August 1, 2024
AVO 37449.004

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

Re: **Greystar Multifamily -Review #1**

Dear Ms. Hammonds,

Halff was requested by the City of Sanger to review the Final Plat and Civil drawings for the Greystar Muti-family Development. The submittal was prepared by Clay Moore Engineering and was received on July 18, 2024.

We have completed our review and offer the following comments:

General Comments

1. Please address comments on attached markups and provide annotated responses on markups. Please note, not all comments are written on letter since some comments are easier to show and explain on the markups. Please annotate markup with responses.
2. Please address drainage comments provided 4/3/24 and provide an updated flood study with the next construction plan submittal.

Beltz Road Retail Phase 1 Final Plat

1. Final Plat approval is contingent upon approval of the preliminary plat.
2. Call out all setbacks.
3. Verify water easement locations based on per the civil plans.
4. Per ordinance, easements shall be a minimum of 15’ wide.
5. The Plat title has already been used in a previous phase. Reconcile.
6. Final plat approval is contingent upon approval of the drainage study. Comments were provided in April.
7. A separate closure report is required for final acceptance of the plat

Collector Road Plan and Profile

1. Clearly denote points of curvature and tangent on the roadway plan view.
2. Provide curve data.
3. The maximum slope is 2% within 100’ of an intersection.

HALFF ASSOCIATES, INC.
4000 FOSSIL CREEK BOULEVARD
FORT WORTH, TX 76137-2720
TEL (817) 847-1422
FAX (817) 232-9784
WWW.HALFF.COM

Paving, Striping and Signage Plans

1. Provide striping information for the roadway.
2. Provide the geotechnical report.
3. The preliminary plat references PD 12-32-22. Clarify in the notes section.
4. Show how parking was calculated and provide enough information to verify that it matches the approved PD.

Fencing Plan

1. Provide gate details. The gates must conform to ordinance 10.105(3).

Grading Plan

1. A minimum slope of 0.50% towards the outlet structure is required for all detention facilities. 10.106(d)(10)(C)
2. The maximum allowable slope is exceed in near the center of the property. Reconcile.
3. Provide poind cross sections.

Drainage Area Map

1. Provide a pond maintenance agreement.
2. Profile and provide HGL/hydraulic data for the proposed ditch. The design must meet requirements outlined in ordinance 10.106(d)(9)(B).
3. A revised flood study (comments returned April 3) is needed for a thorough drainage review. Pond calculations and WSEL are needed to cross check closed conduit calculations.
4. Verify the intensity for the predeveloped condition.
5. Provide more information from the previous phase so there is more information to backcheck in this plan set.
6. C-1 and D-1 only contain street pavement. Per the DCSRR c=0.95.

Storm Drainage Plan

1. Some angles look too large for deflections without a fitting or manhole. Verify and revise.
2. For constructability, it is suggested to remove the 3' section of 24" pipe and up-size straight to 27" RCP. See line B comments.
3. Show water and sewer crossings on the storm profiles.
4. A minimum slope of 0.50% towards the outlet structure is required for all detention facilities.
5. It is unclear what is to be constructed in Phase 1 vs Phase 2 plats. Clarify.
6. Storm design is not consistent between phases 1 and 2.

Storm Drainage Profiles

1. Provide vertical scale.
2. Show Hydraulic data at the storm outfalls. Recalculate throughout.
3. Show HGL in partial flow. it will equal normal depth. Reconcile throughout.
4. How does line C’s flowline outfall tie into the proposed ground?

5. A 2' minimum of cover is desired for storm lines. Provide deload calcs specifications or provide an alternate class of RCP.
6. The minimum pipe diameter for 10' curb inlets is 21" per ordinance.

Storm Drainage Calculations

1. Update calculations for RCP pipe.
2. Provide inlet calculations.
3. Dedicated detention/retention basins shall also include an additional one (1) foot of freeboard and two (2) feet of sediment storage. 10.106(d)(10)
4. Resolve area discrepancy on line B-2.

Water Plan

1. Label all fittings.
2. Lable deflection on line B.
3. Provide PC's, PT,s and curve data where applicable. Typical.
4. Provide the exiting water line sizes at tie ins.
5. Show the storm lines in the plan view.

Water Profiles

1. Show all storm and sewer crossings. Typical.
2. Call out deflections on the line A profile.
3. Provide Vertical Scale.

Sanitary Sewer Profiles

1. Provide vertical scale.
2. Grid elevations are missing on line A.
3. Show how water crossings will be TCEQ compliant..

Utility Plan

4. Verify if the water line to the north is existing or proposed.
5. Show all water and storm crossings in the sewer profiles.

Sanitary Sewer Profiles

1. Show water crossings and how they will comply with TCEQ standards.

Standard Details

1. Provide Storm outfall details.

Landscape Plans

1. Show the landscape buffer adjacent to the proposed street.

2. The parking area requires 9,720 SF of landscaping per the paving plan. Please also see the parking comment and adjust landscaping as needed.
3. Provide a buffer yard adjacent to the residential area per section 48.4 of the zoning ordinance.
4. Add a note specifying that the owner is responsible for landscape maintenance.

The Engineer shall revise the plans in accordance with the above comments and/or provide a written response that addresses each comment. If you have any questions or need additional information, please do not hesitate to call me at (214) 937-3928.

Sincerely,

Jamie Akomer, PE, PMP
HALFF
Firm No. 0312

Attachments: Plans markups

CIVIL CONSTRUCTION PLANS

PREPARED FOR GREYSTAR

SANGER MULTI-FAMILY
DENTON COUNTY
SANGER, TEXAS

JULY 2024

PRELIMINARY
FOR REVIEW ONLY
Not for construction purposes.
CLAYMOORE ENGINEERING
ENGINEERING AND PLANNING CONSULTANTS
Engineer DREW DONOSKY
P.E. No. 125651 Date 7/17/2024

Provide Pavement plan and profile for public street.

Sheet List Table		
Sheet Number	Sheet Title	Drawing Comments
C-0	COVER	7/17/2024
--	FINAL PLAT 1	7/17/2024
--	FINAL PLAT 2	7/17/2024
C-1	GENERAL NOTES	7/17/2024
C-2.0	OVERALL EROSION CONTROL PLAN	7/17/2024
C-2.1	EROSION CONTROL PLAN	7/17/2024
C-2.2	EROSION CONTROL PLAN	7/17/2024
C-2.3	EROSION CONTROL PLAN	7/17/2024
C-2.4	EROSION CONTROL PLAN	7/17/2024
C-2.5	EROSION CONTROL DETAILS	7/17/2024
C-3.0	OVERALL DIMENSION CONTROL PLAN	7/17/2024
C-3.1	DIMENSION CONTROL PLAN	7/17/2024
C-3.2	DIMENSION CONTROL PLAN	7/17/2024
C-3.3	COLLECTOR ROAD PLAN AND PROFILE	7/17/2024
C-4.0	OVERALL PAVING, STRIPING AND SIGNAGE PLAN	7/17/2024
C-4.1	PAVING, STRIPING AND SIGNAGE PLAN	7/17/2024
C-4.2	PAVING, STRIPING AND SIGNAGE PLAN	7/17/2024
C-4.3	FENCE PLAN	7/17/2024
C-5.0	OVERALL GRADING PLAN	7/17/2024
C-5.1	GRADING PLAN	7/17/2024
C-5.2	GRADING PLAN	7/17/2024
C-5.3	GRADING PLAN	7/17/2024
C-5.4	GRADING PLAN	7/17/2024
C-5.5	GRADING PLAN	7/17/2024
C-5.6	GRADING PLAN	7/17/2024
C-6.0	EXISTING DRAINAGE AREAS	7/17/2024
C-6.1	PROPOSED DRAINAGE AREAS	7/17/2024
C-6.2	STORM DRAINAGE PLAN	7/17/2024
C-6.3	STORM DRAINAGE PLAN	7/17/2024
C-6.4	STORM DRAINAGE PROFILES	7/17/2024
C-6.5	STORM DRAINAGE PROFILES	7/17/2024
C-6.6	STORM DRAINAGE CALCULATIONS	7/17/2024
C-7.1	WATER PLAN	7/17/2024
C-7.2	WATER PLAN	7/17/2024
C-7.3	WATER PROFILES	7/17/2024
C-7.4	WATER PROFILES	7/17/2024
C-7.5	SANITARY SEWER PLAN	7/17/2024
C-7.6	SANITARY SEWER PLAN	7/17/2024
C-7.7	OFFSITE SANITARY SEWER PLAN	7/17/2024
C-7.8	SANITARY SEWER PROFILES	7/17/2024
C-7.9	SANITARY SEWER PROFILES	7/17/2024
C-7.10	DRY UTILITY COORDINATION PLAN	7/17/2024
C-7.11	DRY UTILITY COORDINATION PLAN	7/17/2024
C-8.1	CONSTRUCTION DETAILS 1	7/17/2024
C-8.2	CONSTRUCTION DETAILS 2	7/17/2024
C-8.3	CONSTRUCTION DETAILS 3	7/17/2024
C-8.4	CONSTRUCTION DETAILS 4	7/17/2024
LP-1	LANDSCAPE PLANTING	7/17/2024
LP-2	LANDSCAPE PLANTING	7/17/2024
LP-3	LANDSCAPE DETAILS & SPECIFICATIONS	7/17/2024
AP-1	CONCEPTUAL AMENITY PLAN	7/17/2024
AP-2	CONCEPTUAL AMENITY PLAN	7/17/2024
L-1	CONCEPTUAL LIGHTING PLAN	7/17/2024
L-2	CONCEPTUAL LIGHTING PLAN	7/17/2024

ENGINEER

CLAYMOORE ENGINEERING

TEXAS REGISTRATION #14199
1903 CENTRAL DRIVE
SUITE #406
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SANGER MULTI-FAMILY PREPARED FOR GREYSTAR, SANGER, TEXAS

VICINITY MAP
NOT TO SCALE

LINE TABLE		
LINE	BEARING	DISTANCE
L1	S 69°22'12" W	60.00'
L2	N 45°19'00" W	19.43'
L3	S 64°19'30" E	23.62'
L4	N 45°19'00" W	17.56'
L5	N 56°29'20" E	93.79'
L6	N 76°16'44" E	99.36'
L7	N 83°52'36" E	121.83'
L8	S 88°37'28" E	759.89'
L9	S 01°22'32" W	260.87'
L10	S 88°37'28" E	63.98'
L11	S 78°16'02" E	125.61'
L12	N 78°16'02" W	119.64'
L13	N 88°37'28" W	649.70'
L14	S 01°20'03" W	155.70'
L15	N 88°31'02" W	95.65'
L16	S 56°29'20" W	94.53'
L17	N 76°16'44" E	88.62'
L18	N 83°52'36" E	121.04'
L19	S 88°37'28" E	753.50'
L20	S 01°22'33" W	254.87'
L21	N 88°37'27" W	507.54'
L22	S 01°22'32" W	155.58'
L23	N 88°47'42" W	85.25'
L24	N 71°22'32" E	7.16'
L25	N 18°37'28" W	26.00'
L26	S 71°22'32" W	29.81'
L27	N 38°51'11" W	99.23'
L28	N 42°40'29" W	109.16'
L29	N 44°41'06" E	18.60'
L30	N 76°16'48" E	158.58'
L31	N 83°52'36" E	124.28'
L32	S 88°37'24" E	32.87'

LINE TABLE		
LINE	BEARING	DISTANCE
L33	S 59°16'54" E	29.87'
L34	S 88°30'31" E	17.12'
L35	N 56°27'04" E	25.62'
L36	S 88°37'24" E	233.66'
L37	S 42°31'14" E	19.94'
L38	S 88°30'31" E	16.27'
L39	N 55°51'30" E	24.79'
L40	S 88°37'24" E	246.26'
L41	S 51°50'00" E	24.61'
L42	S 88°30'31" E	23.33'
L43	S 01°19'59" W	258.63'
L44	S 87°49'39" E	76.76'
L45	S 02°10'21" W	10.00'
L46	N 87°49'39" W	80.29'
L47	S 56°52'52" W	27.38'
L48	N 88°37'24" W	229.23'
L49	N 32°15'01" W	17.34'
L50	N 89°17'08" W	12.72'
L51	S 55°13'28" W	24.22'
L52	N 88°37'24" W	161.27'
L53	S 64°55'18" W	42.48'
L54	S 01°22'32" W	19.04'
L55	N 88°37'28" W	24.41'
L56	N 55°26'11" W	103.18'
L57	S 67°10'28" W	78.28'
L58	S 29°20'45" E	6.97'
L59	S 25°09'41" W	76.28'
L60	S 22°30'27" E	179.93'
L61	S 67°29'33" W	10.00'
L62	N 22°30'27" W	184.35'
L63	N 25°09'41" E	75.55'
L64	N 29°20'45" W	33.97'

LINE TABLE		
LINE	BEARING	DISTANCE
L65	N 28°23'02" W	21.94'
L66	N 65°07'05" W	114.33'
L67	N 38°51'11" W	97.23'
L68	N 42°40'29" W	99.95'
L69	N 44°41'06" E	6.23'
L70	N 76°16'48" E	155.08'
L71	N 83°52'36" E	122.96'
L72	S 88°37'24" E	29.60'
L73	S 59°16'54" E	29.86'
L74	S 88°30'31" E	22.88'
L75	N 56°27'04" E	25.64'
L76	S 88°37'24" E	226.25'
L77	S 42°31'14" E	19.93'
L78	S 88°30'31" E	23.73'
L79	N 55°51'30" E	24.80'
L80	S 88°37'24" E	239.74'
L81	S 51°50'00" E	24.60'
L82	S 88°30'31" E	16.67'
L83	S 01°19'59" W	250.81'
L84	S 56°52'52" W	23.47'
L85	N 88°37'24" W	220.77'
L86	N 32°15'01" W	17.41'
L87	N 89°17'08" W	21.35'
L88	S 55°13'28" W	24.16'
L89	N 88°37'24" W	160.35'
L90	S 64°55'18" W	51.02'
L91	S 01°22'32" W	15.23'
L92	N 88°37'28" W	11.43'
L93	N 55°26'11" W	105.67'
L94	S 67°10'28" W	84.90'
L95	N 29°20'45" W	22.00'
L96	N 65°07'05" W	115.32'

LINE TABLE		
LINE	BEARING	DISTANCE
L97	N 71°06'36" E	97.10'
L98	N 08°37'47" E	46.40'
L99	N 08°37'47" E	22.32'
L100	N 20°55'49" W	31.72'
L101	N 20°55'49" W	21.91'
L102	N 71°06'36" E	58.53'
L103	S 88°37'28" E	56.42'
L104	S 75°37'53" E	93.64'
L105	N 12°25'30" E	76.52'
L106	N 78°15'29" W	62.50'
L107	N 01°22'32" E	306.56'
L108	S 88°37'28" E	293.13'
L109	N 54°51'19" E	22.00'
L110	S 88°37'28" E	12.60'
L111	S 54°51'19" W	25.21'
L112	S 88°37'28" E	51.42'
L113	N 41°31'28" W	27.66'
L114	N 17°01'19" E	16.41'
L115	N 22°07'49" W	48.38'
L116	N 11°49'45" E	28.07'
L117	N 78°15'29" W	138.22'
L118	N 12°25'30" E	71.66'
L119	N 88°37'28" W	43.20'
L120	S 61°12'08" W	45.87'
L121	N 37°52'14" W	93.93'
L122	N 37°52'14" W	92.74'
L123	N 88°37'28" W	271.91'
L124	S 61°12'08" W	32.73'
L125	S 01°22'32" W	36.60'

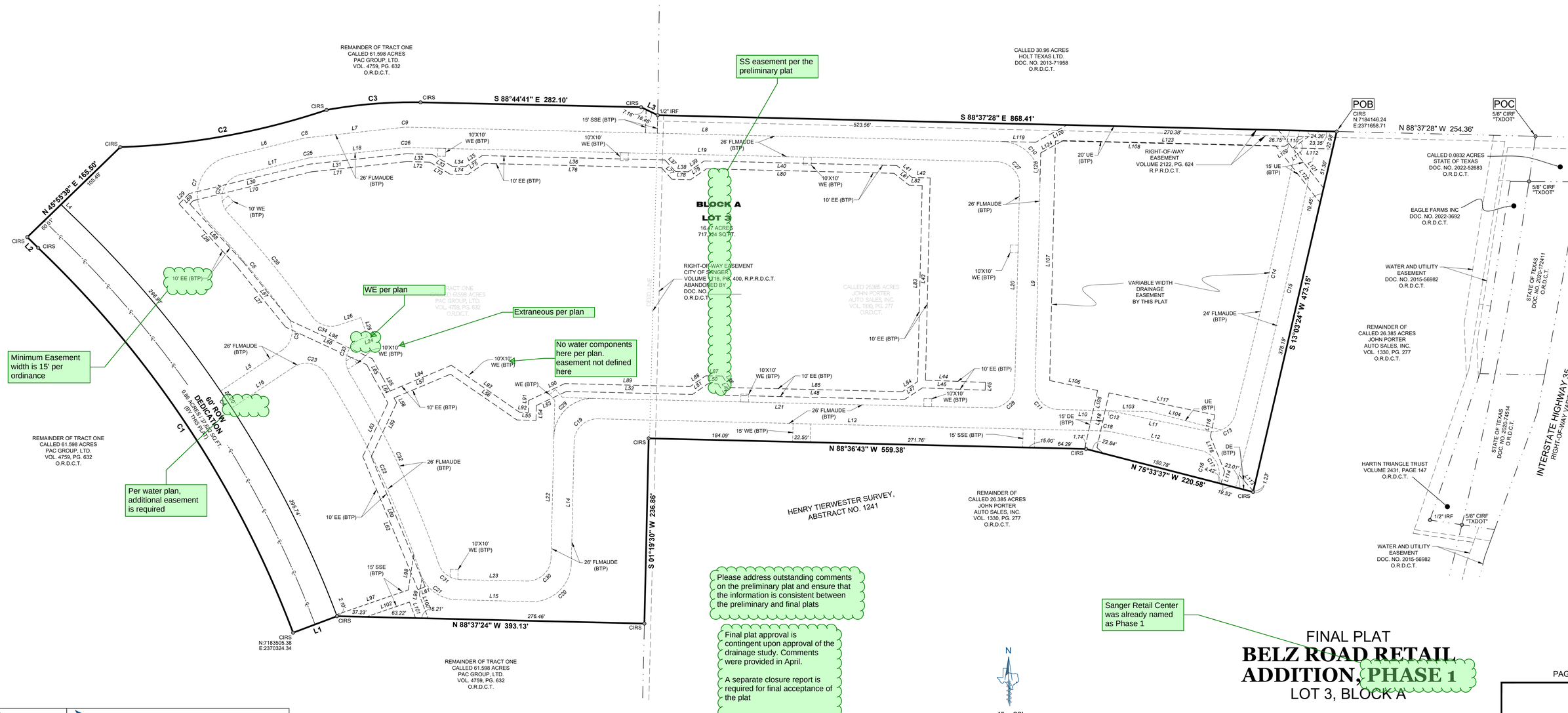
CURVE TABLE					
CURVE	ARC LENGTH	RADIUS	DELTA ANGLE	CHORD BEARING	CHORD LENGTH
C1	595.33'	1322.70'	25°47'17"	N 33°31'27" W	590.32'
C2	268.88'	922.95'	16°41'32"	N 79°47'50" E	267.93'
C3	120.72'	608.75'	11°21'45"	N 85°21'24" E	120.52'
C4	621.75'	1382.70'	25°45'50"	N 33°30'43" W	616.53'
C5	48.47'	30.00'	92°34'48"	N 10°11'56" E	43.37'
C6	158.79'	1220.10'	7°27'24"	N 39°49'10" W	158.68'
C7	104.57'	50.00'	119°49'36"	N 16°21'56" E	86.53'
C8	6.63'	50.00'	7°35'52"	N 80°04'40" E	6.63'
C9	6.54'	50.00'	7°29'56"	N 87°37'34" E	6.54'
C10	78.54'	50.00'	90°00'00"	S 43°37'28" E	70.71'
C11	47.12'	30.00'	90°00'00"	S 43°37'28" E	42.43'
C12	4.70'	26.00'	10°21'26"	S 83°26'45" E	4.69'
C13	45.85'	30.00'	87°33'59"	N 57°56'58" E	41.52'
C14	371.37'	7421.33'	2°52'02"	N 12°43'58" E	371.33'
C15	408.41'	7428.53'	3°09'00"	S 12°50'22" W	408.36'
C16	4.62'	7421.30'	0°02'08"	N 14°51'06" E	4.62'
C17	48.75'	30.00'	93°06'04"	N 31°43'00" W	43.56'
C18	3.62'	20.00'	10°21'26"	N 83°26'45" W	3.61'
C19	47.15'	30.00'	90°02'29"	S 46°21'18" W	42.44'
C20	78.67'	50.00'	90°08'55"	S 46°24'31" W	70.80'
C21	60.92'	50.00'	69°48'19"	N 53°36'53" W	57.22'
C22	281.89'	1220.10'	13°14'16"	N 25°19'52" W	281.27'
C23	47.94'	30.00'	91°33'41"	N 77°43'50" W	43.00'
C24	62.48'	30.00'	119°19'54"	N 16°36'47" E	51.79'
C25	3.98'	30.00'	7°35'52"	N 80°04'40" E	3.98'
C26	3.93'	30.00'	7°29'56"	N 87°37'34" E	3.92'
C27	47.12'	30.00'	90°00'01"	S 43°37'27" E	42.43'
C28	47.12'	30.00'	89°59'59"	S 46°22'33" W	42.43'
C29	78.54'	50.00'	90°00'01"	S 46°22'32" W	70.71'
C30	47.03'	30.00'	89°49'46"	S 46°17'25" W	42.36'
C31	36.59'	30.00'	69°52'46"	N 53°51'19" W	34.36'
C32	269.76'	1257.71'	12°17'21"	N 25°03'37" W	269.25'
C33	53.71'	30.00'	102°34'49"	N 20°05'07" E	46.82'
C34	38.40'	30.00'	73°19'51"	N 71°57'33" W	35.83'
C35	169.67'	1252.92'	7°45'33"	N 39°10'23" W	169.54'

GENERAL NOTES

1. The purpose of this plat is to create one lot of record.
2. This property is located in **Non-Shaded Zone "X"** as scaled from the F.E.M.A. Flood Insurance Rate Map dated April 18, 2011 and is located in Community Number 480786 as shown on Map Number 48121C0210G. The location of the Flood Zone is approximate, no vertical datum was collected at the time of the survey. For the exact Flood Zone designation, please contact 1-(877) FEMA MAP.
3. The bearings and grid coordinates shown on this plat are based on GPS observations utilizing the AllTerra RTK Network. North American Datum of 1983 (Adjustment Realization 2011) Texas North Central Zone 4202.
4. Selling a portion of this addition by metes and bounds is a violation of City Ordinance and State Law, and is subject to fines and/or withholding of utilities and building permits. Building setbacks will be 20' from all lot lines.
5. Lot to lot drainage shall not be allowed.
6. All lots comply with the minimum size requirements of the zoning district.
7. This property may be subject to charges related to impact fees and the applicant should contact the city regarding any applicable fees due.
8. All common areas, drainage easements, and detention facilities will be owned and maintained by the HOA/property owner. Any common area within the city's right-of-way will require a facilities agreement, to be reviewed and approved by the city.
9. This plat does not alter or remove existing deed restriction, if any, on this property.

LEGEND

PG.	= PAGE
VOL.	= VOLUME
CAB.	= CABINET
POB	= POINT OF BEGINNING
IRF	= IRON ROD FOUND
CIRF	= CAPPED IRON ROD FOUND
CIRS	= 1/2" IRON ROD SET W/GREEN CAP STAMPED "EAGLE SURVEYING" SET
DOC. NO.	= DOCUMENT NUMBER
P.R.D.C.T.	= PLAT RECORDS, DENTON COUNTY, TEXAS
O.R.D.C.T.	= OFFICIAL RECORDS, DENTON COUNTY, TEXAS
FLMAUDE	= FIRE LANE, MUTUAL ACCESS DRAINAGE & UTILITY EASEMENT
WE	= WATER EASEMENT
DE	= DRAINAGE EASEMENT
UE	= UTILITY EASEMENT
EE	= ELECTRIC EASEMENT
(BTP)	= BY THIS PLAT



Project	2108.092-XX
Date	07/15/2024
Drafter	BE

EAGLE SURVEYING, LLC
222 S. Elm Street, Suite: 200
Denton, TX 76201
(940) 222-3009
TX Firm #10194177

SURVEYOR
Eagle Surveying, LLC
222 S. Elm Street, Suite: 200
Denton, TX 76201
(940) 222-3009

ENGINEER
Claymoore Engineering, Inc.
1903 Central Drive, Suite: 406
Bedford, TX 76021

OWNER
John Porter Autos Sales, Inc.
PO Box 178
Sanger, TX 76266

OWNER
Pac Group, Ltd.
PO Box 877
Sanger, TX 76266

FINAL PLAT
BELZ ROAD RETAIL ADDITION, PHASE 1
LOT 3, BLOCK A

17.33 ACRES
0.86 ACRES - RIGHT-OF-WAY DEDICATION

HENRY TIERWESTER SURVEY, ABSTRACT No. 1241
CITY OF SANGER, DENTON COUNTY, TEXAS

CERTIFICATE OF SURVEYOR

STATE OF TEXAS §
COUNTY OF DENTON §

I, **MATTHEW RAABE**, Registered Professional Land Surveyor, do hereby certify that this plat is true and correct and was prepared from an actual survey made on the ground and that the monuments shown hereon were found or placed with 1/2-inch iron rods with green plastic caps stamped "EAGLE SURVEYING" under my direction and supervision in accordance with the current provisions of the Texas Administrative Code and the Ordinances of the City of Sanger, Denton County, Texas.

PRELIMINARY
this document shall not be recorded for any purpose and shall not be used or viewed or relied upon as a final survey document

_____
Matthew Raabe, R.P.L.S. # 6402

_____
Date

STATE OF TEXAS §
COUNTY OF TARRANT §

BEFORE ME, the undersigned authority, on this day personally appeared **MATTHEW RAABE**, known to me to be the person whose name is subscribed to the foregoing instrument, 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 THE OFFICE this _____ day of _____, 2024.

_____
Notary Public in and for the State of Texas

OWNER'S CERTIFICATE & DEDICATION

STATE OF TEXAS §
COUNTY OF DENTON §

WHEREAS, **JOHN PORTER AUTO SALES, INC.** and **PAC GROUP, LTD.**, are the owners of a 17.33 acre tract or parcel of land situated in the Henry Tierwester Survey, Abstract Number 1241 in Denton County, Texas and being all of a called 26.385 acre tract of land conveyed to John Porter Auto Sales, Inc. by Warranty Deed of record in Volume 1330, Page 277 of the Official Records of Denton County, Texas, and all of a called 61.598 acre tract of land conveyed to Pac Group LTD by Warranty Deed of record in Volume 4759, Page 632 of the Official Records of Denton County, Texas, and being more particularly described by metes and bounds as follows:

COMMENCING at a 5/8" iron rod with plastic cap satmped "TXDOT" found in the West right-of-way line of Interstate 35E (right-of-way width varies) and the South line of a called 30.96 acre tract of land conveyed to Holt Texas LTD by Warranty Deed of record in Document Number 2013-71958 of the Official Records of Denton County, Texas, being the Northeast corner of a called 0.0832 acre tract conveyed to the State of Texas by Judgement of Court in Absence of Objection of record in Document Number 2022-52683 of the Official Records of Denton County, Texas;

THENCE, N88°37'28"W, along the South line of said 30.96 acre tract, being the common North line of said 26.385 acre tract, a distance of 254.36 feet to a 1/2 inch iron rod with green plastic cap stamped "EAGLE SURVEYING" set at the **POINT OF BEGINNING**;

THENCE, over and across said 26.385 acre tract and said 61.598 acre tract, the following thirteen (13) courses and distances:

1. S 13°03'24" W a distance of 473.15' to a 1/2 inch iron rod with green plastic cap stamped "EAGLE SURVEYING" set;
2. N 75°33'37" W a distance of 220.58' to a 1/2 inch iron rod with green plastic cap stamped "EAGLE SURVEYING" set;
3. N 88°36'43" W a distance of 559.38' to a 1/2 inch iron rod with green plastic cap stamped "EAGLE SURVEYING" set;
4. S 01°19'30" W a distance of 236.86' to a 1/2 inch iron rod with green plastic cap stamped "EAGLE SURVEYING" set;
5. N 88°37'24" W a distance of 393.13' to a 1/2 inch iron rod with green plastic cap stamped "EAGLE SURVEYING" set;
6. S 69°22'12" W a distance of 60.00' to a 1/2 inch iron rod with green plastic cap stamped "EAGLE SURVEYING" set;
7. With a curve turning to the left with an arc length of 595.33', with a radius of 1322.70', with a chord bearing of N 33°31'27" W, with a chord length of 590.32',thence with a curve to a 1/2 inch iron rod with green plastic cap stamped "EAGLE SURVEYING" set;
8. N 45°19'00" W a distance of 19.43' to a 1/2 inch iron rod with green plastic cap stamped "EAGLE SURVEYING" set;
9. N 45°55'38" E a distance of 165.50' to a 1/2 inch iron rod with green plastic cap stamped "EAGLE SURVEYING" set;
10. With a curve turning to the left with an arc length of 268.88', with a radius of 922.95', with a chord bearing of N 79°47'50" E, with a chord length of 267.93',thence with a curve to a 1/2 inch iron rod with green plastic cap stamped "EAGLE SURVEYING" set;
11. With a reverse curve turning to the right with an arc length of 120.72', with a radius of 608.75', with a chord bearing of N 85°21'24" E, with a chord length of 120.52',thence with a reverse curve to a 1/2 inch iron rod with green plastic cap stamped "EAGLE SURVEYING" set;
12. S 88°44'41" E a distance of 282.10' to a 1/2 inch iron rod with green plastic cap stamped "EAGLE SURVEYING" set;
13. S 64°19'30" E a distance of 23.62' to a 1/2 inch iron rod with green plastic cap stamped "EAGLE SURVEYING" set at the Southwest corner of said 30.96 acre tract;

THENCE, S 88°37'28" E, along the South line of said 30.96 acre tract, being the common North line of said 26.385 acre tract, a distance of 868.41' to the point of beginning, and containing 17.33 acres or 754,946 square feet, more or less.

SATE OF TEXAS §
COUNTY OF DENTON §

NOW THEREFORE KNOW ALL MEN BY THESE PRESENTS:

THAT, **JOHN PORTER AUTO SALES, INC.,** and **PAC GROUP, LTD.** acting herein by and through it duly authorized office, does hereby adopt this plat designating the hereinabove described property as **BELZ ROAD RETAIL ADDITION, PHASE 1, LOT 3, BLOCK A,** an addition to the City of Sanger, Texas, and does hereby dedicate to the public use forever by fee simple title, free and clear of all liens and encumbrances, all streets, thoroughfares, alleys, fire lanes, drive aisles, parks, and watercourses, and to the public use forever easements for sidewalks, storm drainage facilities, utilities, and any other property necessary to serve the plat and to implement the requirements of the subdivision regulations and other City codes and do hereby bind ourselves, our heirs, successors and assigns to warrant and to forever defend the title on the land so dedicated. Further, the undersigned covenants and agrees that he/she shall maintain all easements and facilities in a state of good repair and functional condition at all times in accordance with City codes and regulations. No buildings, fences, trees, shrubs, or other improvements or growths shall be constructed or placed upon, over, or across the easements as shown, except that landscape improvements may be installed, if approved by the City of Sanger. The City of Sanger and public entities shall have the right to access and maintain all respective easements without the necessity at any time of procuring permission from anyone.

OWNER: **JOHN PORTER AUTO SALES, INC.**

BY: _____ _____
Date

STATE OF TEXAS §
COUNTY OF _____ §

BEFORE ME, the undersigned authority, on this day personally appeared _____, known to me to be the person whose name is subscribed to the foregoing instrument, and acknowledged to me that he executed the same for the purposes and considerations therein expressed and in the capacity therein stated.

GIVEN UNDER MY HAND AND SEAL OF THE OFFICE this _____ day of _____, 2024.

_____
Notary Public in and for the State of Texas

OWNER: **PAC GROUP, LTD**

BY: _____ _____
Date

STATE OF TEXAS §
COUNTY OF _____ §

BEFORE ME, the undersigned authority, on this day personally appeared _____, known to me to be the person whose name is subscribed to the foregoing instrument, and acknowledged to me that he executed the same for the purposes and considerations therein expressed and in the capacity therein stated.

GIVEN UNDER MY HAND AND SEAL OF THE OFFICE this _____ day of _____, 2024.

_____
Notary Public in and for the State of Texas

APPROVED AND ACCEPTED

CITY OF SANGER
DENTON COUNTY, TEXAS

_____ _____
Thomas Muir — Date
Mayor, City of Sanger, Texas

ATTEST:

_____ _____
Cheryl Price, City Secretary — Date
City of Sanger, Tx

Project	2108.092-XX
Date	07/15/2024
Drafter	BE

EAGLE SURVEYING, LLC
222 S. Elm Street, Suite: 200
Denton, TX 76201
(940) 222-3009
TX Firm #10194177

SURVEYOR
Eagle Surveying, LLC
222 S. Elm Street, Suite: 200
Denton, TX 76201
(940) 222-3009

ENGINEER
Claymoore Engineering, Inc.
1903 Central Drive, Suite: 406
Bedford, TX 76021

OWNER
John Porter Autos Sales, Inc.
PO Box 178
Sanger, TX 76266

OWNER
Pac Group, Ltd.
PO Box 877
Sanger, TX 76266

FINAL PLAT
BELZ ROAD RETAIL ADDITION, PHASE 1
LOT 3, BLOCK A

17.33 ACRES
0.86 ACRES - RIGHT-OF-WAY DEDICATION

HENRY TIERWESTER SURVEY, ABSTRACT No. 1241
CITY OF SANGER, DENTON COUNTY, TEXAS

GENERAL NOTES

1. ALL MATERIAL AND CONSTRUCTION SHALL CONFORM TO THE CITY'S DESIGN STANDARDS. IF NO CITY STANDARD IS APPLICABLE, MATERIAL AND CONSTRUCTION SHALL CONFORM TO THE "NORTH CENTRAL TEXAS COUNCIL OF GOVERNMENTS STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION"
2. THE CONTRACTOR SHALL BE RESPONSIBLE TO FURNISH ALL MATERIALS AND LABOR TO CONSTRUCT THE FACILITY AS SHOWN AND DESCRIBED IN THE CONSTRUCTION DOCUMENTS IN ACCORDANCE WITH THE APPROPRIATE APPROVING AUTHORITIES, SPECIFICATIONS AND REQUIREMENTS. ALL WORK REQUIRED BY THESE PLANS SHALL BE CONDUCTED IN CONFORMANCE WITH CURRENT SAFETY CODES AND STANDARDS WITH JURISDICTION OVER THIS PROJECT.
3. THE CONTRACTOR SHALL CONTACT ALL FRANCHISE UTILITY COMPANIES TO HAVE THEM LOCATE EXISTING UTILITIES PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL COORDINATE THE EXACT LOCATION AND DEPTH OF ALL FRANCHISE UTILITY SERVICES AND ANY REQUIRED RELOCATION AND/OR EXTENSIONS. SERVICES SHOWN ON THE PLANS, IF ANY, ARE CONCEPTUAL.
4. THE CONTRACTOR SHALL PROTECT ALL PUBLIC AND PRIVATE UTILITIES IN THE CONSTRUCTION OF THIS PROJECT. ALL MANHOLES, CLEANOUTS, VALVE BOXES, POWER POLES, SIGNS, FIRE HYDRANTS, ETC., MUST BE ADJUSTED TO PROPER GRADE BY THE CONTRACTOR PRIOR TO AND AFTER PLACING OF PERMANENT PAVING. UTILITIES MUST BE MAINTAINED TO PROPER LINE AND GRADE DURING CONSTRUCTION OF THE PAVING FOR THIS PROJECT.
5. BRACING OF UTILITY POLES MAY BE REQUIRED BY UTILITY COMPANIES WHEN TRENCHING OR EXCAVATION IS IN CLOSE PROXIMITY TO THE POLES. THE COST OF BRACING POLES WILL BE BORNE BY THE CONTRACTOR. THERE IS NO SEPARATE PAY ITEM FOR THIS WORK. THE COST IS INCIDENTAL TO THE VARIOUS PAY ITEMS FOR INSTALLATION OF PIPE.
6. THE LOCATIONS, ELEVATIONS, AND DIMENSIONS OF EXISTING UTILITIES SHOWN ON THE PLANS WERE OBTAINED FROM AVAILABLE RECORDS AND ARE CONSIDERED APPROXIMATE. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO VERIFY LOCATIONS, ELEVATIONS, AND DIMENSIONS OF ADJACENT AND/OR CONFLICTING UTILITIES SUFFICIENTLY IN ADVANCE OF CONSTRUCTION IN ORDER THAT ADJUSTMENTS CAN BE MADE TO PROVIDE ADEQUATE CLEARANCES. THE CONTRACTOR SHALL PRESERVE AND PROTECT PUBLIC UTILITIES AT ALL TIMES DURING CONSTRUCTION. ANY DAMAGE TO UTILITIES RESULTING FROM CONTRACTOR'S OPERATIONS SHALL BE RESTORED AT THE CONTRACTOR'S EXPENSE. THE ENGINEER SHALL BE NOTIFIED WHEN PROPOSED FACILITY GRADES CONFLICT WITH EXISTING UTILITY GRADES.
7. THE CONTRACTOR SHALL IMMEDIATELY REPAIR OR REPLACE ANY PHYSICAL DAMAGE TO PRIVATE PROPERTY, INCLUDING, BUT NOT LIMITED TO FENCES, WALLS, PAVEMENT, GRASS, TREES, AND LAWN SPRINKLER AND IRRIGATION SYSTEMS AT NO COST TO THE OWNER. THIS WORK SHALL BE SUBSIDIARY TO THE CONTRACT (UNLESS OTHERWISE NOTED) AND IS NOT A SEPARATE PAY ITEM.
8. THE CONTRACTOR SHALL REMOVE SURPLUS MATERIAL FROM THE PROJECT AREA. THIS WORK SHALL BE SUBSIDIARY TO THE CONTRACT AND IS NOT A SEPARATE PAY ITEM.
9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS PRIOR TO CONSTRUCTION.
10. THE CONTRACTOR SHALL HAVE AVAILABLE AT THE JOB SITE AT ALL TIMES A COPY OF THE CONTRACT DOCUMENTS INCLUDING PLANS, SPECIFICATIONS, AND SPECIAL CONDITIONS, COPIES OF ANY REQUIRED CONSTRUCTION PERMITS, EROSION CONTROL PLANS, SWPPP AND INSPECTION REPORTS.
11. ANY DISCREPANCIES ON THE DRAWINGS SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE ARCHITECT AND ENGINEER BEFORE COMMENCING WORK. NO FIELD CHANGES OR DEVIATIONS FROM DESIGN SHALL BE MADE WITHOUT PRIOR APPROVAL OF THE OWNER AND NOTIFICATION TO THE ENGINEER. NO CONSIDERATION WILL BE GIVEN TO CHANGE ORDERS FOR WHICH THE OWNER AND ENGINEER WERE NOT CONTACTED PRIOR TO CONSTRUCTION OF THE AFFECTED ITEM.
12. ALL COPIES OF COMPACTION, CONCRETE AND OTHER REQUIRED TEST RESULTS SHALL BE SENT TO THE ARCHITECT, CIVIL ENGINEER, CONTRACTOR AND OWNER DIRECTLY FROM THE TESTING AGENCY.
13. ALL NECESSARY INSPECTIONS AND/OR CERTIFICATIONS REQUIRED BY CODES, JURISDICTIONAL AGENCIES AND/OR UTILITY SERVICE COMPANIES SHALL BE OBTAINED BY THE CONTRACTOR PRIOR TO BUILDING POSSESSION AND THE FINAL CONNECTION OF SERVICES.
14. CONTRACTOR SHALL VERIFY BENCHMARKS AND DATUM PRIOR TO COMMENCING CONSTRUCTION OR STAKING OF IMPROVEMENTS.
15. CONTRACTOR SHALL THOROUGHLY CHECK COORDINATION OF CIVIL, LANDSCAPE, MEP, ARCHITECTURAL, AND OTHER PLANS PRIOR TO COMMENCING CONSTRUCTION. OWNER AND ENGINEER SHALL BE NOTIFIED OF ANY DISCREPANCY PRIOR TO COMMENCING WITH CONSTRUCTION.
16. ALL HORIZONTAL DIMENSIONS GIVEN ARE TO FACE OF CURB AND TO PIPE CENTERLINES UNLESS OTHERWISE NOTED ON PLANS.
17. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING RELOCATION AND INSTALLATION OF FRANCHISE UTILITIES NECESSARY FOR ON AND OFF SITE CONSTRUCTION. PAYMENT FOR RELOCATION AND INSTALLATION WILL BE NEGOTIATED ONCE IDENTIFIED.
18. ALL CUT OR FILL SLOPES SHALL BE 4:1 OR FLATTER UNLESS OTHERWISE SHOWN.
19. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE CONTROL OF DUST AND DIRT RISING AND SCATTERING IN THE AIR DURING CONSTRUCTION AND SHALL PROVIDE WATER SPRINKLING OR OTHER SUITABLE METHODS OF CONTROL. THE CONTRACTOR SHALL COMPLY WITH ALL GOVERNING REGULATIONS PERTAINING TO ENVIRONMENTAL PROTECTION.
20. UPON COMPLETION OF CONSTRUCTION, THE CONTRACTOR SHALL PROVIDE THE CIVIL ENGINEER A COPY OF RECORD DRAWINGS IDENTIFYING ALL DEVIATIONS OR VARIATIONS FROM THE ORIGINAL PLANS.
21. CONTRACTOR SHALL GIVE NOTICE TO ALL AFFECTED PARTIES AND ALL AUTHORIZED INSPECTORS, SUPERINTENDENTS, OR PERSONS IN CHARGE OF PRIVATE AND PUBLIC UTILITIES OR RAILROADS AFFECTED BY HIS OPERATIONS, AT LEAST 48 HOURS PRIOR TO COMMENCEMENT OF WORK.
22. ALL "RECORD" DIMENSIONS SHALL CONFORM TO THE DESIGN DIMENSIONS PLUS OR MINUS 0.02 FEET. ALL "RECORD" SLOPES SHALL CONFORM TO THE DESIGNED SLOPES PLUS OR MINUS 0.005 FOOT/FOOT.
23. CONTRACTOR SHALL CONTACT CITY BUILDING OFFICIAL TO LEARN OF ANY UNUSUAL CONSTRUCTION SEQUENCING REQUIREMENTS THAT THE CITY MAY REQUIRE. THE CONTRACTOR IS CAUTIONED THAT THIS AND PERHAPS OTHER SUCH REQUIREMENTS MAY EXIST AND IT IS THE CONTRACTOR'S RESPONSIBILITY TO INVESTIGATE AND COMPLY WITH THEM.

PAVING AND STRIPING NOTES

1. THE REINFORCED PORTLAND CEMENT CONCRETE SHOULD HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 3,600 PSI AND A MINIMUM REINFORCING THAT SHOULD BE IN ACCORDANCE WITH ACCEPTED CODES AND SHALL STRICTLY ADHERE TO DETAILS INCLUDED IN THIS SET. A BASE SUB-GRADE PER THE GEOTECHNICAL REPORT IS REQUIRED BENEATH ALL PAVING.
2. TESTING OF MATERIALS REQUIRED FOR THE CONSTRUCTION OF THE PAVING IMPROVEMENTS SHALL BE PERFORMED BY AN AGENCY, APPROVED BY THE OWNER, FOR TESTING MATERIALS. PROCUREMENT OF THE TESTING LABORATORY AND THE PAYMENT OF SUCH TESTING SERVICES SHALL BE MADE BY THE OWNER. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO ENSURE, BY THE STANDARD TESTING PROCEDURES, THAT THE WORK CONSTRUCTED MEETS THE REQUIREMENTS OF THE CITY AND PROJECT SPECIFICATIONS.
3. ALL SIGNS, PAVEMENT MARKINGS, AND OTHER TRAFFIC CONTROL DEVICES SHALL CONFORM TO THE "TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES".
4. THE CONTRACTOR SHALL REVIEW LOCATION OF ALL TRAFFIC CONTROL DEVICES WITH THE OWNER PRIOR TO INSTALLATION.
5. SEE M.E.P. PLANS FOR LOCATION OF PROPOSED SLEEVING AND CONDUITS.
6. ALL HANDICAP RAMPING, STRIPING, AND PAVEMENT MARKINGS SHALL CONFORM TO THE MOST RECENT VERSION OF THE AMERICANS WITH DISABILITIES ACT OF 1994 AND THE TEXAS ARCHITECTURAL BARRIERS ACT OF 1994, AND ALL ADDENDUMS OR UPDATES.
7. CONTRACTOR SHALL SUBMIT A PAVEMENT JOINTING PLAN TO THE ENGINEER AND OWNER PRIOR TO THE BEGINNING OF ANY CONCRETE PAVING WORK.
8. ANY EXISTING CONCRETE OR ASPHALT SHOWN TO BE REMOVED SHALL BE PROPERLY DISPOSED OF BY THE CONTRACTOR OFF SITE. THIS WORK SHALL BE SUBSIDIARY TO THE CONTRACT AND IS NOT A SEPARATE PAY ITEM.
9. CONSTRUCTION JOINTS SHALL BE REQUIRED AT INTERRUPTIONS OF PAVING OPERATIONS SUCH AS THOSE OCCURRING AT THE END OF THE DAY OR DUE TO WEATHER OR EQUIPMENT BREAKDOWN. PLACE AT LONGITUDINAL CONSTRUCTION OR ISOLATION JOINT LOCATIONS.
10. CONTRACTOR TO INSTALL CONSTRUCTION JOINTS IN CONCRETE PAVEMENT AT ALL PC'S AND AS CONVENIENT TO PHASING OF POURS. CONCRETE PAVEMENT TO BE CONSTRUCTED WITH ISOLATION JOINTS AROUND THE PERIMETER OF ANY BLOCK OUT IN PAVEMENT AND SAWED DUMMY JOINTS EVERY 12' IN BOTH DIRECTIONS.
11. ALL JOINTS ARE TO CONTINUE THROUGH THE CURB.
12. RADIAL JOINTS SHALL BE NO SHORTER THAN 24".
13. ALL CONSTRUCTION JOINTS SHALL BE SAWED, CLEANED OF DEBRIS, BLOWN DRY AND IMMEDIATELY SEALED WITH HOT POURED RUBBER JOINT SEALING COMPOUND.

STORM SEWER NOTES

1. CONTRACTOR SHALL FIELD VERIFY THE VERTICAL AND HORIZONTAL LOCATIONS OF ALL EXISTING UTILITIES PRIOR TO START OF CONSTRUCTION. THE CONTRACTOR SHALL NOTIFY THE ENGINEER AND CONSTRUCTION MANAGER IMMEDIATELY IF A CONFLICT IS DISCOVERED.
2. CONTRACTOR SHALL VERIFY AND COORDINATE ALL DIMENSIONS SHOWN, INCLUDING THE HORIZONTAL AND VERTICAL LOCATION OF CURB INLETS, GRATE INLETS, AND ALL UTILITIES CROSSING THE STORM SEWER. FLOW LINES AND RIMS OF PROPOSED INLETS SHALL BE VERIFIED WITH THE PROPOSED GRADE PRIOR TO CONSTRUCTION.
3. THE END OF ALL STORM SEWER LATERALS THAT CONNECT TO WORK BY PLUMBER SHALL BE TIGHTLY PLUGGED OR CAPPED AND MARKED 5.0 FEET OUTSIDE THE BUILDING UNTIL FINAL CONNECTIONS ARE MADE BY PLUMBING CONTRACTOR.
4. THE SITE UTILITY CONTRACTOR SHALL PROVIDE ALL MATERIALS AND APPURTENANCES NECESSARY FOR COMPLETE INSTALLATION OF THE STORM SEWER.
5. CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL CONSTRUCTION PERMITS.
6. THE GENERAL CONTRACTOR AND ALL SUBCONTRACTORS 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. EXISTING MANHOLE TOPS AND ALL OTHER DRAINAGE FACILITIES SHALL BE ADJUSTED AS REQUIRED TO MATCH FINAL GRADES AS SHOWN ON GRADING PLAN. NO SEPARATE PAY ITEM.
8. ALL RCP SHALL BE CLASS 3 OR APPROVED EQUAL.

STORM SEWER DISCHARGE AUTHORIZATION

1. IF THE TOTAL DISTURBED AREA EXCEEDS ONE (1) ACRE A NOTICE OF INTENT (N.O.I.) SHALL BE SUBMITTED BY THE CONTRACTOR TO THE TCEQ NO LESS THAN 48 HOURS PRIOR TO COMMENCEMENT OF CONSTRUCTION ACTIVITIES.
2. ALL CONTRACTORS AND SUBCONTRACTORS PROVIDING SERVICES RELATED TO THE SWPPP SHALL SIGN A CONTRACTOR CERTIFICATION STATEMENT ACKNOWLEDGING THEIR RESPONSIBILITIES AS SPECIFIED IN THE SWPPP.
3. A COPY OF THE SWPPP, INCLUDING CONTRACTOR CERTIFICATIONS AND ANY REVISIONS, SHALL BE SUBMITTED TO THE CITY AND FILED WITH THE CONSTRUCTION PLANS, AND SHALL BE RETAINED ON-SITE DURING CONSTRUCTION.
4. A NOTICE OF TERMINATION (N.O.T.) SHALL BE SUBMITTED TO THE TCEQ BY THE CONTRACTOR WHEN THE SITE HAS 100% OF THE DISTURBED AREAS STABILIZED AND THE SITE NO LONGER HAS STORM WATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITIES (CONSTRUCTION), OR THE N.O.T. PERMITTEE OR CO-PERMITTEE NO LONGER HOLDS OPERATIONAL CONTROL OF THE CONSTRUCTION.

WATER NOTES

1. EXISTING UTILITY DATA IS PROVIDED FOR INFORMATION ONLY. ALTHOUGH THIS DATA IS SHOWN AS ACCURATELY AS POSSIBLE, THE CONTRACTOR IS CAUTIONED THAT THE DEVELOPER AND THE ENGINEER NEITHER ASSUMES NOR IMPLIES ANY RESPONSIBILITY FOR THE ACCURACY OF THIS DATA.
2. THE CONTRACTOR IS TO VERIFY LOCATION AND ELEVATION OF EXISTING UTILITIES PRIOR TO CONSTRUCTION.
3. HORIZONTAL AND VERTICAL BLOCKING FOR WATER LINES HAS BEEN OMITTED FOR CLARITY. HOWEVER, BLOCKING SHALL BE CONSTRUCTED IN ACCORDANCE WITH CITY STANDARDS AND SPECIFICATIONS.
4. TRENCHES WHICH LAY OUTSIDE EXISTING OR FUTURE PAVEMENTS SHALL BE BACK FILLED ABOVE THE TOP OF THE EMBEDMENT WITH TYPE 'C' BACKFILL MATERIALS. WHEN TYPE 'C' BACKFILL MATERIAL IS NOT SUITABLE AND AT THE DIRECTION OF THE ENGINEER TYPE 'B' MATERIAL SHALL BE USED. ALL BACKFILL MATERIAL SHALL BE COMPACTED TO A MINIMUM OF 90% PROCTOR DENSITY BY MEANS OF TAMPING ONLY. TRENCHES WHICH CROSS UNDER EXISTING OR FUTURE PAVEMENT SHALL BE BACK FILLED PER FIGURE 'A' WITH 95% PROCTOR STANDARD DENSITY OF -2, +4 OF OPTIMUM MOISTURE CONTENT.
5. TOP OF WATER LINES SHALL BE A MINIMUM OF 42" BELOW TOP OF CURB EXCEPT WHERE SHOWN OTHERWISE IN THESE PLANS.
6. FIRE HYDRANTS SHALL BE A MINIMUM 3' BEHIND THE FACE OF THE CURB UNLESS OTHERWISE DIRECTED BY THE CITY. FIRE HYDRANTS AND VALVES AS SHOWN ON THESE PLANS ARE SYMBOLIC ONLY.
7. CORPORATION STOPS SHALL BE TESTED FOR FULL FLOW WHEN THE SYSTEM IS PRESSURE TESTED.
8. ALL NEW WATER MAINS SHALL BE FULLY PURGED.
9. ALL 6", 8", 10" & 12" WATER MAINS SHALL BE PVC AWWA C900, DR-14. ALL WATER MAINS USING POLY-WRAPPED DUCTILE IRON PIPE SHALL BE CLASS 51.
10. FITTINGS SHALL BE DUCTILE IRON AND MECHANICAL JOINT TYPE, WITH "COR-BLUE" BOLTS AND SHALL BE CLASS 250.

SANITARY SEWER NOTES

1. EXISTING UTILITY DATA IS PROVIDED FOR INFORMATION ONLY. ALTHOUGH THIS DATA IS SHOWN AS ACCURATELY AS POSSIBLE, THE CONTRACTOR IS CAUTIONED THAT THE DEVELOPER AND THE ENGINEER NEITHER ASSUMES NOR IMPLIES ANY RESPONSIBILITY FOR THE ACCURACY OF THIS DATA.
2. THE CONTRACTOR IS TO VERIFY LOCATION AND ELEVATION OF EXISTING UTILITIES PRIOR TO CONSTRUCTION.
3. TRENCHES WHICH LIE OUTSIDE EXISTING PAVEMENTS SHALL BE BACKFILLED ABOVE THE TOP OF THE EMBEDMENT WITH TYPE "C" BACKFILL MATERIAL. WHEN TYPE "C" BACKFILL MATERIAL IS NOT SUITABLE AND AT THE DIRECTION OF THE ENGINEER, TYPE "B" MATERIAL SHALL BE USED. ALL BACKFILL MATERIAL SHALL BE COMPACTED TO A MINIMUM OF 90% OF THE MAXIMUM DRY DENSITY BY MEANS OF TAMPING ONLY. TRENCHES THAT CROSS UNDER EXISTING OR FUTURE PAVEMENT SHALL BE BACKFILLED AND COMPACTED TO A MINIMUM OF 95% OF THE MAXIMUM DRY DENSITY WITH MOISTURE CONTENT-2 AND +4% OF OPTIMUM MOISTURE CONTENT.
4. TYPICAL LOCATION OF SANITARY SEWER PIPE SHALL BE A MINIMUM OF 4'-0" BELOW TOP OF CURB EXCEPT WHERE SHOWN OTHERWISE IN THESE PLANS.
5. ALL DUCTILE IRON SANITARY SEWER MAINS SHALL BE TESTED WITH STANDARD 5% DEFLECTION MANDREL.
6. ALL SANITARY SEWER LINES SHALL BE CAPPED WITH AN APPROPRIATE CAP AT THE END OF EACH WORKDAY.
7. WHEN EXISTING GRADES ARE LOWER THAN PROPOSED MAINS, THE FILL AREA OVER THE PIPE SHALL BE FILLED AND COMPACTED TO A MINIMUM OF 95% OF THE MAXIMUM DRY DENSITY TO THE PROPOSED FINISHED GRADE PRIOR TO INSTALLING ANY MAIN.
8. ALL SEWER SERVICES SHALL BE CONSTRUCTED OF SDR-35 PIPE.

TRAFFIC CONTROL NOTES

1. CONTRACTOR SHALL PROVIDE TRAFFIC CONTROL PLANS TO THE OWNER, AT LEAST 48 HOURS PRIOR TO CONSTRUCTION ACTIVITY.
2. ALL TRAFFIC CONTROL MEASURES SHALL BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (TMUTCD), LATEST VERSION.
3. THE CONTRACTOR SHALL COVER EXISTING SIGNS AND OBLITERATE EXISTING PAVEMENT MARKINGS THAT CONFLICT WITH THE INTENT OF THESE TRAFFIC CONTROL PLANS TO AVOID CONFUSION TO THE TRAVELING PUBLIC.
4. THE CONTRACTOR SHALL UNCOVER EXISTING SIGNS AND REPLACE PAVEMENT MARKINGS IN-KIND AS ORIGINALLY CONFIGURED AT THE END OF CONSTRUCTION OPERATIONS AND PRIOR TO FINAL ACCEPTANCE BY THE OWNER.
5. ALL TEMPORARY SIGNS, BARRICADES, WARNING LIGHTS AND OTHER MISCELLANEOUS TRAFFIC CONTROL MEASURES SHALL BE REMOVED AND ORIGINAL TRAFFIC CONTROL MEASURES REPLACED AT THE END OF THE CONTRACTOR'S CONSTRUCTION OPERATIONS.
6. ACCESS TO THE ADJACENT SHOPPING AREA AND BUSINESS SHALL BE MAINTAINED AT ALL TIMES. ANY CLOSURE OF ACCESS LANES SHALL BE COORDINATED WITH THE OWNER OF THE SHOPPING AREA, TARRANT VISTA PARTNERS, LLC.

EROSION CONTROL NOTES

1. THE CONTRACTOR SHALL COMPLY WITH ALL FEDERAL, STATE, AND LOCAL EROSION, CONSERVATION, AND SILTATION ORDINANCES. THE CONTRACTOR SHALL USE SEDIMENT FILTERS OR OTHER MEASURES APPROVED BY THE ENGINEER AND CONSTRUCTION MANAGER TO PREVENT SILT AND CONSTRUCTION DEBRIS FROM CLOGGING STORM SEWER PIPES OR PROPOSED OR EXISTING INLETS, OR FROM BEING TRANSPORTED TO ADJACENT PROPERTIES AND STREET RIGHT-OF-WAYS. ALL EROSION CONTROL DEVICES SHALL BE INSTALLED PRIOR TO SITE DISTURBANCE AND SHALL REMAIN IN PLACE UNTIL FINAL GRADING AND PAVING IS COMPLETE AND PERMANENT SOIL STABILIZATION IS ACHIEVED.
2. CONSTRUCTION OPERATIONS SHALL BE MANAGED SO THAT AS MUCH OF THE SITE AS POSSIBLE IS LEFT COVERED WITH EXISTING TOPSOIL AND VEGETATION.
3. ALL SLOPES AND AREAS DISTURBED BY CONSTRUCTION SHALL BE GRADED SMOOTH. THE AREAS SHALL THEN BE SEEDED (OR SODDED), IRRIGATED, AND MAINTAINED UNTIL PERMANENT STAND OF GRASS IS ACHIEVED WITH A MINIMUM OF 70% COVERAGE. UNLESS OTHERWISE NOTED, PRIVATE LAWN AREAS AND PARKWAYS IN FRONT OF PRIVATE LAWN AREAS DISTURBED BY CONSTRUCTION SHALL BE REPLACED WITH BLOCK SOD SIMILAR TO THAT EXISTING.
4. CONTRACTOR SHALL CONSTRUCT A STABILIZED CONSTRUCTION ENTRANCE AT ALL PRIMARY POINTS OF ACCESS. CONTRACTOR IS RESPONSIBLE FOR ENSURING THAT ALL CONSTRUCTION TRAFFIC UTILIZES THE STABILIZED ENTRANCE AT ALL TIMES FOR INGRESS/EGRESS TO THE SITE.
5. CONSTRUCTION ENTRANCE:
   - MINIMUM SIZE STONE: 5-INCHES DIAMETER
   - THICKNESS: NOT LESS THAN 8-INCHES
   - LENGTH: AS SHOWN ON PLAN
   - WIDTH: NOT LESS THAN FULL WIDTH OF ALL POINTS OF INGRESS AND EGRESS.
   - MAINTENANCE REQUIREMENTS: AS NECESSARY TO PREVENT TRACKING OR FLOWING MUD INTO PUBLIC RIGHT-OF-WAY OR PARKING AREAS.
6. SITE ENTRY AND EXIT LOCATIONS SHALL BE MAINTAINED IN A CONDITION WHICH SHALL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC ROADWAYS. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ON A PUBLIC ROADWAY SHALL BE REMOVED IMMEDIATELY. WHEN WASHING IS REQUIRED TO REMOVE SEDIMENT PRIOR TO ENTRANCE TO A PUBLIC ROADWAY, IT SHALL BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE WHICH DRAINS INTO AN APPROVED SEDIMENT BASIN. ALL FINES IMPOSED FOR TRACKING ONTO PUBLIC ROADS SHALL BE PAID BY THE CONTRACTOR.
7. CONTRACTOR IS RESPONSIBLE FOR PROPER MAINTENANCE OF THE REQUIRED EROSION CONTROL DEVICES THROUGHOUT THE ENTIRE CONSTRUCTION PROCESS. EROSION CONTROLS SHALL BE REPAIRED OR REPLACED AS INSPECTION DEEMS NECESSARY, OR AS DIRECTED BY THE OWNER'S REPRESENTATIVE. ACCUMULATED SILT IN ANY EROSION CONTROL DEVICE SHALL BE REMOVED AND SHALL BE DISTRIBUTED ON SITE IN A MANNER NOT CONTRIBUTING TO ADDITIONAL SILTATION. THE CONTRACTOR IS RESPONSIBLE FOR RE-ESTABLISHING ANY EROSION CONTROL DEVICE WHICH IS DISTURBED.
8. THE CONTRACTOR SHALL MAINTAIN ADEQUATE SITE DRAINAGE DURING ALL PHASES OF CONSTRUCTION. THE CONTRACTOR SHALL USE FILTER BARRIER (OR OTHER METHOD APPROVED BY THE ENGINEER AND CITY) AS REQUIRED TO PREVENT ADVERSE OFF SITE IMPACTS OR STORM WATER QUALITY FROM SILT AND CONSTRUCTION DEBRIS FLOWING ONTO ADJACENT PROPERTIES AS REQUIRED BY THE CITY.
9. BEFORE ANY EARTHWORK IS DONE, THE CONTRACTOR SHALL STAKE OUT AND MARK THE LIMITS OF CONSTRUCTION AND OTHER ITEMS ESTABLISHED BY THE PLANS. THE CONTRACTOR SHALL PROTECT AND PRESERVE CONTROL POINTS AT ALL TIMES DURING THE COURSE OF THE PROJECT. THE GRADING CONTRACTOR SHALL PROVIDE ALL NECESSARY ENGINEERING AND SURVEYING FOR LINE AND GRADE CONTROL POINTS RELATED TO EARTHWORK.
10. CONTRACTOR STAGING AREA TO BE AGREED UPON BY OWNER PRIOR TO BEGINNING CONSTRUCTION.
11. THE CONTRACTOR MUST REVIEW AND MAINTAIN A COPY OF THE STORM WATER POLLUTION PREVENTION PLAN WITH ALL CONDITIONS, ATTACHMENTS, EXHIBITS, AND PERMIT MODIFICATIONS IN GOOD CONDITION AT THE CONSTRUCTION SITE. THE COMPLETE PERMIT MUST BE AVAILABLE FOR REVIEW UPON REQUEST BY THE T.C.E.Q. OR THE GOVERNING CITY.

