November 27, 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: **Lake Ridge Phase 4 Preliminary Plat -Review #1**

Dear Ms. Hammonds,

Halff Associates, Inc. was requested by the City of Sanger to review the Preliminary Plat for Lake Ridge Phase 4 and the Final Plat for Lake Ridge Drive. The submittal was prepared by Middleton and Associates, LLC and was received November 13th, 2024.

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 note additional comments may be provided in subsequent reviews once additional data/responses is received.

Lake Ridge Phase 4 Preliminary Plat

1. Please provide legend with all symbols used.
2. Please ensure square footage acreage matches closure report.

Lake Ridge Drive Final Plat

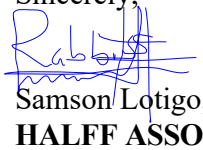
1. Please Show centerline of existing streets. Dimensions from centerline to edges of existing and proposed right-of-way on both sides of the centerline.
2. Please verify description and bearing for lines L3 and L33 respectively.
3. Please provide flood study for review and note that flood study needs to be accepted prior to approval of final plat or construction plans.
4. A portion of Lake Ridge Drive near the intersection with Ranchview Drive appears to be encroaching an affective floodplain. Please provide a flood study incorporating the encroachment for review.

Preliminary Storm Drain Comments

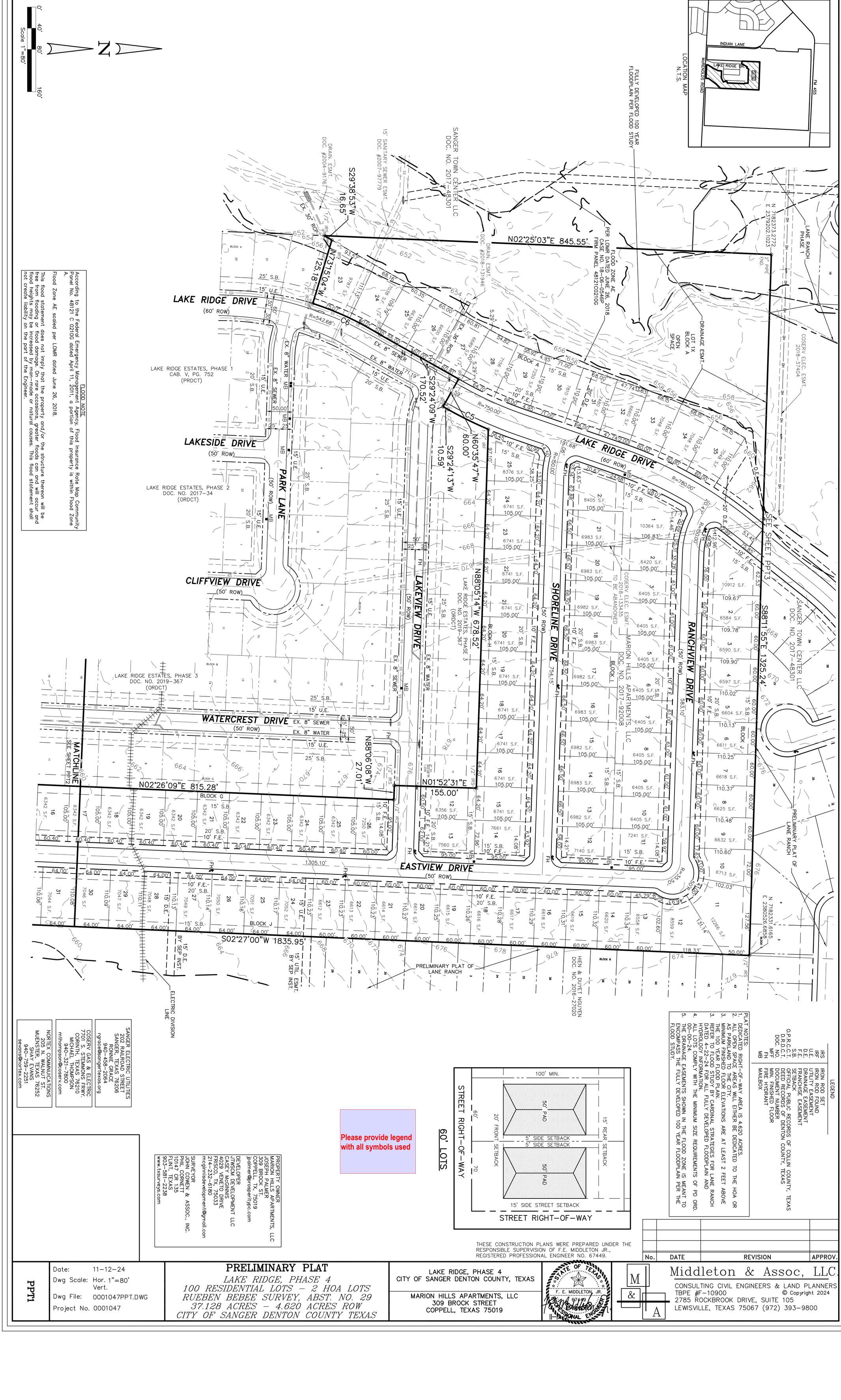
1. Please see markups in pdf attached.

