWING IS AN EXCERPT FROM THE PROJECT GEOTECHNICAL REPORT BY RABA KISTNER CONSULTANTS, INC. DATED JUNE 28, 2024, PROJECT NO. ANA24–016–00.

"LIME OR CEMENT TREATMENT OF THE SUBGRADE SOILS, IF UTILIZED, SHOULD BE IN ACCORDANCE WITH THE TXDOT STANDARD SPECIFICATIONS, ITEM 260 OR ITEM 275, RESPECTIVELY. A SUFFICIENT QUANTITY OF HYDRATED LIME SHOULD BE MIXED WITH THE SUBGRADE SOILS TO REDUCE THE SOIL PLASTICITY INDEX TO 20 OR LESS. BASED ON THE RESULTS OF THE PH–LIME SERIES CURVES, WE RECOMMEND THAT AT LEAST 4 PERCENT HYDRATED LIME/CEMENT TREATMENT BY WEIGHT BE USED TO INCREASE THE PH OF THE SUBGRADE CLAYS TO 12.4 OR HIGHER AND REDUCE THE PI TO 20 OR LESS. THIS PERCENTAGE OF LIME REDUCED THE PI OF THE TESTED SAMPLE TO 6. FOR CONSTRUCTION PURPOSES, WE RECOMMEND THAT THE OPTIMUM LIME OR CEMENT CONTENT OF THE SUBGRADE SOILS BE DETERMINED BY LABORATORY TESTING WITH REPRESENTATIVE SAMPLES OF THE SUBGRADE MATERIALS BEING USED FOR THIS PROJECT. TREATED SUBGRADE SOILS SHOULD BE COMPACTED TO A MINIMUM OF 95 PERCENT OF THE MAXIMUM DENSITY AT A MOISTURE CONTENT WITHIN THE RANGE OF OPTIMUM MOISTURE CONTENT TO 3 PERCENTAGE POINTS ABOVE THE OPTIMUM MOISTURE CONTENT AS DETERMINED BY TEX–113–E."

"FOR AREAS THAT TRANSITION BETWEEN A CLAY AND ROCK SUBGRADE, WE RECOMMEND THAT GEOGRID BE UTILIZED TO RELIEVE STRESS CONCENTRATIONS AT THE SUBGRADE TRANSITIONS. THE GEOGRID SHOULD BE USED AS A TRANSITION FOR 5 FT OR GREATER ON EITHER SIDE OF THE TRANSITION."

"FOR AREAS THAT REQUIRE FILL AND WHERE PAVEMENT SECTIONS WILL UTILIZE THE CLAY SUBGRADE RECOMMENDATIONS USING DARK BROWN CLAY, THE FINAL 6 IN. OF FILL SHOULD BE LIME/CEMENT TREATED (SEE TREATED SUBGRADE). IF FILL GRADING IS NOT PLANNED AND CLAYS REMAIN IN–PLACE, THEN TREATMENT OF THE STRIPPED CLAY SUBGRADE SHOULD BE PERFORMED IN CONJUNCTION WITH THE SCARIFYING, MOISTURE CONDITIONING, AND RECOMPACTION PROCESS DESCRIBED IN THE SITE PREPARATION SECTION OF THE CONSTRUCTION CONSIDERATIONS."

"IF FILL GRADING IS COMPLETED UTILIZING SELECT FILL IN ACCORDANCE WITH THE SELECT FILL SECTION OF THIS REPORT, OR IF NATIVE, INTACT ROCK IS EXPOSED PRIOR TO FILL PLACEMENT (IF NECESSARY), THE TREATED SUBGRADE MAY BE ELIMINATED FROM THE PAVEMENT SECTION AND THE ROCK SUBGRADE RECOMMENDATIONS SHOULD BE UTILIZED."

NO.	REVISION	DATE

STATE OF TEXAS
TODD W. BLACKMON
89208
LICENSED
PROFESSIONAL ENGINEER
12 - 27 - 2024

PAPE-DAWSON ENGINEERS
1672 INDEPENDENCE DR, STE 102 I NEW BRAUNFELS, TX 78132 I 830.632.5633
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

MEYER RANCH UNIT 16
COMAL COUNTY, TEXAS
STREET DETAILS

PLAT NO.
JOB NO. 30010–27
DATE DECEMBER 2024
DESIGNER CL
CHECKED HF DRAWN BH
SHEET C2.21

Date: Dec 17, 2024, 11:23am User ID: ALeddy
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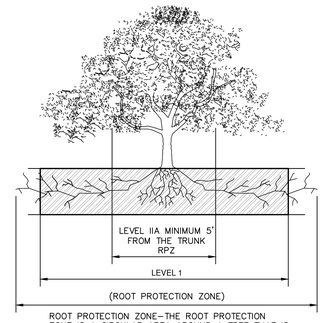
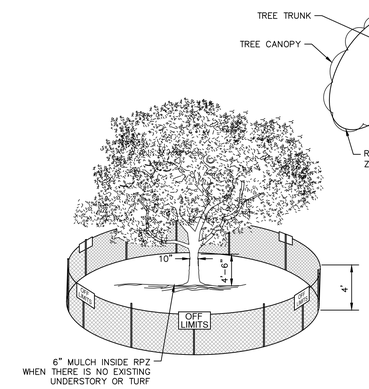
FOR PERMIT



ROOT PROTECTION ZONE—THE ROOT PROTECTION ZONE IS A CIRCULAR AREA AROUND A TREE THAT IS BASED ON THE DIAMETER OF THE TREE. EACH 1 INCH DIAMETER OF THE TREE EQUALS 1 FOOT RADIUS FOR ROOT PROTECTION ZONE.

ELEVATION

NOT TO SCALE



NOTE:

1. THE FENCING SHOWN ABOVE IS DIAGRAMATIC ONLY, WILL CONFORM TO THE DRIP LINE AND IS LIMITED TO PROJECT BOUNDARY.

2. FOR ACCEPTABLE FENCING MATERIALS SEE SPECS.

3. CHAIN LINK FENCE SHALL BE ERECTED PRIOR TO ANY CLEARING, GRUBBING OR SITE WORK OF ANY KIND. FENCING SHALL STAY ERECTED UNTIL FINAL LANDSCAPE OPERATIONS COMMENCE.

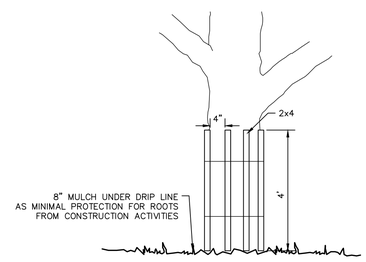
4. ANY PRUNING TO PROVIDE CLEARANCE TO PRESERVED TREES MUST BE APPROVED BY A CERTIFIED ARBORIST.

5. DO NOT REMOVE ANY TREES OVER 1" CALIPER WITHIN THE TREE PROTECTION FENCING OR OUTSIDE THE LIMITS OF CONSTRUCTION.

6. TREE ROOT CUTS SHALL BE MECHANICALLY CUT AT THE DIRECTION OF A CERTIFIED ARBORIST. CUTS SHALL BE CLEAN CUTS, WITHOUT PULLING OR TEARING.

TREE PROTECTION ZONE

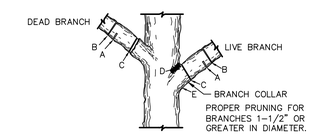
NOT TO SCALE



NOTE:
WRAP TREE TRUCK WITH 2"X4" STUDS AND ROPE OR BAND IN PLACE AS NEEDED TO PROTECT TREES IN WORK AREAS.

LEVEL II B FENCE PROTECTION

NOT TO SCALE



NOTE:
DO NOT CUT FROM D TO E.

A. FIRST CUT – TO PREVENT THE BARK FROM BEING PEELED WHEN THE BRANCH FALLS.
B. SECOND CUT – TO REDUCE THE WEIGHT OF BRANCH.
C. FINAL CUT – ALLOW FOR HEALING COLLAR BUT NO STUBS

FOR OAKS ONLY:
PAINT ALL WOUNDS OR CUTS WITH PRUNING PAINT WITHIN 20 MIN TO PREVENT THE SPREAD OF OAK WILT.

BRANCH PRUNING

NOT TO SCALE

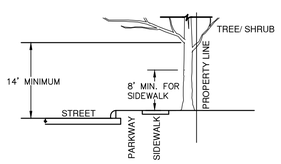
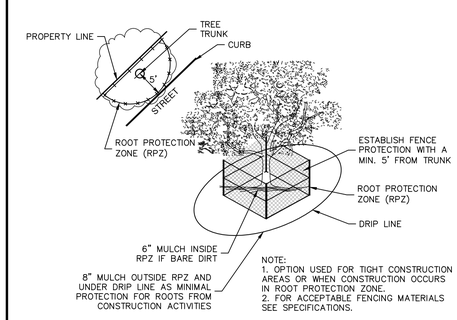


FIGURE NO. 2

A MINIMUM BRANCH CLEARANCE OF 14 FEET ABOVE STREET ELEVATION MUST BE MAINTAINED FROM THE PROPERTY LINE TO THE CURB LINE AS PRESCRIBED BY PROJECT MANAGER.

BRANCH CLEARANCE DETAIL

NOT TO SCALE



NOTE:
1. OPTION USED FOR TIGHT CONSTRUCTION AREAS OR WHEN CONSTRUCTION OCCURS IN ROOT PROTECTION ZONE.
2. FOR ACCEPTABLE FENCING MATERIALS SEE SPECIFICATIONS.

LEVEL II A FENCE PROTECTION

NOT TO SCALE

NO.	REVISION	DATE

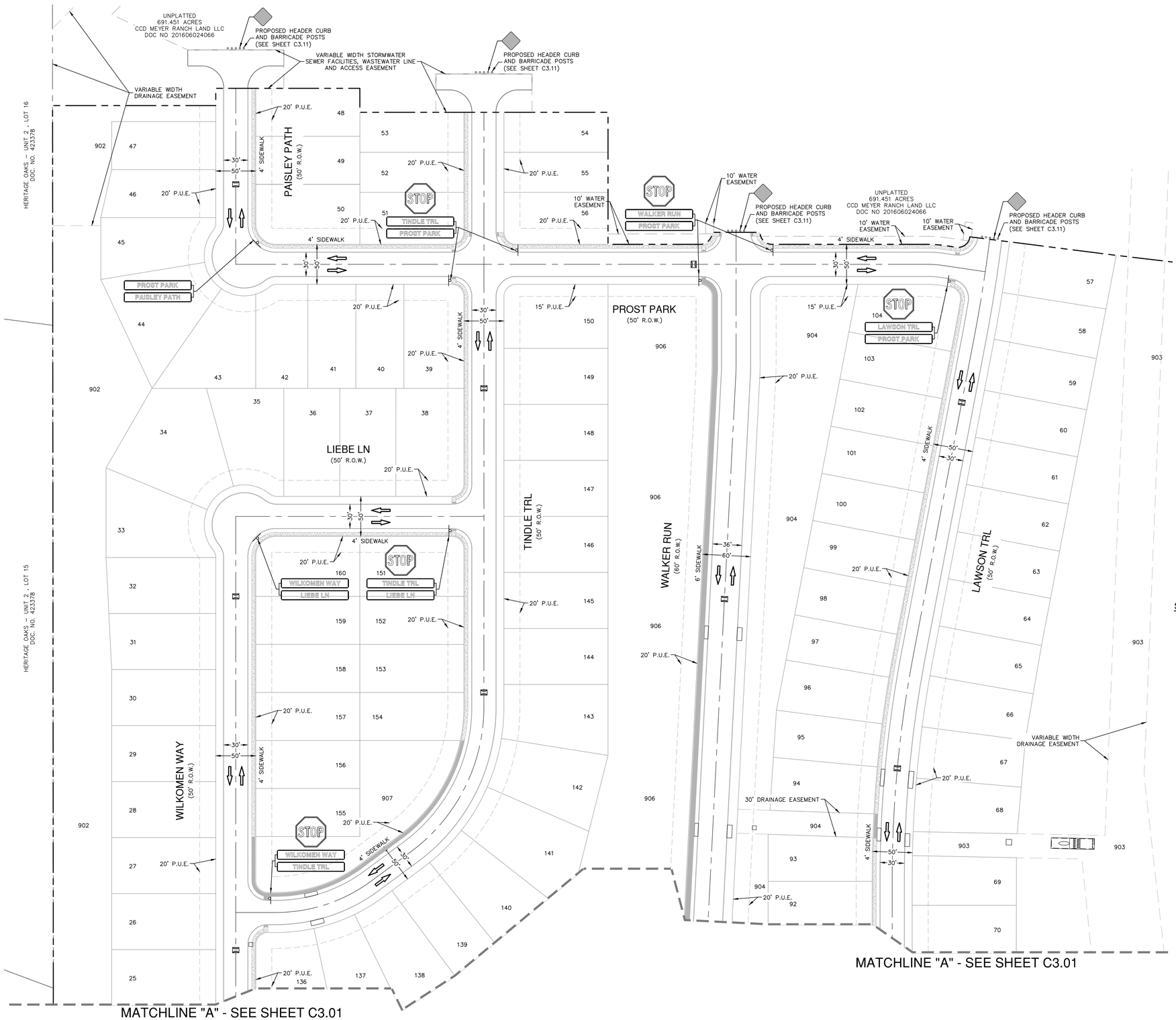
STATE OF TEXAS
TODD W. BLACKMON
89208
LICENSED
PROFESSIONAL ENGINEER
12 - 27 - 2024

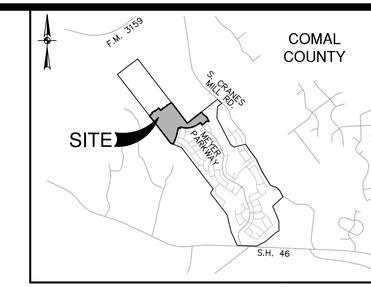
PAPE-DAWSON ENGINEERS
1672 INDEPENDENCE DR, STE 102 I NEW BRAUNFELS, TX 78132 I 830.632.5633
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

MEYER RANCH UNIT 16
COMAL COUNTY, TEXAS
TREE PROTECTION DETAILS

PLAT NO.
JOB NO. 30010-27
DATE DECEMBER 2024
DESIGNER CL
CHECKED HF DRAWN BH
SHEET C2.22

FOR PERMIT





LOCATION MAP

NOT-TO-SCALE

SCALE: 1"= 60'

0' 60' 120' 180'

SYMBOL		ITEM NUMBER
	UNIT BOUNDARY	
	CURB INLET	
	TRAFFIC FLOW ARROW	
	SIDEWALK (HOMEBUILDER RESPONSIBILITY)	
	SIDEWALK (SITEWORK CONTRACTOR RESPONSIBILITY)	
Street Name	STANDARD COMAL COUNTY NAME SIGN 9XSTD (NOTE: STREETS MUST SHOW BLOCK NUMBERS)	
SPEED LIMIT 30	R2-1 24X30	
STOP	R1-1 30"X30"	531.3
	W11-2 30"X30"	531.53
	OM4-3 (531.56) END OF ROAD MARKER	
	TYPE II BLUE RAISED PAVEMENT MARKERS – NO SEPARATE PAY ITEM (N.T.S.)	

SIGNAGE NOTES

1. UNDERGROUND UTILITIES EXIST WITHIN THE PROJECT. CONTRACTOR SHALL HAVE THE UTILITIES MARKED PRIOR TO INSTALLATION OF THE SIGN POST. SIGN LOCATIONS ILLUSTRATED ON THE PLANS ARE APPROXIMATE. CONTRACTOR SHALL LOCATE SIGNS TO AVOID UTILITIES. CONTRACTOR IS RESPONSIBLE FOR DETERMINING THE EXISTENCE AND LOCATION OF UNDERGROUND UTILITIES BEFORE COMMENCING WORK.
2. IN ACCORDANCE WITH THE UNDERGROUND FACILITY DAMAGE PREVENTION ACT THE TELEPHONE NUMBER FOR A UTILITY LOCATOR IS 1-800-545-6005. IT IS THE CONTRACTOR'S RESPONSIBILITY TO MAKE ARRANGEMENTS FOR UTILITY LOCATORS, AS NEEDED.
3. WHEN PREPARING HOLES FOR POSTS, CARE SHALL BE TAKEN SO AS NOT TO RUPTURE EXISTING DRAINAGE STRUCTURES, SPRINKLER SYSTEMS, TELECOMMUNICATIONS FACILITIES, ELECTRICAL CONDUITS AND PUBLIC UTILITIES.
4. ALL SIGNS SHALL COMPLY WITH THE SIGN DESIGNS PRESENTED IN STANDARD HIGHWAY SIGN DESIGNS FOR TEXAS OR THE MILLENNIUM STANDARD HIGHWAY SIGN DESIGNS, IF A MILLENNIUM SIGN IS SPECIFIED ON THE PLANS.
5. SIGN LOCATIONS ILLUSTRATED ON THE PLANS ARE APPROXIMATE. SIGNS SHALL BE LOCATED IN THE FIELD TO PROVIDE APPROPRIATE FUNCTIONALITY. SIGN LOCATIONS SHALL COMPLY WITH GUIDELINES AND REQUIREMENTS PRESENTED IN THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.
6. CONTRACTOR SHALL FURNISH AND MAINTAIN ALL TRAFFIC CONTROL DEVICES, LIGHTING, OR WARNING DEVICES REQUIRED TO COMPLETE THE WORK. ALL CONSTRUCTION SIGNS AND TRAFFIC CONTROL DEVICES SHALL CONFORM TO THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.
7. MATERIALS FURNISHED BY THE CONTRACTOR SHALL BE NEW, UN-DEPRECIATED STOCK. ALL EQUIPMENT SHALL BE NEW, UNLESS NOTED OTHERWISE ON THE PLANS.
8. ALL SIGNS WITH A WHITE BACKGROUND SHALL BE FABRICATED WITH ENGINEER GRADE REFLECTIVE SHEETING (TXDOT TYPE A). ALL SIGNS WITH NON-WHITE BACKGROUNDS SHALL BE FABRICATED WITH HIGH SPECIFIC INTENSITY REFLECTIVE SHEETING (ALL TYPE C TXDOT TSP-(4)-08).
9. CONTRACTOR SHALL BE RESPONSIBLE FOR RESTORING TO ORIGINAL CONDITION, OR BETTER, ANY DAMAGE DONE TO EXISTING BUILDINGS, RETAINING WALLS, UTILITIES, FENCES, PAVEMENT, CURBS OR DRIVEWAYS (NO SEPARATE PAY ITEM). CONTRACTOR SHALL RESTORE THE CONSTRUCTION AREA TO ORIGINAL CONDITION, OR BETTER, PRIOR TO FINAL INSPECTION.
10. ANY CONFLICT BETWEEN ANY DEFINITION, MATERIAL SPECIFICATION, CONSTRUCTION SPECIFICATION, MEASUREMENT AND PAYMENT PROCEDURE, ETC., SHOWN IN THIS PLAN SET AND ANY TEXAS DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS SHALL BE RESOLVED ONLY BY THE ENGINEER AND THE ENGINEER'S DECISION SHALL BE FINAL AND BINDING.
11. ALL PAVEMENT MARKINGS SHALL BE THERMOPLASTIC AS PER TXDOT ITEM NO. 666.
12. COMAL COUNTY WILL INSTALL COUNTY ROAD SIGNS AND INVOICE THE OWNER. THE CONTRACTOR IS TO INSTALL PAVEMENT MARKINGS. ALL ROAD SIGNS AND PAVEMENT MARKINGS SHALL BE INSTALLED IN ACCORDANCE WITH THE APPROVED ENGINEERING PLANS. THE COUNTY WILL INSPECT ALL SIGNS AT FINAL INSPECTION.
13. THE CONTRACTOR SHALL INSTALL ALL PAVEMENT MARKINGS IN ACCORDANCE WITH APPROVED ENGINEERING PLANS. THE CONTRACTOR SHALL NOTIFY THE COUNTY AT LEAST 24 HOUR PRIOR TO THE INSTALLATION OF ALL SEALER AND FINAL MARKINGS. THE COUNTY WILL INSPECT ALL MARKINGS AT FINAL APPLICATION.

TRENCH EXCAVATION SAFETY PROTECTION:

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

NO.	REVISION	DATE

STATE OF TEXAS
TODD W. BLACKMON
89208
LICENSED PROFESSIONAL ENGINEER
12-27-2024

PAPE-DAWSON ENGINEERS
1672 INDEPENDENCE DR, STE 102 I NEW BRAUNFELS, TX 78132 I 830.632.5633
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

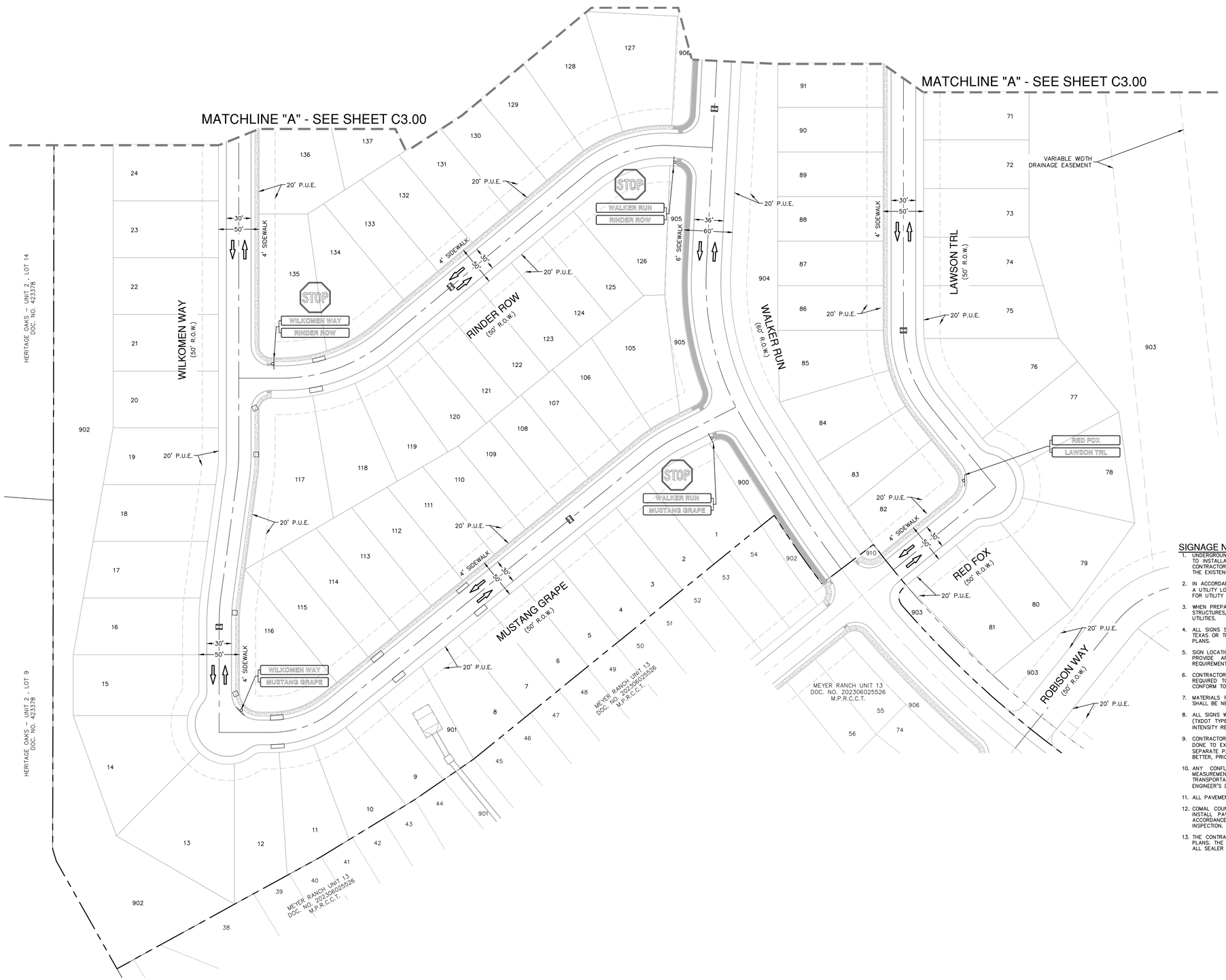
MEYER RANCH UNIT 16

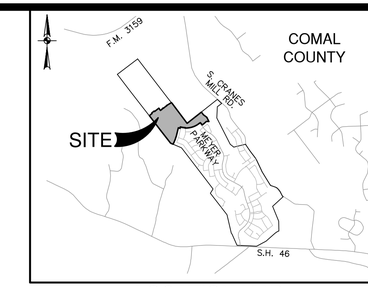
COMAL COUNTY, TEXAS

OVERALL SIGNAGE PLAN

PLAT NO.
JOB NO. 30010-27
DATE DECEMBER 2024
DESIGNER CL
CHECKED HF DRAWN BH
SHEET C3.00

FOR PERMIT





LOCATION MAP

NOT-TO-SCALE

SCALE: 1"= 60'

0' 60' 120' 180'

SYMBOL		ITEM NUMBER
	UNIT BOUNDARY	
	CURB INLET	
	TRAFFIC FLOW ARROW	
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SIGNAGE NOTES

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9. CONTRACTOR SHALL BE RESPONSIBLE FOR RESTORING TO ORIGINAL CONDITION, OR BETTER, ANY DAMAGE DONE TO EXISTING BUILDINGS, RETAINING WALLS, UTILITIES, FENCES, PAVEMENT, CURBS OR DRIVEWAYS (NO SEPARATE PAY ITEM). CONTRACTOR SHALL RESTORE THE CONSTRUCTION AREA TO ORIGINAL CONDITION, OR BETTER, PRIOR TO FINAL INSPECTION.
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11. ALL PAVEMENT MARKINGS SHALL BE THERMOPLASTIC AS PER TXDOT ITEM NO. 666.
12. COMAL COUNTY WILL INSTALL COUNTY ROAD SIGNS AND INVOICE THE OWNER. THE CONTRACTOR IS TO INSTALL PAVEMENT MARKINGS. ALL ROAD SIGNS AND PAVEMENT MARKINGS SHALL BE INSTALLED IN ACCORDANCE WITH THE APPROVED ENGINEERING PLANS. THE COUNTY WILL INSPECT ALL SIGNS AT FINAL INSPECTION.
13. THE CONTRACTOR SHALL INSTALL ALL PAVEMENT MARKINGS IN ACCORDANCE WITH APPROVED ENGINEERING PLANS. THE CONTRACTOR SHALL NOTIFY THE COUNTY AT LEAST 24 HOUR PRIOR TO THE INSTALLATION OF ALL SEALER AND FINAL MARKINGS. THE COUNTY WILL INSPECT ALL MARKINGS AT FINAL APPLICATION.

TRENCH EXCAVATION SAFETY PROTECTION:

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

NO.	REVISION	DATE

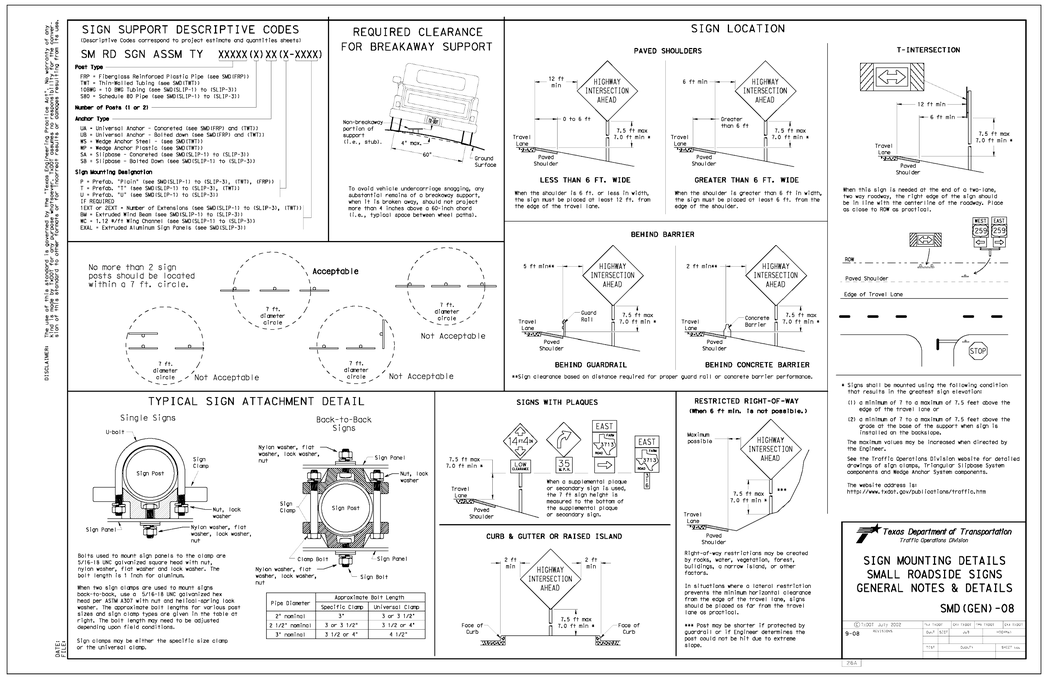
STATE OF TEXAS
TODD W. BLACKMON
89208
LICENSED
PROFESSIONAL ENGINEER
4-24-2025

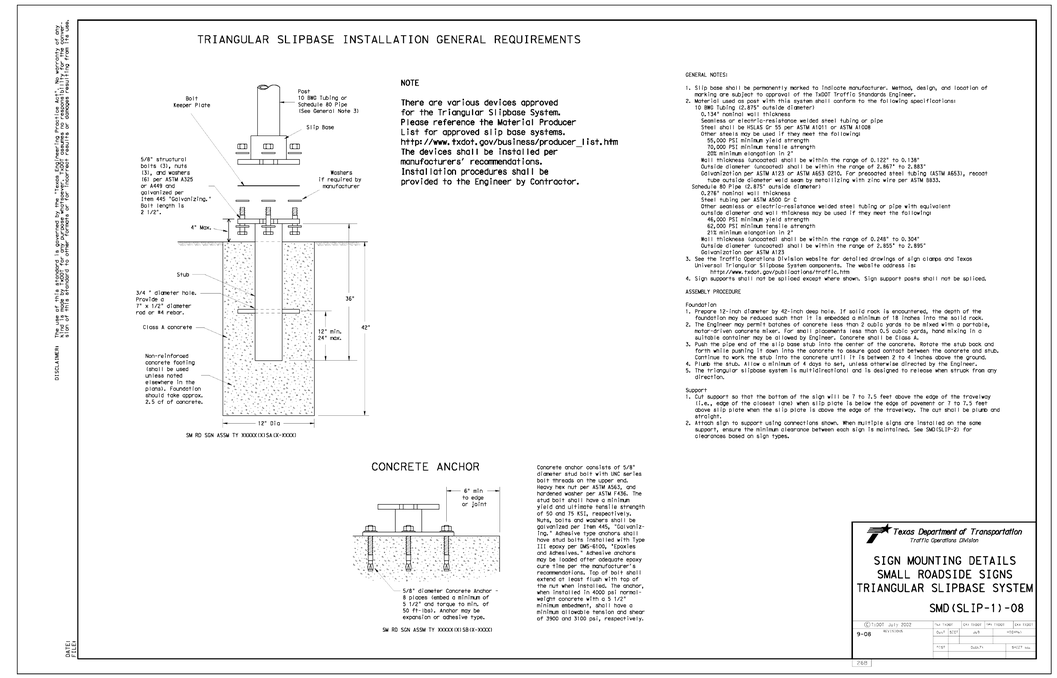
PAPE-DAWSON ENGINEERS
1672 INDEPENDENCE DR, STE 102 | NEW BRAUNFELS, TX 78132 | 830.632.5633
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

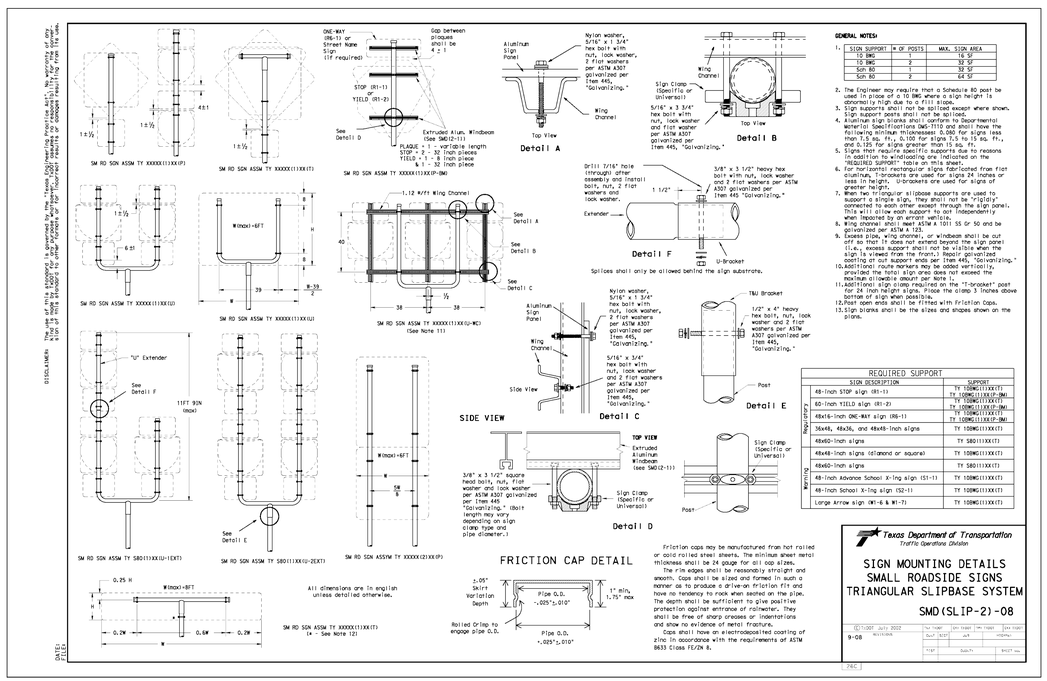
MEYER RANCH UNIT 16
COMAL COUNTY, TEXAS
OVERALL SIGNAGE PLAN

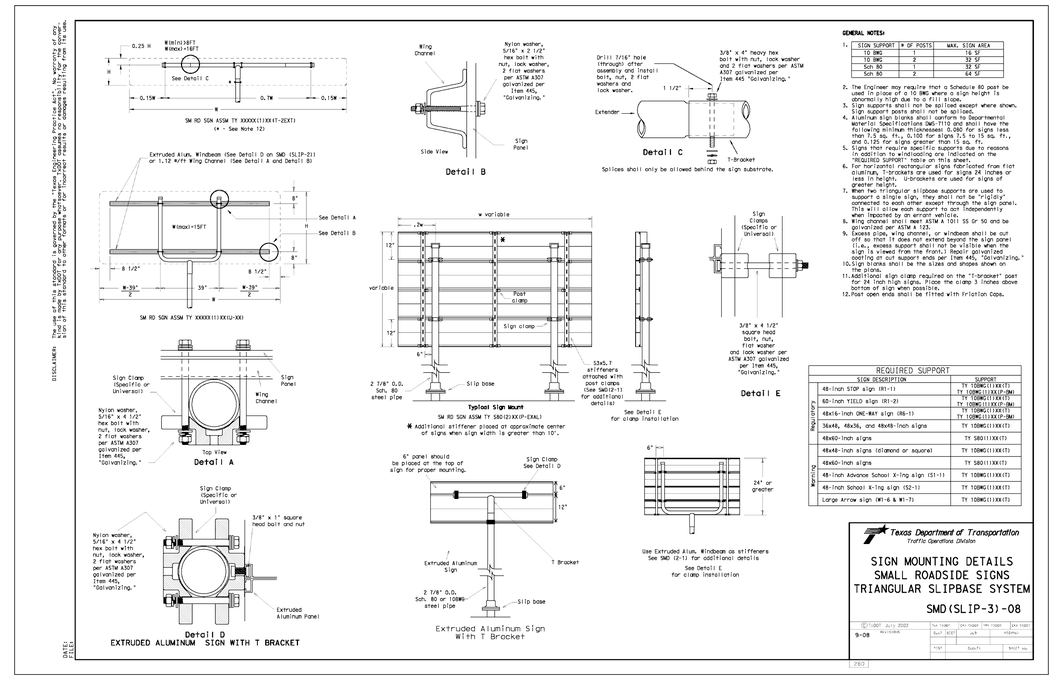
PLAT NO. _____
JOB NO. 30010-27
DATE DECEMBER 2024
DESIGNER CL
CHECKED HF DRAWN BH
SHEET C3.01

FOR PERMIT









NO.	REVISION	DATE

12-27-2024
STATE OF TEXAS
TODD W. BLACKMON
89208
LICENSED
PROFESSIONAL ENGINEER

PAPE-DAWSON ENGINEERS
1672 INDEPENDENCE DR, STE 102 | NEW BRAUNFELS, TX 78132 | 830.632.5603
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

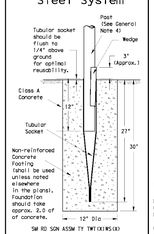
MEYER RANCH UNIT 16
COMAL COUNTY, TEXAS
TXDOT SIGN MOUNTED DETAILS

PLAT NO.
JOB NO. 30010-27
DATE DECEMBER 2024
DESIGNER CL
CHECKED HF DRAWN BH
SHEET C3.10

FOR PERMIT

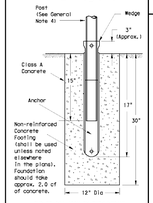
Date: Dec 17, 2024, 11:24am User ID: AlaeddyFile: P:\30010\27\Design\Civil\SGDT-3001027.dwg

Wedge Anchor Steel System



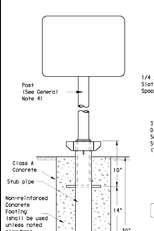
SM RD SGN ASSM TY TWT(X)WS(X)

Wedge Anchor High Density Polyethylene (HDPE) System

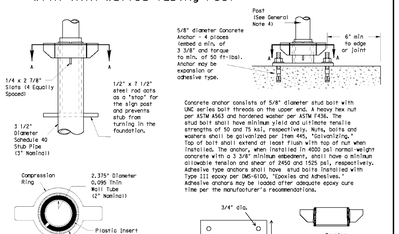


SMD RD SGN ASSM TY TWT(X)WF(X)

Universal Anchor System with Thin-Walled Tubing Post

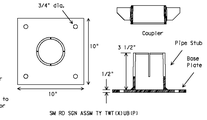


SM RD SGN ASSM TY TWT(X)A(P)



Plastic Insert must be used when using the TWT with either the Universal Anchor System or the Bolt Down Universal Anchor System. The Insert should be approx. 10" long and cover the tubing from just above the top of the stub pipe to the bottom of the sign post when using the Universal Anchor System. The Insert should be cut to approx. 4 1/2" when used with the Bolt Down Universal Anchor System.

Concrete anchor consists of 5/8" diameter stud bolt with UNC series bolt threads on the upper end. A heavy hex nut per ASTM A563 and hardened washer per ASTM F436. The stud bolt shall have minimum yield and ultimate tensile strengths of 50 and 75 ksi, respectively. Nuts, bolts and washers shall be galvanized per Item 445, "Galvanizing." Top of bolt shall extend at least flush with top of nut when installed. The anchor, when installed in 4000 psi normal-weight concrete with a 3 3/8" minimum embedment, shall have a minimum allowable tension and shear of 2450 and 1525 psi, respectively. Adhesive type anchors shall have stud bolts installed with Type III epoxy per DMS-6100, "Epoxies and Adhesives." Adhesive anchors may be loaded after adequate epoxy cure time per the manufacturer's recommendations.



SM RD SGN ASSM TY TWT(X)B(P)

GENERAL NOTES:

1. The Wedge Anchor System and the Universal Anchor System with thin wall tubing post may be used to support up to 10 square feet of sign area.
2. The tubular socket, wedge and prefabricated T-bracket shall be permanently marked to indicate manufacturer. Method, design, and location of marking are subject to the approval of the TxDOT Traffic Standards Engineer.
3. Except for posts (13 BWG Tubing), clamps, nuts and bolts, all components shall be prequalified. A list of prequalified vendors may be obtained from the Material Producer List web page. The website address is:
   http://www.txdot.gov/business/producer list.htm
4. Material used as post with this system shall conform to the following specifications:
   13 BWG Tubing (2.375" outside diameter) (TWT)
   0.095" nominal wall thickness
   Seamless or electric-resistance welded steel tubing
   Steel shall be HSLAS Or SS per ASTM A1011 or ASTM A1008
   Other steels may be used if they meet the following:
   55,000 PSI minimum yield strength
   70,000 PSI minimum tensile strength
   22 % minimum elongation
   Wall thickness (uncoated) shall be within the range of .083" to .095"
   Outside diameter (uncoated) shall be within the range of 2.369" to 2.381"
   Galvanization per ASTM I23 or ASTM A653 G210. For prepainted steel tubing (ASTM A653), precoat tube outside diameter weld seam by metallizing with zinc wire per ASTM B833.
5. Sign planks shall be the sizes and shapes shown on the plans.
6. Additional sign clamp required on the "T-bracket" post for 24" high signs. Place clamp at least 3" above bottom of sign when possible.
7. Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.
8. See the Traffic Operations Division website for detailed drawings of sign clamps and Wedge Anchor System components. The website address is:
   http://www.txdot.gov/publications/traffic.htm

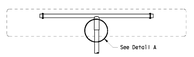
WEDGE ANCHOR SYSTEM INSTALLATION PROCEDURE

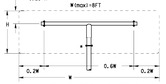
1. Dig foundation hole. Where solid rock is encountered at ground level, the foundation shall be a minimum depth of 18". When solid rock is encountered below ground level, the foundation shall extend in the solid rock a minimum depth of 18" or provide a minimum foundation depth of 30". If solid rock is encountered, the socket/stub may be reduced in length as required to a minimum length of 18". Any material removed from the socket/stub shall be from the bottom and the clearance requirements given on SMD(GEN) must be followed. The inner surfaces of the socket/stub must remain free of concrete or other debris.
2. The Engineer may permit batches of concrete less than 2 cubic yards to be mixed with a portable, motor driven concrete mixer. For small placements less than 0.5 cubic yards, hand mixing in a suitable container may be allowed by Engineer. Place concrete into hole until it is approximately flush with the ground. Concrete shall be Class A.
3. Insert tubular socket into concrete until top of socket is approximately 1/4 " above the concrete footing.
4. Plumb the socket. Allow a minimum 4 days for concrete to set, unless otherwise directed by Engineer..
5. Attach the sign to the sign post.
6. Insert the sign post into socket and align sign face with roadway.
7. Drive the wedge into the socket to secure post. This will leave approximately 3 inches of the wedge exposed.

UNIVERSAL ANCHOR SYSTEM INSTALLATION PROCEDURE

1. Dig foundation hole. Where solid rock is encountered at ground level, the foundation shall be a minimum depth of 18". When solid rock is encountered below ground level, the foundation shall extend in the solid rock a minimum depth of 18" or provide a minimum foundation depth of 30". If solid rock is encountered, the socket/stub may be reduced in length as required to a minimum length of 18". Any material removed from the socket/stub shall be from the bottom and the clearance requirements given on SMD(GEN) must be followed. The inner surfaces of the socket/stub must remain free of concrete or other debris.
2. Insert base post in hole to depths shown and backfill hole with concrete.
3. Level and plumb the base post using a torpedo level and allow concrete adequate time to set. The bottom of the slots provided in the stub pipe shall remain above the top of the concrete foundation.
4. Attach the sign to the sign post.
5. Install plastic insert around bottom of post.
6. Insert sign post into base post. Lower until the post comes to rest on steel rod.
7. Seat compression ring using a hammer. Typically, the top of compression ring will be approximately level with top of stub post when optimally installed.
8. Check sign post by hand to ensure it is unable to turn. If loose, increase the tightening of the compression ring.

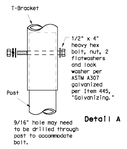
Sign Installation Using a Prefabricated T-Bracket for Thin-Walled Tubing Post





SM RD SGN ASSM TY TWT(X)X(X)T

(* - See General Note 6)



Detail A

NOTE

The devices shall be installed per manufacturer's recommendations.
Installation procedures shall be provided to the Engineer by Contractor.

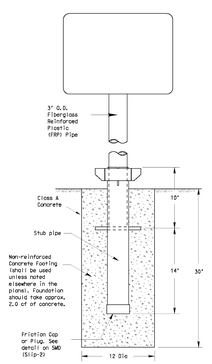
Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS
SMALL ROADSIDE SIGNS
WEDGE & UNIVERSAL ANCHOR
WITH THIN WALL TUBING POST

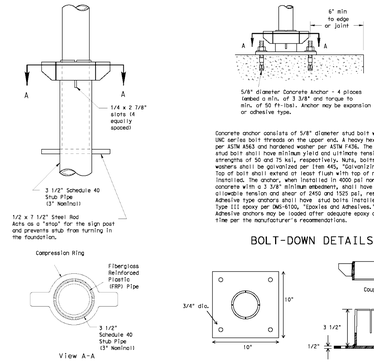
SMD(TWT)-08

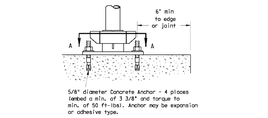
©TxDOT July 2022	CONT	SECT	JOB	HIGHWAY
9-08 REVISIONS	DIST	COUNTY		
	CSJ		SHEET NO.	

Universal Anchor System with Fiberglass Reinforced Plastic (FRP) Post



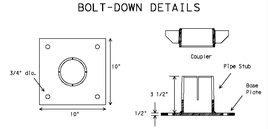
SM RD SGN ASSM TY FRP(X)UA(P)





Concrete anchor consists of 5/8" diameter stud bolt with UNC series bolt threads on the upper end. A heavy hex nut per ASTM A563 and hardened washer per ASTM F436. The stud bolt shall have minimum yield and ultimate tensile strengths of 50 and 75 ksi, respectively. Nuts, bolts and washers shall be galvanized per Item 445, "Galvanizing." Top of bolt shall extend at least flush with top of nut when installed. The anchor, when installed in 4000 psi normal-weight concrete with a 3 3/8" minimum embedment, shall have a minimum allowable tension and shear of 2450 and 1525 psi, respectively. Adhesive type anchors shall have stud bolts installed with Type III epoxy per DMS-6100, "Epoxies and Adhesives." Adhesive anchors may be loaded after adequate epoxy cure time per the manufacturer's recommendations.

BOLT-DOWN DETAILS



SM RD SGN ASSM TY FRP(X)UB(P)

GENERAL NOTES:

1. FRP sign supports for a single type sign support may be used for signs up to and including 16 square feet. Dual post installation may be used for signs up to and including 32 square feet.
2. All nuts, bolts and washers shall be galvanized per Item 445, "Galvanizing."
3. See the Traffic Operations Division website for detailed drawings of sign clamps. The website address is:
   http://www.txdot.gov/publications/traffic.htm

FRP POST REQUIREMENTS

1. Waterface shall conform to the requirements of Departmental Material Specification DMS-6410 and will be furnished in a yellow or grey color as specified/assumed in the plans.
2. Thickness of FRP sign support is 0.125" + 0.031", - 0.0".
3. FRP sign supports are prequalified by the Traffic Operations Division. Prequalification procedures are obtained by writing:
   Texas Department of Transportation
   Traffic Operations Division
   125 East 11th Street
   Austin, Texas 78701-2483

UNIVERSAL ANCHOR SYSTEM INSTALLATION PROCEDURES

1. Dig foundation hole. Where solid rock is encountered at ground level, the foundation shall be a minimum depth of 18". When solid rock is encountered below ground level, the foundation shall extend in the solid rock a minimum depth of 18" or provide a minimum foundation depth of 30". If solid rock is encountered, the socket/stub may be reduced in length as required to a minimum length of 18". Any material removed from the socket/stub shall be from the bottom and the clearance requirements given on SMD(GEN) must be followed. The inner surfaces of the socket/stub must remain free of concrete or other debris.
2. The Engineer may permit batches of concrete less than 2 cubic yards to be mixed with a portable, motor driven concrete mixer. For small placements less than 0.5 cubic yards, hand mixing in a suitable container may be allowed by Engineer. Concrete shall be Class A.
3. Insert base post in foundation hole to depths shown and fill hole with concrete. Cut base post from bottom and ensure a minimum of 18" embedment if installed in solid rock.
4. Level and plumb the base post with coupler using a torpedo level and let concrete set a minimum of 4 days, unless otherwise directed by Engineer. Bottom of base post slots shall be above the concrete footing.
5. Attach sign to FRP post.
6. Insert sign post into base post. Lower until the post comes to rest on the steel rod.
7. Use hammer to ensure the coupler is firmly seated. Top of coupler should be level with top of base post in most instances.
8. Check sign to ensure there is no twist. If loose, increase the tightening of coupler.

BOLT DOWN SIGN SUPPORT

1. Position base plate with coupler on existing concrete.
2. Drill holes into concrete and insert the 5/8" diameter bolts with wedge anchors, and tighten nuts.
3. Attach sign to FRP post.
4. Insert bottom of sign post into pipe stub.
5. Use hammer to ensure the coupler is firmly seated. Top of coupler should be level with top of base post in most instances.
6. Check sign to ensure there is no twist. If loose, increase the tightening of coupler.