GRADING NOTES

1. IF A GRADING PERMIT IS REQUIRED FROM THE CITY PRIOR TO STARTING CONSTRUCTION, CONTRACTOR IS RESPONSIBLE FOR OBTAINING PERMIT AND PAYING ALL ASSOCIATED FEES.
2. CONTRACTOR SHALL FIELD VERIFY HORIZONTAL AND VERTICAL LOCATION OF ALL EXISTING UTILITIES PRIOR TO CONSTRUCTION. CONTRACTOR IS RESPONSIBLE FOR PROTECTING EXISTING UTILITIES (SHOWN OR NOT SHOWN) WITHIN SCOPE OF CONSTRUCTION. IF ANY EXISTING UTILITIES ARE DAMAGED, THE CONTRACTOR SHALL REPLACE THEM AT HIS OWN EXPENSE.
3. ALL SPOT ELEVATIONS SHOWN ARE TO TOP OF PAVING SURFACE OR FINISHED EARTH GRADE UNLESS NOTED OTHERWISE.
4. CONTRACTOR TO ENSURE POSITIVE DRAINAGE FROM THE EXISTING AND PROPOSED BUILDINGS AND NO PONDING IN PAVED AREAS. CONTRACTOR ADJUSTMENTS TO SPOT GRADES TO MAINTAIN POSITIVE DRAINAGE IS ALLOWED WITH THE PRIOR APPROVAL OF THE ENGINEER. CONTRACTOR SHALL CONTACT THE ENGINEER PRIOR TO PAVING IF ANY AREAS OF POOR DRAINAGE ARE ENCOUNTERED.
5. THE CONTRACTOR SHALL PROTECT ALL MANHOLE COVERS, VALVE COVERS, VAULT LIDS, FIRE HYDRANTS, POWER POLES, GUY WIRES, AND TELEPHONE BOXES WHICH ARE TO REMAIN IN PLACE AND UNDISTURBED DURING CONSTRUCTION.
6. ALL EXISTING CONCRETE PAVING, CHANNEL IMPROVEMENTS, SIDEWALK, STRUCTURES AND CURB DEMOLITION SHALL BE REMOVED IN THEIR ENTIRETY AND DISPOSED OF BY THE CONTRACTOR, OFFSITE UNLESS OTHERWISE DIRECTED BY THE OWNER OR ENGINEER.
7. ALL CLEARING, GRADING, COMPACTION AND SUBGRADE PREPARATION SHALL BE IN ACCORDANCE TO THE GEOTECHNICAL REPORT.
8. GRADING CONTRACTOR TO COORDINATE WITH THE FRANCHISE UTILITY COMPANIES FOR ANY REQUIRED UTILITY ADJUSTMENTS AND/OR RELOCATIONS.
9. THE CONTRACTOR SHALL CALCULATE HIS OWN EARTHWORK QUANTITIES AND USE TO DETERMINE HIS BID ACCORDINGLY.
10. BEFORE PLACING PAVEMENT, CONTRACTOR SHALL VERIFY THAT SUITABLE HANDICAPPED ROUTES (PER A.D.A. & T.A.S) EXIST TO AND FROM EVERY DOOR. IN NO CASE SHALL HANDICAP RAMP SLOPES EXCEED 1 VERTICAL TO 12 HORIZONTAL. IN NO CASE SHALL SIDEWALK CROSS SLOPES EXCEED 2.0 PERCENT. IN NO CASE SHALL LONGITUDINAL SIDEWALK SLOPES EXCEED 5.0 PERCENT. CONTRACTOR SHALL CONTACT ENGINEER PRIOR TO PAVING IF ANY EXCESSIVE SLOPES ARE ENCOUNTERED. NO CONTRACTOR CHANGE ORDERS WILL BE ACCEPTED FOR A.D.A. AND T.A.S. COMPLIANCE ISSUES.

TEXAS REGISTRATION #14199

CLAYMOORE ENGINEERING

1903 CENTRAL DRIVE, SUITE #406
BEDFORD, TX 76021
PHONE: 817.281.0572
WWW.CLAYMOOREENG.COM

PRELIMINARY

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Not for construction purposes.

CLAYMOORE ENGINEERING
ENGINEERING AND PLANNING CONSULTANTS

Engineer: DREW DONOSKY
P.E. No. 125651 Date: 7/17/2024

SANGER MULTI-FAMILY
PREPARED FOR GREYSTAR
SANGER, TEXAS

No.	DATE	REVISION	BY

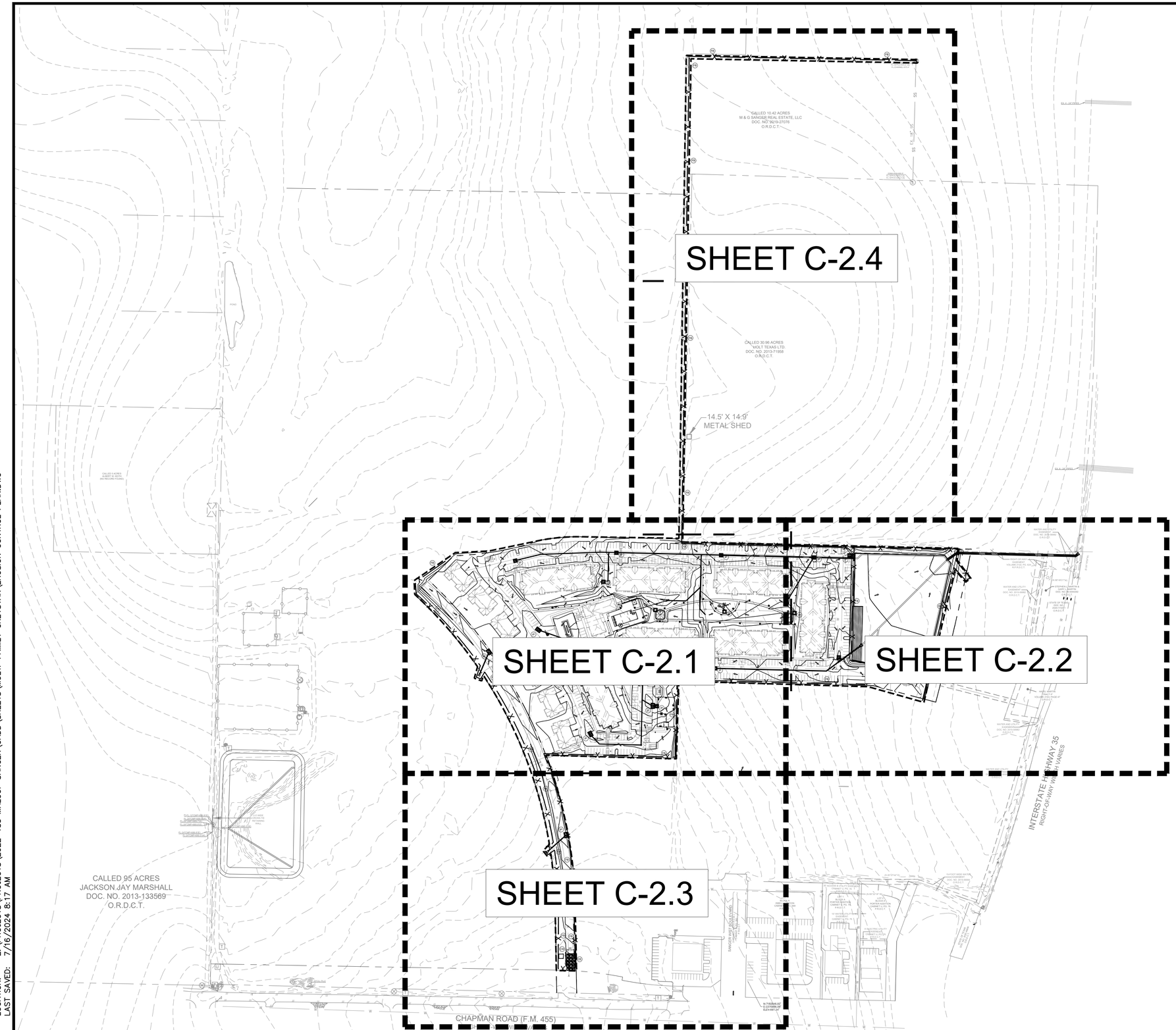
GENERAL NOTES

DESIGN: ASD
DRAWN: DC
CHECKED: ASD
DATE: 7/17/2024

SHEET
C-1

CASE NO. 2022-185

PLOTTED BY: DAN CABALLERO
PLOT DATE: 7/17/2024 9:59 AM
LOCATION: Z:\PROJECTS\2022-185 MALOUF SANGER\CADD\SHEETS\MULTI-FAMILY GREYSTAR\C-1 GENERAL NOTES.DWG
LAST SAVED: 7/15/2024 8:38 PM



GRAPHIC SCALE

150 0 75 150 300

1 inch = 150 ft.

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Engineer DREW DONOSKY
P.E. No. 125651 Date 7/17/2024

SANGER MULTI-FAMILY
PREPARED FOR GREYSTAR
SANGER, TEXAS

No.	DATE	REVISION	BY

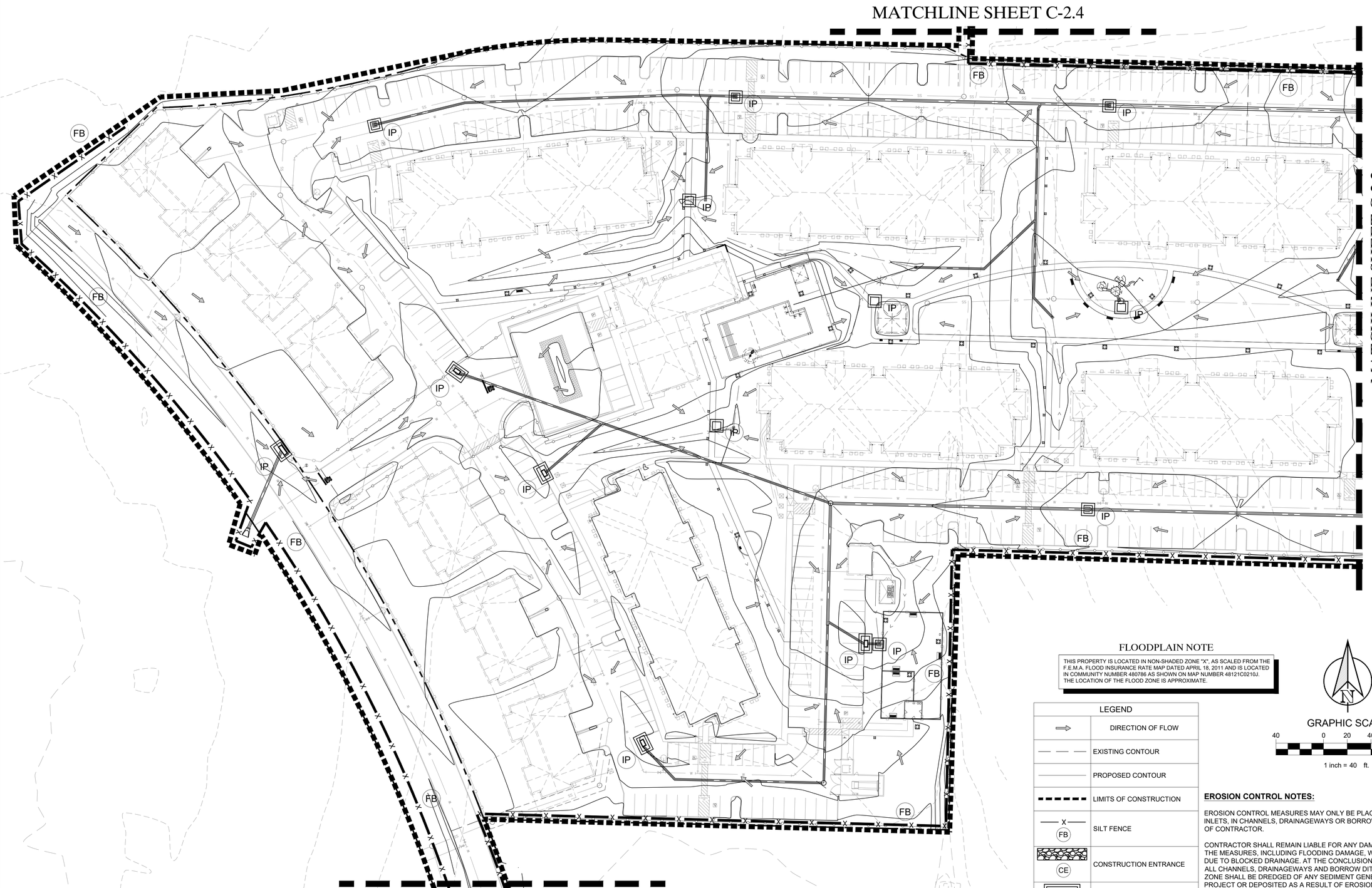
OVERALL EROSION CONTROL PLAN

DESIGN:	ASD
DRAWN:	DC
CHECKED:	ASD
DATE:	7/17/2024

SHEET
C-2.0

CASE NO. 2022-185

PLOTTED BY: DAN CABALLERO
PLOT DATE: 7/17/2024 10:00 AM
LOCATION: Z:\PROJECTS\2022-185 MALOUF SANGER\CADD\SHEETS\MULTI-FAMILY GREYSTAR\EROSION CONTROL PLAN.DWG
LAST SAVED: 7/16/2024 8:17 AM



FLOODPLAIN NOTE

THIS PROPERTY IS LOCATED IN NON-SHADED ZONE "X", AS SCALED FROM THE F.E.M.A. FLOOD INSURANCE RATE MAP DATED APRIL 18, 2011 AND IS LOCATED IN COMMUNITY NUMBER 480786 AS SHOWN ON MAP NUMBER 48121C0210J. THE LOCATION OF THE FLOOD ZONE IS APPROXIMATE.

LEGEND	
⇨	DIRECTION OF FLOW
— — —	EXISTING CONTOUR
———	PROPOSED CONTOUR
- - - -	LIMITS OF CONSTRUCTION
X FB	SILT FENCE
CE	CONSTRUCTION ENTRANCE
IP	INLET PROTECTION
CW	CONCRETE WASHOUT AREA

N

GRAPHIC SCALE

40 0 20 40 80

1 inch = 40 ft.

EROSION CONTROL NOTES:

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SOD 4 FEET BEHIND BACK OF CURB, CURLEX (ONE ROLL WIDTH) WITH SEED BEHIND SOD, PERENNIAL SEED BEHIND CURLEX.

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Engineer DREW DONOSKY
P.E. No. 125651 *Date* 7/17/2024

SANGER MULTI-FAMILY
PREPARED FOR GREYSTAR
SANGER, TEXAS

No.	DATE	REVISION	BY

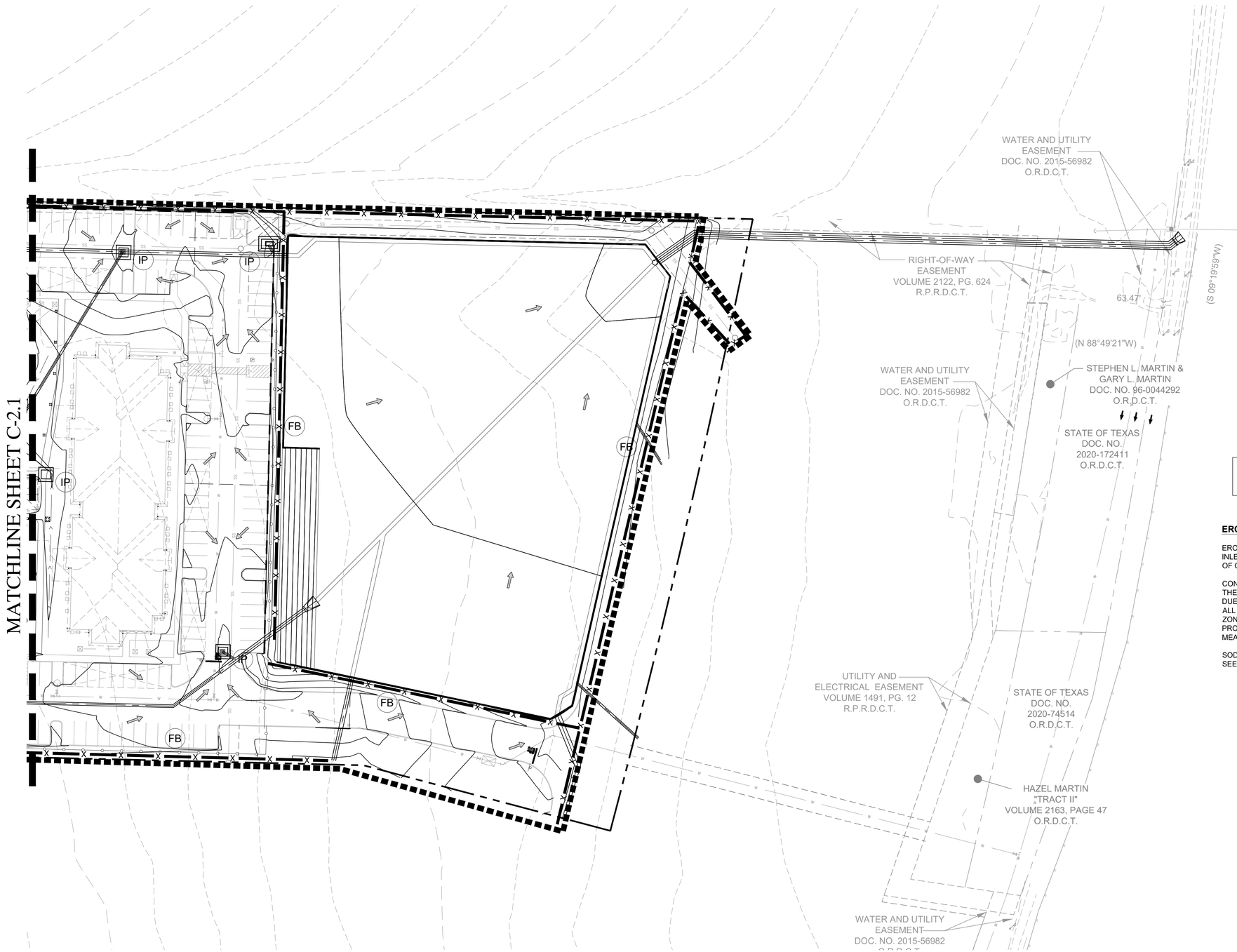
EROSION CONTROL PLAN

DESIGN:	ASD
DRAWN:	DC
CHECKED:	ASD
DATE:	7/17/2024

SHEET
C-2.1

CASE NO. 2022-185

PLOTTED BY: DAN CABALLERO
PLOT DATE: 7/17/2024 10:00 AM
LOCATION: Z:\PROJECTS\PROJECTS\2022-185 MALOUF SANGER\CADD\SHEETS\MULTI-FAMILY GREYSTAR\EROSION CONTROL PLAN.DWG
LAST SAVED: 7/16/2024 8:17 AM



GRAPHIC SCALE

40 0 20 40 80

1 inch = 40 ft.

LEGEND	
⇨	DIRECTION OF FLOW
— — —	EXISTING CONTOUR
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Engineer: DREW DONOSKY
P.E. No: 125651 Date: 7/17/2024

SANGER MULTI-FAMILY
PREPARED FOR GREYSTAR
SANGER, TEXAS

No.	DATE	REVISION	BY

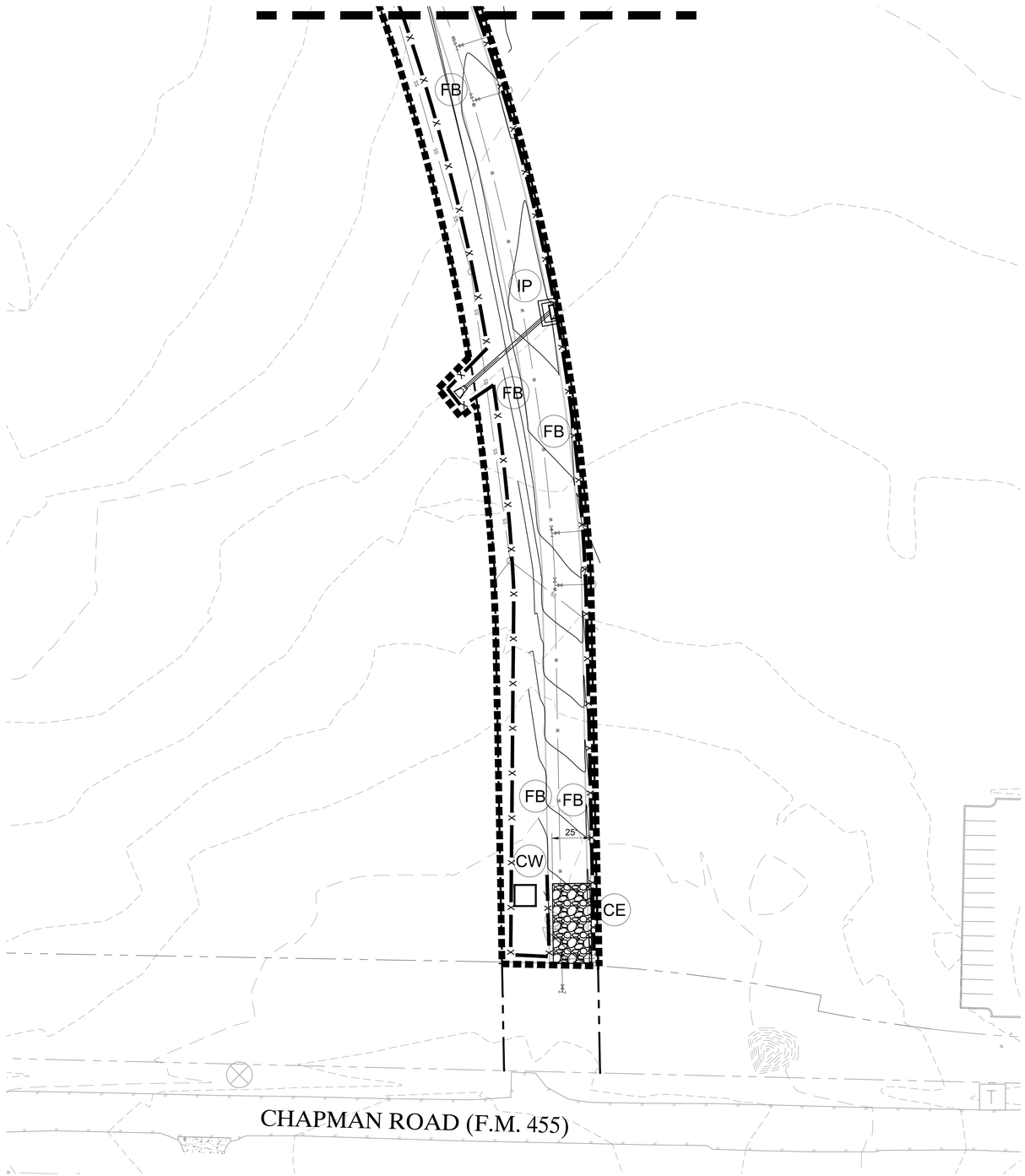
EROSION CONTROL PLAN

DESIGN:	ASD
DRAWN:	DC
CHECKED:	ASD
DATE:	7/17/2024

SHEET
C-2.2

CASE NO. 2022-185

PLOTTED BY: DAN CABALLERO
PLOT DATE: 7/17/2024 10:00 AM
LOCATION: Z:\PROJECTS\PROJECTS\2022-185 MALOUF SANGER\CADD\SHEETS\MULTI-FAMILY GREYSTAR\EROSION CONTROL PLAN.DWG
LAST SAVED: 7/16/2024 8:17 AM



GRAPHIC SCALE

40 0 20 40 80

1 inch = 40 ft.

LEGEND	
⇨	DIRECTION OF FLOW
— — —	EXISTING CONTOUR
———	PROPOSED CONTOUR
- - - - -	LIMITS OF CONSTRUCTION
—X— FB	SILT FENCE
CE	CONSTRUCTION ENTRANCE
IP	INLET PROTECTION
CW	CONCRETE WASHOUT AREA

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Engineer DREW DONOSKY
P.E. No. 125651 *Date* 7/17/2024

SANGER MULTI-FAMILY
PREPARED FOR GREYSTAR
SANGER, TEXAS

No.	DATE	REVISION	BY

EROSION CONTROL PLAN

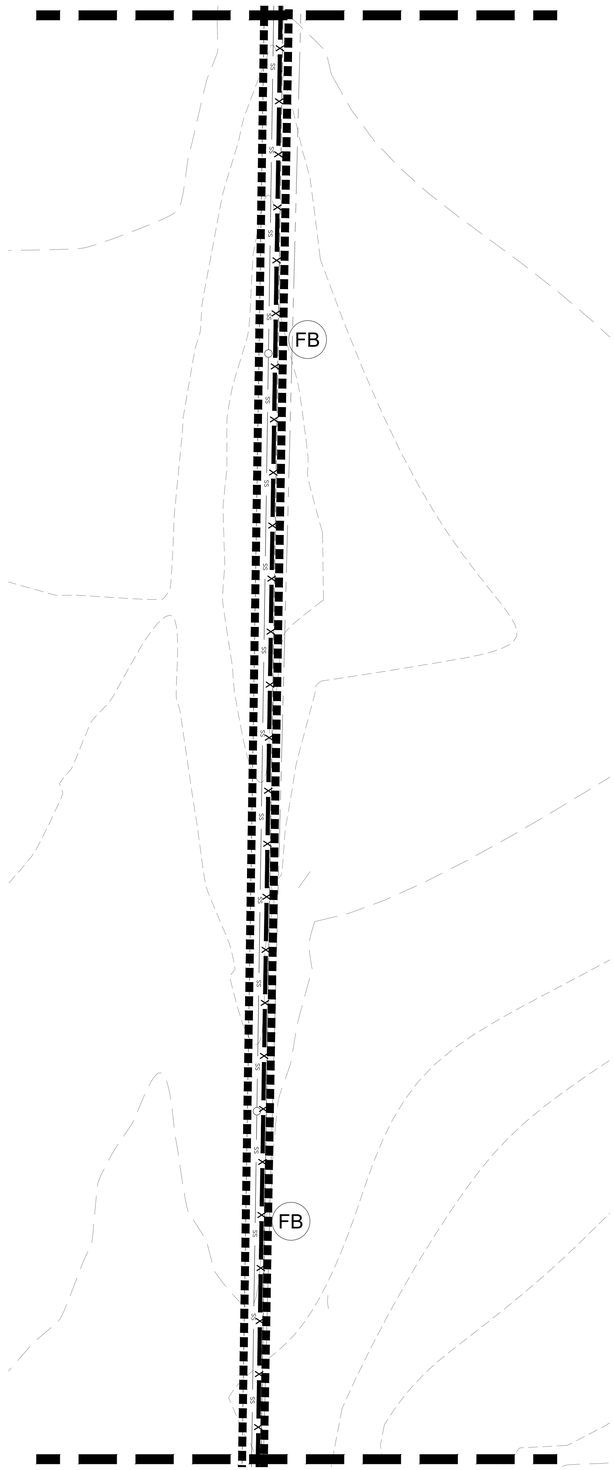
DESIGN:	ASD
DRAWN:	DC
CHECKED:	ASD
DATE:	7/17/2024

SHEET
C-2.3

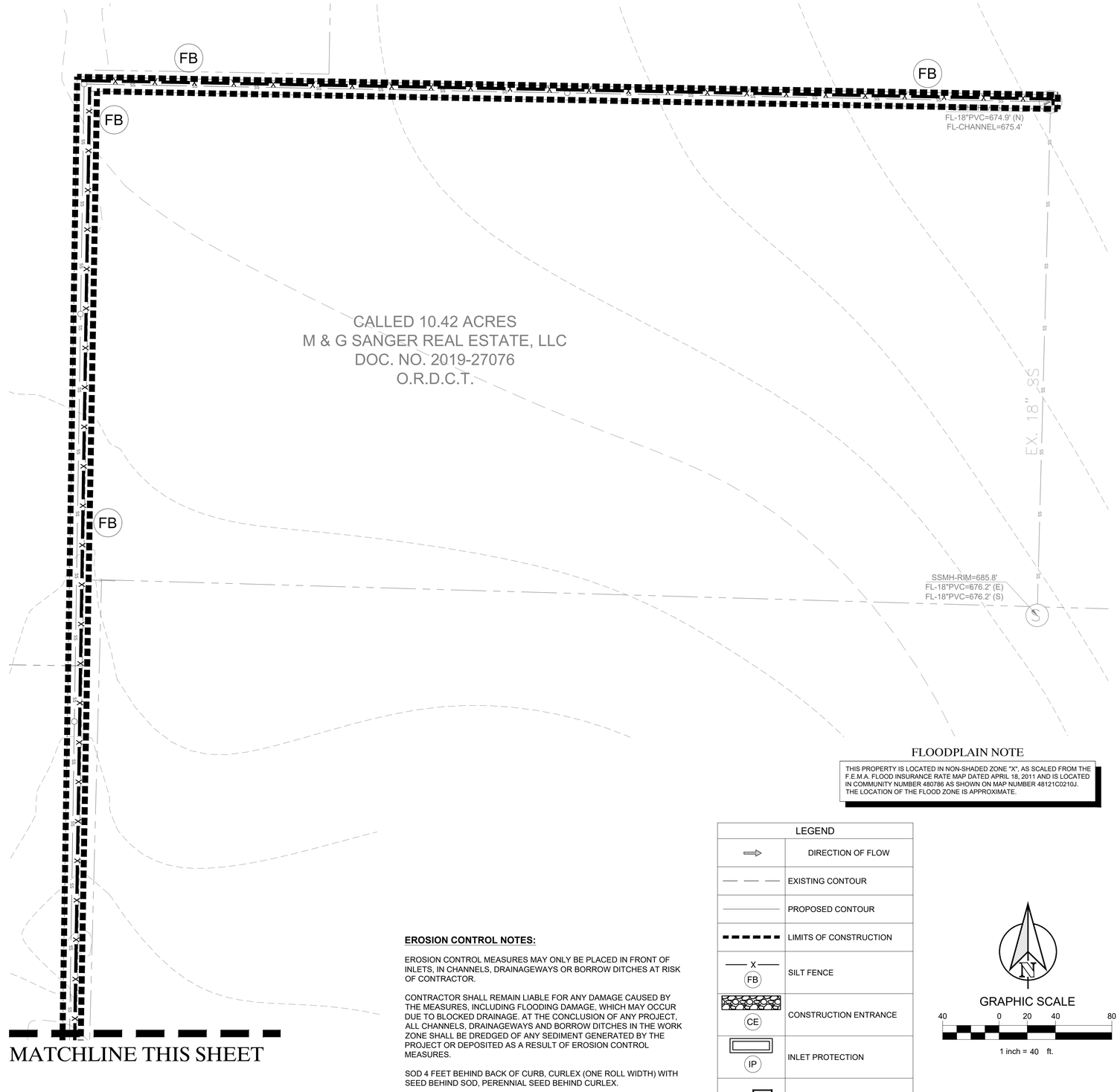
CASE NO. 2022-185

PLOTTED BY: DAN CABALLERO
PLOT DATE: 7/17/2024 10:00 AM
LOCATION: Z:\PROJECTS\2022-185 MALOUF SANGER\CADD\SHEETS\MULTI-FAMILY GREYSTAR\EROSION CONTROL PLAN.DWG
LAST SAVED: 7/16/2024 8:17 AM

MATCHLINE THIS SHEET



MATCHLINE SHEET C-2.1



MATCHLINE THIS SHEET

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LEGEND	
⇒	DIRECTION OF FLOW
— — —	EXISTING CONTOUR
———	PROPOSED CONTOUR
- - - - -	LIMITS OF CONSTRUCTION
X — FB	SILT FENCE
CE	CONSTRUCTION ENTRANCE
IP	INLET PROTECTION
CW	CONCRETE WASHOUT AREA

N

GRAPHIC SCALE

40 0 20 40 80

1 inch = 40 ft.

TEXAS REGISTRATION #14199

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ENGINEERING AND PLANNING CONSULTANTS

Engineer DREW DONOSKY
P.E. No. 125651 Date 7/17/2024

SANGER MULTI-FAMILY
PREPARED FOR
GREYSTAR
SANGER, TEXAS

No.	DATE	REVISION	BY

EROSION CONTROL PLAN

DESIGN:	ASD
DRAWN:	DC
CHECKED:	ASD
DATE:	7/17/2024

SHEET
C-2.4

CASE NO. 2022-185

PLOTTED BY: DAN CABALLERO
PLOT DATE: 7/17/2024 10:01 AM
LOCATION: Z:\PROJECTS\PROJECTS\2022-185 MALOUF SANGER\CADD\SHEETS\MULTI-FAMILY GREYSTAR\EROSION CONTROL PLAN.DWG
LAST SAVED: 7/16/2024 8:17 AM

STANDARD EROSION CONTROL GENERAL NOTES

1. EROSION CONTROL DEVICES AS SHOWN ON THE EROSION CONTROL PLAN FOR THE PROJECT SHALL BE INSTALLED PRIOR TO THE START OF LAND DISTURBING ACTIVITIES ON THE PROJECT.
2. ALL EROSION CONTROL DEVICES ARE TO BE INSTALLED IN ACCORDANCE WITH THE APPROVED PLANS AND SPECIFICATIONS FOR THE PROJECT. CHANGES ARE TO BE APPROVED BEFORE CONSTRUCTION BY THE DESIGN ENGINEER AND THE CITY OF SANGER.
3. IF THE EROSION CONTROL PLAN AS APPROVED CANNOT CONTROL EROSION AND OFF–SITE SEDIMENTATION FROM THE PROJECT THE EROSION CONTROL PLAN WILL BE REQUIRED TO BE REVISED AND/OR ADDITIONAL EROSION CONTROL DEVICES WILL BE REQUIRED ON SITE.
4. IF OFF–SITE BORROW OR SPOILS SITES ARE USED IN CONJUNCTION WITH THIS PROJECT, THIS INFORMATION SHALL BE DISCLOSED AND SHOWN ON THE EROSION CONTROL PLAN. OFF–SITE BORROW AND SPOILS AREAS ARE CONSIDERED PART OF EROSION CONTROL REQUIREMENTS. THESE AREAS SHALL BE STABILIZED WITH GROUND COVER PRIOR TO FINAL APPROVAL OF THE PROJECT.
5. INSPECTIONS SHALL BE MADE WEEKLY AND AFTER RAIN STORM EVENTS TO INSURE THAT THE DEVICES ARE FUNCTIONING PROPERLY. WHEN SEDIMENT OR MUD HAS CLOGGED THE VOID SPACES BETWEEN STONES OR MUD IS BEING TRACKED ONTO A PUBLIC ROADWAY THE AGGREGATE PAD MUST BE WASHED DOWN OR REPLACED. RUNOFF FROM THE WASH DOWN OPERATION HALL SHALL NOT BE ALLOWED TO DRAIN DIRECTLY OFF SITE WITHOUT FIRST FLOWING THROUGH ANOTHER BMP TO CONTROL OFF SITE SEDIMENTATION. PERIODIC RE–GRADING OR THE ADDITION OF NEW STONE MAY BE REQUIRED TO MAINTAIN THE EFFICIENCY OF THE INSTALLATION.
6. CONTRACTOR SHALL HAVE A COPY THE SWPPP ON SITE AT ALL TIMES.
7. CONTRACTOR SHALL BE RESPONSIBLE FOR SUBMITTAL OF N.O.I., N.O.T. AND ANY ADDITIONAL INFORMATION REQUIRED BY THE E.P.A. CONTRACTOR SHALL COMPLY WITH ALL E.P.A. STORM WATER POLLUTION PREVENTION REQUIREMENTS.

EROSION CONTROL SCHEDULE AND PHASING

THE PROJECT SHALL GENERALLY CONFORM TO THE FOLLOWING:

PHASE 1 – DEMOLITION/GRADING
- A. CONSTRUCT TEMPORARY CONSTRUCTION ENTRANCE, SILT FENCE, AND TREE PROTECTION FENCE ACCORDING TO THE APPROXIMATE LOCATION SHOWN ON GRADING AND EROSION CONTROL PLAN, NOTES, AND DETAIL SHEETS.
- B. BEGIN CLEARING AND GRADING OF SITE.
- C. SEED AND REVEGETATE SLOPES WHERE SHOWN.

PHASE 2 – UTILITIES
- A. KEEP ALL STORM WATER POLLUTION PREVENTION MEASURES IN PLACE.
- B. INSTALL STORM DRAINS AS SPECIFIED ON PLAN SHEETS.
- C. INSTALL INLET PROTECTION.

PHASE 3 – PAVING
- A. KEEP ALL STORM WATER POLLUTION PREVENTION MEASURES IN PLACE. REMOVE AS NEEDED TO PAVE.
- B. STABILIZE SUBGRADE.
- C. PAVE PARKING LOT AND SIDEWALKS AS SPECIFIED ON PLAN SHEETS.
- D. REMOVE TEMPORARY CONSTRUCTION ENTRANCE.
- E. MAINTAIN INLET PROTECTION.

PHASE 4 – LANDSCAPING AND SOIL STABILIZATION
- A. REVEGETATE LOT AND PARKWAYS
- B. LANDSCAPE CONTRACTOR SHALL REVEGETATE ALL AREAS RESERVED FOR LANDSCAPE VEGETATIVE COVERS.
- C. REMOVE EROSION CONTROL DEVICES WHEN GROUND COVER ESTABLISHED.

B.M.P. MAINTENANCE SCHEDULE

TEMPORARY STONE CONSTRUCTION ENTRANCE/EXIT:

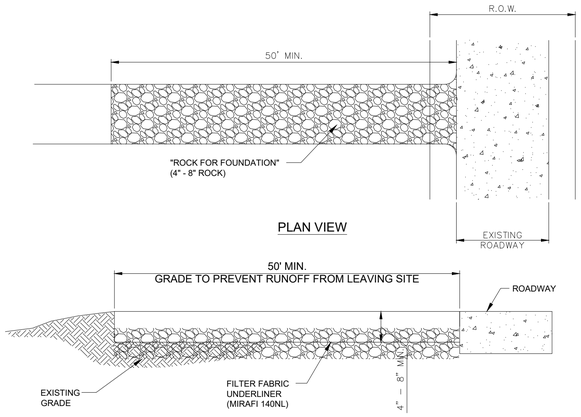
INSPECTIONS SHALL BE MADE WEEKLY AND AFTER RAIN STORM EVENTS TO ENSURE THAT THE FACILITY IS FUNCTIONING PROPERLY. AGGREGATE PAD SHALL BE WASHED DOWN OR REPLACED WHEN SEDIMENT OR MUD HAS CLOGGED THE VOID SPACES BETWEEN THE SONES OR MUD IS BEING TRACKED ONTO THE PUBLIC ROADWAY. RUNOFF FROM WASH DOWN OPERATION SHALL BE FILTERED THROUGH ANOTHER B.M.P. PRIOR TO DRAINING OFF–SITE.

SILT FENCE:

INSPECTIONS SHALL BE MADE WEEKLY AND AFTER RAIN STORM EVENTS. SEDIMENT SHALL BE REMOVED FROM BEHIND THE FENCE WHEN THE DEPTH OF SEDIMENT HAS BUILT UP TO ONE–THIRD THE HEIGHT OF THE FENCE ABOVE GRADE. FENCE SHALL BE INSPECTED FOR GAPS AT BASE. INSPECT SUPPORTING POSTS AND FILTER FABRIC. REPLACE IF REQUIRED.

INLET PROTECTION:

INSPECTIONS SHALL BE MADE WEEKLY AND AFTER RAIN STORM EVENTS TO ENSURE THAT THE DEVICE IS FUNCTIONING PROPERLY. SEDIMENT SHALL BE REMOVED FROM THE STORAGE AREA WHEN SEDIMENT DEPTH HAS BUILT UP TO ONE–HALF THE DESIGN DEPTH. IF DE–WATERING OF THE STORAGE VOLUME IS NOT OCCURRING, CLEAN OR REPLACE THE FILTER STONE SURROUNDING THE INLET. CLEAN THE STONE SURFACE THE FIRST FEW TIMES BY RAKING. REPEATED SEDIMENT BUILD–UP WILL REQUIRE FILTER STONE REPLACEMENT.



PLAN VIEW

PROFILE

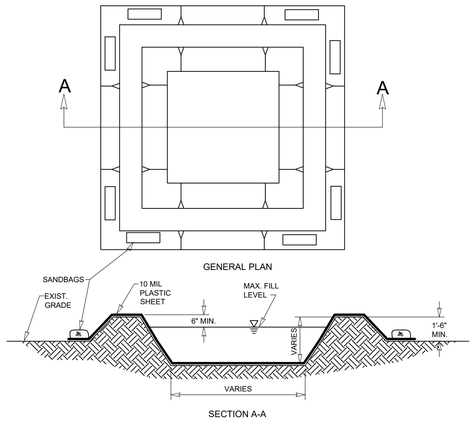
CONSTRUCTION ENTRANCE NOTES:

1. STONE SIZE – 4" TO 8" INCHES (MIN) ROCK.
2. LENGTH – AS EFFECTIVE, BUT NOT LESS THAN 50 FEET.
3. THICKNESS – NOT LESS THAN 4 INCHES.
4. WIDTH – NOT LESS THAN 25 FEET OF ALL POINTS OF INGRESS OR EGRESS.
5. WASHING – WHEN NECESSARY, WHEELS SHALL BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTRANCE ONTO PUBLIC ROADWAY. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE WHICH DRAINS INTO AN APPROVED TRAP OR SEDIMENT BASIN. ALL SEDIMENT SHALL BE PREVENTED FROM ENTERING ANY STORM DRAIN, DITCH OR WATERCOURSE USING APPROVED METHODS.
6. MAINTENANCE – THE ENTRANCE SHALL BE MAINTAINED IN CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC ROADWAYS. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND, AND REPAIR AND/OR CLEAN OUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC ROADWAY, MUST BE REMOVED IMMEDIATELY.
7. DRAINAGE – ENTRANCE MUST BE PROPERLY GRADED OR INCORPORATE A DRAINAGE SWALE TO PREVENT RUNOFF FROM LEAVING THE CONSTRUCTION SITE.
8. CONTRACTOR TO COORDINATE EXACT LOCATION OF THIS DETAIL.

CONSTRUCTION ENTRANCE

N.T.S.

CE



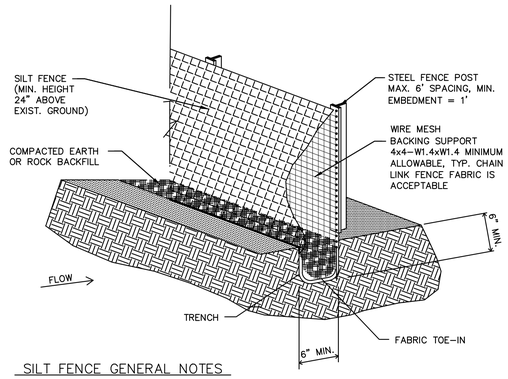
SECTION A-A

NOTES:
1. SET LENGTH AND WIDTH AS NECESSARY TO PROVIDE ADEQUATE SPACE FOR WASHOUT ACTIVITIES.
2. IF RESTRICTED BY DEPTH DUE TO BELOW GRADE APPURTENANCES, PLACE EARTHEN BERMS AT SIDE.
3. USE EXCAVATED MATERIAL TO CREATE EARTHEN BERMS SURROUNDING THE AREA TO BE DESIGNATED AS CONCRETE WASHOUT.
4. PLACE 10MIL OR GREATER PLASTIC SHEETING.
5. SECURE SHEETING ON OUTSIDE OF BERM AREA USING SAND BAGS OR ROCK EQUIVALENT.
6. DISPOSE OF CONTENTS APPROPRIATELY.

CONCRETE WASHOUT DETAIL

N.T.S.

CW



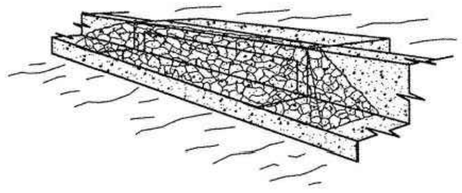
SILT FENCE GENERAL NOTES

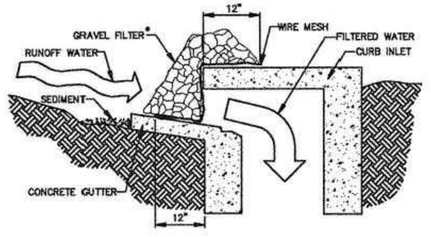
1. STEEL POSTS WHICH SUPPORT THE SILT FENCE SHALL BE INSTALLED ON A SLIGHT ANGLE TOWARD THE ANTICIPATED RUNOFF SOURCE. POST MUST BE EMBEDDED A MINIMUM OF ONE FOOT.
2. THE TOE OF THE SILT FENCE SHALL BE TRENCHED IN WITH A SPADE OR MECHANICAL TRENCHER, SO THAT THE DOWN SLOPE FACE OF THE TRENCH IS FLAT AND PERPENDICULAR TO THE LINE OF FLOW. WHERE FENCE CANNOT BE TRENCHED IN (e.g. PAVEMENT), WEIGHT FABRIC FLAP WITH ROCK ON UPHILL SIDE TO PREVENT FLOW FROM SEEPING UNDER FENCE.
3. 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.
4. SILT FENCE SHOULD BE SECURELY FASTENED TO EACH STEEL SUPPORT POST OR TO WOVEN WIRE, WHICH IN TURN IS ATTACHED TO THE STEEL FENCE POST. THERE SHALL BE A 3 FOOT OVERLAP, SECURELY FASTENED WHERE ENDS OF FABRIC MEET.
5. INSPECTION SHALL BE MADE EVERY WEEK AND AFTER EACH 1/2" RAINFALL. REPAIR OR REPLACEMENT SHALL BE MADE PROMPTLY AS NEEDED.
6. SILT FENCE SHALL BE REMOVED WHEN THE SITE IS COMPLETELY STABILIZED SO AS NOT TO BLOCK OR IMPEDE STORM FLOW OR DRAINAGE.
7. ACCUMULATED SILT SHALL BE REMOVED WHEN IT REACHES A DEPTH OF ONE–THIRD THE HEIGHT OF THE FENCE. THE SILT SHALL BE DISPOSED OF AT AN APPROVED SITE AND IN SUCH A MANNER AS TO NOT CONTRIBUTE TO ADDITIONAL SILTATION.
8. NO STEEL POSTS SHALL BE SET WITHIN THE RIGHT–OF–WAY.

CONSTRUCTION OF A FILTER BARRIER

N.T.S.

FB





SPECIFIC APPLICATION

THIS METHOD OF INLET PROTECTION IS APPLICABLE AT CURB INLETS WHERE PONDING IN FRONT OF THE STRUCTURE IS NOT LIKELY TO CAUSE INCONVENIENCE OR DAMAGE TO ADJACENT STRUCTURES AND UNPROTECTED AREAS.

* GRAVEL SHALL BE 2"–3" STONE

TEMPORARY GRAVEL CURB INLET SEDIMENT FILTER

N.T.S.

IP

TEXAS REGISTRATION #14199

CLAYMOORE ENGINEERING

1903 CENTRAL DRIVE, SUITE #406
BEDFORD, TX 76021
PHONE: 817.281.0572
WWW.CLAYMOOREENG.COM

PRELIMINARY

FOR REVIEW ONLY
Not for construction purposes.

CLAYMOORE ENGINEERING
ENGINEERING AND PLANNING CONSULTANTS

Engineer: DREW DONOSKY
P.E. No. 125651 Date: 7/17/2024

SANGER MULTI-FAMILY
PREPARED FOR
GREYSTAR
SANGER, TEXAS

No.	DATE	REVISION	BY

EROSION CONTROL DETAILS

DESIGN:	ASD
DRAWN:	DC
CHECKED:	ASD
DATE:	7/17/2024

SHEET
C-2.5

CASE NO. 2022-185

PLOTTED BY: DAN CABALLERO
PLOT DATE: 7/17/2024 10:01 AM
LOCATION: Z:\PROJECTS\PROJECTS\2022-185 MALOUF SANGER\CADD\SHEETS\MULTI-FAMILY GREYSTAR\EROSION CONTROL PLAN.DWG
LAST SAVED: 7/16/2024 8:17 AM

SHEET C-3.1

SHEET C-3.2

SHEET C-3.3

GRAPHIC SCALE

80 0 40 80 160

1 inch = 80 ft.

CHAPMAN ROAD (F.M. 455)
RIGHT-OF-WAY WIDTH VARIES

INTERSTATE HIGHWAY 35
RIGHT-OF-WAY WIDTH VARIES

SANGER WEST BLVD.

COLLECTOR ROAD

REFERENCE SHEET C-3.3 FOR PLAN AND PROFILE OF COLLECTOR ROAD

CONCRETE DRIVE BY OTHERS

CONNECT TO ROAD BY OTHERS

PLOTTED BY: DAN CABALLERO
PLOT DATE: 7/17/2024 10:02 AM
LOCATION: Z:\PROJECTS\PROJECTS\2022-185 MALOUF SANGER\CADD\SHEETS\MULTI-FAMILY GREYSTAR\C-3.3 DIMENSION CONTROL PLAN .DWG
LAST SAVED: 7/16/2024 3:20 PM

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P.E. No. 125651 Date 7/17/2024

SANGER MULTI-FAMILY
PREPARED FOR GREYSTAR
SANGER, TEXAS

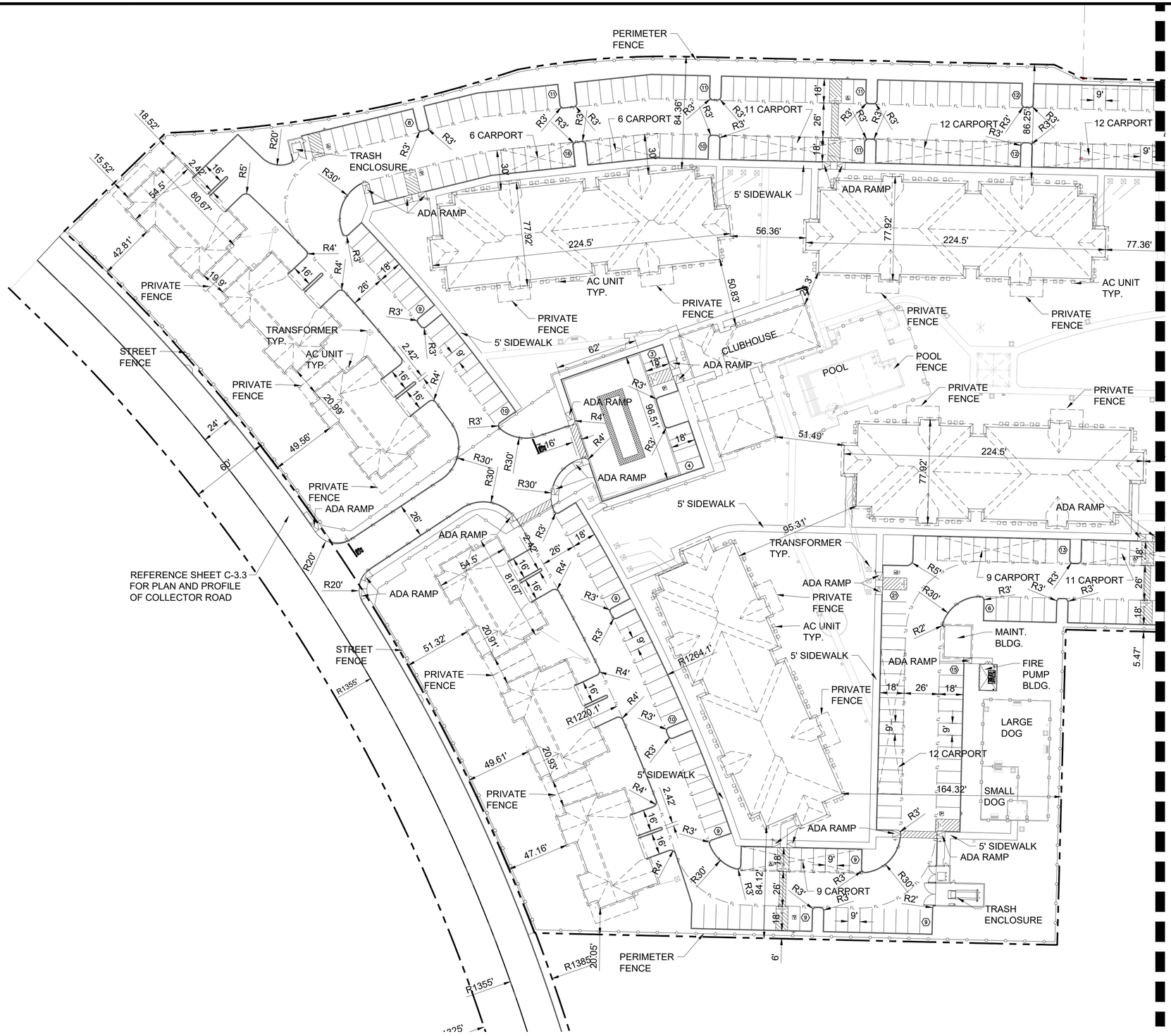
No.	DATE	REVISION	BY

OVERALL DIMENSION CONTROL PLAN

DESIGN:	ASD
DRAWN:	DC
CHECKED:	ASD
DATE:	7/17/2024

SHEET
C-3.0

CASE NO. 2022-185



GRAPHIC SCALE

40 0 20 40 80

1 inch = 40 ft.

LEGEND	
	PROPOSED CONCRETE CURB AND GUTTER
(10)	PARKING COUNT
	PROPERTY LINE
FL FL	PROPOSED FIRE LANE

NOTES:

1. ALL DIMENSIONS ARE TO FACE OF CURB UNLESS OTHERWISE NOTED.
2. REFER TO ARCHITECTURAL PLANS FOR BUILDING DIMENSIONS AND EXACT DOOR LOCATIONS.
3. NO LANDSCAPING SUCH AS TREES, HEDGES, ABOVE AND UNDERGROUND STRUCTURES SHALL BE LOCATED WITHIN EXISTING OR PROPOSED UTILITY EASEMENTS AND RIGHT OF WAY.
4. REFERENCE APPROVED ORDINANCE 12-21-22 FOR LANDSCAPING, ENTRANCE, OPEN SPACE, SCREENING, FENCING, SETBACKS, AND SIGNAGE REQUIREMENTS

PARKING	
REGULAR PARKING	470 SPACES
ADA PARKING	16 SPACES
TOTAL	486 SPACES

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Engineer DREW DONOSKY
P.E. No. 125651 Date 7/17/2024

SANGER MULTI-FAMILY
PREPARED FOR GREYSTAR
SANGER, TEXAS

No.	DATE	REVISION	BY

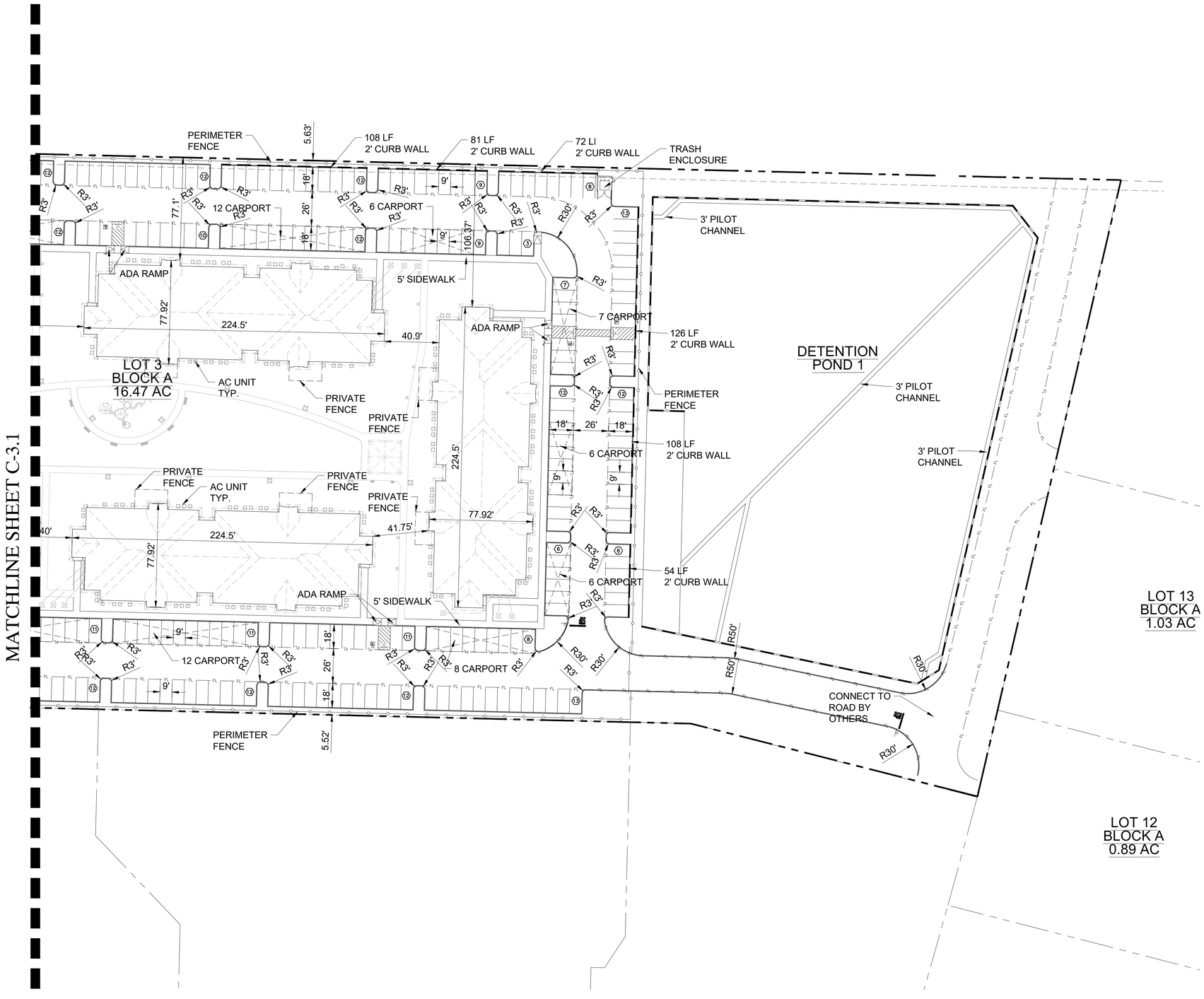
DIMENSION CONTROL PLAN

DESIGN:	ASD
DRAWN:	DC
CHECKED:	ASD
DATE:	7/17/2024

SHEET
C-3.1

CASE NO. 2022-185

PLOTTED BY: DAN CABALLERO
PLOT DATE: 7/17/2024 10:02 AM
LOCATION: Z:\PROJECTS\PROJECTS\2022-185 MALOUF SANGER\CADD\SHEETS\MULTI-FAMILY GREYSTAR\C-3.3 DIMENSION CONTROL PLAN.DWG
LAST SAVED: 7/16/2024 3:20 PM



GRAPHIC SCALE

40 0 20 40 80

1 inch = 40 ft.