If you have any questions or need additional information, please do not hesitate to call me at (817) 764-7498.

Sincerely,



Samson Lotigo, PE
HALFF ASSOCIATES, INC.
Firm No. 0312
Attachments: Plat markups



FLOOD NOTE

According to the Federal Emergency Management Agency, Flood Insurance Rate Map Community Panel No. 48121 C 0210G dated April 11, 2011, a portion of this property is within Flood Zone A.

Flood Zone AE scaled per LOMR dated June 26, 2018.

This flood statement does not imply that the property and/or the structure thereon will be free from flooding or flood damage. On rare occasions, greater floods can and will occur and flood heights may be increased by man-made or natural causes. This flood statement shall not create liability on the part of the Engineer.

SANGER ELECTRIC UTILITIES
202 RAILROAD STREET
SANGER, TEXAS 76266
RONNIE GRACE
940-458-2064
rgrace@sangertexas.org

COSERV GAS & ELECTRIC
7701 S. STEMMONS FRWY.
CORINTH, TEXAS 76210
MICHAEL THOMPSON
940-321-7800
mthompson@coserv.com

NORTEX COMMUNICATIONS
205 N. WALNUT ST.
MUENSTER, TEXAS 76252
SHAY EVANS
940-759-2251
sevans@nortex.com

PROPERTY OWNER
MARION HILLS APARTMENTS, LLC
JOSEPH PALMER
309 BROCK ST.
COPPELL, TX. 75019
jpalmer@prosperitypc.com

DEVELOPER
UTWSCM DEVELOPMENT LLC
CASEY McGINNIS
4029 VENETO DRIVE
FRISCO, TX. 75033
214-232-6180
mcginnisdevelopment@gmail.com

SURVEYOR
JOHN COWEN & ASSOC., INC.
PHIL CORNETT
1014? CR 135
FLINT, TEXAS
903-581-2238
www.txsurveys.com

Please provide legend with all symbols used

60' LOTS

LEGEND

IRS	IRON ROD SET
IRF	IRON ROD FOUND
U.E.	UTILITY EASEMENT
D.E.	DRAINAGE EASEMENT
F.E.	FRANCHISE EASEMENT
S.B.	SETBACK
O.P.R.C.C.T.	OFFICIAL PUBLIC RECORDS OF COLLIN COUNTY, TEXAS
D.R.D.C.T.	DEED RECORDS OF DENTON COUNTY, TEXAS
DOC. NO.	DOCUMENT NUMBER
MFF	MIN. FINISHED FLOOR
FH	FIRE HYDRANT
MB	MAILBOX

PLAT NOTES:

1. DEDICATED RIGHT-OF-WAY AREA IS 4.620 ACRES.
2. ALL OPEN SPACE AREAS WILL EITHER BE DEDICATED TO THE HOA OR AS PARKLAND TO THE CITY.
3. MINIMUM FINISHED FLOOR ELEVATIONS ARE AT LEAST 2 FEET ABOVE THE 100 YEAR FLOOD PLAIN. REFER TO FLOOD STUDY BY CARDINAL STRATEGIES FOR LANE RANCH DATED 4-22-24 FOR ALL FULLY DEVELOPED FLOODPLAIN AND HYDROLOGY INFORMATION.
4. ALL LOTS COMPLY WITH THE MINIMUM SIZE REQUIREMENTS OF PD ORD. 00-00-24.
5. THE DRAINAGE EASEMENTS SHOWN IN THE FLOOD ZONE IS MEANT TO ENCOMPASS THE FULLY DEVELOPED 100 YEAR FLOODPLAIN PER THE FLOOD STUDY.

THESE CONSTRUCTION PLANS WERE PREPARED UNDER THE RESPONSIBLE SUPERVISION OF F.E. MIDDLETON JR., REGISTERED PROFESSIONAL ENGINEER NO. 67449.

No.	DATE	REVISION	APPROV.