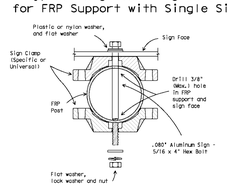
Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS
SMALL ROADSIDE SIGNS
UNIVERSAL ANCHOR SYSTEM
WITH FRP POST

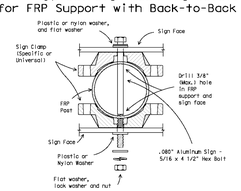
SMD(FRP)-08

©TxDOT July 2022	CONT	SECT	JOB	HIGHWAY
9-08 REVISIONS	DIST	COUNTY		
	CSJ		SHEET NO.	

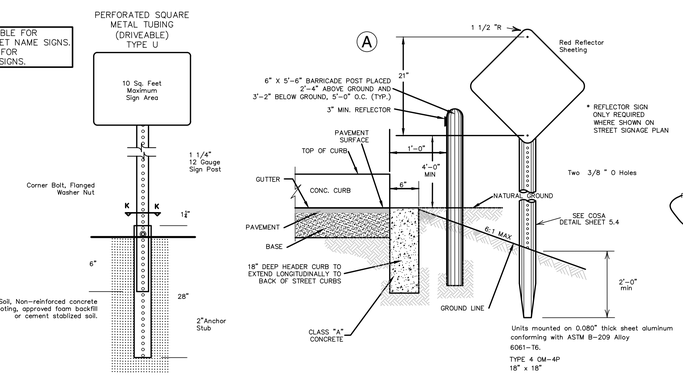
Typical Sign Mounting Detail for FRP Support with Single Sign



Typical Sign Mounting Detail for FRP Support with Back-to-Back Signs



NOTE: CONTRACTOR IS RESPONSIBLE FOR PROVIDING AND INSTALLING STREET NAME SIGNS. COMAL COUNTY IS RESPONSIBLE FOR REGULATORY SIGNS AND OTHER SIGNS.



BARRICADE POST AND HEADER CURB DETAIL

NOT TO SCALE

NO.	REVISION	DATE

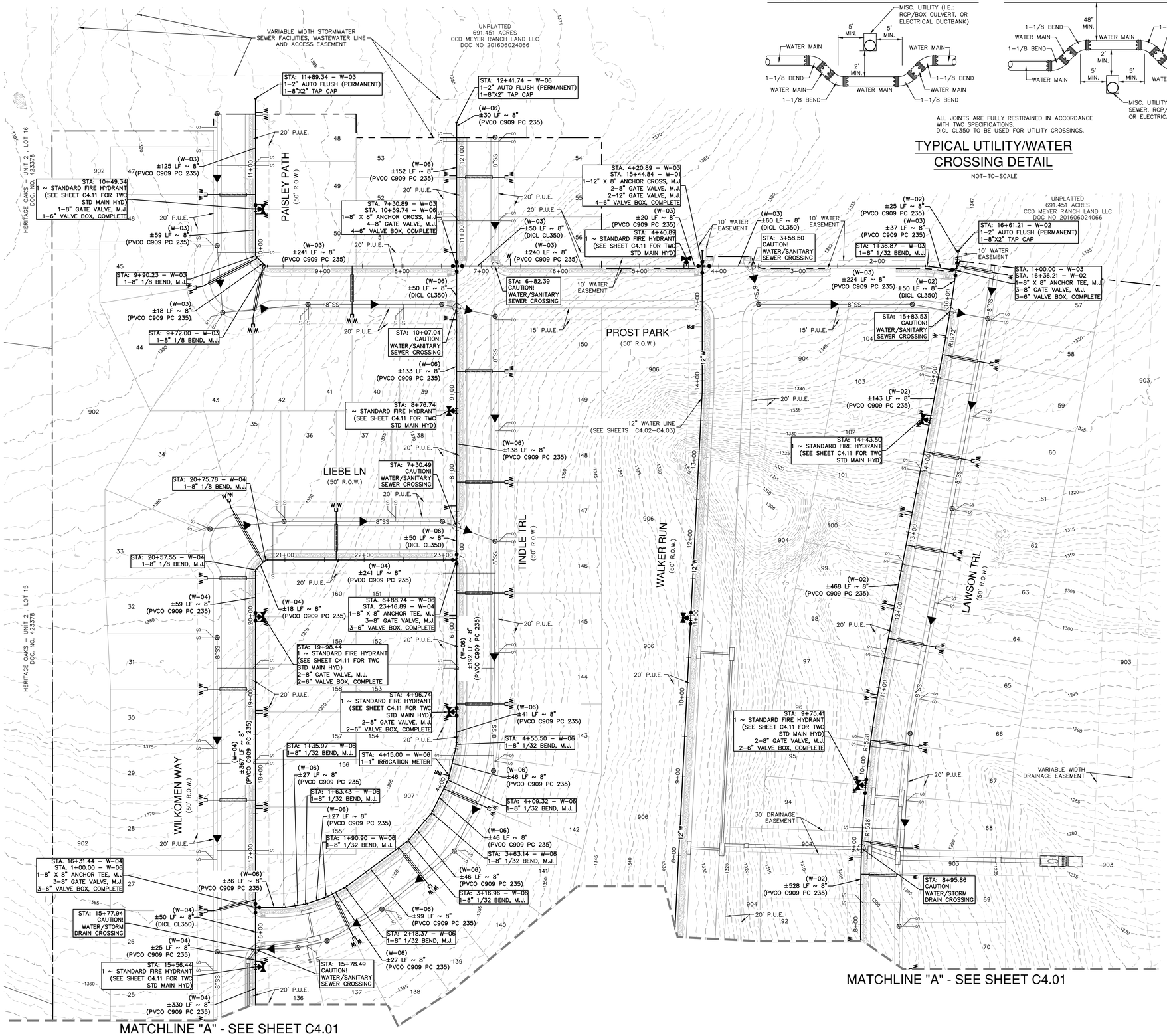
STATE OF TEXAS
TODD W. BLACKMON
89208
LICENSED PROFESSIONAL ENGINEER
12-27-2024

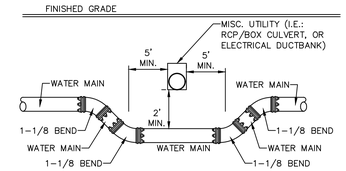
PAPE-DAWSON ENGINEERS
1672 INDEPENDENCE DR, STE 102 I NEW BRAUNFELS, TX 78132 I 830.632.5633
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

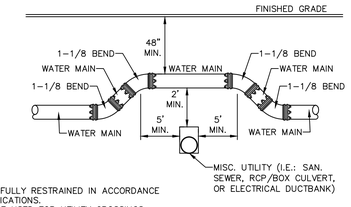
MEYER RANCH UNIT 16
COMAL COUNTY, TEXAS
TXDOT SIGN MOUNTED DETAILS

PLAT NO.
JOB NO. 30010-27
DATE DECEMBER 2024
DESIGNER CL
CHECKED HF DRAWN BH
SHEET C3.11

FOR PERMIT



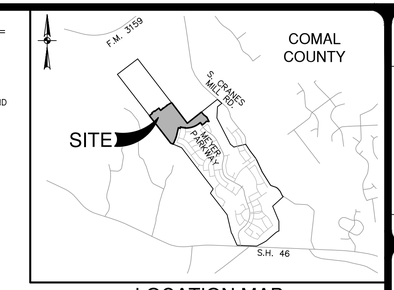




ALL JOINTS ARE FULLY RESTRAINED IN ACCORDANCE WITH TWC SPECIFICATIONS.
DICL CL350 TO BE USED FOR UTILITY CROSSINGS.

TYPICAL UTILITY/WATER CROSSING DETAIL

NOT–TO–SCALE



LOCATION MAP

NOT–TO–SCALE

SCALE: 1"= 60'
0' 60' 120' 180'

WATER LEGEND

- PROJECT LIMITS
- EXISTING WATER — FIRE HYDRANT — W
- EXISTING REUSE WATER — REUSE
- EXISTING SEWER — SS
- PROPOSED SEWER — SS — MANHOLE
- PROPOSED WATER — FIRE HYDRANT — W
- PROPOSED 1" SINGLE SERVICE
- PROPOSED 1.5" DUAL SERVICE
- SINGLE IRRIGATION SERVICE (REF. PLAN VIEW FOR SIZE) — IRR
- JOINT RESTRAINT
- PVC SLEEVE
- PUBLIC UTILITY EASEMENT — P.U.E.
- PROPOSED STORM DRAIN

NOTES

1. ALL WATER AND WASTEWATER SERVICES AND VALVE LOCATIONS SHALL BE MARKED AS FOLLOWS:
   - WATER SERVICE– "W" ON TOP OF CURB
   - WASTEWATER SERVICE– "S" ON TOP OF CURB
   - VALVE– "V" ON FACE OF CURB
2. MARKS SHALL BE MADE DURING CONCRETE PLACEMENT WHEN POSSIBLE. TOOLS FOR CURB MARKINGS SHALL BE PURPOSE BUILT AND PRODUCE MARKINGS THAT ARE CLEAR AND MINIMIZE POTENTIAL FOR SPALLING.

PIPE RESTRAINTS NOTE:

CONTRACTOR TO RESTRAIN ALL PIPE JOINTS AND FITTINGS IN ACCORDANCE WITH SECTION 7 OF THE TEXAS WATER COMPANY GENERAL NOTES.

TRENCH EXCAVATION SAFETY PROTECTION:

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

CAUTION!!

CONTRACTOR SHALL BE REQUIRED TO LOCATE ALL PUBLIC OR PRIVATE UTILITIES INCLUDING BUT NOT LIMITING TO: WATER, SEWER, TELEPHONE AND FIBER OPTIC LINES, SITE LIGHTING ELECTRIC, SECONDARY ELECTRIC, PRIMARY ELECTRICAL DUCTBANKS, LANDSCAPE IRRIGATION FACILITIES, AND GAS LINES. ANY UTILITY CONFLICTS THAT ARISE SHOULD BE COMMUNICATED TO THE ENGINEER IMMEDIATELY AND PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL CONTACT 1–800–DIG–TESS A MINIMUM OF 48 HOURS PRIOR TO THE START OF CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND THE REPAIR SHALL BE AT CONTRACTOR'S SOLE EXPENSE WHETHER THE UTILITY IS SHOWN ON THESE PLANS OR NOT.

NO.	REVISION	DATE

1–10–2025
STATE OF TEXAS
TODD W. BLACKMON
89208
LICENSED
PROFESSIONAL ENGINEER

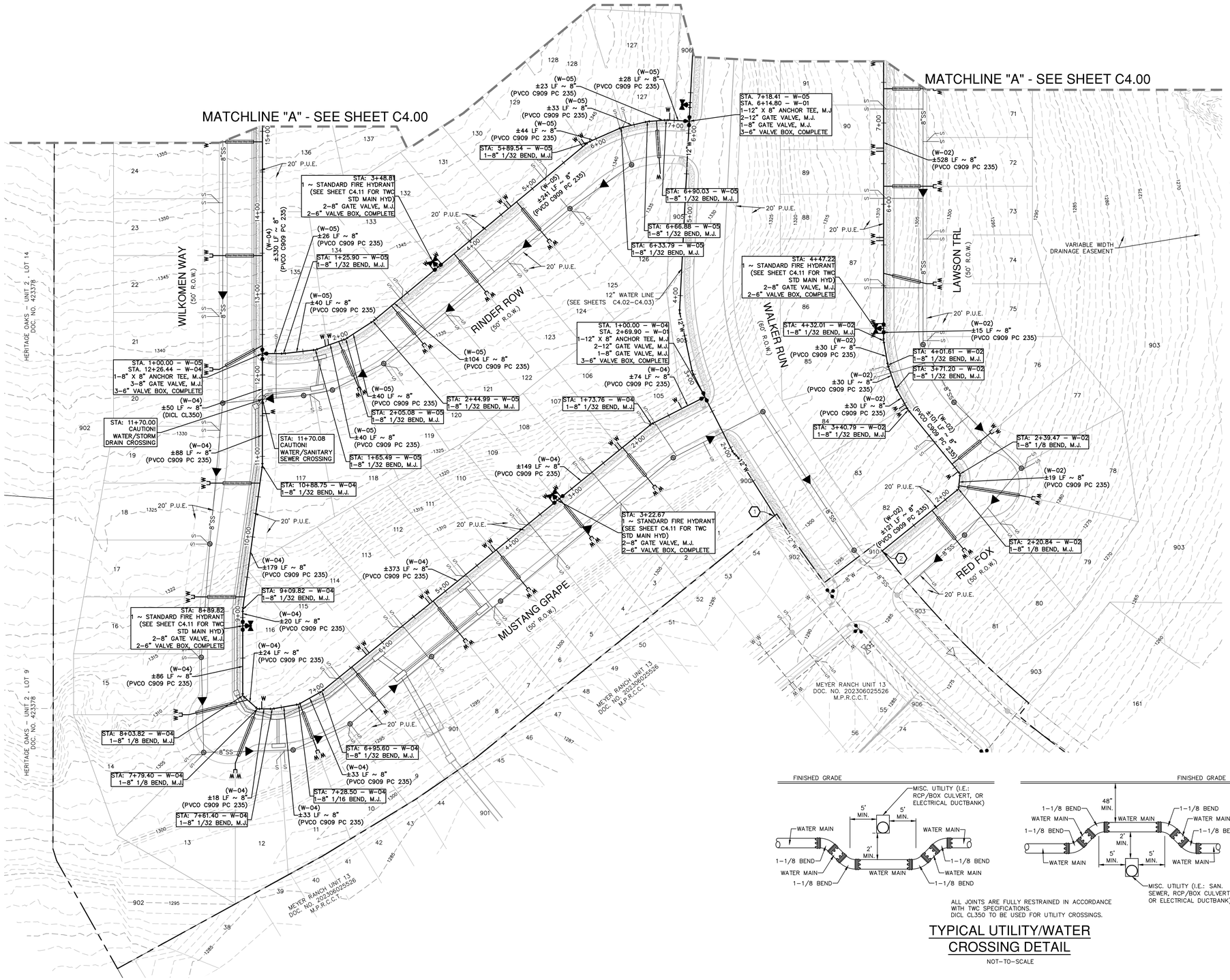
PAPE-DAWSON ENGINEERS
1672 INDEPENDENCE DR, STE 102 I NEW BRAUNFELS, TX 78132 I 830.632.5633
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

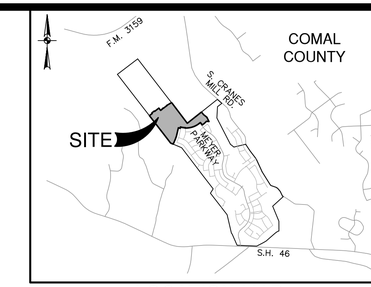
MEYER RANCH UNIT 16
COMAL COUNTY, TEXAS
OVERALL WATER DISTRIBUTION PLAN

PLAT NO.
JOB NO. 30010–27
DATE DECEMBER 2024
DESIGNER CL
CHECKED HF DRAWN BH
SHEET C4.00

FOR PERMIT

Date: Jan 10, 2025, 2:29pm User ID: bhurkett
File: P:\300\10\27\Design\Civil\WTGA–3001027.dwg





LOCATION MAP

NOT-TO-SCALE

SCALE: 1"= 60'
0' 60' 120' 180'

WATER LEGEND

PROJECT LIMITS	
EXISTING WATER	FIRE HYDRANT, W
EXISTING REUSE WATER	REUSE
EXISTING SEWER	SS, MANHOLE
PROPOSED SEWER	SS
PROPOSED WATER	FIRE HYDRANT, W
PROPOSED 1" SINGLE SERVICE	
PROPOSED 1.5" DUAL SERVICE	
SINGLE IRRIGATION SERVICE (REF. PLAN VIEW FOR SIZE)	IRR
JOINT RESTRAINT	
PVC SLEEVE	
PUBLIC UTILITY EASEMENT	P.U.E.
PROPOSED STORM DRAIN	

1. 12" VALVE SHALL REMAIN CLOSED UNTIL NEW MAINS HAVE BEEN DISINFECTED BY CONTRACTOR AND ACCEPTED BY TWC
   CONTRACTOR SHALL TIE PROPOSED 12" MAIN TO EXISTING 12" PVCO C-900 PC 235 MAIN AFTER DISINFECTION BY CONTRACTOR AND ACCEPTANCE BY TWC
   1-2" GALVANIZED TEMPORARY FLUSH
   CONTRACTOR SHALL PERFORM HYDROSTATIC TEST PER TWC REQUIREMENTS

2. 8" VALVE SHALL REMAIN CLOSED UNTIL NEW MAINS HAVE BEEN DISINFECTED BY CONTRACTOR AND ACCEPTED BY TWC
   CONTRACTOR SHALL TIE PROPOSED 8" MAIN TO EXISTING 8" PVCO C-900 PC 235 MAIN AFTER DISINFECTION BY CONTRACTOR AND ACCEPTANCE BY TWC
   1-2" GALVANIZED TEMPORARY FLUSH
   CONTRACTOR SHALL PERFORM HYDROSTATIC TEST PER TWC REQUIREMENTS

NOTES

1. ALL WATER AND WASTEWATER SERVICES AND VALVE LOCATIONS SHALL BE MARKED AS FOLLOWS:
   - WATER SERVICE– "W" ON TOP OF CURB
   - WASTEWATER SERVICE– "S" ON TOP OF CURB
   - VALVE– "V" ON FACE OF CURB
2. MARKS SHALL BE MADE DURING CONCRETE PLACEMENT WHEN POSSIBLE. TOOLS FOR CURB MARKINGS SHALL BE PURPOSE BUILT AND PRODUCE MARKINGS THAT ARE CLEAR AND MINIMIZE POTENTIAL FOR SPALLING.

PIPE RESTRAINTS NOTE:

CONTRACTOR TO RESTRAIN ALL PIPE JOINTS AND FITTINGS IN ACCORDANCE WITH SECTION 7 OF THE TEXAS WATER COMPANY GENERAL NOTES.

TRENCH EXCAVATION SAFETY PROTECTION:

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

CAUTION!!

CONTRACTOR SHALL BE REQUIRED TO LOCATE ALL PUBLIC OR PRIVATE UTILITIES INCLUDING BUT NOT LIMITING TO: WATER, SEWER, TELEPHONE AND FIBER OPTIC LINES, SITE LIGHTING ELECTRIC, SECONDARY ELECTRIC, PRIMARY ELECTRICAL DUCTBANKS, LANDSCAPE IRRIGATION FACILITIES, AND GAS LINES. ANY UTILITY CONFLICTS THAT ARISE SHOULD BE COMMUNICATED TO THE ENGINEER IMMEDIATELY AND PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL CONTACT 1-800-DIG-TESS A MINIMUM OF 48 HOURS PRIOR TO THE START OF CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND THE REPAIR SHALL BE AT CONTRACTOR'S SOLE EXPENSE WHETHER THE UTILITY IS SHOWN ON THESE PLANS OR NOT.

ALL JOINTS ARE FULLY RESTRAINED IN ACCORDANCE WITH TWC SPECIFICATIONS.
DICL CL350 TO BE USED FOR UTILITY CROSSINGS.

TYPICAL UTILITY/WATER CROSSING DETAIL

NOT-TO-SCALE

NO.	REVISION	DATE

STATE OF TEXAS
TODD W. BLACKMON
89208
LICENSED PROFESSIONAL ENGINEER
1-10-2025

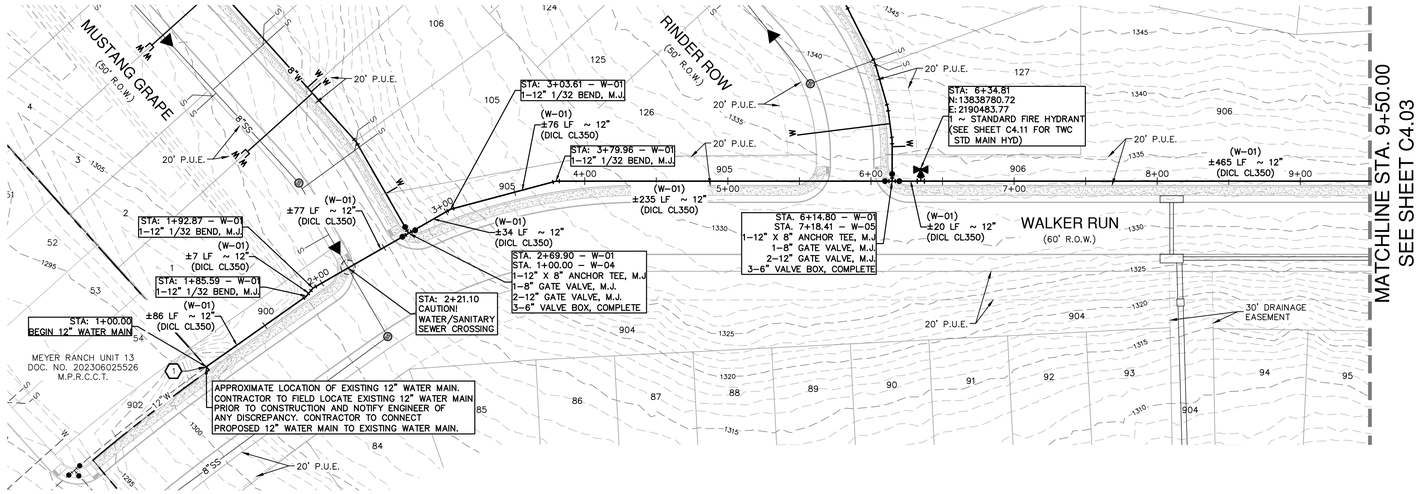
PAPE-DAWSON ENGINEERS
1672 INDEPENDENCE DR, STE 102 I NEW BRAUNFELS, TX 78132 I 830.632.5633
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

MEYER RANCH UNIT 16
COMAL COUNTY, TEXAS
OVERALL WATER DISTRIBUTION PLAN

PLAT NO.
JOB NO. 30010-27
DATE DECEMBER 2024
DESIGNER CL
CHECKED HF DRAWN BH
SHEET C4.01

FOR PERMIT

Date: Jan 10, 2025, 2:29pm User ID: bhurkett
File: P:\30010\27\Design\Civil\WTOA-30010027.dwg



SCALE: 1"= 50'
0' 50' 100' 150'

WATER LEGEND

PROJECT LIMITS	
EXISTING WATER	FIRE HYDRANT, W
EXISTING REUSE WATER	REUSE
EXISTING SEWER	SS, MANHOLE
PROPOSED SEWER	SS
PROPOSED WATER	FIRE HYDRANT, W
PROPOSED 1" SINGLE SERVICE	
PROPOSED 1.5" DUAL SERVICE	
SINGLE IRRIGATION SERVICE (REF. PLAN VIEW FOR SIZE)	IRR
JOINT RESTRAINT	
PVC SLEEVE	
PUBLIC UTILITY EASEMENT	P.U.E.
PROPOSED STORM DRAIN	

NOTE:
NORTHING & EASTINGS ARE SHOWN TO CENTER OF FIRE HYDRANTS.

NOTE:
FOR PAVEMENT DESIGN SECTION SEE GEOTECHNICAL ENGINEERING REPORT.

CAUTION!!!:
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UTILITY NOTES

1. NO VALVES, HYDRANTS, ETC. SHALL BE CONSTRUCTED WITHIN CURBS, SIDEWALKS, OR DRIVEWAYS.
2. ALL UTILITIES TO BE CONSTRUCTED PRIOR TO STREETS.
3. THIS PROJECT INCLUDES UTILITY INSTALLATIONS GREATER THAN 5–FEET IN DEPTH. DEEP TRENCHES POSE COMPACTION TESTING AND CONSTRUCTION CHALLENGES AND CITY METHODS FOR TESTING AND COMPACTION MAY NOT BE ACHIEVABLE. A UTILITY COMPACTION PLAN WILL BE REQUIRED AND MUST BE SUBMITTED FOR APPROVAL TO COUNTY PRIOR TO UTILITY INSTALLATION.
4. UTILITY TRENCH COMPACTION – ALL UTILITY TRENCH COMPACTION TESTS WITHIN THE STREET PAVEMENT/SIDEWALK SECTION SHALL BE THE RESPONSIBILITY OF THE DEVELOPER'S GEOTECHNICAL ENGINEER. FILL MATERIAL SHALL BE PLACED IN UNIFORM LAYERS NOT TO EXCEED TWELVE INCHES (12") LOOSE. DETERMINE THE MAXIMUM LIFT THICKNESS BASED ON THE ABILITY OF THE COMPACTING OPERATION AND EQUIPMENT USED TO MEET THE REQUIRED DENSITY. EACH LAYER OF MATERIAL SHALL BE COMPACTED TO A MINIMUM 95% DENSITY AND TESTED FOR DENSITY AND MOISTURE IN ACCORDANCE WITH TEST METHODS TEX–113–E, TEX–114–E, TEX–115–E. THE NUMBER AND LOCATION OF REQUIRED TESTS SHALL BE DETERMINED BY THE GEOTECHNICAL ENGINEER AND APPROVED BY THE COMAL COUNTY STREET INSPECTOR. AT A MINIMUM, TESTS SHALL BE TAKEN EVERY 200 LF FOR EACH LIFT AND EVERY OTHER SERVICE LINE. UPON COMPLETION OF TESTING THE GEOTECHNICAL ENGINEER SHALL PROVIDE THE COMAL COUNTY STREET INSPECTOR WITH ALL TESTING DOCUMENTATION AND A CERTIFICATION STATING THAT THE PLACEMENT OF FILL MATERIAL HAS BEEN COMPLETED IN ACCORDANCE WITH THE PLANS. ADDITIONAL DENSITY TESTS MAY BE REQUESTED BY THE COMAL COUNTY INSPECTOR.
5. ALL WATER AND WASTEWATER SERVICES AND VALVE LOCATIONS SHALL BE MARKED AS FOLLOWS:
   - WATER SERVICE– "W" ON TOP OF CURB
   - WASTEWATER SERVICE– "S" ON TOP OF CURB
   - VALVE– "V" ON FACE OF CURB
6. MARKS SHALL BE MADE DURING CONCRETE PLACEMENT WHEN POSSIBLE. TOOLS FOR CURB MARKINGS SHALL BE PURPOSE BUILT AND PRODUCE MARKINGS THAT ARE CLEAR AND MINIMIZE POTENTIAL FOR SPALLING.

JOINT RESTRAINT NOTE:
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TRENCH EXCAVATION SAFETY PROTECTION:
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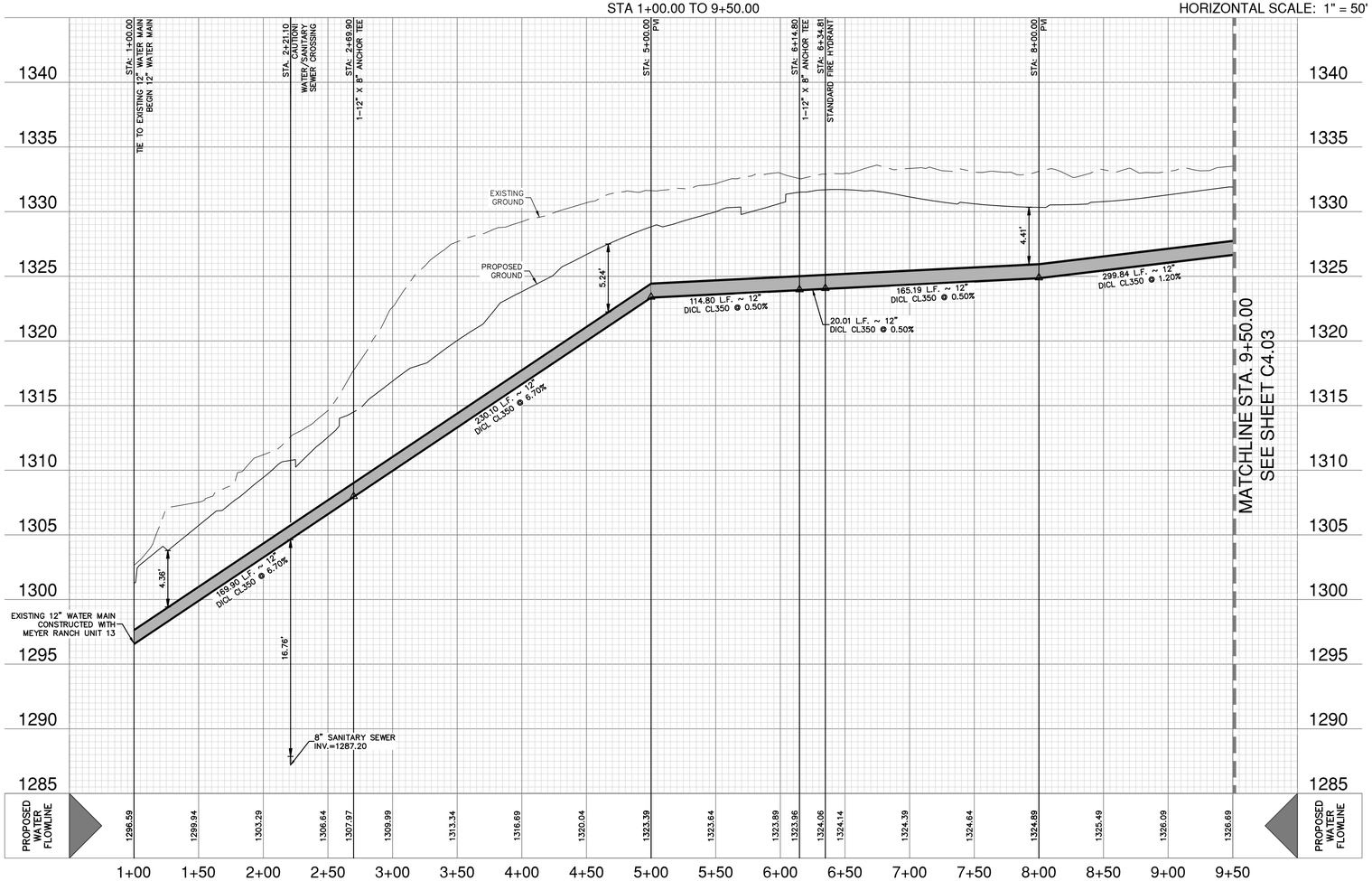
12" WATER MAIN "W-01"
STA 1+00.00 TO 9+50.00

VERTICAL SCALE: 1" = 5'
HORIZONTAL SCALE: 1" = 50'



7 — 12" VALVE SHALL REMAIN CLOSED UNTIL NEW MAINS HAVE BEEN DISINFECTED BY CONTRACTOR AND ACCEPTED BY TWC
— CONTRACTOR SHALL TIE PROPOSED 12" MAIN TO EXISTING 12" PVCO C–900 PC 235 MAIN AFTER DISINFECTION BY CONTRACTOR AND ACCEPTANCE BY TWC
— 1–2" GALVANIZED TEMPORARY FLUSH
— CONTRACTOR SHALL PERFORM HYDROSTATIC TEST PER TWC REQUIREMENTS

NO.	REVISION	DATE

STATE OF TEXAS
TODD W. BLACKMON
89208
LICENSED
PROFESSIONAL ENGINEER
1–10–2025

PAPE-DAWSON ENGINEERS
1672 INDEPENDENCE DR, STE 102 I NEW BRAUNFELS, TX 78132 I 830.632.5633
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

MEYER RANCH UNIT 16
COMAL COUNTY, TEXAS
12 INCH WATER MAIN W-01 - PLAN & PROFILE
STA 1+00.00 TO 9+50.00

PLAT NO.
JOB NO. 30010–27
DATE DECEMBER 2024
DESIGNER CL
CHECKED HF DRAWN BH
SHEET C4.02

FOR PERMIT

Date: Jan 10, 2025, 2:30pm User ID: bhurkett
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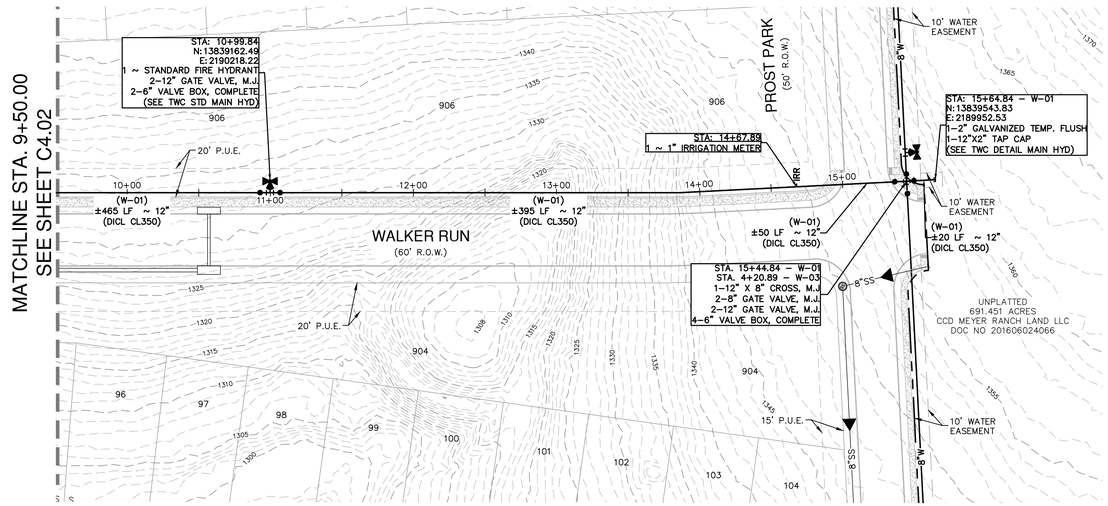

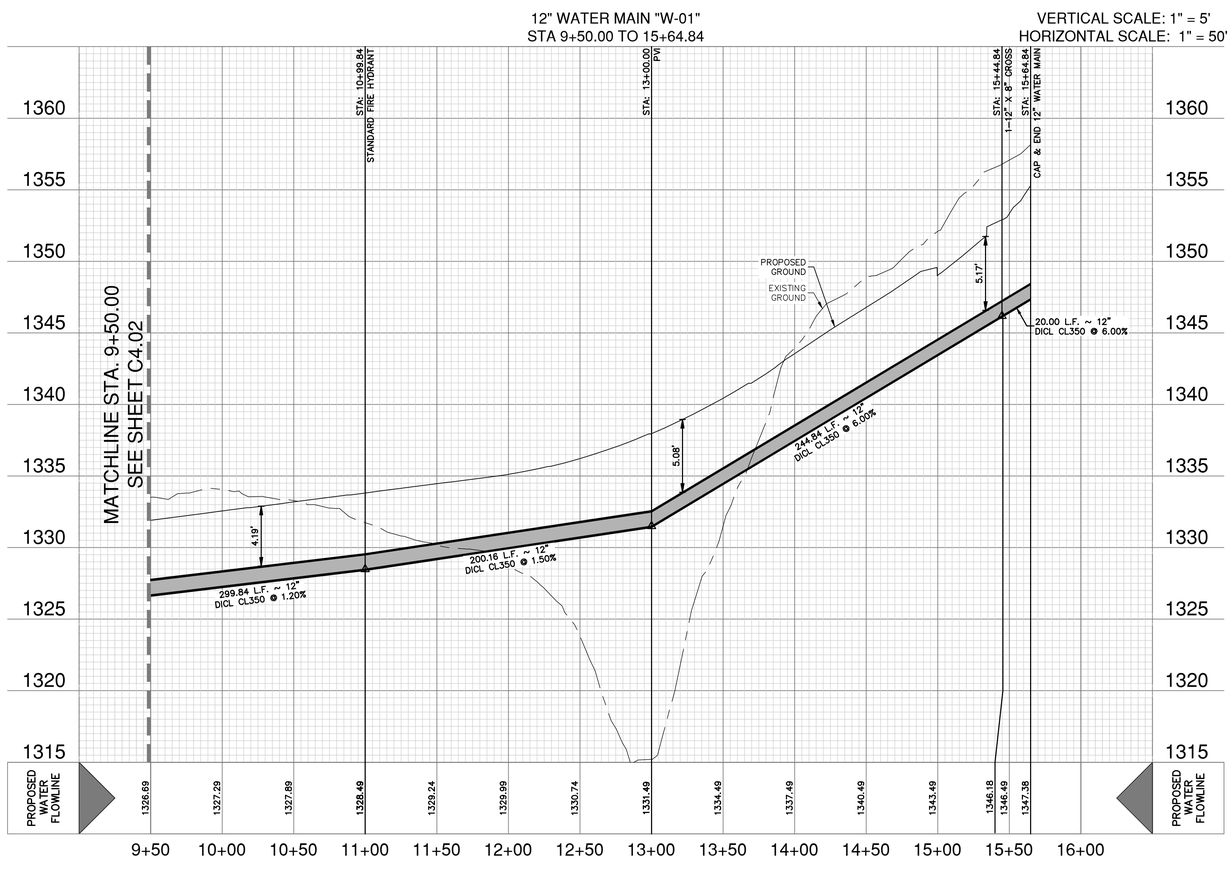

SCALE: 1"= 50'
0' 50' 100' 150'

WATER LEGEND

PROJECT LIMITS	
EXISTING WATER	FIRE HYDRANT — W
EXISTING REUSE WATER	REUSE
EXISTING SEWER	SS — MANHOLE
PROPOSED SEWER	SS
PROPOSED WATER	FIRE HYDRANT — W
PROPOSED 1" SINGLE SERVICE	W
PROPOSED 1.5" DUAL SERVICE	W
SINGLE IRRIGATION SERVICE (REF. PLAN VIEW FOR SIZE)	IRR
JOINT RESTRAINT	⊠
PVC SLEEVE	
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NO.	REVISION	DATE

STATE OF TEXAS
TODD W. BLACKMON
89208
LICENSED
PROFESSIONAL ENGINEER
4-24-2025

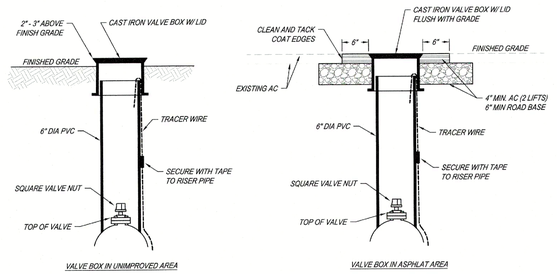
PAPE-DAWSON ENGINEERS
1672 INDEPENDENCE DR, STE 102 I NEW BRAUNFELS, TX 78132 I 830.632.5633
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

MEYER RANCH UNIT 16
COMAL COUNTY, TEXAS

12 INCH WATER MAIN W-01 - PLAN & PROFILE
STA 9+50.00 TO 15+64.84

PLAT NO.
JOB NO. 30010-27
DATE DECEMBER 2024
DESIGNER CL
CHECKED HF DRAWN BH
SHEET C4.03

FOR PERMIT



NOTES:

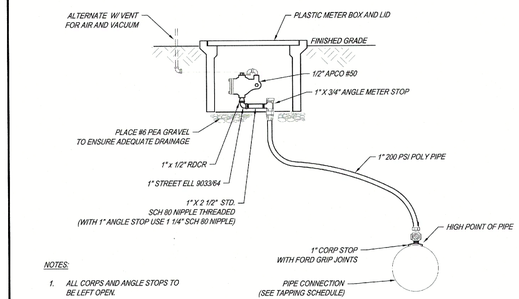
1. ALL ASPHALT MATERIAL SHALL BE TYPE C GRADATION, USING AC-10 OIL AND SHALL BE COMPACTED TO AT LEAST 97% OF MAXIMUM DENISTY.
2. VALVE BOX SHALL BE CENTERED ON VALVE.

TEXAS WATER COMPANY
1399 Sattler Road Canyon Lake, Texas 78133 (830) 312-4600

VALVE BOX INSTALLATION

February 15, 2024

SHEET NO. MAIN-VB



NOTES:

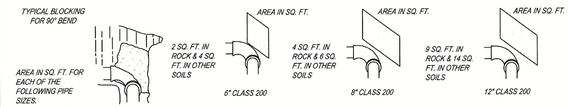
1. ALL CORPS AND ANGLE STOPS TO BE LEFT OPEN.
2. BLOW OFF MAIN BEFORE INSTALLING AIR VALVE.
3. AIR RELEASE ONLY, NOT VACUUM.

TEXAS WATER COMPANY
1399 Sattler Road Canyon Lake, Texas 78133 (830) 312-4600

1/2" TO 1" AIR VALVE INSTALLATION

February 15, 2024

SHEET NO. MAIN-AV12



SQ. FT. OF BLOCKING REQUIRED FOR OTHER THAN ROCK EXCAVATION

PIPE SIZE	TEES & DEAD ENDS	90° BENDS	45° BENDS	22.5° BENDS
6"	3	4	2	1
8"	4	6	4	2
12"	10	14	8	4
16"	18	25	14	7

SQ. FT. OF BLOCKING REQUIRED FOR OTHER THAN ROCK EXCAVATION

PIPE SIZE	TEES & DEAD ENDS	90° BENDS	45° BENDS	22.5° BENDS
6"	2	2	1	1
8"	3	4	2	1
12"	6	9	5	2
16"	11	15	8	4

BLOCKING AREA FOR 200 PSI TESTS AND 175 PSI WORKING PRESSURE

ON BASIS OF 200 PSI WATER PRESSURE USED FOR TESTS. THE BLOCKING REQUIRED FOR TWO TYPES OF SOILS ARE NOTED BELOW. IN ONE CASE, A SOIL PRESSURE OF 5000 PSI IS USED FOR ROCK EXCAVATION AND FOR SOILS OTHER THAN ROCK A 3000 PSI BEARING SOIL PRESSURE IS USED. THE DISTRIBUTION ON SYSTEM IS DESIGNED TO OPERATE WITH A MAXIMUM WATER PRESSURE OF 175 PSI ALL CALCULATIONS APPLY TO ALL TYPES OF PIPE APPROVED FOR USE BY TWC AND MEETING TWC SPECIFICATIONS AND STANDARDS.

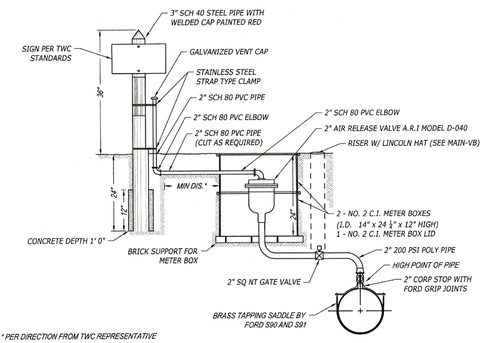
TRANSIT 2500 PSI CONCRETE MIX SHALL BE USED HOWEVER FOR SMALL VOLUME REQUIREMENTS CONCRETE MIXED AT JOB SITE WILL BE ACCEPTABLE ONLY IF A CONCRETE MIXER IS USED. ALL AGGREGATE SHALL BE CLEAN AND THE FIELD MIX SHALL BE IN THE RATIO OF 1:3:4 AND CONTAIN NOT LESS THAN 4 SACKS OF CEMENT PER CUBIC YARD.

TEXAS WATER COMPANY
1399 Sattler Road Canyon Lake, Texas 78133 (830) 312-4600

THRUST BLOCKING

February 15, 2024

SHEET NO. TB-HP



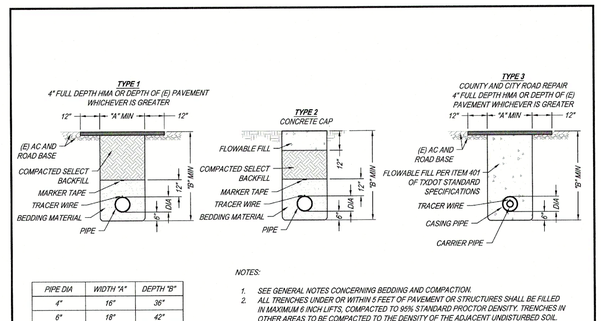
* PER DIRECTION FROM TWC REPRESENTATIVE

TEXAS WATER COMPANY
1399 Sattler Road Canyon Lake, Texas 78133 (830) 312-4600

2" AIR VALVE INSTALLATION

February 15, 2024

SHEET NO. MAIN-AV2



PIPE DIA	WIDTH "A"	DEPTH "B"
4"	16"	36"
6"	18"	42"
8"	20"	44"
12"	30"	52"
16"	36"	56"
>16"	DIA + 24"	DIA + 40"

NOTES:

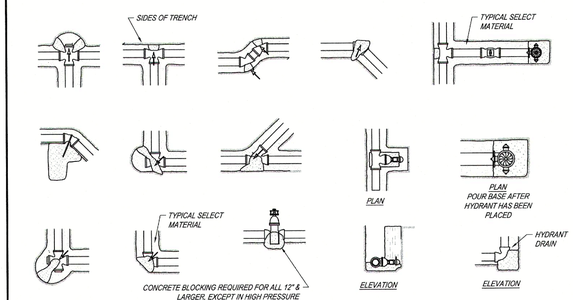
1. SEE GENERAL NOTES CONCERNING BEDDING AND COMPACTION.
2. ALL TRENCHES UNDER OR WITHIN 5 FEET OF PAVEMENT OR STRUCTURES SHALL BE FILLED IN MAXIMUM 6 INCH LIFTS, COMPACTED TO 95% STANDARD PROCTOR DENISITY. TRENCHES IN OTHER AREAS TO BE COMPACTED TO THE DENSITY OF THE ADJACENT UNDISTURBED SOIL.
3. ALL ASPHALT MATERIAL SHALL BE TYPE C GRADATION, USING AC-10 OIL AND SHALL BE COMPACTED TO AT LEAST 97% OF MAXIMUM DENISITY.
4. MARKER TAPE ATTACHED TO THE TOP OF PIPE WITH DUCT TAPE.
5. INSULATED 12 AWG SOLID DIRECT BURIAL RATED (30 MIL POLYETHYLENE JACKET MINIMUM) COPPER TRACER WIRE SHALL BE INSTALLED ABOVE AND ALONG ALL WATER LINES.
6. SEE TEST STATION DETAIL FOR TRACER WIRE TERMINATION.

TEXAS WATER COMPANY
1399 Sattler Road Canyon Lake, Texas 78133 (830) 312-4600

PIPE TRENCH DETAIL

February 15, 2024

SHEET NO. MAIN-TRN

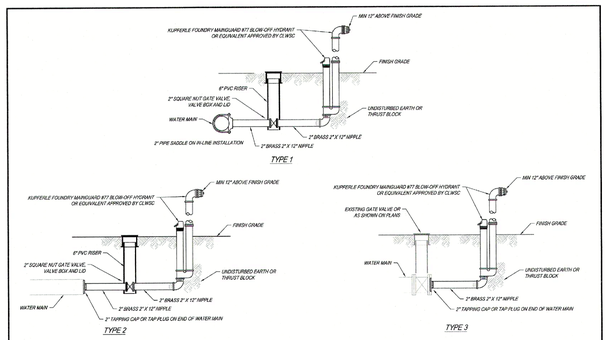


TEXAS WATER COMPANY
1399 Sattler Road Canyon Lake, Texas 78133 (830) 312-4600

THRUST BLOCKING

February 15, 2024

SHEET NO. TB-STD

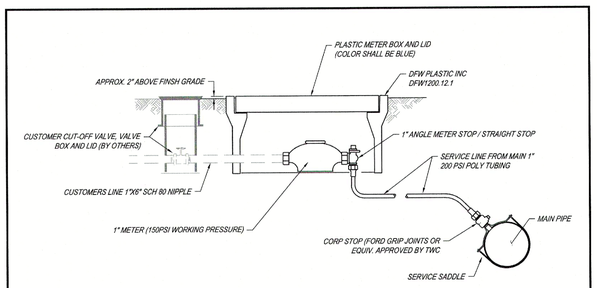


TEXAS WATER COMPANY
1399 Sattler Road Canyon Lake, Texas 78133 (830) 312-4600

TYPICAL BLOW-OFF ASSEMBLY INSTALLATION

February 15, 2024

SHEET NO. MAIN-BO



NOTES:

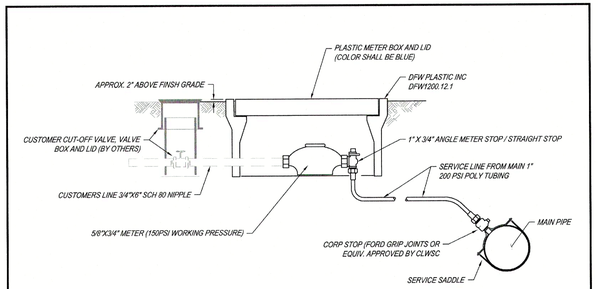
1. SERVICE SADDLES SHALL BE WRAPPED COMPLETELY WITH 8 MIL. POLYETHYLENE FILM.
2. PIPING AND TUBING SHALL BE BEDDED IN GRANULAR MATERIALS AS REQUIRED IN THE SPECIFICATIONS.
3. METERS SUPPLIED BY TWC.