LEGEND	
	PROPOSED CONCRETE CURB AND GUTTER
(10)	PARKING COUNT
	PROPERTY LINE
FL FL	PROPOSED FIRE LANE

NOTES:

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P.E. No. 125651 Date: 7/17/2024

SANGER MULTI-FAMILY
PREPARED FOR GREYSTAR
SANGER, TEXAS

No.	DATE	REVISION	BY

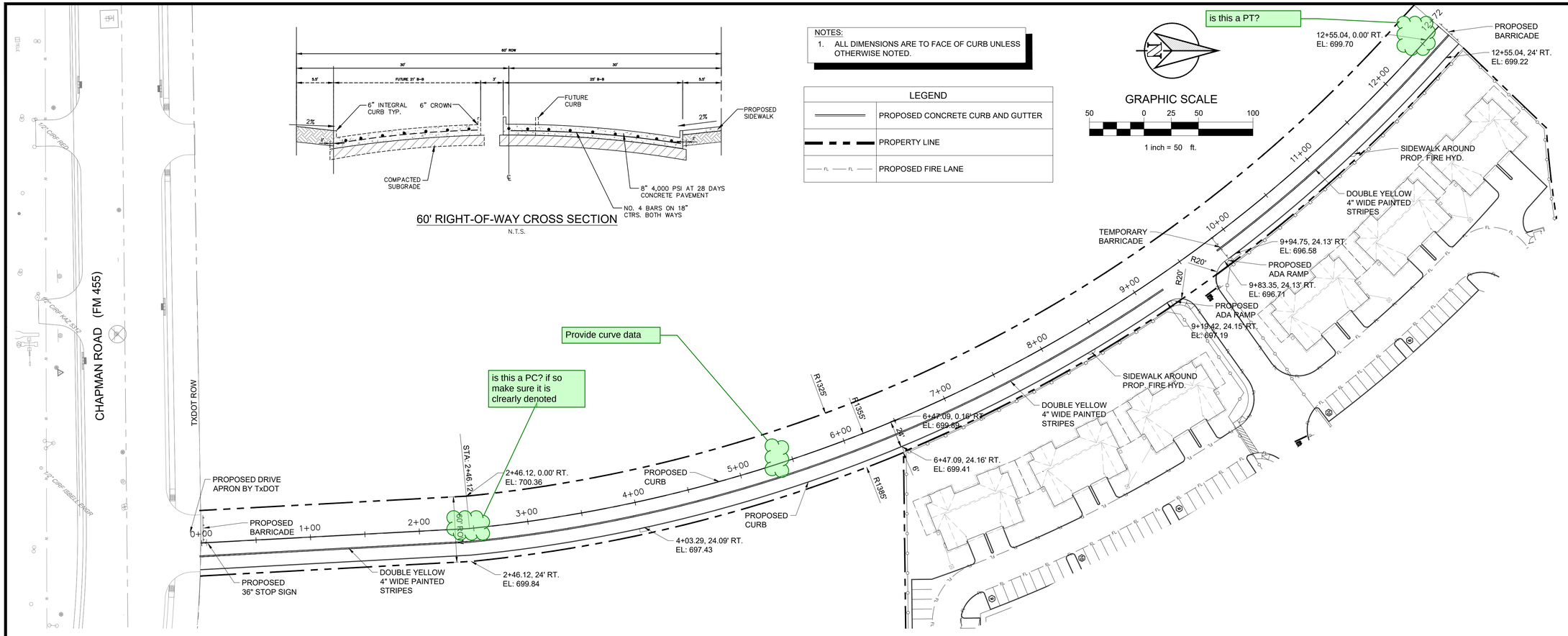
DIMENSION CONTROL PLAN

DESIGN:	ASD
DRAWN:	DC
CHECKED:	ASD
DATE:	7/17/2024

SHEET
C-3.2

CASE NO. 2022-185

PLOTTED BY: DAN CABALLERO
PLOT DATE: 7/17/2024 10:02 AM
LOCATION: Z:\PROJECTS\2022-185 MALOUF SANGER\CADD\SHEETS\MULTI-FAMILY GREYSTAR\C-3.3 DIMENSION CONTROL PLAN .DWG
LAST SAVED: 7/16/2024 3:20 PM



60' RIGHT-OF-WAY CROSS SECTION

N.T.S.

NOTES:
1. ALL DIMENSIONS ARE TO FACE OF CURB UNLESS OTHERWISE NOTED.

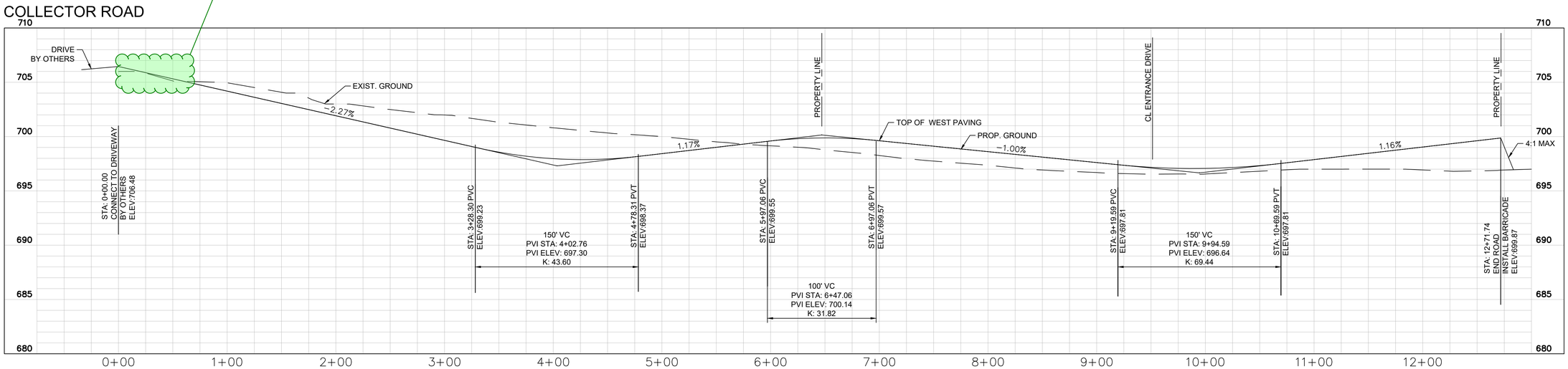
LEGEND	
	PROPOSED CONCRETE CURB AND GUTTER
	PROPERTY LINE
FL FL	PROPOSED FIRE LANE

GRAPHIC SCALE

50 0 25 50 100

1 inch = 50 ft.

max slope is 2% within 100' of an intersection.



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P.E. No. 125651 Date 7/17/2024

SANGER MULTI-FAMILY
PREPARED FOR GREYSTAR
SANGER, TEXAS

No.	DATE	REVISION	BY

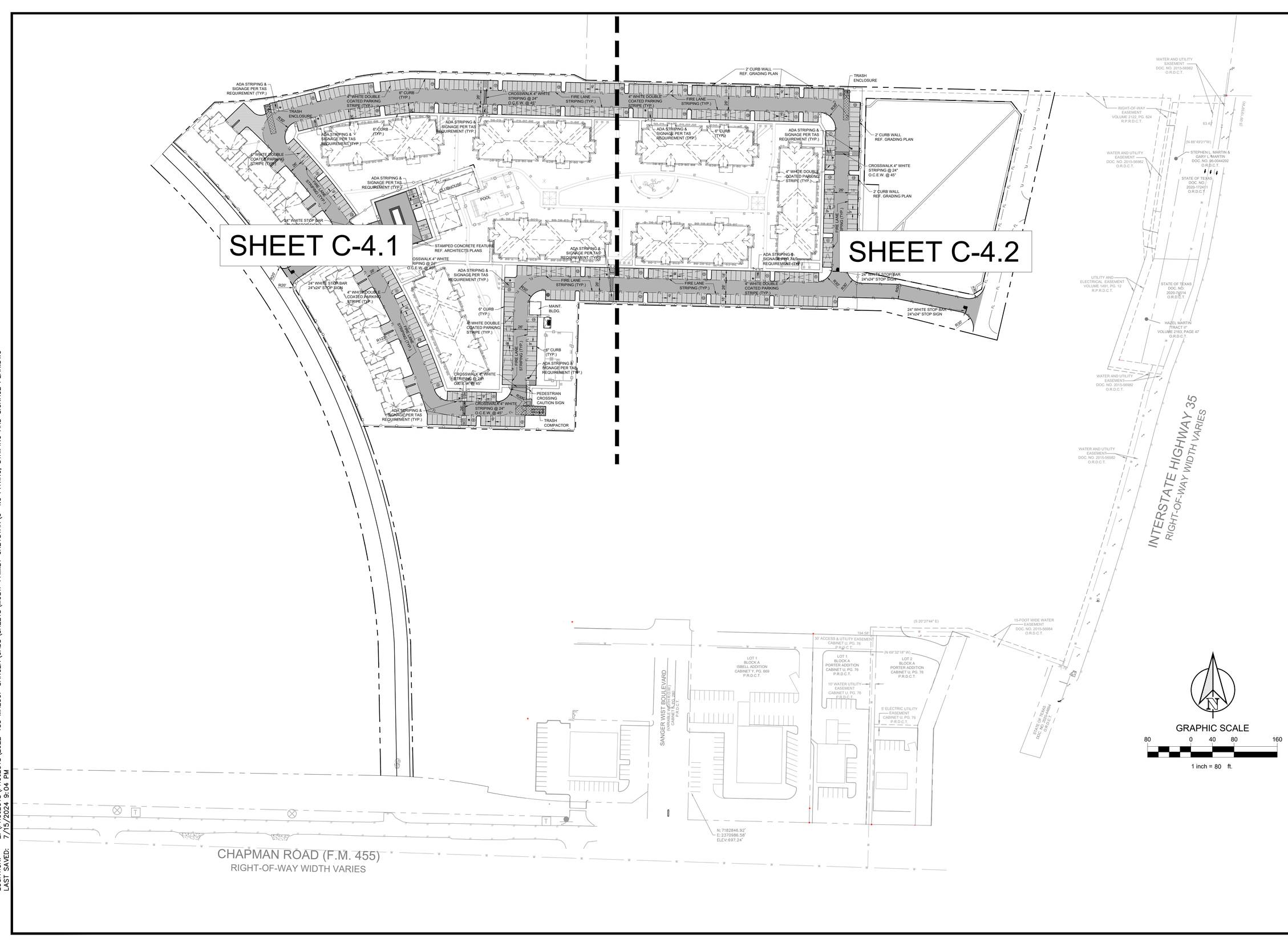
COLLECTOR ROAD PLAN AND PROFILE

DESIGN:	ASD
DRAWN:	DC
CHECKED:	ASD
DATE:	7/17/2024

SHEET
C-3.3

CASE NO. 2022-185

PLOTTED BY: DAN CABALLERO
PLOT DATE: 7/17/2024 10:03 AM
LOCATION: Z:\PROJECTS\PROJECTS\2022-185 MALOUF SANGER\CADD\SHEETS\MULTI-FAMILY GREYSTAR\C-3.3 DIMENSION CONTROL PLAN .DWG
LAST SAVED: 7/16/2024 3:20 PM



PLOTTED BY: DAN CABALLERO
PLOT DATE: 7/17/2024 10:04 AM
LOCATION: Z:\PROJECTS\PROJECTS\2022-185 MALOUF SANGER\CADD\SHEETS\MULTI-FAMILY GREYSTAR\C-4.3 PAVING, STRIPING AND SIGNAGE PLAN.DWG
LAST SAVED: 7/15/2024 9:04 PM

TEXAS REGISTRATION #14199
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P.E. No. 125651 Date 7/17/2024

SANGER MULTI-FAMILY
PREPARED FOR GREYSTAR
SANGER, TEXAS

No.	DATE	REVISION	BY

OVERALL PAVING, STRIPING AND SIGNAGE PLAN

DESIGN:	ASD
DRAWN:	DC
CHECKED:	ASD
DATE:	7/17/2024

SHEET
C-4.0

CASE NO. 2022-185

ADA STRIPING & SIGNAGE PER TAS REQUIREMENT (TYP.)
4" WHITE DOUBLE COATED PARKING STRIPE (TYP.)
6" CURB (TYP.)
CROSSWALK 4" WHITE STRIPING @ 24" O.C.E.W. @ 45°
FIRE LANE STRIPING (TYP.)
TRASH ENCLOSURE
R30'
30'
18'
26'
9'
6" CURB (TYP.)
ADA STRIPING & SIGNAGE PER TAS REQUIREMENT (TYP.)
4" WHITE DOUBLE COATED PARKING STRIPE (TYP.)
FIRE LANE STRIPING (TYP.)
ADA STRIPING & SIGNAGE PER TAS REQUIREMENT (TYP.)
CLUBHOUSE
POOL
24" WHITE STOP BAR
24"x24" STOP SIGN
60'
R30'
R20'
STAMPED CONCRETE FEATURE REF. ARCHITECTS PLANS
CROSSWALK 4" WHITE STRIPING @ 24" O.C.E.W. @ 45°
ADA STRIPING & SIGNAGE PER TAS REQUIREMENT (TYP.)
ADA STRIPING & SIGNAGE PER TAS REQUIREMENT (TYP.)
FIRE LANE STRIPING (TYP.)
MAINT. BLDG.
6" CURB (TYP.)
4" WHITE DOUBLE COATED PARKING STRIPE (TYP.)
R1220.1'
FIRE LANE STRIPING (TYP.)
CROSSWALK 4" WHITE STRIPING @ 24" O.C.E.W. @ 45°
6" CURB (TYP.)
ADA STRIPING & SIGNAGE PER TAS REQUIREMENT (TYP.)
PEDESTRIAN CROSSING CAUTION SIGN
CROSSWALK 4" WHITE STRIPING @ 24" O.C.E.W. @ 45°
ADA STRIPING & SIGNAGE PER TAS REQUIREMENT (TYP.)
TRASH COMPACTOR

what are the plans within the roadway

MATCHLINE SHEET C-4.2

GRAPHIC SCALE
40 0 20 40 80
1 inch = 40 ft.

LEGEND	
	PROPOSED CONCRETE CURB AND GUTTER
10	PARKING COUNT
	PROPERTY LINE
FL FL	PROPOSED FIRE LANE
	5" THICK LIGHT DUTY PAVEMENT
	6" THICK MODERATE DUTY PAVEMENT
	7" THICK HEAVY DUTY PAVEMENT

NOTES:
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2. REFER TO ARCHITECTURAL PLANS FOR BUILDING DIMENSIONS AND EXACT DOOR LOCATIONS.
3. NO LANDSCAPING SUCH AS TREES, HEDGES, ABOVE AND UNDERGROUND STRUCTURES SHALL BE LOCATED WITHIN EXISTING OR PROPOSED UTILITY EASEMENTS AND RIGHT OF WAY.
4. REFERENCE APPROVED ORDINANCE 12-21-22 FOR LANDSCAPING, ENTRANCE, OPEN SPACE, SCREENING, FENCING, SETBACKS, AND SIGNAGE REQUIREMENTS

The preliminary plat references ordinance 12-32-22

PARKING	
REGULAR PARKING	465 SPACES
ADA PARKING	18 SPACES
TOTAL	483 SPACES

Show how this is calculated. Show that this matches the approved PD

TEXAS REGISTRATION #14199
CLAYMOORE ENGINEERING
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1903 CENTRAL DRIVE, SUITE #406
BEDFORD, TX 76021

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ENGINEERING AND PLANNING CONSULTANTS
Engineer DREW DONOSKY
P.E. No. 125651 Date 7/17/2024

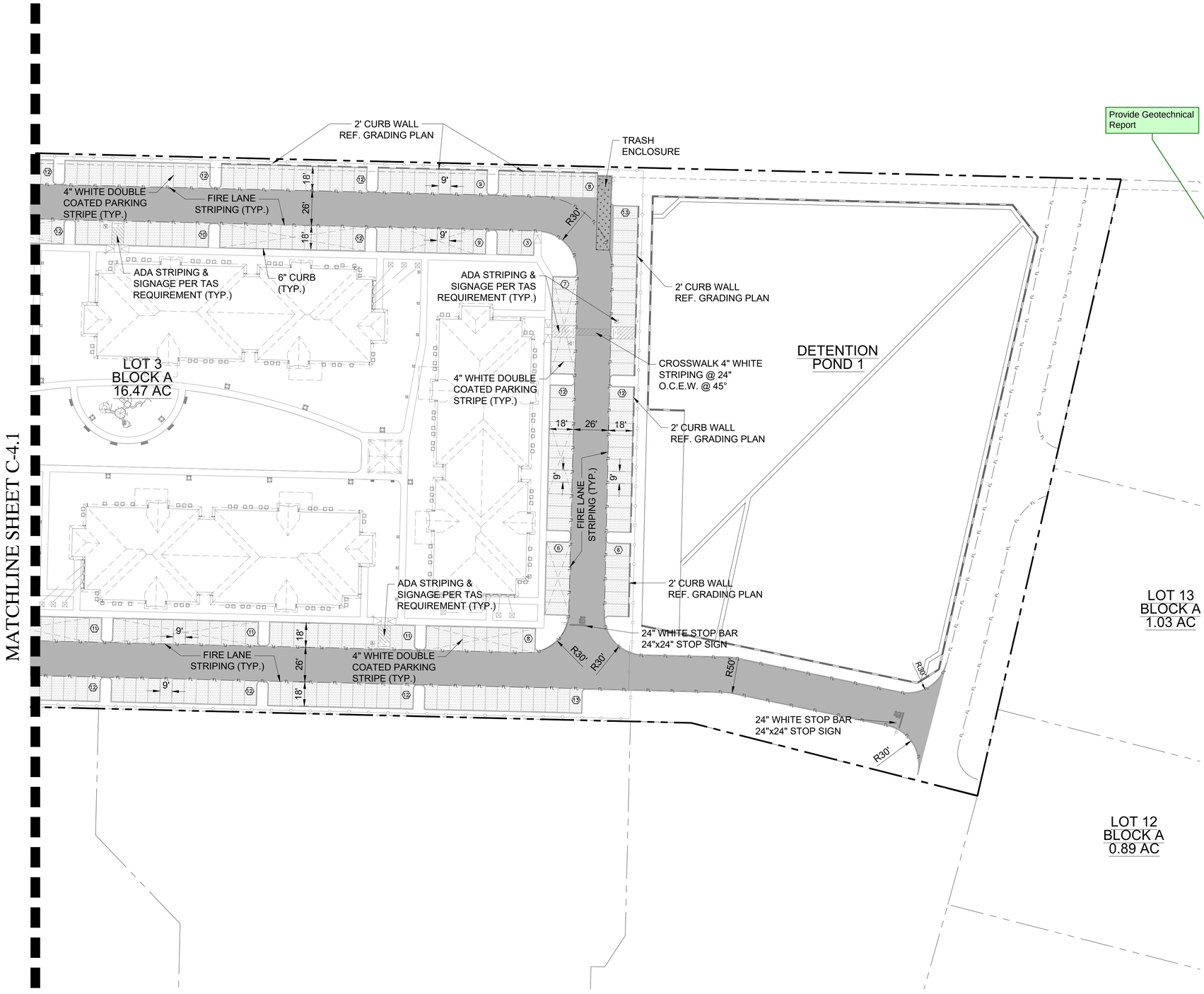
SANGER MULTI-FAMILY
PREPARED FOR GREYSTAR
SANGER, TEXAS

No.	DATE	REVISION	BY

PAVING, STRIPING AND SIGNAGE PLAN

DESIGN: ASD
DRAWN: DC
CHECKED: ASD
DATE: 7/17/2024
SHEET C-4.1
CASE NO. 2022-185

PLOTTED BY: DAN CABALLERO
PLOT DATE: 7/17/2024 10:04 AM
LOCATION: Z:\PROJECTS\PROJECTS\2022-185 MALOUF SANGER\CADD\SHEETS\MULTI-FAMILY GREYSTAR\C-4.3 PAVING, STRIPING AND SIGNAGE PLAN.DWG
LAST SAVED: 7/15/2024 9:04 PM



Provide Geotechnical Report

GRAPHIC SCALE

40 0 20 40 80

1 inch = 40 ft.

LEGEND	
	PROPOSED CONCRETE CURB AND GUTTER
10	PARKING COUNT
	PROPERTY LINE
FL FL	PROPOSED FIRE LANE
	5" THICK LIGHT DUTY PAVEMENT
	6" THICK MODERATE DUTY PAVEMENT
	7" THICK HEAVY DUTY PAVEMENT

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Engineer DREW DONOSKY
P.E. No. 125651 Date 7/17/2024

SANGER MULTI-FAMILY
PREPARED FOR GREYSTAR
SANGER, TEXAS

No.	DATE	REVISION	BY

PAVING, STRIPING AND SIGNAGE PLAN

DESIGN:	ASD
DRAWN:	DC
CHECKED:	ASD
DATE:	7/17/2024

SHEET
C-4.2

CASE NO. 2022-185

PLOTTED BY: DAN CABALLERO
PLOT DATE: 7/17/2024 10:04 AM
LOCATION: Z:\PROJECTS\2022-185 MALOUF SANGER\CADD\SHEETS\MULTI-FAMILY GREYSTAR\C-4.3 PAVING, STRIPING AND SIGNAGE PLAN.DWG
LAST SAVED: 7/15/2024 9:04 PM

GRAPHIC SCALE

50 0 25 50 100

1 inch = 50 ft.

LEGEND	
	PROPOSED CONCRETE CURB AND GUTTER
	PROPERTY LINE
FL FL	PROPOSED FIRE LANE
	STREET FRONTAGE FENCE (72" HT WROUGHT IRON FENCE, MASONRY COLUMNS 24' O.C.)
	PERIMETER FENCE (72" HT WROUGHT IRON FENCE)
	POOL/DOG PARK FENCE (60" HT STEEL TUBE FENCE)
	PRIVATE YARD FENCE (42" HT STEEL TUBE FENCE)

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P.E. No. 125651 Date 7/17/2024

SANGER MULTI-FAMILY
PREPARED FOR GREYSTAR
SANGER, TEXAS

No.	DATE	REVISION	BY

FENCE PLAN

DESIGN:	ASD
DRAWN:	DC
CHECKED:	ASD
DATE:	7/17/2024

SHEET
C-4.3

CASE NO. 2022-185

PLOTTED BY: DAN CABALLERO
PLOT DATE: 7/17/2024 10:05 AM
LOCATION: Z:\PROJECTS\2022-185 MALOUF SANGER\CADD\SHEETS\MULTI-FAMILY GREYSTAR\C-4.3 FENCE PLAN.DWG
LAST SAVED: 7/12/2024 10:51 AM

SHEET C-5.1

SHEET C-5.3

SHEET C-5.5

SHEET C-5.2

SHEET C-5.4

SHEET C-5.6

FF = 699.22
FF = 696.90
FF = 698.81
FF = 697.90
FF = 698.05
FF = 694.85
FF = 692.90
FF = 695.90
FF = 693.90
FF = 692.90
FF = 697.73
FF = 698.16
FF = 699.28
FF = 698.31

16.47 AC

8,400 sf
(70' x 120')
165 SPACES

LOT 6
BLOCK A
2.25 AC

LOT 7
BLOCK A
5.11 AC

LOT 8
BLOCK A
2.40 AC

LOT 11
BLOCK A
0.93 AC

LOT 13
BLOCK A
1.03 AC

LOT 12
BLOCK A
0.89 AC

LOT 4
BLOCK A
3.07 AC

LOT 5
BLOCK A
1.53 AC

CORNER
LOT
1.13 AC

NOTE:
WALLS FOR DETENTION POND ARE DESIGN BUILD BY CONTRACTOR, AND MUST SUBMIT ENGINEERED

S 88°37'28" E (1186.11')
(S 88°11'56" E)

S 01°16'23" W 1183.57'
(S 00°51'55" E)

N 88°21'17" W 221.87'
(N 88°08'43" E)

EXCHANGE DRIVE
(50' WIDE R.O.W.)
CABINET E, PG. 280, P.R.D.C.T.

N 01°13'52" E
9.80'
(N 01°26'26" E)

N 88°36'29" W 419.32'
(N 88°13'58" W)

S 20°05'13" W
30.70'
(S 20°31'44" E)

N 69°54'47" W
(55.48')
(N 69°32'18" W)

N 70°40'52" W 233.60'
(N 70°25'09" W)

BLVD. WEST BOULEVARD
(VARIABLE WIDTH R.O.W.)
CABINET A, PG. 280
P.R.D.C.T.

30' ACCESS & UTILITY EASEMENT
CABINET U, PG. 76
P.R.D.C.T.

LOT 1
BLOCK A
PORTER ADDITION
CABINET U, PG. 76
P.R.D.C.T.

LOT 2
BLOCK A
PORTER ADDITION
CABINET U, PG. 76
P.R.D.C.T.

10' WATER UTILITY
EASEMENT
CABINET U, PG. 76
P.R.D.C.T.

5' ELECTRIC UTILITY
EASEMENT
CABINET U, PG. 76
P.R.D.C.T.

LOT 1
BLOCK A
ISBELL ADDITION
CABINET Y, PG. 669
P.R.D.C.T.

15' WIDE WATER
EASEMENT
DOC. NO. 2015-56984
O.R.D.C.T.

1/2" CIRS
ISBELL
ENGINEERING

"X" CUT
SET

5/8" CIRS
"TXDOT"

CIRS

1/2" IRF

L1

GRAPHIC SCALE
60 0 30 60 120
1 inch = 60 ft.

N

PLOTTED BY: DAN CABALLERO
PLOT DATE: 7/17/2024 10:06 AM
LOCATION: Z:\PROJECTS\PROJECTS\2022-185 MALOUF SANGER\CADD\SHEETS\MULTI-FAMILY GREYSTAR\C-3.3 GRADING PLAN.DWG
LAST SAVED: 7/15/2024 9:19 PM

TEXAS REGISTRATION #14199
CLAYMOORE ENGINEERING
1903 CENTRAL DRIVE, SUITE #406
BEDFORD, TX 76021
PHONE 817.281.0572
WWW.CLAYMOOREENG.COM

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CLAYMOORE ENGINEERING
ENGINEERING AND PLANNING CONSULTANTS

Engineer DREW DONOSKY
P.E. No. 125651 Date 7/17/2024

SANGER MULTI-FAMILY
PREPARED FOR GREYSTAR
SANGER, TEXAS

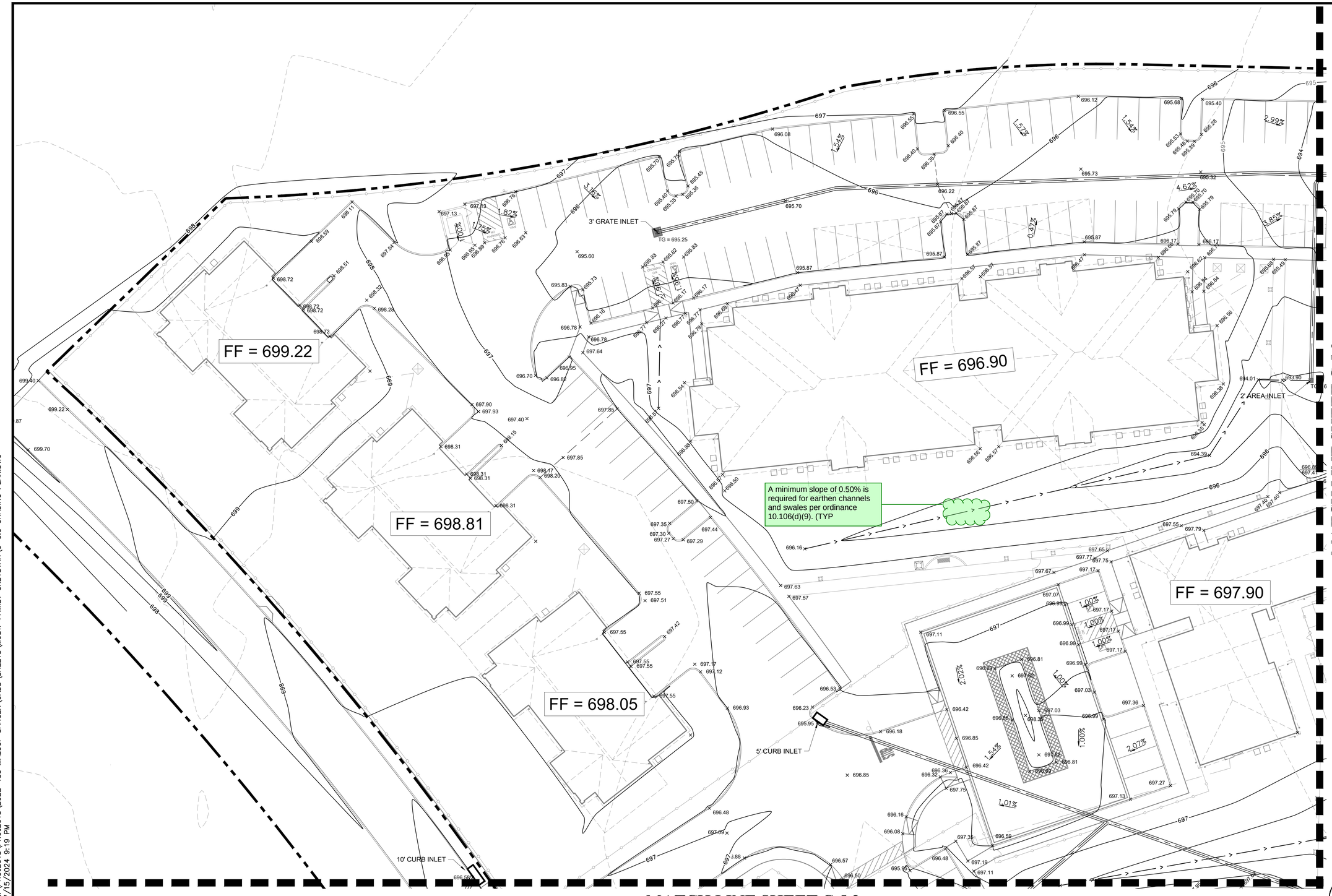
No.	REVISION	DATE	BY

OVERALL GRADING PLAN

DESIGN:	ASD
DRAWN:	DC
CHECKED:	ASD
DATE:	7/17/2024

SHEET
C-5.0

CASE NO. 2022-185



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SANGER MULTI-FAMILY
PREPARED FOR GREYSTAR
SANGER, TEXAS

GRADING PLAN

No.	DATE	REVISION	BY

DESIGN:	ASD
DRAWN:	DC
CHECKED:	ASD
DATE:	7/17/2024

SHEET
C-5.1

CASE NO. 2022-185

MATCH LINE SHEET C-5.1

MATCH LINE SHEET C-5.4

FF = 697.73

FF = 699.28

FF = 698.16

FF = 698.31

5' CURB INLET

5' CURB INLET

GRAPHIC SCALE

20 0 10 20 40

1 inch = 20 ft.

PLOTTED BY: DAN CABALLERO
PLOT DATE: 7/17/2024 10:06 AM
LOCATION: Z:\PROJECTS\2022-185 MALOUF SANGER\CADD\SHEETS\MULTI-FAMILY GREYSTAR\C-3.3 GRADING PLAN.DWG
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Engineer DREW DONOSKY
P.E. No. 125651 Date 7/17/2024

SANGER MULTI-FAMILY

PREPARED FOR
GREYSTAR
SANGER, TEXAS

No.	DATE	REVISION	BY

GRADING PLAN

DESIGN:	ASD
DRAWN:	DC
CHECKED:	ASD
DATE:	7/17/2024

SHEET
C-5.2

CASE NO. 2022-185

GRAPHIC SCALE
20 0 10 20 40
1 inch = 20 ft.

MATCH LINE SHEET C-5.1

MATCH LINE SHEET C-5.5

TG = 693.08
3' GRATE INLET

TG = 691.28
3' GRATE INLET

FF = 694.85

Max slope exceeded

Min 0.5% slope required

TG = 693.78

TG = 692.78
2' AREA INLET

FF = 692.90

TG = 690.48
2' AREA INLET

TG = 691.04
2' AREA INLET

FF = 695.90

TG = 694.80
2' AREA INLET

FF = 693.90

MATCH LINE SHEET C-5.4

PLOTTED BY: DAN CABALLERO
PLOT DATE: 7/17/2024 10:07 AM
LOCATION: Z:\PROJECTS\PROJECTS\2022-185 MALOUF SANGER\CADD\SHEETS\MULTI-FAMILY GREYSTAR\C-3.3 GRADING PLAN.DWG
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Engineer: DREW DONOSKY
P.E. No: 125651 Date: 7/17/2024

SANGER MULTI-FAMILY
PREPARED FOR
GREYSTAR
SANGER, TEXAS

No.	DATE	REVISION	BY

GRADING PLAN

DESIGN:	ASD
DRAWN:	DC
CHECKED:	ASD
DATE:	7/17/2024

SHEET
C-5.3

CASE NO. 2022-185

GRAPHIC SCALE
20 0 10 20 40
1 inch = 20 ft.

MATCH LINE SHEET C-5.3

MATCH LINE SHEET C-5.2

MATCH LINE SHEET C-5.6

FF = 697.97

FF = 694.90

FF = 695.40

3' GRATE INLET
TG = 691.97

5' CURB INLET

3' AREA INLET

8,400 sf
(70' x 120')
165 SPACES
LOT 6
BLOCK A
2.25 AC

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LOCATION: Z:\PROJECTS\2022-185 MALOUF SANGER\CADD\SHEETS\MULTI-FAMILY GREYSTAR\C-3.3 GRADING PLAN.DWG
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Engineer DREW DONOSKY
P.E. No. 125651 Date 7/17/2024

SANGER MULTI-FAMILY
PREPARED FOR
GREYSTAR
SANGER, TEXAS

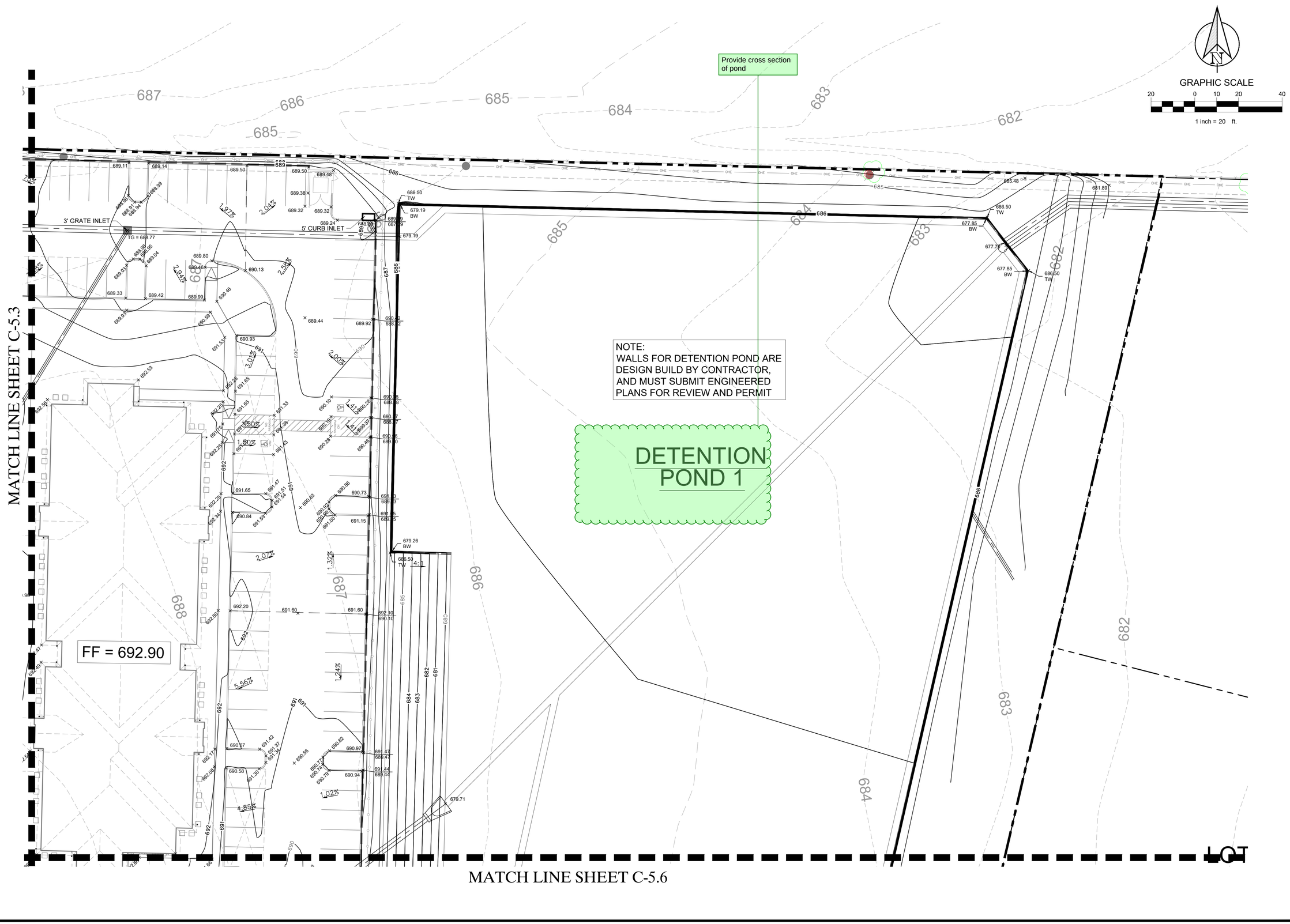
No.	DATE	REVISION	BY

GRADING PLAN

DESIGN: ASD
DRAWN: DC
CHECKED: ASD
DATE: 7/17/2024

SHEET
C-5.4

CASE NO. 2022-185



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Engineer: DREW DONOSKY
P.E. No: 125651 Date: 7/17/2024

SANGER MULTI-FAMILY
PREPARED FOR GREYSTAR
SANGER, TEXAS

No.	DATE	REVISION	BY

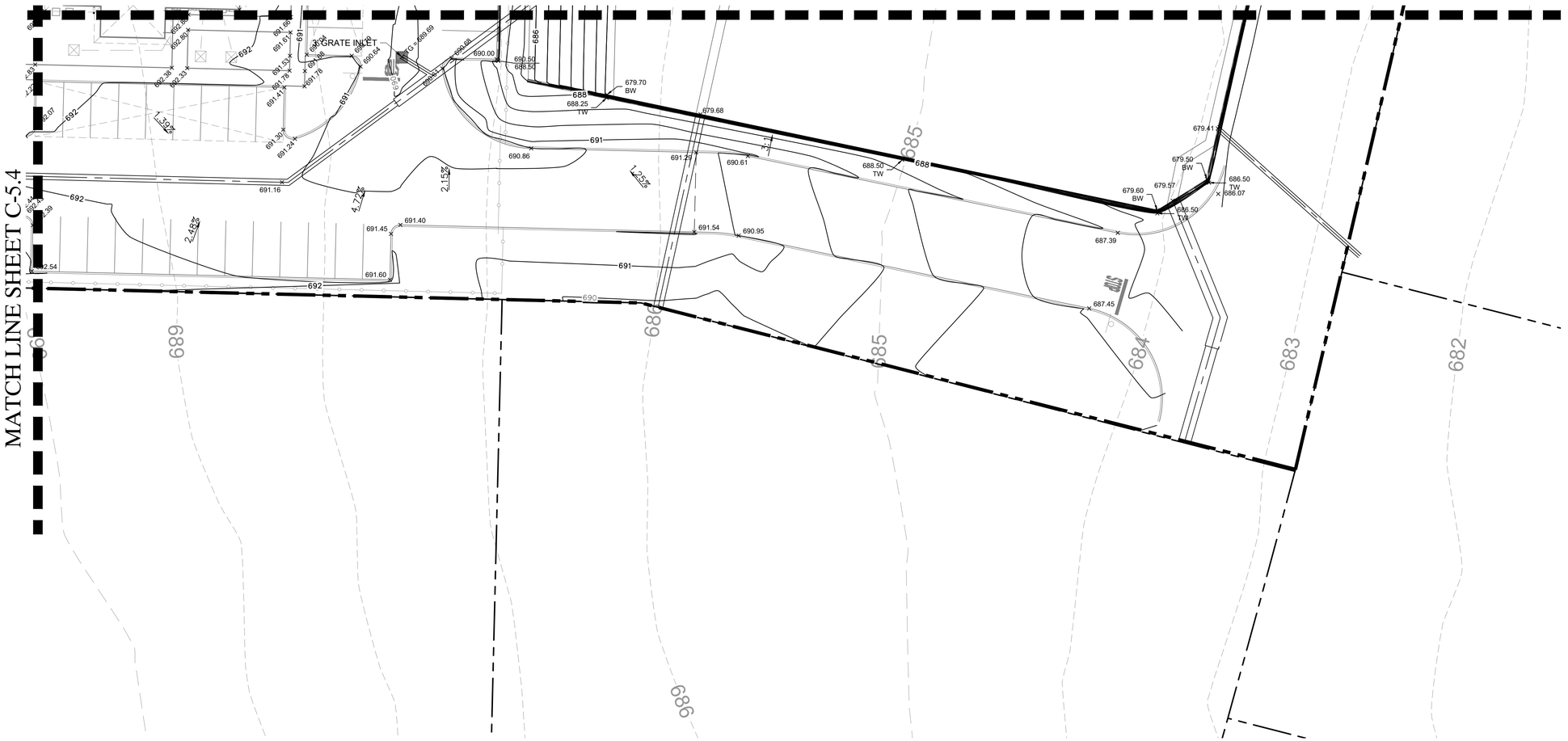
GRADING PLAN

DESIGN:	ASD
DRAWN:	DC
CHECKED:	ASD
DATE:	7/17/2024

SHEET
C-5.5

CASE NO. 2022-185

PLOTTED BY: DAN CABALLERO
PLOT DATE: 7/17/2024 10:07 AM
LOCATION: Z:\PROJECTS\PROJECTS\2022-185 MALOUF SANGER\CADD\SHEETS\MULTI-FAMILY GREYSTAR\C-3.3 GRADING PLAN.DWG
LAST SAVED: 7/15/2024 9:19 PM



GRAPHIC SCALE

20 0 10 20 40

1 inch = 20 ft.

Cut/Fill Summary

Name	Cut Factor	Fill Factor	2d Area	Cut	Fill	Net
cut fill	**1.000**	1.100	776944.02 Sq. Ft.	30713.97 Cu. Yd.	29803.40 Cu. Yd.	910.56 Cu. Yd.<Cut>
Totals			776944.02 Sq. Ft.	30713.97 Cu. Yd.	29803.40 Cu. Yd.	910.56 Cu. Yd.<Cut>

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P.E. No. 125651 Date 7/17/2024

SANGER MULTI-FAMILY
PREPARED FOR GREYSTAR
SANGER, TEXAS

No.	DATE	REVISION	BY

GRADING PLAN

DESIGN: ASD
DRAWN: DC
CHECKED: ASD
DATE: 7/17/2024

SHEET
C-5.6

CASE NO. 2022-185

Time of Concentration
EX -1 Undeveloped Tract

Total Length of Flow = 1929 ft

Overland Flow (1st 300 ft.)

Tc = 0.007(nL)^.8/(P2^0.5*^0.4)

n =	0.15 grass	Mannings Number	
L =	300	Concrete =	0
P2 =	3.36	Grass =	0.15
s =	0.008	Average Slope =	0.75%
Tc =	0.57 Hours		
Tc =	34.1 Minutes		

Shallow Concentrated Flow

Unpaved Velocities = V = 16.1345(s)^0.5 — Average Slope

Paved Velocities = V = 20.3282(s)^0.5 — Sunpaved = 0.75%, Spaved = 0.0%

Vunpaved =	1.40 ft/s	Unpaved Length	1629 ft
Vpaved =	0.00 ft/s	Paved Length =	0 ft
Tc (unpaved) =	1164.5 seconds		
Tc (paved) =	0.0 seconds		
Tc (unpaved) =	19.4 minutes		
Tc (paved) =	0.0 minutes		
Tc (total) =	19.4 minutes		
Total Tc =	53 minutes		

Time of Concentration
EX -2 Undeveloped Tract

Total Length of Flow = 2079 ft

Overland Flow (1st 300 ft.)

Tc = 0.007(nL)^.8/(P2^0.5*^0.4)

n =	0.15 grass	Mannings Number	
L =	300	Concrete =	0
P2 =	3.36	Grass =	0.15
s =	0.011	Average Slope =	1.11%
Tc =	0.49 Hours		
Tc =	29.2 Minutes		

Shallow Concentrated Flow

Unpaved Velocities = V = 16.1345(s)^0.5 — Average Slope

Paved Velocities = V = 20.3282(s)^0.5 — Sunpaved = 1.11%, Spaved = 0.0%

Vunpaved =	1.70 ft/s	Unpaved Length	1779 ft
Vpaved =	0.00 ft/s	Paved Length =	0 ft
Tc (unpaved) =	1048.4 seconds		
Tc (paved) =	0.0 seconds		
Tc (unpaved) =	17.5 minutes		
Tc (paved) =	0.0 minutes		
Tc (total) =	17.5 minutes		
Total Tc =	47 minutes		

HYDROLOGIC CALCULATIONS - PRE DEVELOPMENT

DRAINAGE AREA	AREA (AC.)	TC (MIN)	C	I5 (IN/HR)	Q5 (CFS)	I10 (IN/HR)	Q10 (CFS)	I_{25} (IN/HR)	Q_{25} (CFS)	I_{100} (IN/HR)	Q_{100} (CFS)	COLLECTION POINT
OS-1	34.00	53	0.30	2.70	27.54	3.12	31.82	3.71	37.84	4.56	46.51	DRAINS TO EXISTING DETENTION POND
OS-2	9.00	47	0.30	2.27	6.13	2.63	7.10	3.12	8.42	3.84	10.37	DRAINS TO IH 35 FRONTAGE ROAD CHANNEL
EX-1	41.67	47	0.30	2.27	28.38	2.63	32.88	3.12	39.00	3.84	48.00	DRAINS TO IH 35 FRONTAGE ROAD CHANNEL
TOTAL DRAINAGE	**84.67**				**62.05**		**71.80**		**85.27**		**104.88**	

CALLED 30.96 ACRES
HOLT TEXAS LTD.
DOC. NO. 2013-71958
O.R.D.C.T.

14.5' X 14.9'
METAL SHED

OS-2
9.00 AC
10.37 CFS

EXISTING
SWALE

PRE
41.67 AC, 54.75 CFS

L = 2,079 FT

EX-1
41.67 AC
48.00 CFS

L = 1,929 FT

OS-1
34.00 AC
46.51 CFS

EXISTING
3 - 24" PIPES

PRE
34.00 AC, 41.52 CFS

EXISTING
STORM CROSSING
6 - 24" STORM PIPES

EXISTING
ROADSIDE DITCH W/
2 - 24" STORM PIPES

INTERSTATE HIGHWAY 35
RIGHT-OF-WAY WIDTH VARIES

CHAPMAN ROAD (F.M. 455)
RIGHT-OF-WAY WIDTH VARIES

EXCHANGE DRIVE
(50' WIDE R.O.W.)
CABINET E-PG.286, P.R.D.C.

S 00°48'52" W 563.24'
(S 00°14'55" E)

S 01°26'23" W 1183.57'
(S 00°14'55" E)

N 00°58'47" E 724.59'
(N 00°30'07" W)

N 88°49'25" W 1307.41'
(S 89°41'39" W)

GRAPHIC SCALE

100 0 50 100 200

1 inch = 100 ft.

LEGEND	
A-1 / 1.5 AC / 10 CFS	– DRAINAGE AREA –DRAINAGE AREA IN ACRES – FLOW FOR DRAINAGE AREA IN 10 MIN CFS
	DRAINAGE AREA BOUNDARY

FLOODPLAIN NOTE

THIS PROPERTY IS LOCATED IN NON-SHADED ZONE "X", AS SCALED FROM THE F.E.M.A. FLOOD INSURANCE RATE MAP DATED APRIL 18, 2011 AND IS LOCATED IN COMMUNITY NUMBER 480786 AS SHOWN ON MAP NUMBER 48121C0210J. THE LOCATION OF THE FLOOD ZONE IS APPROXIMATE.

TEXAS REGISTRATION #14199

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Engineer DREW DONOSKY
P.E. No. 125651 Date 7/17/2024

SANGER MULTI-FAMILY
PREPARED FOR GREYSTAR
SANGER, TEXAS

No.	DATE	REVISION	BY

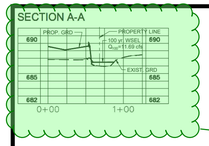
EXISTING DRAINAGE AREAS

DESIGN:	ASD
DRAWN:	DC
CHECKED:	ASD
DATE:	7/17/2024

SHEET
C-6.0

CASE NO. 2022-185

PLOTTED BY: DAN CABALLERO
PLOT DATE: 7/17/2024 10:08 AM
LOCATION: Z:\PROJECTS\PROJECTS\2022-185 MALOUF SANGER\CADD\SHEETS\MULTI-FAMILY GREYSTAR\C-6.0 EXISTING DRAINAGE AREAS.DWG
LAST SAVED: 7/10/2024 5:39 PM



Profile and provide HGL/hydraulic data for the proposed ditch. The design must meet requirements outlined in ordinance 10.106(d)(9)(B)

Please provide an updated drainage study. Comments provided in April

Proposed Detention Pond Evaluation

Elevation	Area (sf)	Ac	Elevation Difference	Incremental Volume (ft³)	Cumulative Volume (ft³)	Cumulative Volume (ac-ft)	Elevation	Ft³ per one hundredth
677.69	0	0.00					677.69	
			0.31	449	449	0.010		14.47705
678.00	2895	0.07					678.00	
			1.00	25521	25969	0.596		255.2067
679.00	48146	1.11					679.00	
			1.00	65689	91659	2.104		656.89195
680.00	83232	1.91					680.00	
			1.00	83607	175266	4.024		836.07065
681.00	83982	1.93					681.00	
			1.00	84379	259645	5.961		843.78785
682.00	84776	1.95					682.00	
			1.00	85165	344810	7.916		851.6514
683.00	85555	1.96					683.00	
			1.00	85946	430756	9.889		859.4648
684.00	86338	1.98					684.00	
100 YR WSE **684.30**			1.00	86736	517492	11.880		867.3577
685.00	87134	2.00					685.00	
1 FT FREEBOARD **685.30**			1.00	87526	605018	13.889		875.26235
TOP OF POND 686.00	87919	2.02					686.00	

Predeveloped Conditions

Area	41.67 acres
Time (Tc)	47 minutes
C value	0.30
I-100yr	5.25 in/hr
Q100yr	**65.63 cfs**
Bypass Flow	**12.52 cfs**
Release Rate	**53.11 cfs**
Q100yr (T)	**53.11 cfs**

Does not match previous sheet

Onsite Proposed Conditions

Area	37.15 acres
Time (Tc)	10 minutes
Avg. C value	0.85 avg
I-100yr	11.60 in/hr
Q100yr	**366.30 cfs**

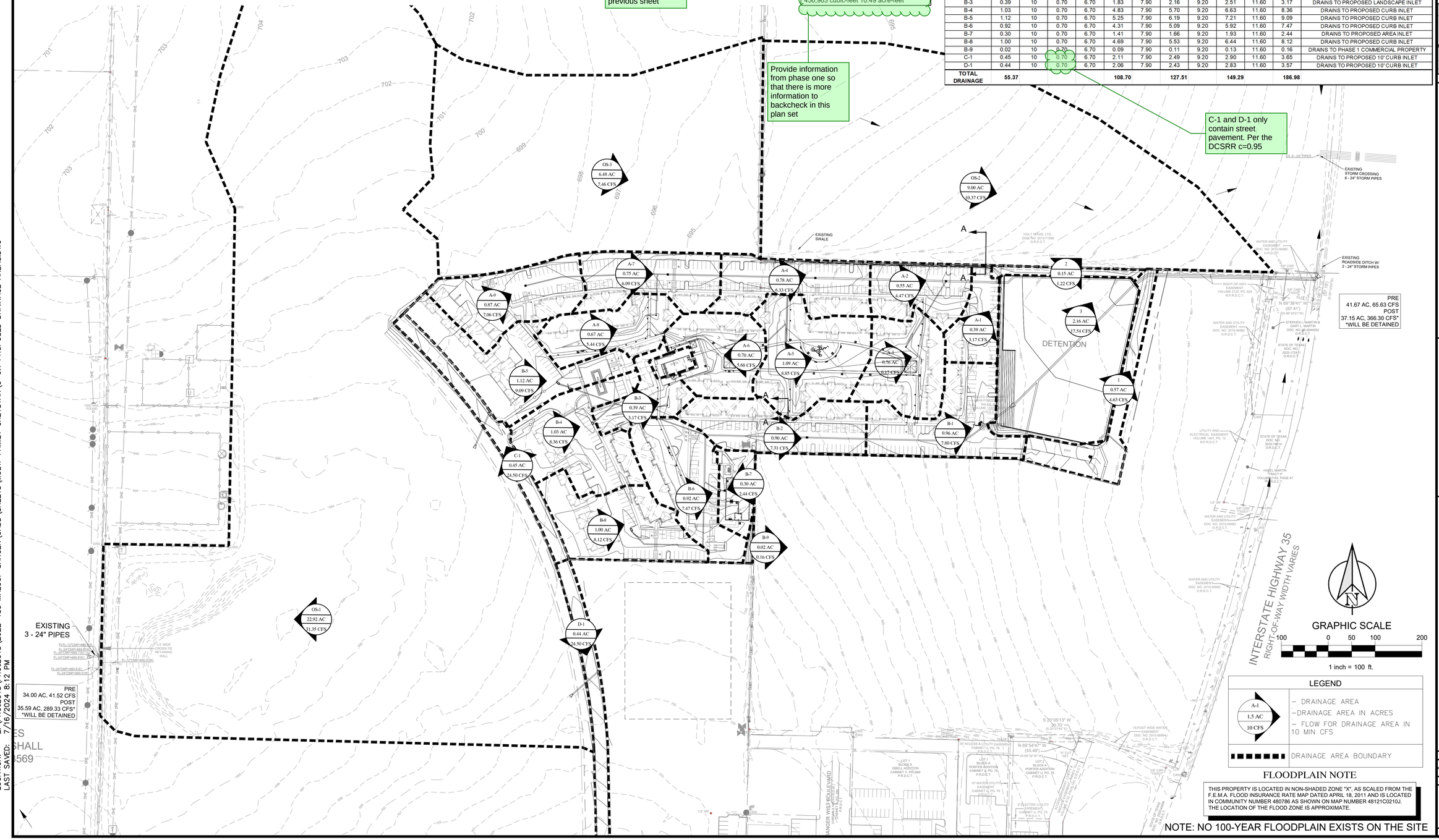
Required Storage Volume: 456,963 cubic-feet 10.49 acre-feet

HYDROLOGIC CALCULATIONS - POST DEVELOPMENT

DRAINAGE AREA	AREA (AC.)	TC (MIN)	C	I5 (IN/HR)	Q5 (CFS)	I10 (IN/HR)	Q10 (CFS)	I25 (IN/HR)	Q25 (CFS)	I100 (IN/HR)	Q100 (CFS)	COLLECTION POINT
OS-1	22.92	53	0.30	2.70	18.57	3.12	21.45	3.71	25.51	4.56	31.35	DRAINS TO EXISTING DETENTION POND
OS-2	9.00	47	0.30	2.27	6.13	2.63	7.10	3.12	8.42	3.84	10.37	DRAINS TO IH 35 FRONTAGE ROAD CHANNEL
OS-3	6.48	47	0.30	2.27	4.41	2.63	5.11	3.12	6.07	3.84	7.46	DRAINS TO IH 35 FRONTAGE ROAD CHANNEL
1	0.57	10	0.70	6.70	2.67	7.90	3.15	9.20	3.67	11.60	4.63	DRAINS TO PHASE 1 COMMERCIAL PROPERTY
2	0.15	10	0.70	6.70	0.70	7.90	0.83	9.20	0.97	11.60	1.22	DRAINS TO IH 35 FRONTAGE ROAD CHANNEL
3	2.16	10	0.70	6.70	10.13	7.90	11.94	9.20	13.91	11.60	17.54	DRAINS TO DETENTION POND OUTLET
A-1	0.39	10	0.70	6.70	1.83	7.90	2.16	9.20	2.51	11.60	3.17	DRAINS TO PROPOSED CURB INLET
A-2	0.55	10	0.70	6.70	2.58	7.90	3.04	9.20	3.54	11.60	4.47	DRAINS TO PROPOSED GRATE INLET
A-3	0.76	10	0.70	6.70	3.56	7.90	4.20	9.20	4.89	11.60	6.17	DRAINS TO PROPOSED LANDSCAPE INLET
A-4	0.78	10	0.70	6.70	3.66	7.90	4.31	9.20	5.02	11.60	6.33	DRAINS TO PROPOSED GRATE INLET
A-5	1.09	10	0.70	6.70	5.11	7.90	6.03	9.20	7.02	11.60	8.85	DRAINS TO PROPOSED LANDSCAPE INLET
A-6	0.70	10	0.70	6.70	3.28	7.90	3.87	9.20	4.51	11.60	5.68	DRAINS TO PROPOSED LANDSCAPE INLET
A-7	0.75	10	0.70	6.70	3.52	7.90	4.15	9.20	4.83	11.60	6.09	DRAINS TO PROPOSED GRATE INLET
A-8	0.67	10	0.70	6.70	3.14	7.90	3.71	9.20	4.31	11.60	5.44	DRAINS TO PROPOSED LANDSCAPE INLET
A-9	0.87	10	0.70	6.70	4.08	7.90	4.81	9.20	5.60	11.60	7.06	DRAINS TO PROPOSED GRATE INLET
B-1	0.96	10	0.70	6.70	4.50	7.90	5.31	9.20	6.18	11.60	7.80	DRAINS TO PROPOSED GRATE INLET
B-2	0.90	10	0.70	6.70	4.22	7.90	4.98	9.20	5.80	11.60	7.31	DRAINS TO PROPOSED GRATE INLET
B-3	0.39	10	0.70	6.70	1.83	7.90	2.16	9.20	2.51	11.60	3.17	DRAINS TO PROPOSED LANDSCAPE INLET
B-4	1.03	10	0.70	6.70	4.83	7.90	5.70	9.20	6.63	11.60	8.36	DRAINS TO PROPOSED CURB INLET
B-5	1.12	10	0.70	6.70	5.25	7.90	6.19	9.20	7.21	11.60	9.09	DRAINS TO PROPOSED CURB INLET
B-6	0.92	10	0.70	6.70	4.31	7.90	5.09	9.20	5.92	11.60	7.47	DRAINS TO PROPOSED CURB INLET
B-7	0.30	10	0.70	6.70	1.41	7.90	1.66	9.20	1.93	11.60	2.44	DRAINS TO PROPOSED AREA INLET
B-8	1.00	10	0.70	6.70	4.69	7.90	5.53	9.20	6.44	11.60	8.12	DRAINS TO PROPOSED CURB INLET
B-9	0.02	10	0.70	6.70	0.09	7.90	0.11	9.20	0.13	11.60	0.16	DRAINS TO PHASE 1 COMMERCIAL PROPERTY
C-1	0.45	10	0.70	6.70	2.11	7.90	2.49	9.20	2.90	11.60	3.65	DRAINS TO PROPOSED 10' CURB INLET
D-1	0.44	10	0.70	6.70	2.06	7.90	2.43	9.20	2.83	11.60	3.57	DRAINS TO PROPOSED 10' CURB INLET
TOTAL DRAINAGE	**55.37**				**108.70**		**127.51**		**149.29**		**186.98**	

Provide information from phase one so that there is more information to backcheck in this plan set

C-1 and D-1 only contain street pavement. Per the DCSRR c=0.95



GRAPHIC SCALE

100 0 50 100 200

1 inch = 100 ft.