PPT1

Date: 11-12-24
Dwg Scale: Hor. 1"=80' Vert.
Dwg File: 0001047PPT.DWG
Project No. 0001047

PRELIMINARY PLAT

LAKE RIDGE, PHASE 4
100 RESIDENTIAL LOTS - 2 HOA LOTS
RUEBEN BEBEE SURVEY, ABST. NO. 29
37.128 ACRES - 4.620 ACRES ROW
CITY OF SANGER DENTON COUNTY TEXAS

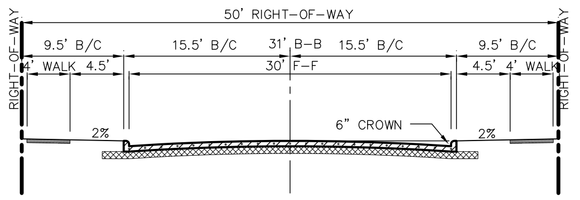
LAKE RIDGE, PHASE 4
CITY OF SANGER DENTON COUNTY, TEXAS

MARION HILLS APARTMENTS, LLC
309 BROCK STREET
COPPELL, TEXAS 75019

STATE OF TEXAS
F. E. MIDDLETON, JR.
97449
REGISTERED
PROFESSIONAL ENGINEER

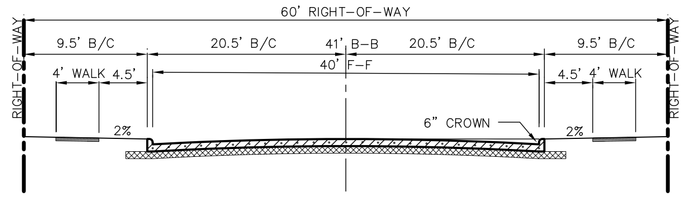
M & A

Middleton & Assoc, LLC
CONSULTING CIVIL ENGINEERS & LAND PLANNERS
TBPE #F-10900
© Copyright 2024
2785 ROCKBROOK DRIVE, SUITE 105
LEWISVILLE, TEXAS 75067 (972) 393-9800



50' LOCAL RESIDENTIAL SECTION

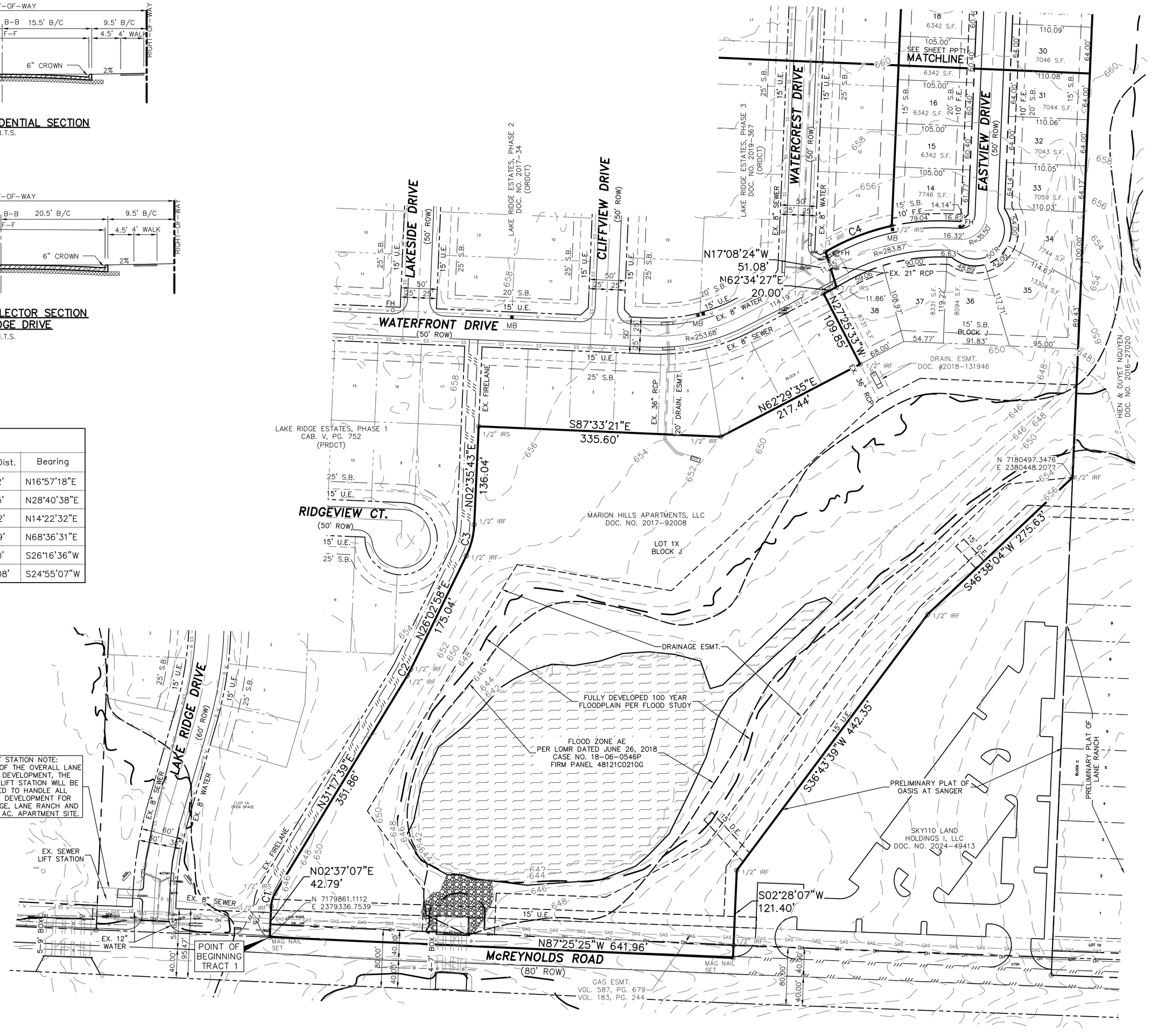
N.T.S.