TEXAS WATER COMPANY
1399 Sattler Road Canyon Lake, Texas 78133 (830) 312-4600

1" SERVICE

February 15, 2024

SHEET NO. SER-1



NOTES:

1. SERVICE SADDLES SHALL BE WRAPPED COMPLETELY WITH 8 MIL. POLYETHYLENE FILM.
2. PIPING AND TUBING SHALL BE BEDDED IN GRANULAR MATERIALS AS REQUIRED IN THE SPECIFICATIONS.
3. METERS SUPPLIED BY TWC.

TEXAS WATER COMPANY
1399 Sattler Road Canyon Lake, Texas 78133 (830) 312-4600

5/8" OR 3/4" SERVICE

February 15, 2024

SHEET NO. SER-58-34

NO.	REVISION	DATE

10-24-2024
STATE OF TEXAS
TODD W. BLACKMON
89208
LICENSED
PROFESSIONAL ENGINEER

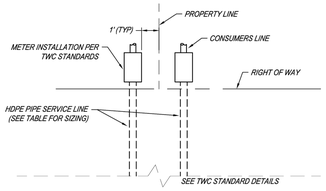
PAPE-DAWSON ENGINEERS
1672 INDEPENDENCE DR, STE 102 | NEW BRAUNFELS, TX 78132 | 830.602.5633
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

MEYER RANCH UNIT 16
COMAL COUNTY, TEXAS
WATER DISTRIBUTION DETAILS

PLAT NO.
JOB NO. 30010-27
DATE OCTOBER 2024
DESIGNER CL
CHECKED HF DRAWN BH
SHEET C4.10

Date: Oct 24, 2024, 9:26am User ID: bhurkett
File: P:\30010\07\27\Design\Civil\WTD1-30010Z7.dwg

FOR PERMIT



SERVICE SIZING	
HDPE PIPE SIZE	METER SIZE
1"	5/8" / 3/4"
1"	1"

NOTES

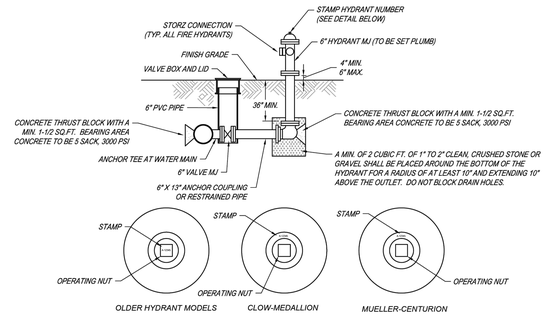
1) ALL HDPE SERVICE PIPE SHALL BE 200 PSI SDR9 CTS.
2) ALL METERS SHALL BE PLACED WITHIN EASEMENT OR EXISTING CITY/COUNTY RIGHT OF WAY.

TEXAS WATER COMPANY
1399 Sattler Road Canyon Lake, Texas 78133 (830) 312-4600

TYPICAL DUAL SERVICE INSTALLATION

February 15, 2024

SHEET NO. SER-DUAL



NOTE:

1. ALL HYDRANTS SHALL BE TURN LEFT TO OPEN.
2. FIRE HYDRANTS SHALL BE INSTALLED WITH STORZ TYPE CONNECTION, INTEGRAL CONNECTION OR STORZ ADAPTORS SHALL BE REQUIRED ON ALL FIRE HYDRANTS.
3. SEE STD. DWG. MAIN-VB FOR VALVE BOX INSTALLATION

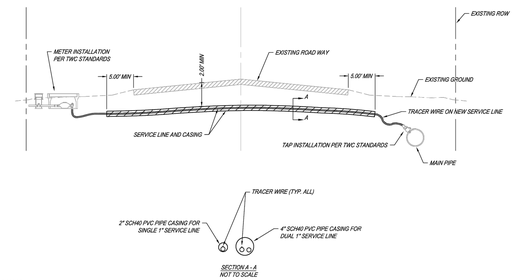
HYDRANT NUMBER LOCATION TOP VIEW

TEXAS WATER COMPANY
1399 Sattler Road Canyon Lake, Texas 78133 (830) 312-4600

STANDARD FIRE HYDRANT INSTALLATION

February 15, 2024

SHEET NO. MAIN-HYD



NOTES

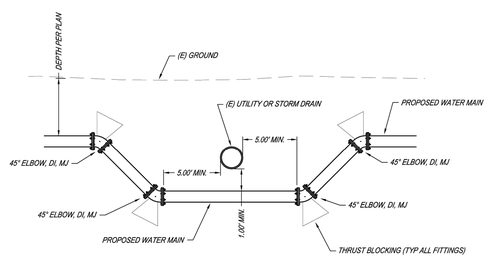
1) ALL HDPE SERVICE PIPE SHALL BE 200 PSI.
2) ALL METERS SHALL BE PLACED WITHIN EASEMENT OR EXISTING CITY/COUNTY RIGHT OF WAY.

TEXAS WATER COMPANY
1399 Sattler Road Canyon Lake, Texas 78133 (830) 312-4600

February 15, 2024

LONG SERVICE

SHEET NO. SER-LT



NOTES:

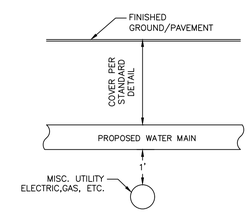
1. ALL MATERIAL SHALL BE DICL FOR WATER LOWERING.
2. ALL JOINTS SHALL BE RESTRAINED.

TEXAS WATER COMPANY
1399 Sattler Road Canyon Lake, Texas 78133 (830) 312-4600

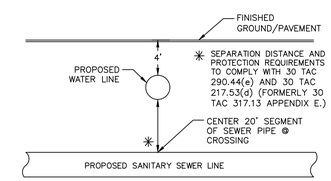
TYPICAL WATER MAIN LOWERING - UTILITY CROSSING

February 15, 2024

SHEET NO. MAIN-LOW



TYPICAL UTILITY/WATER CROSSING DETAIL
NOT-TO-SCALE



TYPICAL SANITARY SEWER/WATER CROSSING DETAIL
NOT-TO-SCALE

NO.	REVISION	DATE

STATE OF TEXAS
TODD W. BLACKMON
89208
LICENSED PROFESSIONAL ENGINEER
1-10-2025

PAPE-DAWSON ENGINEERS
1672 INDEPENDENCE DR, STE 102 I NEW BRAUNFELS, TX 78132 I 830.632.5633
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

MEYER RANCH UNIT 16
COMAL COUNTY, TEXAS
WATER DISTRIBUTION DETAILS

PLAT NO.
JOB NO. 30010-27
DATE DECEMBER 2024
DESIGNER CL
CHECKED HF DRAWN BH
SHEET C4.11

Date: Jan 10, 2025, 2:30pm User ID: bburkett
File: P:\300\10\27\Design\Civil\WTDT-3001027.dwg

FOR PERMIT

TWC STANDARD CONSTRUCTION NOTES FOR PLANS
Effective July 27th, 2023

GENERAL

1. SECTION 1 – INTRODUCTION
    a. SECTIONS OF THE TWC ENGINEERING DESIGN CRITERIA AND THE TWC STANDARD CONSTRUCTION NOTES FOR PLANS HAVE BEEN WRITTEN CONCURRENTLY. INFORMATION THAT APPLIES TO THE CONTRACTOR AND WORK PERFORMED ON-SITE IS LISTED IN THE TWC STANDARD CONSTRUCTION NOTES FOR PLANS. DURING DESIGN, BOTH DOCUMENTS SHOULD BE CHECKED FOR CLARITY.
    b. CONSTRUCTION OF DOMESTIC WATER PIPELINES AND APPURTENANCES ARE SUBJECT TO INSPECTION AND APPROVAL BY THE TEXAS WATER COMPANY (TWC) AND SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THIS DOCUMENT AND TWC'S STANDARD DRAWINGS AND TWC ENGINEERING DESIGN CRITERIA.
    c. ALL WATER DISTRIBUTION SYSTEMS, WATER MAIN EXTENSIONS, AND ALL APPURTENANT ITEMS SHALL BE DESIGNED IN ACCORDANCE WITH THESE STANDARDS, TWC STANDARD DETAILS AND TCEQ TITLE 30 CHAPTER 290 STANDARDS, WHICHEVER IS MOST STRINGENT. CONSULT TWC FOR CLARIFICATION OF SPECIFIC ITEMS.
    d. THE MOST RECENT TWC ENGINEERING DESIGN CRITERIA AND DETAILS SHALL APPLY TO ALL CONSTRUCTION REGARDLESS OF INFORMATION PROVIDED ON PLANS. CONTRACTORS ARE ENCOURAGED TO VERIFY CURRENT INFORMATION WITH TWC STAFF PRIOR TO THE BEGINNING OF CONSTRUCTION.
    e. CONTRACTORS ARE RESPONSIBLE FOR ALL SAFETY REQUIREMENTS (OSHA AND ANY OTHER AGENCIES THAT APPLY) ASSOCIATED WITH TRENCH CONSTRUCTION AND SHALL BE REQUIRED TO HAVE A TRENCH SAFETY PLAN PREPARED BY AN APPROVED PROFESSIONAL. UNLESS OTHERWISE NOTED IN THE CONSTRUCTION DOCUMENTS, THERE IS NO SEPARATE PAY ITEM FOR THIS REQUIREMENT FOR PROJECTS COMPLETED ON BEHALF OF TWC.
    f. IT IS THE INTENT OF THESE PLANS TO SHOW THE LOCATION OF EXISTING UNDERGROUND FACILITIES IN ACCORDANCE WITH EXISTING RECORDS. HOWEVER, IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO LOCATE AND VERIFY THE EXACT LOCATION OF ALL EXISTING UNDERGROUND FACILITIES PRIOR TO EXCAVATION. THE CONTRACTOR SHALL ASSUME FULL RESPONSIBILITY FOR ANY AND ALL DAMAGES TO EXISTING FACILITIES.

2. SECTION 2 – PLAN PREPARATION
    a. PLAN REVIEW
        i. ONE SET OF THE "APPROVED FOR CONSTRUCTION" PLANS MUST BE ON SITE AT ALL TIMES DURING CONSTRUCTION.
        ii. ANY CHANGES TO THE PLANS DURING CONSTRUCTION MUST BE DOCUMENTED ON THE "APPROVED FOR CONSTRUCTION" PLANS AND DENOTED ON THE AS-BUILT PLANS.

        iii. MINOR CHANGES MAY BE REVIEWED AND APPROVED ON SITE BY A REPRESENTATIVE OF TWC AND THE CHANGES ANNOTATED ON THE AS-BUILT PLANS.
        iv. ALL MAJOR CHANGES DURING CONSTRUCTION SHALL BE SUBMITTED IN WRITING TO THE TWC ENGINEERING DEPARTMENT FOR FORMAL REVIEW AND APPROVAL. DETERMINATION AS TO WHETHER OR NOT AN RFI/SUBMITTAL IS REQUIRED SHALL BE DETERMINED ON A CASE BY CASE BASIS BY TWC PERSONNEL.

3. SECTION 3 – MANDATORY PRE-CONSTRUCTION MEETING
    a. NO LATER THAN ONE WEEK PRIOR TO COMMENCING WORK, THE CONTRACTOR SHALL CONDUCT A PRE-CONSTRUCTION MEETING WITH TWC, AT A LOCATION MUTUALLY DETERMINED.
    b. CONTRACTOR SHALL NOTIFY THE TWC CONSTRUCTION INSPECTION DEPARTMENT (830-312-4600) AT LEAST 72 HOURS PRIOR TO COMMENCING CONSTRUCTION.
    c. THE PURPOSE OF THE PRE-CONSTRUCTION MEETING IS TO REVIEW PROJECT STATUS AND COORDINATE SCHEDULED ACTIVITIES.
    d. NO CONSTRUCTION ACTIVITIES SHALL BEGIN UNTIL A PRECONSTRUCTION MEETING HAS BEEN HELD BETWEEN THE CONTRACTOR, ENGINEER OF RECORD, AND A REPRESENTATIVE OF TWC.

4. SECTION 4 – PROJECT CLEANLINESS
    a. CONSTRUCTION METHODS, MATERIAL AND DISPOSAL OF PRODUCTS SHALL ALSO BE SUBJECT TO CURRENT STANDARDS ESTABLISHED BY THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY (TCEQ) AND ANY OTHER LOCAL, STATE OR FEDERAL AGENCIES HAVING AUTHORITY IN THEIR RESPECTIVE JURISDICTIONS.
    b. BOUNDARY FENCES OR OTHER IMPROVEMENTS REMOVED TO PERMIT CONSTRUCTION SHALL BE REPLACED IN THE SAME LOCATION AND IN SAME CONDITION AS GOOD OR BETTER THAN IN WHICH THEY WERE FOUND. UNLESS OTHERWISE STATED ON THE PLANS, NO COMPENSATION SHALL BE GIVEN TO THE CONTRACTOR FOR REMOVAL AND REPLACEMENT OF FENCES.
    c. THE CONTRACTOR IS RESPONSIBLE FOR KEEPING STREETS AND SIDEWALKS ADJACENT TO PROJECT FREE OF MUD AND DEBRIS FROM THE CONSTRUCTION.
    d. CONTRACTOR SHALL NOT PLACE FILL OR WASTE MATERIAL ON ANY PRIVATE PROPERTY WITHOUT PRIOR WRITTEN AGREEMENT WITH THE PROPERTY OWNER. A COPY OF ANY WRITTEN AGREEMENT BETWEEN PROPERTY OWNER AND CONTRACTOR SHALL BE FURNISHED TO TWC.
    e. NO EXCESS EXCAVATION MATERIAL SHALL BE DEPOSITED IN LOW AREAS OR ALONG NATURAL DRAINAGE WAY WITHOUT WRITTEN PERMISSION FROM THE ENGINEER.
    f. REMOVE AND DISPOSE OF TREES, STUMPS, BRUSH, ROOTS, VEGETATION, LOGS, RUBBISH AND OTHER OBJECTIONABLE MATTER WITHIN THE LIMITS OF AREA AFFECTED BY THE WORK, INCLUDING ALL AREAS TO BE RE-GRADED. PROTECT TREES, SHRUBS, AND OTHER LANDSCAPE FEATURES SPECIFICALLY DESIGNATED FROM DAMAGE DURING CONSTRUCTION OPERATIONS.

5. SECTION 5 – PROJECT LAYOUT CONTROL AND SURFACE REPAIR
    a. CONTACTOR TO CONFIRM ACTUAL HORIZONTAL AND VERTICAL LOCATION OF EXISTING STRUCTURES, PIPING, PAVING, FENCING, UNDERGROUND UTILITIES AND ALL OTHER EXISTING FACILITIES PRIOR TO CONSTRUCTION.
    b. CONTRACTOR SHALL COORDINATE FOR ALL NECESSARY UTILITY LOCATES AT LEAST 48 HOURS PRIOR TO CONSTRUCTION.
    c. CONTRACTOR SHALL NOTIFY TEXAS DEPARTMENT OF TRANSPORTATION AT LEAST 48 HOURS PRIOR TO ANY CONSTRUCTION ACTIVITY WITHIN THE STATE RIGHT-OF-WAY.
    d. NO UTILITY TRENCHES OR PITS ARE TO BE LEFT OPEN OVERNIGHT. CONTRACTOR SHALL BE RESPONSIBLE FOR ENSURING ADEQUATE SAFETY MEASURES ARE IN PLACE FOR BOTH HUMANS AND LIVESTOCK FOR ANY TRENCH LEFT OPEN OVERNIGHT. BACKFILLING WILL OCCUR DAILY AND AS SOON AS PRACTICAL FOLLOWING CONSTRUCTION OPERATIONS.
    e. CONTRACTOR SHALL NOT OPEN CUT ANY IMPROVED DRIVEWAY IN COUNTY OR STATE RIGHT-OF-WAY WITHOUT PRIOR WRITTEN APPROVAL OF THE AGENCY.
    f. FINE GRADE AREAS TO ACHIEVE FINAL CONTOURS INDICATED OR RESTORE EXISTING GRADES. REMOVE RUBBISH VEGETATION AND ROCKS OVER 1 ½" IN DIAMETER. ADJUST CONTOURS TO ACHIEVE POSITIVE DRAINAGE AWAY FROM STRUCTURES. PROVIDE UNIFORM ROUNDING AT TOP AND BOTTOM OF SLOPES AND OTHER BREAKS IN GRADE. CORRECT IRREGULARITIES AND AREAS WHERE WATER WILL STAND.
    g. ALL VEGETATED AREAS DISTURBED BY CONSTRUCTION ACTIVITIES SHALL BE RESTORED TO ORIGINAL OR BETTER CONDITIONS THAN FOUND PRIOR TO THE BEGINNING OF CONSTRUCTION.
    h. BEFORE FINAL COMPLETION OF THE PROPOSED WORK, ALL ROADWAY, SLOPES, DITCHES AND BERMS SHALL BE RESTORED TO THEIR ORIGINAL CONDITION.

6. SECTION 6 – CONTRACT CLOSE-OUT
    a. FINAL INSPECTION
        i. TWC WILL REQUIRE A FIELD FINAL INSPECTION ON ALL MAIN LINE CONSTRUCTION PROJECTS. TWC WILL VERIFY OPERATION OF VALVES, HYDRANTS AND SERVICES. METER BOXES, VALVE BOXES AND VAULTS, MUST BE SET TO GRADE AND WORK SITE MUST BE FREE OF DEBRIS, EXCESS MATERIAL, ETC.
        ii. FIELD SET OF AS-BUILT DRAWINGS MUST BE PROVIDED AT THE FIELD FINAL INSPECTION.
        iii. BACTERIOLOGICAL TEST SAMPLES MUST HAVE RETURNED FROM THE DESIGNATED LAB FREE FROM COLIFORM BACTERIA AND MEET THE SAME STANDARDS AS THE SOURCE WATER. THIS MUST BE NOTED ON THE TWC ACCEPTANCE FORM BY A WATER QUALITY TECHNICIAN. INSPECTOR WILL THEN PROVIDE THREE DIGITAL ACCEPTANCE FORMS TO BE SIGNED BY THE ENGINEER, CONTRACTOR AND TWC INSPECTOR. EACH PARTY SHALL RECEIVE A DATED COPY OF THE FORM.
        iv. SEE SECTION 7B FOR FURTHER GUIDANCE ON DISINFECTION REQUIREMENTS.
    b. RECORD DRAWINGS

        i. CONTRACTOR SHALL PROVIDE A NEAT AS-BUILT DRAWING WITHIN 30 DAYS OF JOB COMPLETION IN BOTH PAPER AND ELECTRONIC (.PDF) FORMAT TO TWC AND THE ENGINEER OF RECORD.
        ii. ACCEPTANCE OF FACILITIES BY TWC WILL NOT BE AUTHORIZED UNTIL RECEIPT OF AN APPROVED SET OF RECORD DRAWINGS COMPLETED BY THE ENGINEER OF RECORD.
        iii. SEE GENERAL SECTION 2A OF TWC ENGINEERING DESIGN CRITERIA.
    c. WARRANTY PERIOD
        i. THE WARRANTY PERIOD FOR ALL WORK COMPLETED SHALL BEGIN UPON WRITTEN ACCEPTANCE OF FACILITIES BY TWC. THE WARRANTY PERIOD AND REQUIREMENTS FOR BONDING SHALL BE OUTLINED IN THE CONTRACT.

7. SECTION 7 – LINE SEPARATION
    a. HORIZONTAL SEPARATION
        i. HORIZONTAL SEPARATION SHOULD BE IN ACCORDANCE WITH TCEQ REQUIREMENTS.
        ii. JOINT TRENCHES OF WATER WITH OTHER UTILITIES SUCH AS ELECTRICAL, TELECOM, NATURAL GAS, FIBER OPTIC OR CABLE LINES ARE NOT PERMITTED.
    b. VERTICAL SEPARATION
        i. VERTICAL SEPARATION SHOULD BE IN ACCORDANCE WITH TCEQ REQUIREMENTS.
        ii. AT ALL WATER MAIN CROSSINGS, ONE FULL LENGTH OF WATER PIPE SHALL BE CENTERED AT THE CROSSING SO BOTH JOINTS OF THE WATER PIPE WILL BE AS FAR FROM THE OTHER PIPELINES AS POSSIBLE.
        iii. NATURAL OR PROPANE GAS LINE CROSSINGS SHALL BE ENCASED IN CONCRETE. THE CONCRETE ENCASEMENT SHALL EXTEND 12" ABOVE AND BELOW THE GAS LINE AND SHALL HAVE A MINIMUM SEPARATION OF 18" FROM OUTSIDE OF PIPE TO OUTSIDE OF PIPE.
        iv. ALL OTHER UTILITIES SHALL BE LOCATED BELOW WATER MAINS UNLESS OTHERWISE APPROVED BY TWC. THIS INCLUDES SERVICE LINES FOR ALL OTHER UTILITIES.
    c. TYPICAL SECTION SHOWING ALL UTILITIES
        i. SEE GENERAL SECTION 7 OF TWC ENGINEERING DESIGN CRITERIA.

8. SECTION 8 – PIPE LAYING REQUIREMENTS
    a. IF APPLICABLE, DEWATERING SHALL BE IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
    b. PIPE SHALL BE CONSTRUCTED OF MATERIALS SPECIFIED AND AS SHOWN ON THE DRAWINGS.
    c. EXCAVATION, TRENCHING AND BACKFILLING SHALL BE IN ACCORDANCE WITH TWC ENGINEERING DESIGN CRITERIA AND DETAILS.
        i. ALL DICL PIPE SHALL BE INSTALLED IN ACCORDANCE WITH STANDARDS SET FORTH IN THE DIPRA "INSTALLATION GUIDE FOR DUCTILE IRON PIPE" UNLESS SUCH STANDARDS CONFLICT WITH TWC STANDARDS IN WHICH CASE TWC STANDARDS SHALL APPLY.

        ii. ALL PVC AND PVCO PIPE SHALL BE INSTALLED IN ACCORDANCE WITH STANDARDS SET FORTH IN THE UNI-BELL "HANDBOOK OF PVC PIPE DESIGN AND CONSTRUCTION" UNLESS SUCH STANDARDS CONFLICT WITH TWC STANDARDS IN WHICH CASE TWC STANDARDS SHALL APPLY.
    d. NO PIPE SHALL BE LAID WHEN THE TRENCH CONDITIONS OR THE WEATHER IS UNSUITABLE FOR SUCH WORK, EXCEPT BY PERMISSION OF TWC.
    e. EACH SECTION OF PIPE SHALL REST UPON THE PIPE BED FOR THE FULL-LENGTH BARREL, WITH RECESSES EXCAVATED TO ACCOMMODATE BELLS AND JOINTS. ANY PIPE WHICH HAS A GRADE OR JOINT DISTURBED AFTER LYING SHALL BE TAKEN UP AND RE-LAID.
    f. ANY SECTION OF PIPE ALREADY LAID WHICH IS FOUND TO BE DEFECTIVE OR DAMAGED SHALL BE REPLACED WITH NEW PIPE WITHOUT ADDITIONAL COST TO TWC.
    g. USE DUCTILE IRON FITTING WITH MECHANICAL JOINT AND RESTRAIN PER TWC ENGINEERING DESIGN CRITERIA ON ALL PIPE REGARDLESS OF PIPE MATERIAL UNLESS OTHERWISE INDICATED ON PLANS.
    h. CONTRACTOR SHALL CUT DUCTILE IRON PIPE ONLY AS NECESSARY TO COMPLY WITH ALIGNMENT SHOWN ON THE DRAWINGS.

9. SECTION 9 – TRENCH EXCAVATION
    a. ALL EXCAVATIONS SHALL BE OPEN CUT, WITH BANKS OF TRENCHES KEPT AS NEARLY VERTICAL AS POSSIBLE IN ACCORDANCE WITH OSHA REQUIREMENTS.
    b. WATER MAINS MAY BE OFFSET TO ONE SIDE OF A TRENCH BUT A MINIMUM OF 6" CLEARANCE MUST BE MAINTAINED BETWEEN THE TRENCH WALL AND THE WATER MAIN.
    c. SEE TRENCHING REQUIREMENTS BELOW:

TRENCHING REQUIREMENTS		
PIPE DIAMETER (INCHES)	**MINIMUM TRENCH WIDTH**	**MINIMUM TRENCH DEPTH**
4"	16"	36"
6"	18'	42"
8"	20"	44"
12"	30"	52"
16"	36"	56"
>16"	DIAMETER + 24"	DIAMETER + 40"

    d. THE TRENCH FLOOR SHALL PROVIDE A UNIFORM BEARING FOR EACH FULL LENGTH OF PIPE SECTION. EXCAVATE BELL HOLES AFTER THE BEDDING HAS BEEN GRADED. PERFORM ALL EXCAVATIONS OF WHATEVER SUBSTANCE ENCOUNTERED TO THE DEPTHS SHOWN OR INDICATED ON THE DRAWINGS.
    e. WHEN APPROPRIATE, TWC WILL ALLOW CUT OR FILL TECHNIQUES TO BE USED TO LEVEL AN AREA FOR EXCAVATION.

10. SECTION 10 – BEDDING, BACKFILL, COMPACTION, AND FINAL GRADING

    a. FOR ALL WATER LINES CROSSING COUNTY OR STATE ROADWAYS, THE PROVISIONS FOR TRENCH COMPACTION AND BACKFILL AS ESTABLISHED BY THESE AGENCIES SHALL BE MET. WHERE THESE PROVISIONS AND THE TWC ENGINEERING DESIGN CRITERIA ARE IN CONFLICT, THE MORE STRINGENT STANDARD SHALL APPLY.
    b. BEDDING
        i. PIPE SHALL BE BEDDED WITH A MINIMUM OF 6" OF THE SAWS MODIFIED GRADE 5 BEDDING. SCREENING OF EXCAVATED TRENCH MATERIAL FOR BEDDING MAY BE ALLOWED USING A 1" OR 1-1/4" SCREEN UNDER NO CIRCUMSTANCE WILL ROCKS LARGER THAN 2" BE ALLOWED IN BEDDING.
        ii. BEDDING OF ALL WATER MAINS SHALL ADHERE TO THE STANDARD BEDDING DETAILS BASED ON BOTH CURRENT AND PROPOSED USAGE OF THE AREA ABOVE THE PIPE, WHICHEVER IS MORE STRINGENT.
    c. BACKFILL
        i. WHEN, IN THE OPINION OF TWC, MATERIAL EXCAVATED FROM THE TRENCH IS UNSUITABLE BACKFILL OR WHEN IT IS REQUIRED BY THE JURISDICTIONAL AGENCY, SUITABLE BACKFILL SHALL BE FURNISHED AND PLACED BY THE CONTRACTOR.
        ii. ALL UNSUITABLE MATERIAL AND EXCESS BACKFILL SHALL BE REMOVED AND DISPOSED OF BY THE CONTRACTOR CONCURRENTLY WITH THE INSTALLATION OF THE MAIN.
        iii. BACKFILL SHALL NOT BE PLACED UNTIL THE PIPELINE HAS BEEN INSPECTED BY TWC. BACKFILL MATERIAL SHALL NOT BE DROPPED DIRECTLY UPON THE PIPELINE. THE BACKFILL MATERIAL SHALL BE DEPOSITED FROM ONE END OF THE TRENCH UNIFORMLY ON BOTH SIDES OF THE PIPE.
        iv. BACKFILL FOR HAND TAMPING SHALL BE DEPOSITED IN LAYERS NOT TO EXCEED 4" THICKNESS AND FOR MECHANICAL TAMPING NOT TO EXCEED 6". CARE SHALL BE TAKEN NOT TO INJURE THE PIPE WHILE ENSURING THOROUGH CONSOLIDATION. WHERE APPROPRIATE, EXCESS MATERIAL SHALL BE HEAPED OVER THE TRENCH TO ALLOW FOR SETTLEMENT.
    d. COMPACTION
        i. SEE TWC STANDARD DETAIL FOR COMPACTION REQUIREMENTS.
    e. FINAL GRADING
        i. ALL STREETS ARE TO BE RESTORED TO THEIR ORIGINAL CONDITION WITH AT LEAST THE SAME AMOUNT OF PROPERLY COMPACTED SUB GRADE AND PAVEMENT.
        ii. FINAL GRADING OF THE AREA SURROUNDING THE TRENCH EXCAVATION SITE SHALL NOT INTERRUPT THE NATURAL DRAINAGE COURSE OF THE SITE. THE AREA SHALL BE RELATIVELY FREE OF LARGE ROCKS AND OTHER DEBRIS THAT IS GREATER THAN THAT OF ORIGINAL CONDITIONS.

WATER NOTES

1. SECTION 1 – SYSTEM DESIGN AND FLOW CRITERIA
    a. LINE SIZING CRITERIA

        i. SEE WATER SECTION 1 OF TWC ENGINEERING DESIGN CRITERIA.
    b. MINIMUM LINE SIZE
        i. THE MINIMUM PIPE SIZE FOR DISTRIBUTION MAINS SHALL BE 4 INCHES, UNLESS OTHERWISE AUTHORIZED BY TWC. THE MINIMUM SIZE FOR DISTRIBUTION MAINS SERVING FIRE HYDRANTS AND FIRE HYDRANT BRANCHES SHALL BE 6 INCHES IN DIAMETER.
    c. WATER LINE ROUTING AND LOOPING
        i. CONTRACTOR SHALL ESTABLISH PIPE GRADES USING TOP OF FINISHED GRADE UNLESS OTHERWISE INDICATED ON PLANS.
        ii. CONTRACTOR SHALL GRADE MAIN TO AVOID USE OF AIR VALVES.
        iii. ALL ROAD CROSSING UNDER COMAL COUNTY ROADWAYS SHALL REQUIRE A SEPARATE PERMIT FROM THE COMAL COUNTY ENGINEER. CONTRACTOR IS RESPONSIBLE FOR AQUIRING ALL NECESSARY PERMITS AND SHALL CONSTRUCT ALL CROSSINGS IN ACCORDANCE WITH COMAL COUNTY STANDARDS.
        iv. CONTRACTOR SHALL CONSTRUCT ALL CROSSINGS WITH SANITARY SEWER FACILITIES IN ACCORDANCE WITH THE MOST RECENT VERSION OF APPLICABLE TCEQ STANDARDS.
    d. WATER LINE EASEMENTS
        i. SEE WATER SECTION 1 OF TWC ENGINEERING DESIGN CRITERIA.
    e. DEPTH OF COVER
        i. COVER AS MEASURED FROM FINISHED GRADE TO TOP OF THE PIPELINE SHALL BE A MINIMUM OF 30 INCHES FOR PIPE DIAMETERS UP TO AND INCLUDING 12 INCHES. DEPTH OF COVER FOR PIPES 14 INCHES AND GREATER IN DIAMETER SHALL BE A MINIMUM OF 36 INCHES. EXCEPTIONS MUST BE APPROVED BY TWC AND MAY REQUIRE 4 INCHES OF CONCRETE ABOVE THE PIPING IN AREAS WHERE MINIMUM COVER CANNOT BE OBTAINED.
        ii. DEPTH OF COVER AND TRENCH WIDTH REQUIREMENTS CAN BE FOUND IN THE STANDARD DETAIL FOR TRENCH CONSTRUCTION.

2. SECTION 2 – CONNECTION TO EXISTING WATER MAINS
    a. TAPPING SLEEVES AND VALVES
        i. TAPPING SLEEVES FOR SIZE-ON-SIZE CONNECTIONS ARE NOT ALLOWED.
        ii. TAPPING SLEEVES SHALL HAVE AN OUTLET FLANGE PER ANSI B16.1.
        iii. FOR TAPPING PVC AND PVCO PIPE, TAPPING SLEEVES SHOULD BE STAINLESS STEEL MANUFACTURED BY SMITH BLAIR OR POWERSEAL.
        iv. FOR TAPPING DUCTILE IRON PIPE, USE THE MUELLER DUCTILE IRON TAPPING SLEEVE WITH EPOXY COATING.
        v. TAPPING VALVES SHALL BE MECHANICAL JOINT OUTLET, NON-RISING STEM, RESILIENT SEAT GATE VALVES MEETING THE APPLICABLE REQUIREMENTS OF AWWA C509 AND C550. TAPPING VALVES SHALL BE SPECIFICALLY DESIGNED FOR PRESSURE TAPPING WITH SUFFICIENT SEAT OPENING TO ALLOW FULL DIAMETER TAPS TO BE MADE.

    b. CONTRACTOR SHALL FOLLOW METHODS AND PROCEDURES OF SHUTDOWN AS DIRECTED BY THE TWC STAFF.
    c. CONTRACTOR SHALL NOTIFY CONSUMERS OF, AND COORDINATE ALL SHUTDOWNS WITH TWC, PER TWC GUIDELINES.
    d. ALL TAPS 2" AND LARGER MADE TO EXISTING WATER MAINS SHALL BE MADE BY A VENDOR APPROVED BY TWC ONLY.
    e. WATER MAINS SHALL BE TAPPED IN SUCH A MANNER AS TO AVOID DISTURBANCE OR DISRUPTION TO THE OPERATION OF THE MAIN IN SERVICE AND TO PROTECT THE POTABLE WATER SUPPLY FROM CONTAMINATION.
    f. IF APPLICABLE, THE CONTRACTOR SHALL DETERMINE THE OUTSIDE DIAMETER OF THE EXISTING MAIN BEFORE ORDERING THE SLEEVE.
    g. VALVES ON EXISTING MAINS SHALL ONLY BE OPERATED BY TWC PERSONNEL.
    h. WHEN SERVICE MUST BE INTERRUPTED TO EXISTING CUSTOMERS DURING CONSTRUCTION OF A TAP OR ADDITION OF APPURTENANCES:
        v. THE CONTRACTOR SHALL PROVIDE 3 DAYS' NOTICE TO TWC.
        vi. THE CONTRACTOR OR DEVELOPER SHALL BE REQUIRED TO NOTIFY EXISTING CUSTOMERS AS DIRECTED BY TWC.

3. SECTION 3 – CROSS-CONNECTION CONTROL AND BACKFLOW PREVENTION
    a. SEE WATER SECTION 3 OF TWC ENGINEERING DESIGN CRITERIA.

4. SECTION 4 – FIRE PROTECTION STANDARDS
    a. FIRE FLOW
        i. SEE WATER SECTION 4 OF TWC ENGINEERING DESIGN CRITERIA.
    b. FIRE HYDRANT SPACING
        i. IN AREAS WHERE LOCAL MUNICIPAL CODES ARE ENFORCED FOR DEVELOPMENT, AND CONFLICT WITH THIS INFORMATION, THE MORE STRINGENT REQUIREMENT SHALL APPLY.
        ii. RESIDENTIAL AREAS: FIRE HYDRANTS SHALL BE PLACED A MAXIMUM OF 1,000 FEET APART MEASURED ALONG THE RIGHTS-OF-WAY WITH A MAXIMUM SEPARATION OF 500 FEET TO THE LAST LOT.
        iii. COMMERCIAL AND APARTMENT AREAS: FIRE HYDRANTS SHALL BE PLACED EVERY 500 FEET ALONG THE RIGHTS-OF-WAY WITH A MAXIMUM SEPARATION OF 250 FEET TO THE LAST LOT. THE REQUIRED FIRE FLOW SHALL BE DETERMINED BY TWC, OR LOCAL AGENCY REQUIREMENT, WHICHEVER IS GREATER.
        iv. MANUFACTURING AND INDUSTRIAL AREAS: FIRE HYDRANTS SHALL BE PLACED EVERY 300 FEET ALONG THE RIGHTS-OF-WAY WITH A MAXIMUM SEPARATION OF 150 FEET TO THE LAST LOT. THE REQUIRED FIRE FLOW SHALL BE DETERMINED BY TWC, OR LOCAL AGENCY REQUIREMENT, WHICHEVER IS GREATER.
    c. FIRE HYDRANT LOCATION

        i. HYDRANTS SHALL BE LOCATED WITHIN ONE FOOT OF THE SIDE LOT LINES, BETWEEN ADJACENT PROPERTIES IN RESIDENTIAL AREAS, OR IN FRONT OF COMMERCIAL AND INDUSTRIAL PROPERTIES AS REQUIRED.
        ii. HYDRANTS SHALL BE A MINIMUM OF 2 FEET FROM EDGE OF RIGHTS-OF-WAY OR CURB IN AREAS WITHOUT SIDEWALKS AND SHALL NOT OBSTRUCT SIDEWALKS.
        iii. THE LOCATION OF NEW FIRE HYDRANTS SHALL BE IDENTIFIED WITH A BLUE REFLECTIVE PAVEMENT MARKER INSTALLED ON THE ROADWAY. THE REFLECTIVE MARKER SHALL BE LOCATED PERPENDICULAR TO THE HYDRANT, IN THE CENTER OF THE LANE CLOSEST TO THE HYDRANT.
        iv. CONTRACTOR SHALL MAINTAIN MINIMUM 10 FEET CLEARANCE BETWEEN HYDRANTS AND DRIVEWAYS.
    d. FIRE HYDRANT REQUIREMENTS
        i. THE INTERIOR OF THE HYDRANT SHALL BE THOROUGHLY INSPECTED AND CLEANED OF ALL FOREIGN MATTER BEFORE BEING SET IN PLACE.
        ii. FIRE HYDRANTS SHALL BE OF THE DRY BARREL, COMPRESSION TYPE AND SHALL COMPLY WITH AWWA C502 "STANDARD FOR DRY-BARREL FIRE HYDRANTS" AND BE MUELLER CENTURION 200 TO 250 CLASS OR CLOW MEDALLION FIRE HYDRANTS. USE EPDM FOR O-RINGS AND SEATS (RUBBERS).
        iii. HYDRANT OPERATING NUT SHOULD OPEN LEFT.
        iv. GASKETS SHALL BE FURNISHED IN ALL OUTLET CAPS. THE BARREL LENGTH SHALL BE AS REQUIRED TO ACCOMMODATE THE DEPTH OF THE MAIN.
        v. HYDRANTS SHALL BE INSTALLED AT LOCATIONS SHOWN ON THE DRAWINGS. IF ONE OR MORE HYDRANTS CANNOT BE INSTALLED AS SHOWN BECAUSE OF OBSTRUCTIONS, DRIVEWAYS, OR CHANGES, NEW LOCATIONS SHALL BE REQUESTED OF TWC OR THE FIRE DEPARTMENT HAVING JURISDICTION.
        vi. EACH HYDRANT SHALL STAND PLUMB, WITH STEAMER CONNECTION FACING STREET AND THE 2.5" NOZZLES ON EACH SIDE AT A 90 DEGREE ANGLE TO THE STREET.
    e. STANDBY SERVICE LINES (FIRE LINES)
        i. STANDBY SERVICE LINES (FIRE LINES) SHALL BE DESIGNED WITH ADEQUATE CROSS-CONNECTION AND BACKFLOW PREVENTION MEASURES AS WELL AS A METHOD FOR DETERMINING WATER FLOW. SEE THE CROSS-CONNECTION CONTROL AND BACKFLOW PREVENTION PROGRAM FOR MORE INFORMATION.
        ii. IT IS NOT NECESSARY TO INSTALL A METER ON A STANDBY SERVICE LINE. A DETECTOR CHECK IS REQUIRED. AN EFFICIENT WAY TO MEET BOTH CROSS CONNECTION AND BACKFLOW PREVENTION REQUIREMENTS WITH ONE DEVICE IS TO INSTALL A DOUBLE CHECK DETECTOR ASSEMBLY (DCDA) ON THE STANDBY SERVICE LINE. THE DCDA SHALL BE INSTALLED AS CLOSE AS POSSIBLE TO THE LOCATION OF CONNECTION TO THE PUBLIC MAIN AND SHALL BE ACCESSIBLE BY TWC PERSONNEL. DOUBLE CHECK VALVES, DOUBLE CHECK DETECTOR ASSEMBLIES, REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTERS, AND OTHER APPURTENANCES IF INSTALLED UNDERGROUND MUST HAVE A VAULT THAT MEETS THE STANDARDS OUTLINED IN THIS DOCUMENT. ALL UNDERGROUND INSTALLATIONS MUST BE REVIEWED AND APPROVED BY TWC.

        iii. THE BACKFLOW PREVENTION DEVICE WITH FLOW DETECTION SHALL BE INSTALLED ON THE LINE AS CLOSE AS POSSIBLE TO WHERE THE FIRE LINE CROSSES THE PROPERTY LINE.

5. SECTION 5 – VAULTS
    a. CONTRACTOR SHALL PROVIDE TWC ENGINEERING STAFF WITH SPECIFIC INFORMATION ON ANY VAULT FOR REVIEW AND APPROVAL PRIOR TO INSTALLATION.
    b. VAULTS SHALL BE CONSTRUCTED OF CONCRETE WITH DOUBLE SPRING LOADED, SKID RESISTANT, STEEL DOOR WITH AUTOMATIC HOLD OPEN FEATURE.
    c. VAULTS SHALL BE SIZED IN ORDER TO HOUSE THE APPURTENANCE WITH A MINIMUM 2' OF SPACING AROUND IT FOR ROUTINE MAINTENANCE AND INSPECTION.
    d. VAULTS SHALL BE SET 2" ABOVE FINISHED GRADE BUT SHOULD NOT EXCEED 6" ABOVE FINISHED GRADE WITHOUT TWC ENGINEERING STAFF APPROVAL.
    e. EACH END OF THE VAULT SHALL HAVE A CIRCULAR OPENING 2" LARGER IN DIAMETER THAN THE PIPE TO ALLOW FOR PIPE PENETRATION. THESE OPENINGS SHALL BE SEALED WITH LINK SEALS UPON INSERTION OF THE PIPING.
    f. FOR ELECTRONICALLY CONTROLLED VALVES, PROVIDE THE FOLLOWING VAULT DESIGN:
        i. THE VAULT FLOOR SHOULD BE CONCRETE.
        ii. PROVIDE AN APPROPRIATELY-SIZED SUMP AND SUMP PUMP DRAINING WATER TO ABOVE FINISHED GRADE ON VAULT EXTERIOR.
    g. FOR HYDRAULICALLY CONTROLLED VALVES, PROVIDE THE FOLLOWING VAULT DESIGN:
        i. THE VAULT FLOOR SHALL CONSIST OF 1"-11/2" WASHED ROCK 12" THICK. THIS SAME WASHED ROCK WILL SERVE AS THE FOUNDATION AND THE BOTTOM 18" OF BACKFILL FOR THE VAULT.
        ii. PROVIDE AN APPROPRIATELY-SIZED FRENCH DRAIN AROUND VAULT FOR PROPER DRAINAGE.
    h. ALL VAULTS AND VAULT DOORS PLACED IN AREAS WHERE TRAFFIC MAY CROSS OVER IT MUST MEET H-20 LOAD STANDARDS.

6. SECTION 6 – WATER MAIN MATERIALS
    a. DUCTILE IRON PIPE, FITTINGS, AND GASKETS
        i. MECHANICAL JOINTS CONSISTING OF BELL, SOCKET, GLAND, GASKET, BOLTS AND NUTS SHALL CONFORM TO ANSI A21.11.
        ii. ALL DUCTILE IRON PIPE AND FITTINGS SHOULD BE PRESSURE CLASS 350 UNLESS OTHERWISE APPROVED BY TWC AND SHALL CONFORM TO ANSI/AWWA A21.10/C110 OR A21.53/C153.
        iii. PIPE AND FITTINGS SHALL HAVE AN EXTERIOR BITUMINOUS COATING IN ACCORDANCE WITH ANSI A21.51. PIPE AND FITTING INTERIOR SHALL HAVE A CEMENT MORTAR LINING WITH AN ASPHALTIC SEAL COAT CONFORMING TO ANSI/AWWA A21.4/C104.

NO.	REVISION	DATE

10-24-2024
TODD W. BLACKMON
89208

PAPE-DAWSON ENGINEERS
1672 INDEPENDENCE DR, STE 102 I NEW BRAUNFELS, TX 78132 I 830.632.5633
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

MEYER RANCH UNIT 16
COMAL COUNTY, TEXAS
WATER DISTRIBUTION NOTES

PLAT NO.
JOB NO. 30010-27
DATE OCTOBER 2024
DESIGNER CL
CHECKED HF DRAWN BH
SHEET C4.20

Date: Oct 24, 2024, 9:26am User ID: bhurkett
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FOR PERMIT

iv. PIPE AND FITTINGS SHOULD BE DOMESTIC PRODUCTS. FOREIGN MANUFACTURING WILL NOT BE ACCEPTED.
v. PIPE AND FITTING GASKETS, CONFORMING TO ANSI A21.11, SHALL BE MADE OF EPDM (ETHYLENE PROPYLENE DIENE MONOMER) OR SBR (STYRENE-BUTADIENE RUBBER).

b. PVC AND PVCO PIPE
i. PVC PIPE SHOULD BE SDR-21 ASTM D-2241 CLASS 200.
ii. PVCO PIPE SHOULD BE AWWA C909 PVCO PC235.
iii. ALL PVC AND PVCO PIPE FOR POTABLE WATER MAINS SHALL BE BLUE IN COLOR.
iv. ALL PVC AND PVCO PIPE AND FITTINGS SHALL BEAR THE APPROVAL SEAL OF THE NATIONAL SANITATION FOUNDATION (NSF) THAT WILL REMAIN LEGIBLE DURING NORMAL HANDLING, STORAGE, AND INSTALLATION.
v. FITTINGS FOR PVC AND PVCO PIPE (4 INCHES THROUGH 8 INCHES) SHALL BE DUCTILE IRON MECHANICAL JOINT WITH A MINIMUM PRESSURE RATING OF 250 PSI AND SHALL CONFORM TO THE REQUIREMENTS OF ANSI/AWWA A21.10/C110 OR A21.53/C153.

c. HDPE PIPE
i. HDPE PIPE SHOULD BE IPS DR11 RATED TO 200 PSI, OR GREATER AS NEEDED BASED ON SPECIFIC PROJECT REQUIREMENTS. SEE WATER SECTION 6 OF TWC ENGINEERING DESIGN CRITERIA.
ii. HDPE PIPE AND FITTINGS SHOULD BE FUSED UNLESS OTHERWISE NOTED BY TWC.

7. SECTION 7 – WATER MAIN PIPE RESTRAINTS
a. THRUST BLOCKING
i. ALL TEE'S, CROSS'S AND ELBOWS MUST HAVE A CONCRETE THRUST BLOCK SUPPORT. THRUST BLOCKING SHALL BE CONSTRUCTED IN ACCORDANCE WITH TWC STANDARD DETAILS.
ii. THE CONCRETE MUST BE POURED WITH ADEQUATE CONTAINMENT IN PLACE TO AVOID LOSS OF CONCRETE FROM UNDER AND AT THE POINT OF THRUST ON THE FITTING.
iii. THE USE OF ROCKS, BRICKS, AND DRY BAGGED CEMENT ARE NOT CONSIDERED AS ADEQUATE THRUST BLOCKING AND ARE NOT PERMITTED.
b. PVC AND PVCO PIPE JOINT AND FITTING RESTRAINTS
i. ALL PVC AND PVCO PIPE JOINTS SHALL BE RESTRAINED WITH EXTERNAL BELL RESTRAINTS.
ii. ALL DUCTILE IRON FITTINGS ON PVC PIPE SHOULD BE RESTRAINED WITH RETAINER GLANDS, MEGALUG MANUFACTURED BY EBAA OR APPROVED EQUAL.

8. SECTION 8 – WATER MAIN VALVES
a. GATE VALVES
i. BURIED AND ABOVE-GROUND GATE VALVES SHALL BE OF THE RESILIENT SEAT TYPE MEETING THE REQUIREMENTS OF AWWA C509, AND COATED PER AWWA C550 AS MANUFACTURED BY THE MUELLER OR CLOW COMPANY.

ii. GATE VALVES SHALL HAVE NON-RISING STEMS AND SHALL OPEN WHEN THE NUT IS TURNED COUNTERCLOCKWISE.
iii. BURIED GATE VALVES SHALL BE FURNISHED WITH 2 INCH SQUARE AWWA OPERATING NUTS.
iv. ABOVE-GROUND GATE VALVES SHALL BE FURNISHED WITH A HANDWHEEL.

b. VALVE BOXES
i. VALVE BOXES FOR ALL VALVES INSTALLED BELOW GROUND SHALL CONSIST OF A PVC RISER, AND A CAST IRON "LINCOLN HAT" BOX AND LID.
ii. VALVE BOX EXTENSIONS SHALL BE INSTALLED TO RESERVE A MINIMUM OF 50% OF THE ADJUSTMENT FOR A FUTURE EXTENSION.
iii. THE OPERATING NUT SHOULD NOT EXCEED 36-INCHES BELOW FINISHED GRADE. HOWEVER, IF CONDITIONS REQUIRE THAT THE OPERATING NUT EXCEEDS 36 INCHES, THEN AN EXTENSION, MECHANICALLY ATTACHED TO THE VALVE, SHALL BE ADDED, AND THE TOP OF THE EXTENSION SHALL NOT EXCEED 12 INCHES BELOW FINISHED GRADE.

c. AIR RELEASE VALVES
i. AIR RELEASE VALVES SHALL BE APCO #55 OR EQUIVALENT SUBJECT TO APPROVAL BY TWC.
ii. AIR RELEASE VALVES SHALL BE HOUSED IN AN 18"X24" OR LARGER CONCRETE METER BOX WITH A CAST IRON RING AND LID WITH THE WORD WATER CAST INTO THE LID.
iii. AIR RELEASE VALVE ASSEMBLIES SHALL BE CONSTRUCTED IN ACCORDANCE WITH TWC STANDARD DETAILS.

d. PRESSURE REDUCING VALVES (PRV)
i. STEEL BRAIDED LINES FROM PRV TO REGULATOR MUST BE INSTALLED ON THE PILOT SYSTEM. SEE WATER SECTION 8 OF TWC ENGINEERING DESIGN CRITERIA.