LEGEND	
A-1 / 1.5 AC / 10 CFS	– DRAINAGE AREA –DRAINAGE AREA IN ACRES – FLOW FOR DRAINAGE AREA IN 10 MIN CFS
	DRAINAGE AREA BOUNDARY

FLOODPLAIN NOTE

THIS PROPERTY IS LOCATED IN NON-SHADED ZONE "X", AS SCALED FROM THE F.E.M.A. FLOOD INSURANCE RATE MAP DATED APRIL 18, 2011 AND IS LOCATED IN COMMUNITY NUMBER 480786 AS SHOWN ON MAP NUMBER 48121C0210J. THE LOCATION OF THE FLOOD ZONE IS APPROXIMATE.

NOTE: NO 100-YEAR FLOODPLAIN EXISTS ON THE SITE

PLOTTED BY: DAN CABALLERO
PLOT DATE: 7/17/2024 10:08 AM
LOCATION: Z:\PROJECTS\PROJECTS\2022-185 MALOUF SANGER\CADD\SHEETS\MULTI-FAMILY GREYSTAR\C-6.1 PROPOSED DRAINAGE AREAS.DWG
LAST SAVED: 7/16/2024 8:12 PM

TEXAS REGISTRATION #14199
CLAY MOORE ENGINEERING
1903 CENTRAL DRIVE, SUITE #406
BEDFORD, TX 76021
PHONE: 817.281.0572
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CLAYMOORE ENGINEERING
ENGINEERING AND PLANNING CONSULTANTS

Engineer DREW DONOSKY
P.E. No. 125651 Date 7/17/2024

SANGER MULTI-FAMILY
PREPARED FOR GREYSTAR
SANGER, TEXAS

No.	DATE	REVISION	BY

PROPOSED DRAINAGE AREAS

DESIGN:	ASD
DRAWN:	DC
CHECKED:	ASD
DATE:	7/17/2024

SHEET
C-6.1

CASE NO. 2022-185

These angles look too large for deflection without a fitting or manhole. Verify and revise

STA: 9+48.32 STORM LINE A
12° DEFLECTION
FL 24": 689.26
FL 24": 689.26

STA: 7+64.42 STORM LINE A
4° DEFLECTION
FL 24": 688.37
FL 24": 688.37

STA: 10+24.83 STORM LINE A
INSTALL:
3'X3' GRATE INLET
TOP: 695.25
FL 24": 691.25

78 LF OF 24" RCP @ 2.53%

9 182 LF OF 24" RCP @ 0.50%

25 LF OF 24" RCP @ 0.50%

20 LF OF 27" RCP @ 0.50%

STA: 7+18.69 STORM LINE A
INSTALL:
3'X3' GRATE INLET
TOP: 693.08
FL 36": 686.97
FL 27": 687.89

57 LF OF 36" RCP @ 0.50%

258 LF OF 36" RCP @ 0.50%

STA: 4+03.69 STORM LINE A
INSTALL:
3'X3' GRATE INLET
TOP: 691.28
FL 36": 685.39
FL 36": 685.39

279 LF OF 36" RCP @ 0.50%

STA: 1+24.69 STORM LINE A
INSTALL:
4'X4' GRATE INLET
TOP: 687.88
FL 18": 685.00
FL 36": 684.00
FL 36": 684.00

STA: 0+07.97 STORM LAT A-1
INSTALL:
5' CURB INLET
TOP: 689.39
FL 18": 685.39

8 LF OF 18" RCP @ 12.30%

A minimum slope of 0.50% towards the outlet structure is required for all detention facilities.

STA: 0+00 STORM LINE A
INSTALL:
SLOPED HEADWALL
FL 36": 680.15

10 LF OF 36" RCP @ 33.41%

STA: 0+10.49 STORM LINE A
STA: 0+00.00 STORM LAT A-1
INSTALL:
36"X18"X60° WYE
FL 36": 683.66
FL 18": 684.41
FL 36": 683.66

114 LF OF 36" RCP @ 0.30%

STA: 7+39.18 STORM LINE A
18" PIPE CONNECTION
FL 18": 688.32 (S)
FL 24": 688.24
FL 27": 687.99

88 LF 18" PVC @ 2.80%

2'x2' GRATE INLET
TOP: 693.78
FL 18": 690.78

STA: 4+60.71 STORM LINE A
18" PIPE CONNECTION
FL 18": 686.91
FL 36": 685.68
FL 36": 685.68

187 LF 18" PVC @ 0.60%

FL: 687.50

118 LF 18" PVC @ 1.93%

165 LF 18" PVC @ 1.50%

6" POOL DRAIN
FL 6": 692.00
REF. ARCH. PLANS

2'x2' GRATE INLET
TOP: 692.78
FL 18": 689.78

2'x2' GRATE INLET
TOP: 691.04
FL 18": 688.04

2'x2' GRATE INLET
TOP: 690.48
FL 18": 687.48

STA: 3+31 STORM LAT B-2
INSTALL:
5' CURB INLET
TOP: 696.45
FL 24": 692.45

127 LF OF 24" RCP @ 1.00%

STA: 2+03.64 STORM LAT B-2
STA: 0+00.00 STORM LAT B-3
18"X18"X60° WYE
FL 24": 691.18
FL 24": 691.18
FL 24": 691.18

STA: 0+70.89 STORM LINE C
INSTALL:
10' CURB INLET
TOP: 697.08
FL 24": 693.08

71 LF OF 24" RCP @ 0.50%

STA: 0+00 STORM LINE C
INSTALL:
SLOPED HEADWALL
FL 24": 692.73

STA: 0+62.95 STORM LAT B-3
INSTALL:
5' CURB INLET
TOP: 696.13
FL 24": 692.13

63 LF OF 24" RCP @ 1.51%

106 LF OF 24" RCP @ 1.00%

98 LF OF 24" RCP @ 1.00%

2'x2' GRATE INLET
TOP: 694.80
FL 12": 691.80

33 LF 12" PVC @ 3.57%

STA: 0+97.99 STORM LAT B-2
12" PIPE CONNECTION
FL 12": 690.62
FL 24": 690.12
FL 24": 690.12

STA: 6+85.38 STORM LINE B
STA: 0+00.00 STORM LAT B-2
INSTALL:
4' DIA. STRM MH
TOP: 694.85
FL 27": 687.97
FL 24": 689.14
FL 36": 687.05

STA: 4+68.95 STORM LINE B
INSTALL:
4'X4' GRATE INLET
TOP: 691.97
FL 36": 685.97
FL 36": 685.97

STA: 0+11.88 STORM LAT B-1
INSTALL:
3'X3' GRATE INLET
TOP: 689.69
FL 18": 685.69

65 LF OF 36" RCP @ 6.15%

12 LF OF 18" RCP @ 7.91%

STA: 0+10.12 STORM LINE B
INSTALL:
SLOPED HEADWALL
FL 36": 680.00

STA: 0+75.19 STORM LINE B
STA: 0+00.00 STORM LAT B-1
36"X18"X60° WYE
FL 36": 684.00
FL 18": 684.75
FL 36": 684.00

59 LF OF 36" RCP @ 0.50%

216 LF OF 36" RCP @ 0.50%

335 LF OF 36" RCP @ 0.50%

STA: 0+00 STORM LINE C-1
1 - PIPE THROUGH WALL
FL 42": 679.68

64 LF OF 42" PVC @ 0.50%

STA: 0+64.31 STORM LINE C-1
1 - PLUG
FL 42": 680.00

STA: 1+33.97 STORM LINE B
INSTALL:
30° BEND
FL 36": 684.29
FL 36": 684.29

STA: 7+85.14 STORM LINE B
STA: 0+00.00 STORM LAT B-4
24"X18"X60° WYE
FL 18": 688.80
FL 27": 688.47
FL 24": 688.72

36 LF OF 18" RCP @ 3.60%

STA: 0+35.79 STORM LAT B-4
INSTALL:
5' CURB INLET
TOP: 694.09
FL 18": 690.09
FL 18": 690.09

Show WL crossing

3 LF OF 24" RCP @ 0.50%

STA: 7+88.14 STORM LINE B
PIPE SIZE CHANGE
FL 24": 688.73
FL 18": 689.23

STA: 0+48.44 STORM LAT B-4
INSTALL:
3'X3' AREA INLET
TOP: 693.97
FL 18": 690.15

13 LF OF 18" RCP @ 0.50%

STA: 10+84.76 STORM LINE B
INSTALL:
5' CURB INLET
TOP: 697.12
FL 18": 693.12

9 133 LF OF 18" RCP @ 1.31%

38 LF OF 18" RCP @ 1.31%

126 LF OF 18" RCP @ 1.31%

For constructability, it is suggested to remove the 3' section of 24" pipe and up-size straight to 27" RCP

STA: 10+46.81 STORM LINE B
INSTALL:
45° BEND
FL 18": 692.62
FL 18": 692.62

STA: 9+21.24 STORM LINE B
INSTALL:
4' DIA. STORM MH
TOP: 697.75
FL 18": 690.98
FL 18": 690.98

Show WL crossing (TYP)

70 LF OF 18" RCP @ 0.50%

STA: 0+00 STORM LINE D
INSTALL:
SLOPED HEADWALL
FL 18": 693.58

STA: 0+70.13 STORM LINE D
INSTALL:
10' CURB INLET
TOP: 697.93
FL 18": 693.93

MATCHLINE SHEET C-6.3

MATCHLINE SHEET C-6.3

LEGEND	
	EXISTING STORM DRAIN
	PROPOSED STORM DRAIN
	PROPOSED WYE INLET
	PROPOSED CURB INLET

GRAPHIC SCALE

50 0 25 50 100

1 inch = 50 ft.

PLOTTED BY: DAN CABALLERO
PLOT DATE: 7/17/2024 10:10 AM
LOCATION: Z:\PROJECTS\2022-185 MALOUF SANGER\CADD\SHEETS\MULTI-FAMILY GREYSTAR\C-6.4 STORM DRAINAGE PROFILES.DWG
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CLAYMOORE ENGINEERING
1903 CENTRAL DRIVE, SUITE #406
BEDFORD, TX 76021
PHONE: 817.281.0572
WWW.CLAYMOOREENG.COM

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ENGINEERING AND PLANNING CONSULTANTS

Engineer: DREW DONOSKY
P.E. No: 125651 Date: 7/17/2024

SANGER MULTI-FAMILY
PREPARED FOR
GREYSTAR
SANGER, TEXAS

No.	DATE	REVISION	BY

STORM DRAINAGE PLAN

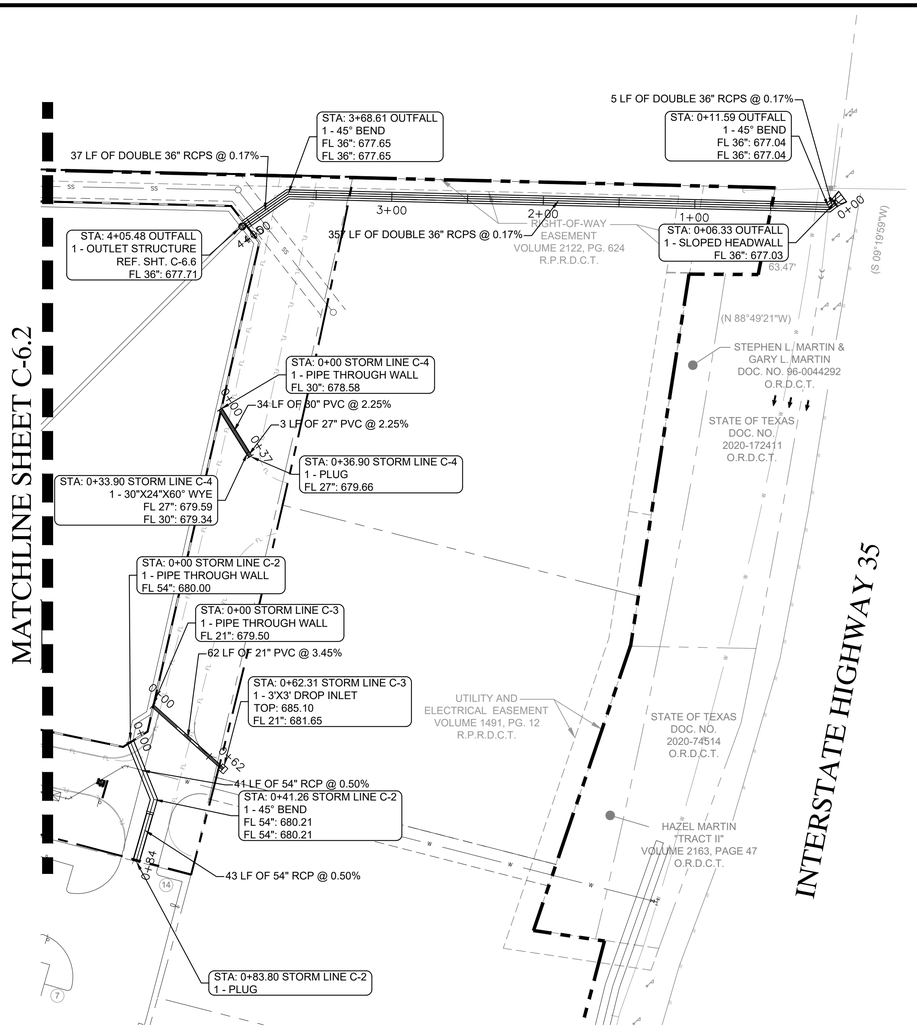
DESIGN: ASD
DRAWN: DC
CHECKED: ASD
DATE: 7/17/2024

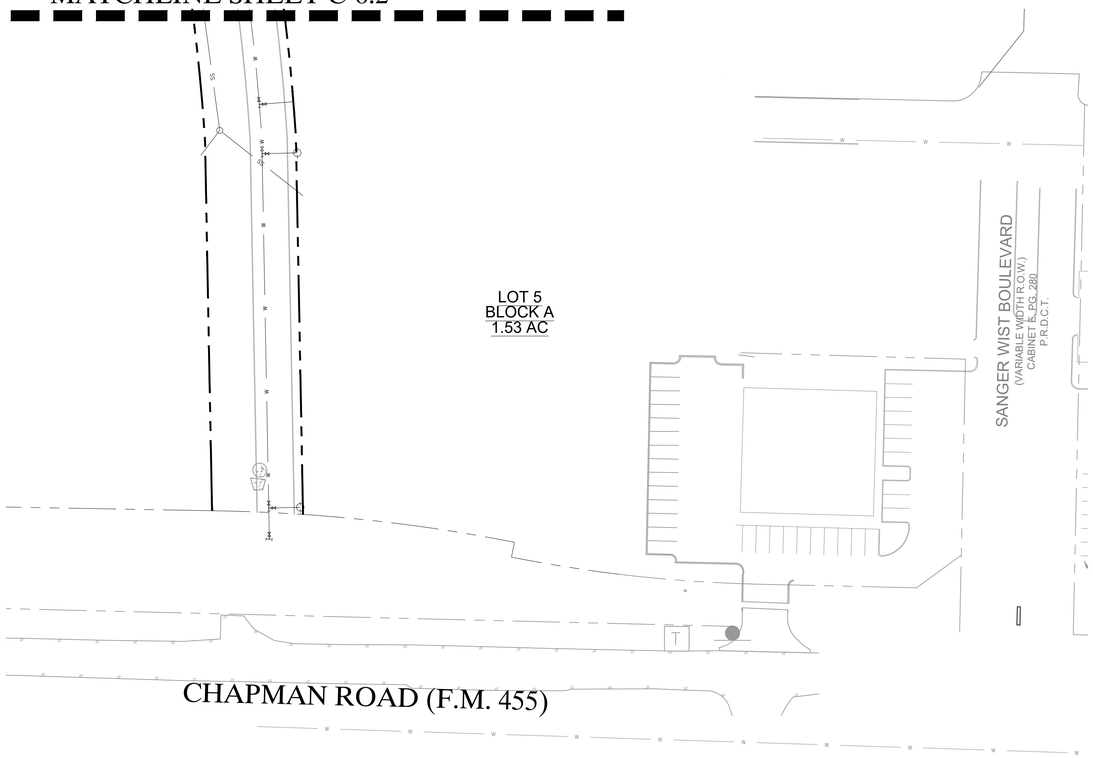
SHEET
C-6.2

CASE NO. 2022-185

It is unclear what is to be constructed in Phase 1 vs Phase 2 plats. Clarify.

Storm design is not consistent between phase 1 and 2





LEGEND	
SD	EXISTING STORM DRAIN
	PROPOSED STORM DRAIN
	PROPOSED WYE INLET
	PROPOSED CURB INLET

GRAPHIC SCALE

50 0 25 50 100

1 inch = 50 ft.

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Engineer DREW DONOSKY
P.E. No. 125651 Date 7/17/2024

SANGER MULTI-FAMILY
PREPARED FOR GREYSTAR
SANGER, TEXAS

No.	DATE	REVISION	BY

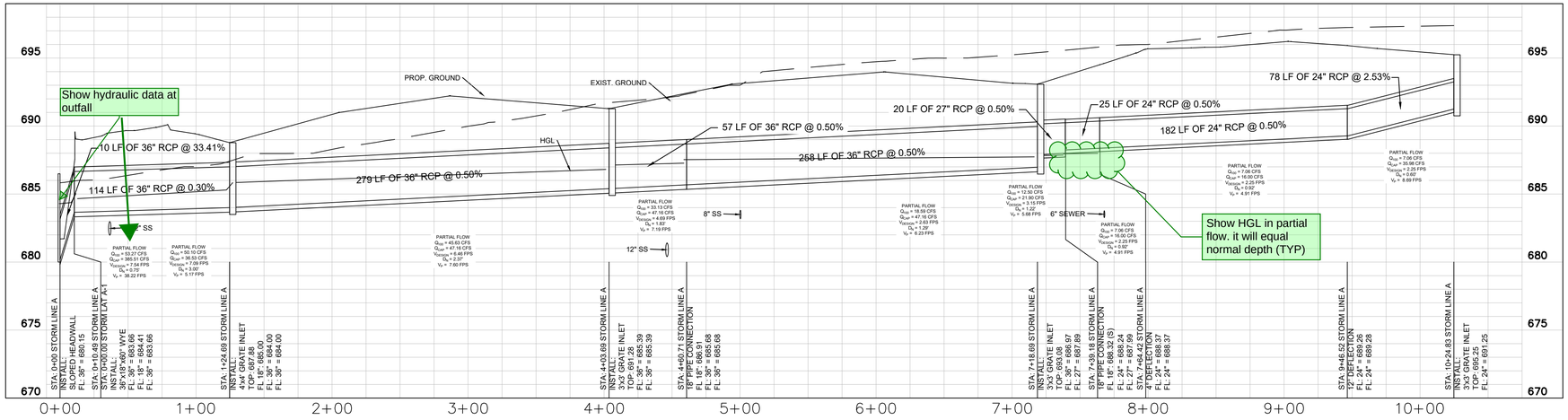
STORM DRAINAGE PLAN

DESIGN:	ASD
DRAWN:	DC
CHECKED:	ASD
DATE:	7/17/2024

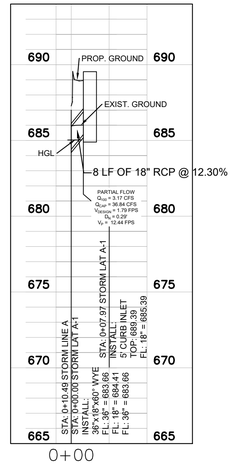
SHEET
C-6.3

CASE NO. 2022-185

STORM LINE A



STORM LAT A-1



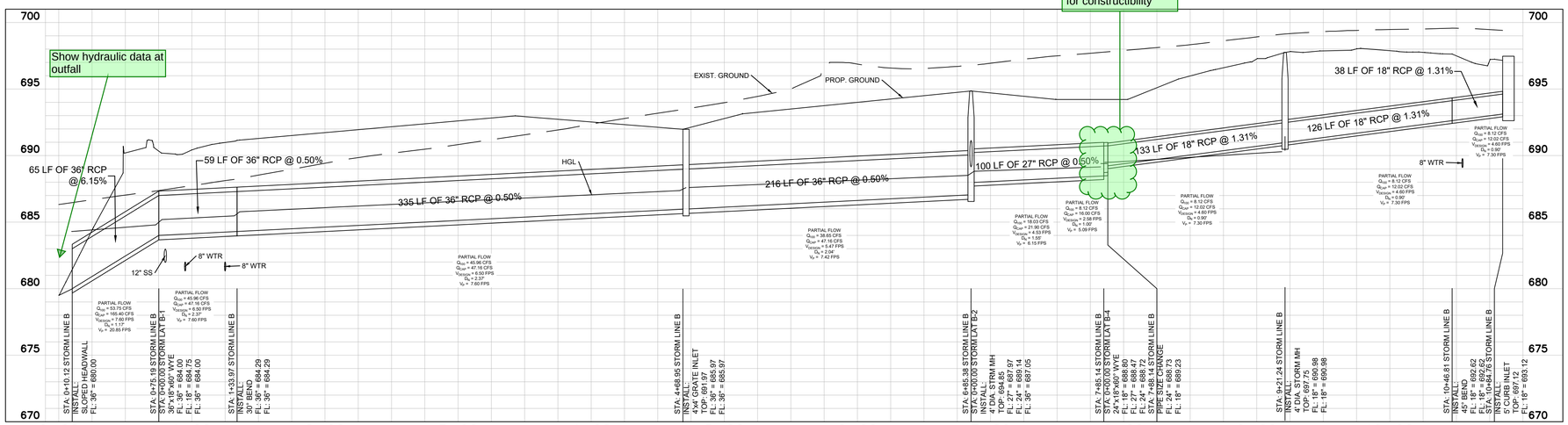
GRAPHIC SCALE

50 0 25 50 100

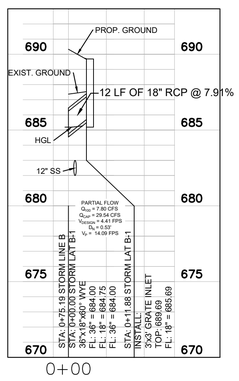
1 inch = 50 ft.

vertical scale missing

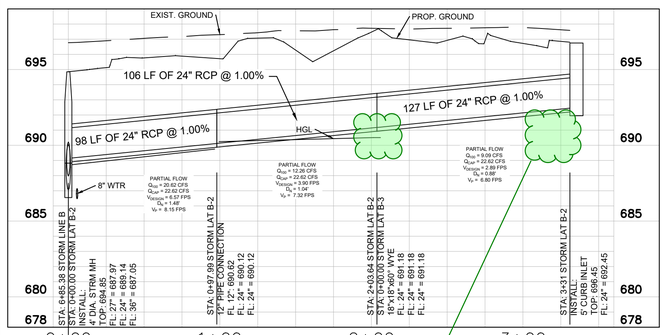
STORM LINE B



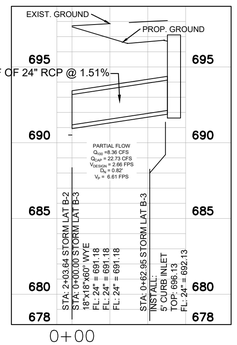
STORM LAT B-1



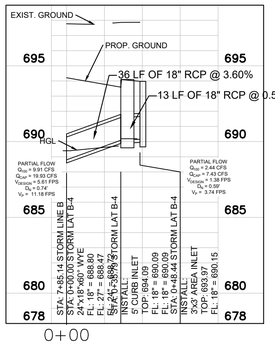
STORM LAT B-2



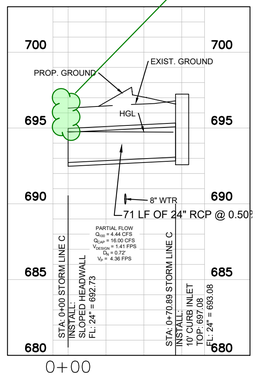
STORM LAT B-3



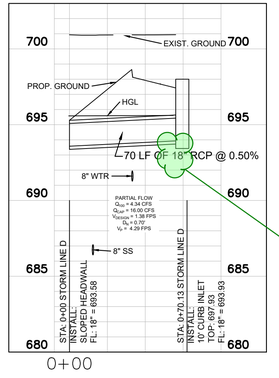
STORM LAT B-4



STORM LINE C



STORM LINE D



TEXAS REGISTRATION #14199

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ENGINEERING AND PLANNING CONSULTANTS

Engineer: DREW DONOSKY
P.E. No: 125651 Date: 7/17/2024

SANGER MULTI-FAMILY
PREPARED FOR GREYSTAR
SANGER, TEXAS

STORM DRAINAGE PROFILES

No.	DATE	REVISION	BY

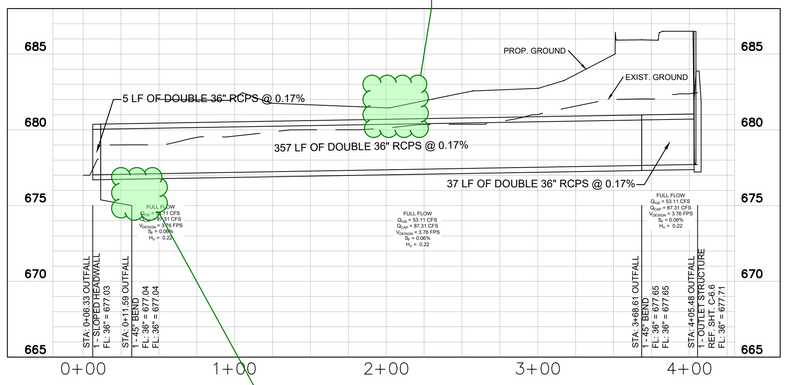
DESIGN:	ASD
DRAWN:	DC
CHECKED:	ASD
DATE:	7/17/2024

SHEET
C-6.4

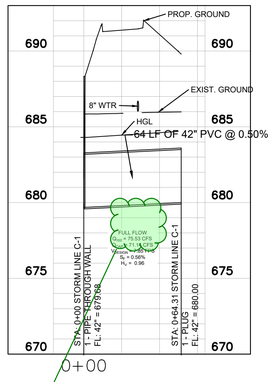
CASE NO. 2022-185

PLOTTED BY: DAN CABALLERO
PLOT DATE: 7/17/2024 10:11 AM
LOCATION: Z:\PROJECTS\PROJECTS\2022-185 MALOUF SANGER\CADD\SHEETS\MULTI-FAMILY GREYSTAR\C-6.4 STORM DRAINAGE PROFILES.DWG
LAST SAVED: 7/17/2024 9:54 AM

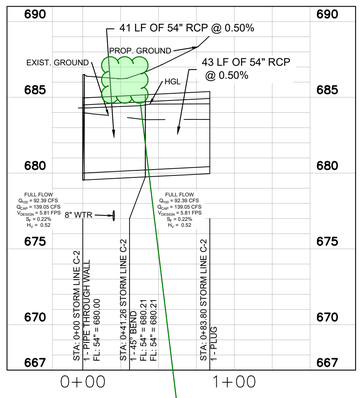
OUTFALL



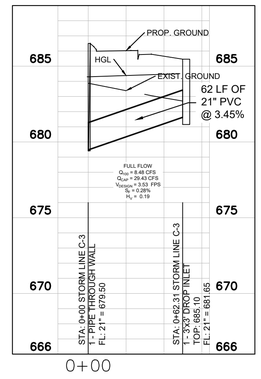
STORM LINE C-1



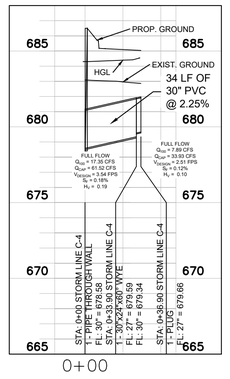
STORM LINE C-2



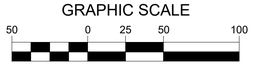
STORM LINE C-3



STORM LINE C-4



GRAPHIC SCALE



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P.E. No. 125651 Date: 7/17/2024

SANGER MULTI-FAMILY
PREPARED FOR GREYSTAR
SANGER, TEXAS

No.	DATE	REVISION	BY

STORM DRAINAGE PROFILES

DESIGN:	ASD
DRAWN:	DC
CHECKED:	ASD
DATE:	7/17/2024

SHEET
C-6.5

CASE NO. 2022-185

PLOTTED BY: DAN CABALLERO
PLOT DATE: 7/17/2024 10:11 AM
LOCATION: Z:\PROJECTS\2022-185 MALOUF SANGER\CADD\SHEETS\MULTI-FAMILY GREYSTAR\C-6.4 STORM DRAINAGE PROFILES.DWG
LAST SAVED: 7/17/2024 9:54 AM

	Proposed Detention Pond Evaluation									
	Elevation	Area (sf)	Ac	Elevation Difference	Incremental Volume (ft^3)	Cumulative Volume (ft^3)	Cumulative Volume (ac-ft)		Elevation	Ft^3 per one hundredth
	677.69	0	0.00						677.69	
				0.31	449	449	0.010			14.47705
	678.00	2895	0.07						678.00	
				1.00	25521	25969	0.596			255.2067
	679.00	48146	1.11						679.00	
				1.00	65689	91659	2.104			656.89195
	680.00	83232	1.91						680.00	
				1.00	83607	175266	4.024			836.07065
	681.00	83982	1.93						681.00	
				1.00	84379	259645	5.961			843.78785
	682.00	84776	1.95						682.00	
				1.00	85165	344810	7.916			851.6541
	683.00	85555	1.96						683.00	
				1.00	85946	430756	9.889			859.4648
	684.00	86338	1.98						684.00	
100 YR WSE	684.30			1.00	86736	517492	11.880			867.3577
	685.00	87134	2.00						685.00	
1 FT FREEBOARD	685.30			1.00	87526	605018	13.889			875.26235
TOP OF POND	686.00	87919	2.02						686.00	

1' of freeboard and 2' of sediment storage required

Drainage / Detention Calculations
Modified Rational Method

Required Storage Volume	456,963 cubic-feet 10.490 acre-feet

Predeveloped Conditions		
Area	41.67 acres	
Time (Tc)	47 minutes	
C value	0.30	
I-100yr	5.25 in/hr	
Q100yr	**65.63 cfs**	
Bypass Flow	**12.52 cfs**	**Drainage Areas ROW and Bypass**
Release Rate	**53.11 cfs**	**Allowable Release from Pond**
Q100yr (T)	**53.11 cfs**	**Rate of Release by Outfall Structure**

Onsite Proposed Conditions		
Area	37.15 acres	
Time (Tc)	10 minutes	
Avg. C value	0.85 avg	
I-100yr	11.60 in/hr	
Q100yr	**366.30 cfs**	**Developed Runoff**

Runoff per Storm Event - Developed

Time (min.)	I-100yr	C value	Area (ac)	Runoff (cfs)
10	11.60	0.85	37.15	366.30
15	9.60	0.85	37.15	303.14
20	8.59	0.85	37.15	271.25
30	6.98	0.85	37.15	220.41
35	6.40	0.85	37.15	202.10
40	5.25	0.85	37.15	165.78
50	5.19	0.85	37.15	163.89
60	4.20	0.85	37.15	132.63
70	4.00	0.85	37.15	126.31
80	3.75	0.85	37.15	118.42
90	3.45	0.85	37.15	108.94
100	3.32	0.85	37.15	104.84
110	3.11	0.85	37.15	98.21
120	2.60	0.85	37.15	82.10

Inflow per Storm Event

Storm Event	Runoff	Inflow (ft^3)
10	366.30	219,779
15	303.14	272,830
20	271.25	325,501
30	220.41	396,740
35	202.10	424,402
40	165.78	397,877
50	163.89	491,662
60	132.63	477,452
70	126.31	530,502
80	118.42	568,395
90	108.94	588,289
100	104.84	629,024
110	98.21	648,160
120	82.10	591,131
130	0.00	-
140	0.00	-

Max Allowable Outflow per Storm Event

Storm	Time	Release	Outflow (ft^3)
10	20	53.11	31,866
15	25	53.11	39,833
20	30	53.11	47,799
30	40	53.11	63,732
35	45	53.11	71,699
40	50	53.11	79,665
50	60	53.11	95,598
60	70	53.11	111,532
70	80	53.11	127,465
80	90	53.11	143,398
90	100	53.11	159,331
100	110	53.11	175,264
110	120	53.11	191,197
120	130	53.11	207,130
130	140	53.11	223,063
140	150	53.11	238,996

Detention Volume Required

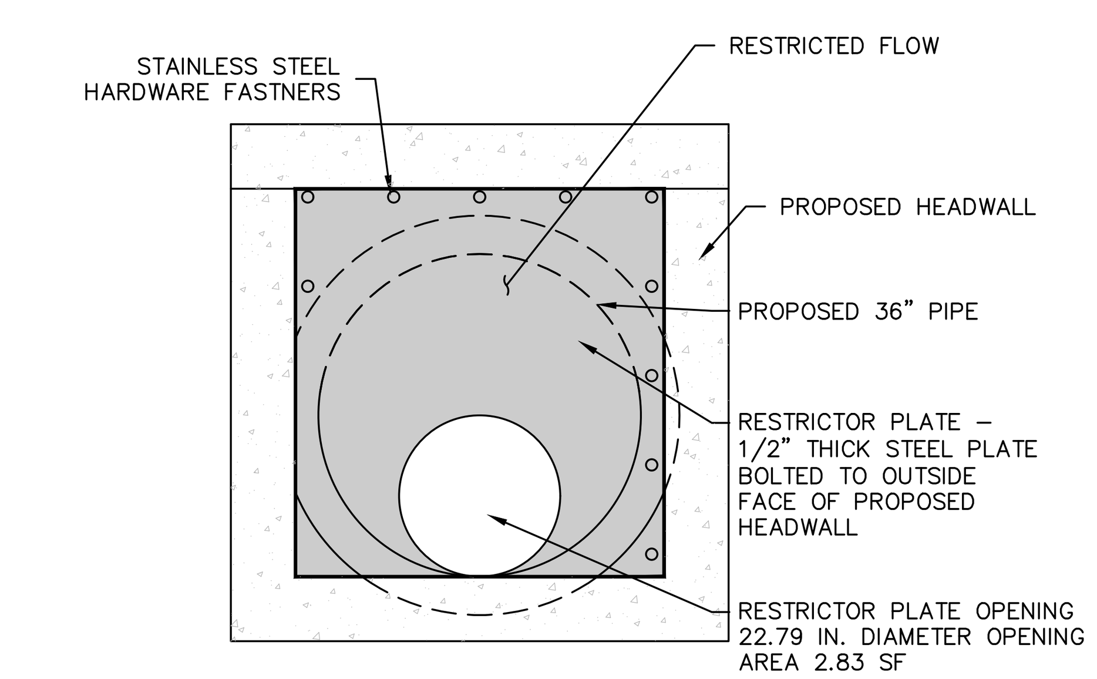
Storm	Inflow	Outflow	Storage (ft^3)	Storage (acre-ft)
10	219,779	31,866	187,913	4.314
15	272,830	39,833	232,997	5.349
20	325,501	47,799	277,702	6.375
30	396,740	63,732	333,007	7.645
35	424,402	71,699	352,703	8.097
40	397,877	79,665	318,211	7.305
50	491,662	95,598	396,063	9.092
60	477,452	111,532	365,920	8.400
70	530,502	127,465	403,037	9.252
80	568,395	143,398	424,997	9.757
90	588,289	159,331	428,958	9.848
100	629,024	175,264	453,760	10.417
110	648,160	191,197	456,963	10.490
120	591,131	207,130	384,001	8.815
130	-	223,063	(223,063)	-5.121
140	-	238,996	(238,996)	-5.487

100-YR STORM DRAIN CALCULATIONS

LINE.	STA.		INCREMENTAL AREA ACRES	CUMULATIVE AREA ACRES	RUNOFF COEFFICIENT	INCREMENTAL CA	CUMULATIVE CA	INLET TIME	FLOW TIME IN PIPE	TIME OF CONCENTRATION MIN	INTENSITY I_{100} IN/HR	DIST FT	TOTAL FLOW Q_{100} CFS	DIA. IN	SPAN FT	RISE FT	NUMBER	A Sq FT	R	ROUGH-NESS n	PIPE SLOPE So %	PIPE CAPACITY Q_{cap} CFS	V_{design} Qdesign/A	V_{full} FPS	Q/Qfull	V/Vfull	d/D	Flow Depth FT	Vpartial FPS	FRICTION SLOPE Sf FT/FT	Hv Vdesign^2/2g	K_j	H_j (MIN 0.1) FT.	HGL INCOMING PIPE FT	HGL OUTGOING PIPE FT
STORM LINE A	0+00.00	HEADWALL								12.73																								684.30	
				6.56			4.59		0.00			10.49	53.27	36		3		7.07	0.750	0.013	33.41%	385.51	7.54	54.54	0.138	0.70	0.25	0.75	38.22	0.63%	0.88				
	0+10.49	LAT A-1	0.39		0.70	0.27		10.00		12.73	11.60																					0.75	0.30	684.66	684.37
				6.17			4.32		0.37			114.20	50.10	36		3		7.07	0.750	0.013	0.30%	36.53	7.09	5.17	1.371	1.00	1.00	3.00	5.17	0.56%	0.78				
	1+24.69	GRATE INLET	1.31		0.70	0.92		10.00		12.36	11.60																					0.50	0.54	685.84	685.30
				4.86			3.40		0.62			279.00	39.46	36		3		7.07	0.750	0.013	0.50%	47.16	5.58	6.67	0.837	1.12	0.69	2.07	7.45	0.35%	0.48				
	4+03.69	GRATE INLET	0.78		0.70	0.55		10.00		11.74	11.60																					0.50	0.31	687.13	686.81
				4.08			2.86		0.13			57.02	33.13	36		3		7.07	0.750	0.013	0.50%	47.16	4.69	6.67	0.702	1.08	0.61	1.83	7.19	0.25%	0.34				
	4+60.71	LANDSCAPE DRAINS	1.79		0.70	1.25		10.00		11.61	11.60																					0.75	0.26	687.53	687.27
				2.29			1.60		0.69			257.98	18.59	36		3		7.07	0.750	0.013	0.50%	47.16	2.63	6.67	0.394	0.93	0.43	1.29	6.23	0.08%	0.11				
	7+18.69	GRATE INLET	0.75		0.70	0.53		10.00		10.92	11.60																					0.50	0.10	687.83	687.73
				1.54			1.08		0.06			20.49	12.50	27		2.25		3.98	0.563	0.013	0.50%	21.90	3.15	5.51	0.571	1.03	0.54	1.22	5.68	0.16%	0.15				
	7+39.18	LANDSCAPE DRAINS	0.67		0.70	0.47		10.00		10.86	11.60																					0.75	0.10	687.96	687.86
				0.87			0.61		0.09			25.24	7.06	24		2		3.14	0.500	0.013	0.50%	16.00	2.25	5.09	0.442	0.96	0.46	0.92	4.91	0.10%	0.08				
	7+64.42	DEFLECTION	0.00		0.70	0.00		10.00		10.77	11.60																					0.25	0.10	688.09	687.99
				0.87			0.61		0.62			182.10	7.06	24		2		3.14	0.500	0.013	0.50%	16.00	2.25	5.09	0.442	0.96	0.46	0.92	4.91	0.10%	0.08				
	9+46.52	DEFLECTION	0.00		0.70	0.00		10.00		10.15	11.60																					0.25	0.10	688.36	688.26
				0.87			0.61		0.15			78.31	7.06	24		2		3.14	0.500	0.013	2.53%	35.98	2.25	11.45	0.196	0.78	0.30	0.60	8.89	0.10%	0.08				
	10+24.83	GRATE INLET	0.87		0.70	0.61		10.00		10.00	11.60																					1.50	0.12	688.56	688.44
LAT A-1	0+00.00	LINE A								10.01																								684.66	
				0.39			0.27		0.01			7.97	3.17	18		1.5		1.77	0.375	0.013	12.30%	36.84	1.79	20.85	0.086	0.60	0.19	0.29	12.44	0.09%	0.05				
	0+07.97	CURB INLET	0.39		0.70	0.27		10.00		10.00	11.60																					1.50	0.10	684.77	684.67
STORM LINE B	0+00.00	HEADWALL								12.37																								684.30	
				6.62			4.63		0.06			75.19	53.75	36		3		7.07	0.750	0.013	6.15%	165.40	7.60	23.40	0.325	0.89	0.39	1.17	20.85	0.65%	0.90				
	0+75.19	LAT B-1	0.96		0.70	0.67		10.00		12.31	11.60																					0.75	0.41	685.19	684.79
				5.66			3.96		0.13			58.78	45.96	36		3		7.07	0.750	0.013	0.50%	47.16	6.50	6.67	0.975	1.14	0.79	2.37	7.60	0.47%	0.66				
	1+33.97	45° BEND	0.00		0.70	0.00		10.00		12.18	11.60																					0.35	0.31	685.78	685.47
				5.66			3.96		0.73			334.98	45.96	36		3		7.07	0.750	0.013	0.50%	47.16	6.50	6.67	0.975	1.14	0.79	2.37	7.60	0.47%	0.66				
	4+68.95	GRATE INLET	0.90		0.70	0.63		10.00		11.45	11.60																					0.50	0.42	687.79	687.37
				4.76			3.33		0.49			216.43	38.65	36		3		7.07	0.750	0.013	0.50%	47.16	5.47	6.67	0.820	1.11	0.68	2.04	7.42	0.33%	0.46				
	6+85.38	MANHOLE, LAT B-2	2.54		0.70	1.78		10.00		10.96	11.60																					0.50	0.30	688.82	688.51
				2.22			1.55		0.27			99.76	18.03	27		2.25		3.98	0.563	0.013	0.50%	21.90	4.53	5.51	0.823	1.12	0.69	1.55	6.15	0.34%	0.32				
	7+85.14	LAT B-4	1.22		0.70	0.85		10.00		10.69	11.60																					0.75	0.24	689.40	689.15
				1.00			0.70		0.01			3.00	8.12	24		2		3.14	0.500	0.013	0.50%	16.00	2.58	5.09	0.508	1.00	0.50	1.00	5.09	0.13%	0.10				
	7+88.14	PIPE SIZE CHANGE	0.00		0.70	0.00		10.00		10.68	11.60																					0.25	0.10	689.50	689.40
				1.00			0.70		0.30			133.10	8.12	18		1.5		1.77	0.375	0.013	1.31%	12.02	4.60	6.80	0.675	1.07	0.60	0.90	7.30	0.59%	0.33				
	9+21.24	MANHOLE	0.00		0.70	0.00		10.00		10.38	11.60																					0.50	0.10	690.39	690.29
				1.00			0.70		0.29			125.57	8.12	18		1.5		1.77	0.375	0.013	1.31%	12.02	4.60	6.80	0.675	1.07	0.60	0.90	7.30	0.59%	0.33				
	10+46.81	45° BEND	0.00		0.70	0.00		10.00		10.09	11.60																					0.35	0.11	691.25	691.14
				1.00			0.70		0.09			37.95	8.12	18		1.5		1.77	0.375	0.013	1.31%	12.02	4.60	6.80	0.675	1.07	0.60	0.90	7.30	0.59%	0.33				
	10+84.76	CURB INLET	1.00		0.70	0.70		10.00		10.00	11.60																					1.50	0.49	691.97	691.48
LAT B-1	0+00.00	LINE B								10.02																								685.19	
				0.96			0.67		0.02			14.46	7.80	18		1.5		1.77	0.375	0.013	7.91%	29.54	4.41	16.72	0.264	0.84	0.35	0.53	14.09	0.55%	0.30				
	0+14.46	CURB INLET	0.96		0.70	0.67		10.00		10.00	11.60																					1.50	0.10	685.37	685.27
LAT B-4	0+00.00	LINE B								10.11																								689.40	
				1.22			0.85		0.05			35.79	9.91	18		1.5		1.77	0.375	0.013	3.60%	19.93	5.61	11.28	0.497	0.99	0.49	0.74	11.18	0.88%	0.49				
	0+35.79	CURB INLET	0.92		0.70	0.64		10.00		10.06	11.60																					0.50	0.47	690.19	689.71
				0.30			0.21		0.06			12.65	2.44	18		1.5		1.77	0.375	0.013	0.50%	7.43	1.38	4.20	0.328	0.89	0.39	0.59	3.74	0.05%	0.03				
	0+48.44	GRATE INLET	0.30		0.70	0.21		10.00		10.00	11.60																					1.50	0.73	690.92	690.19
LAT B-2	0+00.00	LINE B								10.76																								688.82	
				2.54			1.78		0.23			112.86	20.62	24		2		3.14	0.500	0.013	1.00%	22.62	6.57	7.20	0.912	1.13	0.74	1.48	8.15	0.83%	0.67				
	1+12.86	LAT B-3	1.03		0.70	0.72		10.00		10.53	11.60																					0.75	0.49	690.24	689.75
				1.51			1.06		0.21			90.78	12.26	24		2		3.14	0.500	0.013	1.00%	22.62	3.90	7.20	0.542	1.02	0.52	1.04	7.32	0.29%	0.24				
	2+03.64	LANDSCAPE DRAIN	0.39		0.70	0.27		10.00		10.32	11.60																					0.75	0.14	690.65	690.51
				1.12			0.78		0.32			128.62	9.09	24		2		3.14	0.500	0.013	1.00%	22.62	2.89	7.20	0.402	0.94	0.44	0.88	6.80	0.16%	0.13				
	3+32.26	CURB INLET	1.12		0.70	0.78		10.00		10.00	11.60																					1.50	0.35	691.21	690.85
LAT B-3	0+00.00	LINE B								10.16																								690.24	
				1.03			0.72		0.16			62.95	8.36	24		2		3.14	0.500	0.013	1.01%	22.73	2.66	7.24	0.368	0.91	0.41	0.82	6.61	0.14%	0.11				
	0+62.95	CURB INLET	1.03		0.70	0.72		10.00		10.00	11.60																					1.50	0.10	690.43	690.33
STORM LINE C	0+00.00	HEADWALL								10.27																								694.73	
				0.45			0.38		0.27			69.49	4.44	24		2		3.14	0.500	0.013	0.50%	16.00	1.41	5.09	0.277	0.86	0.36	0.72	4.36	0.04%	0.03				
	0+70.89	CURB INLET	0.45		0.85	0.38		10.00		10.00	11.60																					1.50	0.10	694.86	694.76
STORM LINE D	0+00.00	HEADWALL								10.27																								695.58	
				0.44			0.37		0.27			69.49	4.34	24		2		3.14	0.500	0.013	0.50%	16.00	1.38	5.09	0.271	0.84	0.35	0.70	4.29	0.04%	0.03				
	0+70.13	CURB INLET	0.44		0.85	0.37		10.00		10.00	11.60																					1.50	0.10	695.71	695.61
STORM LINE C-1	0+00.00	HEADWALL								10.15																								684.30	
				7.66			6.51		0.15			69.49	75.53	42		3.5		9.62	0.875	0.013	0.50%	71.14	7.85	7.39	1.062	1.13	0.89	3.50	8.34	0.56%	0.96				
	0+64.31	FUTURE STUB	7.66		0.85	6.51		10.00		10.00	11.60																					1.50	0.10	684.79	684.69
STORM LINE C-2	0+00.00	HEADWALL								10.23																								684.30	
				9.37			7.96		0.20			69.49	92.39	54		4.5		15.90	1.125	0.013	0.50%	139.05	5.81	8.74	0.664	1.07	0.59	4.50	9.32	0.22%	0.52				
	0+41.26	45° BEND	0.00		0.85	0.00		10.00		10.03	11.60																					0.35	0.10	684.55	684.45
				9.37			7.96		0.03			10.08	92.39	54		4.5		15.90	1.125	0.013	0.50%	139.05	5.81	8.74	0.664	1.07	0.59	4.50	9.32	0.22%	0.52				
	0+51.34	FUTURE STUB	9.37		0.85	7.96		10.00		10.00	11.60																					1.50	0.79	685.36	684.57
STORM LINE C-3	0+00.00	HEADWALL								10.33																								684.30	
				0.86			0.73		0.33			69.49	8.48	21		1.75		2.41	0.438	0.013	3.45%	29.43	3.53	12.24	0.288	0.86	0.36	1.75	10.47	0.28%	0.19				
	0+62.31	DROP INLET	0.86		0.85	0.73		10.00		10.00	11.60																					1.50	0.10	684.60	684.50
STORM LINE C-4	0+00.00	HEADWALL								10.35																								684.30	
				1.76			1.50		0.33			69.49	17.35	30		2.5		4.91	0.625	0.013	2.25%	61.52	3.54	12.53	0.282	0.86	0.36	2.50	10.72	0.18%	0.19				
	0+33.90	WYE STUB	0.96		0.85	0.82		10.00		10.02	11.60																					0.75	0.12	684.54	684.42
				0.80			0.68		0.02			3.00	7.89	24		2		3.14	0.500	0.013	2.25%	33.93	2.51	10.80	0.232	0.80	0.32	2.00	8.68	0.12%	0.10				
	0+36.90	FUTURE STUB	0.80		0.85	0.68		10.00		10.00	11.60																					1.50	0.29	684.84	684.55
OUTFALL PIPE	0+00.00	TXDOT ROW								11.13																								680.03	
				1.00			0.85		0.05			11.59	53.11	36		3	2	14.14	1.500	0.013	0.17%	87.31	3.76	6.18	0.608	1.05	0.56	3.00	6.46	0.06%	0.22				
	0+11.59	45° BEND	0.00		0.70	0.00		10.00		11.08	11.60																					0.35	0.10	680.14	680.04
				1.00			0.85		0.92			357.02	53.11	36		3	2	14.14	1.500	0.013	0.17%	87.31	3.76	6.18	0.608	1.05	0.56	1.68	6.46	0.06%	0.22				
	3+68.61	45° BEND	0.00		0.70	0.00		10.00		10.16	11.60																					0.35	0.10	680.46	680.36
				1.00			0.85		0.16			36.87	53.11	36		3	2	14.14	1.500	0.013	0.17%	87.31	3.76	6.18	0.608	1.05	0.56	3.00	6.46	0.06%	0.22				
	4+05.48	POND	1.00		0.85	0.85		10.00		10.00	11.60																					1.50	0.33	680.81	680.48

Stations do not match the plan view

100 YR	
Elevation Interpolation	
Needed Volume	456963
Delta Volume	-60529
Delta Elevation	-0.70
Interpolated Water Surf Elev	684.30
DETENTION POND SURFACE ELEVATION	
100 YR WSE	684.30



RESTRICTOR PLATE DETAIL
POND 1
NOT TO SCALE

100 YEAR ORIFICE CALCULATION	
$Q = C*A(2gh)^{0.5}$	
RESTRICTOR PLATE	
C =	0.85
Dia Orifice =	22.79 in
Open Area	2.83 ft^2
g =	32.2 ft/s^2
FL 36" =	677.69
WSE =	684.30
h=	7.56
Q =	53.11 cfs

PLOTTED BY: DAN CABALLERO
PLOT DATE: 7/17/2024 10:11 AM
LOCATION: Z:\PROJECTS\PROJECTS\2022-185 MALOUF SANGER\CADD\SHEETS\MULTI-FAMILY GREYSTAR\C-6.4 STORM DRAINAGE PROFILES.DWG
LAST SAVED: 7/17/2024 9:54 AM

TEXAS REGISTRATION #14199
CLAYMOORE ENGINEERING
1903 CENTRAL DRIVE, SUITE #406
BEDFORD, TX 76021
PHONE: 817.281.0572
WWW.CLAYMOOREENG.COM

PRELIMINARY
FOR REVIEW ONLY
Not for construction purposes.
CLAYMOORE ENGINEERING
ENGINEERING AND PLANNING CONSULTANTS
Engineer DREW DONOSKY
P.E. No. 125651 Date 7/17/2024

SANGER MULTI-FAMILY
PREPARED FOR GREYSTAR
SANGER, TEXAS

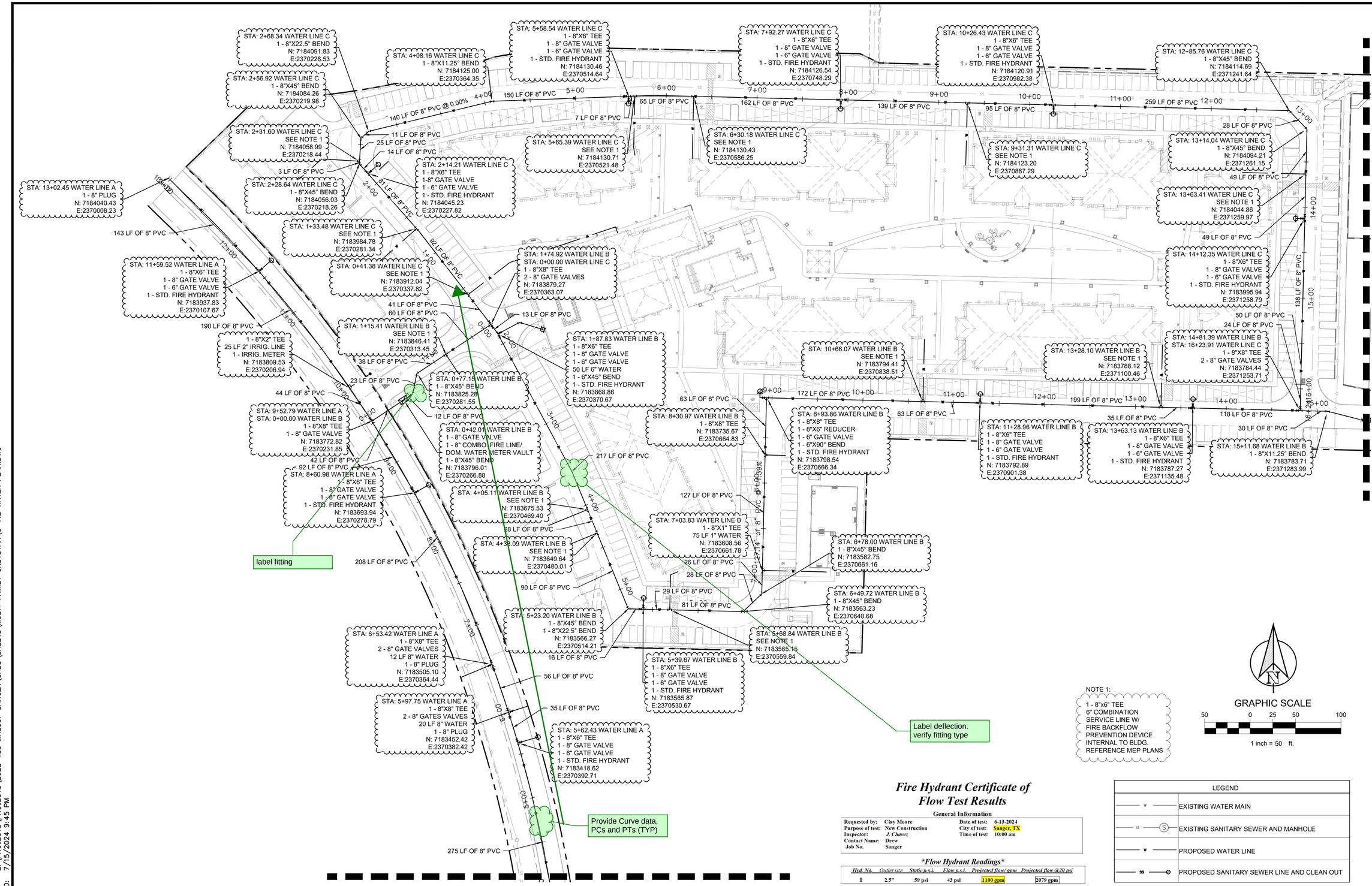
No.	DATE	REVISION	BY

STORM DRAINAGE CALCULATIONS

DESIGN:	ASD
DRAWN:	DC
CHECKED:	ASD
DATE:	7/17/2024

SHEET
C-6.6

CASE NO. 2022-185



NOTE 1:
1 - 8"x6" TEE
6" COMBINATION SERVICE LINE W/ FIRE BACKFLOW PREVENTION DEVICE INTERNAL TO BLDG. REFERENCE MEP PLANS

GRAPHIC SCALE
50 0 25 50 100
1 inch = 50 ft.

Fire Hydrant Certificate of Flow Test Results

General Information

Requested by:	Clay Moore	**Date of test:**	6-13-2024
Purpose of test:	New Construction	**City of test:**	Sanger, TX
Inspector:	J. Chavez	**Time of test:**	10:00 am
Contact Name:	Drew		
Job No.	Sanger		

Flow Hydrant Readings

Hyd. No.	*Outlet size*	*Static p.s.i.*	*Flow p.s.i.*	*Projected flow/ gpm*	*Projected flow @20 psi*
1	2.5"	59 psi	43 psi	1100 gpm	2079 gpm

Location: Hydrant on service road north of the old Jack in the Box as per map.

Static / Residual Hydrant Readings

Hyd. No.	*Static p.s.i.*	*Residual p.s.i.*
2	59 psi	47 psi

Location: Hydrant at old Jack in the Box north entrance to parking lot as per map.