60' MINOR COLLECTOR SECTION
LAKE RIDGE DRIVE

N.T.S.

Curve Table					
No.	Delta	Radius	Length	Ch. Dist.	Bearing
C1	28°40'42"	38.00'	19.02'	18.82'	N16°57'18"E
C2	5°14'08"	110.00'	10.05'	10.05'	N28°40'38"E
C3	23°33'38"	110.01'	45.24'	44.92'	N14°22'32"E
C4	18°19'46"	308.87'	98.81'	98.39'	N68°36'31"E
C5	6°15'15"	779.99'	85.14'	85.10'	S26°16'36"W
C6	14°03'00"	572.68'	140.43'	140.08'	S24°55'07"W



LEGAL DESCRIPTION
TRACT 1

All that certain lot, tract, or parcel of land, being part of the Rueben Bebee Survey, Abstract No. 29, Denton County, Texas, and being a part of that tract of land described in a deed to Marion Hills Apartments, LLC recorded in Document No. 2017-92008 Real Property Records of Denton, County, Texas (RPRDCT), being more completely described as follows, to-wit:

BEGINNING at a 1/2" iron rod set for the southwest corner Lake Ridge Estates, Phase 1 an addition to the City of Sanger recorded in Cabinet V, Page 752 Plat Records of Denton County, Texas (PRDCT) the north right-of-way line of McReynolds Road;

THENCE North 2°37'07" East a distance of 42.79 feet to the beginning of a curve to the right having a radius of 38.00 feet, a chord of North 16°57'18" East – 18.82 feet, a distance of 19.02 feet to a 1/2" iron rod set for corner;

THENCE North 31°17'39" East a distance of 351.86 feet to a 1/2" iron rod set for the beginning of a curve to the left having a radius of 110.00 feet, a chord of North 28°40'38" East – 10.05 feet, a distance of 10.05 feet to a 1/2" iron rod set for corner;

THENCE North 26°02'58" East a distance of 175.04 feet to a 1/2" iron rod set for the beginning of a curve to the left having a radius of 110.01 feet, a chord of North 14°22'32" East – 44.92 feet, a distance of 45.24 feet to a 1/2" iron rod set for corner;

THENCE North 2°35'43" East a distance of 136.04 feet to a 1/2" iron rod set for corner;

THENCE South 87°33'21" East a distance of 335.60 feet to a 1/2" iron rod set for corner;

THENCE North 62°29'35" East a distance of 217.44 feet to a 1/2" iron rod set for the southeast corner of Lake Ridge Estates, Phase 3 an addition to the City of Sanger recorded in Document No. 2019-367 of the Official Records of Denton County, Texas (ORDCT);

THENCE with the east and north lines of Lake Ridge, Phase 3 North 27°25'33" West a distance of 109.85 feet to a 1/2" iron rod set for corner;

THENCE North 62°34'27" East a distance of 20.00 feet to a 1/2" iron rod set for corner;

THENCE North 17°08'24" West a distance of 51.08 feet to a 1/2" iron rod set for the beginning of a curve to the right having a radius of 308.87 feet, a chord of North 68°36'31" East – 98.39 feet, a distance of 98.81 feet to a 1/2" iron rod set for corner;