9. SECTION 9 – PIPE AND VALVE LOCATING
a. ELECTRONIC LOCATOR TAPE
i. ALL BURIED WATER MAINS SHALL HAVE A SUITABLE ELECTRONIC LOCATOR TAPE BURIED OVER THE WATER MAIN APPROXIMATELY ONE FOOT ABOVE THE CROWN OF THE PIPE AT THE TOP OF THE BEDDING MATERIAL.
ii. THE TAPE SHALL BE CONTINUOUS BETWEEN VALVES.
iii. THE TAPE SHALL BE AT LEAST 4.5 MILS THICK, 6 INCH MINIMUM WIDTH AND MADE WITH AN ALUMINUM MATERIAL SANDWICHED BETWEEN 2 LAYERS OF POLYETHYLENE.
iv. THE TAPE SHALL HAVE IMPRINTED IN PERMANENT BLACK INK WITH 1 INCH LETTERS "CAUTION WATER MAIN BURIED BELOW" ON BLUE BACKGROUND.

b. TRACER WIRE
i. ALL BURIED WATER MAINS SHALL HAVE TRACER WIRE TAPED ON TOP OF THE WATER MAIN. SEE STANDARD DETAILS FOR INSTALLATION REQUIREMENTS.
ii. THE WIRE SHALL BE CONTINUOUS BETWEEN VALVES AND SECURED TO EACH VALVE WITH A TEST STATION. TEST STATION SHOULD BE SNAKEPIT ACCESS POINT MANUFACTURED BY COPPERHEAD INDUSTRIES.

iii. THE WIRE SHALL BE BLUE 12 GAUGE COPPER-CLAD MANUFACTURED BY COPPERHEAD INDUSTRIES, SEE TWC STANDARD DETAIL.

c. VALVE AND LINE MARKERS
i. ALL TWC CROSS-COUNTRY MAIN LINE VALVES WILL HAVE A 2" X 54" MARKER POST INSTALLED 12" BEHIND THE VALVE BOX, UNLESS OTHERWISE DIRECTED BY TWC. THE MARKER POST SHOULD BE BURIED AND CONCRETED INTO PLACE 18" DEEP AND PAINTED BLUE . 2" MARKER PIPE MUST BE FILLED WITH CONCRETE PER TWC STANDARD DETAIL.

10. SECTION 10 – SERVICE INSTALLATION REQUIREMENTS
a. WATER SERVICES ARE ONLY ALLOWED ON WATER LINES 16" AND SMALLER.
b. WATER METERS AND METER BOX INSTALLATION
i. THE CONTRACTOR SHALL FURNISH ALL LABOR AND MATERIAL REQUIRED TO INSTALL THE SERVICES. THE METER WILL BE FURNISHED AND INSTALLED BY TWC. THE CONTRACTOR SHALL LEAVE THE PROPER SPACE BETWEEN THE ANGLE METER STOP OR VALVE IN THE METER BOX AND CONSUMER'S PIPING SO THE METER MAY BE EASILY INSTALLED IN THE SPACE PROVIDED.
ii. METER BOXES SHALL, WHERE POSSIBLE, BE SET SQUARE AND LEVEL 2" ABOVE THE FINISHED GRADE OF THE SURROUNDING AREA IN ORDER TO AVOID RUN-OFF WATER. THEY SHALL BE LOCATED AT THE EDGE OF PROPERTY OR ROW LINE AND 6" OUTSIDE THE BACK OF THE CURB OR SIDEWALK.
iii. WHERE NO CURB OR SIDEWALK EXISTS, THE METER BOXES SHALL BE SET AT THE LOCATION INDICATED ON THE DRAWINGS OR AS DIRECTED BY THE ENGINEER; METER BOXES WILL BE PLACED AT PROPERTY LINES IN MOST CASES.
iv. WHEN POSSIBLE, METER BOXES FOR ADJACENT LOTS SHALL BE PLACED SIDE BY SIDE ON EITHER SIDE OF THE PROPERTY LINE DIVIDING THE TWO LOTS. THE BOXES, RECTANGULAR IN SHAPE, SHALL BE SET WITH THE LONG SIDE PERPENDICULAR TO THE CENTER LINE OF THE STREET OR RIGHTS-OF-WAY, WITH THE NOTCHED END TOWARD CONSUMER PIPING IN ACCORDANCE WITH TWC STANDARD DETAIL.
v. TRAFFIC BEARING METER BOXES SHALL BE USED IN ANY PAVED AREA WHERE VEHICLE TRAFFIC IS ANTICIPATED.

a. SERVICE SADDLES
i. SERVICE SADDLES ARE REQUIRED FOR WATER SERVICES ON PVC PIPE AND DUCTILE IRON PIPE.
ii. SERVICE SADDLES SHALL HAVE A BRASS BODY, HINGED, BE SUITABLE FOR WET OR DRY INSTALLATION, AND OF THE SIZE AND APPLICATION SPECIFIED.
iii. SERVICE SADDLE MATERIAL SHALL BE IN ACCORDANCE WITH ASTM B62 AND B584 (85-5-5-5) REQUIREMENTS AND FABRICATED TO ANCI/AWWA C800, LATEST REVISION.
iv. SADDLES FOR PVC PIPE SHALL BE PERFORMED TO AWWA C900 AND C905 OR C909 OUTSIDE DIAMETER DIMENSIONS AND SO STAMPED OR OTHERWISE IDENTIFIED BY A PERMANENT INKED MARKING THAT WILL NOT SMEAR OR WASH OFF ON THE BODY OF THE SADDLE.

v. SADDLES SHOULD BE IN ACCORDANCE WITH TWC STANDARD PRODUCTS.
vi. SADDLES FOR DUCTILE IRON PIPE SHALL BE STAMPED OR OTHERWISE IDENTIFIED IN A SIMILAR MANNER. THE SEALING GASKET SHALL BE THE O-RING TYPE SUITABLE FOR THE APPLICABLE SERVICE. OUTLET FLANGE SHALL BE ANSI B16.1.

11. SECTION 11 – HYDROSTATIC AND LEAKAGE TEST REQUIREMENTS
a. CONTRACTOR SHALL COMPLETE HYDROSTATIC AND LEAKAGE TEST AND DISINFECT WATER LINES PRIOR TO PROJECT COMPLETION.
b. WATER MAINS SHALL BE TESTED AS A WHOLE OR IN SECTIONS BETWEEN VALVES. THE TOTAL LENGTH OF PIPE FOR ANY SINGLE TEST SHALL NOT EXCEED 2,000 FEET.
c. PRIOR TO TESTING, ALL VALVES SHALL BE TESTED FOR SECURE CLOSURE.
d. THE MAINS SHALL BE TESTED IN ACCORDANCE WITH SECTION 4, HYDROSTATIC TESTING, AWWA C600 (LATEST REVISION).
i. WHEN INSTALLING C909 CLASS 200, TESTING SHALL NOT BE LESS THAN 175 PSI FOR 30 MINUTES USING A 300 PSI GAUGE.
ii. WHEN INSTALLING C909 CLASS 150, TESTING SHALL BE NOT LESS THAN 150PSI FOR 30 MINUTES USING A 300 PSI GAUGE.
e. ALL PUMPS, GAUGES AND MEASURING DEVICES SHALL BE FURNISHED, INSTALLED, AND OPERATED BY THE CONTRACTOR AND ALL SUCH EQUIPMENT AND DEVICES AND THEIR INSTALLATION, SHALL BE APPROVED BY TWC.
f. ALL WATER FOR TESTING AND FLUSHING SHALL BE POTABLE WATER PROVIDED BY TWC, AT THE CONTRACTOR'S EXPENSE.
g. THE QUANTITY OF WATER USED FOR TESTING, WHICH SHALL BE COMPARED TO THE ALLOWABLE QUANTITY, SHALL BE MEASURED BY PUMPING FROM A CALIBRATED CONTAINER OR CERTIFIED WATER METER, THAT MEETS TWC APPROVAL.
h. ALL RESTRAINED SECTIONS OF THE BURIED MAIN SHALL BE COMPLETELY BACKFILLED BEFORE SUCH SECTIONS ARE TESTED.
i. THE ENTIRE PRESSURE AND LEAKAGE PROCESS SHALL BE DONE IN THE PRESENCE OF A TWC INSPECTOR. COORDINATE WITH TWC INSPECTION DEPARTMENT A MINIMUM OF 2 DAYS IN ADVANCE.
j. WHEN LEAKAGE OCCURS IN EXCESS OF THE SPECIFIED AMOUNT, DEFECTIVE PIPE, PIPE JOINTS OR OTHER APPURTENANCES SHALL BE LOCATED AND REPAIRED AT THE EXPENSE OF THE CONTRACTOR. IF THE DEFECTIVE PORTIONS CANNOT BE LOCATED, THE CONTRACTOR, AT HIS OWN EXPENSE, SHALL REMOVE AND RECONSTRUCT AS MUCH OF THE ORIGINAL WORK AS NECESSARY TO OBTAIN A WATER MAIN WITHIN THE ALLOWABLE LEAKAGE LIMITS UPON RETESTING.

12. SECTION 12 – DISINFECTION REQUIREMENTS
a. WATER LINES
a. THE CONTRACTOR SHALL DISINFECT ALL PIPE AND FITTINGS INSTALLED IN THE SYSTEM AND RECEIVE THE REQUIRED APPROVALS AND CLEARANCES PRIOR TO PLACING THE SYSTEM IN SERVICE.
b. THE DISINFECTION SHALL BE ACCOMPLISHED IN ACCORDANCE WITH THE APPLICABLE PROVISIONS OF AWWA C 651, "DISINFECTING WATER MAINS," AND ALL APPROPRIATE APPROVAL AGENCIES. CARE SHALL BE TAKEN TO PROVIDE DISINFECTION OF THE ENTIRE SYSTEM.

c. AFTER DISINFECTION, THE CONTRACTOR WILL THOROUGHLY FLUSH THE LINE UNTIL WATER SAMPLES SHOW A CHLORINE CONTENT EQUAL TO OR GREATER THAN EXISTING SYSTEM AND BACTERIOLOGICAL TESTS ARE SATISFACTORY.

b. TANKS
a. THE REQUIRED DISINFECTION METHOD FOR TANKS (GROUND STORAGE, ELEVATED, CLEAR WELLS, ETC.) IS METHOD #2 PER AWWA C652.

NO.	REVISION	DATE

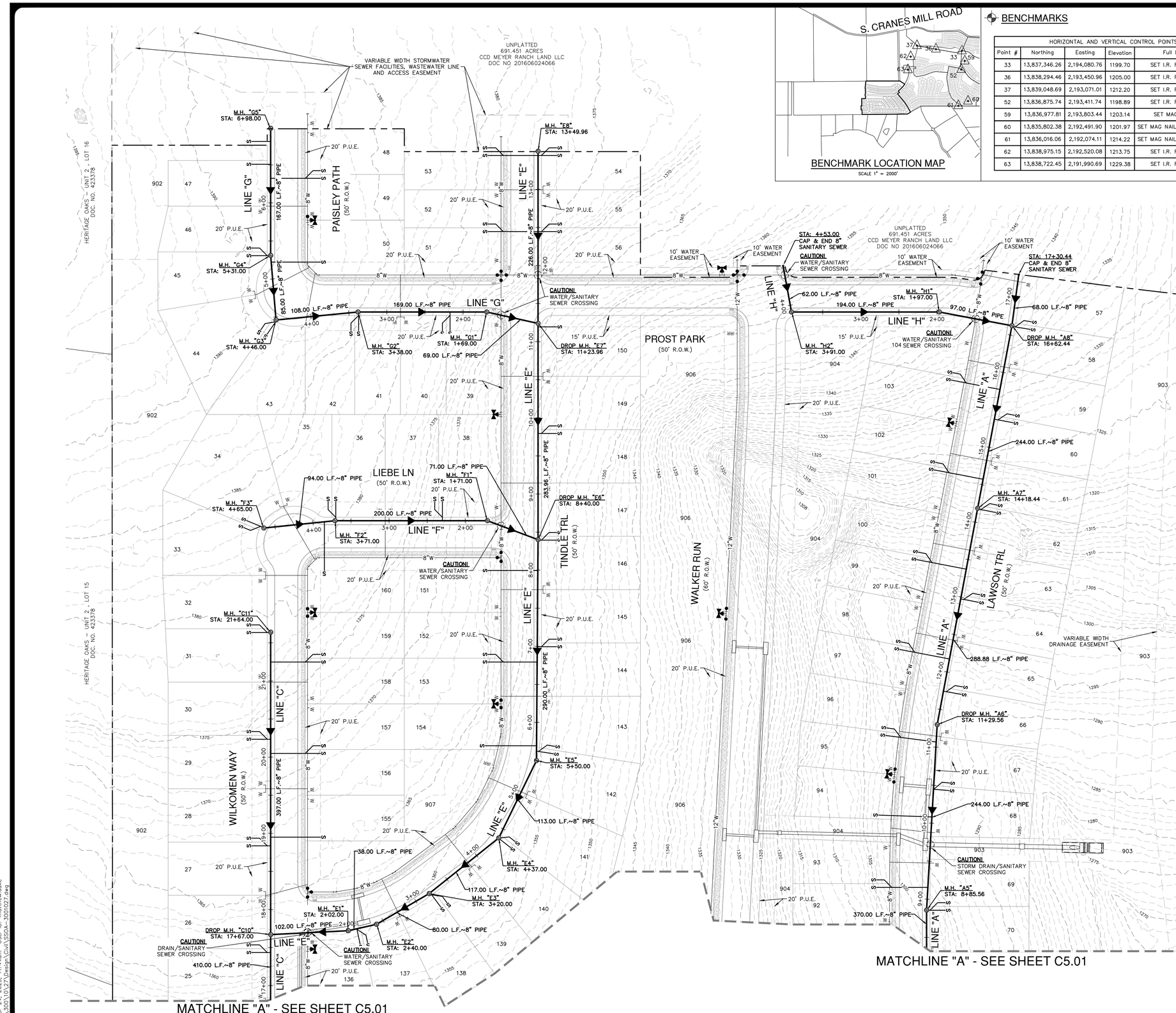
STATE OF TEXAS
TODD W. BLACKMON
89208
LICENSED
PROFESSIONAL ENGINEER
10-24-2024

PAPE-DAWSON ENGINEERS
1672 INDEPENDENCE DR, STE 102 | NEW BRAUNFELS, TX 78132 | 830.832.5653
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

MEYER RANCH UNIT 16
COMAL COUNTY, TEXAS
WATER DISTRIBUTION NOTES

PLAT NO.
JOB NO. 30010-27
DATE OCTOBER 2024
DESIGNER CL
CHECKED HF DRAWN BH
SHEET C4.21

FOR PERMIT



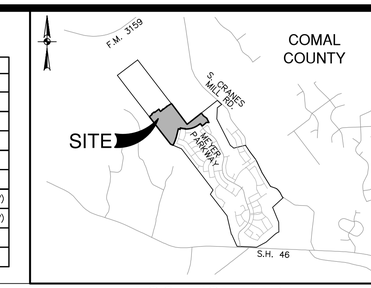
BENCHMARK LOCATION MAP

SCALE 1" = 2000'

BENCHMARKS

HORIZONTAL AND VERTICAL CONTROL POINTS

Point #	Northing	Easting	Elevation	Full Description
33	13,837,346.26	2,194,080.76	1199.70	SET I.R. REDCAP (TRAV)
36	13,838,294.46	2,193,450.96	1205.00	SET I.R. REDCAP (TRAV)
37	13,839,048.69	2,193,071.01	1212.20	SET I.R. REDCAP (TRAV)
52	13,836,875.74	2,193,411.74	1198.89	SET I.R. REDCAP (TRAV)
59	13,836,977.81	2,193,803.44	1203.14	SET MAG NAIL (TRAV)
60	13,835,802.38	2,192,491.90	1201.97	SET MAG NAIL & WASHER (TRAV)
61	13,836,016.06	2,192,074.11	1214.22	SET MAG NAIL & WASHER (TRAV)
62	13,838,975.15	2,192,520.08	1213.75	SET I.R. REDCAP (TRAV)
63	13,838,722.45	2,191,990.69	1229.38	SET I.R. REDCAP (TRAV)



LOCATION MAP

NOT-TO-SCALE

SCALE: 1"= 60' 0' 60' 120' 180'

SEWER LEGEND

PROJECT LIMITS	
EXISTING WATER	W
EXISTING REUSE WATER	REUSE
EXISTING SEWER	SS
PROPOSED SEWER	SS MANHOLE
PROPOSED WATER	FIRE HYDRANT W
PROPOSED WYE & LATERAL	
GAS, ELECTRIC, TELEPHONE & CABLE TELEVISION EASEMENT	P.U.E.
PROPOSED STORM DRAIN	
PROPOSED UNDERGROUND ELECTRIC (REFER TO NBU DESIGN SHEETS AND DETAILS)	UGE
100' SANITARY SEWER ENVELOPE	

NOTES

1. ALL WATER AND WASTEWATER SERVICES AND VALVE LOCATIONS SHALL BE MARKED AS FOLLOWS:
   - WATER SERVICE– "W" ON TOP OF CURB
   - WASTEWATER SERVICE– "S" ON TOP OF CURB
   - VALVE– "V" ON FACE OF CURB
2. MARKS SHALL BE MADE DURING CONCRETE PLACEMENT WHEN POSSIBLE. TOOLS FOR CURB MARKINGS SHALL BE PURPOSE BUILT AND PRODUCE MARKINGS THAT ARE CLEAR AND MINIMIZE POTENTIAL FOR SPALLING.

CAUTION!!

CONTRACTOR SHALL BE REQUIRED TO LOCATE ALL PUBLIC OR PRIVATE UTILITIES INCLUDING BUT NOT LIMITING TO: WATER, SEWER, TELEPHONE AND FIBER OPTIC LINES, SITE LIGHTING ELECTRIC, SECONDARY ELECTRIC, PRIMARY ELECTRICAL DUCTBANKS, LANDSCAPE IRRIGATION FACILITIES, AND GAS LINES. ANY UTILITY CONFLICTS THAT ARISE SHOULD BE COMMUNICATED TO THE ENGINEER IMMEDIATELY AND PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL CONTACT 1–800–DIG–TESS A MINIMUM OF 48 HOURS PRIOR TO THE START OF CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND THE REPAIR SHALL BE AT CONTRACTOR'S SOLE EXPENSE WHETHER THE UTILITY IS SHOWN ON THESE PLANS OR NOT.

FINISHED FLOOR NOTES:

1. THE FINISHED FLOOR ELEVATIONS (FF) REPRESENT THE MINIMUM POSSIBLE FLOOR ELEVATION TO PROVIDE SANITARY SEWER SERVICE TO EACH LOT. ACTUAL FINISHED FLOOR ELEVATIONS FOR EACH LOT ARE TO BE DETERMINED BY THE BUILDER AND SHALL TAKE INTO CONSIDERATION AS–BUILT CONDITIONS FOR FOUND SEWER SERVICES AND ACTUAL LATERAL PLACEMENT. IT IS THE BUILDER'S SOLE RESPONSIBILITY TO DETERMINE ACTUAL FINISHED FLOOR ELEVATIONS FOR EACH LOT PRIOR TO THE START OF HOME FOUNDATION CONSTRUCTION TAKING INTO CONSIDERATION SITE DRAINAGE, STREET ACCESS AND SANITARY SEWER SERVICE ELEVATIONS.
2. THE MINIMUM SANITARY SEWER LATERAL GRADES WERE BASED UPON THE MINIMUM FINISHED FLOOR ELEVATIONS FOR THE LOTS LOCATED ON THE DOWNHILL SIDES OF THE PROPOSED ROADWAYS.

TRENCH EXCAVATION SAFETY PROTECTION:

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

ITEM	UNIT	QUANTITY
8" SANITARY SEWER PIPE	LF	7,047
LUEs	EA	160
WASTEWATER SERVICE	EA	160
MANHOLES	EA	44
CAPS	EA	2

NO.	REVISION	DATE

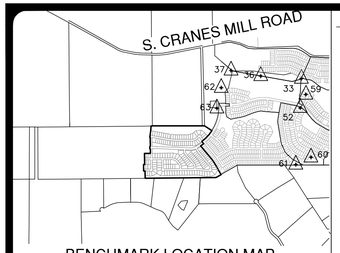
STATE OF TEXAS
TODD W. BLACKMON
89208
LICENSED PROFESSIONAL ENGINEER
4–24–2025

PAPE-DAWSON ENGINEERS
1672 INDEPENDENCE DR, STE 102 I NEW BRAUNFELS, TX 78132 I 830.632.5633
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

MEYER RANCH UNIT 16
COMAL COUNTY, TEXAS
OVERALL SANITARY SEWER PLAN

PLAT NO. _____
JOB NO. 30010–27
DATE DECEMBER 2024
DESIGNER CL
CHECKED HF DRAWN BH
SHEET C5.00

FOR PERMIT

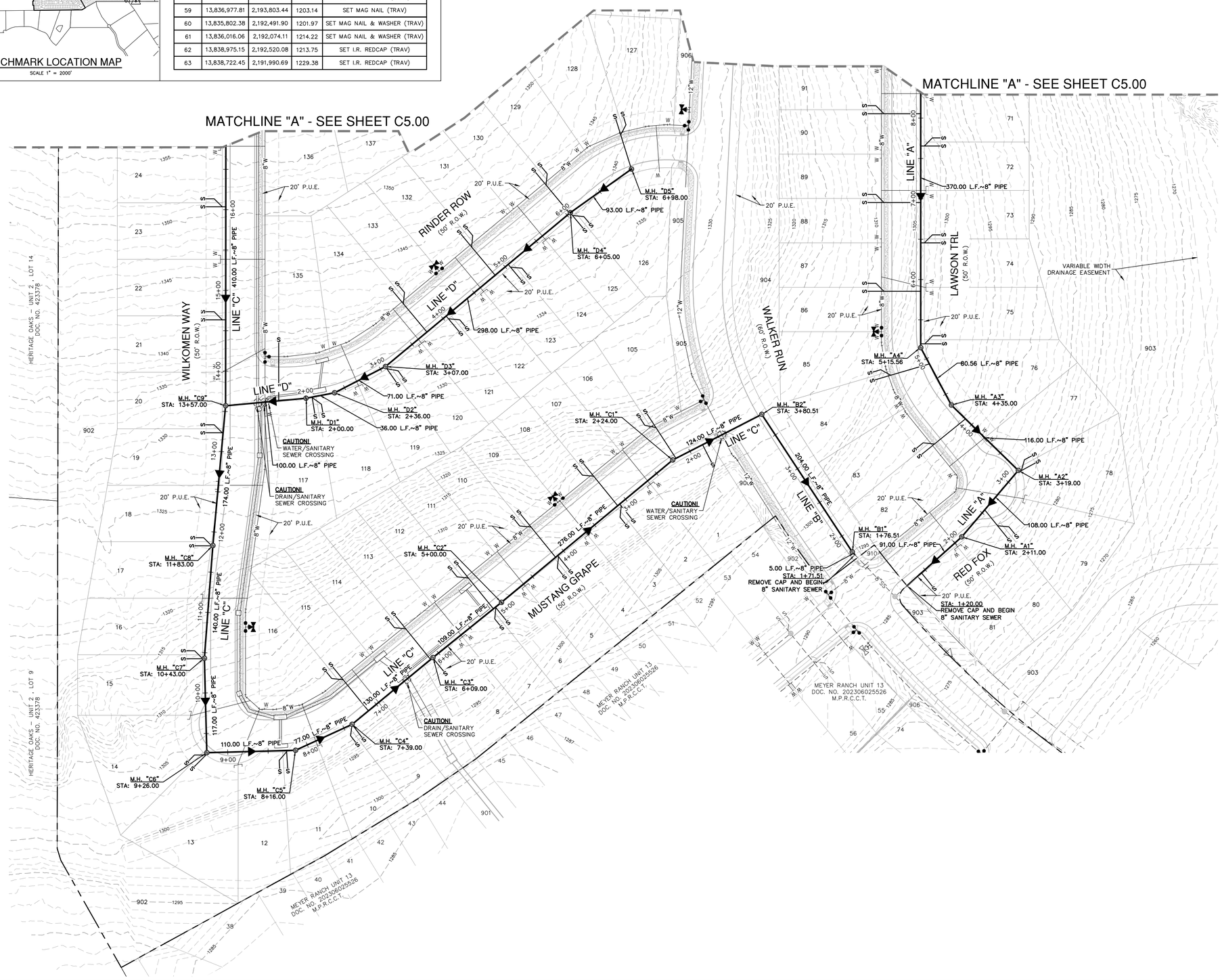


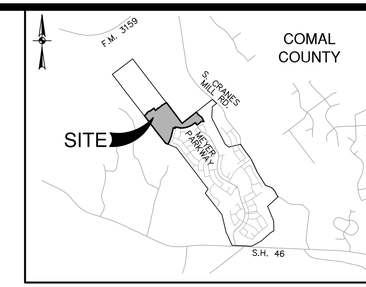
BENCHMARK LOCATION MAP

SCALE 1" = 2000'

BENCHMARKS

HORIZONTAL AND VERTICAL CONTROL POINTS				
Point #	Northing	Easting	Elevation	Full Description
33	13,837,346.26	2,194,080.76	1199.70	SET I.R. REDCAP (TRAV)
36	13,838,294.46	2,193,450.96	1205.00	SET I.R. REDCAP (TRAV)
37	13,839,048.69	2,193,071.01	1212.20	SET I.R. REDCAP (TRAV)
52	13,836,875.74	2,193,411.74	1198.89	SET I.R. REDCAP (TRAV)
59	13,836,977.81	2,193,803.44	1203.14	SET MAG NAIL (TRAV)
60	13,835,802.38	2,192,491.90	1201.97	SET MAG NAIL & WASHER (TRAV)
61	13,836,016.06	2,192,074.11	1214.22	SET MAG NAIL & WASHER (TRAV)
62	13,838,975.15	2,192,520.08	1213.75	SET I.R. REDCAP (TRAV)
63	13,838,722.45	2,191,990.69	1229.38	SET I.R. REDCAP (TRAV)





LOCATION MAP

NOT-TO-SCALE

SCALE: 1"= 60'

0' 60' 120' 180'

SEWER LEGEND

PROJECT LIMITS	
EXISTING WATER	W
EXISTING REUSE WATER	REUSE
EXISTING SEWER	SS
PROPOSED SEWER	SS MANHOLE
PROPOSED WATER	FIRE HYDRANT W
PROPOSED WYE & LATERAL	S
GAS, ELECTRIC, TELEPHONE & CABLE TELEVISION EASEMENT	P.U.E.
PROPOSED STORM DRAIN	
PROPOSED UNDERGROUND ELECTRIC (REFER TO NBU DESIGN SHEETS AND DETAILS)	UGE
100' SANITARY SEWER ENVELOPE	

NOTES

1. ALL WATER AND WASTEWATER SERVICES AND VALVE LOCATIONS SHALL BE MARKED AS FOLLOWS:
   - WATER SERVICE– "W" ON TOP OF CURB
   - WASTEWATER SERVICE– "S" ON TOP OF CURB
   - VALVE– "V" ON FACE OF CURB
2. MARKS SHALL BE MADE DURING CONCRETE PLACEMENT WHEN POSSIBLE. TOOLS FOR CURB MARKINGS SHALL BE PURPOSE BUILT AND PRODUCE MARKINGS THAT ARE CLEAR AND MINIMIZE POTENTIAL FOR SPALLING.

CAUTION!!

CONTRACTOR SHALL BE REQUIRED TO LOCATE ALL PUBLIC OR PRIVATE UTILITIES INCLUDING BUT NOT LIMITING TO: WATER, SEWER, TELEPHONE AND FIBER OPTIC LINES, SITE LIGHTING ELECTRIC, SECONDARY ELECTRIC, PRIMARY ELECTRICAL DUCTBANKS, LANDSCAPE IRRIGATION FACILITIES, AND GAS LINES. ANY UTILITY CONFLICTS THAT ARISE SHOULD BE COMMUNICATED TO THE ENGINEER IMMEDIATELY AND PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL CONTACT 1–800–DIG–TESS A MINIMUM OF 48 HOURS PRIOR TO THE START OF CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND THE REPAIR SHALL BE AT CONTRACTOR'S SOLE EXPENSE WHETHER THE UTILITY IS SHOWN ON THESE PLANS OR NOT.

FINISHED FLOOR NOTES:

1. THE FINISHED FLOOR ELEVATIONS (FF) REPRESENT THE MINIMUM POSSIBLE FLOOR ELEVATION TO PROVIDE SANITARY SEWER SERVICE TO EACH LOT. ACTUAL FINISHED FLOOR ELEVATIONS FOR EACH LOT ARE TO BE DETERMINED BY THE BUILDER AND SHALL TAKE INTO CONSIDERATION AS–BUILT CONDITIONS FOR FOUND SEWER SERVICES AND ACTUAL LATERAL PLACEMENT. IT IS THE BUILDER'S SOLE RESPONSIBILITY TO DETERMINE ACTUAL FINISHED FLOOR ELEVATIONS FOR EACH LOT PRIOR TO THE START OF HOME FOUNDATION CONSTRUCTION TAKING INTO CONSIDERATION SITE DRAINAGE, STREET ACCESS AND SANITARY SEWER SERVICE ELEVATIONS.
2. THE MINIMUM SANITARY SEWER LATERAL GRADES WERE BASED UPON THE MINIMUM FINISHED FLOOR ELEVATIONS FOR THE LOTS LOCATED ON THE DOWNHILL SIDES OF THE PROPOSED ROADWAYS.

TRENCH EXCAVATION SAFETY PROTECTION:

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

ITEM	UNIT	QUANTITY
8" SANITARY SEWER PIPE	LF	7,047
LUEs	EA	160
WASTEWATER SERVICE	EA	160
MANHOLES	EA	44
CAPS	EA	2

NO.	REVISION	DATE

STATE OF TEXAS
TODD W. BLACKMON
89208
LICENSED
PROFESSIONAL ENGINEER
4–24–2025

PAPE-DAWSON ENGINEERS
1672 INDEPENDENCE DR, STE 102 I NEW BRAUNFELS, TX 78132 I 830.632.5633
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

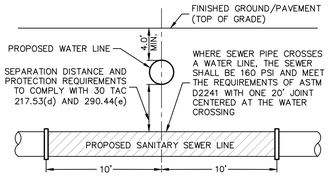
MEYER RANCH UNIT 16

COMAL COUNTY, TEXAS

OVERALL SANITARY SEWER PLAN

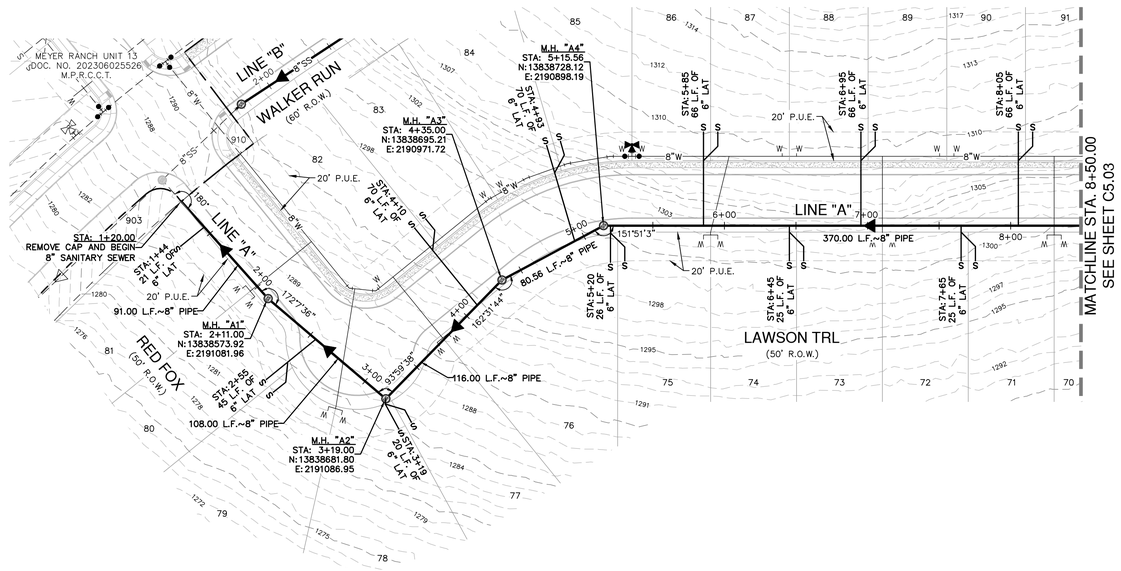
PLAT NO.
JOB NO. 30010–27
DATE DECEMBER 2024
DESIGNER CL
CHECKED HF DRAWN BH
SHEET C5.01

FOR PERMIT



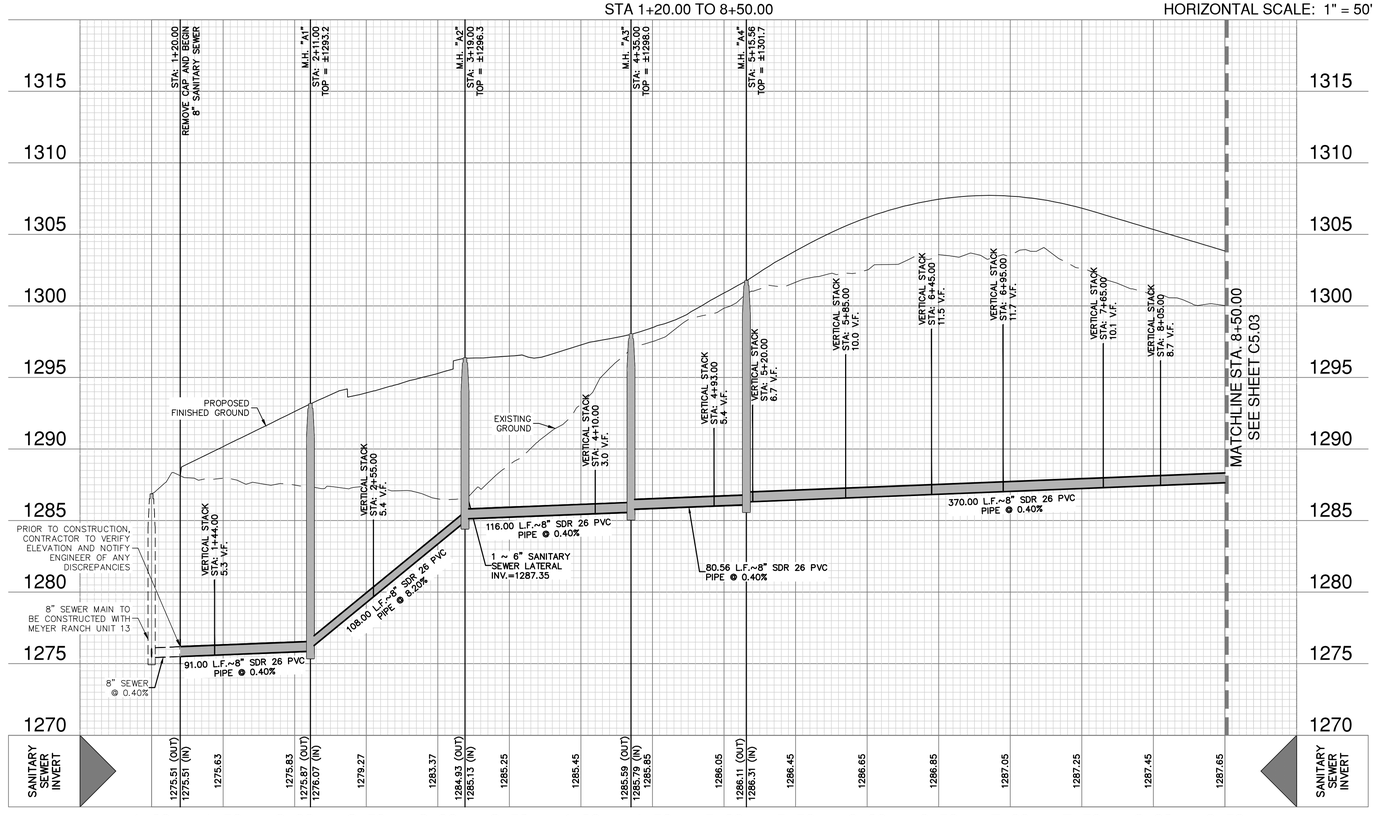
TYPICAL SANITARY SEWER/WATER CROSSING DETAIL

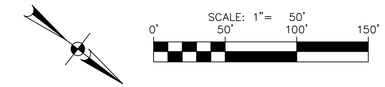
NOT-TO-SCALE



SANITARY SEWER LINE "A"
STA 1+20.00 TO 8+50.00

VERTICAL SCALE: 1" = 5'
HORIZONTAL SCALE: 1" = 50'





SEWER LEGEND

- PROJECT LIMITS
- EXISTING WATER
- EXISTING SEWER
- PROPOSED SEWER
- PROPOSED WATER
- PROPOSED SEWER LATERAL
- FINISHED FLOOR ELEVATION FOR SEWER
- PUBLIC UTILITY EASEMENT
- PROPOSED STORM DRAIN
- CAUTION! WATER SERVICE/SEWER CROSSING

MANHOLE
FIRE HYDRANT
FF = XXXX.XX
P.U.E.

NOTES

1. SEWER PIPE WHERE WATER LINE CROSSES SHALL BE 160 P.S.I. AND MEET THE REQUIREMENTS OF ASTM D2241 WITH ONE 20' JOINT CENTERED AT WATER MAIN.
2. NO VERTICAL STACKS ALLOWED FOR ANY LOTS UNLESS OTHERWISE SPECIFIED BY THE ENGINEER.
3. WHEN HORIZONTAL DISTANCE BETWEEN SEWER PIPES AND WATER MAIN IS LESS THAN 9 FOOT OF SEPARATION, SEWER MAIN SHALL BE INSTALLED WITH 150 PSI (MIN) PRESSURE PIPE AND FITTINGS IN ACCORDANCE WITH NBU'S WATER CONNECTION POLICY IN THE VICINITY OF WATER MAINS. (SEE SEWER NOTES SHEET C5.30)
4. CONTRACTOR SHALL ENSURE THAT MANHOLES OUTSIDE OF PAVED AREAS ARE SET WITH TOP ELEVATIONS 2" ABOVE FINISHED GRADE WITH CONCRETE RING ENCASEMENT. CONTRACTOR SHALL ENSURE THAT MANHOLES IN PAVED AREAS ARE SET TO MATCH TOP OF FINISHED GRADE.
5. ALL SEWER PIPES SHALL BE 8" OR 12" PVC (SDR 26), UNLESS OTHERWISE NOTED.
6. CONTRACTOR IS TO VERIFY EXISTING INVERT OF SANITARY SEWER MAIN AND ALERT ENGINEER IMMEDIATELY OF ANY DIFFERENCE FROM INVERT SHOWN ON PLANS.
7. CONTRACTOR SHALL PROTECT ALL EXISTING FENCES. ANY FENCE DAMAGED BY THE CONTRACTOR SHALL BE REPAIRED BY THE CONTRACTOR AT THEIR EXPENSE.
8. THE CONTRACTOR WILL BE RESPONSIBLE FOR DETERMINING EXACT LOCATION OF ALL UTILITIES AND DRAINAGE STRUCTURES WHETHER SHOWN ON THE PLANS OR NOT. THE CONTRACTOR SHALL UNCOVER EXISTING UTILITIES PRIOR TO CONSTRUCTION TO VERIFY SIZE, GRADE, AND LOCATION. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY OF ANY DEVIATIONS FROM PLANS PRIOR TO BEGINNING CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES, WHETHER SHOWN ON THE PLANS OR NOT, SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO REPAIR, AT HIS EXPENSE.
9. SEE THIS SHEET FOR TYPICAL SANITARY SEWER/WATER CROSSING DETAIL.
10. IF A CONFLICT EXISTS BETWEEN THE VARIOUS SUBMITTED DOCUMENTS (ENGINEERING CALCULATIONS, PROJECTED SPECIFICATIONS, PROJECTED PLANS, ADDENDUMS, ETC.), THE FOLLOWING DOCUMENTS TAKE PRECEDENT: SPECIFICATIONS GOVERN OVER PLANS, SPECIAL CONDITIONS GOVERN OVER SPECIFICATIONS AND PLANS. ADDENDUMS TAKE PRECEDENCE OVER ALL.
11. LAST 20 L.F. OF 8" STUB-OUT SHALL BE CONSTRUCTED OF P.V.C. SDR 26 (160 P.S.I.) PRESSURE PIPE.
12. ALL SEWER PIPE LATERALS SHALL BE SDR 26 (CLASS 160) PVC PIPE.
13. ALL WATER AND WASTEWATER SERVICES AND VALVE LOCATIONS SHALL BE MARKED AS FOLLOWS:
    - WATER SERVICE– "W" ON TOP OF CURB
    - WASTEWATER SERVICE– "S" ON TOP OF CURB
    - VALVE– "V" ON FACE OF CURB
14. MARKS SHALL BE MADE DURING CONCRETE PLACEMENT WHEN POSSIBLE. TOOLS FOR CURB MARKINGS SHALL BE PURPOSE BUILT AND PRODUCE MARKINGS THAT ARE CLEAR AND MINIMIZE POTENTIAL FOR SPALLING.

NOTE:
FOR PAVEMENT DESIGN SECTION SEE GEOTECHNICAL ENGINEERING REPORT.

CAUTION!!

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NO.	REVISION	DATE

STATE OF TEXAS
TODD W. BLACKMON
89208
LICENSED
PROFESSIONAL ENGINEER
4-24-2025

PAPE-DAWSON ENGINEERS
1672 INDEPENDENCE DR, STE 102 | NEW BRAUNFELS, TX 78132 | 830.632.5633
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

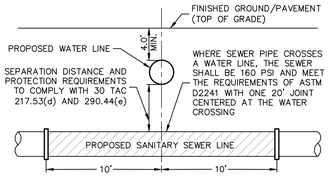
MEYER RANCH UNIT 16

COMAL COUNTY, TEXAS

SANITARY SEWER LINE A - PLAN & PROFILE
STA 1+20.00 TO 8+50.00

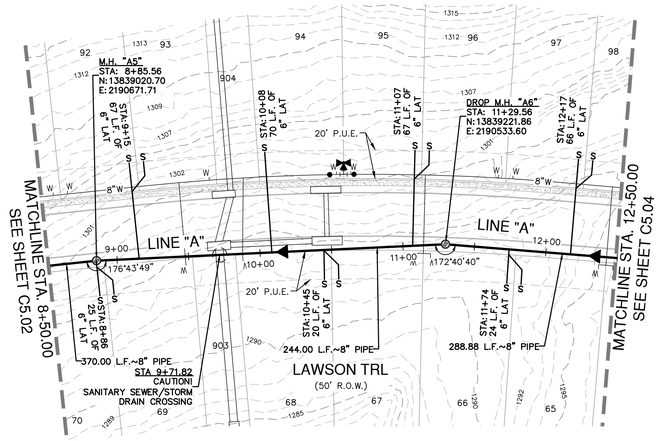
PLAT NO.
JOB NO. 30010-27
DATE DECEMBER 2024
DESIGNER CL
CHECKED HF DRAWN BH
SHEET C5.02

FOR PERMIT



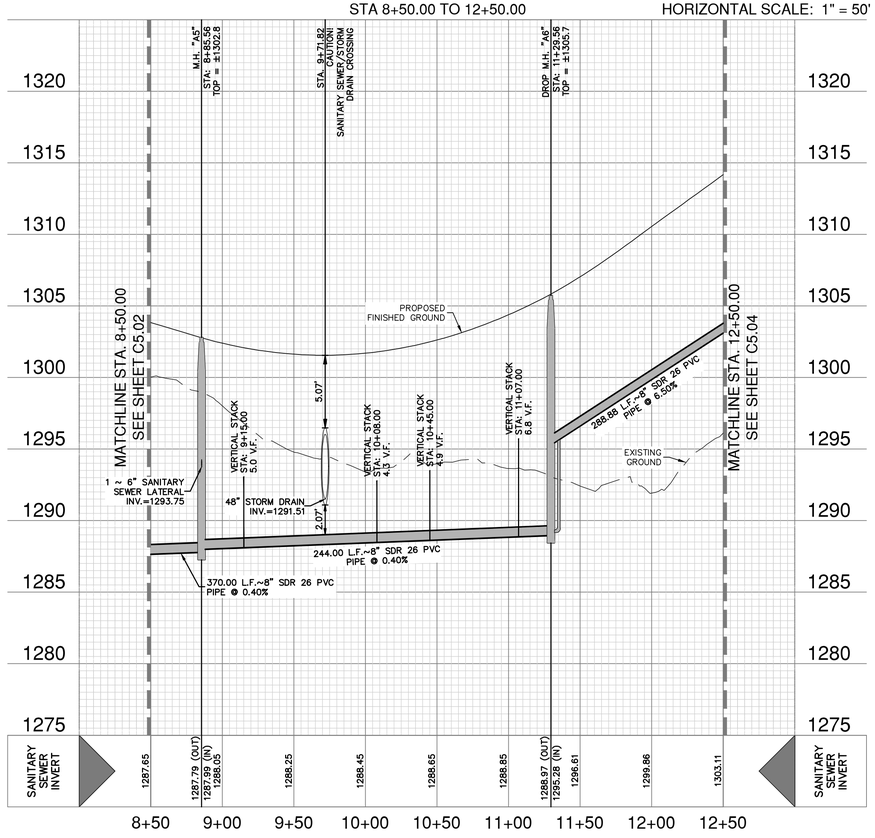
TYPICAL SANITARY SEWER/WATER CROSSING DETAIL

NOT-TO-SCALE



SANITARY SEWER LINE "A"
STA 8+50.00 TO 12+50.00

VERTICAL SCALE: 1" = 5'
HORIZONTAL SCALE: 1" = 50'



SCALE: 1"= 50'

0' 50' 100' 150'

SEWER LEGEND

PROJECT LIMITS	
EXISTING WATER	W
EXISTING SEWER	SS MANHOLE
PROPOSED SEWER	SS MANHOLE
PROPOSED WATER	FIRE HYDRANT W
PROPOSED SEWER LATERAL	S
FINISHED FLOOR ELEVATION FOR SEWER	FF = XXXX.XX
PUBLIC UTILITY EASEMENT	P.U.E.
PROPOSED STORM DRAIN	
CAUTION! WATER SERVICE/SEWER CROSSING	

NOTES

1. SEWER PIPE WHERE WATER LINE CROSSES SHALL BE 160 P.S.I. AND MEET THE REQUIREMENTS OF ASTM D2241 WITH ONE 20' JOINT CENTERED AT WATER MAIN.
2. NO VERTICAL STACKS ALLOWED FOR ANY LOTS UNLESS OTHERWISE SPECIFIED BY THE ENGINEER.
3. WHEN HORIZONTAL DISTANCE BETWEEN SEWER PIPES AND WATER MAIN IS LESS THAN 9 FOOT OF SEPARATION, SEWER MAIN SHALL BE INSTALLED WITH 150 PSI (MIN) PRESSURE PIPE AND FITTINGS IN ACCORDANCE WITH NBU'S WATER CONNECTION POLICY IN THE VICINITY OF WATER MAINS. (SEE SEWER NOTES SHEET C5.30)
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NOTE:
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NO.	REVISION	DATE

STATE OF TEXAS
TODD W. BLACKMON
89208
LICENSED
PROFESSIONAL ENGINEER
4-24-2025

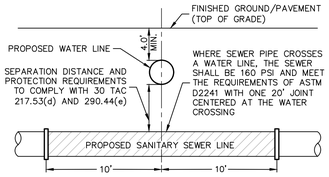
PAPE-DAWSON ENGINEERS
1672 INDEPENDENCE DR, STE 102 | NEW BRAUNFELS, TX 78132 | 830.632.5633
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

MEYER RANCH UNIT 16
COMAL COUNTY, TEXAS

SANITARY SEWER LINE A - PLAN & PROFILE
STA 8+50.00 TO 12+50.00

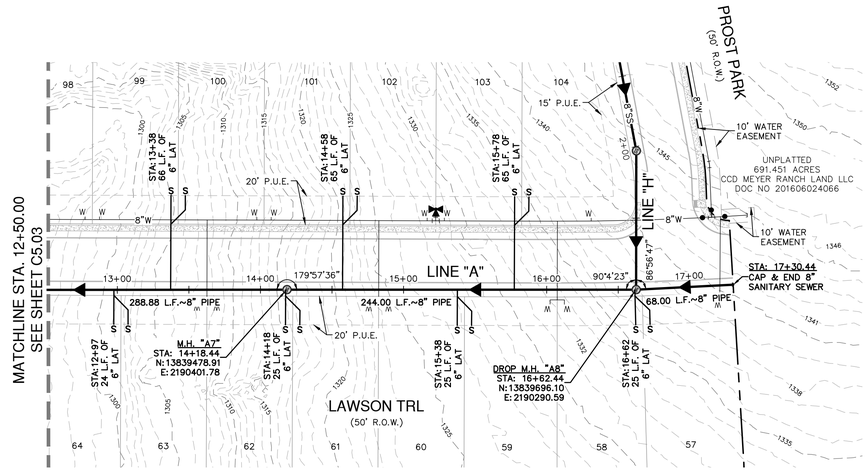
PLAT NO.
JOB NO. 30010-27
DATE DECEMBER 2024
DESIGNER CL
CHECKED HF DRAWN BH
SHEET C5.03