LEGEND	
W	EXISTING WATER MAIN
SS (S)	EXISTING SANITARY SEWER AND MANHOLE
W	PROPOSED WATER LINE
SS	PROPOSED SANITARY SEWER LINE AND CLEAN OUT

TEXAS REGISTRATION #14199
CLAY MOORE ENGINEERING
1903 CENTRAL DRIVE, SUITE #406
BEDFORD, TX 76021
PHONE: 817.281.0572
WWW.CLAYMOOREENG.COM

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CLAYMOORE ENGINEERING
ENGINEERING AND PLANNING CONSULTANTS
Engineer: DREW DONOSKY
P.E. No. 125651 Date: 7/17/2024

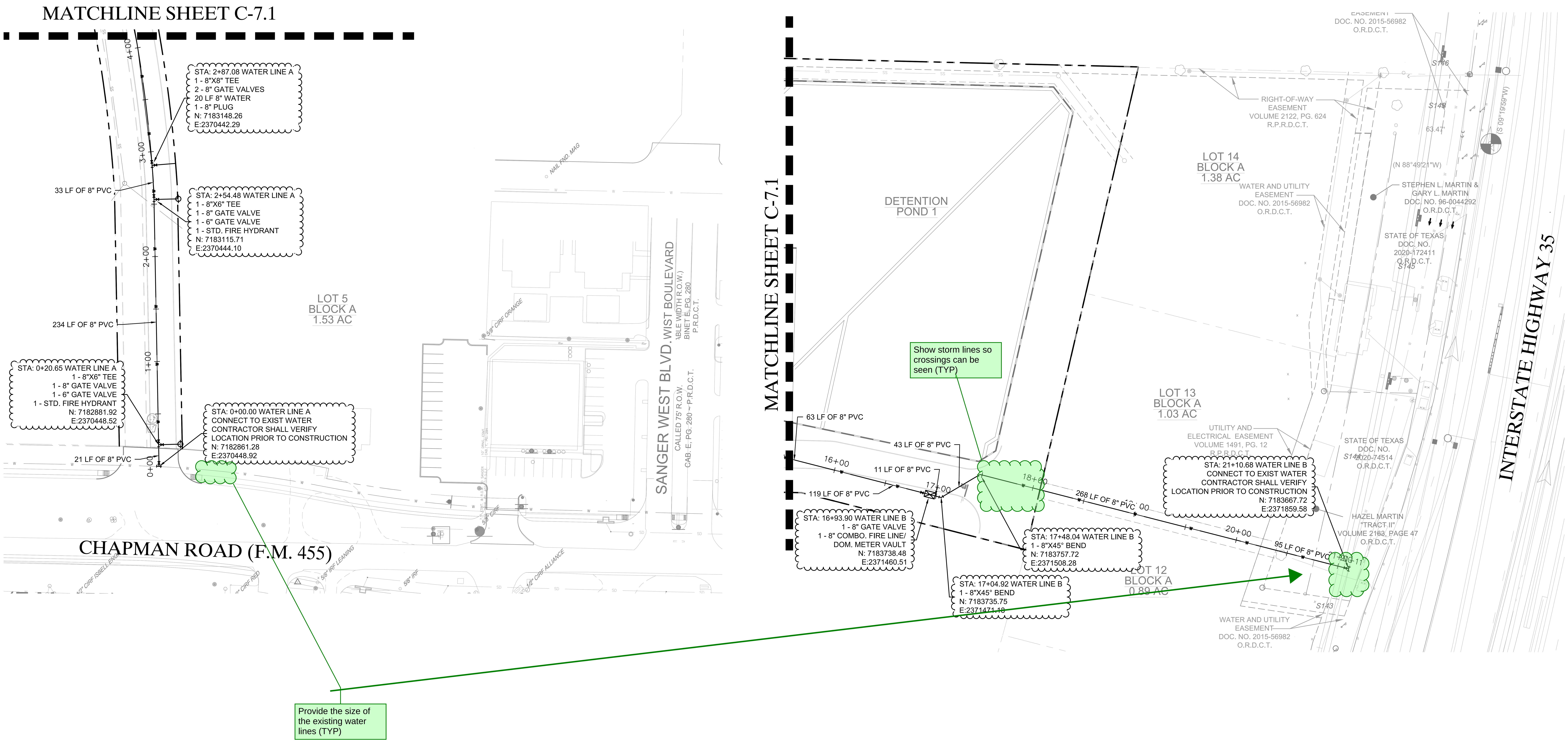
SANGER MULTI-FAMILY
PREPARED FOR
GREYSTAR
SANGER, TEXAS

No.	DATE	REVISION	BY

WATER PLAN

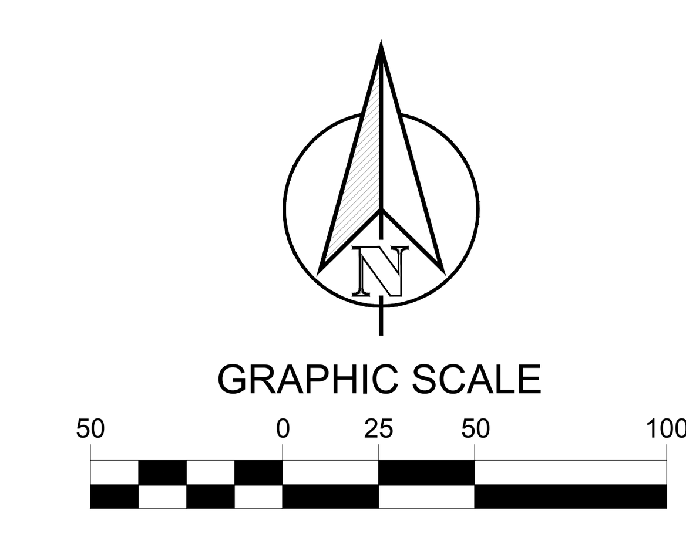
DESIGN: ASD
DRAWN: DC
CHECKED: ASD
DATE: 7/17/2024
SHEET
C-7.1
CASE NO. 2022-185

PLOTTED BY: DAN CABALLERO
PLOT DATE: 7/17/2024 10:12 AM
LOCATION: Z:\PROJECTS\2022-185 MALOUF SANGER\CADD\SHEETS\MULTI-FAMILY GREYSTAR\C-7.2 WATER PLAN.DWG
LAST SAVED: 7/15/2024 9:45 PM



LEGEND

—— W ——	EXISTING WATER MAIN
—— SS —— Ⓢ	EXISTING SANITARY SEWER AND MANHOLE
—— W ——	PROPOSED WATER LINE
—— SS ——○	PROPOSED SANITARY SEWER LINE AND CLEAN OUT



PLOTTED BY: DAN CABALLERO
PLOT DATE: 7/17/2024 10:12 AM
LOCATION: Z:\PROJECTS\PROJECTS\2022-185 MALOUF SANGER\CADD\SHEETS\MULTI-FAMILY GREYSTAR\C-7.2 WATER PLAN.DWG
LAST SAVED: 7/15/2024 9:45 PM

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Engineer DREW DONOSKY
P.E. No. 125651 Date 7/17/2024

SANGER MULTI-FAMILY
PREPARED FOR
GREYSTAR
SANGER, TEXAS

No.	DATE	REVISION	BY

WATER PLAN

DESIGN: ASD
DRAWN: DC
CHECKED: ASD
DATE: 7/17/2024

SHEET
C-7.2

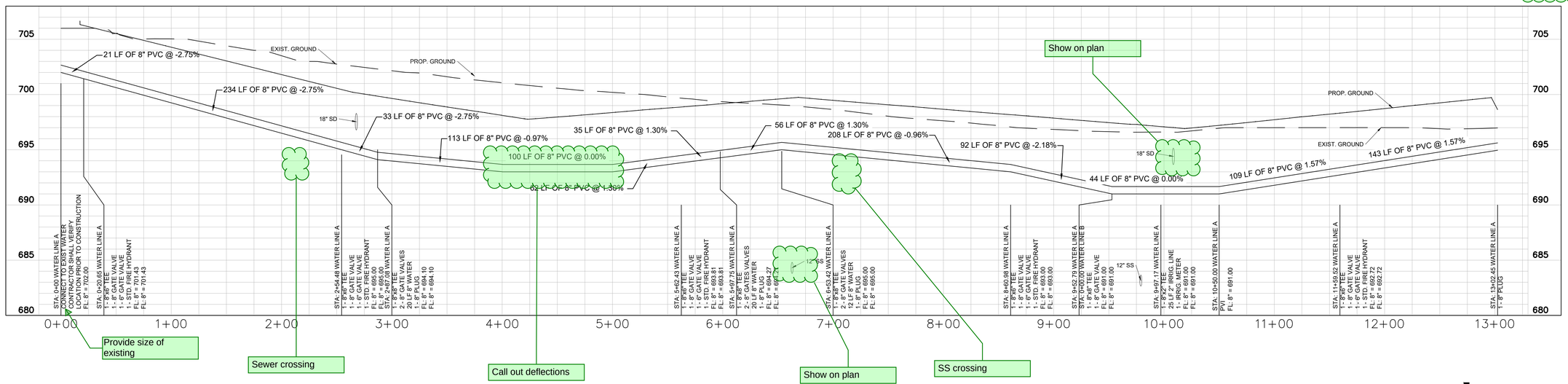
CASE NO. 2022-185

NOTE 1:
1 - 8"x6" TEE
6" COMBINATION SERVICE LINE W/ FIRE BACKFLOW PREVENTION DEVICE INTERNAL TO BLDG. REFERENCE MEP PLANS

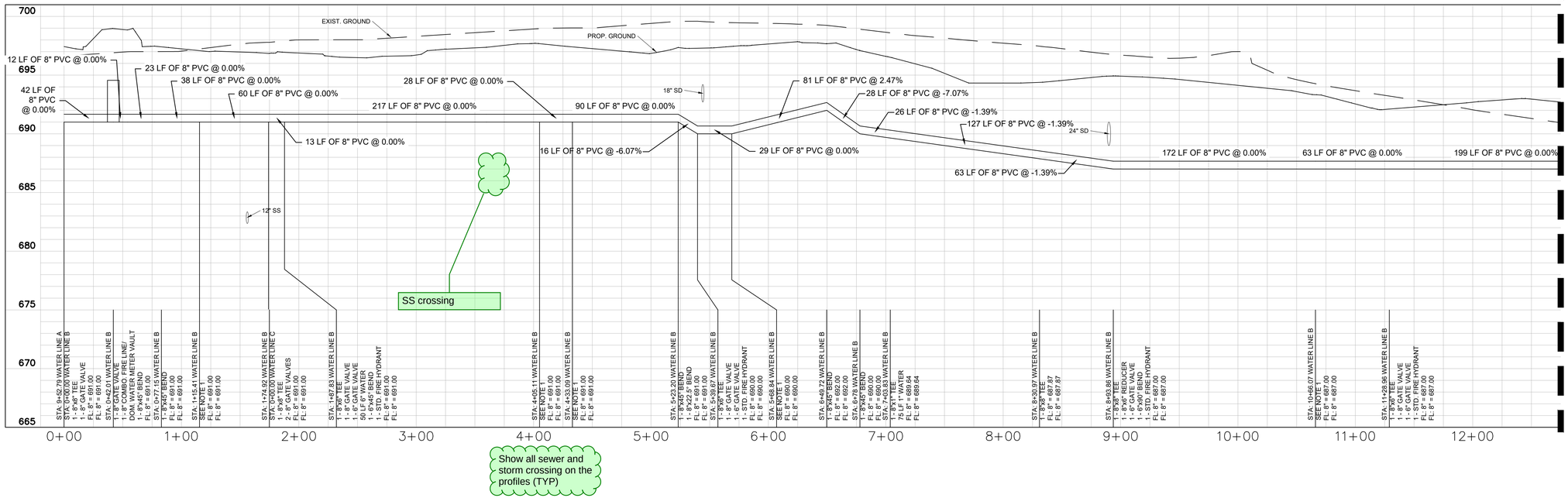
GRAPHIC SCALE
50 0 25 50 100
1 inch = 50 ft.

Vertical scale missing

WATER LINE A



WATER LINE B



MATCHLINE SHEET C-7.4

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CLAYMOORE ENGINEERING
193 CENTRAL DRIVE, SUITE #406
BEDFORD, TX 76021
PHONE 817.281.0572
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ENGINEERING AND PLANNING CONSULTANTS
Engineer DREW DONOSKY
P.E. No. 125651 Date 7/17/2024

SANGER MULTI-FAMILY
PREPARED FOR
GREYSTAR
SANGER, TEXAS

No.	DATE	REVISION	BY

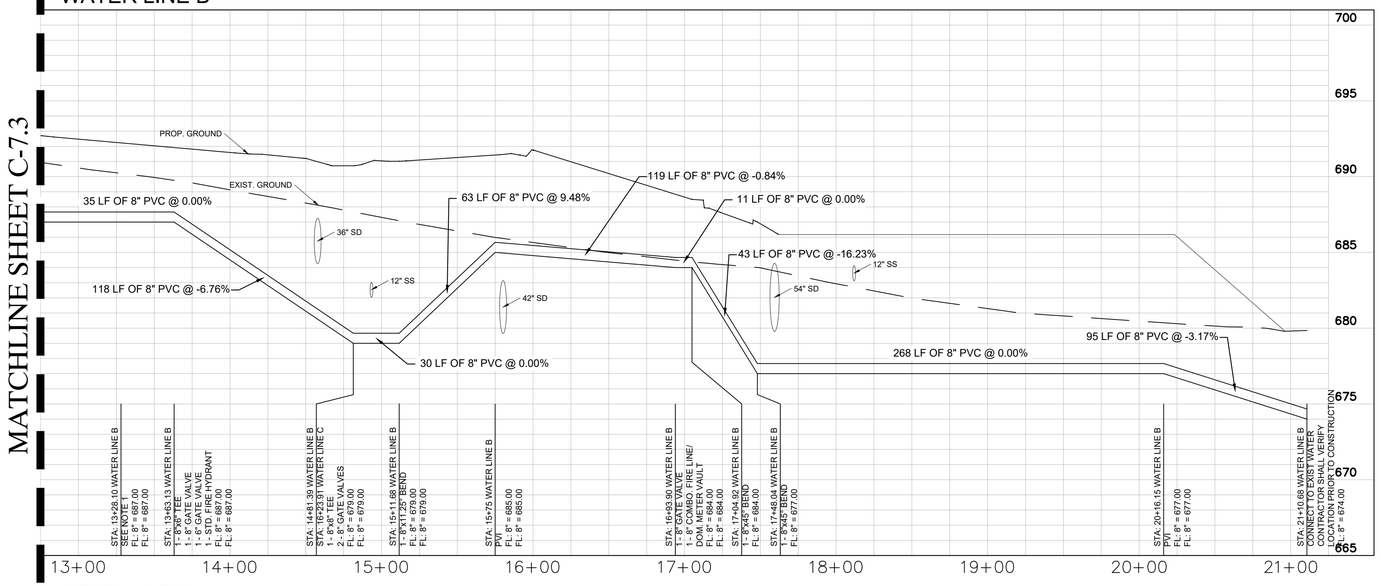
WATER PROFILES

DESIGN: ASD
DRAWN: DC
CHECKED: ASD
DATE: 7/17/2024
SHEET
C-7.3
CASE NO. 2022-185

PLOTTED BY: DAN CABALLERO
PLOT DATE: 7/17/2024 10:13 AM
LOCATION: Z:\PROJECTS\2022-185 MALOUF SANGER\CADD\SHEETS\MULTI-FAMILY GREYSTAR\C-7.2 WATER PLAN.DWG
LAST SAVED: 7/15/2024 9:45 PM

WATER LINE B

MATCHLINE SHEET C-7.3



NOTE 1:
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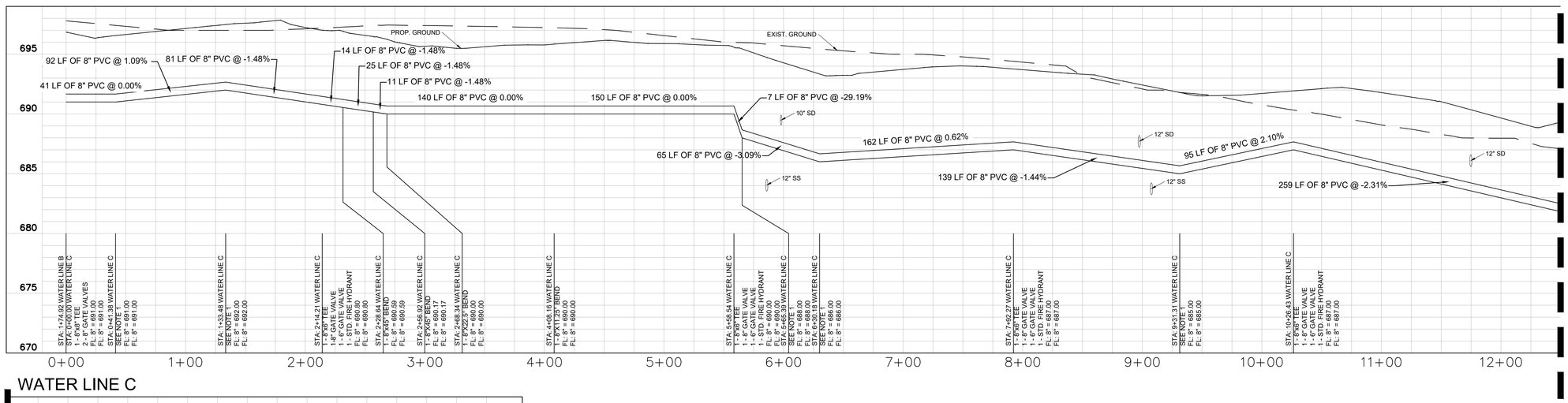
6" COMBINATION SERVICE LINE W/ FIRE BACKFLOW PREVENTION DEVICE INTERNAL TO BLDG. REFERENCE MEP PLANS

Vertical scale missing

GRAPHIC SCALE
50 0 25 50 100
1 inch = 50 ft.

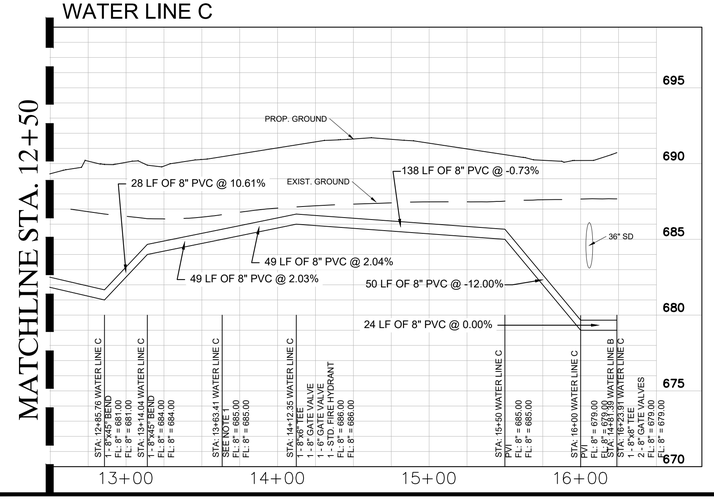
WATER LINE C

MATCHLINE STA. 12+50



WATER LINE C

MATCHLINE STA. 12+50



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P.E. No. 125651 Date 7/17/2024

SANGER MULTI-FAMILY
PREPARED FOR GREYSTAR
SANGER, TEXAS

No.	DATE	REVISION	BY

WATER PROFILES

DESIGN:	ASD
DRAWN:	DC
CHECKED:	ASD
DATE:	7/17/2024

SHEET
C-7.4

CASE NO. 2022-185

PLOTTED BY: DAN CABALLERO
PLOT DATE: 7/17/2024 10:14 AM
LOCATION: Z:\PROJECTS\2022-185 MALOUF SANGER\CADD\SHEETS\MULTI-FAMILY GREYSTAR\C-7.2 WATER PLAN.DWG
LAST SAVED: 7/15/2024 9:45 PM

MATCHLINE SHEET C-7.7

MATCHLINE SHEET C-7.6

STA: 19+38.23 SANITARY SEWER LINE A
INSTALL:
4' DIA. SSMH
FL 12": 679.49
FL 12": 679.39

238 LF OF 12" PVC @ 0.20%

STA: 21+76.64 SANITARY SEWER LINE A
STA: 0+00 SANITARY SEWER LINE B
INSTALL:
4' DIA. SSMH
FL 12": 680.07
FL 12": 679.97

STA: 25+97.92 SANITARY SEWER LINE A
INSTALL:
4' DIA. SSMH
FL 12": 681.11
FL 12": 681.01

STA: 24+18.35 SANITARY SEWER LINE A
STA: 0+00 SANIIITARY SEWER LINE A-1
INSTALL:
4' DIA. SSMH
FL 12": 680.65
FL 12": 680.55
FL 8": 683.00

STA: 27+54.58 SANITARY SEWER LINE A
INSTALL:
4' DIA. SSMH
FL 12": 681.52
FL 12": 681.42

STA: 0+79.83 SANITARY SEWER LINE B
STA: 0+00.00 SANITARY SEWER LINE B-1
INSTALL:
4' DIA. SSMH
FL 12": 680.33
FL 12": 680.23
FL 8": 683.14

STA: 3+00 SANITARY SEWER LINE B
INSTALL:
1 - 4' DIA. SS MANHOLE
FL 12": 680.87
FL 12": 680.77

1/2" IRF

80 LF OF 12" PVC @ 0.20%

220 LF OF 12" PVC @ 0.20%

39 LF OF 12" PVC @ 0.20%

190 LF OF 12" PVC @ 0.20%

180 LF OF 12" PVC @ 0.20%

242 LF OF 12" PVC @ 0.20%

157 LF OF 12" PVC @ 0.20%

45 LF OF 12" PVC @ 0.20%

73 LF OF 8" PVC @ 5.46%

STA: 0+73.29 SANITARY SEWER LINE A-1
INSTALL:
6"X8" WYE CONNECTION
FL 8": 687.00
FL 6": 687.08

1/2" IRON PIPE FOUND

STA: 4+89.94 SANITARY SEWER LINE B
STA: 0+00.00 SANITARY SEWER LINE C
INSTALL:
1 - 4' DIA. SSMH
FL 12": 681.35
FL 12": 681.25
FL 12": 681.35

FF 699.22

FF 696.90

FF 694.85

FF 692.90

STA: 28+00 SANITARY SEWER LINE A
INSTALL:
4' DIA. SSMH
FL 12": 681.71
FL 12": 681.61

79 LF OF 6" PVC @ 2.45%

104 LF OF 12" PVC @ 0.20%

STA: 1+21.02 SANITARY SEWER LINE B-2
INSTALL:
1 - 4' DIA. SS MANHOLE
FL: 6" (N/S) = 686.14
FL 8": 686.04
FL 6": 686.14

169 LF OF 8" PVC @ 1.00%

387 LF OF 12" PVC @ 0.20%

FF 698.61

STA: 29+03.86 SANITARY SEWER LINE A
INSTALL:
4' DIA. SSMH
FL 12": 682.02
FL 12": 681.92

STA: 1+51.80 SANITARY SEWER LINE A-1
INSTALL:
CLEANOUT
FL 6": 689.00

STA: 30+21.01 SANITARY SEWER LINE A
STA: 0+00 SANITARY SEWER LINE A-2
INSTALL:
4' DIA. SSMH
FL 12": 682.35
FL 12": 682.35
FL 12": 682.25

117 LF OF 12" PVC @ 0.20%

121 LF OF 8" PVC @ 1.00%

157 LF OF 6" PVC @ 1.00%

STA: 2+75.23 SANITARY SEWER LINE B-1
INSTALL:
1 - 4' DIA. SS MANHOLE
FL 6": 686.00

107 LF OF 6" PVC @ 1.00%

STA: 2+77.56 SANITARY SEWER LINE B-2
INSTALL:
1 - CLEANOUT
FL 6": 687.71

FF 698.05

FF 697.90

STA: 1+68.60 SANITARY SEWER LINE B-1
STA: 0+00.00 SANITARY SEWER LINE B-2
INSTALL:
1 - 4' DIA. SS MANHOLE
FL 8": 684.83
FL 6": 684.93
FL 8": 684.83

FF 695.90

FF 693.90

STA: 31+12.55 SANITARY SEWER LINE A
INSTALL:
4' DIA. SSMH
FL 12": 682.63
FL 12": 682.53

92 LF OF 12" PVC @ 0.20%

186 LF OF 12" PVC @ 0.20%

102 LF OF 12" PVC @ 0.20%

FF 697.73

STA: 32+14.28 SANITARY SEWER LINE A
INSTALL:
4' DIA. SSMH
FL 12": 682.93
FL 12": 682.83

STA: 8+76.86 SANITARY SEWER LINE B
INSTALL:
1 - 4' DIA. SS MANHOLE
FL 12": 682.12

STA: 1+86.28 SANITARY SEWER LINE A-2
INSTALL:
12" PLUG
FL 12": 682.72

FF 698.16

FF 699.28

111 LF OF 12" PVC @ 0.20%

STA: 33+25.69 SANITARY SEWER LINE A
INSTALL:
4' DIA. SSMH
FL 12": 683.25
FL 12": 683.15

FF 698.31

STA: 34+76.82 SANITARY SEWER LINE A
INSTALL:
4' DIA. SSMH
FL 12": 683.75
FL 12": 683.65

56 LF OF 12" PVC @ 0.20%

10 LF OF 12" PVC @ 0.20%

STA: 35+41.83 SANITARY SEWER LINE A
INSTALL:
12" PLUG
FL 12": 683.98

96 LF OF 12" PVC @ 0.20%

STA: 35+31.60 SANITARY SEWER LINE A
STA: 0+00.00 SANITARY SEWER LINE D
INSTALL:
1 - 4' DIA. SSMH
FL 12": 683.96
FL 12": 683.86
FL 8": 685.00

55 LF OF 12" PVC @ 0.20%

STA: 33+81.29 SANITARY SEWER LINE A
INSTALL:
4' DIA. SSMH
FL 12": 683.46
FL 12": 683.36

LEGEND	
W	EXISTING WATER MAIN
SS S	EXISTING SANITARY SEWER AND MANHOLE
W	PROPOSED WATER LINE
SS	PROPOSED SANITARY SEWER LINE AND CLEAN OUT

GRAPHIC SCALE
50 0 25 50 100
1 inch = 50 ft.

PLOTTED BY: DAN CABALLERO
PLOT DATE: 7/17/2024 10:15 AM
LOCATION: Z:\PROJECTS\2022-185 MALOUF SANGER\CADD\SHEETS\MULTI-FAMILY GREYSTAR\C-7.9 SANITARY SEWER PROFILES.DWG
LAST SAVED: 7/17/2024 9:46 AM

TEXAS REGISTRATION #14199
CLAYMOORE ENGINEERING
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Engineer DREW DONOSKY
P.E. No. 125651 Date 7/17/2024

SANGER MULTI-FAMILY
PREPARED FOR
GREYSTAR
SANGER, TEXAS

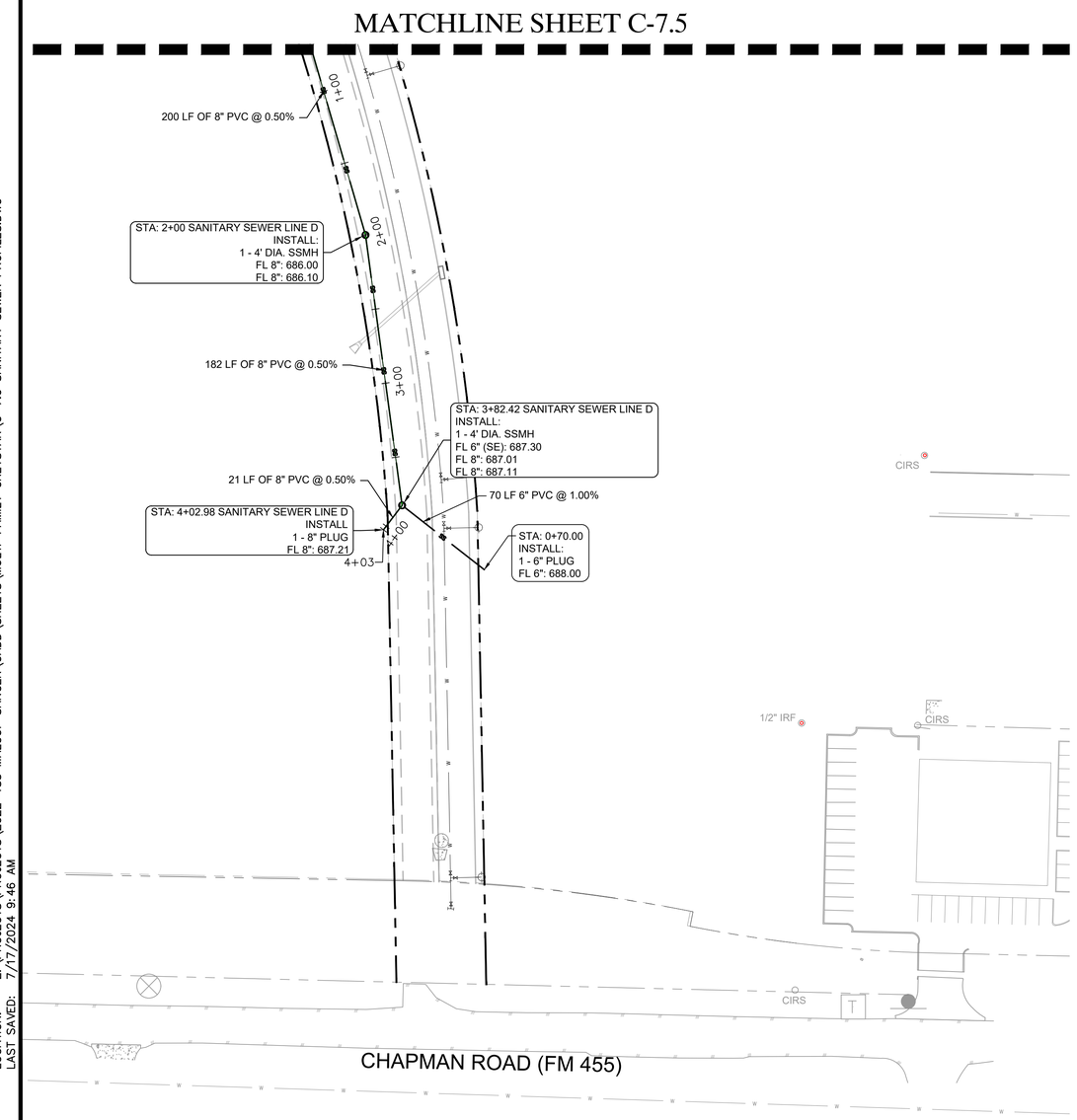
No.	DATE	REVISION	BY

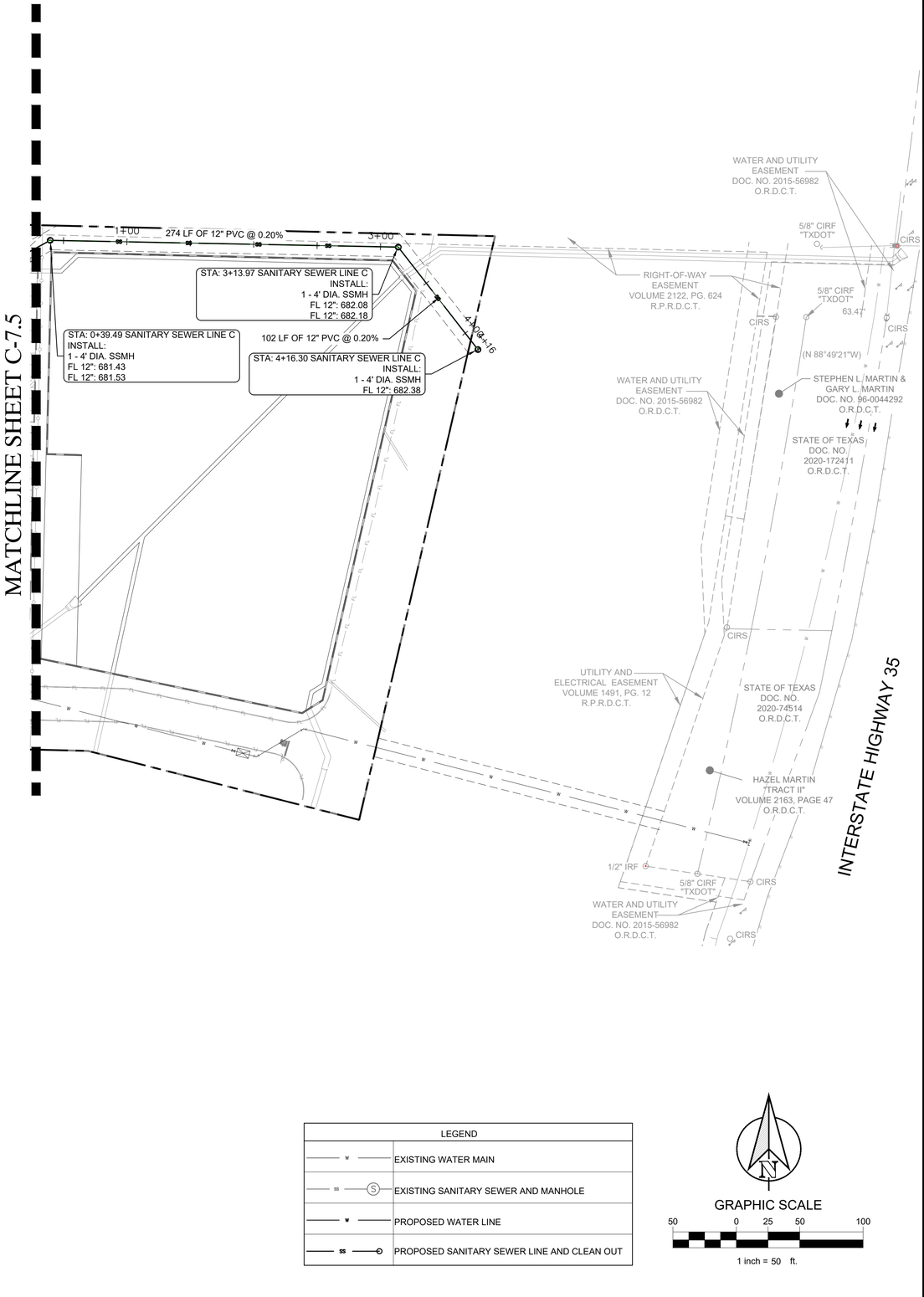
SANITARY SEWER PLAN

DESIGN: ASD
DRAWN: DC
CHECKED: ASD
DATE: 7/17/2024

SHEET
C-7.5

CASE NO. 2022-185





LEGEND	
w	EXISTING WATER MAIN
ss S	EXISTING SANITARY SEWER AND MANHOLE
w	PROPOSED WATER LINE
ss	PROPOSED SANITARY SEWER LINE AND CLEAN OUT

GRAPHIC SCALE

50 0 25 50 100

1 inch = 50 ft.

TEXAS REGISTRATION #14199

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Engineer: DREW DONOSKY
P.E. No. 125651 Date 7/17/2024

SANGER MULTI-FAMILY
PREPARED FOR GREYSTAR
SANGER, TEXAS

No.	DATE	REVISION	BY

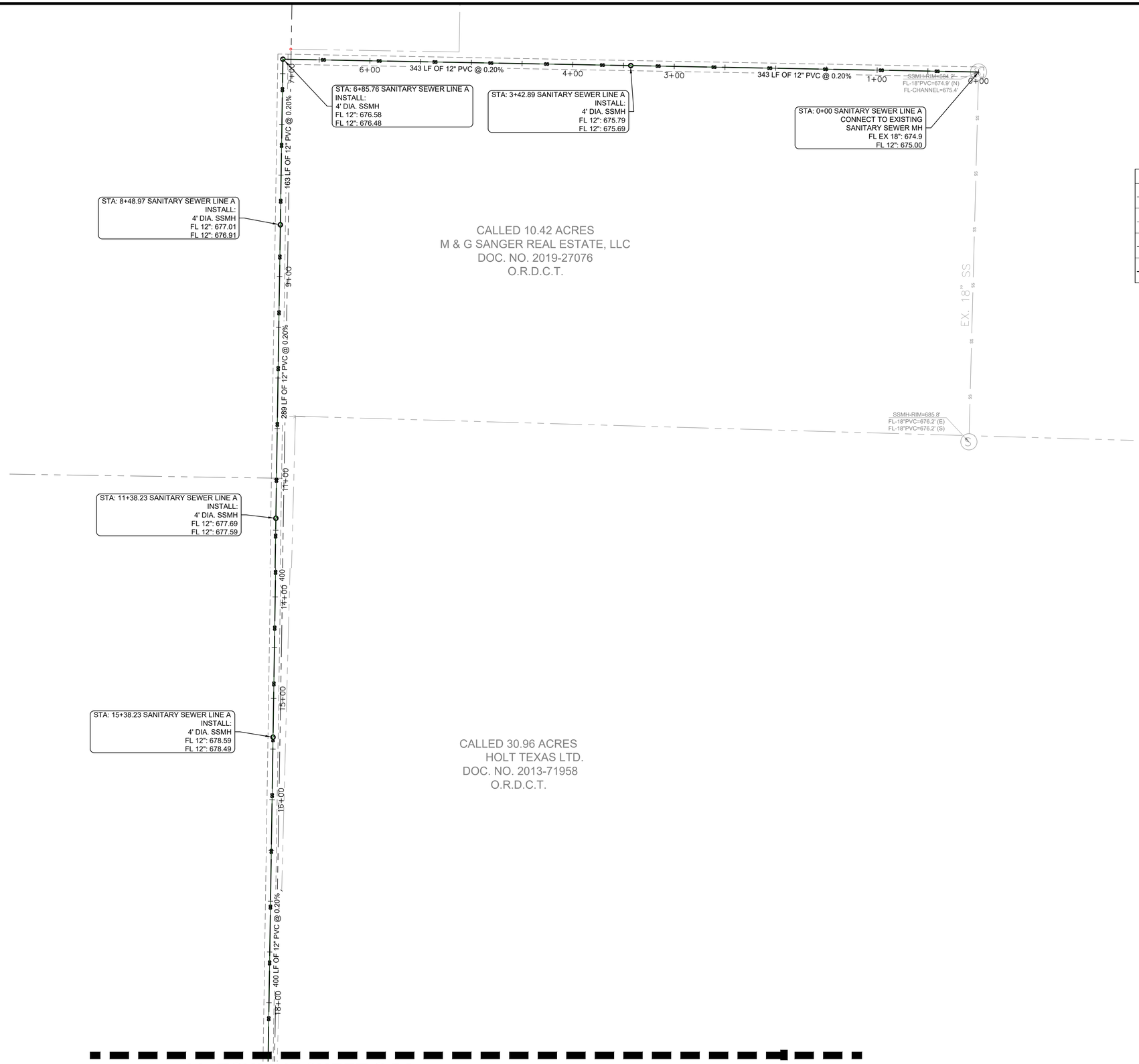
SANITARY SEWER PLAN

DESIGN:	ASD
DRAWN:	DC
CHECKED:	ASD
DATE:	7/17/2024

SHEET
C-7.6

CASE NO. 2022-185

PLOTTED BY: DAN CABALLERO
PLOT DATE: 7/17/2024 10:16 AM
LOCATION: Z:\PROJECTS\2022-185 MALOUF SANGER\CADD\SHEETS\MULTI-FAMILY GREYSTAR\C-7.9 SANITARY SEWER PROFILES.DWG
LAST SAVED: 7/17/2024 9:46 AM



GRAPHIC SCALE

50 0 25 50 100

1 inch = 50 ft.

LEGEND	
W	EXISTING WATER MAIN
SS (S)	EXISTING SANITARY SEWER AND MANHOLE
W	PROPOSED WATER LINE
SS	PROPOSED SANITARY SEWER LINE AND CLEAN OUT

TEXAS REGISTRATION #14199

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ENGINEERING AND PLANNING CONSULTANTS

Engineer DREW DONOSKY
P.E. No. 125651 Date 7/17/2024

SANGER MULTI-FAMILY
PREPARED FOR GREYSTAR
SANGER, TEXAS

No.	DATE	REVISION	BY

OFFSITE SANITARY SEWER PLAN

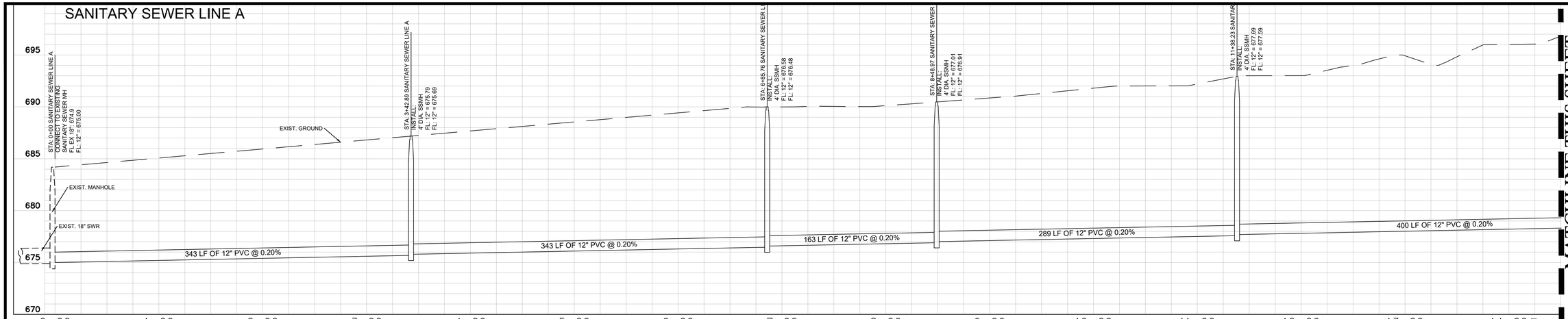
DESIGN:	ASD
DRAWN:	DC
CHECKED:	ASD
DATE:	7/17/2024

SHEET
C-7.7

CASE NO. 2022-185

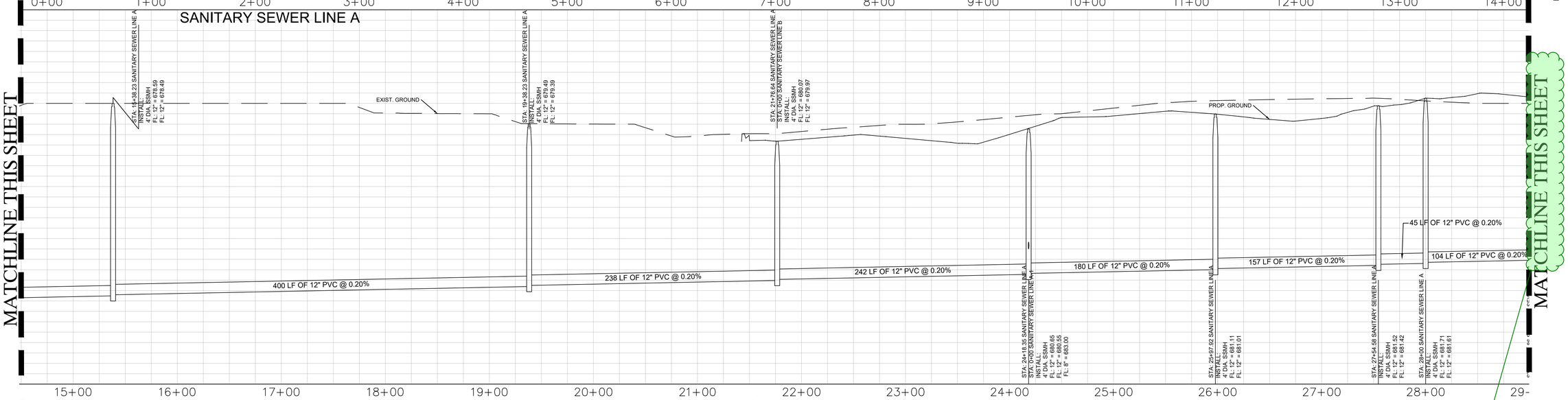
PLOTTED BY: DAN CABALLERO
PLOT DATE: 7/17/2024 10:16 AM
LOCATION: Z:\PROJECTS\2022-185 MALOUF SANGER\CADD\SHEETS\MULTI-FAMILY GREYSTAR\C-7.9 SANITARY SEWER PROFILES.DWG
LAST SAVED: 7/17/2024 9:46 AM

SANITARY SEWER LINE A



MATCHLINE THIS SHEET

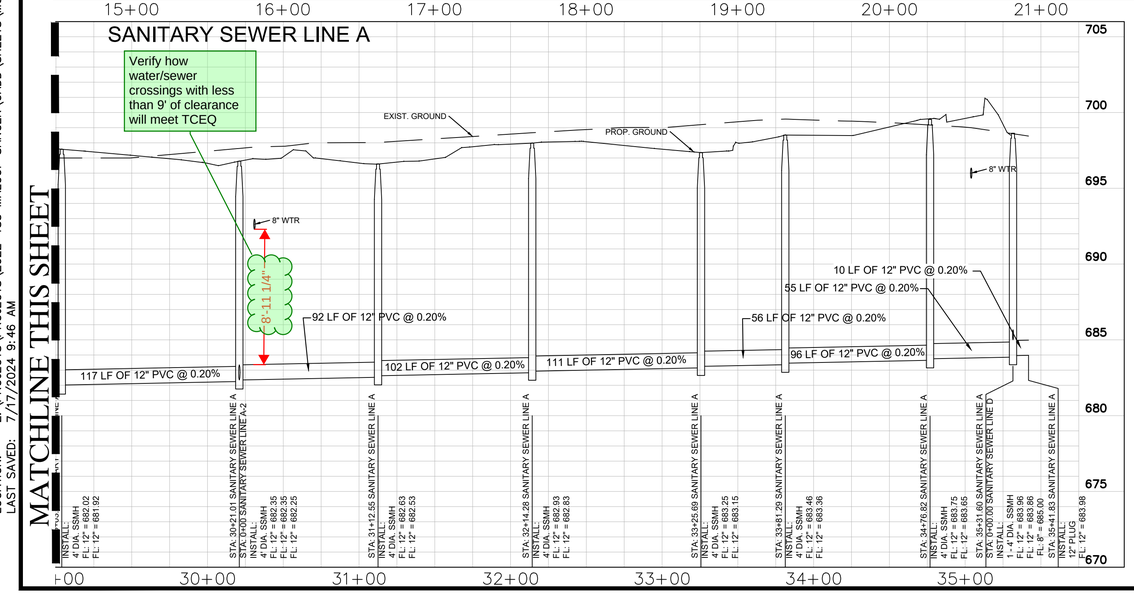
SANITARY SEWER LINE A



MATCHLINE THIS SHEET

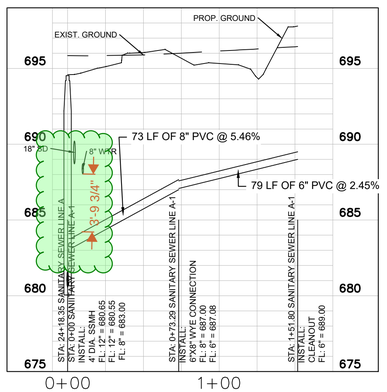
SANITARY SEWER LINE A

Verify how water/sewer crossings with less than 9' of clearance will meet TCEQ

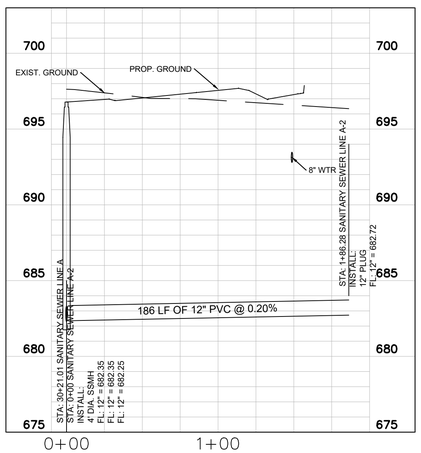


MATCHLINE THIS SHEET

SANITARY SEWER LINE A-1



SANITARY SEWER LINE A-2



Elevations missing

Vertical scale missing

GRAPHIC SCALE

50 0 25 50 100

1 inch = 50 ft.

TEXAS REGISTRATION #14199

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Engineer: DREW DONOSKY
P.E. No: 125651 Date: 7/17/2024

SANGER MULTI-FAMILY
PREPARED FOR GREYSTAR
SANGER, TEXAS

No.	DATE	REVISION	BY

SANITARY SEWER PROFILES

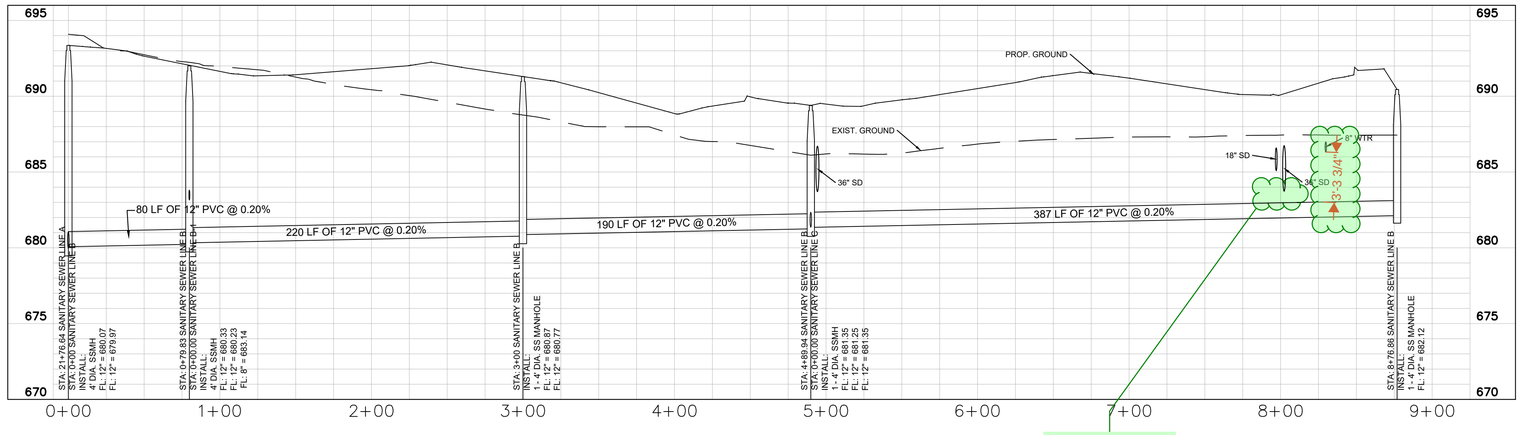
DESIGN: ASD
DRAWN: DC
CHECKED: ASD
DATE: 7/17/2024

SHEET
C-7.8

CASE NO. 2022-185

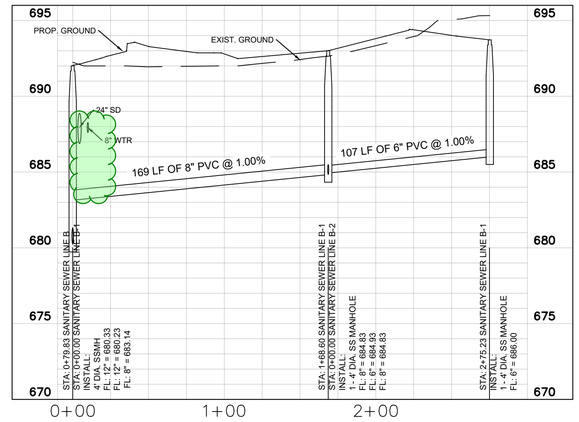
PLOTTED BY: DAN CABALLERO
PLOT DATE: 7/17/2024 10:16 AM
LOCATION: Z:\PROJECTS\PROJECTS\2022-185 MALOUF SANGER\CADD\SHEETS\MULTI-FAMILY GREYSTAR\C-7.9 SANITARY SEWER PROFILES.DWG
LAST SAVED: 7/17/2024 9:46 AM

SANITARY SEWER LINE B

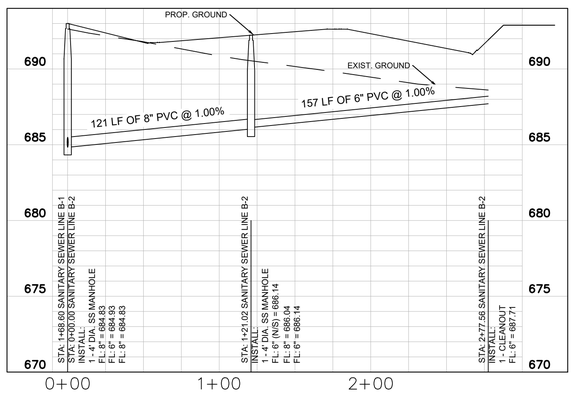


Min 2' desired. show how pipe will be properly protected with the storm install (TYP)

SANITARY SEWER LINE B-1



SANITARY SEWER LINE B-2



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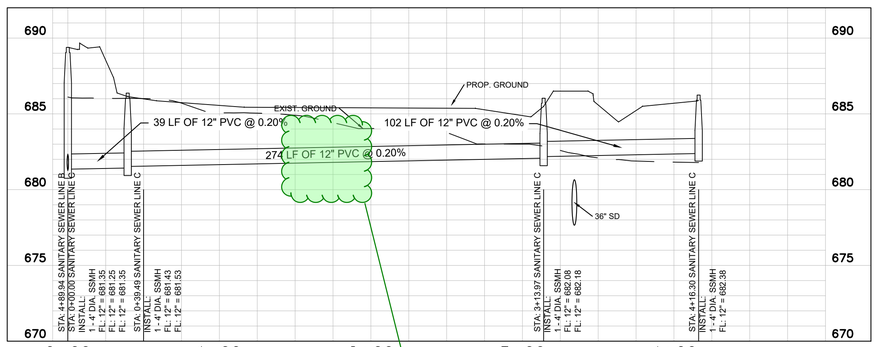
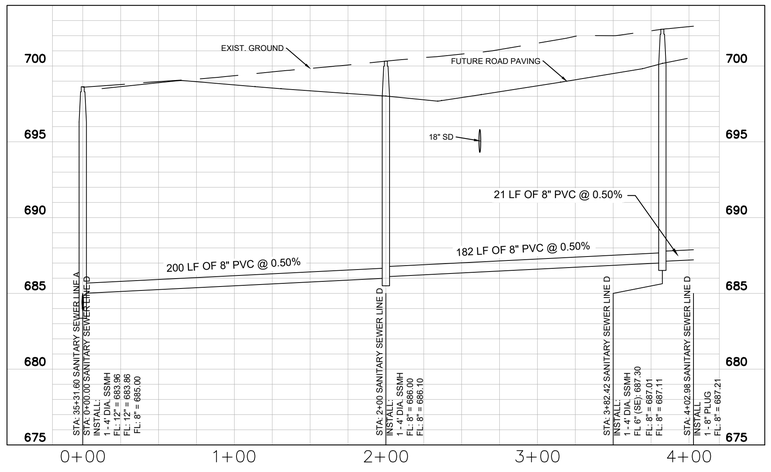


What type of embedment is to be used? Shallow line

SANITARY SEWER LINE D



GRAPHIC SCALE

50 0 25 50 100

1 inch = 50 ft.

TEXAS REGISTRATION #14199

CLAYMOORE ENGINEERING

1903 CENTRAL DRIVE, SUITE #406
BEDFORD, TX 76021
PHONE: 817.281.0572
WWW.CLAYMOOREENG.COM

PRELIMINARY

FOR REVIEW ONLY
Not for construction purposes.

CLAYMOORE ENGINEERING
ENGINEERING AND PLANNING CONSULTANTS

Engineer DREW DONOSKY
P.E. No. 125651 Date 7/17/2024

SANGER MULTI-FAMILY
PREPARED FOR GREYSTAR
SANGER, TEXAS

No.	DATE	REVISION	BY

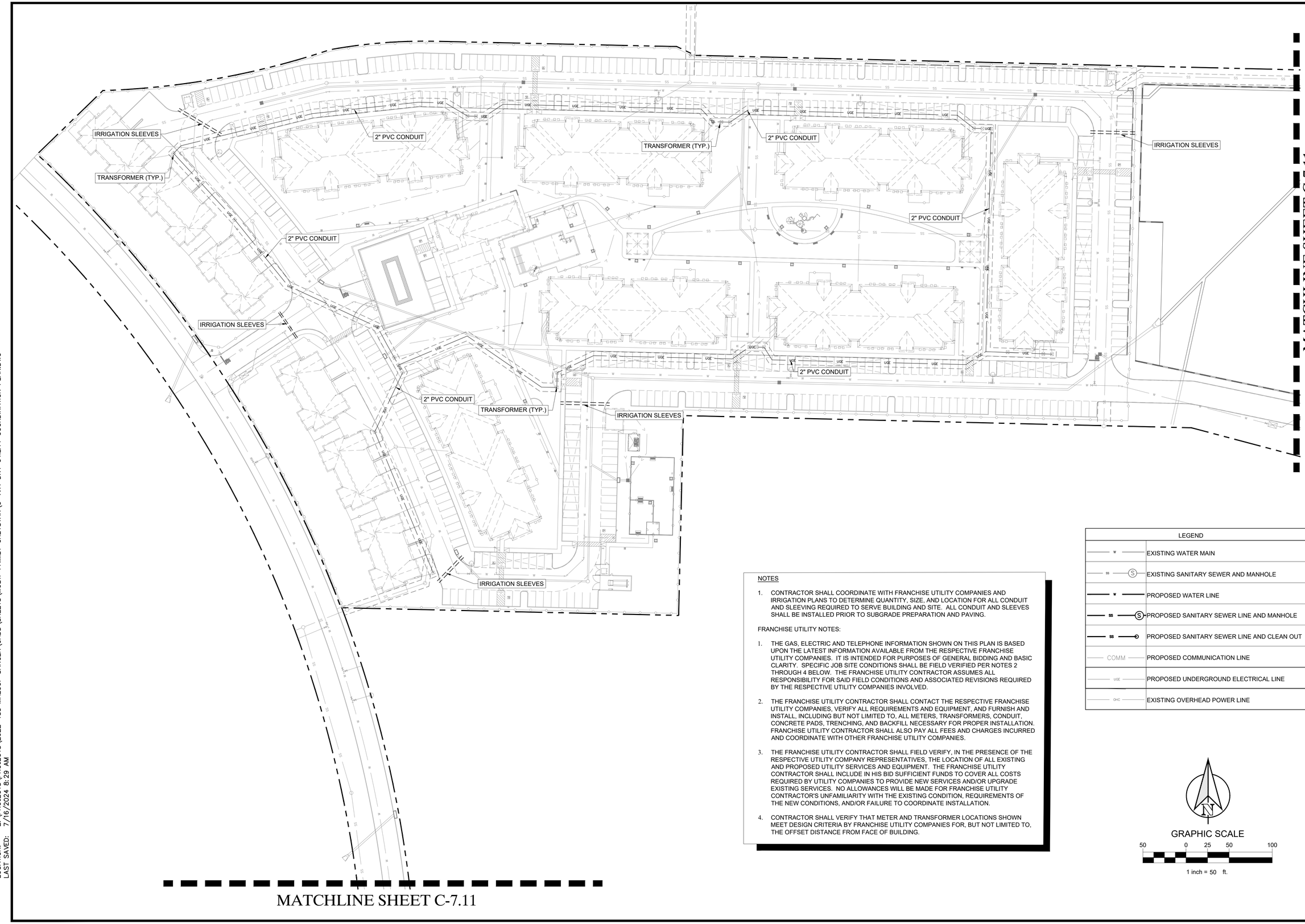
SANITARY SEWER PROFILES

DESIGN:	ASD
DRAWN:	DC
CHECKED:	ASD
DATE:	7/17/2024

SHEET
C-7.9

CASE NO. 2022-185

PLOTTED BY: DAN CABALLERO
PLOT DATE: 7/17/2024 10:16 AM
LOCATION: Z:\PROJECTS\2022-185 MALOUF SANGER\CADD\SHEETS\MULTI-FAMILY GREYSTAR\C-7.9 SANITARY SEWER PROFILES.DWG
LAST SAVED: 7/17/2024 9:46 AM



NOTES

1. CONTRACTOR SHALL COORDINATE WITH FRANCHISE UTILITY COMPANIES AND IRRIGATION PLANS TO DETERMINE QUANTITY, SIZE, AND LOCATION FOR ALL CONDUIT AND SLEEVING REQUIRED TO SERVE BUILDING AND SITE. ALL CONDUIT AND SLEEVES SHALL BE INSTALLED PRIOR TO SUBGRADE PREPARATION AND PAVING.

FRANCHISE UTILITY NOTES:

1. THE GAS, ELECTRIC AND TELEPHONE INFORMATION SHOWN ON THIS PLAN IS BASED UPON THE LATEST INFORMATION AVAILABLE FROM THE RESPECTIVE FRANCHISE UTILITY COMPANIES. IT IS INTENDED FOR PURPOSES OF GENERAL BIDDING AND BASIC CLARITY. SPECIFIC JOB SITE CONDITIONS SHALL BE FIELD VERIFIED PER NOTES 2 THROUGH 4 BELOW. THE FRANCHISE UTILITY CONTRACTOR ASSUMES ALL RESPONSIBILITY FOR SAID FIELD CONDITIONS AND ASSOCIATED REVISIONS REQUIRED BY THE RESPECTIVE UTILITY COMPANIES INVOLVED.
2. THE FRANCHISE UTILITY CONTRACTOR SHALL CONTACT THE RESPECTIVE FRANCHISE UTILITY COMPANIES, VERIFY ALL REQUIREMENTS AND EQUIPMENT, AND FURNISH AND INSTALL, INCLUDING BUT NOT LIMITED TO, ALL METERS, TRANSFORMERS, CONDUIT, CONCRETE PADS, TRENCHING, AND BACKFILL NECESSARY FOR PROPER INSTALLATION. FRANCHISE UTILITY CONTRACTOR SHALL ALSO PAY ALL FEES AND CHARGES INCURRED AND COORDINATE WITH OTHER FRANCHISE UTILITY COMPANIES.
3. THE FRANCHISE UTILITY CONTRACTOR SHALL FIELD VERIFY, IN THE PRESENCE OF THE RESPECTIVE UTILITY COMPANY REPRESENTATIVES, THE LOCATION OF ALL EXISTING AND PROPOSED UTILITY SERVICES AND EQUIPMENT. THE FRANCHISE UTILITY CONTRACTOR SHALL INCLUDE IN HIS BID SUFFICIENT FUNDS TO COVER ALL COSTS REQUIRED BY UTILITY COMPANIES TO PROVIDE NEW SERVICES AND/OR UPGRADE EXISTING SERVICES. NO ALLOWANCES WILL BE MADE FOR FRANCHISE UTILITY CONTRACTOR'S UNFAMILIARITY WITH THE EXISTING CONDITION, REQUIREMENTS OF THE NEW CONDITIONS, AND/OR FAILURE TO COORDINATE INSTALLATION.
4. CONTRACTOR SHALL VERIFY THAT METER AND TRANSFORMER LOCATIONS SHOWN MEET DESIGN CRITERIA BY FRANCHISE UTILITY COMPANIES FOR, BUT NOT LIMITED TO, THE OFFSET DISTANCE FROM FACE OF BUILDING.

LEGEND	
W	EXISTING WATER MAIN
SS (S)	EXISTING SANITARY SEWER AND MANHOLE
W	PROPOSED WATER LINE
SS (S)	PROPOSED SANITARY SEWER LINE AND MANHOLE
SS	PROPOSED SANITARY SEWER LINE AND CLEAN OUT
COMM	PROPOSED COMMUNICATION LINE
UGE	PROPOSED UNDERGROUND ELECTRICAL LINE
OHC	EXISTING OVERHEAD POWER LINE

GRAPHIC SCALE

50 0 25 50 100

1 inch = 50 ft.