THENCE North 2°26'09" East a distance of 815.28 feet to a 1/2" iron rod set for corner;

THENCE North 88°06'08" West a distance of 27.01 feet to a 1/2" iron rod set for corner;

THENCE North 1°52'31" East a distance of 155.00 feet to a 1/2" iron rod set for corner;

THENCE North 88°05'14" West a distance of 678.52 feet to a 1/2" iron rod set for the beginning of a curve to the right having a radius of 779.99 feet, a chord of South 26°16'36" West – 85.10 feet, a distance of 85.14 feet to a 1/2" iron rod set for corner;

THENCE South 29°24'13" West a distance of 10.59 feet to a 1/2" iron rod set for corner;

THENCE North 60°35'47" West a distance of 60.00 feet to a 1/2" iron rod set for corner;

THENCE South 29°24'09" West a distance of 170.52 feet to a 1/2" iron rod set for the beginning of a curve to the left having a radius of 572.68 feet, a chord of South 24°55'07" West – 140.08 feet, a distance of 140.43 feet to a 1/2" iron rod set for corner;

THENCE North 73°15'04" West a distance of 125.18 feet to a 1/2" iron rod set for corner;

THENCE South 29°38'53" West a distance of 16.65 feet to a 1/2" iron rod set for corner in the west line of the Marion Hills Apartments, LLC tract;

THENCE with the west line of the Marion Hills Apartments, LLC tract North 2°25'03" East a distance of 845.55 feet to a 2" iron pipe found for northwest corner of the Marion Hills Apartments, LLC tract;

THENCE with the north line of the Marion Hills Apartments, LLC tract South 88°11'55" East a distance of 1,325.24 feet to a 1/2" iron rod set for the northeast corner of the Marion Hills Apartments, LLC tract;

THENCE with the east line of the Marion Hills Apartments, LLC tract South 2°27'00" West a distance of 1,835.95 feet to a 1/2" iron rod found for the north corner of that tract of land described in a deed to Winston Grove Apartments, LLC recorded in Document No. 2018-13037 (RPRDCT);

THENCE with the west line of the Winston Grove Apartments, LLC tract South 46°38'04" West a distance of 275.63 feet to a 1/2" iron rod found for corner;

THENCE South 36°43'39" West a distance of 442.35 feet to a 1/2" iron rod found for corner;

THENCE South 2°28'07" West a distance of 121.40 feet to a 1/2" iron rod found for corner;

THENCE with the north right-of-way line of McReynolds Road North 87°25'25" West a distance of 641.96 feet to the place of beginning, containing 37.128 acres, or 1,617,281 square feet of land.

Square footage acreage does not match closure report

PRELIMINARY PLAT FOR REVIEW PURPOSES ONLY

APPROVED FOR PREPARATION OF FINAL PLAT

_____ _____ _____
CITY OF SANGER, TX DATE
PLANNING & ZONING COMMISSION

No.	DATE	REVISION	APPROV.

Middleton & Assoc, LLC
CONSULTING CIVIL ENGINEERS & LAND PLANNERS
TBPE #F-10900
2785 ROCKBROOK DRIVE, SUITE 105
LEWISVILLE, TEXAS 75067 (972) 393-9800
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THESE CONSTRUCTION PLANS WERE PREPARED UNDER THE RESPONSIBLE SUPERVISION OF T. E. MIDDLETON, JR., REGISTERED PROFESSIONAL ENGINEER NO. 57448

STATE OF TEXAS
T. E. MIDDLETON, JR.
57448
REGISTERED
PROFESSIONAL
ENGINEER

LAKE RIDGE, PHASE 4
CITY OF SANGER DENTON COUNTY, TEXAS

MARION HILLS APARTMENTS, LLC
309 BROCK STREET
COPPELL, TEXAS 75019

PRELIMINARY PLAT
LAKE RIDGE, PHASE 4
100 RESIDENTIAL LOTS - 2 HOA LOTS
RUEBEN BEBEE SURVEY, ABST. NO. 29
37.128 ACRES 4,620 ACRES ROW
CITY OF SANGER DENTON COUNTY TEXAS

Date: 11-12-24
Dwg Scale: Hor. 1"=80'
Vert.
Dwg File: 0001047PPT.DWG
Project No. 0001047

PPT2

PRELIMINARY PLAT

LAKE RIDGE, PHASE 4
100 RESIDENTIAL LOTS - 2 HOA LOTS
REUBEN BEBEE SURVEY, ABST. NO. 29
37.128 ACRES, 4.620 ACRES ROW
CITY OF SANGER, DENTON COUNTY, TEXAS

PPT3

Date: 11-12-24
Dwg Scale: Hor. 1"=80'
Vert.
Dwg File: 000104ROW.DWG
Project No. 000104?