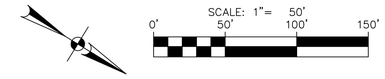
FOR PERMIT



TYPICAL SANITARY SEWER/WATER CROSSING DETAIL

NOT-TO-SCALE





SEWER LEGEND

- PROJECT LIMITS
- EXISTING WATER
- EXISTING SEWER
- PROPOSED SEWER (MANHOLE)
- PROPOSED WATER (FIRE HYDRANT)
- PROPOSED SEWER LATERAL
- FINISHED FLOOR ELEVATION FOR SEWER (FF = XXXX.XX)
- PUBLIC UTILITY EASEMENT (P.U.E.)
- PROPOSED STORM DRAIN
- CAUTION! WATER SERVICE/SEWER CROSSING

NOTES

1. SEWER PIPE WHERE WATER LINE CROSSES SHALL BE 160 P.S.I. AND MEET THE REQUIREMENTS OF ASTM D2241 WITH ONE 20' JOINT CENTERED AT WATER MAIN.
2. NO VERTICAL STACKS ALLOWED FOR ANY LOTS UNLESS OTHERWISE SPECIFIED BY THE ENGINEER.
3. WHEN HORIZONTAL DISTANCE BETWEEN SEWER PIPES AND WATER MAIN IS LESS THAN 9 FOOT OF SEPARATION, SEWER MAIN SHALL BE INSTALLED WITH 150 PSI (MIN) PRESSURE PIPE AND FITTINGS IN ACCORDANCE WITH NBU'S WATER CONNECTION POLICY IN THE VICINITY OF WATER MAINS. (SEE SEWER NOTES SHEET C5.30)
4. CONTRACTOR SHALL ENSURE THAT MANHOLES OUTSIDE OF PAVED AREAS ARE SET WITH TOP ELEVATIONS 2" ABOVE FINISHED GRADE WITH CONCRETE RING ENCASEMENT. CONTRACTOR SHALL ENSURE THAT MANHOLES IN PAVED AREAS ARE SET TO MATCH TOP OF FINISHED GRADE.
5. ALL SEWER PIPES SHALL BE 8" OR 12" PVC (SDR 26), UNLESS OTHERWISE NOTED.
6. CONTRACTOR IS TO VERIFY EXISTING INVERT OF SANITARY SEWER MAIN AND ALERT ENGINEER IMMEDIATELY OF ANY DIFFERENCE FROM INVERT SHOWN ON PLANS.
7. CONTRACTOR SHALL PROTECT ALL EXISTING FENCES. ANY FENCE DAMAGED BY THE CONTRACTOR SHALL BE REPAIRED BY THE CONTRACTOR AT THEIR EXPENSE.
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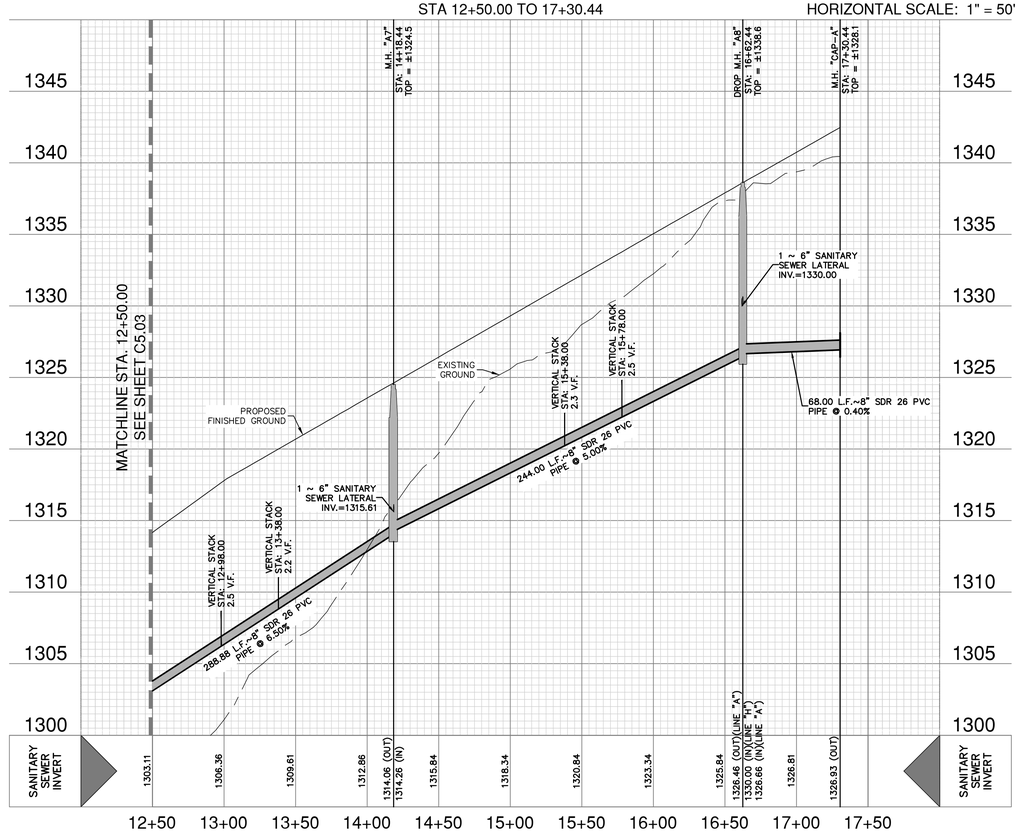
9. SEE THIS SHEET FOR TYPICAL SANITARY SEWER/WATER CROSSING DETAIL.
10. IF A CONFLICT EXISTS BETWEEN THE VARIOUS SUBMITTED DOCUMENTS (ENGINEERING CALCULATIONS, PROJECTED SPECIFICATIONS, PROJECTED PLANS, ADDENDUMS, ETC.), THE FOLLOWING DOCUMENTS TAKE PRECEDENT: SPECIFICATIONS GOVERN OVER PLANS, SPECIAL CONDITIONS GOVERN OVER SPECIFICATIONS AND PLANS. ADDENDUMS TAKE PRECEDENCE OVER ALL.
11. LAST 20 L.F. OF 8" STUB-OUT SHALL BE CONSTRUCTED OF P.V.C. SDR 26 (160 P.S.I.) PRESSURE PIPE.
12. ALL SEWER PIPE LATERALS SHALL BE SDR 26 (CLASS 160) PVC PIPE.
13. ALL WATER AND WASTEWATER SERVICES AND VALVE LOCATIONS SHALL BE MARKED AS FOLLOWS:
    - WATER SERVICE– "W" ON TOP OF CURB
    - WASTEWATER SERVICE– "S" ON TOP OF CURB
    - VALVE– "V" ON FACE OF CURB
14. MARKS SHALL BE MADE DURING CONCRETE PLACEMENT WHEN POSSIBLE. TOOLS FOR CURB MARKINGS SHALL BE PURPOSE BUILT AND PRODUCE MARKINGS THAT ARE CLEAR AND MINIMIZE POTENTIAL FOR SPALLING.

SANITARY SEWER LINE "A"
STA 12+50.00 TO 17+30.44

VERTICAL SCALE: 1" = 5'
HORIZONTAL SCALE: 1" = 50'



NOTE:
FOR PAVEMENT DESIGN SECTION SEE GEOTECHNICAL ENGINEERING REPORT.

CAUTION!!

CONTRACTOR SHALL BE REQUIRED TO LOCATE ALL PUBLIC OR PRIVATE UTILITIES INCLUDING BUT NOT LIMITING TO: WATER, SEWER, TELEPHONE AND FIBER OPTIC LINES, SITE LIGHTING ELECTRIC, SECONDARY ELECTRIC, PRIMARY ELECTRICAL DUCTBANKS, LANDSCAPE IRRIGATION FACILITIES, AND GAS LINES. ANY UTILITY CONFLICTS THAT ARISE SHOULD BE COMMUNICATED TO THE ENGINEER IMMEDIATELY AND PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL CONTACT 1-800-DIG-TESS A MINIMUM OF 48 HOURS PRIOR TO THE START OF CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND THE REPAIR SHALL BE AT CONTRACTOR'S SOLE EXPENSE WHETHER THE UTILITY IS SHOWN ON THESE PLANS OR NOT.

TRENCH EXCAVATION SAFETY PROTECTION:

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

NO.	REVISION	DATE

STATE OF TEXAS
TODD W. BLACKMON
89208
LICENSED
PROFESSIONAL ENGINEER
4-24-2025

PAPE-DAWSON ENGINEERS
1672 INDEPENDENCE DR, STE 102 | NEW BRAUNFELS, TX 78132 | 830.632.5633
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

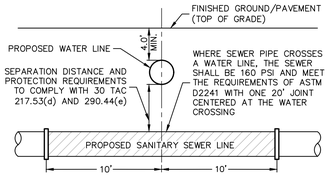
MEYER RANCH UNIT 16

COMAL COUNTY, TEXAS

SANITARY SEWER LINE A - PLAN & PROFILE
STA 12+50.00 TO 17+30.44

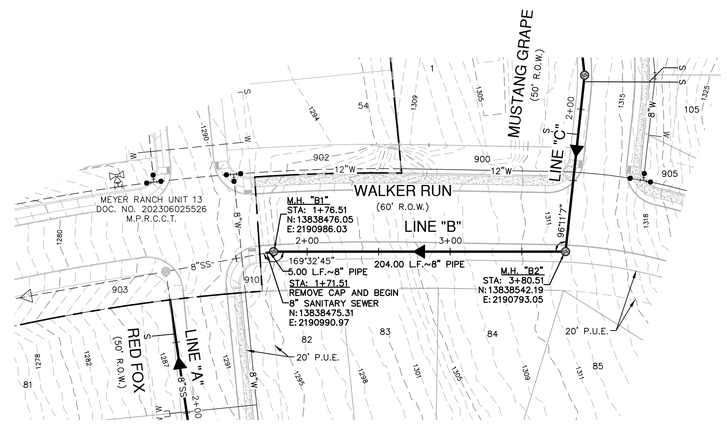
PLAT NO. ____
JOB NO. 30010-27
DATE DECEMBER 2024
DESIGNER CL
CHECKED HF DRAWN BH
SHEET C5.04

FOR PERMIT



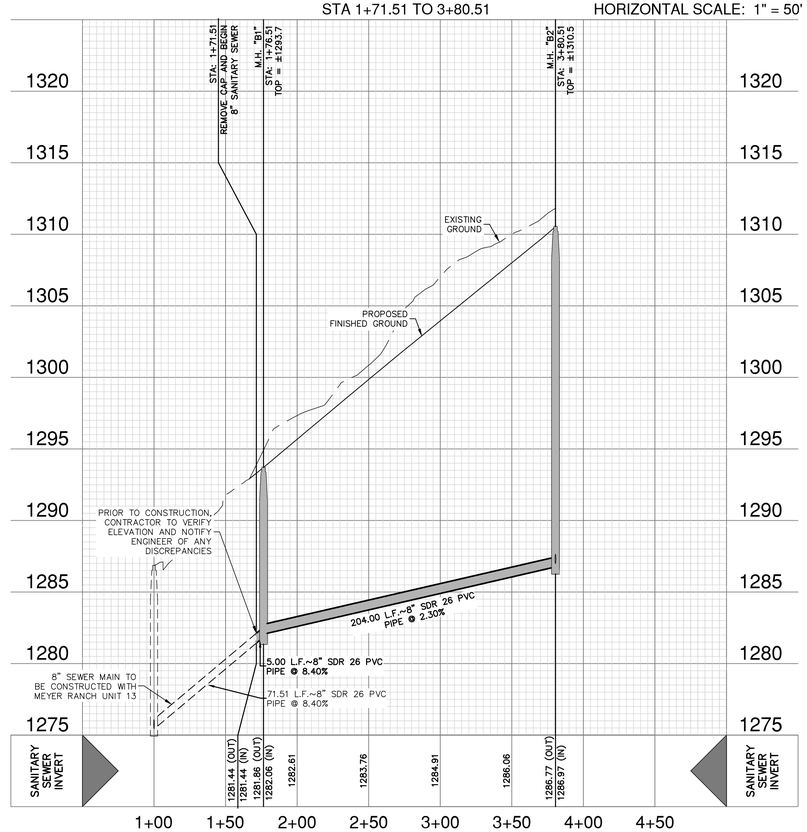
TYPICAL SANITARY SEWER/WATER CROSSING DETAIL

NOT-TO-SCALE



SANITARY SEWER LINE "B"
STA 1+71.51 TO 3+80.51

VERTICAL SCALE: 1" = 5'
HORIZONTAL SCALE: 1" = 50'



SCALE: 1"= 50'
0' 50' 100' 150'

SEWER LEGEND

- PROJECT LIMITS
- EXISTING WATER
- EXISTING SEWER
- PROPOSED SEWER
- PROPOSED WATER
- PROPOSED SEWER LATERAL
- FINISHED FLOOR ELEVATION FOR SEWER — FF = XXXX.XX
- PUBLIC UTILITY EASEMENT — P.U.E.
- PROPOSED STORM DRAIN
- CAUTION! WATER SERVICE/SEWER CROSSING

NOTES

1. SEWER PIPE WHERE WATER LINE CROSSES SHALL BE 160 P.S.I. AND MEET THE REQUIREMENTS OF ASTM D2241 WITH ONE 20' JOINT CENTERED AT WATER MAIN.
2. NO VERTICAL STACKS ALLOWED FOR ANY LOTS UNLESS OTHERWISE SPECIFIED BY THE ENGINEER.
3. WHEN HORIZONTAL DISTANCE BETWEEN SEWER PIPES AND WATER MAIN IS LESS THAN 9 FOOT OF SEPARATION, SEWER MAIN SHALL BE INSTALLED WITH 150 PSI (MIN) PRESSURE PIPE AND FITTINGS IN ACCORDANCE WITH NBU'S WATER CONNECTION POLICY IN THE VICINITY OF WATER MAINS. (SEE SEWER NOTES SHEET C5.30)
4. CONTRACTOR SHALL ENSURE THAT MANHOLES OUTSIDE OF PAVED AREAS ARE SET WITH TOP ELEVATIONS 2" ABOVE FINISHED GRADE WITH CONCRETE RING ENCASEMENT. CONTRACTOR SHALL ENSURE THAT MANHOLES IN PAVED AREAS ARE SET TO MATCH TOP OF FINISHED GRADE.
5. ALL SEWER PIPES SHALL BE 8" OR 12" PVC (SDR 26), UNLESS OTHERWISE NOTED.
6. CONTRACTOR IS TO VERIFY EXISTING INVERT OF SANITARY SEWER MAIN AND ALERT ENGINEER IMMEDIATELY OF ANY DIFFERENCE FROM INVERT SHOWN ON PLANS.
7. CONTRACTOR SHALL PROTECT ALL EXISTING FENCES. ANY FENCE DAMAGED BY THE CONTRACTOR SHALL BE REPAIRED BY THE CONTRACTOR AT THEIR EXPENSE.
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NOTE:
FOR PAVEMENT DESIGN SECTION SEE GEOTECHNICAL ENGINEERING REPORT.

CAUTION!!

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NO.	REVISION	DATE

12 - 27 - 2024
STATE OF TEXAS
TODD W. BLACKMON
89208
LICENSED
PROFESSIONAL ENGINEER

PAPE-DAWSON ENGINEERS
1672 INDEPENDENCE DR, STE 102 | NEW BRAUNFELS, TX 78132 | 830.632.5633
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

MEYER RANCH UNIT 16
COMAL COUNTY, TEXAS

SANITARY SEWER LINE B - PLAN & PROFILE
STA 1+71.51 TO 3+80.51

PLAT NO.
JOB NO. 30010-27
DATE DECEMBER 2024
DESIGNER CL
CHECKED HF DRAWN BH
SHEET C5.05

Date: Dec 17, 2024, 11:26am User ID: ALeddy
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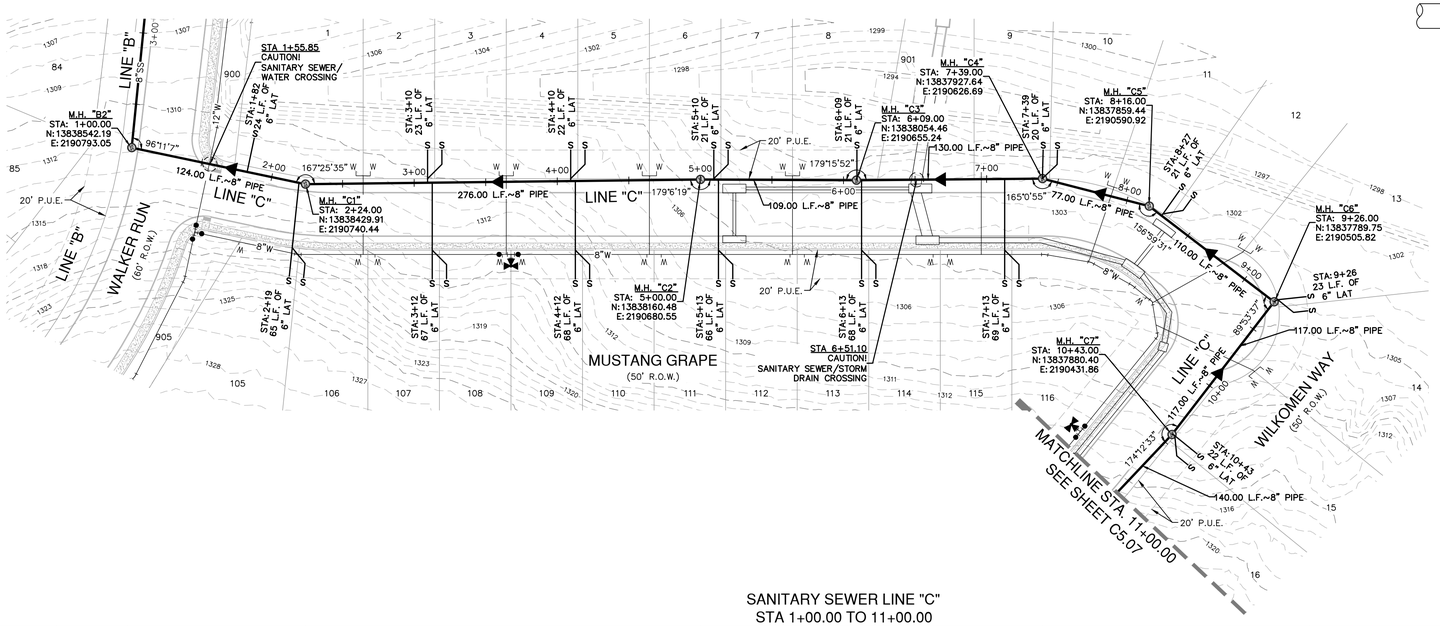
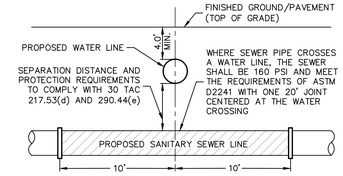
FOR PERMIT





TYPICAL SANITARY
SEWER/WATER CROSSING DETAIL

NOT-TO-SCALE

SCALE: 1"= 50'
0' 50' 100' 150'

SEWER LEGEND

PROJECT LIMITS
EXISTING WATER
EXISTING SEWER
PROPOSED SEWER
MANHOLE
PROPOSED WATER
FIRE HYDRANT
PROPOSED SEWER LATERAL
FINISHED FLOOR ELEVATION FOR SEWER — FF = XXXX.XX
PUBLIC UTILITY EASEMENT — P.U.E.
PROPOSED STORM DRAIN
CAUTION!
WATER SERVICE/SEWER CROSSING

NOTES

1. SEWER PIPE WHERE WATER LINE CROSSES SHALL BE 160 P.S.I. AND MEET THE REQUIREMENTS OF ASTM D2241 WITH ONE 20' JOINT CENTERED AT WATER MAIN.
2. NO VERTICAL STACKS ALLOWED FOR ANY LOTS UNLESS OTHERWISE SPECIFIED BY THE ENGINEER.
3. WHEN HORIZONTAL DISTANCE BETWEEN SEWER PIPES AND WATER MAIN IS LESS THAN 9 FOOT OF SEPARATION, SEWER MAIN SHALL BE INSTALLED WITH 150 PSI (MIN) PRESSURE PIPE AND FITTINGS IN ACCORDANCE WITH NBU'S WATER CONNECTION POLICY IN THE VICINITY OF WATER MAINS. (SEE SEWER NOTES SHEET C5.30)
4. CONTRACTOR SHALL ENSURE THAT MANHOLES OUTSIDE OF PAVED AREAS ARE SET WITH TOP ELEVATIONS 2" ABOVE FINISHED GRADE WITH CONCRETE RING ENCASEMENT. CONTRACTOR SHALL ENSURE THAT MANHOLES IN PAVED AREAS ARE SET TO MATCH TOP OF FINISHED GRADE.
5. ALL SEWER PIPES SHALL BE 8" OR 12" PVC (SDR 26), UNLESS OTHERWISE NOTED.
6. CONTRACTOR IS TO VERIFY EXISTING INVERT OF SANITARY SEWER MAIN AND ALERT ENGINEER IMMEDIATELY OF ANY DIFFERENCE FROM INVERT SHOWN ON PLANS.
7. CONTRACTOR SHALL PROTECT ALL EXISTING FENCES. ANY FENCE DAMAGED BY THE CONTRACTOR SHALL BE REPAIRED BY THE CONTRACTOR AT THEIR EXPENSE.
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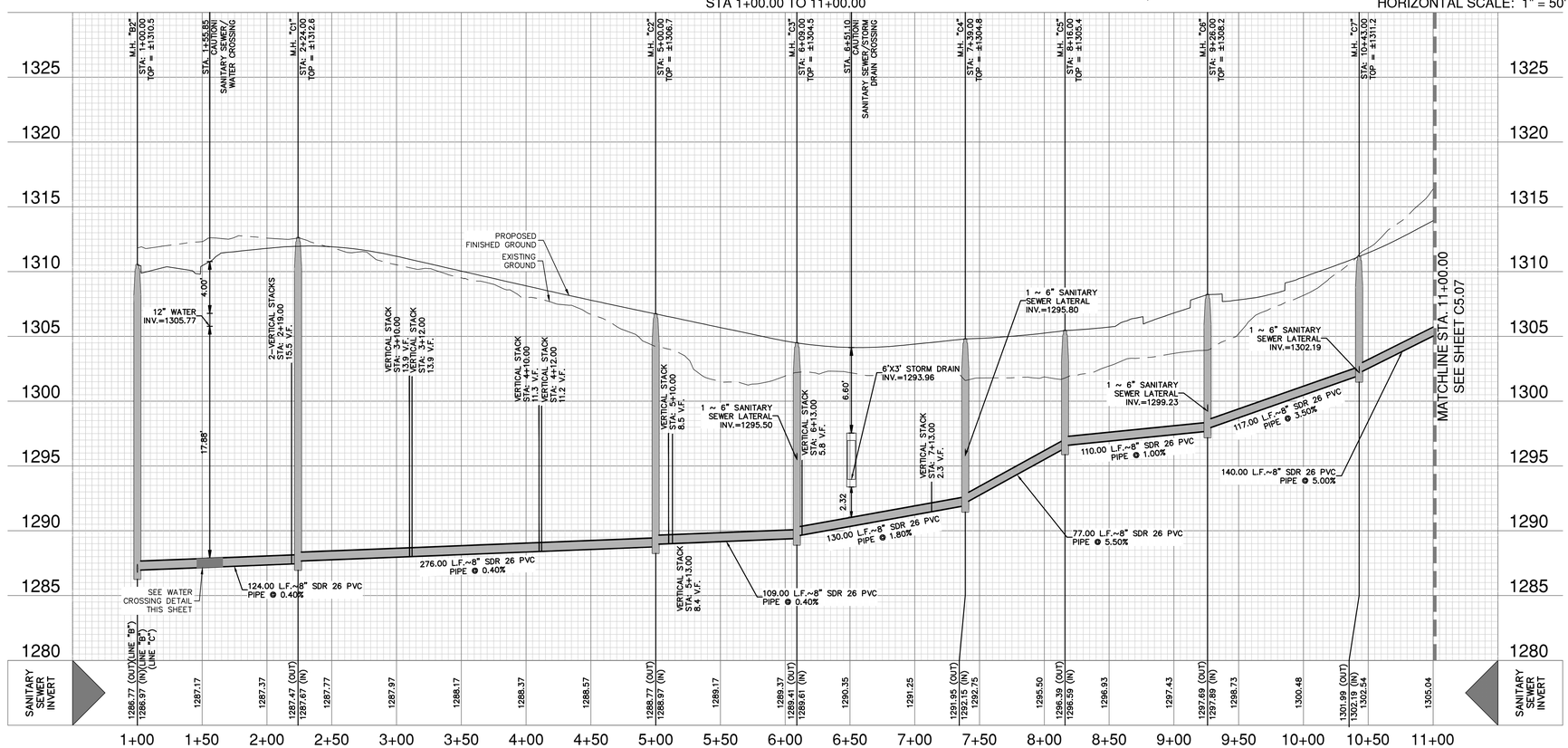
- VALVE– "V" ON FACE OF CURB
14. MARKS SHALL BE MADE DURING CONCRETE PLACEMENT WHEN POSSIBLE. TOOLS FOR CURB MARKINGS SHALL BE PURPOSE BUILT AND PRODUCE MARKINGS THAT ARE CLEAR AND MINIMIZE POTENTIAL FOR SPALLING.

SANITARY SEWER LINE "C"
STA 1+00.00 TO 11+00.00

VERTICAL SCALE: 1" = 5'
HORIZONTAL SCALE: 1" = 50'



FOR PERMIT

NO.	REVISION	DATE

STATE OF TEXAS
TODD W. BLACKMON
89208
LICENSED
PROFESSIONAL ENGINEER
4-24-2025

PAPE-DAWSON ENGINEERS
1672 INDEPENDENCE DR, STE 102 | NEW BRAUNFELS, TX 78132 | 830.632.5633
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

MEYER RANCH UNIT 16
COMAL COUNTY, TEXAS

SANITARY SEWER LINE C - PLAN & PROFILE
STA 1+00.00 TO 11+00.00

NOTE:
FOR PAVEMENT DESIGN SECTION SEE GEOTECHNICAL ENGINEERING REPORT.

CAUTION!!

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PLAT NO.
JOB NO. 30010-27
DATE DECEMBER 2024
DESIGNER CL
CHECKED HF DRAWN BH
SHEET C5.06

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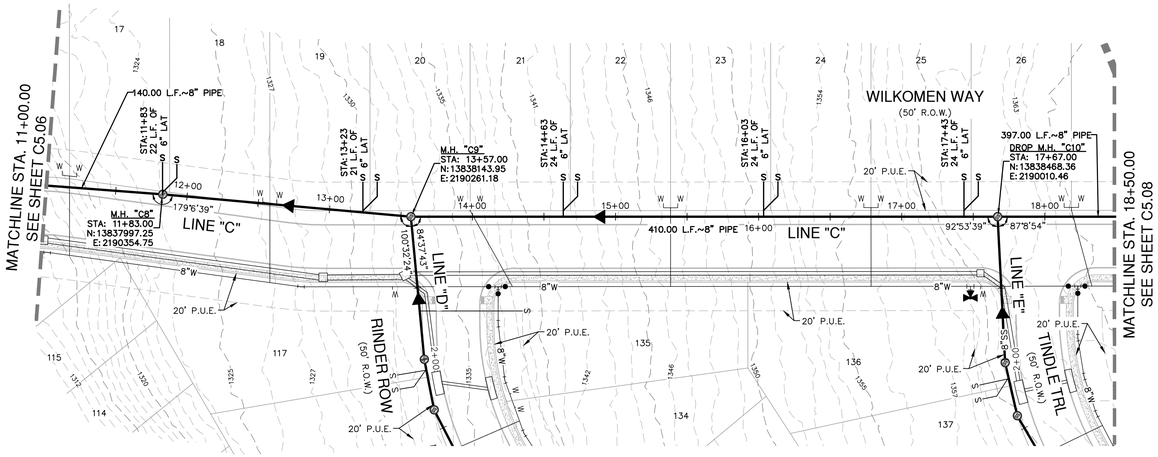

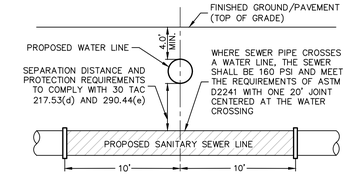

TYPICAL SANITARY SEWER/WATER CROSSING DETAIL

NOT-TO-SCALE

SCALE: 1"= 50'

0' 50' 100' 150'

SEWER LEGEND

- PROJECT LIMITS
- EXISTING WATER
- EXISTING SEWER
- PROPOSED SEWER (MANHOLE)
- PROPOSED WATER (FIRE HYDRANT)
- PROPOSED SEWER LATERAL
- FINISHED FLOOR ELEVATION FOR SEWER (FF = XXXX.XX)
- PUBLIC UTILITY EASEMENT (P.U.E.)
- PROPOSED STORM DRAIN
- CAUTION! WATER SERVICE/SEWER CROSSING

NOTES

1. SEWER PIPE WHERE WATER LINE CROSSES SHALL BE 160 P.S.I. AND MEET THE REQUIREMENTS OF ASTM D2241 WITH ONE 20' JOINT CENTERED AT WATER MAIN.
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5. ALL SEWER PIPES SHALL BE 8" OR 12" PVC (SDR 26), UNLESS OTHERWISE NOTED.
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NOTE:
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TRENCH EXCAVATION SAFETY PROTECTION:

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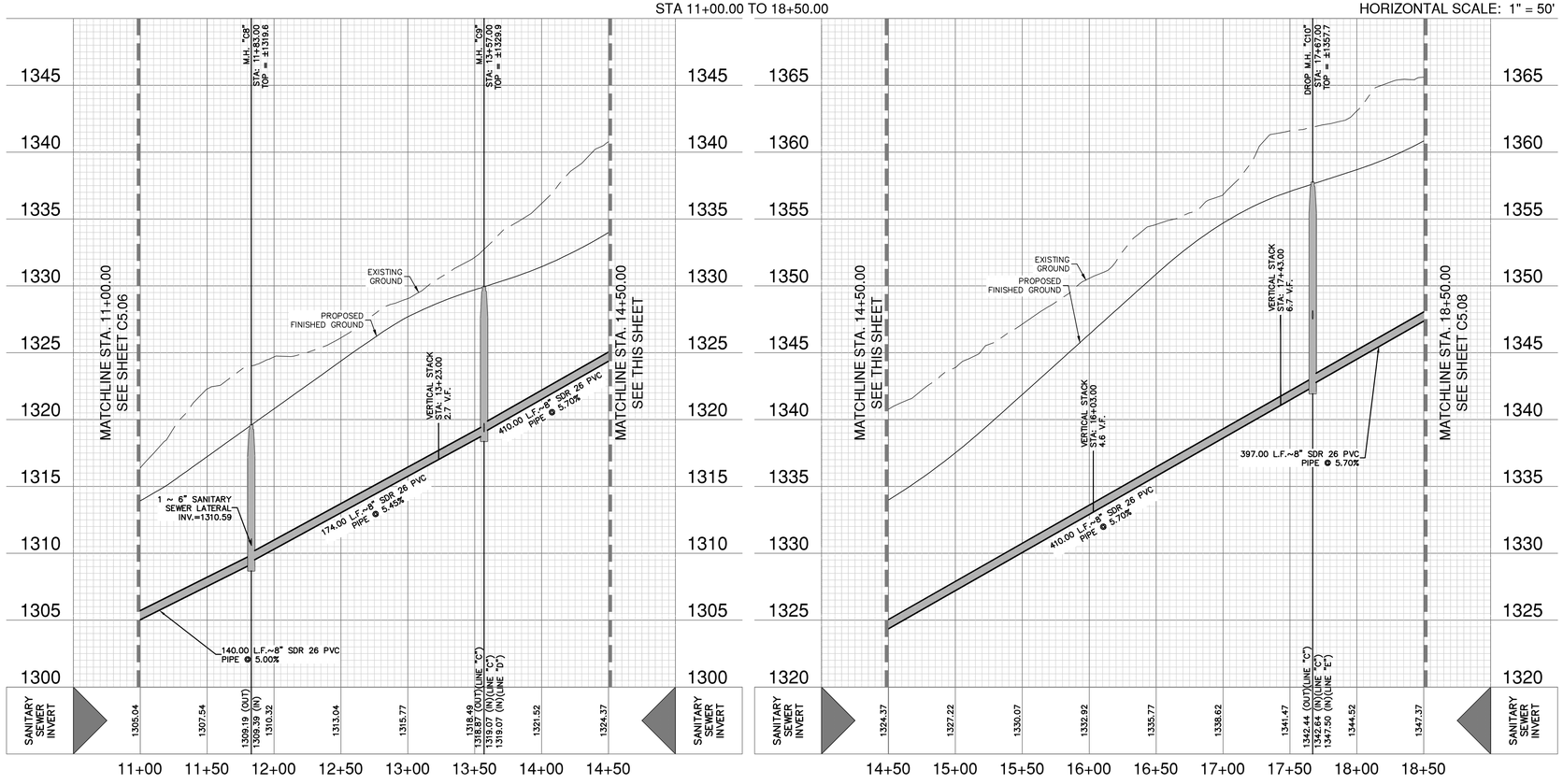
SANITARY SEWER LINE "C"
STA 11+00.00 TO 18+50.00

VERTICAL SCALE: 1" = 5'
HORIZONTAL SCALE: 1" = 50'



NO.	REVISION	DATE

STATE OF TEXAS
TODD W. BLACKMON
89208
LICENSED
PROFESSIONAL ENGINEER
4-24-2025

PAPE-DAWSON ENGINEERS
1672 INDEPENDENCE DR, STE 102 | NEW BRAUNFELS, TX 78132 | 830.632.5633
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

MEYER RANCH UNIT 16
COMAL COUNTY, TEXAS

SANITARY SEWER LINE C - PLAN & PROFILE
STA 11+00.00 TO 18+50.00

PLAT NO.
JOB NO. 30010-27
DATE DECEMBER 2024
DESIGNER CL
CHECKED HF DRAWN BH
SHEET C5.07

FOR PERMIT

Date: Apr 24, 2025, 11:46am User ID: matthew.duke
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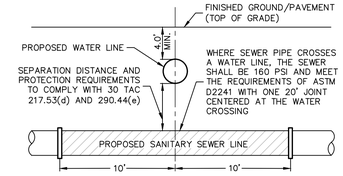

TYPICAL SANITARY SEWER/WATER CROSSING DETAIL

NOT-TO-SCALE

SCALE: 1"= 50'

0' 50' 100' 150'

SEWER LEGEND

PROJECT LIMITS

EXISTING WATER

EXISTING SEWER

PROPOSED SEWER

MANHOLE

PROPOSED WATER

FIRE HYDRANT

PROPOSED SEWER LATERAL

FINISHED FLOOR ELEVATION FOR SEWER — FF = XXXX.XX

PUBLIC UTILITY EASEMENT — P.U.E.

PROPOSED STORM DRAIN

CAUTION!
WATER SERVICE/SEWER CROSSING

NOTES

1. SEWER PIPE WHERE WATER LINE CROSSES SHALL BE 160 P.S.I. AND MEET THE REQUIREMENTS OF ASTM D2241 WITH ONE 20' JOINT CENTERED AT WATER MAIN.
2. NO VERTICAL STACKS ALLOWED FOR ANY LOTS UNLESS OTHERWISE SPECIFIED BY THE ENGINEER.
3. WHEN HORIZONTAL DISTANCE BETWEEN SEWER PIPES AND WATER MAIN IS LESS THAN 9 FOOT OF SEPARATION, SEWER MAIN SHALL BE INSTALLED WITH 150 PSI (MIN) PRESSURE PIPE AND FITTINGS IN ACCORDANCE WITH NBU'S WATER CONNECTION POLICY IN THE VICINITY OF WATER MAINS. (SEE SEWER NOTES SHEET C5.30)
4. CONTRACTOR SHALL ENSURE THAT MANHOLES OUTSIDE OF PAVED AREAS ARE SET WITH TOP ELEVATIONS 2" ABOVE FINISHED GRADE WITH CONCRETE RING ENCASEMENT. CONTRACTOR SHALL ENSURE THAT MANHOLES IN PAVED AREAS ARE SET TO MATCH TOP OF FINISHED GRADE.
5. ALL SEWER PIPES SHALL BE 8" OR 12" PVC (SDR 26), UNLESS OTHERWISE NOTED.
6. CONTRACTOR IS TO VERIFY EXISTING INVERT OF SANITARY SEWER MAIN AND ALERT ENGINEER IMMEDIATELY OF ANY DIFFERENCE FROM INVERT SHOWN ON PLANS.
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9. SEE THIS SHEET FOR TYPICAL SANITARY SEWER/WATER CROSSING DETAIL.
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12. ALL SEWER PIPE LATERALS SHALL BE SDR 26 (CLASS 160) PVC PIPE.
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- VALVE- "V" ON FACE OF CURB
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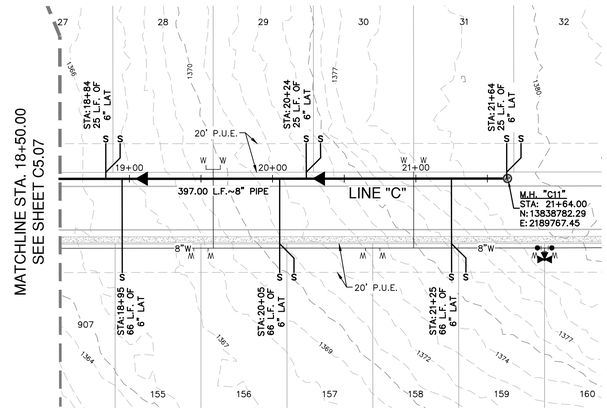
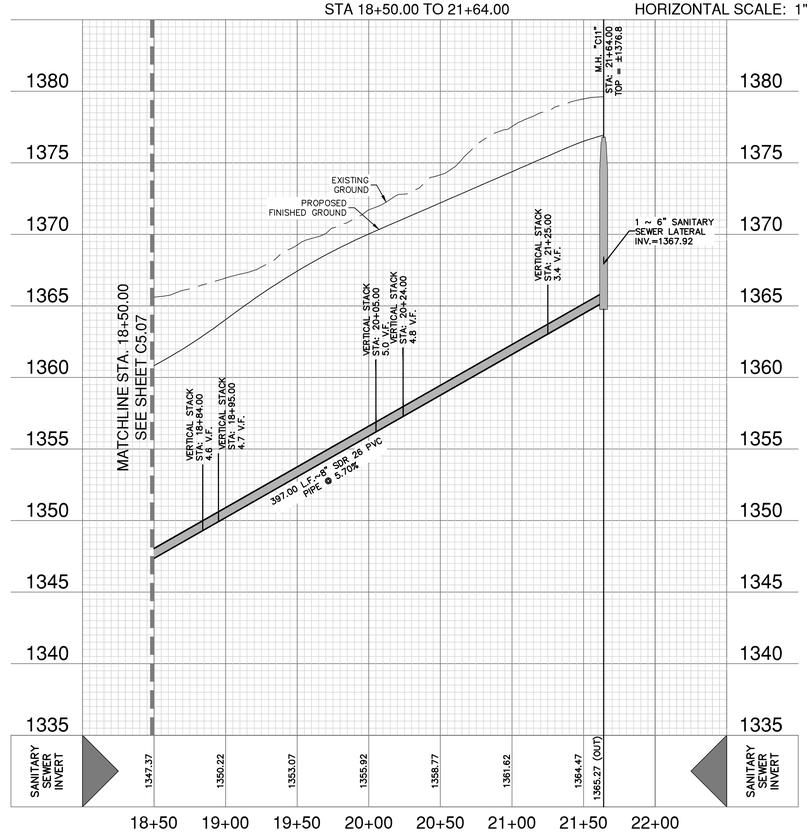


SANITARY SEWER LINE "C"
STA 18+50.00 TO 21+64.00

VERTICAL SCALE: 1" = 5'
HORIZONTAL SCALE: 1" = 50'



NOTE:

FOR PAVEMENT DESIGN SECTION SEE GEOTECHNICAL ENGINEERING REPORT.

CAUTION!!

CONTRACTOR SHALL BE REQUIRED TO LOCATE ALL PUBLIC OR PRIVATE UTILITIES INCLUDING BUT NOT LIMITING TO: WATER, SEWER, TELEPHONE AND FIBER OPTIC LINES, SITE LIGHTING ELECTRIC, SECONDARY ELECTRIC, PRIMARY ELECTRICAL DUCTBANKS, LANDSCAPE IRRIGATION FACILITIES, AND GAS LINES. ANY UTILITY CONFLICTS THAT ARISE SHOULD BE COMMUNICATED TO THE ENGINEER IMMEDIATELY AND PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL CONTACT 1-800-DIG-TESS A MINIMUM OF 48 HOURS PRIOR TO THE START OF CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND THE REPAIR SHALL BE AT CONTRACTOR'S SOLE EXPENSE WHETHER THE UTILITY IS SHOWN ON THESE PLANS OR NOT.

TRENCH EXCAVATION SAFETY PROTECTION:

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NO.	REVISION	DATE

STATE OF TEXAS
TODD W. BLACKMON
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LICENSED
PROFESSIONAL ENGINEER
4-24-2025

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TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

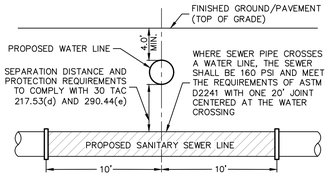
MEYER RANCH UNIT 16

COMAL COUNTY, TEXAS

SANITARY SEWER LINE C - PLAN & PROFILE
STA 18+50.00 TO 21+64.00

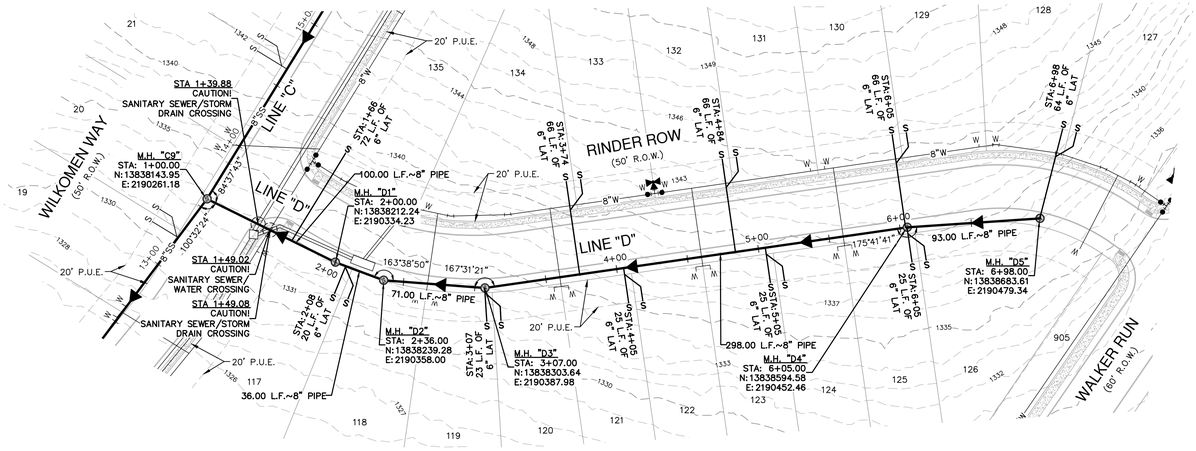
PLAT NO. ____
JOB NO. 30010-27
DATE DECEMBER 2024
DESIGNER CL
CHECKED HF DRAWN BH
SHEET C5.08

FOR PERMIT



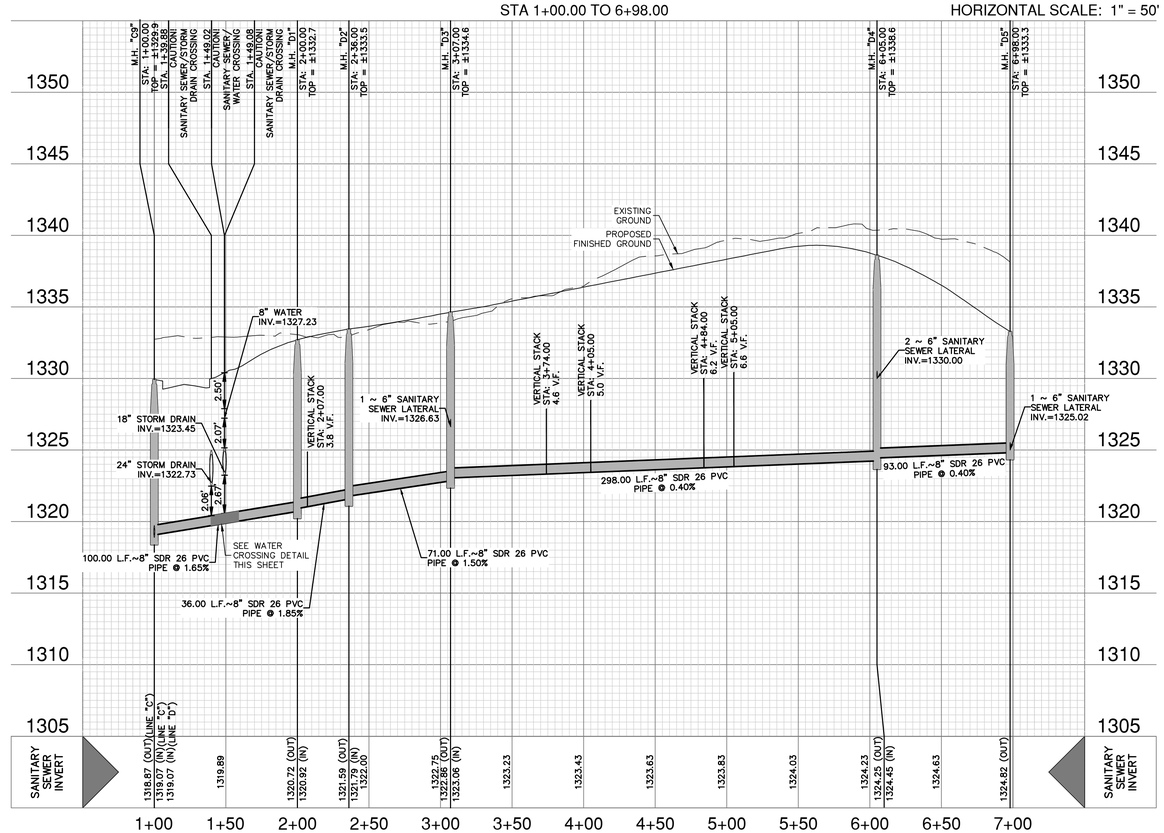
TYPICAL SANITARY SEWER/WATER CROSSING DETAIL

NOT-TO-SCALE



SANITARY SEWER LINE "D"
STA 1+00.00 TO 6+98.00

VERTICAL SCALE: 1" = 5'
HORIZONTAL SCALE: 1" = 50'



SEWER LEGEND

- PROJECT LIMITS
- EXISTING WATER
- EXISTING SEWER
- PROPOSED SEWER (MANHOLE)
- PROPOSED WATER (FIRE HYDRANT)
- PROPOSED SEWER LATERAL
- FINISHED FLOOR ELEVATION FOR SEWER — FF = XXXX.XX
- PUBLIC UTILITY EASEMENT — P.U.E.
- PROPOSED STORM DRAIN
- CAUTION! WATER SERVICE/SEWER CROSSING

NOTES

1. SEWER PIPE WHERE WATER LINE CROSSES SHALL BE 160 P.S.I. AND MEET THE REQUIREMENTS OF ASTM D2241 WITH ONE 20' JOINT CENTERED AT WATER MAIN.
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NOTE:
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NO.	REVISION	DATE

STATE OF TEXAS
TODD W. BLACKMON
89208
LICENSED PROFESSIONAL ENGINEER
4-24-2025

PAPE-DAWSON ENGINEERS
1672 INDEPENDENCE DR, STE 102 | NEW BRAUNFELS, TX 78132 | 830.632.5633
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