PLOTTED BY: DAN CABALLERO
PLOT DATE: 7/17/2024 10:17 AM
LOCATION: Z:\PROJECTS\2022-185 MALOUF SANGER\CADD\SHEETS\MULTI-FAMILY GREYSTAR\C-7.11 DRY UTILITY COORDINATION PLAN.DWG
LAST SAVED: 7/16/2024 8:29 AM

TEXAS REGISTRATION #14199
CLAYMOORE ENGINEERING
PHONE: 817.281.0572
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1903 CENTRAL DRIVE, SUITE #406
BEDFORD, TX 76021

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ENGINEERING AND PLANNING CONSULTANTS

Engineer DREW DONOSKY
P.E. No. 125651 Date 7/17/2024

SANGER MULTI-FAMILY
PREPARED FOR GREYSTAR
SANGER, TEXAS

No.	DATE	REVISION	BY

DRY UTILITY COORDINATION PLAN

DESIGN:	ASD
DRAWN:	DC
CHECKED:	ASD
DATE:	7/17/2024

SHEET
C-7.10

CASE NO. 2022-185

NOTES

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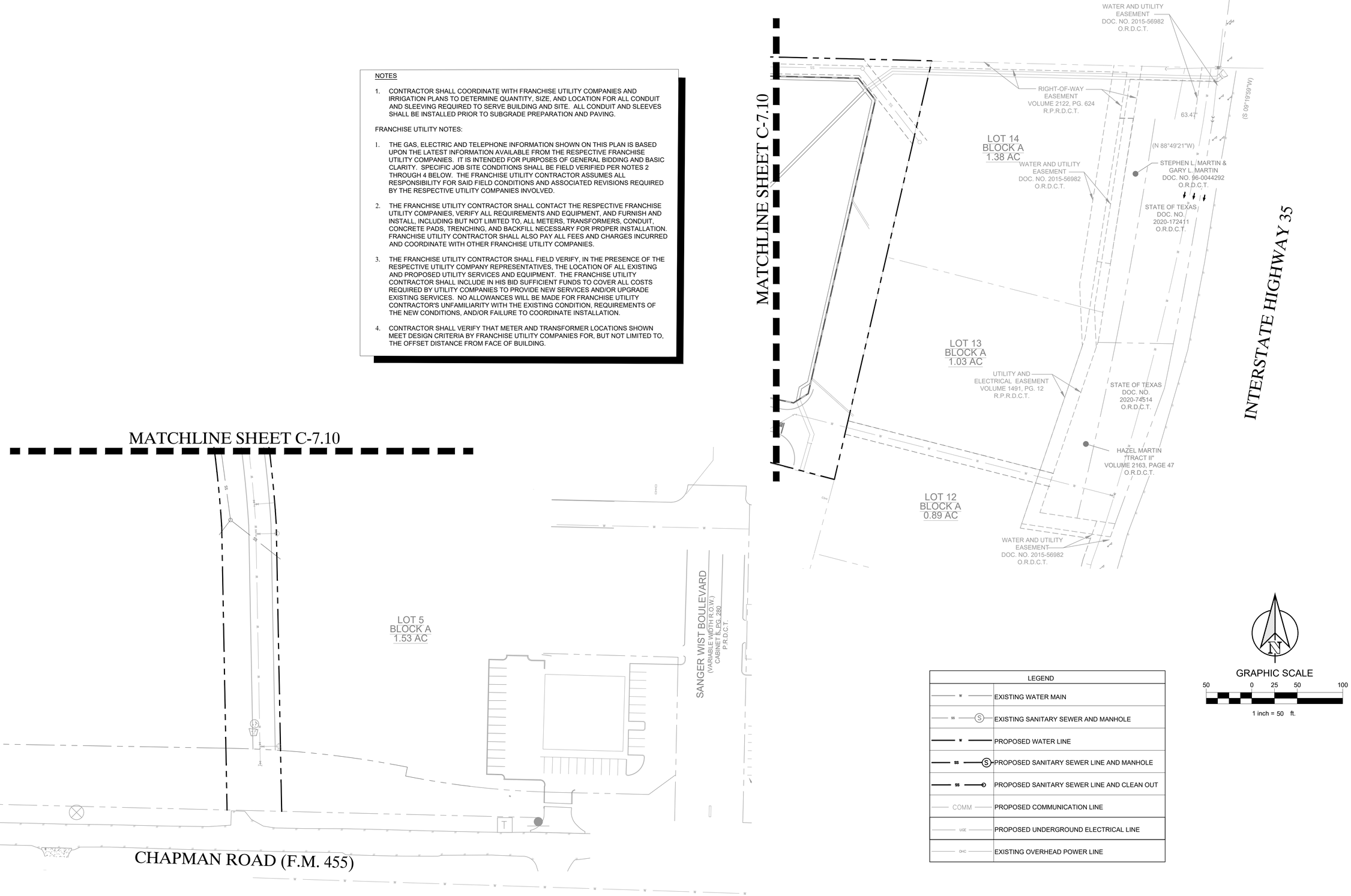

LEGEND	
W	EXISTING WATER MAIN
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N

GRAPHIC SCALE

50 0 25 50 100

1 inch = 50 ft.

PLOTTED BY: DAN CABALLERO
PLOT DATE: 7/17/2024 10:18 AM
LOCATION: Z:\PROJECTS\PROJECTS\2022-185 MALOUF SANGER\CADD\SHEETS\MULTI-FAMILY GREYSTAR\C-7.11 DRY UTILITY COORDINATION PLAN.DWG
LAST SAVED: 7/16/2024 8:29 AM

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Engineer DREW DONOSKY
P.E. No. 125651 Date 7/17/2024

SANGER MULTI-FAMILY
PREPARED FOR GREYSTAR
SANGER, TEXAS

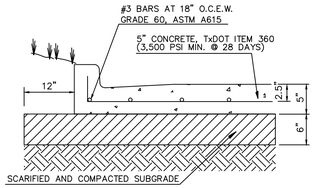
No.	DATE	REVISION	BY

DRY UTILITY COORDINATION PLAN

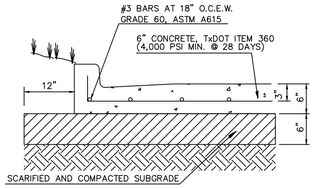
DESIGN:	ASD
DRAWN:	DC
CHECKED:	ASD
DATE:	7/17/2024

SHEET
C-7.11

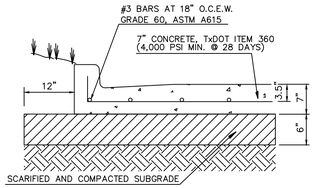
CASE NO. 2022-185



STANDARD DUTY
CONCRETE PAVING



HEAVY DUTY/FIRE LANE
CONCRETE PAVING



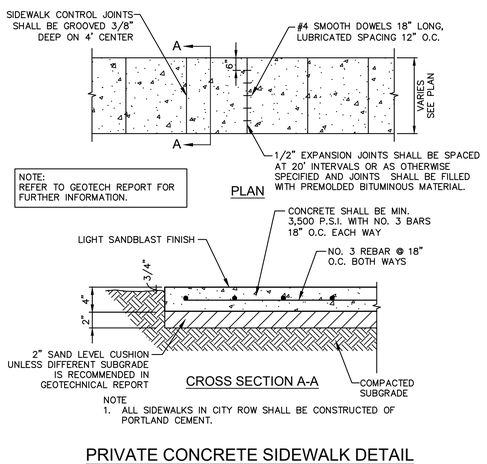
DUMPSTER
CONCRETE PAVING

GENERAL PAVING NOTES

1. SUBGRADE SHALL BE SCARIFIED TO A DEPTH OF AT LEAST 6 INCHES AND COMPACTED TO AT LEAST 95 PERCENT OF STANDARD PROCTOR MAXIMUM DENSITY (ASTM D 698) AND WITHIN A RANGE OF −1 TO +3 PERCENTAGE POINTS OF THE MATERIAL'S OPTIMUM MOISTURE CONTENT.
2. CONCRETE SHALL HAVE A MINIMUM 3,500 PSI COMPRESSIVE STRENGTH AT 28 DAYS AND 4,000 PSI COMPRESSIVE STRENGTH AT 28 DAYS FOR FIRE LANES AND DUMPSTER AREA CONCRETE PAVING. CONCRETE SHALL BE DESIGNED WITH 4.5± 1.5 PERCENT ENTRAINED AIR.
3. JOINTS IN CONCRETE PAVEMENT SHALL NOT EXCEED 15 FOOT SPACING.

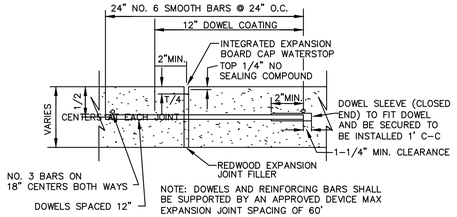
PAVING DETAILS

SCALE: NONE

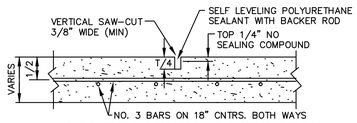


PRIVATE CONCRETE SIDEWALK DETAIL

N.T.S.

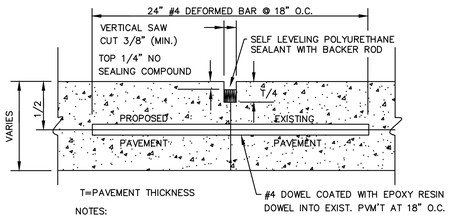


TRANSVERSE EXPANSION/ ISOLATION JOINT DETAIL



CONTRACTION JOINT DETAIL

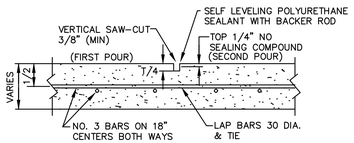
SCALE: NONE



NOTES:
1. DOWEL BARS SHALL BE DRILLED INTO PAVEMENT HORIZONTALLY BY USE OF A MECHANICAL RIG. DRILLING BY HAND IS NOT ACCEPTABLE

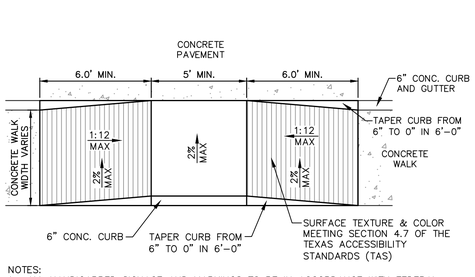
LONGITUDINAL BUTT JOINT DETAIL

SCALE: NONE



CONSTRUCTION JOINT DETAIL

SCALE: NONE

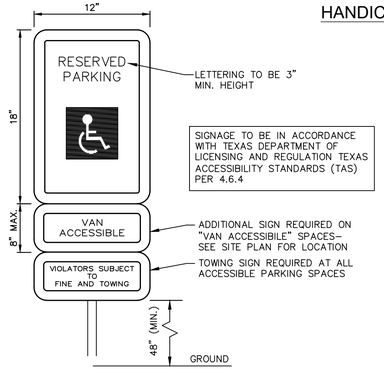


NOTES:
1. ALL HANDICAPPED SIGNAGE AND MARKINGS TO BE IN ACCORDANCE WITH FEDERAL STATE AND AND LOCAL REGULATIONS.
2. MAXIMUM SLOPE FOR HANDICAPPED ACCESSIBLE PATHS ARE 5% WITH A MAXIMUM CROSS FALL SLOPE OF 2% THE FIRST FIVE FEET FROM THE DOOR IS NOT TO EXCEED 2% IN ANY DIRECTION.
3. TAPERED CURB AND GUTTER SECTION. MAINTAIN GUTTER FLOWLINE AS REQUIRED.
4. RAMP SHALL BE CONSTRUCTED OF 4" THICK, 3000 PSI CONCRETE WITH 6"x6" W2.9xW2.9 WELDED WIRE REINF.

NOTE:
REFER TO GEOTECH REPORT FOR FURTHER INFORMATION.

ACCESS RAMP DETAIL

N.T.S.



NOTES:
1. A SIGN IDENTIFYING THE CONSEQUENCES OF PARKING ILLEGALLY IN A PAVED ACCESSIBLE PARKING SPACE MUST AT A MINIMUM:
   1.1. STATE "VIOLATORS SUBJECT TO FINE AND TOWING" IN A LETTER HEIGHT OF AT LEAST 1 INCH;
   1.2. BE MOUNTED ON A POLE, POST, WALL OR FREESTANDING BOARD;
   1.3. BE NO MORE THAN EIGHT (8) INCHES BELOW A SIGN REQUIRED BY TEXAS ACCESSIBILITY STANDARDS, 506.6;
   1.4. AND BE INSTALLED SO THAT THE BOTTOM EDGE OF THE SIGN IS NO LOWER THAN 48 INCHES AND NO HIGHER THAN 80 INCHES ABOVE GROUND LEVEL.

DISABLED SIGN DETAIL

N.T.S.

NOTES:
1. RAMP SCORE JOINTS 2" O.C. (MIN.. 1/8" DEEP GROOVE, 1/4" WIDE.) RAMP SURFACE COLORED AS NECESSARY TO SIGNIFICANTLY CONTRAST WITH THE COLOR OF THE ADJOINING SIDEWALK/ACCESSIBLE ROUTES.
2. TAPERED CURB AND GUTTER SECTION. MAINTAIN GUTTER FLOWLINE AS REQUIRED.
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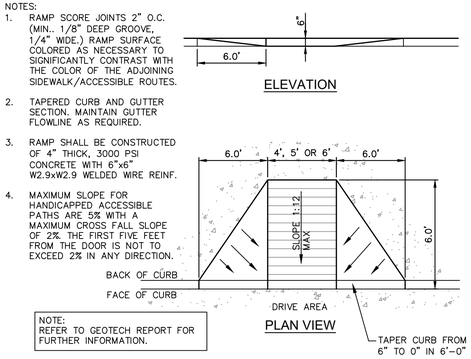

NOTE:
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PRIVATE BARRIER FREE RAMP W/ 6' FLARES DETAIL

N.T.S.

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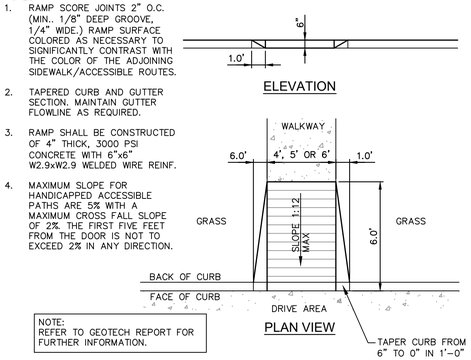

NOTE:
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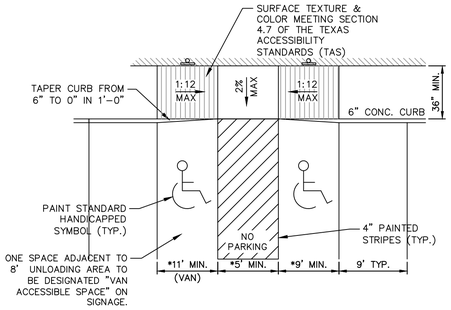
PRIVATE BARRIER FREE RAMP W/ 1' FLARES DETAIL

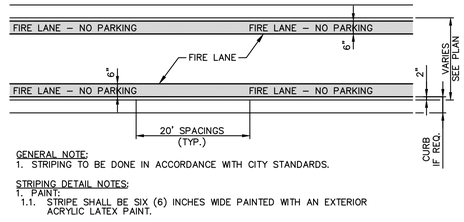
N.T.S.



NOTES:
1. * DIMENSIONS MAY VARY REFER TO DIMENSIONAL CONTROL PLAN
2. SIGNAGE AND MARKINGS TO BE IN ACCORDANCE WITH FEDERAL STATE AND LOCAL REGULATIONS.
3. MAXIMUM SLOPE FOR HANDICAPPED ACCESSIBLE PATHS ARE 5% WITH A MAXIMUM CROSS FALL SLOPE OF 2% THE FIRST FIVE FEET FROM THE DOOR IS NOT TO EXCEED 2% IN ANY DIRECTION.
4. HANDICAPPED SIGNS, INSTALL 2' FROM BACK OF CURB (TYP. EACH SPACE). SIGNAGE TO BE IN ACCORDANCE WITH TEXAS DEPARTMENT OF LICENSING AND REGULATION TEXAS ACCESSIBILITY STANDARDS (TAS) PER 4.6.4
5. THE WORDS "NO PARKING" ARE REQUIRED TO BE PAINTED ON ANY ACCESSIBLE AISLES ADJACENT TO THE PARKING SPACE. MINIMUM LETTER HEIGHT OF 12" AND MINIMUM STROKE WIDTH IS 2". CENTERED IN AISLES.

HANDICAPPED PARKING DETAIL

N.T.S.

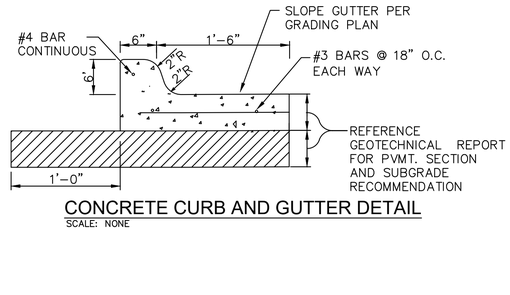


GENERAL NOTE:
1. STRIPING TO BE DONE IN ACCORDANCE WITH CITY STANDARDS.

STRIPING DETAIL NOTES:
1. PAINT:
   1.1. STRIPE SHALL BE SIX (6) INCHES WIDE PAINTED WITH AN EXTERIOR ACRYLIC LATEX PAINT.
      A. COLOR SHALL BE "TRAFFIC RED" GLIDDEN NO. 63251 OR EQUAL.
   1.1. LETTERS SHALL BE FOUR (4) INCHES HIGH PAINTED WITH AN EXTERIOR ACRYLIC LATEX PAINT.
      B. COLOR SHALL BE "TRAFFIC WHITE" GLIDDEN NO. 563245 OR EQUAL.
2. APPLICATION:
   2.1. STRIPE MAY BE BRUSHED OR SPRAYED, ONE COAT TO FINISH.
   2.2. LETTERS SHALL BE STENCIL FORMED, BRUSH APPLIED AND SPACED AS DETAILED ON THIS SHEET.

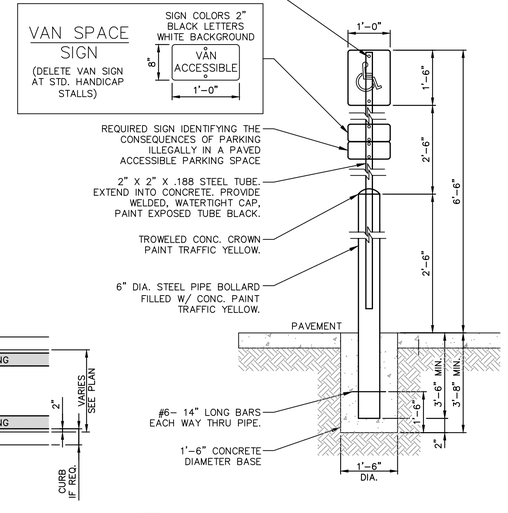
FIRE LANE STRIPING DETAIL

N.T.S.



CONCRETE CURB AND GUTTER DETAIL

SCALE: NONE



NOTES:
1. SIGN COLORS
   1.1. BACKGROUND: WHITE
   1.2. SYMBOL: BLUE
2. PROVIDE SIGNAGE AT END OF STALL AT LOCATIONS W/ ACCESSIBLE DESIGNATION TO ACT AS BUMPER STOP.
3. 1'-0"x1'-6"x .080" ALUM. HANDICAPPED PARKING SIGN. SIGN TO READ "RESERVED PARKING" W/ IDENTIFICATION SYMBOL, BOLT TO STEEL TUBE W/ 3/8" CADMIUM PLATED BOLTS, NUTS & WASHERS.
4. HANDICAP SIGNAGE TO BE IN ACCORDANCE WITH TEXAS DEPARTMENT OF LICENSING AND REGULATION TEXAS ACCESSIBILITY STANDARDS (TAS) PER 4.6.4

"HANDICAPPED PARKING" SIGN POST DETAIL

N.T.S.

TEXAS REGISTRATION #14199
CLAYMOORE ENGINEERING
1903 CENTRAL DRIVE, SUITE #406
BEDFORD, TX 76021
PHONE: 817.281.0572
WWW.CLAYMOORETEXAS.COM

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Engineer: DREW DONOSKY
P.E. No. 125651 Date 7/17/2024

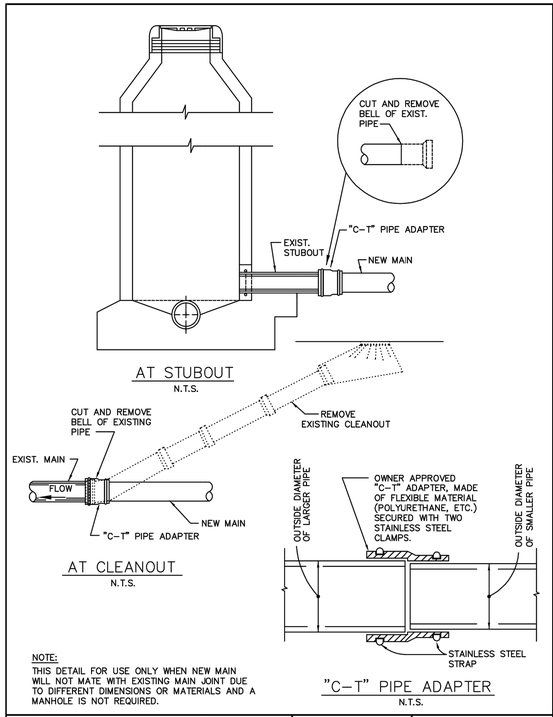
SANGER MULTI-FAMILY
PREPARED FOR
GREYSTAR
SANGER, TEXAS

No.	DATE	REVISION	BY

CONSTRUCTION DETAILS 1

DESIGN:	ASD
DRAWN:	DC
CHECKED:	ASD
DATE:	7/17/2024
SHEET	C-8.1
CASE NO.	2022-185

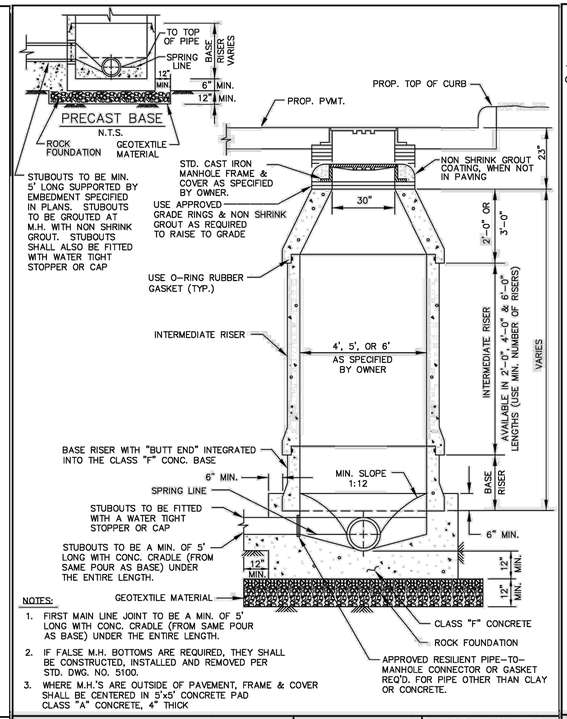
PLOTTED BY: DAN CABALLERO
PLOT DATE: 7/17/2024 10:18 AM
LOCATION: Z:\PROJECTS\PROJECTS\2022-185 MALOUF SANGER\CADD\SHEETS\MULTI-FAMILY GREYSTAR\C-31 CONSTRUCTION DETAILS 4.DWG
LAST SAVED: 7/16/2024 8:31 AM



WASTEWATER MAIN TIE-IN
AT CLEANOUT OR M.H. STUBOUT

North Central Texas Council of Governments

STANDARD SPECIFICATION REFERENCE	
502.10	
DATE	STANDARD DRAWING NO.
OCT. '04	5010

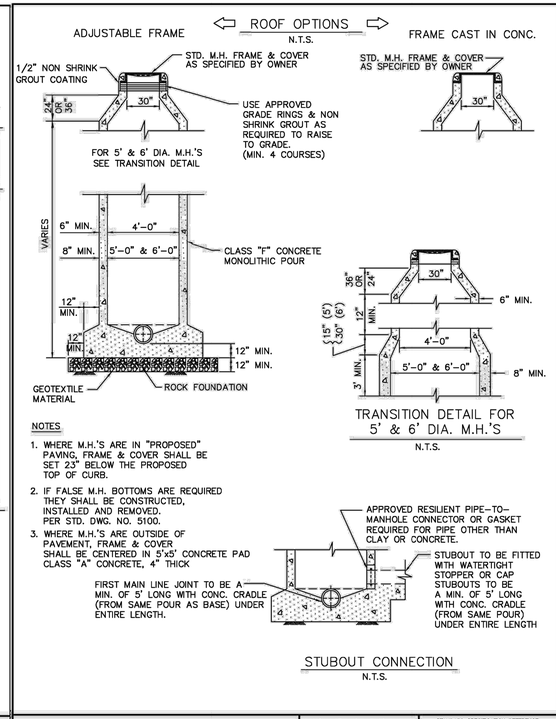


NOTES:
1. FIRST MAIN LINE JOINT TO BE A MIN. OF 5' LONG WITH CONC. CRADLE (FROM SAME POUR AS BASE) UNDER THE ENTIRE LENGTH.
2. IF FALSE M.H. BOTTOMS ARE REQUIRED, THEY SHALL BE CONSTRUCTED, INSTALLED AND REMOVED PER STD. DWG. NO. 5100.
3. WHERE M.H.'S ARE OUTSIDE OF PAVEMENT, FRAME & COVER SHALL BE CENTERED IN 5'x5' CONCRETE PAD CLASS "A" CONCRETE, 4" THICK

WASTEWATER MANHOLE
PRECAST

North Central Texas Council of Governments

STANDARD SPECIFICATION REFERENCE	
502.1.4.12*	
DATE	STANDARD DRAWING NO.
OCT. '04	5020

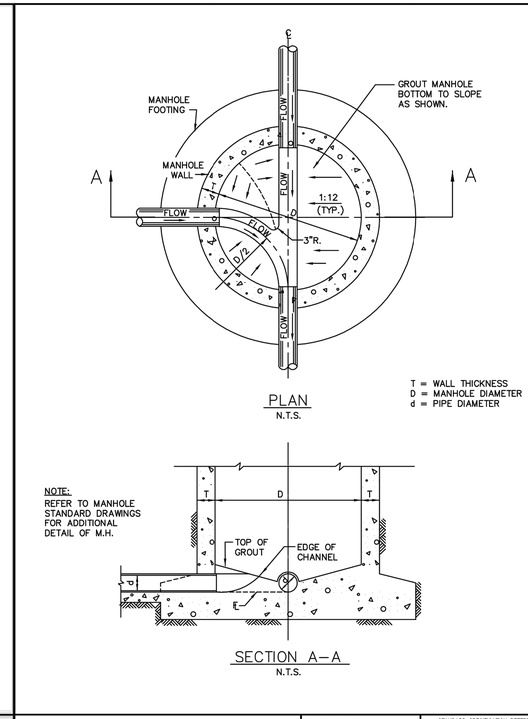


NOTES
1. WHERE M.H.'S ARE IN "PROPOSED" PAVING, FRAME & COVER SHALL BE SET 23" BELOW THE PROPOSED TOP OF CURB.
2. IF FALSE M.H. BOTTOMS ARE REQUIRED THEY SHALL BE CONSTRUCTED, INSTALLED AND REMOVED. PER STD. DWG. NO. 5100.
3. WHERE M.H.'S ARE OUTSIDE OF PAVEMENT, FRAME & COVER SHALL BE CENTERED IN 5'x5' CONCRETE PAD CLASS "A" CONCRETE, 4" THICK

WASTEWATER MANHOLE
CAST-IN-PLACE

North Central Texas Council of Governments

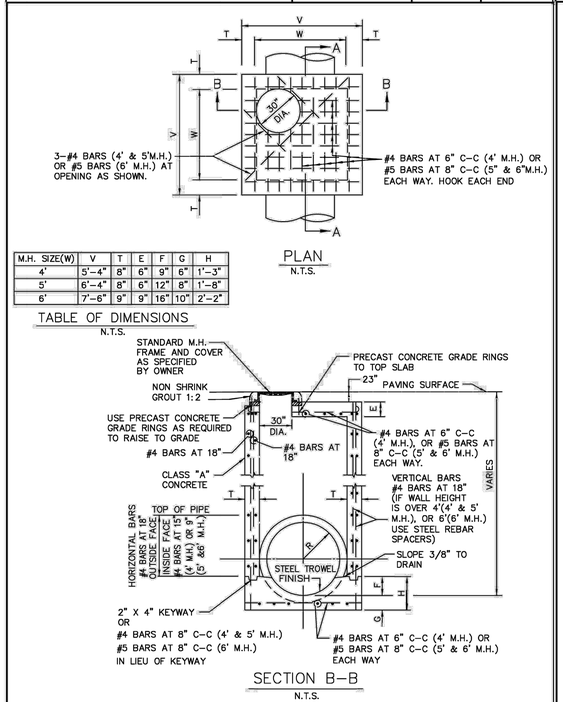
STANDARD SPECIFICATION REFERENCE	
502.1.4.1.1*	
DATE	STANDARD DRAWING NO.
OCT. '04	5030



WASTEWATER MANHOLE
LINE INTERSECTION

North Central Texas Council of Governments

STANDARD SPECIFICATION REFERENCE	
502.1	
DATE	STANDARD DRAWING NO.
OCT. '04	5090



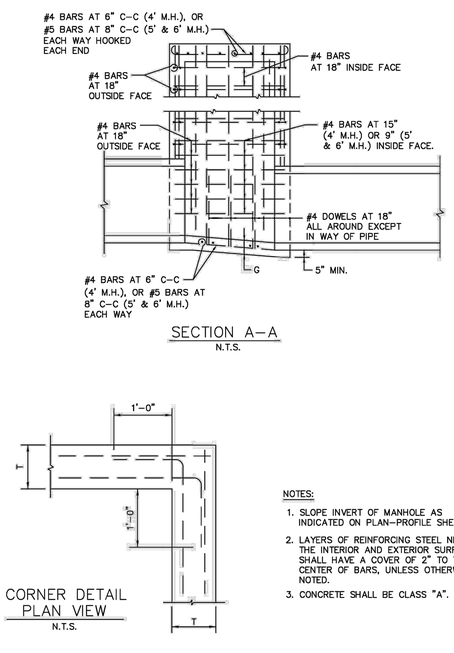
M.H. SIZE(W)	V	T	E	F	G	H
4'	5'-4"	8"	6"	9"	6"	1'-3"
5'	6'-4"	8"	6"	12"	8"	1'-8"
6'	7'-6"	9"	9"	16"	10"	2'-2"

TABLE OF DIMENSIONS
N.T.S.

STORM WATER MANHOLE
4', 5', OR 6' SQUARE

North Central Texas Council of Governments

STANDARD SPECIFICATION REFERENCE	
502.1.4.1*	
DATE	STANDARD DRAWING NO.
OCT. '04	6010A

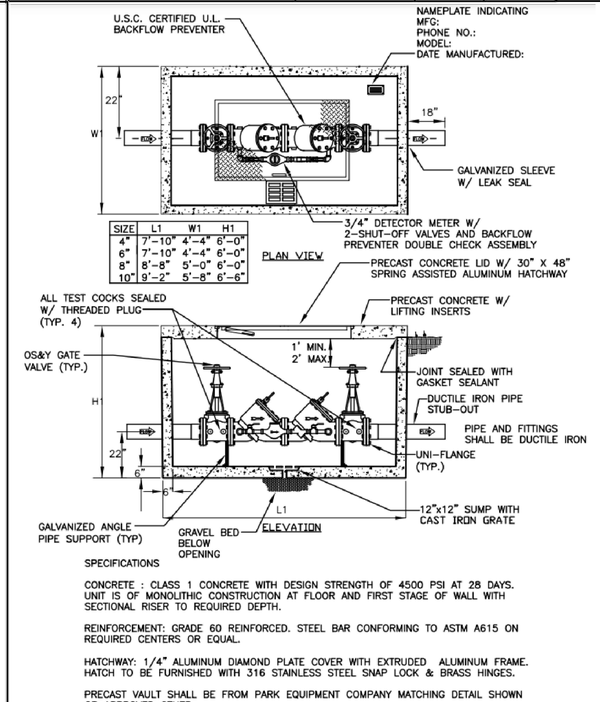


NOTES:
1. SLOPE INVERT OF MANHOLE AS INDICATED ON PLAN-PROFILE SHEET.
2. LAYERS OF REINFORCING STEEL NEAREST THE INTERIOR AND EXTERIOR SURFACE SHALL HAVE A COVER OF 2" TO THE CENTER OF BARS, UNLESS OTHERWISE NOTED.
3. CONCRETE SHALL BE CLASS "A".

STORM WATER MANHOLE
4', 5', OR 6' SQUARE

North Central Texas Council of Governments

STANDARD SPECIFICATION REFERENCE	
502.1.4.1*	
DATE	STANDARD DRAWING NO.
OCT. '04	6010B



SIZE	L1	W1	H1
4"	7'-10"	4'-4"	6'-0"
6"	7'-10"	4'-4"	6'-0"
8"	8'-8"	5'-0"	6'-0"
10"	9'-2"	5'-8"	6'-6"

SPECIFICATIONS

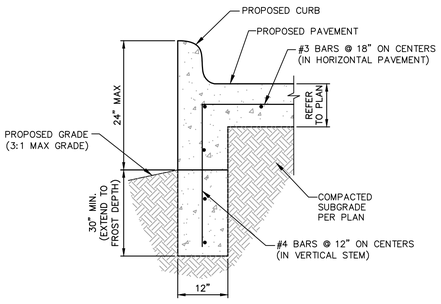
CONCRETE : CLASS 1 CONCRETE WITH DESIGN STRENGTH OF 4500 PSI AT 28 DAYS. UNIT IS OF MONOLITHIC CONSTRUCTION AT FLOOR AND FIRST STAGE OF WALL WITH SECTIONAL RISER TO REQUIRED DEPTH.

REINFORCEMENT: GRADE 60 REINFORCED. STEEL BAR CONFORMING TO ASTM A615 ON REQUIRED CENTERS OR EQUAL.

HATCHWAY: 1/4" ALUMINUM DIAMOND PLATE COVER WITH EXTRUDED ALUMINUM FRAME. HATCH TO BE FURNISHED WITH 316 STAINLESS STEEL SNAP LOCK & BRASS HINGES.

PRECAST VAULT SHALL BE FROM PARK EQUIPMENT COMPANY MATCHING DETAIL SHOWN OR APPROVED OTHER.

DOUBLE DETECTOR CHECK FIRE VAULT



CURB WITH WALL DETAIL
FOR PARKING ADJACENT TO POND
N.T.S.

Provide embedment details

TEXAS REGISTRATION #14199
CLAYMOORE ENGINEERING
1903 CENTRAL DRIVE, SUITE #406
BEDFORD, TX 76021
PHONE: 817.281.0572
WWW.CLAYMOORETEXAS.COM

PRELIMINARY
FOR REVIEW ONLY
Not for construction purposes.
CLAYMOORE ENGINEERING
ENGINEERING AND PLANNING CONSULTANTS
Engineer: DREW DONOSKY
P.E. No. 125651 Date 7/17/2024

SANGER MULTI-FAMILY
PREPARED FOR
GREYSTAR
SANGER, TEXAS

No.	DATE	REVISION	BY

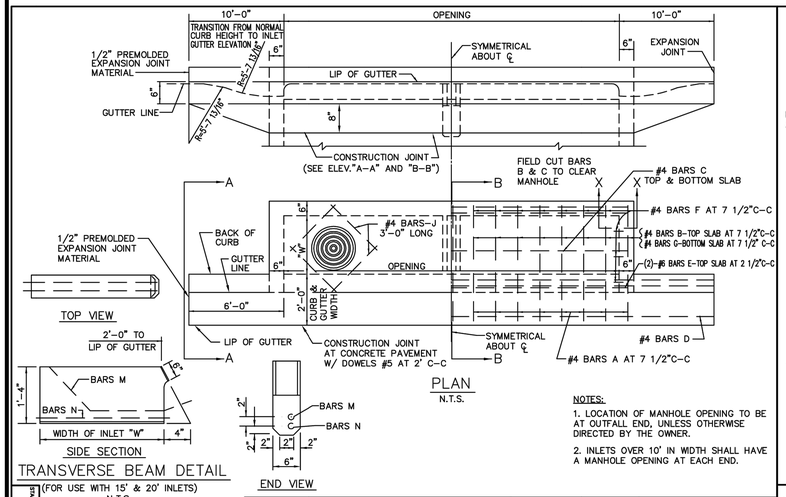
CONSTRUCTION DETAILS 2

DESIGN:	ASD
DRAWN:	DC
CHECKED:	ASD
DATE:	7/17/2024

SHEET
C-8.2

CASE NO. 2022-185

PLOTTED BY: DAN CABALLERO
PLOT DATE: 7/17/2024 10:18 AM
LOCATION: Z:\PROJECTS\PROJECTS\2022-185 MALOUF SANGER\CADD\SHEETS\MULTI-FAMILY GREYSTAR\C-31 CONSTRUCTION DETAILS 4.DWG
LAST SAVED: 7/16/2024 8:31 AM



NOTES:

1. LOCATION OF MANHOLE OPENING TO BE AT OUTFALL END, UNLESS OTHERWISE DIRECTED BY THE OWNER.
2. INLETS OVER 10' IN WIDTH SHALL HAVE A MANHOLE OPENING AT EACH END.

STANDARD DRAWING NO. 6020A

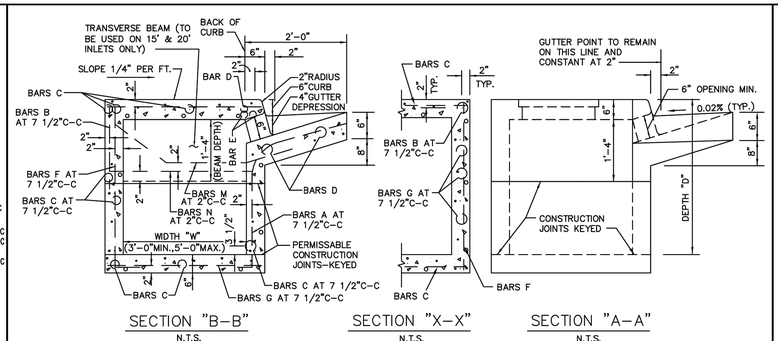
CURB INLET

5', 10', 15' OR 20' OPENING

North Central Texas Council of Governments

STANDARD SPECIFICATION REFERENCE 702

DATE: OCT. '04 | STANDARD DRAWING NO.: 6020A



GENERAL NOTES:

1. ALL CONCRETE SHALL BE CLASS "A" CONCRETE.
2. REINFORCING BARS SHALL BE STANDARD GRADE STEEL, DEFORMED REINFORCING BARS OF A DIAMETER AND LENGTH AS SHOWN.
3. CHAMFER ALL EXPOSED CORNERS 3/4" EXCEPT WHERE OTHERWISE NOTED.
4. DIMENSIONS RELATING TO REINFORCING STEEL ARE TO CENTERS OF BARS.
5. FIELD CUT AND BEND BARS AS NECESSARY TO ACCOMODATE STORM SEWER PIPE.
6. RING AND COVER SHALL BE APPROVED BY THE OWNER AND INSTALLED BY THE CONTRACTOR.

STANDARD DRAWING NO. 6020B

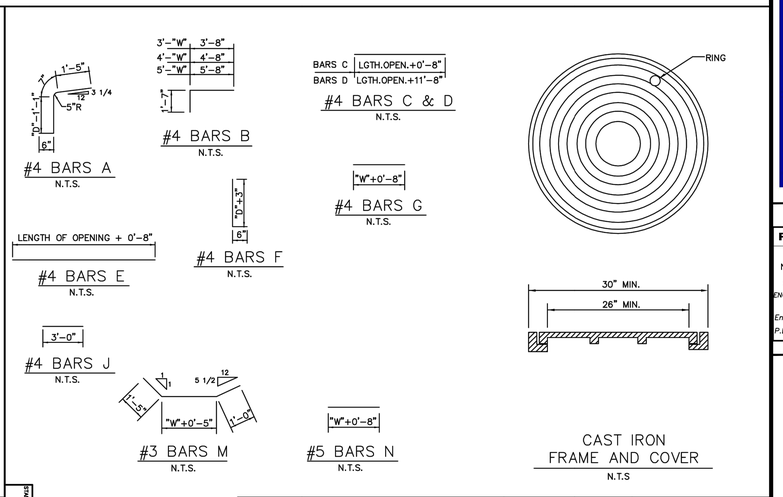
CURB INLET

CROSS SECTION & INLET THROAT

North Central Texas Council of Governments

STANDARD SPECIFICATION REFERENCE 702

DATE: OCT. '04 | STANDARD DRAWING NO.: 6020B



STANDARD DRAWING NO. 6020C

CURB INLET

REBAR & M.H. FRAME & COVER

North Central Texas Council of Governments

STANDARD SPECIFICATION REFERENCE 702

DATE: OCT. '04 | STANDARD DRAWING NO.: 6020C

BILL OF REINFORCING STEEL

DEPTH "D"	ALL WIDTHS AND LENGTHS				OPENING LENGTH "L" = 5ft							OPENING LENGTH "L" = 10ft							OPENING LENGTH "L" = 15 ft							OPENING LENGTH "L" = 20 ft						
					Widths "W" 3ft 4ft 5ft							Widths "W" 3ft 4ft 5ft							Widths "W" 3ft 4ft 5ft							Widths "W" 3ft 4ft 5ft						
	BARS C	BARS D	BARS E	BARS J	BARS F	BARS F	BARS A	BARS B	BARS G	BARS F	BARS F	BARS A	BARS B	BARS G	BARS F	BARS F	BARS A	BARS B	BARS G	BARS F	BARS F	BARS A	BARS B	BARS G	BARS F	BARS F	BARS A	BARS B	BARS G	BARS M	BARS N
3'-6"	17	3	2	4	20	24	28	10	10	20	28	32	36	18	18	28	36	40	44	26	26	36	2	2	44	48	52	34	34	44	2	2
3'-9"	18	"	"	"	"	"	"	"	"	20	"	"	"	"	"	28	"	"	"	"	"	36	"	"	"	"	"	"	"	44	"	"
4'-0"	19	"	"	"	"	"	"	"	"	24	"	"	"	"	"	32	"	"	"	"	"	40	"	"	"	"	"	"	"	48	"	"
4'-3"	19	"	"	"	"	"	"	"	"	24	"	"	"	"	"	32	"	"	"	"	"	40	"	"	"	"	"	"	"	48	"	"
4'-6"	21	"	"	"	"	"	"	"	"	26	"	"	"	"	"	34	"	"	"	"	"	42	"	"	"	"	"	"	"	50	"	"
4'-9"	21	"	"	"	"	"	"	"	"	26	"	"	"	"	"	34	"	"	"	"	"	42	"	"	"	"	"	"	"	50	"	"
5'-0"	21	"	"	"	"	"	"	"	"	26	"	"	"	"	"	34	"	"	"	"	"	42	"	"	"	"	"	"	"	50	"	"
5'-3"	23	"	"	"	"	"	"	"	"	28	"	"	"	"	"	36	"	"	"	"	"	44	"	"	"	"	"	"	"	52	"	"
5'-6"	23	"	"	"	"	"	"	"	"	28	"	"	"	"	"	36	"	"	"	"	"	44	"	"	"	"	"	"	"	52	"	"
5'-9"	25	"	"	"	"	"	"	"	"	30	"	"	"	"	"	38	"	"	"	"	"	46	"	"	"	"	"	"	"	54	"	"
6'-0"	25	"	"	"	"	"	"	"	"	30	"	"	"	"	"	38	"	"	"	"	"	46	"	"	"	"	"	"	"	54	"	"
6'-3"	26	"	"	"	"	"	"	"	"	30	"	"	"	"	"	38	"	"	"	"	"	46	"	"	"	"	"	"	"	54	"	"
6'-6"	27	"	"	"	"	"	"	"	"	32	"	"	"	"	"	40	"	"	"	"	"	48	"	"	"	"	"	"	"	56	"	"
6'-9"	27	"	"	"	"	"	"	"	"	32	"	"	"	"	"	40	"	"	"	"	"	48	"	"	"	"	"	"	"	56	"	"
7'-0"	29	"	"	"	"	"	"	"	"	34	"	"	"	"	"	42	"	"	"	"	"	50	"	"	"	"	"	"	"	58	"	"
7'-3"	29	"	"	"	"	"	"	"	"	34	"	"	"	"	"	42	"	"	"	"	"	50	"	"	"	"	"	"	"	58	"	"
7'-6"	30	"	"	"	"	"	"	"	"	34	"	"	"	"	"	42	"	"	"	"	"	50	"	"	"	"	"	"	"	58	"	"
7'-9"	31	"	"	"	"	"	"	"	"	36	"	"	"	"	"	44	"	"	"	"	"	52	"	"	"	"	"	"	"	60	"	"
8'-0"	31	"	"	"	"	"	"	"	"	36	"	"	"	"	"	44	"	"	"	"	"	52	"	"	"	"	"	"	"	60	"	"
8'-3"	32	"	"	"	"	"	"	"	"	36	"	"	"	"	"	44	"	"	"	"	"	52	"	"	"	"	"	"	"	60	"	"
8'-6"	33	"	"	"	"	"	"	"	"	38	"	"	"	"	"	46	"	"	"	"	"	54	"	"	"	"	"	"	"	62	"	"
8'-9"	34	"	"	"	"	"	"	"	"	38	"	"	"	"	"	46	"	"	"	"	"	54	"	"	"	"	"	"	"	62	"	"
9'-0"	35	"	"	"	"	"	"	"	"	40	"	"	"	"	"	48	"	"	"	"	"	56	"	"	"	"	"	"	"	64	"	"
9'-3"	36	"	"	"	"	"	"	"	"	40	"	"	"	"	"	48	"	"	"	"	"	56	"	"	"	"	"	"	"	64	"	"
9'-6"	37	"	"	"	"	"	"	"	"	42	"	"	"	"	"	50	"	"	"	"	"	58	"	"	"	"	"	"	"	66	"	"
10'-0"	38	"	"	"	"	"	"	"	"	42	"	"	"	"	"	50	"	"	"	"	"	58	"	"	"	"	"	"	"	66	"	"

NOTE:
FOR CONVENIENCE, DEPTHS OF INLETS SHOWN IN ABOVE TABLES ARE IN INCREMENTS OF 3 INCHES BUT ANY DEPTHS OTHER THAN THOSE SHOWN ABOVE MAY BE USED WHEREVER DEEMED NECESSARY. QUANTITIES FOR OTHER DEPTHS FALLING WITHIN THE LIMITS OF THE TABLE MAY BE FOUND BY INTERPOLATION.

STANDARD DRAWING NO. 6020D

CURB INLET

BILL OF REINFORCING STEEL

North Central Texas Council of Governments

STANDARD SPECIFICATION REFERENCE 702

DATE: OCT. '04 | STANDARD DRAWING NO.: 6020D

SUMMARY OF QUANTITIES FOR CURB INLETS

DEPTH "D"	5'-0" OPENING						10'-0" OPENING						15'-0" OPENING						20'-0" OPENING					
	WIDTH 3'-0"		WIDTH 4'-0"		WIDTH 5'-0"		WIDTH 3'-0"		WIDTH 4'-0"		WIDTH 5'-0"		WIDTH 3'-0"		WIDTH 4'-0"		WIDTH 5'-0"		WIDTH 3'-0"		WIDTH 4'-0"		WIDTH 5'-0"	
	CONC C.Y.	STEEL LBS.	CONC C.Y.	STEEL LBS.	CONC C.Y.	STEEL LBS.	CONC C.Y.	STEEL LBS.	CONC C.Y.	STEEL LBS.	CONC C.Y.	STEEL LBS.	CONC C.Y.	STEEL LBS.	CONC C.Y.	STEEL LBS.	CONC C.Y.	STEEL LBS.	CONC C.Y.	STEEL LBS.	CONC C.Y.	STEEL LBS.	CONC C.Y.	STEEL LBS.
3'-6"	2.62	306	2.95	332	3.28	373	4.12	479	4.64	521	5.20	564	5.69	667	6.40	721	7.10	775	7.20	846	8.11	909	9.03	976
3'-9"	2.70	309	3.04	341	3.39	373	4.25	494	4.78	536	5.34	579	5.87	687	6.58	741	7.30	796	7.42	874	8.34	937	9.27	1010
4'-0"	2.78	328	3.14	364	3.49	399	4.38	518	4.92	565	5.49	610	6.05	718	6.77	776	7.49	835	7.64	909	8.58	976	9.51	1046
4'-3"	2.87	334	3.23	370	3.59	406	4.51	526	5.06	573	5.64	619	6.22	729	6.95	787	7.69	847	7.87	922	8.81	990	9.75	1061
4'-6"	2.95	356	3.32	394	3.69	431	4.64	558	5.20	607	5.79	656	6.40	770	7.14	830	7.88	891	8.09	973	9.04	1043	9.99	1115
4'-9"	3.03	361	3.41	410	3.79	438	4.77	566	5.34	616	5.94	665	6.57	780	7.32	841	8.07	903	8.31	986	9.27	1056	10.23	1129
5'-0"	3.12	367	3.51	416	3.90	445	4.90	574	5.47	624	6.09	674	6.75	791	7.51	853	8.27	915	8.53	999	9.50	1070	10.47	1144
5'-3"	3.20	383	3.60	424	4.00	465	5.03	600	5.61	652	6.23	704	6.93	827	7.69	890	8.46	955	8.76	1044	9.73	1118	10.71	1194
5'-6"	3.28	389	3.69	430	4.10	472	5.16	608	5.75	661	6.38	713	7.11	837	7.88	901	8.66	967	8.98	1057	9.97	1131	10.95	1208
5'-9"	3.37	405	3.78	451	4.20	495	5.29	635	5.89	690	6.53	744	7.28	874	8.07	940	8.85	1007	9.20	1102	10.20	1178	11.19	1258
6'-0"	3.45	415	3.88	460	4.30	504	5.42	646	6.03	702	6.68	757	7.45	888	8.25	954	9.05	1022	9.42	1119	10.43	1196	11.43	1276
6'-3"	3.53	425	3.97	470	4.41	515	5.55	661	6.17	718	6.83	773	7.63	908	8.44	975	9.24	1044	9.64	1147	10.66	1223	11.67	1305
6'-6"	3.62	437	4.06	486	4.51	532	5.68	681	6.31	739	6.97	797	7.81	935	8.62	1005	9.43	1057	9.87	1178	10.89	1258	11.92	1340
6'-9"	3.70	441	4.15	490	4.61	537	5.81	688	6.45	747	7.12	806	7.98	945	8.81	1015	9.63	1066	10.09	1191	11.12	1272	12.15	1355
7'-0"	3.78	460	4.25	510	4.71	560	5.94	716	6.59	777	7.27	837	8.16	981	8.99	1053	9.82	1126	10.31	1237	11.35	1319	12.40	1404
7'-3"	3.86	465	4.34	516	4.81	567	6.07	724	6.72	785	7.42	846	8.33	992	9.18	1065	10.02	1138	10.53	1249	11.59	1333	12.64	1418
7'-6"	3.95	477	4.43	529	4.91	570	6.20	742	6.86	804	7.57	866	8.51	1016	9.36	1089	10.21	1163	10.75	1290	11.82	1365	12.88	1451
7'-9"	4.03	491	4.53	544	5.02	597	6.33	762	7.00	826	7.71	890	8.67	1040	9.55	1116	10.41	1193	10.98	1313	12.05	1399	13.12	1498
8'-0"	4.12	496	4.62	550	5.12	604	6.46	770	7.14	834	7.86	899	8.86	1051	9.73	1129	10.60	1205	11.20	1325	12.28	1412	13.36	1510
8'-3"	4.20	504	4.71	559	5.22	613	6.59	784	7.28	849	8.01	915	9.04	1069	9.92	1149	10.80	1228	11.42	1353	12.51	1440	13.60	1529
8'-6"	4.28	519	4.80	576	5.32	632	6.71	804	7.42	871	8.16	938	9.21	1107	10.10	1176	10.99	1257	11.64	1385	12.74	1474	13.84	1565
8'-9"	4.37	528	4.90	586	5.42	643	6.84	819	7.56	886	8.31	954	9.39	1119	10.29	1199	11.18	1280	11.87	1410	12.97	1500	14.08	1592
9'-0"	4.45	545	4.99	605	5.53	664	6.97	842	7.70	912	8.46	982	9.56	1148	10.47	1231	11.38	1313	12.09	1447	13.21	1539	14.32	1631
9'-3"	4.53	554	5.08	614	5.63	674	7.10	858	7.84	929	8.60	999	9.74	1169	10.66	1252	11.57	1335	12.31	1474	13.44	1563	14.56	1660
9'-6"	4.62	568	5.17	630	5.73	692	7.23	878	7.97	950	8.75	1022	9.92	1195	10.84	1280	11.77	1365	12.53	1505	13.67	1600	14.80	1696
10'-0"	4.78	582	5.36	645	5.93	708	7.49	900	8.11	974	9.05	1048	10.27	1227	11.21	1312	12.16	1399	12.98	1546	14.13	1642	15.29	1739

NOTE:
FOR CONVENIENCE, DEPTHS OF INLETS SHOWN IN ABOVE TABLES ARE IN INCREMENTS OF 3 INCHES BUT ANY DEPTHS OTHER THAN THOSE SHOWN ABOVE MAY BE USED WHEREVER DEEMED NECESSARY. QUANTITIES FOR OTHER DEPTHS FALLING WITHIN THE LIMITS OF THE TABLE MAY BE FOUND BY INTERPOLATION.

STANDARD DRAWING NO. 6020E

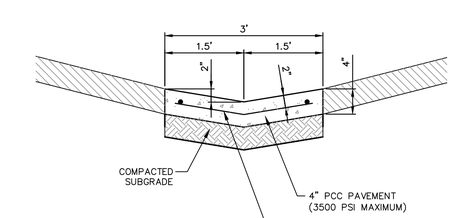
CURB INLET

SUMMARY OF QUANTITIES

North Central Texas Council of Governments

STANDARD SPECIFICATION REFERENCE 702

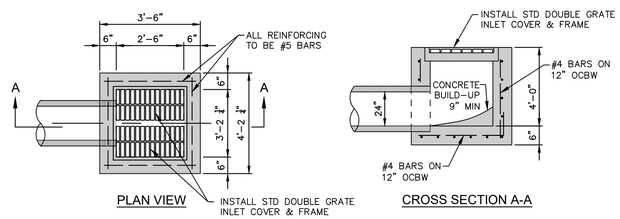
DATE: OCT. '04 | STANDARD DRAWING NO.: 6020E



NOTE:
1. PROVIDE BITUMINOUS EXPANSION MATERIAL AT ALL CONNECTIONS TO EXISTING OR PROPOSED IMPROVEMENTS AND AT ALL GRADE CHANGES. PROVIDE CONTRACTION JOINTS AT SPACES EQUAL TO WIDTH. PROVIDE REDWOOD EXPANSION JOINTS AT 32' SPACING.
2. ALL SUBGRADES SHALL BE COMPACTED TO 95% MAXIMUM DENSITY PER AASHTO T-99 (STANDARD PROCTOR).

CONCRETE PILOT CHANNEL DETAIL

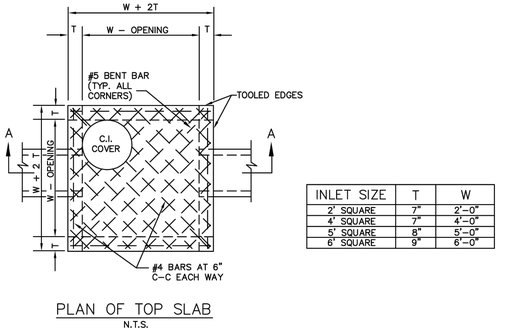
N.T.S.



NOTES:
1. ALL LAPS AND EXTENSIONS OF REINFORCING BARS SHALL BE 30 BAR DIAMETERS UNLESS OTHERWISE NOTED.
2. PIPE MAY BE PLACED IN ANY WALL, BUT SHALL NOT ENTER ANY CORNER, OR BOTTOM.
3. CONCRETE TO BE MIN. 4200 PSI.

GRATE INLET DETAIL

N.T.S.



PLAN OF TOP SLAB

N.T.S.

INLET SIZE	T	W
2' SQUARE	7"	2'-0"
4' SQUARE	7"	4'-0"
5' SQUARE	8"	5'-0"
6' SQUARE	9"	6'-0"

NOTES:

1. MATERIAL AND WORKMANSHIP SHALL CONFORM WITH THE REQUIREMENTS OF NCTCOG STANDARD SPECIFICATIONS FOR STANDARD CONCRETE MANHOLES. MINIMUM CLASS "A" CONCRETE.
2. LAYERS OF REINFORCING STEEL NEAREST THE INTERIOR AND EXTERIOR SURFACES SHALL HAVE A COVER OF 2" TO THE CENTER OF BARS, UNLESS OTHERWISE NOTED.
3. FOR DETAILS OF REINFORCING OF LOWER PORTIONS OF INLET SEE APPROPRIATE SQUARE MANHOLE DETAILS.
4. DEPTH OF DROP INLET FROM FINISHED GRADE TO FLOW LINE OF INLET IS VARIABLE. APPROXIMATE DEPTH WILL BE SHOWN ON PLANS AT LOCATION OF INLET.
5. ALL STANDARD DROP INLETS SHALL HAVE ONE OPENING ON EACH SIDE UNLESS OTHERWISE SHOWN ON PLANS.
6. DECK MAY BE REINFORCED SAME AS 4' SQUARE MANHOLE.

DROP INLET

2', 4', 5' OR 6' SQUARE

North Central Texas Council of Governments

STANDARD SPECIFICATION REFERENCE 702

DATE: OCT. '04 | STANDARD DRAWING NO.: 6040

Provide headwall details for storm outfalls

TEXAS REGISTRATION #14199
CLAYMOORE ENGINEERING
1903 CENTRAL DRIVE, SUITE #406
BEDFORD, TX 76021
PHONE: 817.281.0572
WWW.CLAYMOORETX.COM

PRELIMINARY

FOR REVIEW ONLY
Not for construction purposes.

CLAYMOORE ENGINEERING
ENGINEERING AND PLANNING CONSULTANTS

Engineer: DREW DONOSKY
P.E. No. 125651 Date 7/17/2024

SANGER MULTI-FAMILY
PREPARED FOR
GREYSTAR
SANGER, TEXAS

No.	DATE	REVISION	BY

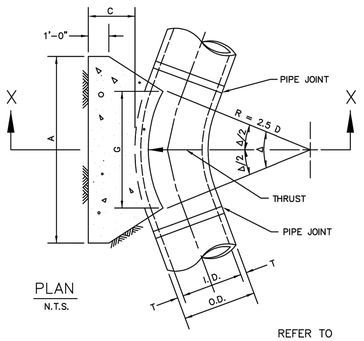
CONSTRUCTION DETAILS 3

DESIGN: ASD
DRAWN: DC
CHECKED: ASD
DATE: 7/17/2024

SHEET
C-8.3

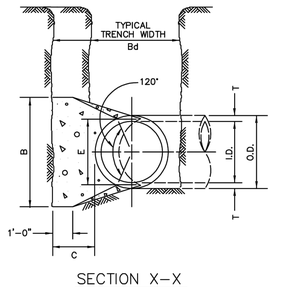
CASE NO. 2022-185

PLOTTED BY: DAN CABALLERO
PLOT DATE: 7/17/2024 10:18 AM
LOCATION: Z:\PROJECTS\PROJECTS\2022-185 MALOUF SANGER\CADD\SHEETS\MULTI-FAMILY GREYSTAR\C-31 CONSTRUCTION DETAILS 4.DWG
LAST SAVED: 7/16/2024 8:31 AM



PLAN
N.T.S.

REFER TO
STD. DWG. No. 4040
FOR GENERAL NOTES.



SECTION X–X
N.T.S.