LAKE RIDGE, PHASE 4
CITY OF SANGER, DENTON COUNTY, TEXAS
MARION HILLS APARTMENTS, LLC
309 BROOK STREET
COPPELL, TEXAS 75019

THESE CONSTRUCTION PLANS WERE PREPARED UNDER THE DIRECTION OF JEFFREY D. BUTLER, REGISTERED PROFESSIONAL ENGINEER NO. 87448.

STATE OF TEXAS — JEFFREY D. BUTLER — 87448 — LICENSED PROFESSIONAL ENGINEER

Middleton & Assoc, LLC
CONSULTING CIVIL ENGINEERS & LAND PLANNERS
TBPE #F-10900
2785 ROCKBROOK DRIVE, SUITE 105
LEWISVILLE, TEXAS 75067 (972) 393-9800
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No.	DATE	REVISION	APPROV.

PRELIMINARY PLAT FOR REVIEW PURPOSES ONLY

APPROVED FOR PREPARATION OF FINAL PLAT

CITY OF SANGER, TX _____ DATE _____

PLANNING & ZONING COMMISSION

SANGER TOWN CENTER LLC
DOC. NO. 2017-48301

DUALBOND HOLDINGS LLC
DOC. NO. 2016-27021

HIEN & DUYET NGUYEN
DOC. NO. 2016-27020

SANGER TOWN CENTER LLC
DOC. NO. 2017-48301

MARION HILLS APARTMENTS, LLC
DOC. NO. 2017-92008

MARION HILLS APARTMENTS, LLC
DOC. NO. 2017-92008

SANGER TOWN CENTER LLC
DOC. NO. 2017-48301

SANGER TOWN CENTER LLC
DOC. NO. 2017-48301

TRACT LINE

MATCHLINE SEE THIS SHEET

LAKE RIDGE DRIVE (60' ROW)

MEADOW LANE (50' ROW)

PASTURE LANE (50' ROW)

DOLLARHYDE DRIVE (50' ROW)

HERD DRIVE (50' ROW)

SILO DRIVE (50' ROW)

SHORTHORN DRIVE (50' ROW)

HAYWAGON DRIVE (50' ROW)

RANCHVIEW DRIVE (50' ROW)

SHORELINE DRIVE (50' ROW)

LAKEVIEW DRIVE (50' ROW)

WEST CHAPMAN RD. FM 455 (VARI. ROW)

FM 455

Line	Bearing	Distance
L1	S02°02'12"W	115.00'
L2	S02°02'12"W	185.00'
L3	S02°02'12"W	115.00'
L4	N02°02'12"E	115.00'
L5	N02°02'12"E	220.00'
L6	N02°02'12"E	220.00'
L7	S02°02'12"W	220.00'
L8	S02°02'12"W	220.00'
L9	S02°02'12"W	220.00'
L10	S02°02'12"W	220.00'
L11	S02°02'12"W	220.00'
L12	S02°02'12"W	220.00'
L13	S02°02'12"W	220.00'
L14	S02°02'12"W	220.00'
L15	S02°02'12"W	220.00'
L16	S02°02'12"W	220.00'
L17	S02°02'12"W	220.00'
L18	S02°02'12"W	220.00'
L19	S02°02'12"W	220.00'
L20	S02°02'12"W	220.00'
L21	S02°02'12"W	220.00'
L22	S02°02'12"W	220.00'
L23	S02°02'12"W	220.00'
L24	S02°02'12"W	220.00'
L25	S02°02'12"W	220.00'
L26	S02°02'12"W	220.00'
L27	S02°02'12"W	220.00'
L28	S02°02'12"W	220.00'
L29	S02°02'12"W	220.00'
L30	S02°02'12"W	220.00'
L31	S02°12'37"W	755.07'
L32	S02°12'37"W	45.75'
L33	S02°12'37"W	45.75'
L34	S02°12'37"W	755.07'
L35	S02°12'37"W	45.75'
L36	S02°12'37"W	45.75'
L37	S02°12'37"W	45.75'
L38	S02°12'37"W	45.75'
L39	S02°02'12"W	220.00'
L40	S02°02'12"W	220.00'
L41	S02°02'12"W	220.00'
L42	S02°02'12"W	220.00'
L43	S02°02'12"W	220.00'
L44	S02°02'12"W	220.00'
L45	S02°02'12"W	220.00'
L46	S02°02'12"W	220.00'
L47	S02°02'12"W	220.00'
L48	S02°02'12"W	220.00'
L49	S02°02'12"W	220.00'
L50	S02°02'12"W	220.00'
L51	S02°02'12"W	220.00'
L52	S02°02'12"W	220.00'
L53	S02°02'12"W	220.00'
L54	S02°02'12"W	220.00'
L55	S02°02'12"W	220.00'
L56	S02°02'12"W	220.00'
L57	S02°02'12"W	220.00'
L58	S02°02'12"W	220.00'
L59	S02°02'12"W	220.00'
L60	S02°02'12"W	220.00'
L61	S02°02'12"W	220.00'
L62	S02°02'12"W	220.00'
L63	S02°02'12"W	220.00'
L64	S02°12'37"W	770.16'
L65	S02°12'37"W	770.16'
L66	S02°12'37"W	770.16'
L67	S02°12'37"W	770.16'
L68	S02°12'37"W	770.16'