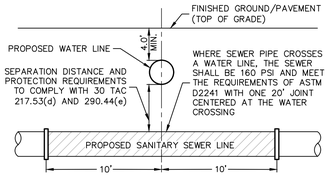
MEYER RANCH UNIT 16

COMAL COUNTY, TEXAS

SANITARY SEWER LINE D - PLAN & PROFILE
STA 1+00.00 TO 6+98.00

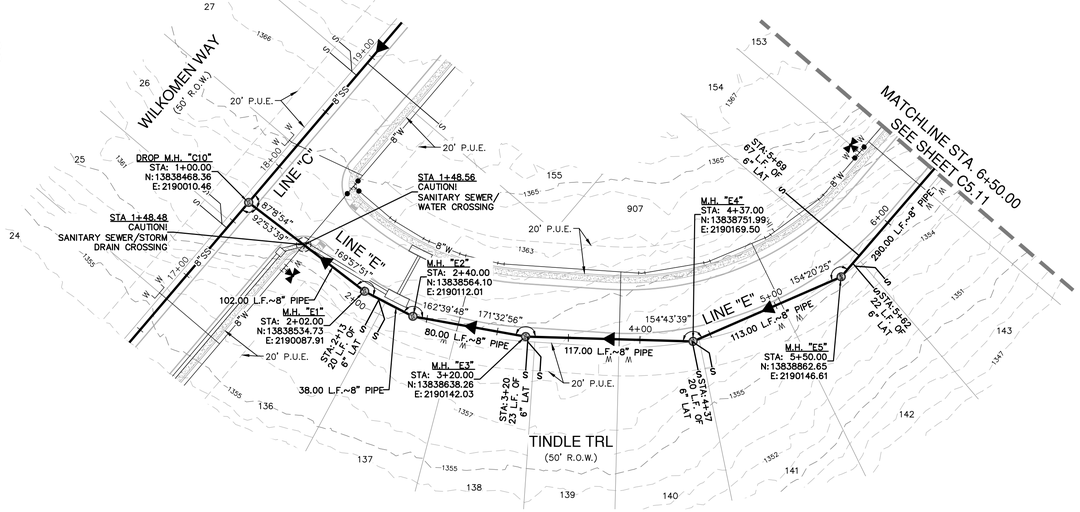
PLAT NO.
JOB NO. 30010-27
DATE DECEMBER 2024
DESIGNER CL
CHECKED HF DRAWN BH
SHEET C5.09

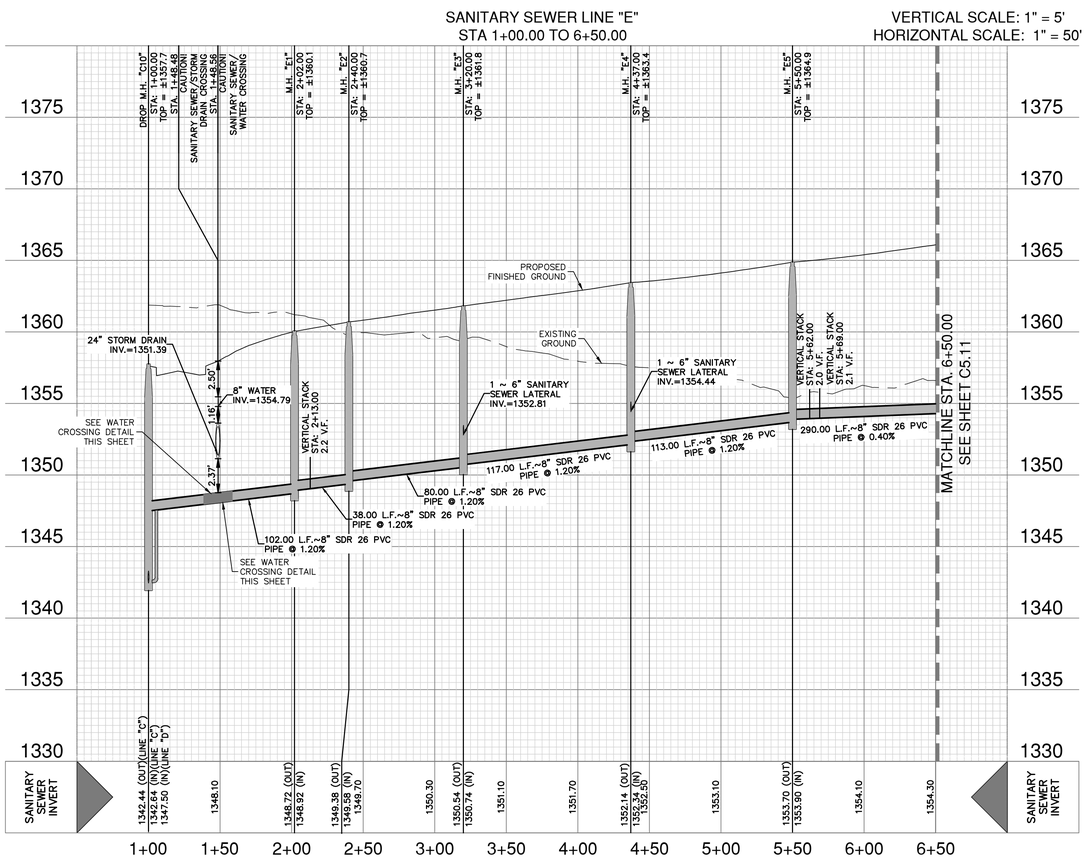
FOR PERMIT



TYPICAL SANITARY SEWER/WATER CROSSING DETAIL

NOT-TO-SCALE





SCALE: 1"= 50'

0' 50' 100' 150'

SEWER LEGEND

PROJECT LIMITS	
EXISTING WATER	W
EXISTING SEWER	SS MANHOLE
PROPOSED SEWER	SS MANHOLE
PROPOSED WATER	FIRE HYDRANT W
PROPOSED SEWER LATERAL	S
FINISHED FLOOR ELEVATION FOR SEWER	FF = XXXX.XX
PUBLIC UTILITY EASEMENT	P.U.E.
PROPOSED STORM DRAIN	
CAUTION! WATER SERVICE/SEWER CROSSING	

NOTES

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STATE OF TEXAS
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LICENSED
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4-24-2025

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TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

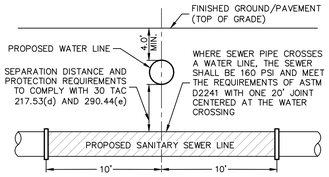
MEYER RANCH UNIT 16

COMAL COUNTY, TEXAS

SANITARY SEWER LINE E - PLAN & PROFILE
STA 1+00.00 TO 6+50.00

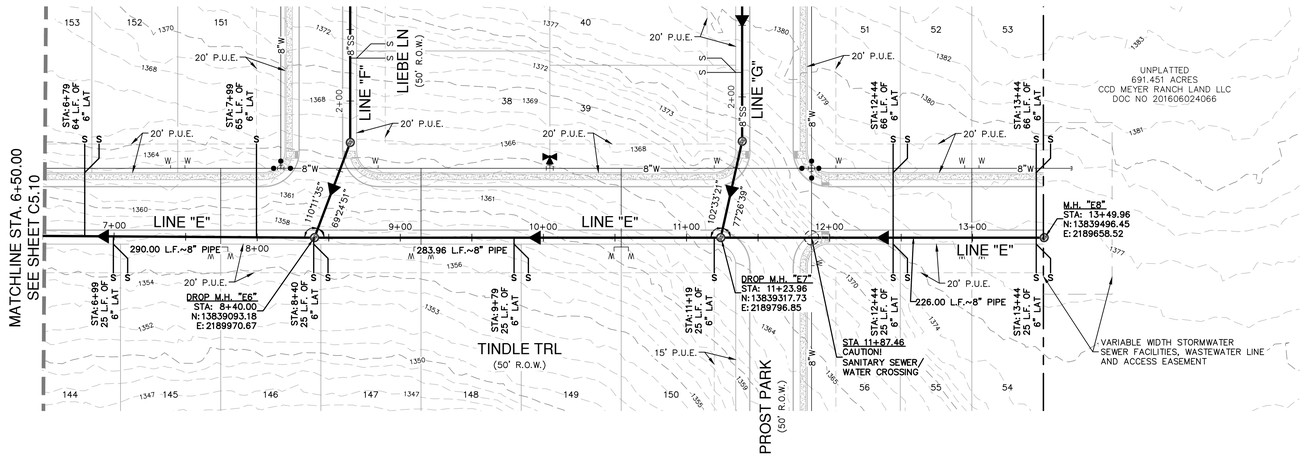
PLAT NO.
JOB NO. 30010-27
DATE DECEMBER 2024
DESIGNER CL
CHECKED HF DRAWN BH
SHEET C5.10

FOR PERMIT



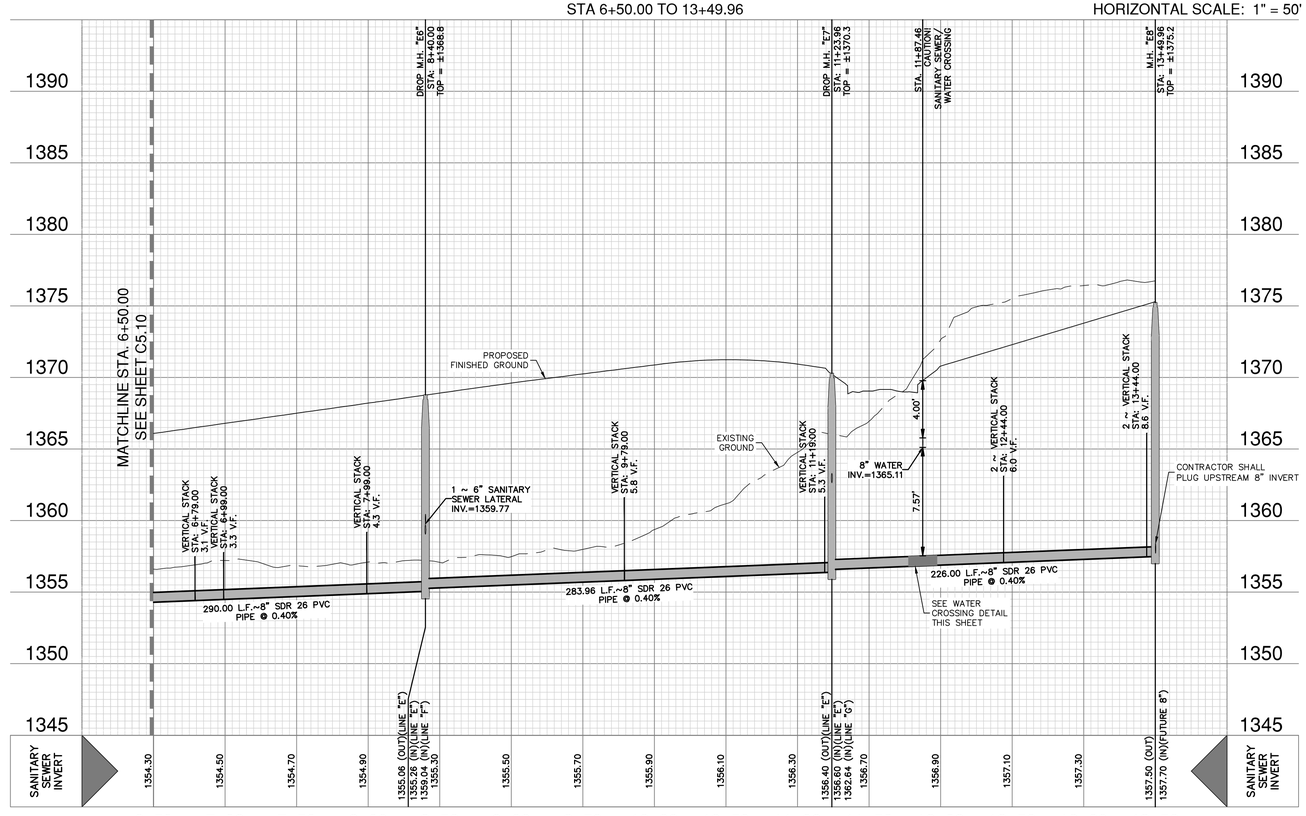
TYPICAL SANITARY SEWER/WATER CROSSING DETAIL

NOT-TO-SCALE



SANITARY SEWER LINE "E"
STA 6+50.00 TO 13+49.96

VERTICAL SCALE: 1" = 5'
HORIZONTAL SCALE: 1" = 50'



SCALE: 1"= 50'
0' 50' 100' 150'

SEWER LEGEND

- PROJECT LIMITS
- EXISTING WATER
- EXISTING SEWER
- PROPOSED SEWER
- PROPOSED WATER
- PROPOSED SEWER LATERAL
- FINISHED FLOOR ELEVATION FOR SEWER
- PUBLIC UTILITY EASEMENT
- PROPOSED STORM DRAIN
- CAUTION! WATER SERVICE/SEWER CROSSING

MANHOLE
FIRE HYDRANT
FF = XXXX.XX
P.U.E.

NOTES

1. SEWER PIPE WHERE WATER LINE CROSSES SHALL BE 160 P.S.I. AND MEET THE REQUIREMENTS OF ASTM D2241 WITH ONE 20' JOINT CENTERED AT WATER MAIN.
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3. WHEN HORIZONTAL DISTANCE BETWEEN SEWER PIPES AND WATER MAIN IS LESS THAN 9 FOOT OF SEPARATION, SEWER MAIN SHALL BE INSTALLED WITH 150 PSI (MIN) PRESSURE PIPE AND FITTINGS IN ACCORDANCE WITH NBU'S WATER CONNECTION POLICY IN THE VICINITY OF WATER MAINS. (SEE SEWER NOTES SHEET C5.30)
4. CONTRACTOR SHALL ENSURE THAT MANHOLES OUTSIDE OF PAVED AREAS ARE SET WITH TOP ELEVATIONS 2" ABOVE FINISHED GRADE WITH CONCRETE RING ENCASEMENT. CONTRACTOR SHALL ENSURE THAT MANHOLES IN PAVED AREAS ARE SET TO MATCH TOP OF FINISHED GRADE.
5. ALL SEWER PIPES SHALL BE 8" OR 12" PVC (SDR 26), UNLESS OTHERWISE NOTED.
6. CONTRACTOR IS TO VERIFY EXISTING INVERT OF SANITARY SEWER MAIN AND ALERT ENGINEER IMMEDIATELY OF ANY DIFFERENCE FROM INVERT SHOWN ON PLANS.
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NOTE:
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CAUTION!!

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NO.	REVISION	DATE

STATE OF TEXAS
TODD W. BLACKMON
89208
LICENSED
PROFESSIONAL ENGINEER
4-24-2025

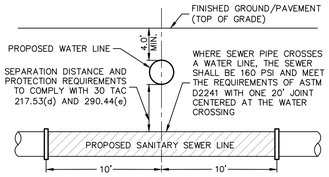
PAPE-DAWSON ENGINEERS
1672 INDEPENDENCE DR, STE 102 I NEW BRAUNFELS, TX 78132 I 830.632.5633
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

MEYER RANCH UNIT 16
COMAL COUNTY, TEXAS

SANITARY SEWER LINE E - PLAN & PROFILE
STA 6+50.00 TO 13+49.96

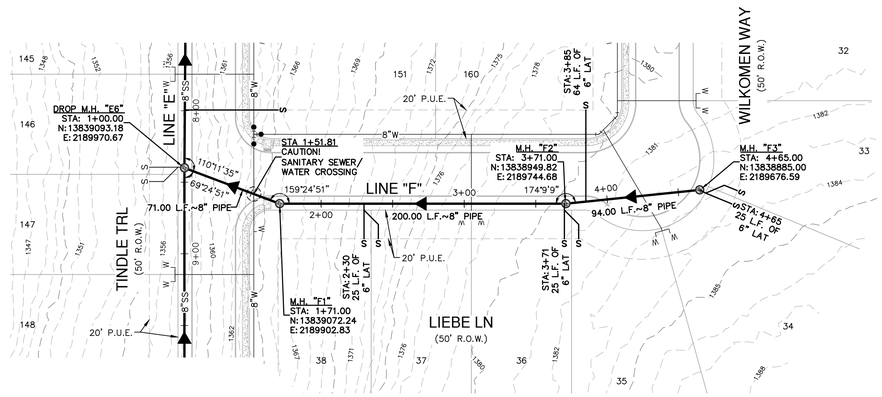
PLAT NO. ____
JOB NO. 30010-27
DATE DECEMBER 2024
DESIGNER CL
CHECKED HF DRAWN BH
SHEET C5.11

FOR PERMIT



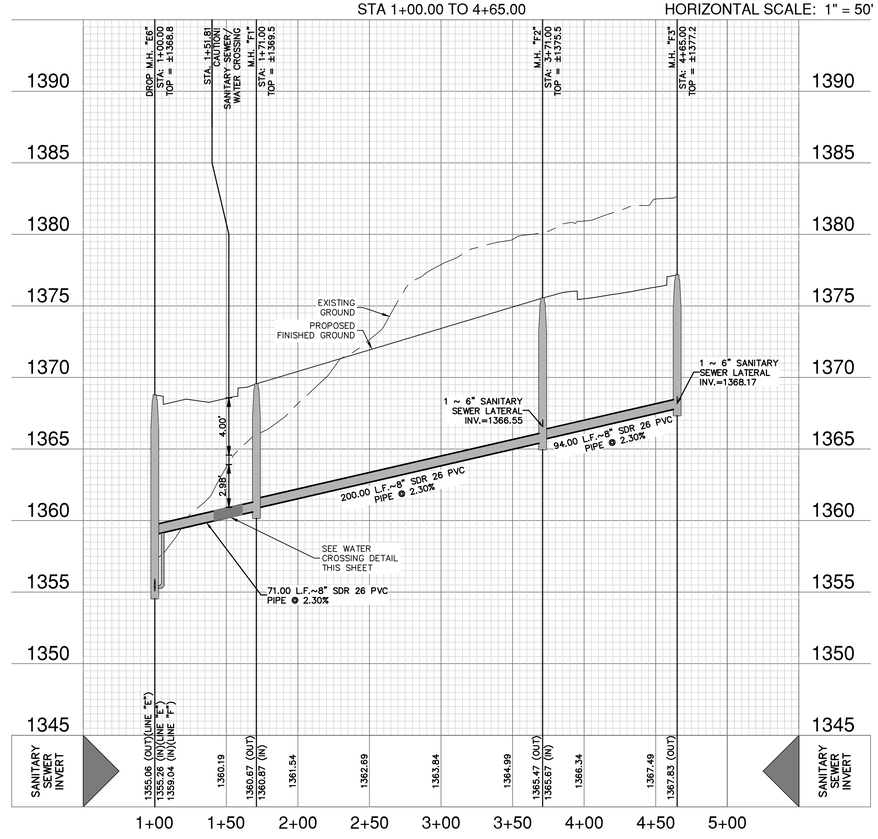
TYPICAL SANITARY SEWER/WATER CROSSING DETAIL

NOT-TO-SCALE



SANITARY SEWER LINE "F"
STA 1+00.00 TO 4+65.00

VERTICAL SCALE: 1" = 5'
HORIZONTAL SCALE: 1" = 50'



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SEWER LEGEND

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EXISTING SEWER
PROPOSED SEWER
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FIRE HYDRANT
PROPOSED WATER
PROPOSED SEWER LATERAL
FINISHED FLOOR ELEVATION FOR SEWER — FF = XXXX.XX
PUBLIC UTILITY EASEMENT — P.U.E.
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CAUTION! WATER SERVICE/SEWER CROSSING

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NO.	REVISION	DATE

STATE OF TEXAS
TODD W. BLACKMON
89208
LICENSED
PROFESSIONAL ENGINEER
4-24-2025

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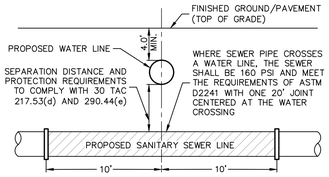
MEYER RANCH UNIT 16
COMAL COUNTY, TEXAS

SANITARY SEWER LINE F - PLAN & PROFILE
STA 1+00.00 TO 4+65.00

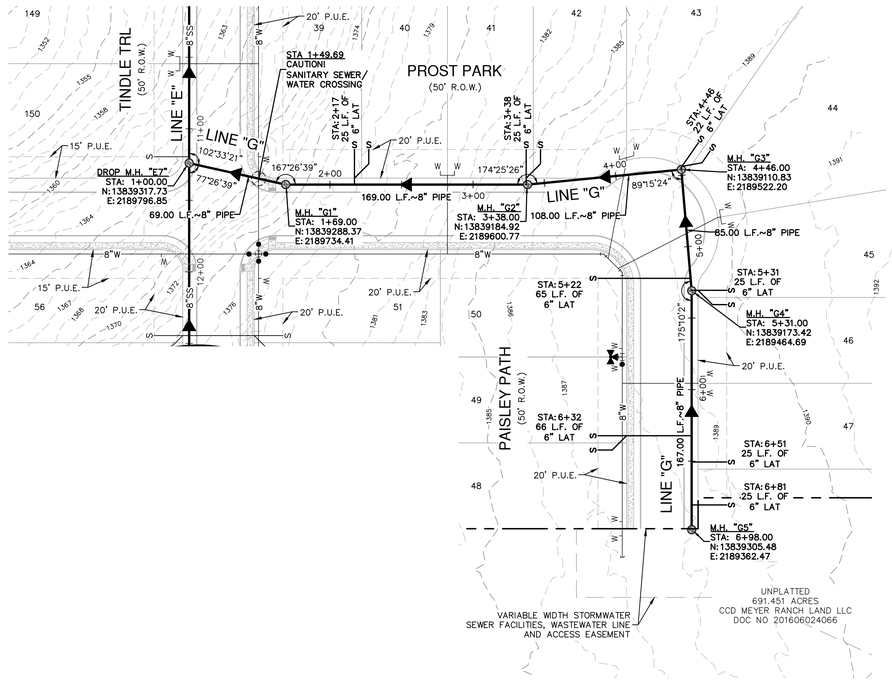
PLAT NO.
JOB NO. 30010-27
DATE DECEMBER 2024
DESIGNER CL
CHECKED HF DRAWN BH
SHEET C5.12

FOR PERMIT



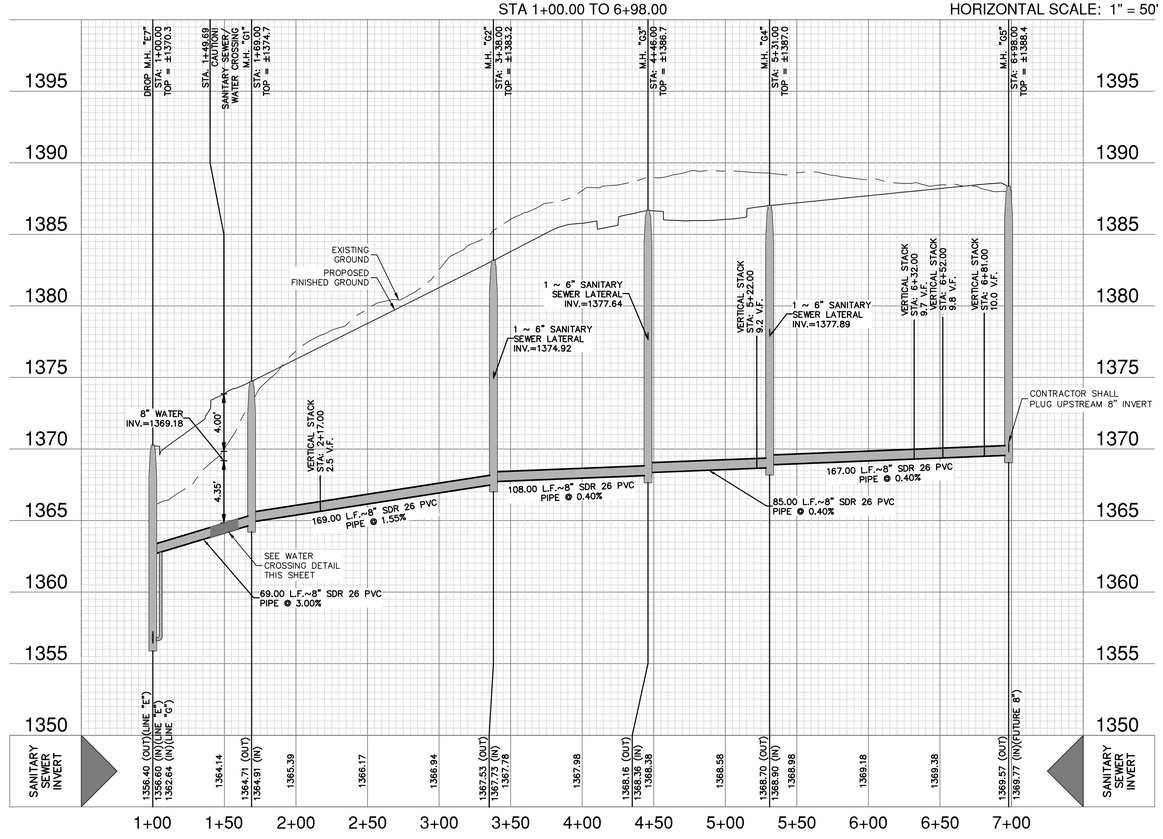
TYPICAL SANITARY SEWER/WATER CROSSING DETAIL

NOT-TO-SCALE



SANITARY SEWER LINE "G"
STA 1+00.00 TO 6+98.00

VERTICAL SCALE: 1" = 5'
HORIZONTAL SCALE: 1" = 50'



SCALE: 1"= 50'
0' 50' 100' 150'

SEWER LEGEND

- PROJECT LIMITS
- EXISTING WATER
- EXISTING SEWER
- PROPOSED SEWER
- PROPOSED WATER
- PROPOSED SEWER LATERAL
- FINISHED FLOOR ELEVATION FOR SEWER — FF = XXXX.XX
- PUBLIC UTILITY EASEMENT — P.U.E.
- PROPOSED STORM DRAIN
- CAUTION! WATER SERVICE/SEWER CROSSING

NOTES

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STA 1+00.00 TO 6+98.00

PLAT NO. ____
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DESIGNER CL
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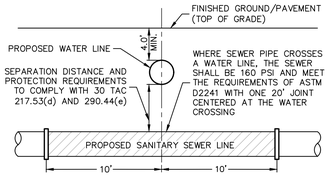
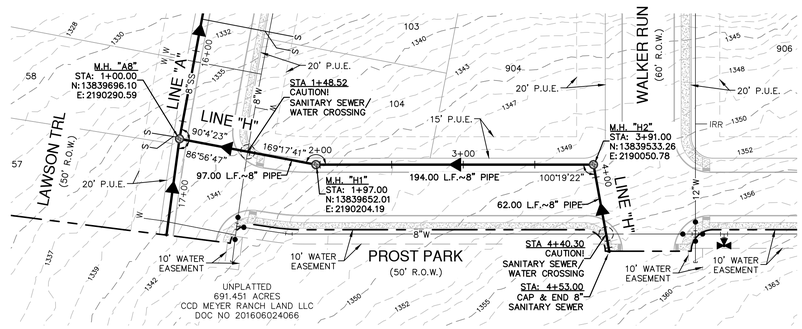
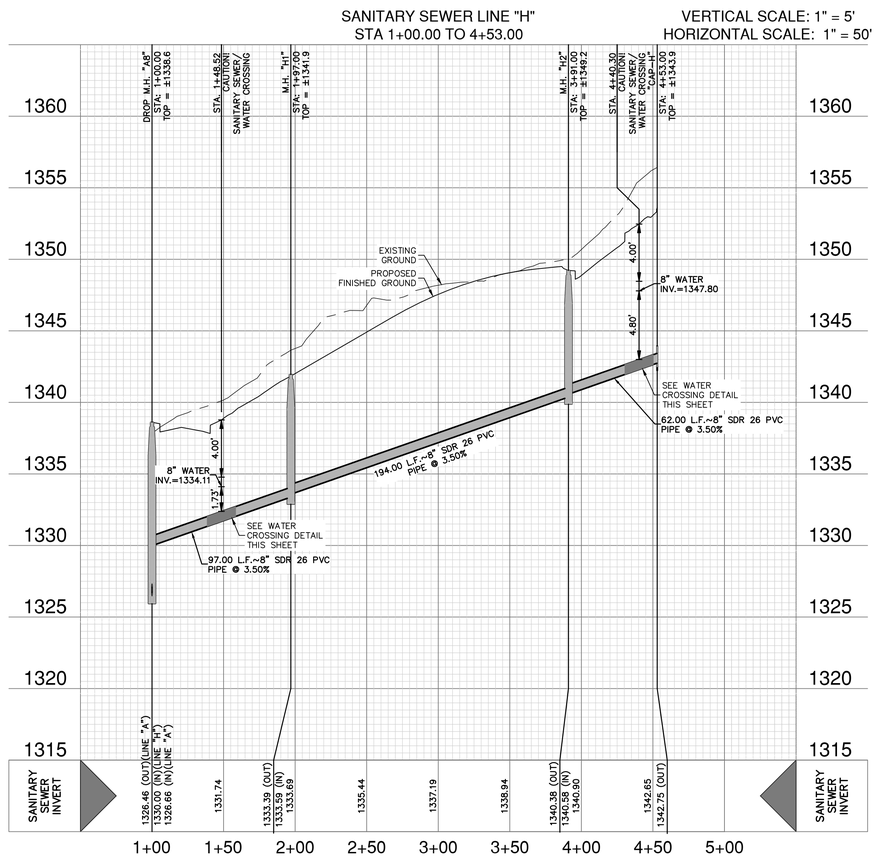
FOR PERMIT



TYPICAL SANITARY SEWER/WATER CROSSING DETAIL

NOT-TO-SCALE





SCALE: 1"= 50'

0' 50' 100' 150'

SEWER LEGEND

PROJECT LIMITS	
EXISTING WATER	W
EXISTING SEWER	SS MANHOLE
PROPOSED SEWER	SS
PROPOSED WATER	FIRE HYDRANT W
PROPOSED SEWER LATERAL	S
FINISHED FLOOR ELEVATION FOR SEWER	FF = XXXX.XX
PUBLIC UTILITY EASEMENT	P.U.E.
PROPOSED STORM DRAIN	
CAUTION! WATER SERVICE/SEWER CROSSING	

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FOR PAVEMENT DESIGN SECTION SEE GEOTECHNICAL ENGINEERING REPORT.

CAUTION!!

CONTRACTOR SHALL BE REQUIRED TO LOCATE ALL PUBLIC OR PRIVATE UTILITIES INCLUDING BUT NOT LIMITING TO: WATER, SEWER, TELEPHONE AND FIBER OPTIC LINES, SITE LIGHTING ELECTRIC, SECONDARY ELECTRIC, PRIMARY ELECTRICAL DUCTBANKS, LANDSCAPE IRRIGATION FACILITIES, AND GAS LINES. ANY UTILITY CONFLICTS THAT ARISE SHOULD BE COMMUNICATED TO THE ENGINEER IMMEDIATELY AND PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL CONTACT 1-800-DIG-TESS A MINIMUM OF 48 HOURS PRIOR TO THE START OF CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND THE REPAIR SHALL BE AT CONTRACTOR'S SOLE EXPENSE WHETHER THE UTILITY IS SHOWN ON THESE PLANS OR NOT.

TRENCH EXCAVATION SAFETY PROTECTION:

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

NO.	REVISION	DATE

STATE OF TEXAS
TODD W. BLACKMON
89208
LICENSED
PROFESSIONAL ENGINEER
12-27-2024

PAPE-DAWSON ENGINEERS
1672 INDEPENDENCE DR, STE 102 | NEW BRAUNFELS, TX 78132 | 830.632.5633
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

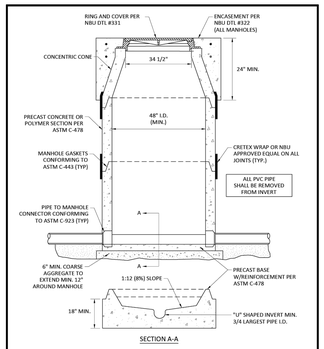
MEYER RANCH UNIT 16

COMAL COUNTY, TEXAS

SANITARY SEWER LINE H - PLAN & PROFILE
STA 1+00.00 TO 4+53.00

PLAT NO.
JOB NO. 30010-27
DATE DECEMBER 2024
DESIGNER CL
CHECKED HF DRAWN BH
SHEET C5.14

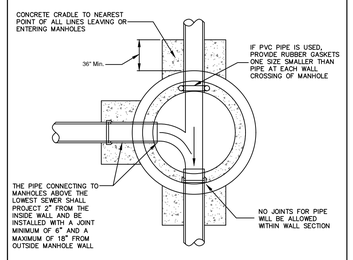
FOR PERMIT



*CONTRACTOR SHALL LEVEL AND PLUMB THE BASE PRIOR TO SETTING THE PRECAST MANHOLE RISER SECTIONS ON THE PRECAST CONCRETE BASE.

NBU NEW BRAUNFELS UTILITIES WATER SYSTEMS ENGINEERING	DRAWN BY: EWL / APPROVED BY: A. WILLARD	STANDARD DRAWING: WASTEWATER MANHOLE ON PRECAST BASE			
	CREATED: 2/5/24	UPDATED:	SCALE: N.T.S.	SHEET: 1 OF 1	DRAWING NO.: 328

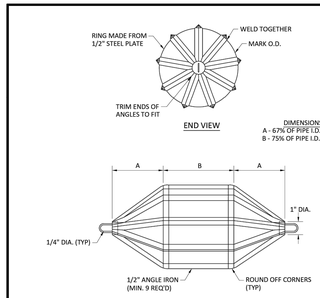
STANDARD MANHOLE



MANHOLE FLOOR PLAN

AUGUST 1998

NBU NEW BRAUNFELS UTILITIES WATER SYSTEMS ENGINEERING	DRAWN BY: H Shadrick / APPROVED BY:	STANDARD DRAWING: STANDARD MANHOLE MANHOLE FLOOR PLAN			
	CREATED: 5-5-03	UPDATED:	SCALE: N.T.S.	SHEET: 2 OF 2	DRAWING NO.: 320

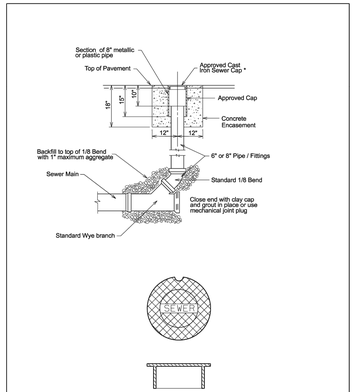


MANDREL REQUIREMENTS:

1. O.D. NOT LESS THAN 95% OF THE I.D. OF THE PIPE, AS SPECIFIED BY THE APPLICABLE ASTM, AWWA, UNI-BELL OR ANSI STANDARD.
2. ABLE TO WITHSTAND 200 PSI WITHOUT BEING DEFORMED.
3. ODD NUMBER OF RUNNERS OR LEGS.

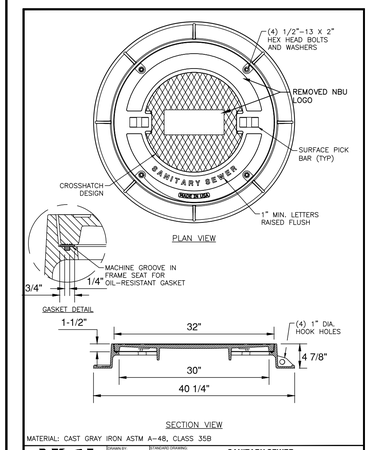
*THIS INFORMATION IS PROVIDED AS A REFERENCE. ALL DEFLECTION TESTING SHALL BE DONE IN ACCORDANCE WITH TCEQ CHAPTER 217.

NBU NEW BRAUNFELS UTILITIES WATER SYSTEMS ENGINEERING	DRAWN BY: EWL / APPROVED BY: A. WILLARD	STANDARD DRAWING: GO, NO GO DEFLECTION TESTING MANDREL			
	CREATED: 2/1/24	UPDATED:	SCALE: N.T.S.	SHEET: 1 OF 1	DRAWING NO.: 350



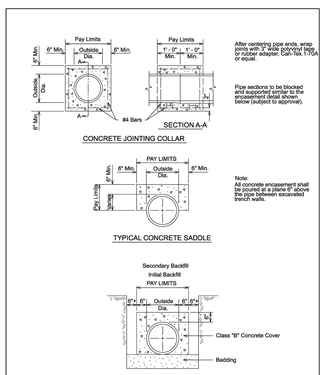
Note: Depending upon the type of service that an 8 inch lateral (on a dead end main) is providing, A standard manhole in lieu of a cleanout may be required. Consult with the SAWS Inspector.

PROPERTY OF SAN ANTONIO WATER SYSTEM SAN ANTONIO, TEXAS	TYPICAL 6" OR 8" CLEANOUT DETAIL (ON DEAD-END MAIN)	APPROVED MARCH 2008	REVISED APRIL 2014	
		DD-854-02		SHEET 1 of 2

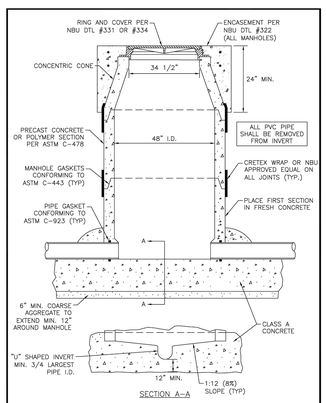


MATERIAL: CAST GRAY IRON ASTM A-48, CLASS 35B

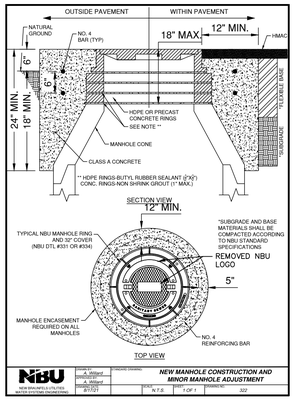
NBU NEW BRAUNFELS UTILITIES WATER SYSTEMS ENGINEERING	DRAWN BY: A. Willard / APPROVED BY: A. Willard	STANDARD DRAWING: SANITARY SEWER MANHOLE COVER			
	CREATED: 8/17/21	UPDATED:	SCALE: N.T.S.	SHEET: 1 OF 1	DRAWING NO.: 331



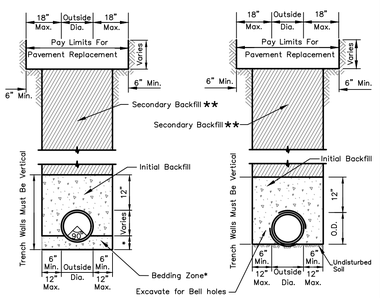
PROPERTY OF SAN ANTONIO WATER SYSTEM SAN ANTONIO, TEXAS	TYPICAL CONCRETE DETAILS	APPROVED MARCH 2008	REVISED APRIL 2014	
		DD-858-02		SHEET 1 of 1



NBU NEW BRAUNFELS UTILITIES WATER SYSTEMS ENGINEERING	DRAWN BY: A. Willard / APPROVED BY: A. Willard	STANDARD DRAWING: WASTEWATER MANHOLE ON CAST IN PLACE FOUNDATION			
	CREATED: 8/17/21	UPDATED:	SCALE: N.T.S.	SHEET: 1 OF 1	DRAWING NO.: 327



NBU NEW BRAUNFELS UTILITIES WATER SYSTEMS ENGINEERING	DRAWN BY: A. Willard / APPROVED BY: A. Willard	STANDARD DRAWING: NEW MANHOLE CONSTRUCTION AND MINOR MANHOLE ADJUSTMENT			
	CREATED: 8/17/21	UPDATED:	SCALE: N.T.S.	SHEET: 1 OF 1	DRAWING NO.: 322



* Sewer Gravel 6" Min, or 1/8 O.D. of the pipe, whichever is greater as directed by the Inspector

Pipe bedding of wastewater lines shall be manufactured sand or pea gravel as per NBU specifications.

1) RIGID PIPE – UNSTABLE OR UNACCEPTABLE CONDITIONS

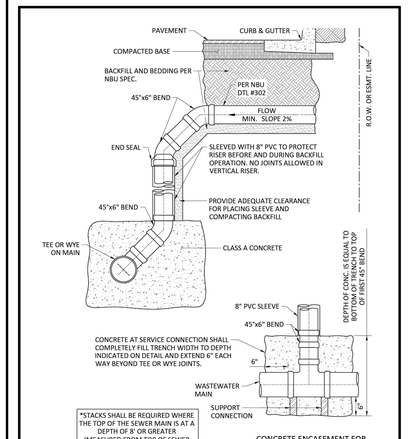
FLEXIBLE PIPE – ALL CONDITIONS

2) RIGID PIPE – EXISTING STABLE BEDDING CONDITIONS

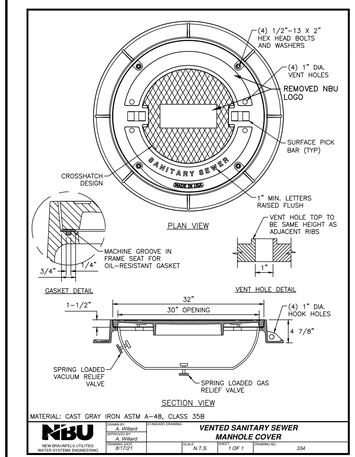
** SECONDARY BACKFILL OF WASTEWATER LINES SHALL MEET NBU AND CITY OF NEW BRAUNFELS SPECIFICATIONS AND SHALL GENERALLY CONSIST OF MATERIALS REMOVED FROM THE TRENCH AND SHALL BE FREE FROM BRUSH, DEBRIS AND TRASH, NO ROCKS OR STONES HAVING ANY DIMENSION LARGER THAN 6 INCHES AT THE LARGEST DIMENSION.

SANITARY SEWER PIPE LAID IN TRENCH

NOT TO SCALE

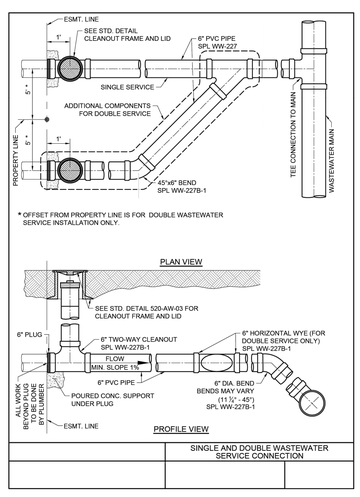


NBU NEW BRAUNFELS UTILITIES WATER SYSTEMS ENGINEERING	DRAWN BY: EWL / APPROVED BY: A. WILLARD	STANDARD DRAWING: WASTWATER DEEP SERVICE CONNECTION DETAIL			
	CREATED: 2/1/24	UPDATED:	SCALE: N.T.S.	SHEET: 1 OF 1	DRAWING NO.: 301



MATERIAL: CAST GRAY IRON ASTM A-48, CLASS 35B

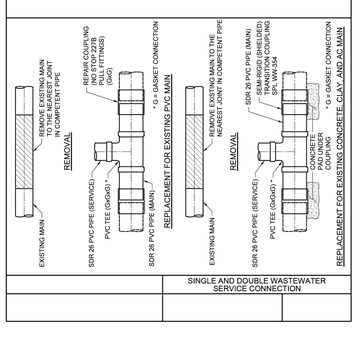
NBU NEW BRAUNFELS UTILITIES WATER SYSTEMS ENGINEERING	DRAWN BY: A. Willard / APPROVED BY: A. Willard	STANDARD DRAWING: VENTED SANITARY MANHOLE COVER			
	CREATED: 8/17/21	UPDATED:	SCALE: N.T.S.	SHEET: 1 OF 1	DRAWING NO.: 334



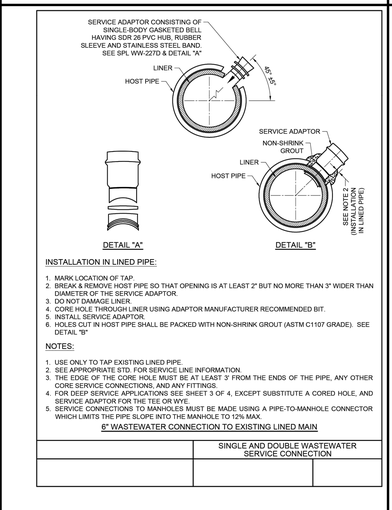
SINGLE AND DOUBLE WASTEWATER SERVICE CONNECTION		

NOTES:

1. DURING SUBDIVISION CONSTRUCTION, UTILITY CONTRACTOR INSTALLS WASTEWATER TEE CONNECTION TO MAIN, 6" STUB, HORIZONTAL WYE FOR DOUBLE SERVICES, 6" SERVICE BRANCH WITH TWO-WAY CLEANOUT(S) AND RISER, FRAME, AND COVER. CLEANOUT(S) TO BE PLUGGED AT PROPERTY LINE OR EASEMENT LINE END. ALL WASTEWATER PIPING SHALL HAVE ELASTOMERIC GASKET TYPE JOINTS AND SLOPE DOWNWARD TO MAIN 2% MIN. TO 45° MAX. DEPTH OF SERVICE AT PROPERTY LINE WILL BE SHOWN ON PLANS BY ENGINEER IF GREATER THAN 4', OTHERWISE THE INSTALLED DEPTH WILL BE 4' MIN. AND 8' MAX. AT PROPERTY LINE. IF WASTEWATER SERVICE LINE TO MAIN REQUIRES DEFLECTION EXCEEDING 45°, SEE SHEET 3 OF 4.
2. PIPING IN STREET RIGHT-OF-WAY AND IN EASEMENT AREA SHALL BE BEDDED IN GRANULAR MATERIALS AS REQUIRED BY CITY OF AUSTIN STANDARD SPECIFICATION 510.3 (14); MATERIALS SHALL BE AS SPECIFIED IN 510.2 (2)(A) AND (3)(B); BACKFILL ABOVE THE GRANULAR BEDDING SHALL BE AS REQUIRED BY SECTION 510.3 (25). SERVICE LINES IN THESE AREAS SHALL HAVE A MIN. COVER BELOW FINAL STREET GRADE OF 42".
3. PLUMBER SHALL REMOVE PLUG AND CONNECT TO TWO-WAY CLEANOUT. NO CONNECTION TO CLEANOUT STACK IS ALLOWED.



SINGLE AND DOUBLE WASTEWATER SERVICE CONNECTION		



INSTALLATION IN LINED PIPE:

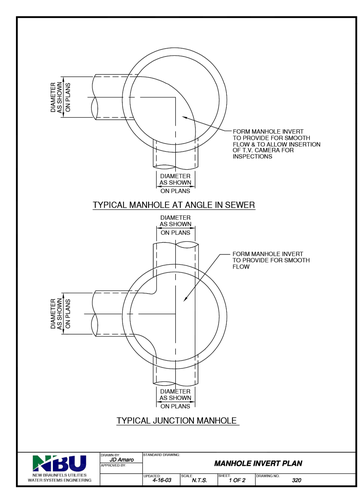
1. MARK LOCATION OF TAP.
2. BREAK & REMOVE HOST PIPE SO THAT OPENING IS AT LEAST 2" BUT NO MORE THAN 3" WIDER THAN DIAMETER OF THE SERVICE ADAPTOR.
3. DO NOT DAMAGE LINER.
4. CORE HOLE THROUGH LINER USING ADAPTOR MANUFACTURER RECOMMENDED BIT.
5. INSTALL SERVICE ADAPTOR.
6. HOLES CUT IN HOST PIPE SHALL BE PACKED WITH NON-SHRINK GROUT (ASTM C1107 GRADE). SEE DETAIL "B"

NOTES:

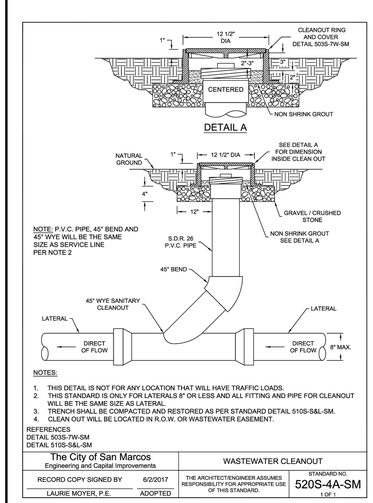
1. USE ONLY TO TAP EXISTING LINED PIPE.
2. SEE APPROPRIATE STD. FOR SERVICE LINE INFORMATION.
3. THE EDGE OF THE CORE HOLE MUST BE AT LEAST 3" FROM THE ENDS OF THE PIPE, ANY OTHER CORE SERVICE CONNECTIONS, AND ANY FITTINGS.
4. FOR DEEP SERVICE APPLICATIONS SEE SHEET 3 OF 4, EXCEPT SUBSTITUTE A CORED HOLE, AND SERVICE ADAPTOR FOR THE TEE OR WYE.
5. SERVICE CONNECTIONS TO MANHOLES MUST BE MADE USING A PIPE-TO-MANHOLE CONNECTOR WHICH LIMITS THE PIPE SLOPE INTO THE MANHOLE TO 12% MAX.

6" WASTEWATER CONNECTION TO EXISTING LINED MAIN

SINGLE AND DOUBLE WASTEWATER SERVICE CONNECTION		



NBU NEW BRAUNFELS UTILITIES WATER SYSTEMS ENGINEERING	DRAWN BY: JD Amaro / APPROVED BY:	STANDARD DRAWING: MANHOLE INVERT PLAN			
	CREATED: 4-16-03	UPDATED:	SCALE: N.T.S.	SHEET: 1 OF 2	DRAWING NO.: 320



NOTES:

1. THIS DETAIL IS NOT FOR ANY LOCATION THAT WILL HAVE TRAFFIC LOADS.
2. THIS STANDARD IS ONLY FOR LATERALS 8" OR LESS AND ALL FITTING AND PIPE FOR CLEANOUT WILL BE THE SAME SIZE AS LATERAL.
3. TRENCH SHALL BE COMPACTED AND RESTORED AS PER STANDARD DETAIL 510S-S&L-SM.
4. CLEAN OUT WILL BE LOCATED IN R.O.W. OR WASTEWATER EASEMENT.