I.D. (IN.)	T (IN.)	Δ = 11.25° C (FT.)	Δ = 22.50° C (FT.)	E (FT.)
4,6,8	0.4	1.5	1.5	0.9
10,12	0.5	1.5	1.5	1.2
16,18	0.6	1.5	1.5	1.6
20	0.7	1.5	1.5	1.8
24	0.9	1.5	1.5	2.1
30	2.9	1.5	1.9	2.6
36	4.5	1.5	2.3	3.3
42	5.0	1.8	2.6	3.8
48	5.5	2.0	3.0	4.3
54	6.0	2.3	3.4	4.8
60	6.5	2.5	3.8	5.3
66	6.8	2.8	4.1	5.7
72	7.5	3.0	4.5	6.3
78	7.5	3.3	4.9	6.7
84	8.0	3.5	5.3	7.2
90	8.5	3.8	5.6	7.7
96	9.0	4.0	6.0	8.2

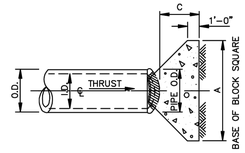
	Δ = 11.25°								Δ = 22.50°							
			EARTH			ROCK					EARTH			ROCK		
I.D. (IN.)	G (FT.)	THRUST (TONS)	A (FT.)	B (FT.)	VOL. (C.Y.)	A (FT.)	B (FT.)	VOL. (C.Y.)	I.D. (IN.)	G (FT.)	THRUST (TONS)	A (FT.)	B (FT.)	VOL. (C.Y.)	A (FT.)	B (FT.)	VOL. (C.Y.)
4,6,8	0.4	1.0	1.0	1.5	0.1	1.0	1.0	0.1	4,6,8	0.8	2.0	1.5	1.5	0.1	1.0	1.0	0.1
10,12	0.6	2.2	1.5	1.5	0.1	1.0	1.5	0.1	10,12	1.1	4.4	2.0	2.5	0.3	1.5	1.5	0.1
16,18	0.8	5.0	2.0	2.5	0.3	1.5	2.0	0.2	16,18	1.6	9.9	3.0	3.5	0.6	2.0	2.5	0.3
20	0.9	6.2	2.0	3.5	0.4	1.5	3.0	0.3	20	1.8	12.3	3.5	3.5	0.7	2.0	3.0	0.4
24	1.1	8.9	3.0	3.5	0.5	1.5	3.0	0.3	24	2.2	17.7	4.0	4.5	1.0	3.0	3.5	0.5
30	1.4	10.4	3.0	3.5	0.6	2.0	3.5	0.4	30	2.7	20.7	5.0	4.5	1.5	3.0	4.0	0.8
36	1.7	15.0	3.5	4.5	0.9	2.0	4.0	0.5	36	3.3	29.8	5.5	5.5	2.3	4.0	4.0	1.3
42	1.9	20.4	4.5	5.0	1.5	2.5	5.0	0.8	42	3.8	40.5	7.0	6.0	3.9	4.5	5.0	2.1
48	2.2	26.6	4.5	6.0	2.0	2.5	6.0	1.1	48	4.4	52.9	8.0	7.0	5.7	4.5	6.0	2.8
54	2.5	33.7	6.0	6.0	3.0	3.0	6.0	1.4	54	4.9	67.0	9.0	8.0	8.0	6.0	6.0	4.1
60	2.7	41.6	6.0	7.0	3.8	3.0	7.0	1.8	60	5.5	82.7	9.5	9.0	10.6	6.0	7.0	5.3
66	3.0	50.3	6.5	8.0	5.1	3.5	8.0	2.7	66	6.0	100.1	10.5	10.0	14.1	6.5	8.0	7.2
72	3.3	59.9	7.5	8.0	6.3	4.0	8.0	3.3	72	6.6	119.1	11.0	11.0	17.6	7.5	8.0	9.1
78	3.6	70.2	8.0	9.0	8.1	4.0	9.0	3.9	78	7.1	139.8	12.0	12.0	22.5	8.0	9.0	11.7
84	3.8	81.5	8.5	10.0	10.3	4.5	10.0	5.3	84	7.6	162.1	13.0	12.5	27.2	8.5	10.0	14.8
90	4.1	93.5	9.5	10.0	12.2	5.0	10.0	6.3	90	8.2	186.1	14.0	13.5	33.7	9.5	10.0	17.7
96	4.4	106.4	10.0	11.0	15.0	5.0	11.0	7.4	96	8.7	211.7	15.0	14.5	41.2	10.0	11.0	21.8

TABLES OF DIMENSIONS AND QUANTITIES

	Δ = 30°								Δ = 45°							
			EARTH			ROCK					EARTH			ROCK		
I.D. (IN.)	G (FT.)	THRUST (TONS)	A (FT.)	B (FT.)	VOL. (C.Y.)	A (FT.)	B (FT.)	VOL. (C.Y.)	I.D. (IN.)	G (FT.)	THRUST (TONS)	A (FT.)	B (FT.)	VOL. (C.Y.)	A (FT.)	B (FT.)	VOL. (C.Y.)
4,6,8	1.0	2.6	2.0	1.5	0.2	1.0	1.5	0.1	4,6,8	1.5	3.9	2.0	2.0	0.2	1.5	1.5	0.1
10,12	1.5	5.9	2.5	2.5	0.3	2.0	1.5	0.2	10,12	2.2	8.7	3.5	2.5	0.5	2.0	2.5	0.3
16,18	2.2	13.2	3.5	4.0	0.8	2.5	3.0	0.4	16,18	3.2	19.5	4.5	4.5	1.2	3.0	3.5	0.6
20	2.4	16.3	4.5	4.0	1.0	3.0	3.0	0.5	20	3.6	24.1	5.5	4.5	1.5	3.5	3.5	0.7
24	2.9	23.4	6.0	4.0	1.4	3.5	3.5	0.7	24	4.3	34.6	8.0	4.5	2.3	4.5	4.0	1.1
30	3.6	27.5	6.5	5.0	1.9	3.5	4.0	0.9	30	5.4	40.6	8.5	5.0	3.2	5.5	4.0	1.6
36	4.4	39.5	7.0	6.0	3.4	4.5	4.5	1.6	36	6.5	58.5	10.0	6.0	5.3	6.5	4.5	2.6
42	5.1	53.8	8.0	7.0	5.1	5.5	5.0	2.5	42	7.5	79.6	11.5	7.0	8.1	8.0	5.0	4.2
48	5.8	70.3	9.0	8.0	7.4	6.0	6.0	3.7	48	8.6	104.0	13.0	8.0	11.9	9.0	6.0	6.3
54	6.5	89.0	10.0	9.0	10.3	7.0	6.5	5.3	54	9.7	131.5	15.0	9.0	17.1	10.5	6.5	8.9
60	7.3	110.0	11.0	10.0	13.9	7.5	7.5	7.3	60	10.7	162.4	16.5	10.0	23.1	11.0	7.5	12.0
66	8.0	132.9	12.5	11.0	18.9	8.5	8.0	9.6	66	11.8	196.5	18.0	11.0	30.1	12.0	8.5	16.2
72	8.7	158.2	13.5	12.0	24.0	9.0	9.0	12.3	72	12.9	233.9	19.5	12.0	38.6	14.0	8.5	20.7
78	9.4	185.6	14.5	13.0	30.0	10.0	9.5	15.6	78	13.9	274.5	21.5	13.0	49.8	14.5	9.5	25.9
84	10.1	215.3	15.5	14.0	37.1	10.5	10.5	19.5	84	15.0	318.4	23.0	14.0	61.2	15.5	10.5	32.6
90	10.9	247.1	16.5	15.0	45.0	11.5	11.0	23.9	90	16.1	365.5	24.5	15.0	74.5	17.5	10.5	39.6
96	11.6	281.2	18.0	16.0	55.5	12.5	11.5	28.9	96	17.1	415.6	26.0	16.0	89.5	18.5	11.5	48.5

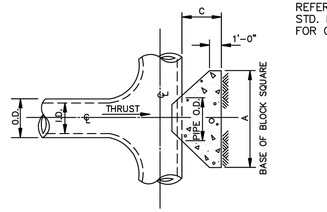
	Δ = 67.50°								Δ = 90°							
			EARTH			ROCK					EARTH			ROCK		
I.D. (IN.)	G (FT.)	THRUST (TONS)	A (FT.)	B (FT.)	VOL. (C.Y.)	A (FT.)	B (FT.)	VOL. (C.Y.)	I.D. (IN.)	G (FT.)	THRUST (TONS)	A (FT.)	B (FT.)	VOL. (C.Y.)	A (FT.)	B (FT.)	VOL. (C.Y.)
4,6,8	2.1	5.6	3.0	2.0	0.3	2.0	1.5	0.2	4,6,8	2.7	7.1	5.0	1.5	0.4	2.0	2.0	0.2
10,12	3.1	12.6	5.5	2.5	0.8	3.5	2.0	0.4	10,12	4.0	16.0	6.5	2.5	1.0	3.5	2.5	0.5
16,18	4.7	28.3	7.5	4.0	1.9	5.5	3.0	0.9	16,18	6.0	36.0	9.0	4.0	2.4	4.5	4.0	1.0
20	5.2	34.9	9.0	4.0	2.3	5.5	3.5	1.2	20	6.6	44.4	10.0	4.5	3.1	6.0	4.0	1.5
24	6.2	50.3	11.5	4.5	3.5	6.5	4.0	1.6	24	7.9	64.0	14.5	4.5	5.0	8.0	4.0	2.1
30	7.8	58.9	12.0	5.0	4.8	7.5	4.0	2.2	30	9.9	75.0	15.0	5.0	6.7	10.0	4.0	3.3
36	9.4	84.9	14.5	6.0	8.2	9.5	4.5	3.8	36	11.9	108.0	18.0	6.0	11.4	12.0	4.5	5.3
42	10.9	115.5	17.0	7.0	12.8	11.0	5.5	6.3	42	13.9	147.0	21.0	7.0	17.8	14.0	5.5	8.7
48	12.5	150.9	19.0	8.0	18.4	13.0	6.0	9.2	48	15.9	192.0	24.0	8.0	26.2	16.0	6.0	12.4
54	14.0	191.0	21.5	9.0	26.0	15.0	6.5	12.9	54	17.9	243.0	27.0	9.0	36.9	18.0	7.0	18.1
60	15.6	235.8	24.0	10.0	35.6	16.0	7.5	17.6	60	19.9	299.8	30.0	10.0	50.3	20.0	7.5	24.0
66	17.1	285.3	26.0	11.0	46.0	18.0	8.0	23.0	66	21.8	362.8	33.0	11.0	66.2	22.0	8.5	32.5
72	18.7	339.5	28.5	12.0	57.8	19.0	9.0	28.4	72	23.8	431.8	36.0	12.0	85.6	24.0	9.0	41.0
78	20.2	398.5	31.0	13.0	75.7	21.0	9.5	37.4	78	25.7	506.7	39.0	13.0	108.2	26.0	10.0	53.2
84	21.8	462.1	33.5	14.0	94.7	22.0	10.5	46.5	84	27.7	587.7	42.0	14.0	134.4	28.0	10.5	64.8
90	23.3	530.5	35.5	15.0	114.4	24.5	11.0	58.2	90	29.0	674.6	45.0	15.0	164.9	30.0	11.5	81.2
96	24.9	603.6	38.0	16.0	138.9	25.5	12.0	70.0	96	31.6	767.5	48.0	16.0	199.0	32.0	12.0	95.1

TABLES OF DIMENSIONS AND QUANTITIES



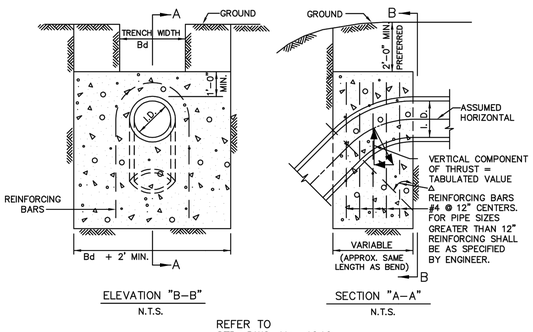
PLAN OF PLUG THRUST BLOCK
N.T.S.

REFER TO
STD. DWG. No. 4040
FOR GENERAL NOTES.



PLAN OF TEE THRUST BLOCK
N.T.S.

I.D. (IN.)	THRUST (TONS)	C (FT.)	EARTH A (FT.)	EARTH VOL. (C.Y.)	ROCK A (FT.)	ROCK VOL. (C.Y.)
4,6,8	5.1	1.5	2.5	0.3	2.0	0.2
10,12	11.3	1.5	3.5	0.6	2.5	0.3
16,18	25.5	2.0	5.5	1.6	4.0	0.9
20	31.5	2.0	6.0	1.9	4.0	0.9
24	45.2	2.5	7.0	3.1	5.0	1.7
30	53.0	3.0	7.5	4.1	5.5	2.4
36	76.3	4.0	9.0	7.3	6.5	4.2
42	104.0	4.5	10.5	11.0	7.5	6.2
48	136.0	5.0	12.0	15.6	8.5	8.7
54	172.0	5.5	13.5	21.4	9.5	11.9
60	212.0	6.0	15.0	28.4	10.5	15.7
66	257.0	6.5	16.5	36.8	11.5	20.5
72	305.0	7.5	17.5	47.2	12.5	27.2
78	358.0	8.0	19.0	58.9	13.5	33.7
84	416.0	8.5	20.5	72.3	14.5	41.2
90	477.0	9.0	22.0	87.7	15.5	49.7
96	543.0	9.5	23.5	104.8	16.5	61.0



ELEVATION "B–B"
N.T.S.

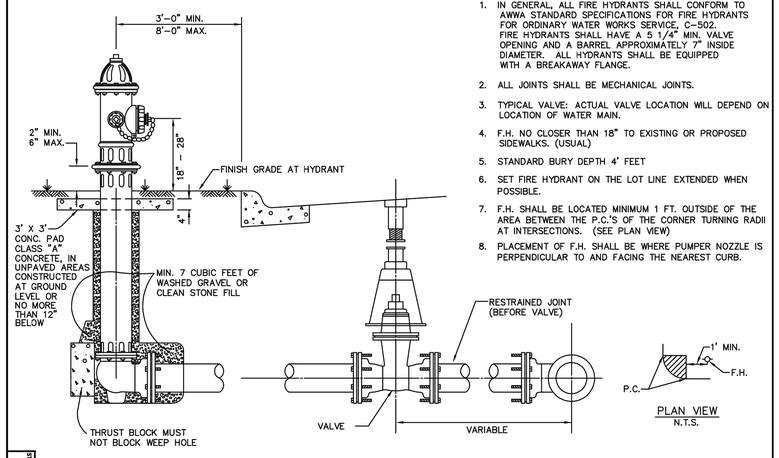
SECTION "A–A"
N.T.S.

REFER TO
STD. DWG. No. 4040
FOR GENERAL NOTES.

Δ	11.25°		22.50°		30°		45°		67.50°		90°		Δ
I.D. (IN.)	THRUST (TONS)	VOL. (C.Y.)	THRUST (TONS)	VOL. (C.Y.)	THRUST (TONS)	VOL. (C.Y.)	THRUST (TONS)	VOL. (C.Y.)	THRUST (TONS)	VOL. (C.Y.)	THRUST (TONS)	VOL. (C.Y.)	I.D. (IN.)
4,6,8	1.0	0.5	2.0	1.0	2.5	1.3	3.6	1.8	4.6	2.3	5.0	2.5	4,6,8
10,12	2.2	1.1	4.3	2.2	5.7	2.8	8.0	4.0	10.5	5.2	11.3	5.7	10,12
16,18	5.0	2.5	9.7	4.9	12.7	6.4	18.0	9.0	23.5	11.8	25.5	12.7	16,18
20	6.1	3.1	12.0	6.0	15.7	7.9	22.2	11.1	29.2	14.5	31.4	15.7	20
24	8.2	4.4	17.3	8.7	22.6	11.3	32.0	16.0	41.8	20.9	45.2	22.6	24
30	10.5	5.2	20.3	10.1	26.5	13.3	37.5	18.8	49.0	24.5	53.1	26.5	30
36	14.9	7.5	29.2	14.6	38.2	19.1	54.0	27.0	70.5	35.3	76.4	38.2	36
42	20.3	10.1	39.8	19.9	52.0	26.0	73.5	36.7	96.0	48.0	104.0	52.0	42
48	26.5	13.2	51.9	26.0	67.9	33.9	96.0	48.0	126.0	62.7	136.0	67.9	48
54	33.5	16.8	65.7	32.9	85.9	42.9	122.0	60.7	159.0	79.4	172.0	85.9	54
60	41.4	20.7	81.2	40.6	106.0	53.0	150.0	75.0	196.0	98.0	212.0	106.0	60
66	50.1	25.0	98.2	49.1	128.0	64.2	182.0	90.7	237.0	119.0	257.0	128.0	66
72	59.6	29.8	117.0	58.4	153.0	76.3	216.0	108.0	282.0	141.0	305.0	153.0	72
78	69.9	35.0	137.0	68.6	179.0	90.0	254.0	127.0	331.0	166.0	358.0	179.0	78
84	81.1	40.5	159.0	79.5	208.0	104.0	294.0	147.0	384.0	192.0	416.0	208.0	84
90	93.1	46.5	183.0	91.3	239.0	119.0	337.0	169.0	441.0	221.0	477.0	239.0	90
96	106.0	53.0	208.0	104.0	272.0	136.0	384.0	192.0	502.0	251.0	543.0	272.0	96

GENERAL NOTES FOR ALL THRUST BLOCKS:

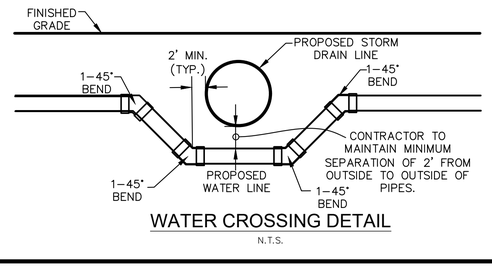
1. CONCRETE FOR BLOCKING SHALL BE CLASS "B".
2. ALL CALCULATIONS ARE BASED ON INTERNAL PRESSURE OF 200 PSI FOR DUCTILE IRON, P.V.C., AND 150 PSI FOR CONCRETE PIPE.
3. VOLUMES OF THRUST BLOCKS ARE NET VOLUMES OF CONCRETE TO BE FURNISHED. THE CORRESPONDING WEIGHT OF THE CONCRETE (CLASS "B") IS EQUAL TO OR GREATER THAN THE VERTICAL COMPONENT OF THE THRUST ON THE VERTICAL BEND.
4. WALL THICKNESS (T) ASSUMED HERE FOR ESTIMATING PURPOSES ONLY.
5. POUR CONCRETE FOR BLOCK AGAINST UNDISTURBED EARTH.
6. DIMENSIONS MAY BE VARIED AS REQUIRED BY FIELD CONDITIONS WHERE AND AS DIRECTED BY THE ENGINEER. THE VOLUME OF CONCRETE BLOCKING SHALL NOT BE LESS THAN SHOWN HERE.
7. THE SOIL BEARING PRESSURES ARE BASED ON 1000 LBS./S.F. IN SOIL AND 2000 LBS./S.F. IN ROCK.
8. USE POLYETHYLENE WRAP OR EQUAL BETWEEN CONCRETE AND BEND, TEE, OR PLUG TO PREVENT THE CONCRETE FROM STICKING TO IT.
9. CONCRETE SHALL NOT EXTEND BEYOND JOINTS.



PLAN VIEW
N.T.S.

NOTES:

1. IN GENERAL, ALL FIRE HYDRANTS SHALL CONFORM TO AWWA STANDARD SPECIFICATIONS FOR FIRE HYDRANTS FOR ORDINARY WATER WORKS SERVICE, C–502. FIRE HYDRANTS SHALL HAVE A 5 1/4" MIN. VALVE OPENING AND A BARREL APPROXIMATELY 7" INSIDE DIAMETER. ALL HYDRANTS SHALL BE EQUIPPED WITH A BREAKAWAY FLANGE.
2. ALL JOINTS SHALL BE MECHANICAL JOINTS.
3. TYPICAL VALVE: ACTUAL VALVE LOCATION WILL DEPEND ON LOCATION OF WATER MAIN.
4. F.H. NO CLOSER THAN 18" TO EXISTING OR PROPOSED SIDEWALKS. (USUAL)
5. STANDARD BURY DEPTH 4' FEET
6. SET FIRE HYDRANT ON THE LOT LINE EXTENDED WHEN POSSIBLE.
7. F.H. SHALL BE LOCATED MINIMUM 1 FT. OUTSIDE OF THE AREA BETWEEN THE P.C.'S OF THE CORNER TURNING RADII AT INTERSECTIONS. (SEE PLAN VIEW)
8. PLACEMENT OF F.H. SHALL BE WHERE PUMPER NOZZLE IS PERPENDICULAR TO AND FACING THE NEAREST CURB.



WATER CROSSING DETAIL
N.T.S.

HORIZONTAL THRUST BLOCK AT PIPE BEND	North Central Texas Council of Governments	STANDARD SPECIFICATION REFERENCE 502.4	DATE OCT. '04	STANDARD DRAWING NO. 4010A
HORIZONTAL THRUST BLOCK AT PIPE BEND	North Central Texas Council of Governments	STANDARD SPECIFICATION REFERENCE 502.4	DATE OCT. '04	STANDARD DRAWING NO. 4010B
HORIZONTAL THRUST BLOCK AT PIPE BEND	North Central Texas Council of Governments	STANDARD SPECIFICATION REFERENCE 502.4	DATE OCT. '04	STANDARD DRAWING NO. 4010C
HORIZONTAL THRUST BLOCK AT TEES AND PLUGS	North Central Texas Council of Governments	STANDARD SPECIFICATION REFERENCE 502.4	DATE OCT. '04	STANDARD DRAWING NO. 4020
VERTICAL THRUST BLOCK AT PIPE BEND	North Central Texas Council of Governments	STANDARD SPECIFICATION REFERENCE 502.4	DATE OCT. '04	STANDARD DRAWING NO. 4030
THRUST BLOCK GENERAL NOTES	North Central Texas Council of Governments	STANDARD SPECIFICATION REFERENCE 502.4	DATE OCT. '04	STANDARD DRAWING NO. 4040
FIRE HYDRANT INSTALLATION	North Central Texas Council of Governments	STANDARD SPECIFICATION REFERENCE 502.3	DATE OCT. '04	STANDARD DRAWING NO. 4120 / 4120

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CLAYMOORE ENGINEERING
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WWW.CLAYMOORETEXAS.COM

PRELIMINARY
FOR REVIEW ONLY
Not for construction purposes.
CLAYMOORE ENGINEERING
ENGINEERING AND PLANNING CONSULTANTS
Engineer DREW DONOSKY
P.E. No. 125651 Date 7/17/2024

SANGER MULTI-FAMILY
PREPARED FOR
GREYSTAR
SANGER, TEXAS

No.	DATE	REVISION	BY

CONSTRUCTION DETAILS 4

DESIGN: ASD
DRAWN: DC
CHECKED: ASD
DATE: 7/17/2024
SHEET
C-8.4
CASE NO. 2022-185

PLOTTED BY: DAN CABALLERO
PLOT DATE: 7/17/2024 10:19 AM
LOCATION: Z:\PROJECTS\PROJECTS\2022-185 MALOUF SANGER\CADD\SHEETS\MULTI-FAMILY GREYSTAR\C-31 CONSTRUCTION DETAILS 4.DWG
LAST SAVED: 7/16/2024 8:31 AM

PLANT SCHEDULE

SYMBOL	CODE	QTY	BOTANICAL / COMMON NAME	CAL.	CONT.	SIZE
TREES						
	AS	9	Acer saccharum `Caddo` Caddo Maple	3" Cal.	Cont. or B&B	10`-12`
	PC	17	Pistacia chinensis Chinese Pistache	3" Cal.	Cont. or B&B	10`-12`
	QM	12	Quercus muehlenbergii Chinquapin Oak	3" Cal.	Cont. or B&B	10`-12`
	QV	7	Quercus virginiana Southern Live Oak	3" Cal.	Cont. or B&B	10`-12`
	UA	10	Ulmus parvifolia `Allee` Allee Lacebark Elm	3" Cal.	Cont. or B&B	10`-12`

SYMBOL	CODE	QTY	BOTANICAL / COMMON NAME	CONT	SPACING	SIZE
GROUND COVERS						
▨	BG	176,588 sf	Cynodon dactylon Bermuda Grass	Hydromulch		
▨	CT	147,227 sf	Cynodon dactylon `Tif 419` Bermuda Grass	sod		

GENERAL GRADING AND PLANTING NOTES

1. BY SUBMITTING A PROPOSAL FOR THE LANDSCAPE PLANTING SCOPE OF WORK, THE CONTRACTOR CONFIRMS THAT HE HAS READ, AND WILL COMPLY WITH, THE ASSOCIATED NOTES, SPECIFICATIONS, AND DETAILS WITH THIS PROJECT.
2. THE GENERAL CONTRACTOR IS RESPONSIBLE FOR REMOVING ALL EXISTING VEGETATION (EXCEPT WHERE NOTED TO REMAIN).
3. IN THE CONTEXT OF THESE PLANS, NOTES, AND SPECIFICATIONS, "FINISH GRADE" REFERS TO THE FINAL ELEVATION OF THE SOIL SURFACE (NOT TOP OF MULCH) AS INDICATED ON THE GRADING PLANS.
   a. BEFORE STARTING WORK, THE LANDSCAPE CONTRACTOR SHALL VERIFY THAT THE ROUGH GRADES OF ALL LANDSCAPE AREAS ARE WITHIN +/-0.1' OF FINISH GRADE. SEE SPECIFICATIONS FOR MORE DETAILED INSTRUCTION ON TURF AREA AND PLANTING BED PREPARATION.
   b. CONSTRUCT AND MAINTAIN FINISH GRADES AS SHOWN ON GRADING PLANS, AND CONSTRUCT AND MAINTAIN SLOPES AS RECOMMENDED BY THE GEOTECHNICAL REPORT. ALL LANDSCAPE AREAS SHALL HAVE POSITIVE DRAINAGE AWAY FROM STRUCTURES AT THE MINIMUM SLOPE SPECIFIED IN THE REPORT AND ON THE GRADING PLANS, AND AREAS OF POTENTIAL PONDING SHALL BE REGRADED TO BLEND IN WITH THE SURROUNDING GRADES AND ELIMINATE PONDING POTENTIAL.
   c. THE LANDSCAPE CONTRACTOR SHALL DETERMINE WHETHER OR NOT THE EXPORT OF ANY SOIL WILL BE NEEDED, TAKING INTO ACCOUNT THE ROUGH GRADE PROVIDED, THE AMOUNT OF SOIL AMENDMENTS TO BE ADDED (**BASED ON A SOIL TEST**, PER SPECIFICATIONS), AND THE FINISH GRADES TO BE ESTABLISHED.
   d. ENSURE THAT THE FINISH GRADE IN SHRUB AREAS IMMEDIATELY ADJACENT TO WALKS AND OTHER WALKING SURFACES, AFTER INSTALLING SOIL AMENDMENTS, IS 3" BELOW THE ADJACENT FINISH SURFACE, IN ORDER TO ALLOW FOR PROPER MULCH DEPTH. TAPER THE SOIL SURFACE TO MEET FINISH GRADE, AS SPECIFIED ON THE GRADING PLANS, AT APPROXIMATELY 18" AWAY FROM THE WALKS.
   e. ENSURE THAT THE FINISH GRADE IN TURF AREAS IMMEDIATELY ADJACENT TO WALKS AND OTHER WALKING SURFACES, AFTER INSTALLING SOIL AMENDMENTS, IS 1" BELOW THE FINISH SURFACE OF THE WALKS. TAPER THE SOIL SURFACE TO MEET FINISH GRADE, AS SPECIFIED ON THE GRADING PLANS, AT APPROXIMATELY 18" AWAY FROM THE WALKS.
   f. SHOULD ANY CONFLICTS AND/OR DISCREPANCIES ARISE BETWEEN THE GRADING PLANS, GEOTECHNICAL REPORT, THESE NOTES AND PLANS, AND ACTUAL CONDITIONS, THE CONTRACTOR SHALL IMMEDIATELY BRING SUCH ITEMS TO THE ATTENTION OF THE LANDSCAPE ARCHITECT, GENERAL CONTRACTOR, AND OWNER.
4. ALL LANDSCAPE AREAS TO RECEIVE A MINIMUM 6" OF TOPSOIL.
5. ALL PLANT LOCATIONS ARE DIAGRAMMATIC. ACTUAL LOCATIONS SHALL BE VERIFIED WITH THE LANDSCAPE ARCHITECT OR DESIGNER PRIOR TO PLANTING. THE LANDSCAPE CONTRACTOR SHALL ENSURE THAT ALL REQUIREMENTS OF THE PERMITTING AUTHORITY ARE MET (I.E., MINIMUM PLANT QUANTITIES, PLANTING METHODS, TREE PROTECTION METHODS, ETC.).
   a. THE LANDSCAPE CONTRACTOR IS RESPONSIBLE FOR DETERMINING PLANT QUANTITIES; PLANT QUANTITIES SHOWN ON LEGENDS AND CALLOUTS ARE FOR GENERAL INFORMATION ONLY. IN THE EVENT OF A DISCREPANCY BETWEEN THE PLAN AND THE PLANT LEGEND, THE PLANT QUANTITY AS SHOWN ON THE PLAN (FOR INDIVIDUAL SYMBOLS) OR CALLOUT (FOR GROUNDCOVER PATTERNS) SHALL TAKE PRECEDENCE.
   b. NO SUBSTITUTIONS OF PLANT MATERIALS SHALL BE ALLOWED WITHOUT THE WRITTEN PERMISSION OF THE LANDSCAPE ARCHITECT. IF SOME OF THE PLANTS ARE NOT AVAILABLE, THE LANDSCAPE CONTRACTOR SHALL NOTIFY THE LANDSCAPE ARCHITECT IN WRITING (VIA PROPER CHANNELS).
   c. THE CONTRACTOR SHALL, AT A MINIMUM, PROVIDE REPRESENTATIVE PHOTOS OF ALL PLANTS PROPOSED FOR THE PROJECT. THE CONTRACTOR SHALL ALLOW THE LANDSCAPE ARCHITECT AND THE OWNER/OWNER'S REPRESENTATIVE TO INSPECT, AND APPROVE OR REJECT, ALL PLANTS DELIVERED TO THE JOBSITE. REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS FOR SUBMITTALS.
5. THE CONTRACTOR SHALL MAINTAIN THE LANDSCAPE IN A HEALTHY CONDITION FOR 90 DAYS AFTER ACCEPTANCE BY THE OWNER. REFER TO SPECIFICATIONS FOR CONDITIONS OF ACCEPTANCE FOR THE START OF THE MAINTENANCE PERIOD, AND FOR FINAL ACCEPTANCE AT THE END OF THE MAINTENANCE PERIOD.
6. SEE SPECIFICATIONS AND DETAILS FOR FURTHER REQUIREMENTS.

MULCHES

AFTER ALL PLANTING IS COMPLETE, CONTRACTOR SHALL INSTALL 3" THICK LAYER OF 1-1/2" SHREDDED WOOD MULCH, NATURAL (UNDYED), OVER LANDSCAPE FABRIC IN ALL PLANTING AREAS (EXCEPT FOR TURF AND SEEDED AREAS). CONTRACTOR SHALL SUBMIT SAMPLES OF ALL MULCHES TO LANDSCAPE ARCHITECT AND OWNER FOR APPROVAL PRIOR TO CONSTRUCTION. ABSOLUTELY NO EXPOSED GROUND SHALL BE LEFT SHOWING ANYWHERE ON THE PROJECT AFTER MULCH HAS BEEN INSTALLED (SUBJECT TO THE CONDITIONS AND REQUIREMENTS OF THE "GENERAL GRADING AND PLANTING NOTES" AND SPECIFICATIONS).

ROOT BARRIERS

THE CONTRACTOR SHALL INSTALL ROOT BARRIERS NEAR ALL NEWLY-PLANTED TREES THAT ARE LOCATED WITHIN FIVE (5) FEET OF PAVING OR CURBS. ROOT BARRIERS SHALL BE "CENTURY" OR "DEEP-ROOT" 24" DEEP PANELS (OR EQUAL). BARRIERS SHALL BE LOCATED IMMEDIATELY ADJACENT TO HARDSCAPE. INSTALL PANELS PER MANUFACTURER'S RECOMMENDATIONS. UNDER NO CIRCUMSTANCES SHALL THE CONTRACTOR USE ROOT BARRIERS OF A TYPE THAT COMPLETELY ENCIRCLE THE ROOTBALL.

9,720 SF per the paving plan. Please also see the parking comment and adjust landscaping as needed

LANDSCAPE CALCULATIONS

SITE AREA: 720,740 SF

LANDSCAPE BUFFER 1 TREE PER 50 LF
STREET FRONTAGE 639 LF
TREES REQUIRED: 13 TREES
TREES PROVIDED: 13 TREES

PARKING AREA 481 SPACES, 1 TREE PER 12 SPACES)
TREES REQUIRED: 41 TREES
TREES PROVIDED: 41 TREES

LANDSCAPE AREA REQUIRED: 9,620 SF (20 SF PER PARKING SPACE)
LANDSCAPE AREA PROVIDED: 10,925 SF

BUFFER YARD N/A - NOT ADJACENT TO SINGLE FAMILY OR ATTACHED HOUSING

SOME TREES HAVE BEEN PLACED IN ALTERNATE LOCATIONS TO AVOID UTILITY CONFLICTS.

BENCHMARKS:
NO. 1
"X-CUT AT THE TERMINUS OF THE EXISTING SIDEWALK ON THE WEST SIDE OF COOK LANE, +/- 1450' SOUTH OF THE CENTERLINE INTERSECTION OF COOK LANE AND PROSPER TRAIL
ELEV: 635.56'

NO. 2
SQUARE CUT ON THE SOUTH END OF A HEADWALL ON THE EAST SIDE OF COOK LANE, +/- 1050' SOUTH OF THE CENTERLINE INTERSECTION OF COOK LANE AND PROSPER TRAIL.
ELEV: 636.18'

0' 20' 40' 80'
Scale 1" = 40'

EVERGREEN DESIGN GROUP
(800) 680-6630
15455 Dallas Pkwy., Ste 600
Addison, TX 75001
www.EvergreenDesignGroup.com

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PHONE: 817.281.0572
WWW.CLAYMOOREENG.COM

REGISTERED LANDSCAPE ARCHITECT
ERIC M. SHEPLEY
3537
STATE OF TEXAS
07/15/2024

SANGER MULTI-FAMILY
PREPARED FOR
GREYSTAR
SANGER, TEXAS

No.	DATE	REVISION	BY

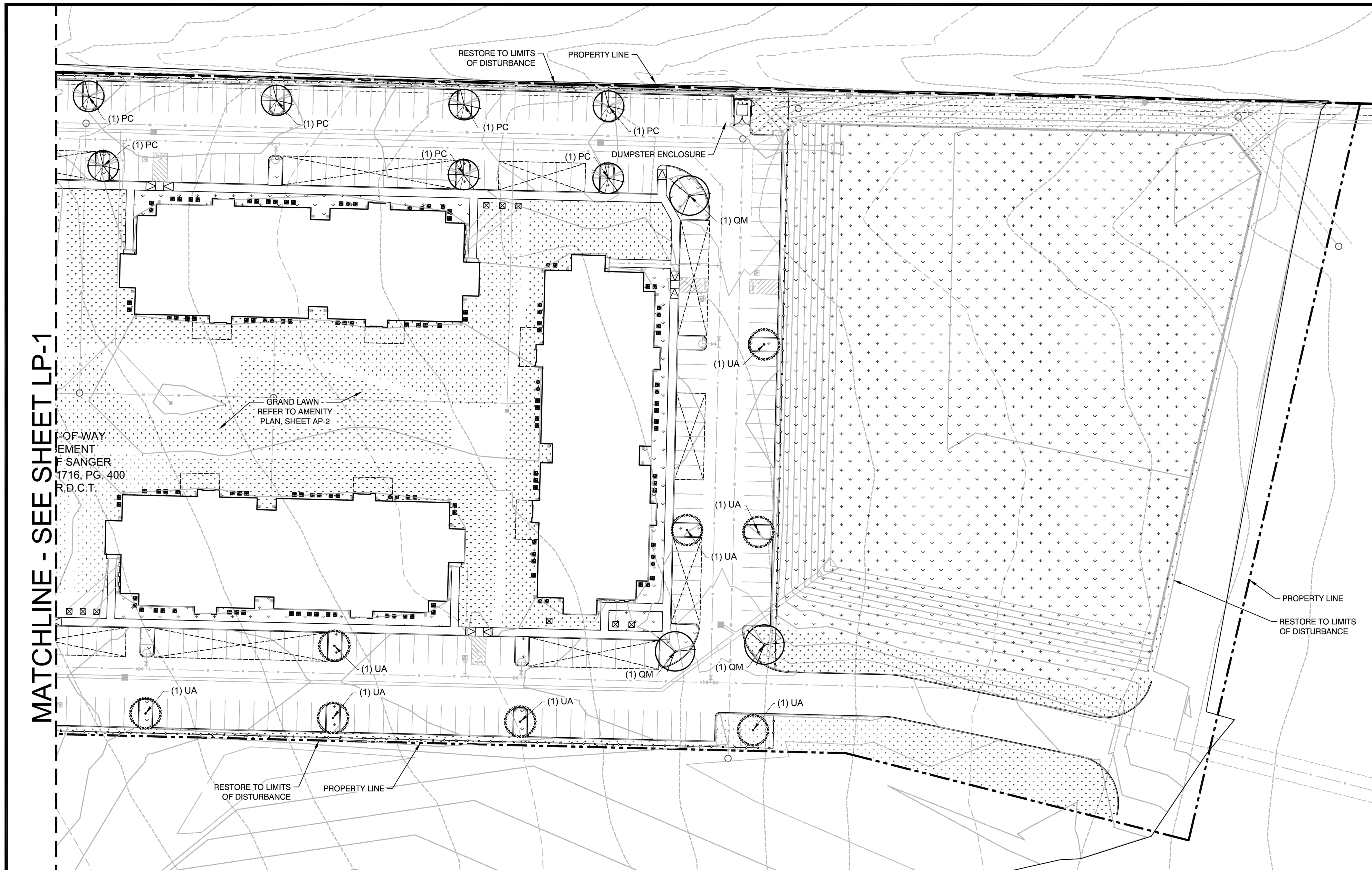
LANDSCAPE PLANTING

DESIGN:	EMS
DRAWN:	EMS
CHECKED:	RM
DATE:	7/12/2024

SHEET
LP-1

CASE NO. 2022-185

PLOTTED BY: ERIC SHEPLEY
PLOT DATE: 7/12/2024 2:21 PM
LOCATION: P:\SHARED\PROJECTS\2023\GREYSTAR MFR - SANGER TX\XREF\X22X34 MF.DWG
LAST SAVED: 7/12/2024 2:08 PM



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SYMBOL	CODE	QTY	BOTANICAL / COMMON NAME	CAL.	CONT.	SIZE
TREES						
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◯	QM	12	Quercus muehlenbergii Chinquapin Oak	3" Cal.	Cont. or B&B	10\`-12\`
◯	QV	7	Quercus virginiana Southern Live Oak	3" Cal.	Cont. or B&B	10\`-12\`
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SYMBOL	CODE	QTY	BOTANICAL / COMMON NAME	CONT	SPACING	SIZE
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REGISTERED LANDSCAPE ARCHITECT
ERIC M. SHEPLEY
3531
STATE OF TEXAS
07/15/2024

SANGER MULTI-FAMILY
PREPARED FOR
GREYSTAR
SANGER, TEXAS

No.	DATE	REVISION	BY

LANDSCAPE PLANTING

DESIGN:	EMS
DRAWN:	EMS
CHECKED:	RM
DATE:	7/12/2024

SHEET
LP-2

CASE NO. 2022-185

PLOTTED BY: ERIC SHEPLEY
PLOT DATE: 7/12/2024 2:21 PM
LOCATION: P:\SHARED\PROJECTS\2023\GREYSTAR MFR – SANGER TX\XREF\X22X34 MF.DWG
LAST SAVED: 7/12/2024 2:08 PM

PLANTING SPECIFICATIONS

GENERAL

A. QUALIFICATIONS OF LANDSCAPE CONTRACTOR
1. ALL LANDSCAPE WORK SHOWN ON THESE PLANS SHALL BE PERFORMED BY A SINGLE FIRM SPECIALIZING IN LANDSCAPE PLANTING.
2. A LIST OF SUCCESSFULLY COMPLETED PROJECTS OF THIS TYPE, SIZE AND NATURE MAY BE REQUESTED BY THE OWNER FOR FURTHER QUALIFICATION MEASURES.
3. THE LANDSCAPE CONTRACTOR SHALL HOLD A VALID NURSERY AND FLORAL CERTIFICATE ISSUED BY THE TEXAS DEPARTMENT OF AGRICULTURE, AS WELL AS OPERATE UNDER A COMMERCIAL PESTICIDE APPLICATOR LICENSE ISSUED BY EITHER THE TEXAS DEPARTMENT OF AGRICULTURE OR THE TEXAS STRUCTURAL PEST CONTROL BOARD.
3. THE LANDSCAPE CONTRACTOR SHALL HOLD A VALID CONTRACTOR'S LICENSE ISSUED BY THE APPROPRIATE LOCAL JURISDICTION.

B. SCOPE OF WORK
1. WORK COVERED BY THESE SECTIONS INCLUDES THE FURNISHING AND PAYMENT OF ALL MATERIALS, LABOR, SERVICES, EQUIPMENT, LICENSES, TAXES AND ANY OTHER ITEMS THAT ARE NECESSARY FOR THE EXECUTION, INSTALLATION AND COMPLETION OF ALL WORK, SPECIFIED HEREIN AND / OR SHOWN ON THE LANDSCAPE PLANS, NOTES, AND DETAILS.
2. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH ALL APPLICABLE LAWS, CODES AND REGULATIONS REQUIRED BY AUTHORITIES HAVING JURISDICTION OVER SUCH WORK, INCLUDING ALL INSPECTIONS AND PERMITS REQUIRED BY FEDERAL, STATE AND LOCAL AUTHORITIES IN SUPPLY, TRANSPORTATION AND INSTALLATION OF MATERIALS.
3. THE LANDSCAPE CONTRACTOR SHALL VERIFY THE LOCATION OF ALL UNDERGROUND UTILITY LINES (WATER, SEWER, ELECTRICAL, TELEPHONE, GAS, CABLE, TELEVISION, ETC.) PRIOR TO THE START OF ANY WORK.

PRODUCTS

A. ALL MANUFACTURED PRODUCTS SHALL BE NEW.

B. CONTAINER AND BALLED-AND-BURLAPPED PLANTS:
1. FURNISH NURSERY-GROWN PLANTS COMPLYING WITH ANSI Z60.1-2014. PROVIDE WELL-SHAPED, FULLY BRANCHED, HEALTHY, VIGOROUS STOCK FREE OF DISEASE, INSECTS, EGGS, LARVAE, AND DEFECTS SUCH AS KNOTS, SUN SCALD, INJURIES, ABRASIONS, AND DISFIGUREMENT. ALL PLANTS WITHIN A SPECIES SHALL HAVE SIMILAR SIZE, AND SHALL BE OF A FORM TYPICAL FOR THE SPECIES. ALL TREES SHALL BE OBTAINED FROM SOURCES WITHIN 200 MILES OF THE PROJECT SITE, AND WITH SIMILAR CLIMACTIC CONDITIONS.
2. ROOT SYSTEMS SHALL BE HEALTHY, DENSELY BRANCHED ROOT SYSTEMS, NON-POT-BOUND, FREE FROM ENCIRCLING AND/OR GIRDLING ROOTS, AND FREE FROM ANY OTHER ROOT DEFECTS (SUCH AS J-SHAPED ROOTS).
3. TREES MAY BE PLANTED FROM CONTAINERS OR BALLED-AND-BURLAPPED (B&B), UNLESS SPECIFIED ON THE PLANTING LEGEND. BARE-ROOT TREES ARE NOT ACCEPTABLE.
4. ANY PLANT DEEMED UNACCEPTABLE BY THE LANDSCAPE ARCHITECT OR OWNER SHALL BE IMMEDIATELY REMOVED FROM THE SITE AND SHALL BE REPLACED WITH AN ACCEPTBLE PLANT OF LIKE TYPE AND SIZE AT THE CONTRACTOR'S OWN EXPENSE. ANY PLANTS APPEARING TO BE UNHEALTHY, EVEN IF DETERMINED TO STILL BE ALIVE, SHALL NOT BE ACCEPTED. THE LANDSCAPE ARCHITECT AND OWNER SHALL BE THE SOLE JUDGES AS TO THE ACCEPTABILITY OF PLANT MATERIAL.
5. ALL TREES SHALL BE STANDARD IN FORM, UNLESS OTHERWISE SPECIFIED. TREES WITH CENTRAL LEADERS WILL NOT BE ACCEPTED IF LEADER IS DAMAGED OR REMOVED. PRUNE ALL DAMAGED TWIGS AFTER PLANTING.
6. CALIPER MEASUREMENTS FOR STANDARD (SINGLE TRUNK) TREES SHALL BE AS FOLLOWS: SIX INCHES ABOVE THE ROOT FLARE FOR TREES UP TO AND INCLUDING FOUR INCHES IN CALIPER, AND TWELVE INCHES ABOVE THE ROOT FLARE FOR TREES EXCEEDING FOUR INCHES IN CALIPER.
7. MULTI-TRUNK TREES SHALL BE MEASURED BY THEIR OVERALL HEIGHT, MEASURED FROM THE TOP OF THE ROOT BALL. WHERE CALIPER MEASUREMENTS ARE USED, THE CALIPER SHALL BE CALCULATED AS ONE-HALF OF THE SUM OF THE CALIPER OF THE THREE LARGEST TRUNKS.
8. ANY TREE OR SHRUB SHOWN TO HAVE EXCESS SOIL PLACED ON TOP OF THE ROOT BALL, SO THAT THE ROOT FLARE HAS BEEN COMPLETELY COVERED, SHALL BE REJECTED.

C. SOD: PROVIDE WELL-ROOTED SOD OF THE VARIETY NOTED ON THE PLANS. SOD SHALL BE CUT FROM HEALTHY, MATURE TURF WITH SOIL THICKNESS OF 3/4" TO 1". EACH PALLET OF SOD SHALL BE ACCOMPANIED BY A CERTIFICATE FROM SUPPLIER STATING THE COMPOSITION OF THE SOD.

D. SEED: PROVIDE BLEND OF SPECIES AND VARIETIES AS NOTED ON THE PLANS, WITH MAXIMUM PERCENTAGES OF PURITY, GERMINATION, AND MINIMUM PERCENTAGE OF WEED SEED AS INDICATED ON PLANS. EACH BAG OF SEED SHALL BE ACCOMPANIED BY A TAG FROM THE SUPPLIER INDICATING THE COMPOSITION OF THE SEED.

E. TOPSOIL: SANDY TO CLAY LOAM TOPSOIL, FREE OF STONES LARGER THAN ½ INCH, FOREIGN MATTER, PLANTS, ROOTS, AND SEEDS.

F. COMPOST: WELL-COMPOSTED, STABLE, AND WEED-FREE ORGANIC MATTER, pH RANGE OF 5.5 TO 8; MOISTURE CONTENT 35 TO 55 PERCENT BY WEIGHT; 100 PERCENT PASSING THROUGH 3/4-INCH SIEVE; SOLUBLE SALT CONTENT OF 5 TO 10 DECISIEMENS/M; NOT EXCEEDING 0.5 PERCENT INERT CONTAMINANTS AND FREE OF SUBSTANCES TOXIC TO PLANTINGS. NO MANURE OR ANIMAL-BASED PRODUCTS SHALL BE USED.

G. PLANTING MIX FOR POTS: AN EQUAL PART MIXTURE OF TOPSOIL, SAND AND COMPOST. INCORPORATE "GELSCAPE", AS MADE BY AMEREQ, INC., (800) 832-8788, AT THE RATE OF 3 LB. PER CUBIC YARD OF PLANTING MIX.

H. FERTILIZER: GRANULAR FERTILIZER CONSISTING OF NITROGEN, PHOSPHORUS, POTASSIUM, AND OTHER NUTRIENTS IN PROPORTIONS, AMOUNTS, AND RELEASE RATES RECOMMENDED IN A SOIL REPORT FROM A QUALIFIED SOIL-TESTING AGENCY (SEE BELOW).

I. PALM MAINTENANCE SPIKES: AS MANUFACTURED BY THE LUTZ CORP, (800) 203-7740, OR APPROVED EQUAL.

J. MULCH: SIZE AND TYPE AS INDICATED ON PLANS, FREE FROM DELETERIOUS MATERIALS AND SUITABLE AS A TOP DRESSING OF TREES AND SHRUBS.

K. TREE STAKING AND GUYING
1. STAKES: 6' LONG GREEN METAL T-POSTS.
2. GUY AND TIE WIRE: ASTM A 641, CLASS 1, GALVANIZED-STEEL WIRE, 2-STRAND, TWISTED, 0.106 INCH DIAMETER.
3. STRAP CHAFING GUARD: REINFORCED NYLON OR CANVAS AT LEAST 1-1/2 INCH WIDE, WITH GROMMETS TO PROTECT TREE TRUNKS FROM DAMAGE.

L. STEEL EDGING: PROFESSIONAL STEEL EDGING, 14 GAUGE THICK X 4 INCHES WIDE, FACTORY PAINTED DARK GREEN. ACCEPTABLE MANUFACTURERS INCLUDE COL-MET OR APPROVED EQUAL.

M. PRE-EMERGENT HERBICIDES: ANY GRANULAR, NON-STAINING PRE-EMERGENT HERBICIDE THAT IS LABELED FOR THE SPECIFIC ORNAMENTALS OR TURF ON WHICH IT WILL BE UTILIZED. PRE-EMERGENT HERBICIDES SHALL BE APPLIED PER THE MANUFACTURER'S LABELED RATES.

METHODS

A. SOIL PREPARATION
1. BEFORE STARTING WORK, THE LANDSCAPE CONTRACTOR SHALL VERIFY THAT THE GRADE OF ALL LANDSCAPE AREAS ARE WITHIN +/-0.1' OF FINISH GRADE. THE CONTRACTOR SHALL NOTIFY THE OWNER IMMEDIATELY SHOULD ANY DISCREPANCIES EXIST.
2. SOIL TESTING:
   a. AFTER FINISH GRADES HAVE BEEN ESTABLISHED, CONTRACTOR SHALL HAVE SOIL SAMPLES FROM THE PROJECT'S LANDSCAPE AREAS TESTED BY AN ESTABLISHED SOIL TESTING LABORATORY. EACH SAMPLE SUBMITTED TO THE LAB SHALL CONTAIN NO LESS THAN ONE QUART OF SOIL, TAKEN FROM BETWEEN THE SOIL SURFACE AND 6" DEPTH. IF NO SAMPLE LOCATIONS ARE INDICATED ON THE PLANS, THE CONTRACTOR SHALL TAKE A MINIMUM OF THREE SAMPLES FROM VARIOUS REPRESENTATIVE LOCATIONS FOR TESTING.
   b. THE CONTRACTOR SHALL HAVE THE SOIL TESTING LABORATORY PROVIDE RESULTS FOR THE FOLLOWING: SOIL TEXTURAL CLASS, GENERAL SOIL FERTILITY, pH, ORGANIC MATTER CONTENT, SALT (CEC), LIME, SODIUM ADSORPTION RATIO (SAR) AND BORON CONTENT.
   c. THE CONTRACTOR SHALL ALSO SUBMIT THE PROJECT'S PLANT LIST TO THE LABORATORY ALONG WITH THE SOIL SAMPLES.
   d. THE SOIL REPORT PRODUCED BY THE LABORATORY SHALL CONTAIN RECOMMENDATIONS FOR THE FOLLOWING (AS APPROPRIATE): SEPARATE SOIL PREPARATION AND BACKFILL MIX RECOMMENDATIONS FOR GENERAL ORNAMENTAL PLANTS, XERIC PLANTS, TURF, AND NATIVE SEED, AS WELL AS PRE-PLANT FERTILIZER APPLICATIONS AND RECOMMENDATIONS FOR ANY OTHER SOIL RELATED ISSUES. THE REPORT SHALL ALSO PROVIDE A FERTILIZER PROGRAM FOR THE ESTABLISHMENT PERIOD AND FOR LONG-TERM MAINTENANCE.
3. THE CONTRACTOR SHALL INSTALL SOIL AMENDMENTS AND FERTILIZERS PER THE SOILS REPORT RECOMMENDATIONS. ANY CHANGE IN COST DUE TO THE SOIL REPORT RECOMMENDATIONS, EITHER INCREASE OR DECREASE, SHALL BE SUBMITTED TO THE OWNER WITH THE REPORT.
4. FOR BIDDING PURPOSES ONLY, THE SOIL PREPARATION SHALL CONSIST OF THE FOLLOWING:
   a. TURF: INCORPORATE THE FOLLOWING AMENDMENTS INTO THE TOP 8" OF SOIL BY MEANS OF ROTOTILLING AFTER CROSS-RIPPING:
      i. NITROGEN STABILIZED ORGANIC AMENDMENT - 4 CU. YDS. PER 1,000 S.F.
      ii. PREPLANT TURF FERTILIZER (10-20-10 OR SIMILAR, SLOW RELEASE, ORGANIC) - 15 LBS PER 1,000 S.F.
      iii. "CLAY BUSTER" OR EQUAL - USE MANUFACTURER'S RECOMMENDED RATE
   b. TREES, SHRUBS, AND PERENNIALS: INCORPORATE THE FOLLOWING AMENDMENTS INTO THE TOP 8" OF SOIL BY MEANS OF ROTOTILLING AFTER CROSS-RIPPING:
      i. NITROGEN STABILIZED ORGANIC AMENDMENT - 4 CU. YDS. PER 1,000 S.F.
      ii. 12-12-12 FERTILIZER (OR SIMILAR, ORGANIC, SLOW RELEASE) - 10 LBS. PER CU. YD.
      iii. "CLAY BUSTER" OR EQUAL - USE MANUFACTURER'S RECOMMENDED RATE
      iv. IRON SULPHATE - 2 LBS. PER CU. YD.
5. IN THE CONTEXT OF THESE PLANS, NOTES, AND SPECIFICATIONS, "FINISH GRADE" REFERS TO THE FINAL ELEVATION OF THE SOIL SURFACE (NOT TOP OF MULCH) AS INDICATED ON THE GRADING PLANS.
   a. BEFORE STARTING WORK, THE LANDSCAPE CONTRACTOR SHALL VERIFY THAT THE ROUGH GRADES OF ALL LANDSCAPE AREAS ARE WITHIN +/-0.1' OF FINISH GRADE. SEE SPECIFICATIONS FOR MORE DETAILED INSTRUCTION ON TURF AREA AND PLANTING BED PREPARATION.
   b. CONSTRUCT AND MAINTAIN FINISH GRADES AS SHOWN ON GRADING PLANS, AND CONSTRUCT AND MAINTAIN SLOPES AS RECOMMENDED BY THE GEOTECHNICAL REPORT. ALL LANDSCAPE AREAS SHALL HAVE POSITIVE DRAINAGE AWAY FROM STRUCTURES AT THE MINIMUM SLOPE SPECIFIED IN THE REPORT AND ON THE GRADING PLANS, AND AREAS OF POTENTIAL PONDING SHALL BE REGRADED TO BLEND IN WITH THE SURROUNDING GRADES AND ELIMINATE PONDING POTENTIAL.
   c. THE LANDSCAPE CONTRACTOR SHALL DETERMINE WHETHER OR NOT THE EXPORT OF ANY SOIL WILL BE NEEDED, TAKING INTO ACCOUNT THE ROUGH GRADE PROVIDED, THE AMOUNT OF SOIL AMENDMENTS TO BE ADDED (**BASED ON A SOIL TEST**, PER SPECIFICATIONS), AND THE FINISH GRADES TO BE ESTABLISHED.
   d. ENSURE THAT THE FINISH GRADE IN SHRUB AREAS IMMEDIATELY ADJACENT TO WALKS AND OTHER WALKING SURFACES, AFTER INSTALLING SOIL AMENDMENTS, IS 3" BELOW THE ADJACENT FINISH SURFACE, IN ORDER TO ALLOW FOR PROPER MULCH DEPTH. TAPER THE SOIL SURFACE TO MEET FINISH GRADE, AS SPECIFIED ON THE GRADING PLANS, AT APPROXIMATELY 18" AWAY FROM THE WALKS.
   e. ENSURE THAT THE FINISH GRADE IN TURF AREAS IMMEDIATELY ADJACENT TO WALKS AND OTHER WALKING SURFACES, AFTER INSTALLING SOIL AMENDMENTS, IS 1" BELOW THE FINISH SURFACE OF THE WALKS. TAPER THE SOIL SURFACE TO MEET FINISH GRADE, AS SPECIFIED ON THE GRADING PLANS, AT APPROXIMATELY 18" AWAY FROM THE WALKS.
   f. SHOULD ANY CONFLICTS AND/OR DISCREPANCIES ARISE BETWEEN THE GRADING PLANS, GEOTECHNICAL REPORT, THESE NOTES AND PLANS, AND ACTUAL CONDITIONS, THE CONTRACTOR SHALL IMMEDIATELY BRING SUCH ITEMS TO THE ATTENTION OF THE LANDSCAPE ARCHITECT, GENERAL CONTRACTOR, AND OWNER.
6. ONCE SOIL PREPARATION IS COMPLETE, THE LANDSCAPE CONTRACTOR SHALL ENSURE THAT THERE ARE NO DEBRIS, TRASH, OR STONES LARGER THAN 1" REMAINING IN THE TOP 6" OF SOIL.

B. SUBMITTALS
1. THE CONTRACTOR SHALL PROVIDE SUBMITTALS AND SAMPLES, IF REQUIRED, TO THE LANDSCAPE ARCHITECT, AND RECEIVE APPROVAL IN WRITING FOR SUCH SUBMITTALS BEFORE WORK COMMENCES.
2. SUBMITTALS SHALL INCLUDE PHOTOS OF PLANTS WITH A RULER OR MEASURING STICK FOR SCALE, PHOTOS OR SAMPLES OF ANY REQUIRED MULCHES, AND SOIL TEST RESULTS AND PREPARATION RECOMMENDATIONS FROM THE TESTING LAB (INCLUDING COMPOST AND FERTILIZER RATES AND TYPES, AND OTHER AMENDMENTS FOR TREE/SHRUB, TURF, AND SEED AREAS AS MAY BE APPROPRIATE).
3. SUBMITTALS SHALL ALSO INCLUDE MANUFACTURER CUT SHEETS FOR PLANTING ACCESSORIES SUCH AS TREE STAKES AND TIES, EDGING, AND LANDSCAPE FABRICS (IF ANY).
4. WHERE MULTIPLE ITEMS ARE SHOWN ON A PAGE, THE CONTRACTOR SHALL CLEARLY INDICATE THE ITEM BEING CONSIDERED.

C. GENERAL PLANTING
1. REMOVE ALL NURSERY TAGS AND STAKES FROM PLANTS.
2. EXCEPT IN AREAS TO BE PLANTED WITH ORNAMENTAL GRASSES, APPLY PRE-EMERGENT HERBICIDES AT THE MANUFACTURER'S RECOMMENDED RATE.
3. TRENCHING NEAR EXISTING TREES:
   a. CONTRACTOR SHALL NOT DISTURB ROOTS 1-1/2" AND LARGER IN DIAMETER WITHIN THE CRITICAL ROOT ZONE (CRZ) OF EXISTING TREES, AND SHALL EXERCISE ALL POSSIBLE CARE AND PRECAUTIONS TO AVOID INJURY TO TREE ROOTS, TRUNKS, AND BRANCHES. THE CRZ IS DEFINED AS A CIRCULAR AREA EXTENDING OUTWARD FROM THE TREE TRUNK, WITH A RADIUS EQUAL TO 1' FOR EVERY 1" OF TRUNK DIAMETER-AT-BREAST-HEIGHT (4.5' ABOVE THE AVERAGE GRADE AT THE TRUNK).
   b. ALL EXCAVATION WITHIN THE CRZ SHALL BE PERFORMED USING HAND TOOLS. NO MACHINE EXCAVATION OR TRENCHING OF ANY KIND SHALL BE ALLOWED WITHIN THE CRZ.
   c. ALTER ALIGNMENT OF PIPE TO AVOID TREE ROOTS 1-1/2" AND LARGER IN DIAMETER. WHERE TREE ROOTS 1-1/2" AND LARGER IN DIAMETER ARE ENCOUNTERED IN THE FIELD, TUNNEL UNDER SUCH ROOTS. WRAP EXPOSED ROOTS WITH SEVERAL LAYERS OF BURLAP AND KEEP MOIST. CLOSE ALL TRENCHES WITHIN THE CANOPY DRIP LINES WITHIN 24 HOURS.
   d. ALL SEVERED ROOTS SHALL BE HAND PRUNED WITH SHARP TOOLS AND ALLOWED TO AIR-DRY. DO NOT USE ANY SORT OF SEALERS OR WOUND PAINTS.