Line Table

Line #	Bearing	Distance
L1	N23°57'09"E	14.93
L2	N73°59'53"E	50.00
L3	S18°01'49"E	0.26
L4	S60°42'06"E	14.73
L5	N1°10'01"E	14.39
L6	N42°48'28"W	15.01
L7	N47°11'32"E	50.00
L8	N87°29'34"E	12.94
L9	S42°48'28"E	10.00
L10	N2°02'12"E	59.83
L11	N42°57'48"W	14.14
L12	N87°57'48"W	10.00
L13	N47°02'12"E	14.14
L14	S87°57'48"E	10.00
L15	N2°02'12"E	50.00
L16	N42°57'48"W	14.14
L17	N87°57'48"W	10.00
L18	N2°02'12"E	50.00
L19	N47°02'12"E	14.14
L20	S87°57'48"E	10.00
L21	N42°57'48"W	14.14
L22	N87°57'48"W	10.00
L23	N2°02'12"E	50.00
L24	N47°02'12"E	14.14
L25	S87°57'48"E	10.00
L26	N87°57'48"W	10.00
L27	N42°57'48"W	14.14
L28	N2°02'12"E	50.00
L29	S87°57'48"E	10.08
L30	N47°07'24"E	14.16
L31	S87°47'23"E	60.00
L32	S42°52'36"E	14.12
L33	S87°57'48"E	10.00
L34	S2°02'12"W	50.00
L35	N87°57'48"W	10.08
L36	S47°02'12"W	14.14
L37	S42°57'48"E	14.14
L38	S87°57'48"E	10.00
L39	S2°02'12"W	50.00
L40	N87°57'48"W	10.00

Line Table

Line #	Bearing	Distance
L41	S47°02'12"W	14.14
L42	S42°57'48"E	14.14
L43	S87°57'48"E	10.00
L44	S2°02'12"W	50.00
L45	N87°57'48"W	10.00
L46	S47°02'12"W	14.14
L47	S42°57'48"E	14.14
L48	S87°57'48"E	10.00
L49	S2°02'12"W	50.00
L50	N87°57'48"W	10.00
L51	S47°02'12"W	14.14
L52	S2°02'12"W	59.83
L53	S28°47'56"W	13.68
L54	S18°01'49"E	10.00
L55	S18°01'49"E	50.67
L56	N18°01'49"W	39.94
L57	S42°48'28"E	53.32
L58	S87°57'48"E	50.00
L59	S87°57'48"E	50.00
L60	N87°57'48"W	50.00
L61	N87°57'48"W	50.00
L62	N87°57'48"W	50.00
L63	N87°57'48"W	50.00
L64	N87°57'48"W	50.08
L65	N87°57'48"W	50.00
L66	S71°58'11"W	50.00
L67	N64°51'35"W	13.68
L68	N18°01'49"W	10.00

Curve Table

No.	Delta	Radius	Length	Ch. Dist.	Bearing
C1	2°01'43"	325.00'	11.51'	11.51'	N17°00'58"W
C2	2°01'43"	275.00'	9.74'	9.74'	S17°00'58"E
C3	5°43'09"	530.00'	52.90'	52.88'	N78°36'50"E
C4	35°43'21"	470.00'	293.03'	288.31'	N63°36'44"E
C5	35°08'51"	470.00'	288.32'	283.82'	N19°36'37"E
C6	79°26'13"	530.00'	734.81'	677.36'	S41°45'18"W
C7	5°14'08"	470.00'	42.95'	42.93'	S78°51'20"W
C8	29°09'12"	470.00'	239.15'	236.58'	S53°07'29"W
C9	29°38'13"	530.00'	274.15'	271.10'	N53°21'59"E
C22	42°55'32"	500.00'	374.59'	365.90'	S60°00'39"W
C23	79°26'13"	500.00'	693.22'	639.02'	S41°45'18"W
C27	2°01'43"	300.00'	10.62'	10.62'	S17°00'58"E