REFERENCES
DETAIL 503S-7W-SM
DETAIL 510S-S&L-SM

The City of San Marcos Engineering and Capital Improvements		WASTEWATER CLEANOUT	
RECORD COPY SIGNED BY	6/2/2017	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 520S-4A-SM 1 OF 1
LAURIE MOYER, P.E.	ADOPTED		

DATE | NO. | REVISION

12 - 27 - 2024

STATE OF TEXAS
TODD W. BLACKMON
89208
LICENSED
PROFESSIONAL ENGINEER

PAPE-DAWSON ENGINEERS
1672 INDEPENDENCE DR, STE 102 I NEW BRAUNFELS, TX 78132 I 830.632.5633
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

MEYER RANCH UNIT 16

COMAL COUNTY, TEXAS

SANITARY SEWER DETAILS

PLAT NO.
JOB NO. 30010-27
DATE DECEMBER 2024
DESIGNER CL
CHECKED HF DRAWN BH
SHEET C5.20

FOR PERMIT

Date: Dec 17, 2024, 11:31am User ID: ALeddy
File: P:\30010\27\Design\Civil\SSDT-3001027.dwg

Texas Commission on Environmental Quality
Organized Sewage Collection System
General Construction Notes

Edwards Aquifer Protection Program Construction Notes – Legal Disclaimer

The following/listed "construction notes" are intended to be advisory in nature only and do not constitute an approval or conditional approval by the Executive Director, nor do they constitute a comprehensive listing of rules or conditions to be followed during construction. Further actions may be required to achieve compliance with TCEQ regulations found in Title 30, Texas Administrative Code, Chapters 213 and 217, as well as local ordinances and regulations providing for the protection of water quality. Additionally, nothing contained in the following/listed "construction notes" restricts the powers of the Executive Director, the commission or any other governmental entity to prevent, correct, or curtail activities that result or may result in pollution of the Edwards Aquifer or hydrologically connected surface waters. The holder of any Edwards Aquifer Protection Plan containing "construction notes" is still responsible for compliance with Title 30, Texas Administrative Code, Chapters 213 or any other applicable TCEQ regulation, as well as all conditions of an Edwards Aquifer Protection Plan through all phases of plan implementation. Failure to comply with any condition of the Executive Director's approval, whether or not in contradiction of any "construction notes," is a violation of TCEQ regulations and any violation is subject to administrative rules, orders, and penalties as provided under Title 30, Texas Administrative Code § 213.10 (relating to Enforcement). Such violations may also be subject to civil penalties and injunction. The following/listed "construction notes" in no way represent an approved exception by the Executive Director to any part of Title 30 Texas Administrative Code, Chapters 213 and 217, or any other TCEQ applicable regulation.

1. This Organized Sewage Collection System (SCS) must be constructed in accordance with 30 Texas Administrative Code (TAC) §213.5(c), the Texas Commission on Environmental Quality's (TCEQ) Edwards Aquifer Rules and any local government standard specifications.

2. All contractors conducting regulated activities associated with this proposed regulated project must be provided with copies of the SCS plan and the TCEQ letter indicating the specific conditions of its approval. During the course of these regulated activities, the contractors must be required to keep on-site copies of the plan and the approval letter.

3. A written notice of construction must be submitted to the presiding TCEQ regional office at least 48 hours prior to the start of any regulated activities. This notice must include:
   - the name of the approved project;
   - the activity start date; and
   - the contact information of the prime contractor.

4. Any modification to the activities described in the referenced SCS application following the date of approval may require the submittal of an SCS application to modify this approval, including the payment of appropriate fees and all information necessary for its review and approval.

5. Prior to beginning any construction activity, all temporary erosion and sedimentation (E&S) control measures must be properly installed and maintained in accordance with the manufacturers specifications. These controls must remain in place until the disturbed areas have been permanently stabilized.

6. If any sensitive features are discovered during the wastewater line trenching activities, all regulated activities near the sensitive feature must be suspended immediately. The applicant must immediately notify the appropriate regional office of the TCEQ of the feature discovered. A geologist's assessment of the location and extent of the feature discovered must be reported to that regional office in writing and the applicant must submit a plan for ensuring the structural integrity of the sewer line or for modifying the proposed collection system alignment around the feature. The regulated activities near the sensitive feature may not proceed until the

executive director has reviewed and approved the methods proposed to protect the sensitive feature and the Edwards Aquifer from any potentially adverse impacts to water quality while maintaining the structural integrity of the line.

7. Sewer lines located within or crossing the 5-year floodplain of a drainage way will be protected from inundation and stream velocities which could cause erosion and scouring of backfill. The trench must be capped with concrete to prevent scouring of backfill, or the sewer lines must be encased in concrete. All concrete shall have a minimum thickness of 6 inches.

8. Blasting procedures for protection of existing sewer lines and other utilities will be in accordance with the National Fire Protection Association criteria. Sand is not allowed as bedding or backfill in trenches that have been blasted. If any existing sewer lines are damaged, the lines must be repaired and retested.

9. All manholes constructed or rehabilitated on this project must have watertight size on size resilient connectors allowing for differential settlement. If manholes are constructed within the 100-year floodplain, the cover must have a gasket and be bolted to the ring. Where gasketed manhole covers are required for more than three manholes in sequence or for more than 1500 feet, alternate means of venting will be provided. Bricks are not an acceptable construction material for any portion of the manhole.

   The diameter of the manholes must be a minimum of four feet and the manhole for entry must have a minimum clear opening diameter of 30 inches. These dimensions and other details showing compliance with the commission's rules concerning manholes and sewer line/manhole inverts described in 30 TAC §217.55 are included on Plan Sheet C4.10.

   It is suggested that entrance into manholes in excess of four feet deep be accomplished by means of a portable ladder. The inclusion of steps in a manhole is prohibited.

10. Where water lines and new sewer line are installed with a separation distance closer than nine feet (i.e., water lines crossing wastewater lines, water lines paralleling wastewater lines, or water lines next to manholes) the installation must meet the requirements of 30 TAC §217.53(d) (Pipe Design) and 30 TAC §290.44(e) (Water Distribution).

11. Where sewers lines deviate from straight alignment and uniform grade all curvature of sewer pipe must be achieved by the following procedure which is recommended by the pipe manufacturer: _____.

    If pipe flexure is proposed, the following method of preventing deflection of the joint must be used: _____.

    Specific care must be taken to ensure that the joint is placed in the center of the trench and properly bedded in accordance with 30 TAC §217.54.

12. New sewage collection system lines must be constructed with stub outs for the connection of anticipated extensions. The location of such stub outs must be marked on the ground such that their location can be easily determined at the time of connection of the extensions. Such stub outs must be manufactured wyes or tees that are compatible in size and material with both the sewer line and the extension. At the time of original construction, new stub-outs must be constructed sufficiently to extend beyond the end of the street pavement. All stub-outs must be sealed with a manufactured cap to prevent leakage. Extensions that were not anticipated at the time of original construction or that are to be connected to an existing sewer line not furnished with stub outs must be connected using a manufactured saddle and in accordance with accepted plumbing techniques.

If no stub-out is present an alternate method of joining laterals is shown in the detail on Plan Sheet __ of __. (For potential future laterals).

The private service lateral stub-outs must be installed as shown on the plan and profile sheets on PlanSheets C5.02, C5.03, C5.04, C5.05, C5.06, C5.07 and C5.08 and marked after backfilling as shown in the detail on Plan Sheet C5.09.

13. Trenching, bedding and backfill must conform with 30 TAC §217.54. The bedding and backfill for flexible pipe must comply with the standards of ASTM D-2321, Classes IA, IB, II or III. Rigid pipe bedding must comply with the requirements of ASTM C 12 (ANSI A 106.2) classes A, B or C.

14. Sewer lines must be tested from manhole to manhole. When a new sewer line is connected to an existing stub or clean-out, it must be tested from existing manhole to new manhole. If a stub or clean-out is used at the end of the proposed sewer line, no private service attachments may be connected between the last manhole and the cleanout unless it can be certified as conforming with the provisions of 30 TAC §213.5(c)(3)(E).

15. All sewer lines must be tested in accordance with 30 TAC §217.57. The engineer must retain copies of all test results which must be made available to the executive director upon request. The engineer must certify in writing that all wastewater lines have passed all required testing to the appropriate regional office within 30 days of test completion and prior to use of the new collection system. Testing method will be:
   (a) For a collection system pipe that will transport wastewater by gravity flow, the design must specify an infiltration and exfiltration test or a low-pressure air test. A test must conform to the following requirements:
      (1) *Low Pressure Air Test.*
         (A) A low pressure air test must follow the procedures described in American Society For Testing And Materials (ASTM) C-828, ASTM C-924, or ASTM F-1417 or other procedure approved by the executive director, except as to testing times as required in Table C.3 in subparagraph (C) of this paragraph or Equation C.3 in subparagraph (B)(ii) of this paragraph.
         (B) For sections of collection system pipe less than 36 inch average inside diameter, the following procedure must apply, unless a pipe is to be tested as required by paragraph (2) of this subsection.
            (i) A pipe must be pressurized to 3.5 pounds per square inch (psi) greater than the pressure exerted by groundwater above the pipe.
            (ii) Once the pressure is stabilized, the minimum time allowable for the pressure to drop from 3.5 psi gauge to 2.5 psi gauge is computed from the following equation:

Equation C.3

$$T = \frac{0.085 \times D \times K}{Q}$$

Where:

T = time for pressure to drop 1.0 pound per square inch gauge in seconds

K = 0.000419 X D X L, but not less than 1.0

D = average inside pipe diameter in inches

L = length of line of same size being tested, in feet

Q = rate of loss, 0.0015 cubic feet per minute per square foot internal surface

(C) Since a K value of less than 1.0 may not be used, the minimum testing time for each pipe diameter is shown in the following Table C.3:

Pipe Diameter *(inches)*	Minimum Time *(seconds)*	Maximum Length for Minimum Time *(feet)*	Time for Longer Length *(seconds/foot)*
6	340	398	0.855
8	454	298	1.520
10	567	239	2.374
12	680	199	3.419
15	850	159	5.342
18	1020	133	7.693
21	1190	114	10.471
24	1360	100	13.676
27	1530	88	17.309
30	1700	80	21.369
33	1870	72	25.856

(D) An owner may stop a test if no pressure loss has occurred during the first 25% of the calculated testing time.
(E) If any pressure loss or leakage has occurred during the first 25% of a testing period, then the test must continue for the entire test duration as outlined above or until failure.
(F) Wastewater collection system pipes with a 27 inch or larger average inside diameter may be air tested at each joint instead of following the procedure outlined in this section.
(G) A testing procedure for pipe with an inside diameter greater than 33 inches must be approved by the executive director.

(2) *Infiltration/Exfiltration Test.*
(A) The total exfiltration, as determined by a hydrostatic head test, must not exceed 50 gallons per inch of diameter per mile of pipe per 24 hours at a minimum test head of 2.0 feet above the crown of a pipe at an upstream manhole.
(B) An owner shall use an infiltration test in lieu of an exfiltration test when pipes are installed below the groundwater level.
(C) The total exfiltration, as determined by a hydrostatic head test, must not exceed 50 gallons per inch diameter per mile of pipe per 24 hours at a minimum test head of two feet above the crown of a pipe at an upstream manhole, or at least two feet above existing groundwater level, whichever is greater.
(D) For construction within a 25-year flood plain, the infiltration or exfiltration must not exceed 10 gallons per inch diameter per mile of pipe per 24 hours at the same minimum test head as in subparagraph (C) of this paragraph.
(E) If the quantity of infiltration or exfiltration exceeds the maximum quantity specified, an owner shall undertake remedial action in order to reduce

the infiltration or exfiltration to an amount within the limits specified. An owner shall retest a pipe following a remediation action.

(b) If a gravity collection pipe is composed of flexible pipe, deflection testing is also required. The following procedures must be followed:
(1) For a collection pipe with inside diameter less than 27 inches, deflection measurement requires a rigid mandrel.
(A) *Mandrel Sizing.*
(i) A rigid mandrel must have an outside diameter (OD) not less than 95% of the base inside diameter (ID) or average ID of a pipe, as specified in the appropriate standard by the ASTMs, American Water Works Association, UNI-BELL, or American National Standards Institute, or any related appendix.
(ii) If a mandrel sizing diameter is not specified in the appropriate standard, the mandrel must have an OD equal to 95% of the ID of a pipe. In this case, the ID of the pipe, for the purpose of determining the OD of the mandrel, must equal be the average outside diameter minus two minimum wall thicknesses for OD controlled pipe and the average inside diameter for ID controlled pipe.
(iii) All dimensions must meet the appropriate standard.
(B) *Mandrel Design.*
(i) A rigid mandrel must be constructed of a metal or a rigid plastic material that can withstand 200 psi without being deformed.
(ii) A mandrel must have nine or more odd number of runners or legs.
(iii) A barrel section length must equal at least 75% of the inside diameter of a pipe.
(iv) Each size mandrel must use a separate proving ring.
(C) *Method Options.*
(i) An adjustable or flexible mandrel is prohibited.
(ii) A test may not use television inspection as a substitute for a deflection test.
(iii) If requested, the executive director may approve the use of a deflectometer or a mandrel with removable legs or runners on a case-by-case basis.
(2) For a gravity collection system pipe with an inside diameter 27 inches and greater, other test methods may be used to determine vertical deflection.
(3) A deflection test method must be accurate to within plus or minus 0.2% deflection.
(4) An owner shall not conduct a deflection test until at least 30 days after the final backfill.
(5) Gravity collection system pipe deflection must not exceed five percent (5%).
(6) If a pipe section fails a deflection test, an owner shall correct the problem and conduct a second test after the final backfill has been in place at least 30 days.

16. All manholes must be tested to meet or exceed the requirements of 30 TAC §217.58.
   (a) All manholes must pass a leakage test.
   (b) An owner shall test each manhole (after assembly and backfilling) for leakage, separate and independent of the collection system pipes, by hydrostatic exfiltration testing, vacuum testing, or other method approved by the executive director.
      (1) Hydrostatic Testing.

(A) The maximum leakage for hydrostatic testing or any alternative test methods is 0.025 gallons per foot diameter per foot of manhole depth per hour.
(B) To perform a hydrostatic exfiltration test, an owner shall seal all wastewater pipes coming into a manhole with an internal pipe plug, fill the manhole with water, and maintain the test for at least one hour.
(C) A test for concrete manholes may use a 24-hour wetting period before testing to allow saturation of the concrete.

(2) Vacuum Testing.
(A) To perform a vacuum test, an owner shall plug all lift holes and exterior joints with a non-shrink grout and plug all pipes entering a manhole.
(B) No grout must be placed in horizontal joints before testing.
(C) Stub-outs, manhole boots, and pipe plugs must be secured to prevent movement while a vacuum is drawn.
(D) An owner shall use a minimum 60 inch/lb torque wrench to tighten the external clamps that secure a test cover to the top of a manhole.
(E) A test head must be placed at the inside of the top of a cone section, and the seal inflated in accordance with the manufacturer's recommendations.
(F) There must be a vacuum of 10 inches of mercury inside a manhole to perform a valid test.
(G) A test does not begin until after the vacuum pump is off.
(H) A manhole passes the test if after 2.0 minutes and with all valves closed, the vacuum is at least 9.0 inches of mercury.

17. All private service laterals must be inspected and certified in accordance with 30 TAC §213.5(c)(3)(I). After installation of and, prior to covering and connecting a private service lateral to an existing organized sewage collection system, a Texas Licensed Professional Engineer, Texas Registered Sanitarian, or appropriate city inspector must visually inspect the private service lateral and the connection to the sewage collection system, and certify that it is constructed in conformity with the applicable provisions of this section. The owner of the collection system must maintain such certifications for five years and forward copies to the appropriate regional office upon request. Connections may only be made to an approved sewage collection system.

Austin Regional Office 12100 Park 35 Circle, Building A Austin, Texas 78753-1808 Phone (512) 339-2929 Fax (512) 339-3795	San Antonio Regional Office 14250 Judson Road San Antonio, Texas 78233-4480 Phone (210) 490-3096 Fax (210) 545-4329

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

WASTEWATER NOTES:

1. The contractor shall maintain service to existing wastewater system at all times during construction.
2. A minimum of 8" wastewater pipe and fittings (P.V.C. SDR-26, ASTM, D-3034, D-3212, F-477) are required on new installation.
3. All residential wastewater service laterals shall be extended to the property line and a cleanout shall be installed at the property line. Services to lots will extend four (4) feet past the underground electric conduit if electric is installed in the front easement.
4. Pipe bedding of wastewater lines shall be manufactured sand or pea gravel as per NBU specifications.
5. Secondary backfill of wastewater lines shall generally consist of materials removed from the trench and shall be free from brush, debris and trash, no rocks or stones having any dimension larger than 6 inches at the largest dimension.
6. All wastewater pipes shall have compression or mechanical joints as per 30 TAC §217.53 (c) (2).
7. For wastewater lines less than 24" in diameter, select initial backfill material shall be placed in two lifts.
   a. The first lift shall be spread uniformly and simultaneously on each side and under the shoulders of the pipe to the mid point or spring line of the pipe.
   b. The second lift shall be placed to a depth as shown on the pipe backfill detail. For pipes larger than 24", 12" maximum lifts shall be used.
8. All manholes must be water tight, either monolithic, cast-in-place concrete structures or prefabricated manholes. The manholes shall have water-tight rings and covers. Wherever they are within the 100 year floodplain, the manhole covers shall be bolted. Every third manhole in sequence shall have an alternate means of venting. 30 TAC §213.5 (c) (3) (A) and 30 TAC §217.55 (o).
9. All manholes shall be constructed so that the top of the ring is two inches (2") above surrounding ground except when located in paved area. In paved areas, the manhole ring shall be flush with pavement.
10. All new manholes are to have covers with 32" openings.
11. Wastewater pipe connections to pre-cast manholes will be compression joints or mechanical "boot type" joint.
12. Wastewater lines shall be tested from manhole to manhole.
13. In areas where a new wastewater manhole is to be constructed over an existing wastewater system, it shall be the contractor's responsibility to test the existing manholes before construction. After the proposed manhole(s) has been built, the contractor shall re-test the existing system to the satisfaction of the construction inspector. (no separate pay item).
14. Where the minimum 9 foot separation distance between wastewater lines and water lines / mains cannot be maintained, the installation of wastewater lines shall be in strict accordance with TCEQ. The wastewater line shall be constructed of cast iron, ductile iron or PVC meeting the ASTM specification for both pipes and joints of 150 psi and shall be in accordance with 30 TAC §217.53 (d) (3) (A) (i).
15. No testing will be performed prior to 30 days from complete installation of the wastewater lines. The following sequence will be strictly adhered to:
    a. Pull mandrel
    b. Perform Air test
    c. Cleaning of any debris
    d. Flushing of system
    e. TV Inspection (within 72 hours of flushing)
16. A minimum of 3 feet of cover is to be maintained over the wastewater main and laterals at subgrade, otherwise concrete encasement will be required.
17. Wastewater main connections made directly to existing manholes will require successful testing of the manhole in accordance with NBU Connection & Construction Policy Manual.
18. TCEQ and EPA require erosion and sedimentation control for construction of wastewater collection systems. Developer or authorized representative shall provide erosion and sedimentation control as notes on the project's plan and profile sheets. All temporary erosion and sedimentation controls shall be removed by the Contractor at final acceptance of the project.
19. All manholes not within paved streets shall have locking concrete collar to secure ring and cover to manhole cone per NBU Detail drawing #329.
20. All manholes over the Edwards Aquifer Recharge Zone shall have locking concrete collar to secure ring and cover to manhole cone per NBU detail drawing #329.

UTILITY NOTES

1. NO VALVES, HYDRANTS, ETC. SHALL BE CONSTRUCTED WITHIN CURBS, SIDEWALKS, OR DRIVEWAYS.
2. ALL UTILITIES TO BE CONSTRUCTED PRIOR TO STREETS.
3. THIS PROJECT INCLUDES UTILITY INSTALLATIONS GREATER THAN 5-FEET IN DEPTH. DEEP TRENCHES POSE COMPACTION TESTING AND CONSTRUCTION CHALLENGES AND METHODS FOR TESTING AND COMPACTION MAY NOT BE ACHIEVABLE. A UTILITY COMPACTION PLAN WILL BE REQUIRED AND MUST BE SUBMITTED FOR APPROVAL PRIOR TO UTILITY INSTALLATION.
4. UTILITY TRENCH COMPACTION – ALL UTILITY TRENCH COMPACTION TESTS SHALL BE THE RESPONSIBILITY OF THE DEVELOPER'S GEOTECHNICAL ENGINEER. FILL MATERIAL SHALL BE PLACED IN UNIFORM LAYERS NOT TO EXCEED TWELVE INCHES (12") LOOSE. DETERMINE THE MAXIMUM LIFT THICKNESS BASED ON THE ABILITY OF THE COMPACTING OPERATION AND EQUIPMENT USED TO MEET THE REQUIRED DENSITY. EACH LAYER OF MATERIAL SHALL BE COMPACTED TO A MINIMUM 95% DENSITY AND TESTED FOR DENSITY AND MOISTURE IN ACCORDANCE WITH TEST METHODS TEX-113-E, TEX-114-E, TEX-115-E. THE NUMBER AND LOCATION OF REQUIRED TESTS SHALL BE DETERMINED BY THE GEOTECHNICAL ENGINEER AND APPROVED BY THE COMAL COUNTY STREET INSPECTOR. AT A MINIMUM, TESTS SHALL BE TAKEN EVERY 200 LF FOR EACH LIFT. UPON COMPLETION OF TESTING THE GEOTECHNICAL ENGINEER SHALL PROVIDE THE COMAL COUNTY STREET INSPECTOR WITH ALL TESTING DOCUMENTATION AND A CERTIFICATION STATING THAT THE PLACEMENT OF FILL MATERIAL HAS BEEN COMPLETED IN ACCORDANCE WITH THE PLANS. ADDITIONAL DENSITY TESTS MAY BE REQUESTED BY THE COMAL COUNTY INSPECTOR.

NO.	REVISION	DATE

12 - 27 - 2024
STATE OF TEXAS
TODD W. BLACKMON
89208
LICENSED
PROFESSIONAL ENGINEER

PAPE-DAWSON ENGINEERS
1672 INDEPENDENCE DR, STE 102 I NEW BRAUNFELS, TX 78132 I 830.632.5633
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

MEYER RANCH UNIT 16
COMAL COUNTY, TEXAS
SANITARY SEWER NOTES

PLAT NO. _____
JOB NO. 30010-27
DATE DECEMBER 2024
DESIGNER CL
CHECKED HF DRAWN BH
SHEET C5.30

FOR PERMIT

Date: Dec 17, 2024, 11:32am User ID: ALeddy
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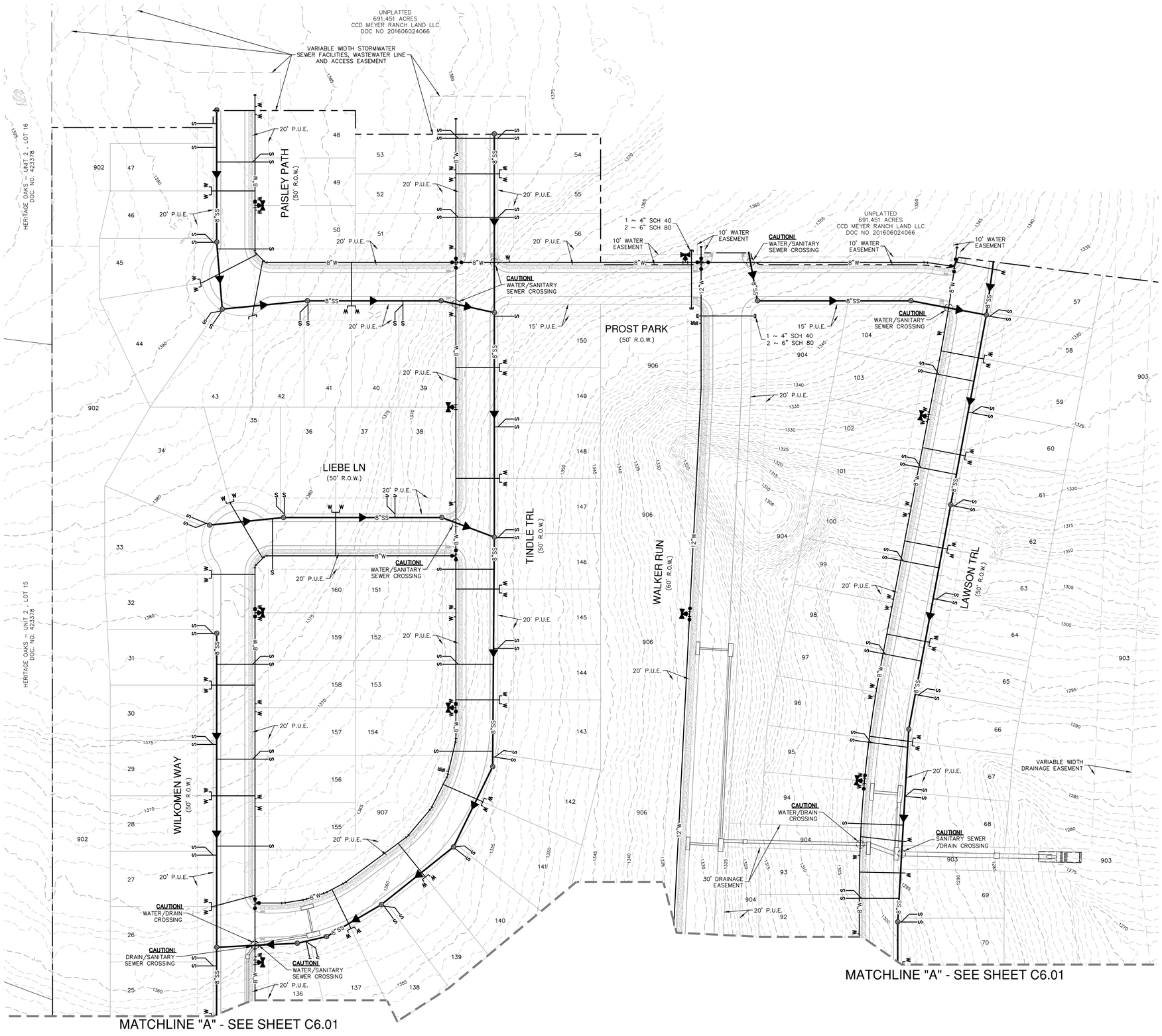

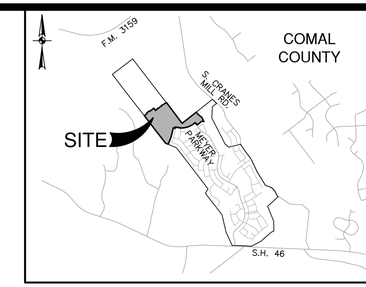

LOCATION MAP

NOT–TO–SCALE

SCALE: 1"= 60'

0' 60' 120' 180'

UTILITY LEGEND

PROJECT LIMITS	
EXISTING WATER	W
EXISTING REUSE WATER	REUSE
EXISTING SEWER	SS
PROPOSED SEWER	SS MANHOLE
PROPOSED WATER	W FIRE HYDRANT
PROPOSED WYE & LATERAL	
SINGLE WATER SERVICE	
DUAL WATER SERVICE	
STREET LIGHTS	SL
GAS, ELECTRIC, TELEPHONE & CABLE TELEVISION EASEMENT	P.U.E.
PROPOSED STORM DRAIN	
PROPOSED UNDERGROUND ELECTRIC (REFER TO NBU DESIGN SHEETS AND DETAILS)	UGE
PROPOSED NATURAL GAS (REFER TO ENERTEX DESIGN SHEETS AND DETAILS)	GAS
CONDUIT	

UTILITY NOTES

1. ALL UTILITY TRENCH COMPACTION TESTS WITHIN THE STREET PAVEMENT SECTION SHALL BE THE RESPONSIBILITY OF THE DEVELOPER'S GEO–TECHNICAL ENGINEER. FILL MATERIAL SHALL BE PLACED IN UNIFORM LAYERS NOT TO EXCEED TWELVE INCHES (12") LOOSE. EACH LAYER OF MATERIAL SHALL BE COMPACTED TO A MINIMUM 95% DENSITY AND TESTED FOR DENSITY AND MOISTURE IN ACCORDANCE WITH TEST METHODS TEX–113–E, TEX–114–E, TEX–115–E. THE NUMBER AND LOCATION OF REQUIRED TESTS SHALL BE DETERMINED BY THE GEO–TECHNICAL ENGINEER AND APPROVED BY THE COMAL COUNTY STREET INSPECTOR. AT A MINIMUM, TESTS SHALL BE TAKEN EVERY 100LF FOR EACH LIFT. UPON COMPLETION OF TESTING THE GEO–TECHNICAL ENGINEER SHALL PROVIDE THE COMAL COUNTY INSPECTOR WITH ALL TESTING DOCUMENTATION AND A CERTIFICATION STATING THAT THE PLACEMENT OF FILL MATERIAL HAS BEEN COMPLETED IN ACCORDANCE WITH THE PLANS.
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TRENCH EXCAVATION SAFETY PROTECTION:

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

CAUTION!!

CONTRACTOR SHALL BE REQUIRED TO LOCATE ALL PUBLIC OR PRIVATE UTILITIES INCLUDING BUT NOT LIMITING TO: WATER, SEWER, TELEPHONE AND FIBER OPTIC LINES, SITE LIGHTING ELECTRIC, SECONDARY ELECTRIC, PRIMARY ELECTRICAL DUCTBANKS, LANDSCAPE IRRIGATION FACILITIES, AND GAS LINES. ANY UTILITY CONFLICTS THAT ARISE SHOULD BE COMMUNICATED TO THE ENGINEER IMMEDIATELY AND PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL CONTACT 1–800–DIG–TESS A MINIMUM OF 48 HOURS PRIOR TO THE START OF CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND THE REPAIR SHALL BE AT CONTRACTOR'S SOLE EXPENSE WHETHER THE UTILITY IS SHOWN ON THESE PLANS OR NOT.

NO.	REVISION	DATE

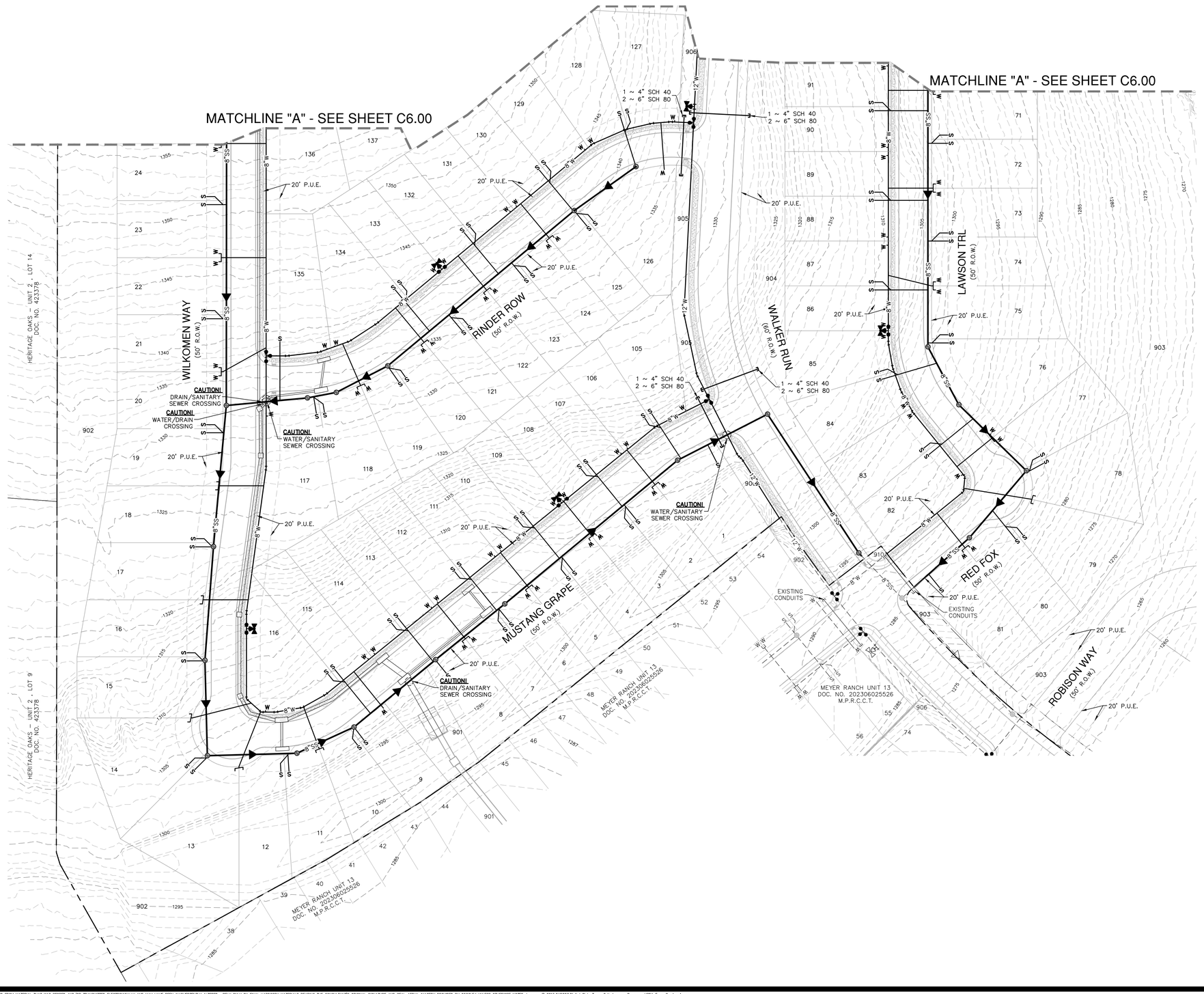
STATE OF TEXAS
TODD W. BLACKMON
89208
LICENSED
PROFESSIONAL ENGINEER
4–24–2025

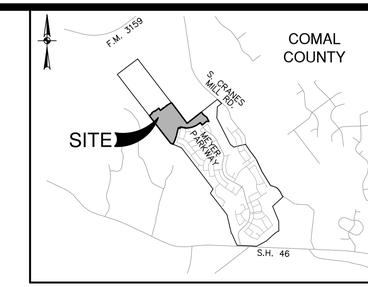
PAPE-DAWSON ENGINEERS
1672 INDEPENDENCE DR, STE 102 I NEW BRAUNFELS, TX 78132 I 830.632.5633
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

MEYER RANCH UNIT 16
COMAL COUNTY, TEXAS
OVERALL UTILITY PLAN

PLAT NO. ____
JOB NO. 30010–27
DATE DECEMBER 2024
DESIGNER CL
CHECKED HF DRAWN BH
SHEET C6.00

FOR PERMIT





LOCATION MAP

NOT-TO-SCALE

SCALE: 1"= 60'

0' 60' 120' 180'

UTILITY LEGEND

PROJECT LIMITS	
EXISTING WATER	W
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EXISTING SEWER	SS MANHOLE
PROPOSED SEWER	SS
PROPOSED WATER	FIRE HYDRANT W
PROPOSED WYE & LATERAL	S
SINGLE WATER SERVICE	W
DUAL WATER SERVICE	W W
STREET LIGHTS	SL
GAS, ELECTRIC, TELEPHONE & CABLE TELEVISION EASEMENT	P.U.E.
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NO.	REVISION	DATE

STATE OF TEXAS
TODD W. BLACKMON
89208
LICENSED
PROFESSIONAL ENGINEER
4-24-2025

PAPE-DAWSON ENGINEERS
1672 INDEPENDENCE DR, STE 102 I NEW BRAUNFELS, TX 78132 I 830.632.5633
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

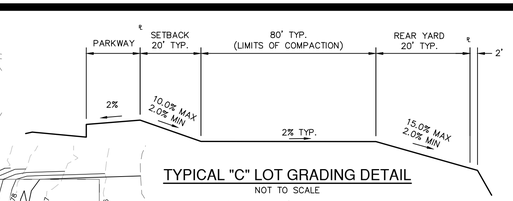
MEYER RANCH UNIT 16

COMAL COUNTY, TEXAS

OVERALL UTILITY PLAN

PLAT NO.
JOB NO. 30010-27
DATE DECEMBER 2024
DESIGNER CL
CHECKED HF DRAWN BH
SHEET C6.01

FOR PERMIT



TYPICAL "C" LOT GRADING DETAIL

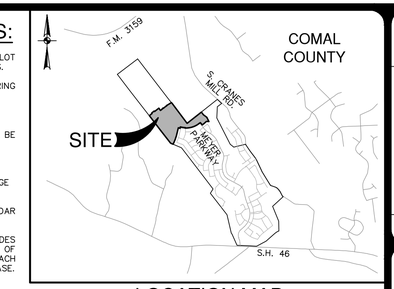
NOT TO SCALE

TYPICAL "A" LOT GRADING DETAIL

NOT TO SCALE

RESIDENTIAL GRADING NOTES:

1. DRIVEWAYS MAY BE LOCATED ON EITHER SIDE OF THE LOT UNLESS OTHERWISE SHOWN ON THIS PLAN OR STREET PLANS.
2. REFERENCE GRADING NOTES AND GEOTECHNICAL ENGINEERING SPECIFICATIONS PROVIDED BY THE OWNER.
3. LOT GRADING PATTERNS (A, B, OR C) MUST BE FOLLOWED.
4. ALL LOTS SHALL BE GRADED SO THAT NO DRAINAGE SHALL BE ALLOWED TO FLOW ONTO ADJACENT SIDE LOTS.
5. BUILDER TO VERIFY INVERTS OF ALL SANITARY SEWER LATERALS WHEN ESTABLISHING THE APPROPRIATE FINISHED FLOOR ELEVATIONS IN ORDER TO ENSURE ADEQUATE DRAINAGE OF HOUSE LATERALS.
6. EXISTING CONTOURS SHOWN ONSITE ARE FROM LIDAR TOPOGRAPHY & FIELD SURVEY BY OTHERS.
7. GRADES, SLOPES, AND ELEVATIONS SHOWN ARE MASS GRADES ONLY. BUILDER SHALL BE RESPONSIBLE FOR CONSTRUCTION OF SIDE YARD SWALES AND DETAILED GRADING AROUND EACH INDIVIDUAL HOUSE ENSURING POSITIVE DRAINAGE IN EACH CASE.



LOCATION MAP

NOT-TO-SCALE

SCALE: 1"= 60'

0' 60' 120' 180'

GRADING LEGEND

- PROJECT LIMITS
- 100 YR FLOODPLAIN
- EXISTING CONTOUR (976)
- PROPOSED CONTOUR (970)
- FLOW ARROW (EXISTING)
- FLOW ARROW (PROPOSED)
- TREES TO REMAIN
- RETAINING WALL
- SAW CUT ROCK WALL

GRADING NOTES:

1. ALL MATERIALS AND CONSTRUCTION PROCEDURES WITHIN THIS SCOPE OF WORK WHERE NOT SPECIFICALLY COVERED IN THE SPECIFICATIONS OR GEOTECHNICAL REPORT SHALL CONFORM TO ALL APPLICABLE COUNTY AND TXDOT STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION (LATEST EDITION).

2. SITE PREPARATION, GRADING, EXCAVATION AND FILL SHALL BE PERFORMED IN ACCORDANCE WITH THE PROJECT GEOTECHNICAL REPORT AND SPECIFICATIONS.

3. ALL SELECT FILL MATERIAL PROVIDED SHALL BE APPROVED BY THE GEOTECHNICAL ENGINEER PRIOR TO PLACING AND COMPACTING.

4. ALL ELEVATIONS AND PROPOSED CONTOURS SHOWN ON THIS GRADING PLAN REFLECT FINISHED GRADES. THE THICKNESS OF PAVING, BASE, GRASS, TOPSOIL, AND MULCH MUST BE SUBTRACTED TO OBTAIN SUBGRADE ELEVATIONS.

5. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER OF ANY QUESTIONS THAT MAY ARISE CONCERNING THE INTENT, PLACEMENT, OR LIMITS OF DIMENSIONS OR GRADES NECESSARY FOR CONSTRUCTION OF THIS PROJECT.

6. THE CONTRACTOR SHALL VERIFY THE SUITABILITY OF ALL EXISTING AND PROPOSED SITE CONDITIONS INCLUDING GRADES AND DIMENSIONS BEFORE COMMENCEMENT OF CONSTRUCTION. THE ENGINEER SHALL BE NOTIFIED IMMEDIATELY OF ANY DISCREPANCIES.

7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ACQUIRING ALL PERMITS, TESTS, APPROVALS AND ACCEPTANCES REQUIRED TO COMPLETE CONSTRUCTION OF THIS PROJECT.

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9. THE SITE CONTRACTOR SHALL BE RESPONSIBLE FOR SITE STABILIZATION. ALL DISTURBED AREAS SHALL BE REVEGETATED IN ACCORDANCE WITH PROJECT SPECIFICATIONS AND TPDES/SWPPP REQUIREMENTS. REFERENCE THE LANDSCAPE ARCHITECT'S PLAN, IF APPLICABLE.

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11. THE CONTRACTOR SHALL OBTAIN GRADES SHOWN HEREON WITHIN +/– TWO–TENTHS (0.20) FOOT.

12. IN PROPOSED PAVING AREAS, STREET DESIGN PLANS SHALL CONTROL. ALL EARTHEN SLOPES SHALL BE A MAXIMUM OF 3:1 AND A MINIMUM OF 1.0% UNLESS OTHERWISE SHOWN.

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18. FOR FILL PLACEMENT ON HILL SIDES OR STEEP SLOPE AREAS, THE CONTRACTOR SHALL REFERENCE THE PROJECT SPECIFICATIONS AND GEOTECHNICAL REPORT FOR SPECIAL INSTRUCTIONS REGARDING BENCHING.

19. NO WORK SHALL BE PERFORMED IN A PUBLIC RIGHT–OF–WAY WITHOUT A PERMIT.

RETAINING WALL NOTE:

1. CONTRACTOR SHALL HIRE A STRUCTURAL ENGINEER FOR THE DESIGN AND PERMITTING OF RETAINING WALLS INCLUDED WITHIN THIS PROJECT.

NO.	REVISION	DATE

STATE OF TEXAS
TODD W. BLACKMON
89208
LICENSED
PROFESSIONAL ENGINEER
4-24-2025

PAPE-DAWSON ENGINEERS
1672 INDEPENDENCE DR, STE 102 I NEW BRAUNFELS, TX 78132 I 830.632.5633
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

MEYER RANCH UNIT 16
COMAL COUNTY, TEXAS
OVERALL GRADING PLAN

PLAT NO. ____
JOB NO. 30010-27
DATE DECEMBER 2024
DESIGNER CL
CHECKED HF DRAWN BH
SHEET C7.00

FOR PERMIT

Date: Apr 24, 2025, 2:48pm User ID: jmoy
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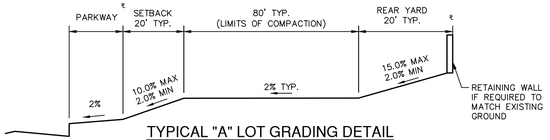
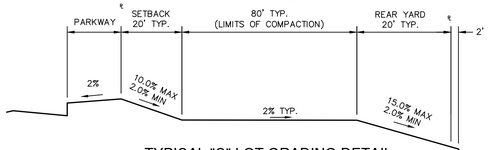


TYPICAL "A" LOT GRADING DETAIL

NOT TO SCALE



TYPICAL "C" LOT GRADING DETAIL

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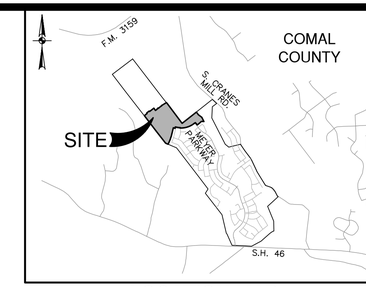

LOCATION MAP

NOT-TO-SCALE

SCALE: 1"= 60'

0' 60' 120' 180'

GRADING LEGEND

- PROJECT LIMITS
- 100 YR FLOODPLAIN
- EXISTING CONTOUR — 976
- PROPOSED CONTOUR — 970
- FLOW ARROW (EXISTING)
- FLOW ARROW (PROPOSED)
- TREES TO REMAIN
- RETAINING WALL
- SAW CUT ROCK WALL

GRADING NOTES:

1. ALL MATERIALS AND CONSTRUCTION PROCEDURES WITHIN THIS SCOPE OF WORK WHERE NOT SPECIFICALLY COVERED IN THE SPECIFICATIONS OR GEOTECHNICAL REPORT SHALL CONFORM TO ALL APPLICABLE COUNTY AND TXDOT STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION (LATEST EDITION).

2. SITE PREPARATION, GRADING, EXCAVATION AND FILL SHALL BE PERFORMED IN ACCORDANCE WITH THE PROJECT GEOTECHNICAL REPORT AND SPECIFICATIONS.

3. ALL SELECT FILL MATERIAL PROVIDED SHALL BE APPROVED BY THE GEOTECHNICAL ENGINEER PRIOR TO PLACING AND COMPACTING.

4. ALL ELEVATIONS AND PROPOSED CONTOURS SHOWN ON THIS GRADING PLAN REFLECT FINISHED GRADES. THE THICKNESS OF PAVING, BASE, GRASS, TOPSOIL, AND MULCH MUST BE SUBTRACTED TO OBTAIN SUBGRADE ELEVATIONS.

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STATE OF TEXAS
TODD W. BLACKMON
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LICENSED
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4-24-2025

PAPE-DAWSON ENGINEERS
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MEYER RANCH UNIT 16

COMAL COUNTY, TEXAS

OVERALL GRADING PLAN

PLAT NO.
JOB NO. 30010-27
DATE DECEMBER 2024
DESIGNER CL
CHECKED HF DRAWN BH
SHEET C7.01

FOR PERMIT

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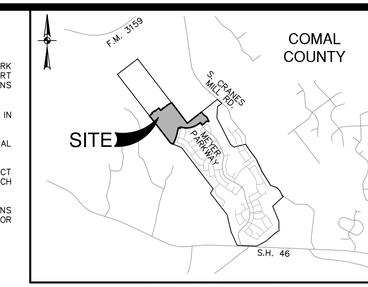

LOCATION MAP

NOT-TO-SCALE

SCALE: 1"= 60'

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GRADING LEGEND

PROJECT LIMITS

100 YR FLOODPLAIN

EXISTING CONTOUR — 976

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TREES TO REMAIN

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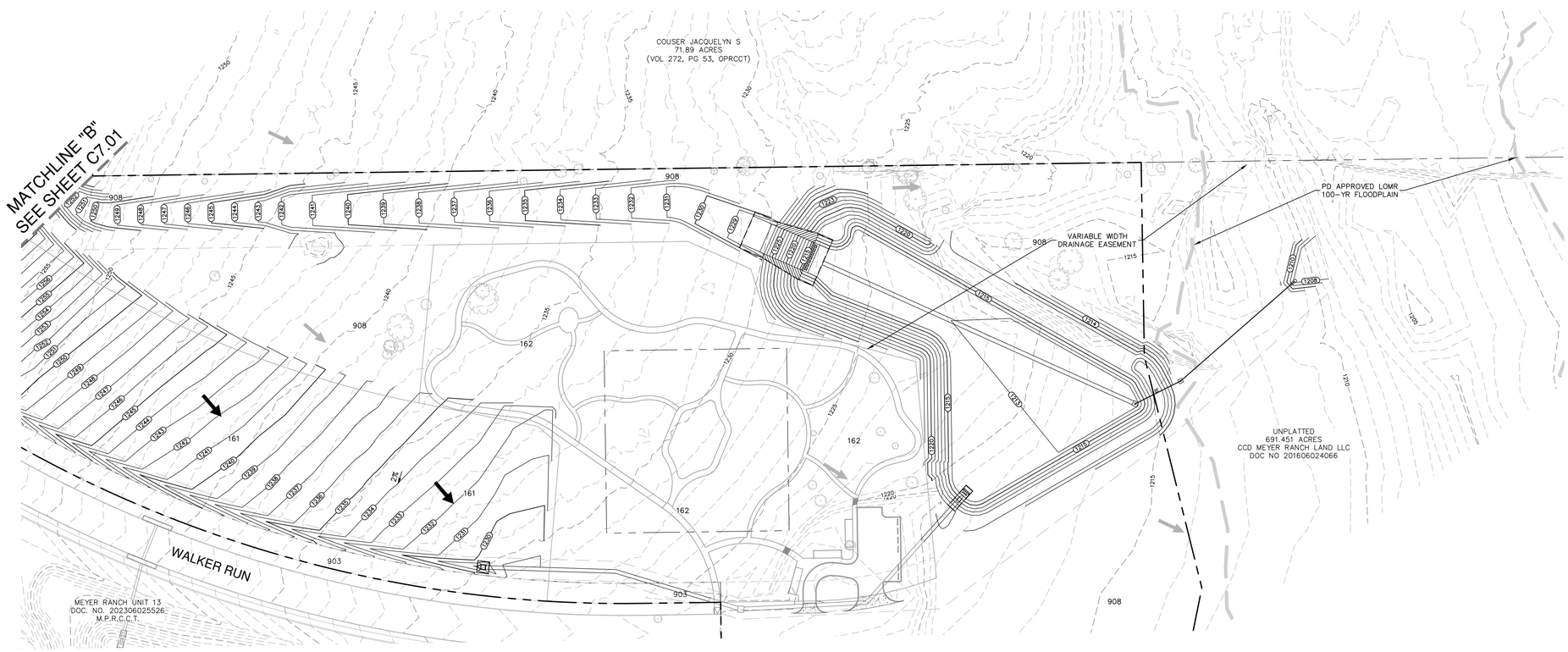

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NO.	REVISION	DATE

12 - 27 - 2024

STATE OF TEXAS
TODD W. BLACKMON
89208
LICENSED
PROFESSIONAL ENGINEER

PAPE-DAWSON ENGINEERS
1672 INDEPENDENCE DR, STE 102 I NEW BRAUNFELS, TX 78132 I 830.632.5633
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MEYER RANCH UNIT 16

COMAL COUNTY, TEXAS

OVERALL GRADING PLAN

PLAT NO.