C. TREE PLANTING
1. TREE PLANTING HOLES SHALL BE EXCAVATED TO MINIMUM WIDTH OF TWO TIMES THE WIDTH OF THE ROOTBALL, AND TO A DEPTH EQUAL TO THE DEPTH OF THE ROOTBALL LESS TWO TO FOUR INCHES.
2. SCARIFY THE SIDES AND BOTTOM OF THE PLANTING HOLE PRIOR TO THE PLACEMENT OF THE TREE. REMOVE ANY GLAZING THAT MAY HAVE BEEN CAUSED DURING THE EXCAVATION OF THE HOLE.
3. FOR CONTAINER AND BOX TREES, TO REMOVE ANY POTENTIALLY GIRDLING ROOTS AND OTHER ROOT DEFECTS, THE CONTRACTOR SHALL SHAVE A 1" LAYER OFF OF THE SIDES AND BOTTOM OF THE ROOTBALL OF ALL TREES JUST BEFORE PLACING INTO THE PLANTING PIT. DO NOT "TEASE" ROOTS OUT FROM THE ROOTBALL.
4. INSTALL THE TREE ON UNDISTURBED SUBGRADE SO THAT THE TOP OF THE ROOTBALL IS TWO TO FOUR INCHES ABOVE THE SURROUNDING GRADE.
5. BACKFILL THE TREE HOLE UTILIZING THE EXISTING TOPSOIL FROM ON-SITE. ROCKS LARGER THAN 1" DIA. AND ALL OTHER DEBRIS SHALL BE REMOVED FROM THE SOIL PRIOR TO THE BACKFILL. SHOULD ADDITIONAL SOIL BE REQUIRED TO ACCOMPLISH THIS TASK, USE STORED TOPSOIL FROM ON-SITE OR IMPORT ADDITIONAL TOPSOIL FROM OFF-SITE AT NO ADDITIONAL COST TO THE OWNER. IMPORTED TOPSOIL SHALL BE OF SIMILAR TEXTURAL CLASS AND COMPOSITION IN THE ON-SITE SOIL.
6. TREES SHALL NOT BE STAKED UNLESS LOCAL CONDITIONS (SUCH AS HEAVY WINDS OR SLOPES) REQUIRE STAKES TO KEEP TREES UPRIGHT. SHOULD STAKING BE REQUIRED, THE TOTAL NUMBER OF TREE STAKES (BEYOND THE MINIMUMS LISTED BELOW) WILL BE LEFT TO THE LANDSCAPE CONTRACTOR'S DISCRETION. SHOULD ANY TREES FALL OR LEAN, THE LANDSCAPE CONTRACTOR SHALL STRAIGHTEN THE TREE, OR REPLACE IT SHOULD IT BECOME DAMAGED. TREE STAKING SHALL ADHERE TO THE FOLLOWING GUIDELINES:

a.	1"-2" TREES	TWO STAKES PER TREE
b.	2-1/2"-4" TREES	THREE STAKES PER TREE
c.	TREES OVER 4" CALIPER	GUY AS NEEDED
d.	MULTI-TRUNK TREES	THREE STAKES PER TREE MINIMUM, QUANTITY AND POSITIONS AS NEEDED TO STABILIZE THE TREE
e.	#15 CONT. - 24" BOX TREES	TWO STAKES PER TREE
f.	36"-48" BOX TREES	THREE STAKES PER TREE
g.	OVER 48" BOX TREES	GUY AS NEEDED
h.	MULTI-TRUNK TREES	THREE STAKES PER TREE MINIMUM, QUANTITY AND POSITIONS AS NEEDED TO STABILIZE THE TREE

7. UPON COMPLETION OF PLANTING, CONSTRUCT AN EARTH WATERING BASIN AROUND THE TREE. COVER THE INTERIOR OF THE TREE RING WITH THE WEED BARRIER CLOTH AND TOPDRESS WITH MULCH (TYPE AND DEPTH PER PLANS).

D. SHRUB, PERENNIAL, AND GROUNDCOVER PLANTING
1. DIG THE PLANTING HOLES TWICE AS WIDE AND 2" LESS DEEP THAN EACH PLANT'S ROOTBALL. INSTALL THE PLANT IN THE HOLE. BACKFILL AROUND THE PLANT WITH SOIL AMENDED PER SOIL TEST RECOMMENDATIONS.
2. INSTALL THE WEED BARRIER CLOTH, OVERLAPPING IT AT THE ENDS. UTILIZE STEEL STAPLES TO KEEP THE WEED BARRIER CLOTH IN PLACE.
3. WHEN PLANTING IS COMPLETE, INSTALL MULCH (TYPE AND DEPTH PER PLANS) OVER ALL PLANTING BEDS, COVERING THE ENTIRE PLANTING AREA.

E. SODDING
1. SOD VARIETY TO BE AS SPECIFIED ON THE LANDSCAPE PLAN.
2. LAY SOD WITHIN 24 HOURS FROM THE TIME OF STRIPPING. DO NOT LAY IF THE GROUND IS FROZEN.
3. LAY THE SOD TO FORM A SOLID MASS WITH TIGHTLY FITTED JOINTS. BUTT ENDS AND SIDES OF SOD STRIPS - DO NOT OVERLAP. STAGGER STRIPS TO OFFSET JOINTS IN ADJACENT COURSES.
4. ROLL THE SOD TO ENSURE GOOD CONTACT OF THE SOD'S ROOT SYSTEM WITH THE SOIL UNDERNEATH.
5. WATER THE SOD THOROUGHLY WITH A FINE SPRAY IMMEDIATELY AFTER PLANTING TO OBTAIN AT LEAST SIX INCHES OF PENETRATION INTO THE SOIL BELOW THE SOD.

F. HYDROMULCHING
1. TURF HYDROMULCH MIX (PER 1,000 SF) SHALL BE AS FOLLOWS:
   a. WINTER MIX (OCTOBER 1 - MARCH 31)
      50# CELLULOSE FIBER MULCH
      2# UNHULLED BERMUDA SEED
      2# ANNUAL RYE SEED
      15# 15-15-15 WATER SOLUBLE FERTILIZER
   b. SUMMER MIX (APRIL 1 - SEPTEMBER 30)
      50# CELLULOSE FIBER MULCH
      2# HULLED BERMUDA SEED
      15# 15-15-15 WATER SOLUBLE FERTILIZER
2. SEED HYDROMULCH MIX (PER 1,000 SF) SHALL BE AS FOLLOWS:
   a. GENERAL
      50# CELLULOSE FIBER MULCH
      15# 15-15-15 WATER SOLUBLE FERTILIZER
      SEED RATE PER LEGEND

G. DRILL SEEDING
1. ALL SEED SHALL BE DRILL SEEDED AT THE RATES SHOWN ON THE PLANS, WITH A HYDROMULCH MIX APPLIED AFTER SEEDING.
2. THE HYDROMULCH MIX (PER 1,000 SF) SHALL BE AS FOLLOWS:
      50# CELLULOSE FIBER MULCH
      15# 15-15-15 WATER SOLUBLE FERTILIZER
      4# ORGANIC BINDER

H. MULCH
1. INSTALL MULCH TOPDRESSING, TYPE AND DEPTH PER MULCH NOTE, IN ALL PLANTING AREAS AND TREE RINGS.
2. DO NOT INSTALL MULCH WITHIN 6" OF TREE ROOT FLARE AND WITHIN 24" OF HABITABLE STRUCTURES, EXCEPT AS MAY BE NOTED ON THESE PLANS. MULCH COVER WITHIN 6" OF CONCRETE WALKS AND CURBS SHALL NOT PROTRUDE ABOVE THE FINISH SURFACE OF THE WALKS AND CURBS. MULCH COVER WITHIN 12" OF WALLS SHALL BE AT LEAST 3" LOWER THAN THE TOP OF WALL.

I. CLEAN UP
1. DURING LANDSCAPE PREPARATION AND PLANTING, KEEP ALL PAVEMENT CLEAN AND ALL WORK AREAS IN A NEAT, ORDERLY CONDITION.
2. DISPOSED LEGALLY OF ALL EXCAVATED MATERIALS OFF THE PROJECT SITE.

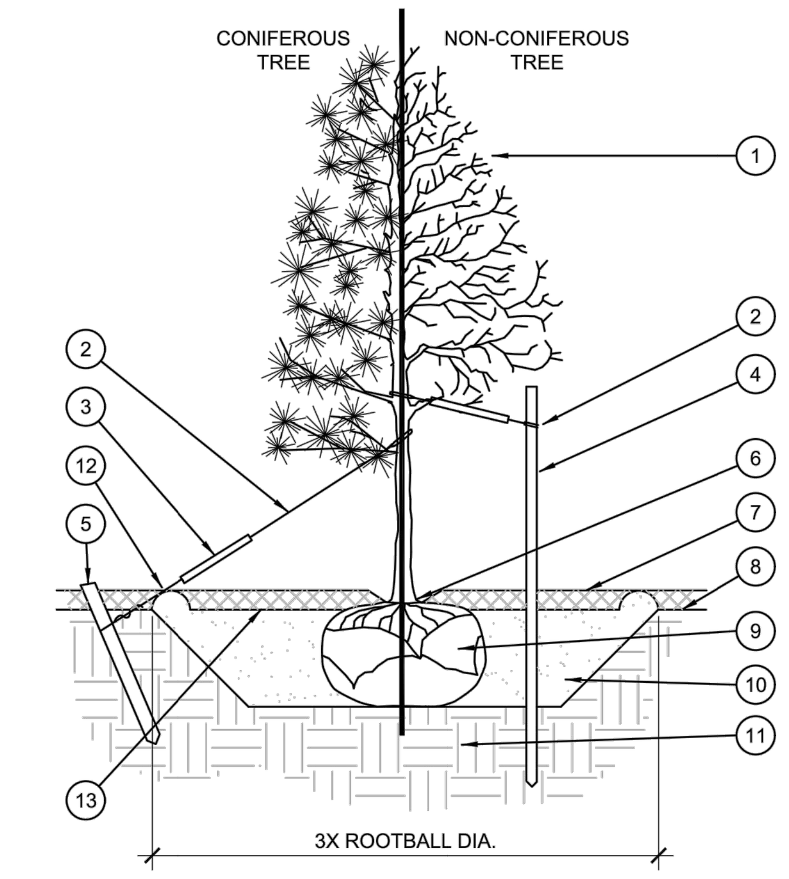
J. INSPECTION AND ACCEPTANCE
1. UPON COMPLETION OF THE WORK, THE LANDSCAPE CONTRACTOR SHALL PROVIDE THE SITE CLEAN, FREE OF DEBRIS AND TRASH, AND SUITABLE FOR USE AS INTENDED. THE LANDSCAPE CONTRACTOR SHALL THEN REQUEST AN INSPECTION BY THE OWNER TO DETERMINE FINAL ACCEPTABILITY.
2. WHEN THE INSPECTED PLANTING WORK DOES NOT COMPLY WITH THE CONTRACT DOCUMENTS, THE LANDSCAPE CONTRACTOR SHALL REPLACE AND/OR REPAIR THE REJECTED WORK TO THE OWNER'S SATISFACTION WITHIN 24 HOURS.
3. THE LANDSCAPE MAINTENANCE PERIOD WILL NOT COMMENCE UNTIL THE LANDSCAPE WORK HAS BEEN RE-INSPECTED BY THE OWNER AND FOUND TO BE ACCEPTABLE. AT THAT TIME, A WRITTEN NOTICE OF FINAL ACCEPTANCE WILL BE ISSUED BY THE OWNER, AND THE MAINTENANCE AND GUARANTEE PERIODS WILL COMMENCE.

K. LANDSCAPE MAINTENANCE
1. THE LANDSCAPE CONTRACTOR SHALL BE RESPONSIBLE FOR THE MAINTENANCE OF ALL WORK SHOWN ON THESE PLANS FOR 90 DAYS BEYOND FINAL ACCEPTANCE OF ALL LANDSCAPE WORK BY THE OWNER. LANDSCAPE MAINTENANCE SHALL INCLUDE WEEKLY SITE VISITS FOR THE FOLLOWING ACTIONS (AS APPROPRIATE): PROPER PRUNING, RESTAKING OF TREES, RESETTING OF PLANTS THAT HAVE SETTLED, MOWING AND AERATION OF LAWNS, WEEDING, RESEEDING AREAS WHICH HAVE NOT GERMINATED WELL, TREATING FOR INSECTS AND DISEASES,REPLACEMENT OF MULCH, REMOVAL OF LITTER, REPAIRS TO THE IRRIGATION SYSTEM DUE TO FAULTY PARTS AND/OR WORKMANSHIP, AND THE APPROPRIATE WATERING OF ALL PLANTINGS. THE LANDSCAPE CONTRACTOR SHALL MAINTAIN THE IRRIGATION SYSTEM IN PROPER WORKING ORDER, WITH SCHEDULING ADJUSTMENTS BY SEASON TO MAXIMIZE WATER CONSERVATION.
2. SHOULD SEEDED AND/OR SODDED AREAS NOT BE COVERED BY AN AUTOMATIC IRRIGATION SYSTEM, THE LANDSCAPE CONTRACTOR SHALL BE RESPONSIBLE FOR WATERING THESE AREAS AND OBTAINING A FULL, HEALTHY STAND OF PLANTS AT NO ADDITIONAL COST TO THE OWNER.
3. TO ACHIEVE FINAL ACCEPTANCE AT THE END OF THE MAINTENANCE PERIOD, ALL OF THE FOLLOWING CONDITIONS MUST OCCUR:
   a. THE LANDSCAPE SHALL SHOW ACTIVE, HEALTHY GROWTH (WITH EXCEPTIONS MADE FOR SEASONAL DORMANCY). ALL PLANTS NOT MEETING THIS CONDITION SHALL BE REJECTED AND REPLACED BY HEALTHY PLANT MATERIAL PRIOR TO FINAL ACCEPTANCE.
   b. ALL HARDSCAPE SHALL BE CLEANED PRIOR TO FINAL ACCEPTANCE.
   c. SODDED AREAS MUST BE ACTIVELY GROWING AND MUST REACH A MINIMUM HEIGHT OF 1 1/2 INCHES BEFORE FIRST MOWING. HYDROMULCHED AREAS SHALL SHOW ACTIVE, HEALTHY GROWTH. BARE AREAS LARGER THAN TWELVE SQUARE INCHES MUST BE RESODDED OR RESEEDED (AS APPROPRIATE) PRIOR TO FINAL ACCEPTANCE. ALL SODDED TURF SHALL BE NEATLY MOWED.

L. WARRANTY PERIOD, PLANT GUARANTEE AND REPLACEMENTS
1. THE LANDSCAPE CONTRACTOR SHALL GUARANTEE ALL TREES, SHRUBS, PERENNIALS, SOD, SEEDED/HYDROMULCHED AREAS, AND IRRIGATION SYSTEMS FOR A PERIOD OF ONE YEAR FROM THE DATE OF THE OWNER'S FINAL ACCEPTANCE (90 DAYS FOR ANNUAL PLANTS). THE CONTRACTOR SHALL REPLACE, AT HIS OWN EXPENSE AND TO THE SATISFACTION OF THE OWNER, ANY PLANTS WHICH DIE IN THAT TIME, OR REPAIR ANY PORTIONS OF THE IRRIGATION SYSTEM WHICH OPERATE IMPROPERLY.
2. AFTER THE INITIAL MAINTENANCE PERIOD AND DURING THE GUARANTEE PERIOD, THE LANDSCAPE CONTRACTOR SHALL ONLY BE RESPONSIBLE FOR REPLACEMENT OF PLANTS WHEN PLANT DEATH CANNOT BE ATTRIBUTED DIRECTLY TO OVERWATERING OR OTHER DAMAGE BY HUMAN ACTIONS.

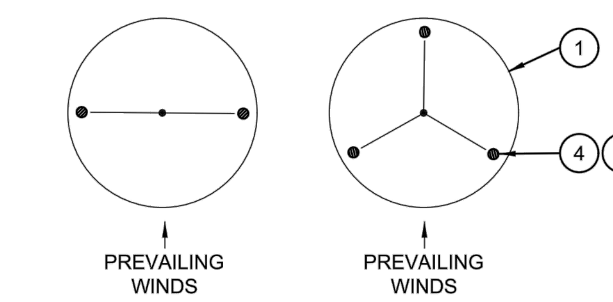
M. PROVIDE A MINIMUM OF (2) COPIES OF RECORD DRAWINGS TO THE OWNER UPON COMPLETION OF WORK. A RECORD DRAWING IS A RECORD OF ALL CHANGES THAT OCCURRED IN THE FIELD AND THAT ARE DOCUMENTED THROUGH CHANGE ORDERS, ADDENDA, OR CONTRACTOR/CONSULTANT DRAWING MARKUPS.

Add not to specify that the owner is responsible for landscape maintenance



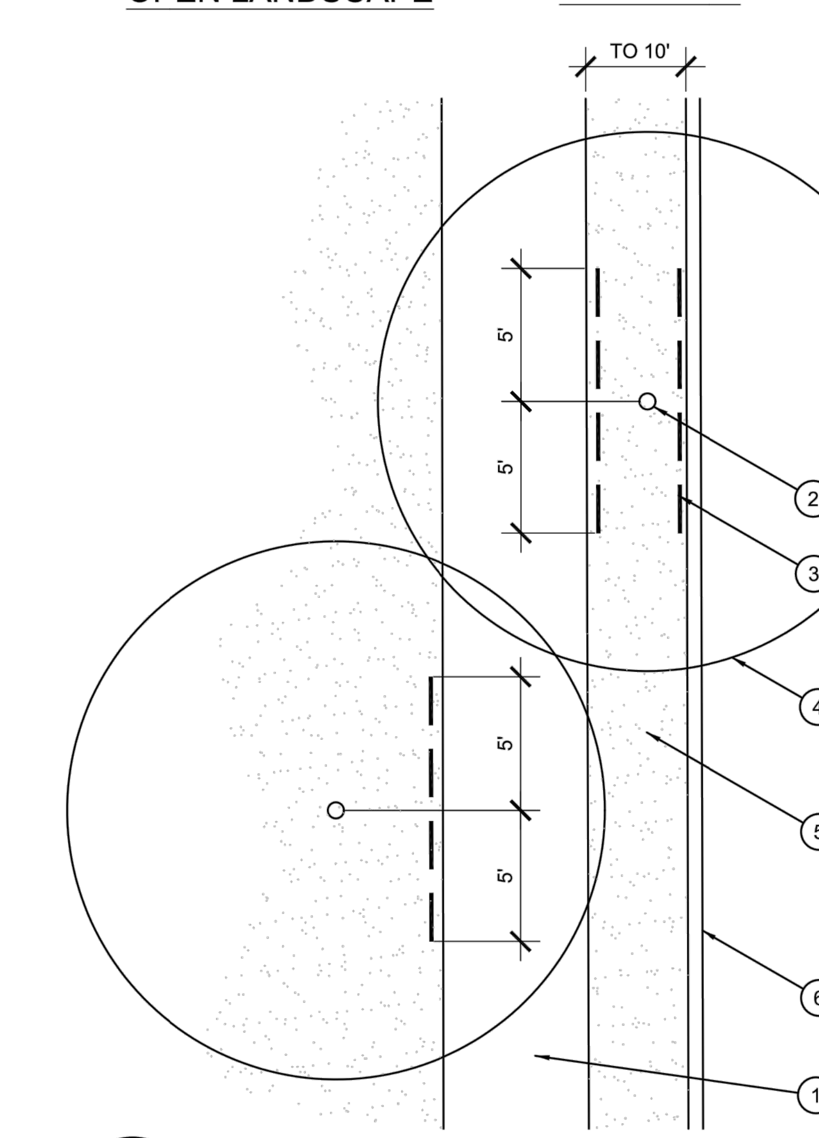
1. TREE CANOPY.
2. CINCH-TIES (24" BOX/2" CAL. TREES AND SMALLER) OR 12 GAUGE GALVANIZED WIRE WITH NYLON TREE STRAPS AT TREE AND STAKE (36" BOX/2.5" CAL. TREES AND LARGER). SECURE TIES OR STRAPS TO TRUNK JUST ABOVE LOWEST MAJOR BRANCHES.
3. 24" X 3/4" P.V.C. MARKERS OVER WIRES.
4. GREEN STEEL T-POSTS. EXTEND POSTS 12" MIN. INTO UNDISTURBED SOIL.
5. PRESSURE-TREATED WOOD DEADMAN, TWO PER TREE (MIN.). BURY OUTSIDE OF PLANTING PIT AND 18" MIN. INTO UNDISTURBED SOIL.
6. TRUNK FLARE.
7. MULCH, TYPE AND DEPTH PER PLANS. DO NOT PLACE MULCH WITHIN 6" OF TRUNK.
8. FINISH GRADE.
9. ROOT BALL.
10. BACKFILL. AMEND AND FERTILIZE ONLY AS RECOMMENDED IN SOIL FERTILITY ANALYSIS.
11. UNDISTURBED NATIVE SOIL.
12. 4" HIGH EARTHEN WATERING BASIN.
13. FINISH GRADE.

STAKING EXAMPLES (PLAN VIEW)



NOTES:
1. SCARIFY SIDES OF PLANTING PIT PRIOR TO SETTING TREE.
2. REMOVE EXCESS SOIL APPLIED ON TOP OF THE ROOTBALL THAT COVERS THE ROOT FLARE. THE PLANTING HOLE DEPTH SHALL BE SUCH THAT THE ROOTBALL RESTS ON UNDISTURBED SOIL, AND THE ROOT FLARE IS 2"-4" ABOVE FINISH GRADE.
3. FOR B&B TREES, CUT OFF BOTTOM 1/3 OF WIRE BASKET BEFORE PLACING TREE IN HOLE, CUT OFF AND REMOVE REMAINDER OF BASKET AFTER TREE IS SET IN HOLE, REMOVE ALL NYLON TIES, TWINE, ROPE, AND OTHER PACKING MATERIAL. REMOVE AS MUCH BURLAP FROM AROUND ROOTBALL AS IS PRACTICAL.
4. REMOVE ALL NURSERY STAKES AFTER PLANTING.
5. FOR TREES 36" BOX/2.5" CAL. AND LARGER, USE THREE STAKES OR DEADMEN (AS APPROPRIATE), SPACED EVENLY AROUND TREE.
6. STAKING SHALL BE TIGHT ENOUGH TO PREVENT TRUNK FROM BENDING, BUT LOOSE ENOUGH TO ALLOW SOME TRUNK MOVEMENT IN WIND.

A — TREE PLANTING
SCALE: NOT TO SCALE



1. TYPICAL WALKWAY OR PAVING
2. TREE TRUNK
3. LINEAR ROOT BARRIER MATERIAL. SEE PLANTING NOTES FOR TYPE AND MANUFACTURER. INSTALL PER MANUFACTURER'S SPECIFICATIONS.
4. TREE CANOPY
5. TYPICAL PLANTING AREA
6. TYPICAL CURB AND GUTTER

NOTES:
1) INSTALL ROOT BARRIERS NEAR ALL NEWLY-PLANTED TREES THAT ARE LOCATED WITHIN FIVE (5) FEET OF PAVING OR CURBS.
2) BARRIERS SHALL BE LOCATED IMMEDIATELY ADJACENT TO HARDSCAPE. UNDER NO CIRCUMSTANCES SHALL THE CONTRACTOR USE ROOT BARRIERS OF A TYPE THAT COMPLETELY ENCIRCLE THE ROOTBALL.

B — ROOT BARRIER - PLAN VIEW
SCALE: NOT TO SCALE

TEXAS REGISTRATION #14199
CLAYMOORE ENGINEERING
1903 CENTRAL DRIVE, SUITE #406
BEDFORD, TX 76021
PHONE: 817.281.0572
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REGISTERED LANDSCAPE ARCHITECT
ERIC M. SHEPLEY
3537
STATE OF TEXAS
07/15/2024

SANGER MULTI-FAMILY
PREPARED FOR
GREYSTAR
SANGER, TEXAS

BY	REVISION	DATE

LANDSCAPE PLANTING
DETAILS & SPECIFICATIONS

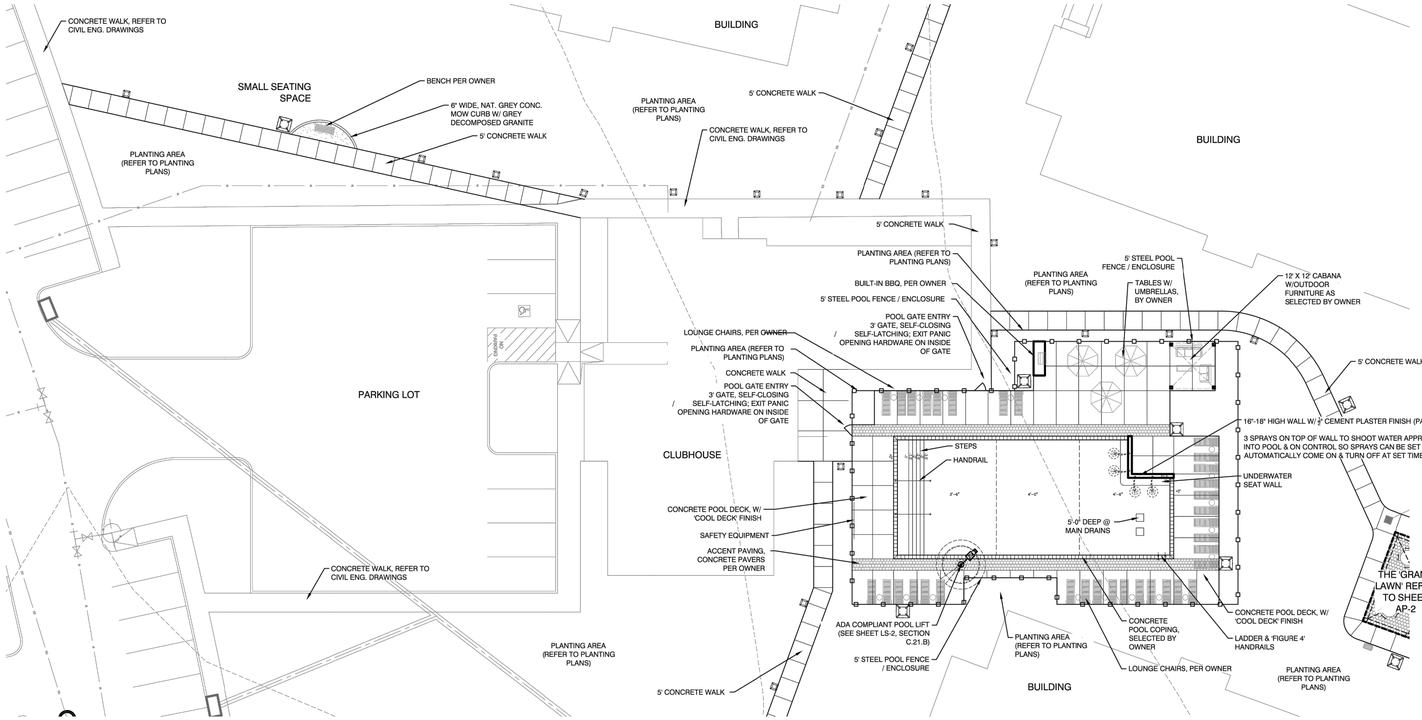
EVERGREEN DESIGN GROUP
(800) 680-6630
15455 Dallas Pkwy., Ste 600
Addison, TX 75001
www.EvergreenDesignGroup.com

DESIGN:	EMS
DRAWN:	EMS
CHECKED:	RM
DATE:	7/12/2024

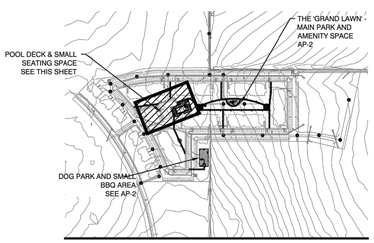
SHEET
LP-3

CASE NO. 2022-185

PLOTTED BY: ERIC SHEPLEY
PLOT DATE: 7/12/2024 2:21 PM
LOCATION: P:\SHARED\PROJECTS\2023\GREYSTAR MFR - SANGER TX\XREF\X22X34 MF.DWG
LAST SAVED: 7/12/2024 2:08 PM



POOL DECK & SMALL SEATING SPACE



KEY MAP

GENERAL NOTES

1. CONTRACTOR SHALL VERIFY WITH OWNER'S REPRESENTATIVE THAT PLANS ARE CURRENT AND APPROVED.
2. WORK SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE LOCAL JURISDICTIONS.
3. THESE PLANS ARE BASED ON IMPROVEMENT PLANS BY CLAYMOORE ENGINEERING.
4. THE GEOTECHNICAL SOILS ENGINEERING REPORT IS A PART OF THESE CONSTRUCTION DOCUMENTS. THE CONTRACTOR SHALL COMPLY WITH THE REPORT'S RECOMMENDATIONS AS THEY RELATE TO HIS WORK.
5. THE CONTRACTOR SHALL OBTAIN ALL NECESSARY AND/OR REQUIRED PERMITS AND PAY ALL RELATED FEES AND/OR TAXES REQUIRED TO INSTALL THE WORK ON THESE PLANS.
6. THE CONTRACTOR SHALL BE APPROPRIATELY LICENSED AS REQUIRED BY THE STATE IN WHICH THE WORK TAKES PLACE.
7. A SEPARATE PLUMBING PERMIT AND INSPECTION WILL BE REQUIRED FROM THE BUILDING INSPECTION DEPARTMENT FOR THE INSTALLATION OF IRRIGATION SYSTEMS SHOWN ON THIS DRAWING.
8. THE CONTRACTOR SHALL NOTIFY THE OWNER'S REPRESENTATIVE PRIOR TO BEGINNING THE WORK AND SHALL BE RESPONSIBLE FOR COORDINATING WITH THE OWNER, LANDSCAPE ARCHITECT, GOVERNING AGENCIES AND OTHER TRADES.
9. CONTRACTOR SHALL NOTIFY LANDSCAPE ARCHITECT IMMEDIATELY OF ANY ERRORS, OMISSIONS OR DISCREPANCIES IN EXISTING CONDITIONS OR WITHIN THE PLANS PRIOR TO BEGINNING THE WORK.
10. UNIT PRICES FOR ALL IMPROVEMENTS SHALL BE ESTABLISHED AS A PART OF THE CONTRACT WITH THE PROJECT OWNER AND PRIOR TO BEGINNING WORK, TO ACCOMMODATE ADDITIONS AND/OR DELETIONS OF MATERIAL AND/OR LABOR.
11. DETERMINATION OF "EQUAL" SUBSTITUTIONS SHALL BE MADE ONLY BY THE LANDSCAPE ARCHITECT.
12. LANDSCAPE ARCHITECT SHALL BE NOTIFIED NO LESS THAN 48 HOURS IN ADVANCE OF ANY SITE OBSERVATIONS OR MEETINGS.
13. SITE OBSERVATIONS AND MEETINGS SHALL INCLUDE:
    A. PRE-CONSTRUCTION CONFERENCE
    B. SELECTION AND TAGGING OF SPECIMEN TREES AT NURSERIES
    C. LANDSCAPE GRADING PRIOR TO PLANTING
    D. LAYOUT AND INSTALLATION OF HARDSCAPE AND LANDSCAPE STRUCTURES IN RELATION TO DESIGN INTENT
    E. PLANT MATERIAL QUALITY AND INSTALLATION AT THE PROJECT SITE
    F. OBSERVATION TO ESTABLISH 90-DAY MAINTENANCE PERIOD (PRE-MAINTENANCE)
    G. FINAL OBSERVATION AT THE END OF THE 90-DAY MAINTENANCE PERIOD (FINAL)
    NOTE: "LANDSCAPE" SHALL REFER TO ALL IMPROVEMENTS WITHIN THIS SET OF DOCUMENTS THAT HAVE BEEN DESIGNED BY THIS OFFICE.
14. SITE OBSERVATIONS BY THE LANDSCAPE ARCHITECT DURING ANY PHASE OF THIS PROJECT DOES NOT RELIEVE THE CONTRACTOR OF HIS PRIMARY RESPONSIBILITY TO PERFORM ALL WORK IN ACCORDANCE WITH THE PLANS, SPECIFICATIONS AND GOVERNING CODES.
15. CONTRACTOR SHALL BE BACKCHARGED FOR LANDSCAPE ARCHITECT'S TIME WHEN OBSERVATIONS ARE CALLED FOR AND IT IS FOUND THAT THE WORK IS NOT SIGNIFICANTLY READY UPON OBSERVATION OR THE APPOINTMENT IS NOT KEPT. TIME WILL BE CHARGED ON AN HOURLY BASIS, PLUS TRANSPORTATION, FOOD AND LODGING COSTS, IF ANY, AT THE THEN EXISTING HOURLY RATE FOR THE PERSONNEL PROVIDING THE OBSERVATIONS.
16. THIS FIRM DOES NOT PRACTICE OR CONSULT IN THE FIELD OF SAFETY ENGINEERING. THIS FIRM DOES NOT DIRECT THE CONTRACTOR'S OPERATIONS, AND IS NOT RESPONSIBLE FOR THE SAFETY OF PERSONNEL OTHER THAN OUR OWN ON THE SITE; THE SAFETY OF OTHERS IS THE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR SHOULD NOTIFY THE OWNER IF HE CONSIDERS ANY OF THE RECOMMENDED ACTIONS PRESENTED HEREIN TO BE UNSAFE.

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

THIS LAYOUT PLAN AND ASSOCIATED SPECIFICATIONS ARE PROVIDED TO SHOW DESIGN INTENT ONLY. POOL CONTRACTOR IS RESPONSIBLE TO PROVIDE ENGINEERED AQUATIC DRAWINGS IN COMPLIANCE WITH ALL APPLICABLE JURISDICTIONAL CODES.

NOTES

ALL PLANTERS AROUND THE POOL STRUCTURE SHALL BE FULLY ENCLOSED TO PREVENT WATER FROM ENTERING THE SUBGRADE BELOW/AROUND THE POOL. PLANTERS SHALL BE CONSTRUCTED TO HAVE A 36" MINIMUM DEPTH OF SOIL FOR HEALTHY PLANT GROWTH, PLUS GRAVEL BOTTOM WITH 'FRENCH DRAIN' TO REMOVE EXCESS WATER. 'FRENCH-DRAINS' SHALL BE CONNECTED TO A PIPE TO GRAVITY flOW WATER TO A SUITABLE OUTFLOW LOCATION.

POOL SHELL, DECKING, ENCLOSED PLANTERS, ETC. DESIGNED BY STRUCTURAL ENGINEER AND COMPLYING TO GEOTECHNICAL REPORT PREPARED FOR THIS PROJECT AND AS PARTIALLY REPRODUCED ON THIS SHEET.

DECKING SCORING AND EXPANSION JOINT PATTERNS SHOWN ARE INTENDED AS GUIDELINES ONLY. DUE TO THE REQUIREMENTS OF THE GEOTECHNICAL REPORT, THE POOL CONTRACTOR AND THEIR STRUCTURAL ENGINEER SHALL REVIEW THIS LAYOUT AND REVISE AS APPROPRIATE WITH OWNER APPROVAL. SPECIAL PAVINGS SHOWN SHALL ALSO BE REVIEWED AND REVISED AS NECESSARY TO COMPLY TO CONSTRAINTS OF THE REPORT AND THE DESIRES OF THE OWNER.

HOSE BIBS SHALL BE PROVIDED AROUND THE PERIMETER OF THE DECK AREA AT INTERVALS SUCH THAT ALL PARTS OF THE DECK CAN BE REACHED WITH A 100-FOOT HOSE.

GRADING & DRAINAGE NOTES:
1) SEE CIVIL ENGINEERING PLANS FOR FINISH GRADING ON DECK AND AROUND POOL.
2) TYPICAL SLOPE AWAY FROM POOL EDGE ACROSS POOL DECK SHOULD NOT EXCEED 2.0% IN ANY DIRECTION, REPORT ANY VARIANCE TO THIS TO ENGINEER AND OWNER FOR CORRECTION.

GATE LATCH NOTES:

1) GATE MUST HAVE A SELF-CLOSING AND SELF-LATCHING DEVICE.
2) GATE MUST HAVE HARDWARE ENABLING IT TO BE LOCKED, AT THE OPTION OF WHOEVER CONTROLS THE GATE, BY A PADLOCK OR A BUILT-IN LOCK OPERATED BY KEY, CARD, OR COMBINATION.
3) GATE MUST OPEN OUTWARD AWAY FROM THE POOL YARD.
4) GATE LATCH MUST BE INSTALLED AT LEAST 60 INCHES ABOVE THE GROUND.
5) GATE LATCH MAY BE INSTALLED LOWER THAN 60 INCHES IF THE LATCH IS INSTALLED ON THE POOL YARD SIDE OF THE GATE ONLY AND IS AT LEAST THREE INCHES BELOW THE TOP OF THE GATE, AND THE GATE OR ENCLOSURE HAS NO OPENING GREATER THAN ONE-HALF INCH IN ANY DIRECTION WITHIN 18 INCHES FROM THE LATCH, INCLUDING THE SPACE BETWEEN THE GATE AND THE GATE POST TO WHICH THE GATE LATCHES.
6) A GATE LATCH MAY BE LOCATED 42 INCHES OR HIGHER ABOVE THE GROUND IF THE GATE CANNOT BE OPENED EXCEPT BY KEY, CARD, OR COMBINATION ON BOTH SIDES OF THE GATE.

GEOTECHNICAL REPORT RECOMMENDATIONS (FOR REFERENCE)

THE FOLLOWING IS PROVIDE SECTION OF THE GEOTECHNICAL REPORT PREPARED BY ALPHA TESTING DATED 10/27/22. THE BELOW IS FOR REFERENCE ONLY, PLEASE REFER TO SECTION 6.6 OF THE MOST CURRENT GEOTECHINCAL REPORT FOR ADDITIONAL INFORMATION AND TO ENSURE THE RECOMMENDATIONS ARE CURRENT:

BASED ON THE INFORMATION PROVIDED TO US, WE ANTICIPATE THE SWIMMING POOL WILL BE LOCATED IN THE VICINITY OF BORING B-1. ROCK (LIMESTONE) WAS ENCOUNTERED AT A DEPTH AS SHALLOW AS 2 FT BELOW THE EXISTING GROUND SURFACE IN THIS BORING. THE SWIMMING POOL/POOL DECK AREA COULD BE SUBJECTED TO POTENTIAL SEASONAL MOVEMENT UP TO ABOUT 1½ INCHES BASED ON THE SOIL CONDITIONS ENCOUNTERED IN THIS AREA. SUBGRADE IMPROVEMENT IN THE SWIMMING POOL AND POOL DECK AREAS SHOULD CONFORM TO THE RECOMMENDATIONS DISCUSSED IN SECTION 6.2 (USING ON-SITE SOIL (MAX PI OF 25) AND/OR SELECT FILL TO RAISE SITE GRADES).

THE PROPOSED SWIMMING POOL WALLS WILL BE SUBJECT TO LATERAL EARTH PRESSURES INDUCED BY THE SOIL RETAINED BY THOSE WALLS. IF THE POOL IS CONSTRUCTED USING "GUNITE" TECHNIQUES, THEN THE RETAINED SOIL WILL BE THE ON-SITE CLAYEY SOILS ENCOUNTERED IN THE BORINGS. AS SUCH, THE EQUIVALENT FLUID DENSITY WILL BE DICTATED BY THAT NATURAL SOIL. LATERAL PRESSURES EXERTED BY COMPETENT LIMESTONE ROCK WILL BE NEGLIGIBLE.

IF THE SOILS ARE MASS-EXCAVATED AND THE SWIMMING POOL IS FORMED AND PLACED, THEN THE BACKFILL CAN CONSIST OF FREE DRAINING GRANULAR SOILS SUCH AS CLEAN, FREE-DRAINING SAND OR GRAVEL, WHICH WILL ALLOW THE EQUIVALENT FLUID DENSITY EXERTED ON THE POOL WALLS TO BE CONTROLLED TO SOME EXTENT. IF THE POOL WALLS ARE BACKFILLED, THEN A DRAINAGE SYSTEM COMPRISED OF SLOTTED OR PERFORATED PVC PIPE ENCASED BY CLEAN SAND OR GRAVEL THAT IS COMPLETELY WRAPPED IN FILTER FABRIC SHOULD BE CONSIDERED FOR BEHINDWALL CONSTRUCTION TO FURTHER CONTROL THE EQUIVALENT FLUID DENSITY. VERTICAL FACE DRAINS ARE COMMONLY USED TO PROVIDE SOME DRAINAGE AND REDUCE HYDROSTATIC FORCES BEHIND EARTH-FORMED RETAINING STRUCTURES. HOWEVER, WITHOUT A FREE-DRAINING MATERIAL PLACED WITHIN THE ENTIRE ACTIVE ZONE BEHIND THE WALL, HYDROSTATIC FORCES CAN STILL DEVELOP. THE "ACTIVE ZONE" CONSISTS OF THE AREA BEHIND THE WALL WITHIN A BOUNDARY CREATED BY A 45-DEGREE ANGLE DRAWN FROM THE HEEL OF THE WALL AND EXTENDING UPWARD TO THE GROUND SURFACE.

THE EQUIVALENT FLUID PRESSURES PROVIDED IN TABLE C MAY BE USED FOR THE DESIGN OF THE SWIMMING POOL WALLS AT THIS SITE DEPENDING UPON THE DESIGN RESTRAINT CONDITION AND UPON WHETHER OR NOT SUBSURFACE WATER CAN BE EFFECTIVELY DRAINED FROM BEHIND THE WALL. THE FLUID PRESSURES DO NOT ACCOUNT FOR ANY SURCHARGE LOADS. THE "ACTIVE" RESTRAINT CONDITION ASSUMES THE TOP OF WALL WILL rotate.CONVERSELY, THE "AT-REST" RESTRAINT CONDITION ASSUMES THE TOP OF THE WALL WILL NOT MOVE. THE "AT-REST" CONDITION MAY BE MORE APPROPRIATE FOR SWIMMING POOL WALLS.

WE RECOMMEND THAT THE WALLS OF THE POOL BE DESIGNED ASSUMING NO PRESSURE FROM THE WATER IN THE POOL (THAT IS, AN EMPTY POOL). WE ANTICIPATE THAT FLATWORK OR A 2-FT THICK CLAY CAP WILL BE CONSTRUCTED OVER THE GRANULAR BACKFILL AND WILL SERVE AS A PROTECTIVE COVER TO REDUCE SURFACE WATER FROM INFILTRATING INTO THE BACKFILL MATERIALS. THE RECOMMENDATIONS PRESENTED IN THIS SECTION ARE TO BE USED FOR EQUIVALENT FLUID PRESSURES TO AID IN DESIGNING THE POOL. A SPECIAL POOL DESIGNER AND
1) ENGINEER SHOULD BE CONSULTED.

0' 10' 20' 40'

Scale 1" = 20'

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REGISTERED LANDSCAPE ARCHITECT
SHARON M STACHECKI
3682
STATE OF TEXAS
07/12/2024

SANGER MULTI-FAMILY
PREPARED FOR GREYSTAR
SANGER, TEXAS

No.	DATE	REVISION	BY

AMENITY PLAN

DESIGN:	EMS
DRAWN:	EMS
CHECKED:	RM
DATE:	7/12/2024

SHEET
AP-1

CASE NO. 2022-185

PLOTTED BY: SHARON STACHECKI
PLOT DATE: 7/12/2024 2:24 PM
LOCATION: P:\SHARED\PROJECTS\2023\GREYSTAR MFR - SANGER TX\GREYSTAR MF SANGER TX 2024-07-12 AP.DWG
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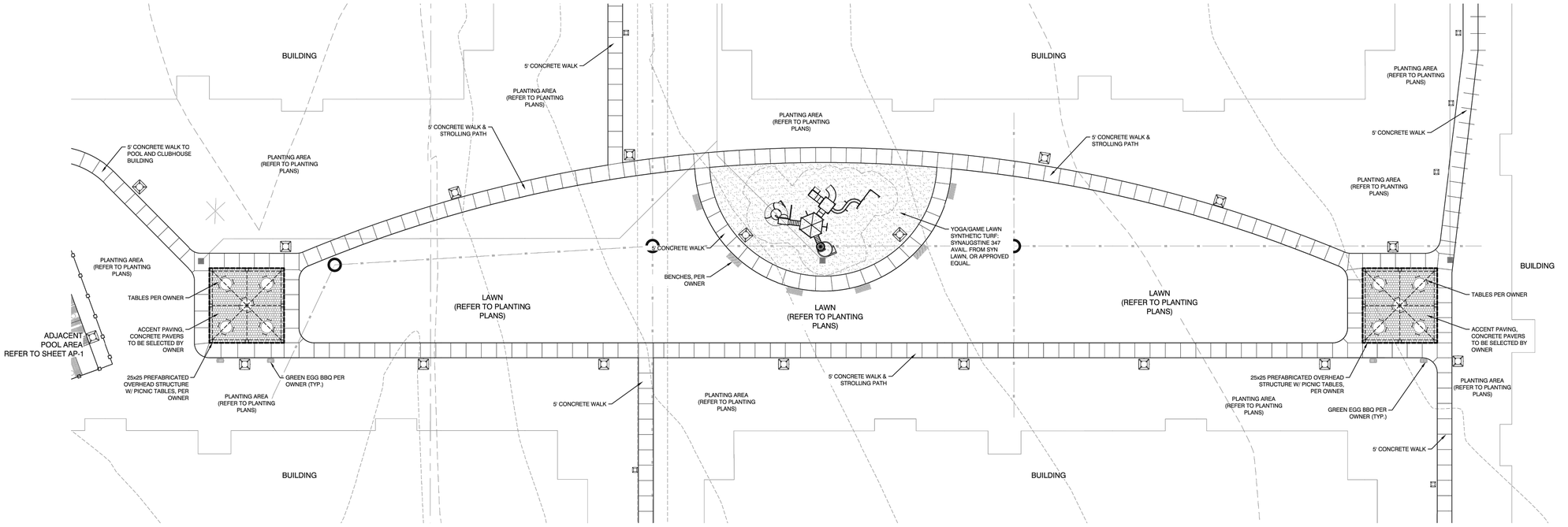
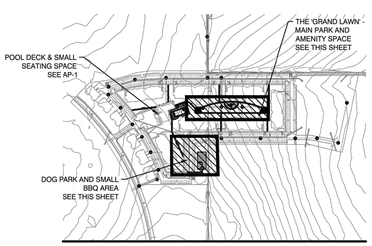
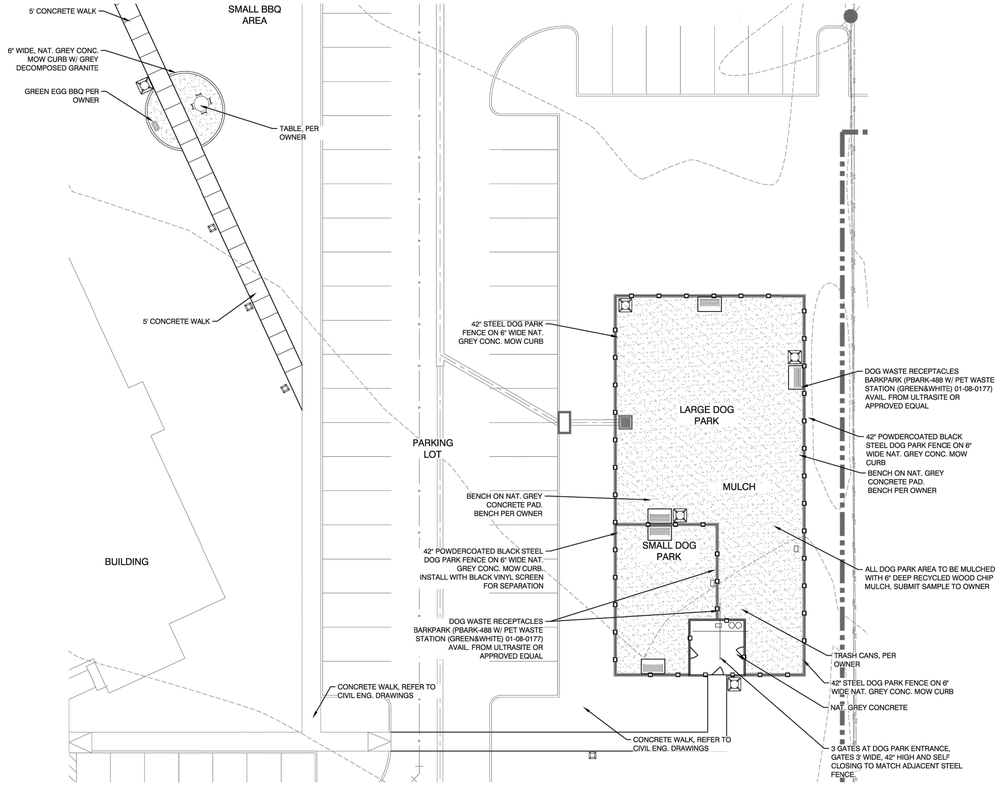


THE 'GRAND LAWN' - MAIN PARK AND AMENITY SPACE



KEY MAP



DOG PARK AND SMALL BBQ AREA

GENERAL NOTES

1. CONTRACTOR SHALL VERIFY WITH OWNER'S REPRESENTATIVE THAT PLANS ARE CURRENT AND APPROVED.
2. WORK SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE LOCAL JURISDICTIONS.
3. THESE PLANS ARE BASED ON IMPROVEMENT PLANS BY CLAYMOORE ENGINEERING.
4. THE GEOTECHNICAL SOILS ENGINEERING REPORT IS A PART OF THESE CONSTRUCTION DOCUMENTS. THE CONTRACTOR SHALL COMPLY WITH THE REPORT'S RECOMMENDATIONS AS THEY RELATE TO HIS WORK.
5. THE CONTRACTOR SHALL OBTAIN ALL NECESSARY AND/OR REQUIRED PERMITS AND PAY ALL RELATED FEES AND/OR TAXES REQUIRED TO INSTALL THE WORK ON THESE PLANS.
6. THE CONTRACTOR SHALL BE APPROPRIATELY LICENSED AS REQUIRED BY THE STATE IN WHICH THE WORK TAKES PLACE.
7. A SEPARATE PLUMBING PERMIT AND INSPECTION WILL BE REQUIRED FROM THE BUILDING INSPECTION DEPARTMENT FOR THE INSTALLATION OF IRRIGATION SYSTEMS SHOWN ON THIS DRAWING.
8. THE CONTRACTOR SHALL NOTIFY THE OWNER'S REPRESENTATIVE PRIOR TO BEGINNING THE WORK AND SHALL BE RESPONSIBLE FOR COORDINATING WITH THE OWNER, LANDSCAPE ARCHITECT, GOVERNING AGENCIES AND OTHER TRADES.
9. CONTRACTOR SHALL NOTIFY LANDSCAPE ARCHITECT IMMEDIATELY OF ANY ERRORS, OMISSIONS OR DISCREPANCIES IN EXISTING CONDITIONS OR WITHIN THE PLANS PRIOR TO BEGINNING THE WORK.
10. UNIT PRICES FOR ALL IMPROVEMENTS SHALL BE ESTABLISHED AS A PART OF THE CONTRACT WITH THE PROJECT OWNER AND PRIOR TO BEGINNING WORK, TO ACCOMMODATE ADDITIONS AND/OR DELETIONS OF MATERIAL AND/OR LABOR.
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07/12/2024

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PREPARED FOR
GREYSTAR
SANGER, TEXAS

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SHEET
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CASE NO. 2022-185

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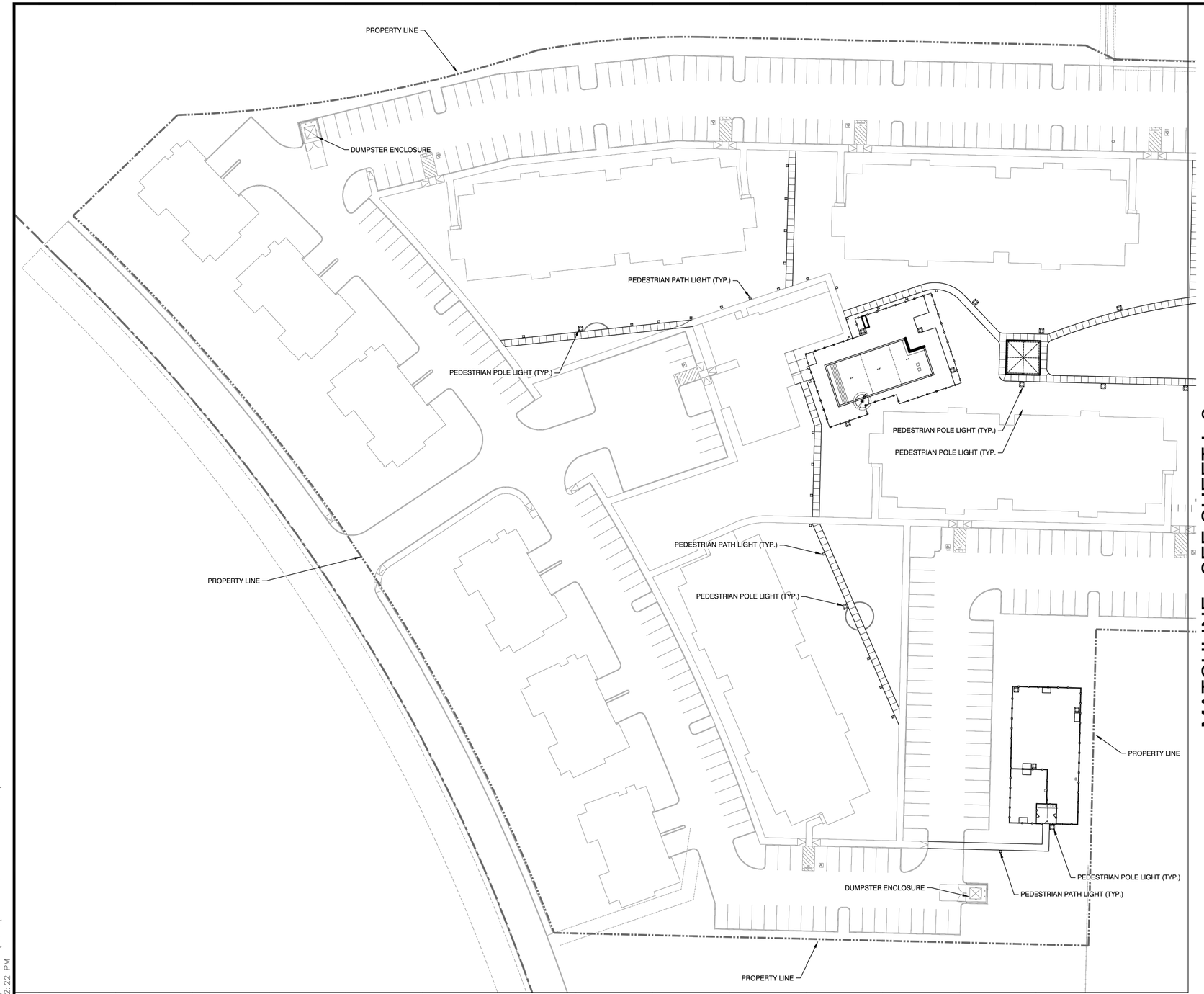

MATCHLINE - SEE SHEET L-2

CONCEPTUAL LIGHTING LEGEND

	DESCRIPTION	QTY
	PEDESTRIAN POLE LIGHT - ASHBERY POLE LIGHT AVAILABLE FROM LANDSCAPE FORMS, OR APPROVED EQUAL. 12' POLE HEIGHT, USE BOTH TYPE 3 AND TYPE 5 LIGHT DISTRIBUTION, COLOR TBS	28
	PEDESTRIAN PATH LIGHT - ASHBERY PATH LIGHT AVAILABLE FROM LANDSCAPE FORMS, OR APPROVED EQUAL. 3' POLE HEIGHT, USE TYPE 5 LIGHT DISTRIBUTION, COLOR TBS	41

CONCEPTUAL LIGHTING NOTES

1. LIGHTING PLAN IS FOR CONCEPTUAL USE ONLY. ALL LIGHTING PLACEMENT AND LIGHT LEVELS SHALL BE CONFIRM BY ELECTRICAL ENGINEER OR LIGHTING DESIGNER TO ENSURE COMPLIANCE WITH LIGHT REQUIREMENTS.
2. ALL WIRING, TRANSFORMERS, AND ELECTRICAL CONNECTIONS ARE BY OTHERS.
3. ALL LIGHTING SHALL BE DIRECTED AWAY FROM ADJACENT RESIDENTIAL BUILDINGS.
4. ALL LIGHTING SHALL BE LED LIGHTING WITH 3000K (WARM WHITE) BULBS
5. ALL LIGHTING SHALL BE UL LISTED AND INTERNATIONAL DARK-SKY APPROVED.

CONCEPTUAL LIGHTING IMAGES

PEDESTRIAN POLE LIGHT

PEDESTRIAN PATH LIGHT

0' 20' 40' 80'

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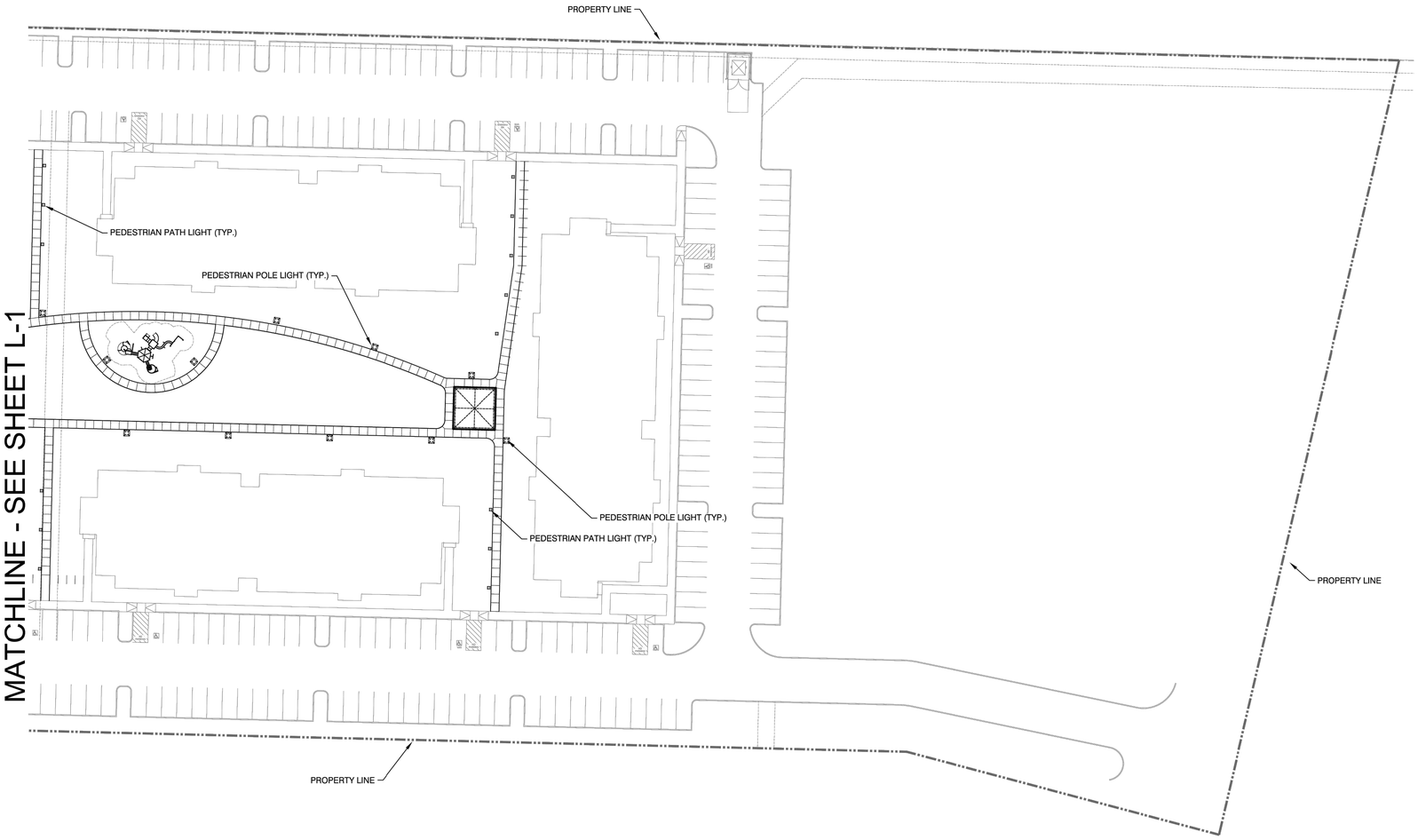

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