JOB NO. 30010-27

DATE DECEMBER 2024

DESIGNER CL

CHECKED HF DRAWN BH

SHEET C7.02

FOR PERMIT

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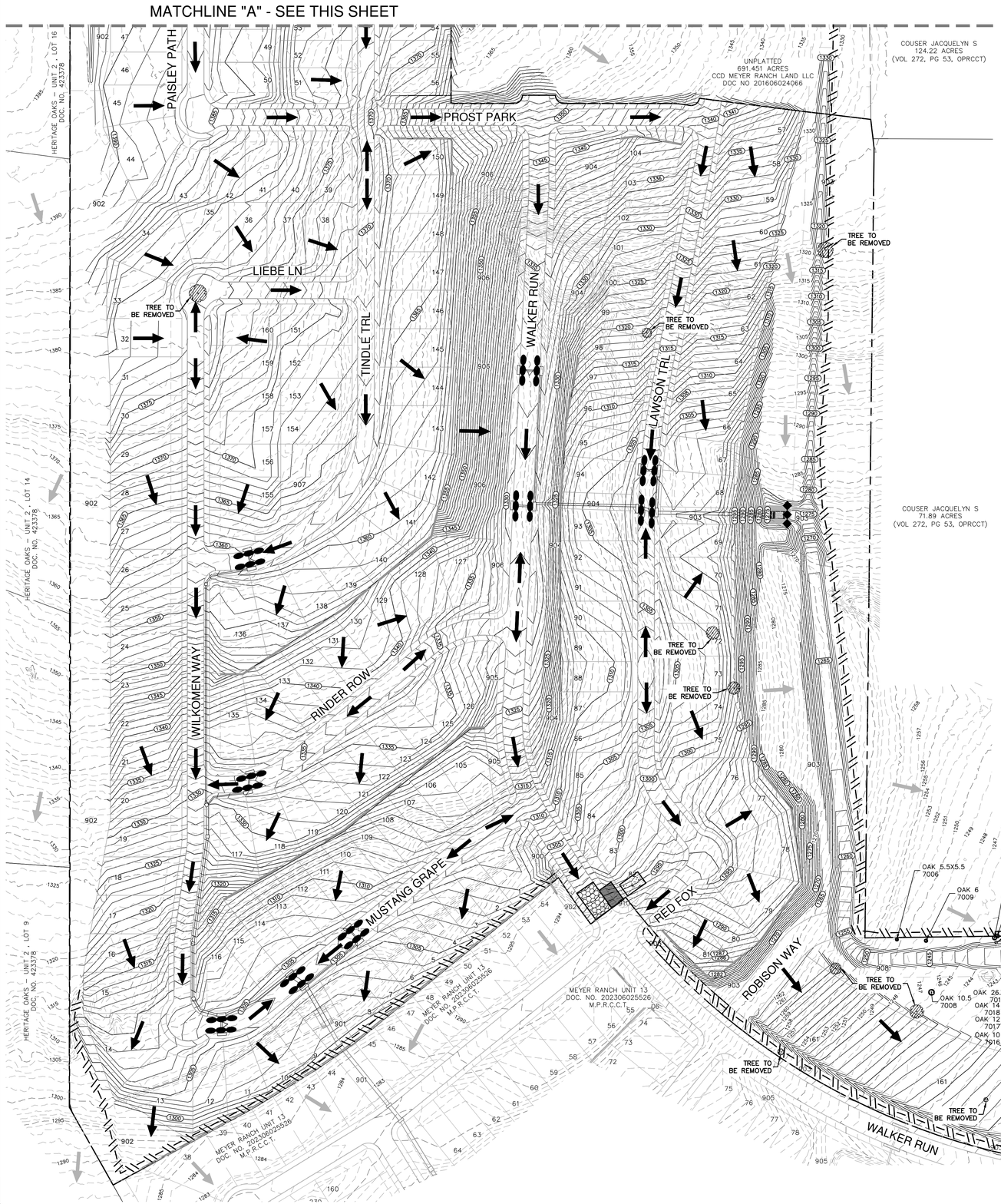
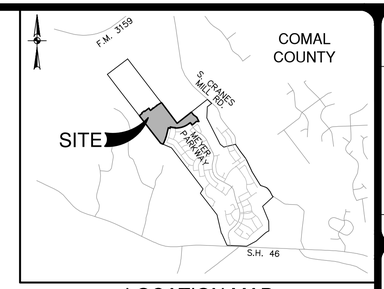


SWP3 MODIFICATIONS

DATE	SIGNATURE	DESCRIPTION

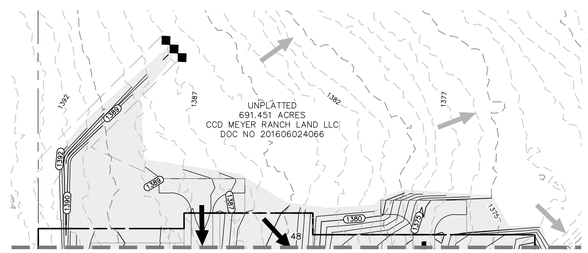


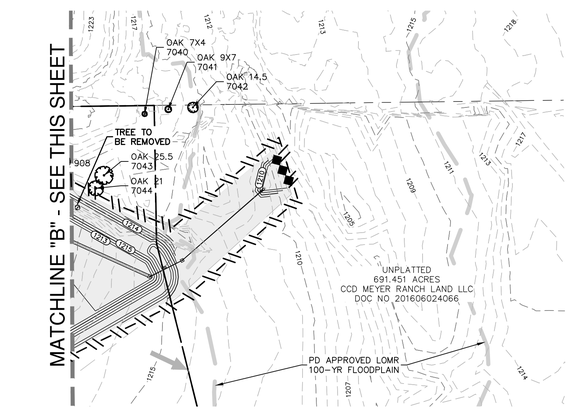
LOCATION MAP

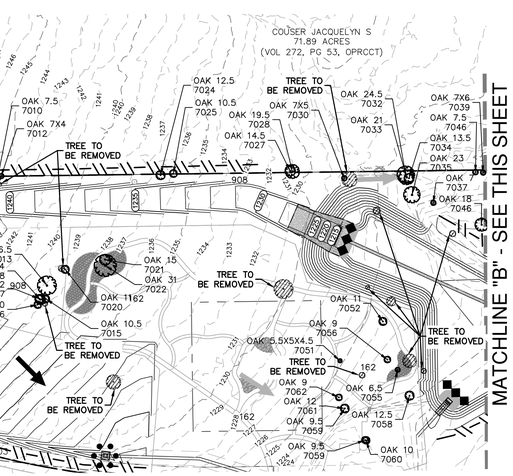
NOT-TO-SCALE

SCALE: 1"= 100'

0' 100' 200' 300'







SWPPP LEGEND

- PROJECT LIMITS
- EXISTING CONTOUR (976)
- PROPOSED CONTOUR (970)
- FLOW ARROW (EXISTING)
- FLOW ARROW (PROPOSED)
- SILT FENCE
- ROCK BERM
- GRAVEL FILTER BAGS
- GRATE INLET PROTECTION
- SEDIMENT CONTROL ROLLS
- LIMITS OF DISTURBED AREA
- STABILIZED CONSTRUCTION ENTRANCE/EXIT (FIELD LOCATE)
- CONSTRUCTION EQUIPMENT, VEHICLE & MATERIALS STORAGE AREA (FIELD LOCATE)
- CONCRETE TRUCK WASH-OUT PIT (FIELD LOCATE)
- PERMANENT 15' WIDE VEGETATIVE FILTER STRIP
- TREES TO REMAIN WITH PROTECTION (REFER TO LANDSCAPE PLANS) (REFER TO SHEET C2.22 FOR TREE PRESERVATION DETAILS)
- TREES TO REMAIN
- TREES TO BE REMOVED

GENERAL NOTES

1. DO NOT DISTURB VEGETATED AREAS (TREES, GRASS, WEEDS, BRUSH, ETC.) ANY MORE THAN NECESSARY FOR CONSTRUCTION.

2. CONSTRUCTION ENTRANCE/EXIT LOCATION, CONCRETE WASH-OUT PIT, AND CONSTRUCTION EQUIPMENT AND MATERIAL STORAGE YARD TO BE DETERMINED IN THE FIELD.

3. STORM WATER POLLUTION PREVENTION CONTROLS MAY NEED TO BE MODIFIED IN THE FIELD TO ACCOMPLISH THE DESIRED EFFECT. ALL MODIFICATIONS ARE TO BE NOTED ON THIS EXHIBIT AND SIGNED AND DATED BY THE RESPONSIBLE PARTY.

4. RESTRICT ENTRY/EXIT TO THE PROJECT SITE TO DESIGNATED LOCATIONS BY USE OF ADEQUATE FENCING, IF NECESSARY.

5. ALL STORM WATER POLLUTION PREVENTION CONTROLS ARE TO BE MAINTAINED AND IN WORKING CONDITIONS AT ALL TIMES.

6. FOR A COMPLETE LISTING OF TEMPORARY STORM WATER POLLUTION PREVENTION CONTROLS REFER TO THE TPDES STORM WATER POLLUTION PREVENTION PLAN.

7. STORM WATER POLLUTION PREVENTION STRUCTURES SHOULD BE CONSTRUCTED WITHIN THE SITE BOUNDARIES. SOME OF THESE FEATURES MAY BE SHOWN OUTSIDE THE SITE BOUNDARIES ON THIS PLAN FOR VISUAL CLARITY.

8. AS SOON AS PRACTICAL, ALL DISTURBED SOIL THAT WILL NOT BE COVERED BY IMPERVIOUS COVER SUCH AS PARKWAY AREAS, EASEMENT AREAS, EMBANKMENT SLOPES, ETC. WILL BE STABILIZED PER APPLICABLE PROJECT SPECIFICATIONS.

9. BEST MANAGEMENT PRACTICES MAY BE INSTALLED IN STAGES TO COINCIDE WITH THE DISTURBANCE OF UPGRADIENT AREAS.

10. BEST MANAGEMENT PRACTICES MAY BE REMOVED IN STAGES ONCE THE WATERSHED FOR THAT PORTION CONTROLLED BY THE BEST MANAGEMENT PRACTICES HAS BEEN STABILIZED IN ACCORDANCE WITH TPDES REQUIREMENTS.

11. UPON COMPLETION OF THE PROJECT, INCLUDING SITE STABILIZATION, AND BEFORE FINAL PAYMENT IS ISSUED, CONTRACTOR SHALL REMOVE ALL SEDIMENT AND EROSION CONTROL MEASURES, PAYING SPECIAL ATTENTION TO ROCK BERMS IN DRAINAGE FEATURES.

12. WHERE VEGETATED FILTER STRIPS ARE INDICATED, CONTRACTOR SHALL VERIFY THAT SUFFICIENT VEGETATION EXISTS, OTHERWISE CONTRACTOR SHALL PLACE SILT FENCING IN LIEU OF VEGETATED FILTER STRIP.

13. SHADED AREA [ ] DENOTES LIMITS OF DISTURBED AREAS. OTHER AREAS WITHIN THE PROJECT LIMITS, WITH THE EXCEPTION OF A CONSTRUCTION EQUIPMENT AND MATERIAL STORAGE YARD, ARE NOT A PART OF THIS TPDES STORM WATER POLLUTION PREVENTION PLAN (SWP3) AND WILL NOT BE DISTURBED BY CIVIL CONSTRUCTION ACTIVITIES. HOUSE CONSTRUCTION ACTIVITIES WILL REQUIRE A SEPARATE STORM WATER POLLUTION PREVENTION PLAN.

14. PRIOR TO BEGINNING CONSTRUCTION, CONTRACTOR SHALL COORDINATE PLACEMENT OF TEMPORARY BEST MANAGEMENT PRACTICES WITHIN TXDOT RIGHT-OF-WAY WITH TXDOT.

THE ENGINEERING SEAL HAS BEEN AFFIXED TO THIS SHEET ONLY FOR THE PURPOSE OF DEMONSTRATING COMPLIANCE WITH THE TPDES-STORM WATER POLLUTION PREVENTION PLAN (SWP3) REGULATIONS.

THIS SHEET HAS BEEN PREPARED FOR PURPOSES OF THE SWP3 ONLY. ALL OTHER CIVIL ENGINEERING RELATED INFORMATION SHOULD BE ACQUIRED FROM THE APPROPRIATE SHEET IN THE CIVIL IMPROVEMENT PLANS.

EXHIBIT 2

NO.	REVISION	DATE

STATE OF TEXAS
TODD W. BLACKMON
89208
LICENSED
PROFESSIONAL ENGINEER
4-24-2025

PAPE-DAWSON ENGINEERS
1672 INDEPENDENCE DR, STE 102 | NEW BRAUNFELS, TX 78132 | 830.632.5633
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

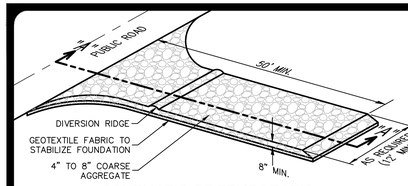
MEYER RANCH UNIT 16

COMAL COUNTY, TEXAS

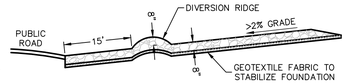
STORMWATER POLLUTION PREVENTION PLAN

PLAT NO.
JOB NO. 30010-27
DATE DECEMBER 2024
DESIGNER CL
CHECKED HF DRAWN BH
SHEET C8.00

FOR PERMIT



SCHEMATIC OF TEMPORARY CONSTRUCTION ENTRANCE/EXIT



SECTION "A-A" OF A CONSTRUCTION ENTRANCE/EXIT

MATERIALS
1. THE AGGREGATE SHOULD CONSIST OF 4–INCH TO 8–INCH WASHED STONE OVER A STABLE FOUNDATION AS SPECIFIED IN THE PLAN.

2. THE AGGREGATE SHOULD BE PLACED WITH A MINIMUM THICKNESS OF 8–INCHES.

3. THE GEOTEXTILE FABRIC SHOULD BE DESIGNED SPECIFICALLY FOR USE AS A SOIL FILTRATION MEDIA WITH AN APPROXIMATE WEIGHT OF 6 OZ/YD^2, A MULLEN BURST RATING OF 140 LB/IN^2, AND AN EQUIVALENT OPENING SIZE GREATER THAN A NUMBER 50 SIEVE.

4. IF A WASHING FACILITY IS REQUIRED, A LEVEL AREA WITH A MINIMUM OF 4–INCH DIAMETER WASHED STONE OR COMMERCIAL ROCK SHOULD BE INCLUDED IN THE PLANS. DIVERT WASTEWATER TO A SEDIMENT TRAP OR BASIN.

INSTALLATION
1. AVOID CURVES ON PUBLIC ROADS AND STEEP SLOPES. REMOVE VEGETATION AND OTHER OBJECTIONABLE MATERIAL FROM THE FOUNDATION AREA. GRADE CROWN FOUNDATION FOR POSITIVE DRAINAGE.

2. THE MINIMUM WIDTH OF THE ENTRANCE/EXIT SHOULD BE 12 FEET OR THE FULL WIDTH OF EXIT ROADWAY, WHICHEVER IS GREATER.

3. THE CONSTRUCTION ENTRANCE SHOULD BE AT LEAST 50 FEET LONG.

4. IF THE SLOPE TOWARD THE ROAD EXCEEDS 2%, CONSTRUCT A RIDGE, 6–INCHES TO 8–INCHES HIGH WITH 3:1 (H:V) SIDE SLOPES, ACROSS THE FOUNDATION APPROXIMATELY 15 FEET FROM THE ENTRANCE TO DIVERT RUNOFF AWAY FROM THE PUBLIC ROAD.

5. PLACE GEOTEXTILE FABRIC AND GRADE FOUNDATION TO IMPROVE STABILITY, ESPECIALLY WHERE WET CONDITIONS ARE ANTICIPATED.

6. PLACE STONE TO DIMENSIONS AND GRADE SHOWN ON PLANS. LEAVE SURFACE SMOOTH AND SLOPE FOR DRAINAGE.

7. DIVERT ALL SURFACE RUNOFF AND DRAINAGE FROM THE STONE PAD TO A SEDIMENT TRAP OR BASIN.

8. INSTALL PIPE UNDER PAD AS NEEDED TO MAINTAIN PROPER PUBLIC ROAD DRAINAGE.

COMMON TROUBLE POINTS
1. INADEQUATE RUNOFF CONTROL–SEDIMENT WASHES ONTO PUBLIC ROAD.

2. STONE TOO SMALL OR GEOTEXTILE FABRIC ABSENT, RESULTS IN MUDDY CONDITION AS STONE IS PRESSED INTO SOIL.

3. PAD TOO SHORT FOR HEAVY CONSTRUCTION TRAFFIC–EXTEND PAD BEYOND THE MINIMUM 50–FOOT LENGTH AS NECESSARY.

4. PAD NOT FLARED SUFFICIENTLY AT ROAD SURFACE, RESULTS IN MUD BEING TRACKED ON TO ROAD AND POSSIBLE DAMAGE TO ROAD.

5. UNSTABLE FOUNDATION – USE GEOTEXTILE FABRIC UNDER PAD AND/OR IMPROVE FOUNDATION DRAINAGE.

INSPECTION AND MAINTENANCE GUIDELINES
1. THE ENTRANCE SHOULD BE MAINTAINED IN A CONDITION, WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS–OF–WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT.

2. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS–OF–WAY SHOULD BE REMOVED IMMEDIATELY BY CONTRACTOR.

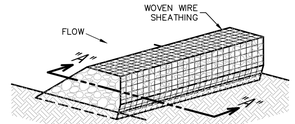
3. WHEN NECESSARY, WHEELS SHOULD BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTRANCE ONTO PUBLIC RIGHT–OF–WAY.

4. WHEN WASHING IS REQUIRED, IT SHOULD BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE THAT DRAINS INTO AN APPROVED SEDIMENT TRAP OR SEDIMENT BASIN.

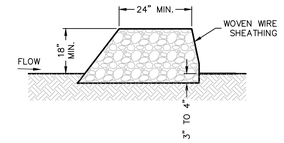
5. ALL SEDIMENT SHOULD BE PREVENTED FROM ENTERING ANY STORM DRAIN, DITCH OR WATER COURSE BY USING APPROVED METHODS.

STABILIZED CONSTRUCTION ENTRANCE/EXIT DETAIL

NOT–TO–SCALE



ISOMETRIC PLAN VIEW



SECTION "A-A"

ROCK BERMS
THE PURPOSE OF A ROCK BERM IS TO SERVE AS A CHECK DAM IN AREAS OF CONCENTRATED FLOW, TO INTERCEPT SEDIMENT–LADEN RUNOFF, DETAIN THE SEDIMENT AND RELEASE THE WATER IN SHEET FLOW. THE ROCK BERM SHOULD BE USED WHEN THE CONTRIBUTING DRAINAGE AREA IS LESS THAN 5 ACRES. ROCK BERMS ARE USED IN AREAS WHERE THE VOLUME OF RUNOFF IS TOO GREAT FOR A SILT FENCE TO CONTAIN. THEY ARE LESS EFFECTIVE FOR SEDIMENT REMOVAL THAN SILT FENCES, PARTICULARLY FOR FINE PARTICLES, BUT ARE ABLE TO WITHSTAND HIGHER FLOWS THAN A SILT FENCE. AS SUCH, ROCK BERMS ARE OFTEN USED IN AREAS OF CHANNEL FLOWS (DITCHES, GULLIES, ETC.). ROCK BERMS ARE MOST EFFECTIVE AT REDUCING BED LOAD IN CHANNELS AND SHOULD NOT BE SUBSTITUTED FOR OTHER EROSION AND SEDIMENT CONTROL MEASURES FARTHER UP THE WATERSHED.

INSPECTION AND MAINTENANCE GUIDELINES
1. INSPECTION SHOULD BE MADE WEEKLY AND AFTER EACH RAINFALL BY THE RESPONSIBLE PARTY. FOR INSTALLATIONS IN STREAMBEDS, ADDITIONAL DAILY INSPECTIONS SHOULD BE MADE.

2. REMOVE SEDIMENT AND OTHER DEBRIS WHEN BUILDUP REACHES 6 INCHES AND DISPOSE OF THE ACCUMULATED SILT IN AN APPROVED MANNER THAT WILL NOT CAUSE ANY ADDITIONAL SILTATION.

3. REPAIR ANY LOOSE WIRE SHEATHING.

4. THE BERM SHOULD BE RESHAPED AS NEEDED DURING INSPECTION.

5. THE BERM SHOULD BE REPLACED WHEN THE STRUCTURE CEASES TO FUNCTION AS INTENDED DUE TO SILT ACCUMULATION AMONG THE ROCKS, WASHOUT, CONSTRUCTION TRAFFIC DAMAGE, ETC.

6. THE ROCK BERM SHOULD BE LEFT IN PLACE UNTIL ALL UPSTREAM AREAS ARE STABILIZED AND ACCUMULATED SILT REMOVED.

MATERIALS
1. THE BERM STRUCTURE SHOULD BE SECURED WITH A WOVEN WIRE SHEATHING HAVING MAXIMUM OPENING OF 1 INCH AND A MINIMUM WIRE DIAMETER OF 20 GAUGE GALVANIZED AND SHOULD BE SECURED WITH SHOAT RINGS.

2. CLEAN, OPEN GRADED 3–INCH TO 5–INCH DIAMETER ROCK SHOULD BE USED, EXCEPT IN AREAS WHERE HIGH VELOCITIES OR LARGE VOLUMES OF FLOW ARE EXPECTED, WHERE 5–INCH TO 8–INCH DIAMETER ROCKS MAY BE USED.

INSTALLATION
1. LAY OUT THE WOVEN WIRE SHEATHING PERPENDICULAR TO THE FLOW LINE. THE SHEATHING SHOULD BE 20 GAUGE WOVEN WIRE MESH WITH 1 INCH OPENINGS.

2. BERM SHOULD HAVE A TOP WIDTH OF 2 FEET MINIMUM WITH SIDE SLOPES BEING 2:1 (H:V) OR FLATTER.

3. PLACE THE ROCK ALONG THE SHEATHING AS SHOWN IN THE DIAGRAM TO A HEIGHT NOT LESS THAN 18".

4. WRAP THE WIRE SHEATHING AROUND THE ROCK AND SECURE WITH TIE WIRE SO THAT THE ENDS OF THE SHEATHING OVERLAP AT LEAST 2 INCHES, AND THE BERM RETAINS ITS SHAPE WHEN WALKED UPON.

5. BERM SHOULD BE BUILT ALONG THE CONTOUR AT ZERO PERCENT GRADE OR AS NEAR AS POSSIBLE.

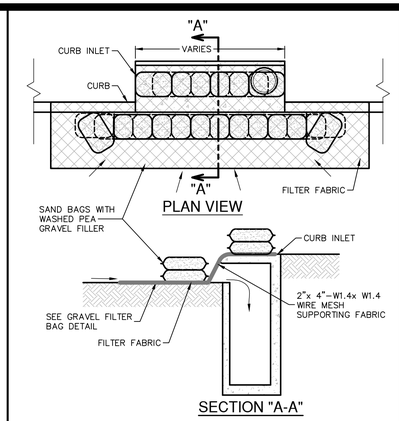
6. THE ENDS OF THE BERM SHOULD BE TIED INTO EXISTING UPSLOPE GRADE AND THE BERM SHOULD BE BURIED IN A TRENCH APPROXIMATELY 3 TO 4 INCHES DEEP TO PREVENT FAILURE OF THE CONTROL.

COMMON TROUBLE POINTS
1. INSUFFICIENT BERM HEIGHT OR LENGTH (RUNOFF QUICKLY ESCAPES OVER THE TOP OR AROUND THE SIDES OF BERM).

2. BERM NOT INSTALLED PERPENDICULAR TO FLOW LINE (RUNOFF ESCAPING AROUND ONE SIDE).

ROCK BERM DETAIL

NOT–TO–SCALE



PLAN VIEW

SECTION "A-A"

GENERAL NOTES
1. CONTRACTOR TO INSTALL 2"x4"–W1.4xW1.4 WIRE MESH SUPPORTING FILTER FABRIC OVER THE INLET OPENING. FABRIC MUST BE SECURED TO WIRE BACKING WITH CLIPS OR WIRE TIES AT THIS LOCATION. SAND BAGS FILLED WITH WASHED PEA GRAVEL SHOULD BE PLACED ON TOP OF WIRE MESH ON TOP OF THE INLET AS SHOWN ON THIS DETAIL TO HOLD WIRE MESH IN PLACE. SANDBAGS FILLED WITH WASHED PEA GRAVEL SHOULD ALSO BE PLACED ALONG THE GUTTER AS SHOWN ON THIS DETAIL TO HOLD WIRE MESH IN PLACE. SAND BAGS TO BE STACKED TO FORM A CONTINUOUS BARRIER AROUND INLETS.

2. THE BAGS SHOULD BE TIGHTLY ABUTTED AGAINST EACH OTHER TO PREVENT RUNOFF FROM FLOWING BETWEEN THE BAGS.

INSPECTION AND MAINTENANCE GUIDELINES
1. INSPECTION SHOULD BE MADE WEEKLY AND AFTER EACH RAINFALL. REPAIR OR REPLACEMENT SHOULD BE MADE PROMPTLY AS NEEDED BY THE CONTRACTOR.

2. REMOVE SEDIMENT WHEN BUILDUP REACHES A DEPTH OF 3 INCHES. REMOVED SEDIMENT SHOULD BE DEPOSITED IN A SUITABLE AREA AND IN SUCH A MANNER THAT IT WILL NOT ERODE.

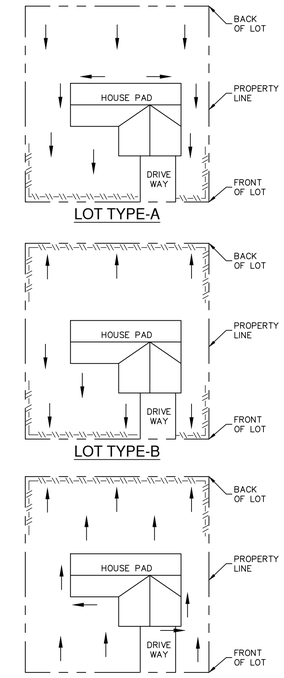
3. CHECK PLACEMENT OF DEVICE TO PREVENT GAPS BETWEEN DEVICE AND CURB.

4. INSPECT FILTER FABRIC AND PATCH OR REPLACE IF TORN OR MISSING.

5. STRUCTURES SHOULD BE REMOVED AND THE AREA STABILIZED ONLY AFTER THE REMAINING DRAINAGE AREA HAS BEEN PROPERLY STABILIZED.

BAGGED GRAVEL CURB INLET PROTECTION DETAIL

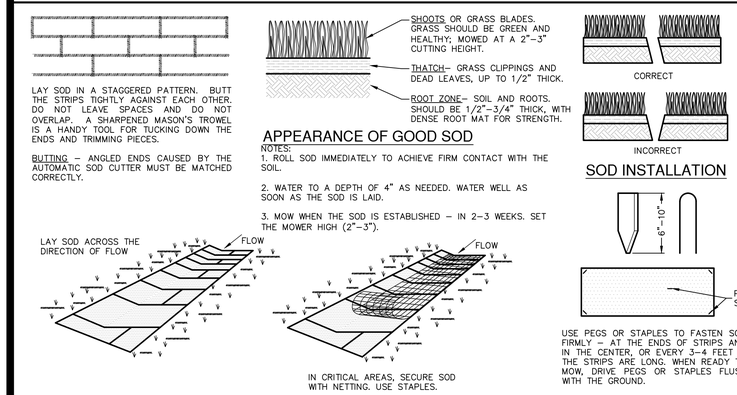
NOT–TO–SCALE



NOTE: SILT FENCE TO BE INSTALLED PER THESE DETAILS AND LOCATED ON THE DOWNGRADIENT SIDE OF EACH LOT LINE OR LIMITS OF CLEARING AS GENERALLY SHOWN ON THE OVERALL SITE PLAN.

TYPICAL HOUSE LOT LAYOUTS

NOT–TO–SCALE



APPEARANCE OF GOOD SOD

NOTES:
1. ROLL SOD IMMEDIATELY TO ACHIEVE FIRM CONTACT WITH THE SOIL.

2. WATER TO A DEPTH OF 4" AS NEEDED. WATER WELL AS SOON AS THE SOD IS LAID.

3. MOW WHEN THE SOD IS ESTABLISHED – IN 2–3 WEEKS. SET THE MOWER HIGH (2"–3").

SOD INSTALLATION

USE PEGS OR STAPLES TO FASTEN SOD FIRMLY – AT THE ENDS OF STRIPS AND IN THE CENTER, OR EVERY 3–4 FEET IF THE STRIPS ARE LONG. WHEN READY TO MOW, DRIVE PEGS OR STAPLES FLUSH WITH THE GROUND.

MATERIALS
1. SOD SHOULD BE MACHINE CUT AT A UNIFORM SOIL THICKNESS OF 3/4" INCH (± 1/4" INCH) AT THE TIME OF CUTTING. THIS THICKNESS SHOULD EXCLUDE SHOOT GROWTH AND THATCH.

2. PIECES OF SOD SHOULD BE CUT TO THE SUPPLIER'S STANDARD WIDTH AND LENGTH, WITH A MAXIMUM ALLOWABLE DEVIATION IN ANY DIMENSION OF 5%. TORN OR UNEVEN PADS SHOULD NOT BE ACCEPTABLE.

3. STANDARD SIZE SECTIONS OF SOD SHOULD BE STRONG ENOUGH TO SUPPORT THEIR OWN WEIGHT AND RETAIN THEIR SIZE AND SHAPE WHEN SUSPENDED FROM A FIRM GRASP ON ONE END OF THE SECTION.

4. SOD SHOULD BE HARVESTED, DELIVERED, AND INSTALLED WITHIN A PERIOD OF 36 HOURS.

SITE PREPARATION
1. PRIOR TO SOIL PREPARATION, AREAS TO BE SODDED SHOULD BE BROUGHT TO FINAL GRADE IN ACCORDANCE WITH THE APPROVED PLAN.

2. THE SURFACE SHOULD BE CLEARED OF ALL TRASH, DEBRIS AND OF ALL ROOTS, BRUSH, WIRE, GRADE STAKES AND OTHER OBJECTS THAT WOULD INTERFERE WITH PLANTING, FERTILIZING OR MAINTENANCE OPERATIONS.

3. FERTILIZE ACCORDING TO SOIL TESTS. FERTILIZER NEEDS CAN BE DETERMINED BY A SOIL TESTING LABORATORY OR REGIONAL RECOMMENDATIONS CAN BE MADE BY COUNTY AGRICULTURAL EXTENSION AGENTS. FERTILIZER SHOULD BE WORKED INTO THE SOIL TO A DEPTH OF 3 INCHES WITH A DISC, SPRINGTOOTH HARROW OR OTHER SUITABLE EQUIPMENT. ON SLOPING LAND, THE FINAL HARROWING OR DISCING OPERATION SHOULD BE ON THE CONTOUR.

INSTALLATION IN CHANNELS
1. SOD STRIPS IN WATERWAYS SHOULD BE LAID PERPENDICULAR TO THE DIRECTION OF FLOW. CARE SHOULD BE TAKEN TO BUTT ENDS OF STRIPS TIGHTLY (SEE FIGURE ABOVE).

2. AFTER ROLLING OR TAMPING, SOD SHOULD BE PEGGED OR STAPLED TO RESIST WASHOUT DURING THE ESTABLISHMENT PERIOD. MESH OR OTHER NETTING MAY BE PEGGED OVER THE SOD FOR EXTRA PROTECTION IN CRITICAL AREAS.

GENERAL INSTALLATION (VA. DEPT. OF CONSERVATION, 1992)
1. SOD SHOULD NOT BE CUT OR LAID IN EXCESSIVELY WET OR DRY WEATHER. SOD ALSO SHOULD NOT BE LAID ON SOIL SURFACES THAT ARE FROZEN.

2. DURING PERIODS OF HIGH TEMPERATURE, THE SOIL SHOULD BE LIGHTLY IRRIGATED IMMEDIATELY PRIOR TO LAYING THE SOD, TO COOL THE SOIL AND REDUCE ROOT BURNING AND DIEBACK.

3. THE FIRST ROW OF SOD SHOULD BE LAID IN A STRAIGHT LINE WITH SUBSEQUENT ROWS PLACED PARALLEL TO AND BUTTING TIGHTLY AGAINST EACH OTHER. LATERAL JOINTS SHOULD BE STAGGERED TO PROMOTE MORE UNIFORM GROWTH AND STRENGTH. CARE SHOULD BE EXERCISED TO ENSURE THAT SOD IS NOT STRETCHED OR OVERLAPPED AND THAT ALL JOINTS ARE BUTTED TIGHT IN ORDER TO PREVENT VOIDS WHICH WOULD CAUSE DRYING OF THE ROOTS (SEE FIGURE ABOVE).

4. ON SLOPES 3:1 OR GREATER, OR WHEREVER EROSION MAY BE A PROBLEM, SOD SHOULD BE LAID WITH STAGGERED JOINTS AND SECURED BY STAPLING OR OTHER APPROVED METHODS. SOD SHOULD BE INSTALLED WITH THE LENGTH PERPENDICULAR TO THE SLOPE (ON CONTOUR).

5. AS SODDING OF CLEARLY DEFINED AREAS IS COMPLETED, SOD SHOULD BE ROLLED OR TAMPED TO PROVIDE FIRM CONTACT BETWEEN ROOTS AND SOIL.

6. AFTER ROLLING, SOD SHOULD BE IRRIGATED TO A DEPTH SUFFICIENT THAT THE UNDERSIDE OF THE SOD PAD AND THE SOIL 4 INCHES BELOW THE SOD IS THOROUGHLY WET.

7. UNTIL SUCH TIME A GOOD ROOT SYSTEM BECOMES DEVELOPED, IN THE ABSENCE OF ADEQUATE RAINFALL, WATERING SHOULD BE PERFORMED AS OFTEN AS NECESSARY TO MAINTAIN MOIST SOIL TO A DEPTH OF AT LEAST 4 INCHES.

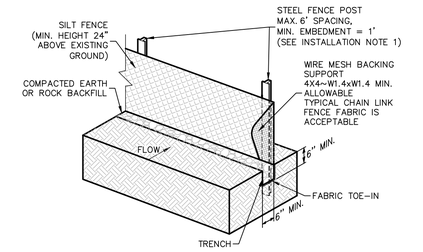
8. THE FIRST MOWING SHOULD NOT BE ATTEMPTED UNTIL THE SOD IS FIRMLY ROOTED, USUALLY 2–3 WEEKS. NOT MORE THAN ONE THIRD OF THE GRASS LEAF SHOULD BE REMOVED AT ANY ONE CUTTING.

INSPECTION AND MAINTENANCE GUIDELINES
1. SOD SHOULD BE INSPECTED WEEKLY AND AFTER EACH RAIN EVENT TO LOCATE AND REPAIR ANY DAMAGE.

2. DAMAGE FROM STORMS OR NORMAL CONSTRUCTION ACTIVITIES SUCH AS TIRE RUTS OR DISTURBANCE OF SWALE STABILIZATION SHOULD BE REPAIRED AS SOON AS PRACTICAL.

SOD INSTALLATION DETAIL

NOT–TO–SCALE



ISOMETRIC PLAN VIEW

SILT FENCE
A SILT FENCE IS A BARRIER CONSISTING OF GEOTEXTILE FABRIC SUPPORTED BY METAL POSTS TO PREVENT SOIL AND SEDIMENT LOSS FROM A SITE. WHEN PROPERLY USED, SILT FENCES CAN BE HIGHLY EFFECTIVE AT CONTROLLING SEDIMENT FROM DISTURBED AREAS. THEY CAUSE RUNOFF TO POND, ALLOWING HEAVIER SOLIDS TO SETTLE OUT. IF NOT PROPERLY INSTALLED, SILT FENCES ARE NOT LIKELY TO BE EFFECTIVE.

THE PURPOSE OF A SILT FENCE IS TO INTERCEPT AND DETAIN WATER–BORN SEDIMENT FROM UNPROTECTED AREAS OF A LIMITED EXTENT. SILT FENCE IS USED DURING THE PERIOD OF CONSTRUCTION NEAR THE PERIMETER OF A DISTURBED AREA TO INTERCEPT SEDIMENT WHILE ALLOWING WATER TO PERCOLATE THROUGH. THIS FENCE SHOULD REMAIN IN PLACE UNTIL THE DISTURBED AREA IS PERMANENTLY STABILIZED. SILT FENCE SHOULD NOT BE USED WHERE THERE IS A CONCENTRATION OF WATER IN A CHANNEL OR DRAINAGE WAY. IF CONCENTRATED FLOW OCCURS AFTER INSTALLATION, CORRECTIVE ACTION MUST BE TAKEN SUCH AS PLACING A ROCK BERM IN THE AREAS OF CONCENTRATED FLOW.

SILT FENCING WITHIN THE SITE MAY BE TEMPORARILY MOVED DURING THE DAY TO ALLOW CONSTRUCTION ACTIVITY PROVIDED IT IS REPLACED AND PROPERLY ANCHORED TO THE GROUND AT THE END OF THE DAY. SILT FENCES ON THE PERIMETER OF THE SITE OR AROUND DRAINAGE WAYS SHOULD NOT BE MOVED AT ANY TIME.

MATERIALS
1. SILT FENCE MATERIAL SHOULD BE POLYPROPYLENE, POLYETHYLENE, OR POLYAMIDE WOVEN OR NONWOVEN FABRIC. THE FABRIC SHOULD BE 36 INCHES, WITH A MINIMUM UNIT WEIGHT OF 4.5 OZ/YD, MULLEN BURST STRENGTH EXCEEDING 190 LB/IN2, ULTRAVIOLET STABILITY EXCEEDING 70%, AND MINIMUM APPARENT OPENING SIZE OF U.S. SIEVE NUMBER 30.

2. FENCE POSTS SHOULD BE MADE OF HOT ROLLED STEEL, AT LEAST 4 FEET LONG WITH TEE OR Y–BAR CROSS SECTION, SURFACE PAINTED OR GALVANIZED, MINIMUM WEIGHT 1.25 LB/FT, AND BRINDELL HARDNESS EXCEEDING 140.

3. WOVEN WIRE BACKING TO SUPPORT THE FABRIC SHOULD BE GALVANIZED 2" X 4" WELDED WIRE, 12 GAUGE MINIMUM.

INSTALLATION
1. STEEL POSTS, WHICH SUPPORT THE SILT FENCE, SHOULD BE INSTALLED ON A SLIGHT ANGLE TOWARD THE ANTICIPATED RUNOFF SOURCE. POSTS MUST BE EMBEDDED A MINIMUM OF 1–FOOT DEEP AND SPACED NOT MORE THAN 8 FEET ON CENTER. WHERE WATER CONCENTRATES, THE MAXIMUM SPACING SHOULD BE 6 FEET.

2. LAY OUT FENCING DOWN–SLOPE OF DISTURBED AREA, FOLLOWING THE CONTOUR AS CLOSELY AS POSSIBLE. THE FENCE SHOULD BE SITED SO THAT THE MAXIMUM DRAINAGE AREA IS ¼ ACRE/100 FEET OF FENCE.

3. THE TOE OF THE SILT FENCE SHOULD BE TRENCHED IN WITH A SPADE OR MECHANICAL TRENCHER, SO THAT THE DOWN–SLOPE FACE OF THE TRENCH IS FLAT AND PERPENDICULAR TO THE LINE OF FLOW. WHERE FENCE CANNOT BE TRENCHED IN (E.G., PAVEMENT OR ROCK OUTCROP), WEIGHT FABRIC FLAP WITH 3 INCHES OF PEA GRAVEL ON UPHILL SIDE TO PREVENT FLOW FROM SEEPING UNDER FENCE.

4. THE TRENCH MUST BE A MINIMUM OF 6 INCHES DEEP AND 6 INCHES WIDE TO ALLOW FOR THE SILT FENCE FABRIC TO BE LAID IN THE GROUND AND BACKFILLED WITH COMPACTED MATERIAL.

5. SILT FENCE SHOULD BE SECURELY FASTENED TO EACH STEEL SUPPORT POST OR TO WOVEN WIRE, WHICH IS IN TURN ATTACHED TO THE STEEL FENCE POST. THERE SHOULD BE A 3–FOOT OVERLAP, SECURELY FASTENED WHERE ENDS OF FABRIC MEET.

6. SILT FENCE SHOULD BE REMOVED WHEN THE SITE IS COMPLETELY STABILIZED SO AS NOT TO BLOCK OR IMPEDE STORM FLOW OR DRAINAGE.

COMMON TROUBLE POINTS
1. FENCE NOT INSTALLED ALONG THE CONTOUR CAUSING WATER TO CONCENTRATE AND FLOW OVER THE FENCE.

2. FABRIC NOT SEATED SECURELY TO GROUND (RUNOFF PASSING UNDER FENCE).

3. FENCE NOT INSTALLED PERPENDICULAR TO FLOW LINE (RUNOFF ESCAPING AROUND SIDES).

4. FENCE TREATING TOO LARGE AN AREA, OR EXCESSIVE CHANNEL FLOW (RUNOFF OVERTOPS OR COLLAPSES FENCE).

INSPECTION AND MAINTENANCE GUIDELINES
1. INSPECT ALL FENCING WEEKLY, AND AFTER RAINFALL.

2. REMOVE SEDIMENT WHEN BUILDUP REACHES 6 INCHES.

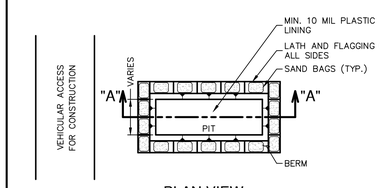
3. REPLACE TORN FABRIC OR INSTALL A SECOND LINE OF FENCING PARALLEL TO THE TORN SECTION.

4. REPLACE OR REPAIR SECTIONS CRUSHED OR COLLAPSED IN THE COURSE OF CONSTRUCTION ACTIVITY. IF A SECTION OF FENCE IS OBSTRUCTING VEHICULAR ACCESS, CONSIDER RELOCATING IT TO A SPOT WHERE IT WILL PROVIDE EQUAL PROTECTION, BUT WILL NOT OBSTRUCT VEHICLES. A TRIANGULAR FILTER DIKE MAY BE PREFERABLE TO A SILT FENCE AT COMMON VEHICLE ACCESS POINTS.

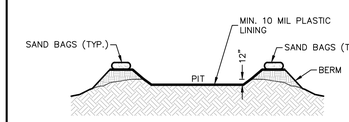
5. WHEN CONSTRUCTION IS COMPLETE, THE SEDIMENT SHOULD BE DISPOSED OF IN A MANNER THAT WILL NOT CAUSE ADDITIONAL SILTATION AND THE PRIOR LOCATION OF THE SILT FENCE SHOULD BE REVEGETATED. THE FENCE ITSELF SHOULD BE DISPOSED OF IN AN APPROVED LANDFILL.

SILT FENCE DETAIL

NOT–TO–SCALE



PLAN VIEW



SECTION "A-A"

GENERAL NOTES
1. DETAIL ABOVE ILLUSTRATES MINIMUM DIMENSIONS. PIT CAN BE INCREASED IN SIZE DEPENDING ON EXPECTED FREQUENCY OF USE.

2. WASHOUT PIT SHALL BE LOCATED IN AN AREA EASILY ACCESSIBLE TO CONSTRUCTION TRAFFIC.

3. WASHOUT PIT SHALL NOT BE LOCATED IN AREAS SUBJECT TO INUNDATION FROM STORM WATER RUNOFF.

4. LOCATE WASHOUT AREA AT LEAST 50 FEET FROM SENSITIVE FEATURES, STORM DRAINS, OPEN DITCHES OR WATER BODIES.

5. TEMPORARY CONCRETE WASHOUT FACILITY SHOULD BE CONSTRUCTED WITH SUFFICIENT QUANTITY AND VOLUME TO CONTAIN ALL LIQUID AND CONCRETE WASTE GENERATED BY WASHOUT OPERATIONS.

MATERIALS
PLASTIC LINING MATERIAL SHOULD BE A MINIMUM OF 10 MIL IN POLYETHYLENE SHEETING AND SHOULD BE FREE OF HOLES, TEARS, OR OTHER DEFECTS THAT COMPROMISE THE IMPERMEABILITY OF THE MATERIAL.

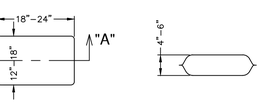
MAINTENANCE
1. WHEN TEMPORARY CONCRETE WASHOUT FACILITIES ARE NO LONGER REQUIRED FOR THE WORK, THE HARDENED CONCRETE SHOULD BE REMOVED AND DISPOSED OF.

2. MATERIALS USED TO CONSTRUCT TEMPORARY CONCRETE WASHOUT FACILITIES SHOULD BE REMOVED FROM THE SITE OF THE WORK AND DISPOSED OF.

3. HOLES, DEPRESSIONS OR OTHER GROUND DISTURBANCES CAUSED BY THE REMOVAL OF THE TEMPORARY CONCRETE WASHOUT FACILITIES SHOULD BE BACKFILLED AND REPAIRED.

CONCRETE TRUCK WASHOUT PIT DETAIL

NOT–TO–SCALE



PLAN VIEW

SECTION "A-A"

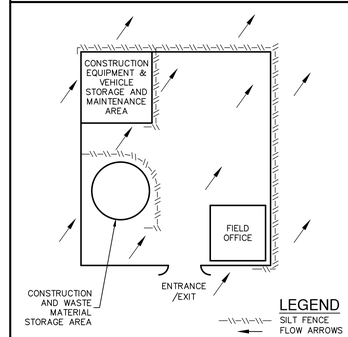
NOTES:
1. THE FILTER BAG MATERIAL SHALL BE MADE OF POLYPROPYLENE, POLYETHYLENE OR POLYAMIDE WOVEN FABRIC, MIN. UNIT WEIGHT OF 4 OUNCES/SY, HAVE A MULLEN BURST STRENGTH EXCEEDING 300 PSI AND ULTRAVIOLET STABILITY EXCEEDING 70%.

2. THE FILTER BAG SHALL BE FILLED WITH CLEAN, MEDIUM WASHED PEA GRAVEL TO COARSE GRAVEL (0.31 TO 0.75 INCH DIAMETER).

3. SAND SHALL NOT BE USED TO FILL THE FILTER BAGS.

GRAVEL FILTER BAG DETAIL

NOT–TO–SCALE



CONSTRUCTION STAGING AREA

NOT–TO–SCALE

THE ENGINEERING SEAL HAS BEEN AFFIXED TO THIS SHEET ONLY FOR THE PURPOSE OF DEMONSTRATING COMPLIANCE WITH THE TPDES–STORM WATER POLLUTION PREVENTION PLAN (SWP3) REGULATIONS.

THIS SHEET HAS BEEN PREPARED FOR PURPOSES OF THE SWP3 ONLY. ALL OTHER CIVIL ENGINEERING RELATED INFORMATION SHOULD BE ACQUIRED FROM THE APPROPRIATE SHEET IN THE CIVIL IMPROVEMENT PLANS.

NO.	REVISION	DATE

STATE OF TEXAS
TODD W. BLACKMON
89208
LICENSED PROFESSIONAL ENGINEER
12 - 27 - 2024

PAPE-DAWSON ENGINEERS
1672 INDEPENDENCE DR, STE 102 I NEW BRAUNFELS, TX 78132 I 830.632.5633
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

MEYER RANCH UNIT 16
COMAL COUNTY, TEXAS
STORMWATER POLLUTION PREVENTION PLAN DETAILS

PLAT NO. ____
JOB NO. 30010–27
DATE DECEMBER 2024
DESIGNER CL
CHECKED HF DRAWN BH
SHEET C8.10

FOR PERMIT