TRACT 2
STATE OF TEXAS
COUNTY OF DENTON

We the undersigned owners of the land shown on this plat within the area described by metes and bounds as follows:

All that certain lot, tract, or parcel of land, being part of the Rueben Bebee Survey, Abstract No. 29, Denton County, Texas, and being a part of that certain called 127.61 acre tract described in a deed from E.M.J. Lane, Inc. to Sanger Town Center, LLC on April 20, 2017, recorded in Document No. 2017-48301 of the Official Public Records of Denton, County, Texas (OPRDCT) and a part of that certain called 151.67 acre tract of land described in a deed from E.M.J. Lane, Inc. and Rodney V. Lane to Hien T. Nguyen and Duyet Nguyen on March 10, 2016, recorded in Document No. 2016-27020 of the (OPRDCT) and a part of tract of land described in a deed to Dualbond Holdings, LLC recorded in Document No. 2016-27021 (OPRDCT) and being an easement more completely described as follows, to-wit:

COMMENCING at a 2" pipe found for an ell corner in the easterly South line of the Sanger Town Center, LLC, the Northwest corner of that tract of land described in a deed to Marion Hills Apartments, LLC tract recorded in Document No. 2017-92008 (OPRDCT);

THENCE South 88°11'55" East with the North line of the Marion Hills Apartments, LLC tract a distance of 508.26 feet to the place of BEGINNING;

THENCE North 38°32'53" East a distance of 143.31 feet to a 1/2" iron rod (set) for the beginning of a curve to the right having a radius of 530.00 feet, a chord of North 53°21'59" East – 271.10 feet, a distance of 274.15 feet to a 1/2" iron rod (set) for corner;

THENCE North 23°57'09" East a distance of 14.93 feet to a 1/2" iron rod (set) for the beginning of a curve to the right having a radius of 325.00 feet, a chord of North 17°00'58" West – 11.51 feet, a distance of 11.51 feet to a 1/2" iron rod (set) for corner;

THENCE North 73°59'53" East a distance of 50.00 feet to a 1/2" iron rod (set) for the beginning of a curve to the left having a radius of 275.00 feet, a chord of South 17°00'58" East – 9.74 feet, a distance of 9.74 feet to a 1/2" iron rod (set) for corner;

THENCE South 60°00'48" East a distance of 14.93 feet to a 1/2" iron rod (set) for the beginning of a curve to the right having a radius of 530.00 feet, a chord of North 78°36'50" East – 52.88 feet, a distance of 52.90 feet to a 1/2" iron rod (set) for the beginning of a curve to the left having a radius of 470.00 feet, a chord of North 63°36'44" East – 288.31 feet, a distance of 293.03 feet to a 1/2" iron rod (set) for corner;

THENCE North 1°10'01" East a distance of 14.39 feet to a 1/2" iron rod (set) for corner;

THENCE North 42°48'28" West a distance of 15.01 feet to a 1/2" iron rod (set) for corner;

THENCE North 47°11'32" East a distance of 50.00 feet to a 1/2" iron rod (set) for corner;

THENCE South 42°48'28" East a distance of 10.00 feet to a 1/2" iron rod (set) for corner;

THENCE North 87°29'34" East a distance of 12.94 feet to a 1/2" iron rod (set) for the beginning of a curve to the left having a radius of 470.00 feet, a chord of North 19°36'37" East – 283.82 feet, a distance of 288.32 feet to a 1/2" iron rod (set) for corner;

THENCE North 2°02'12" East a distance of 59.83 feet to a 1/2" iron rod (set) for corner;

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THENCE North 87°57'48" West a distance of 10.00 feet to a 1/2" iron rod (set) for corner;

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THENCE North 47°02'12" East a distance of 14.14 feet to a 1/2" iron rod (set) for corner;

THENCE North 2°02'12" East a distance of 220.00 feet to a 1/2" iron rod (set) for corner;

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THENCE North 2°02'12" East a distance of 115.00 feet to a 1/2" iron rod (set) for corner;

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THENCE North 87°57'48" West a distance of 10.00 feet to a 1/2" iron rod (set) for corner;

THENCE North 2°02'12" East a distance of 50.00 feet to a 1/2" iron rod (set) for corner;

THENCE South 87°57'48" East a distance of 10.08 feet to a 1/2" iron rod (set) for corner;

THENCE North 47°07'24" East a distance of 14.16 feet to a 1/2" iron rod (set) for corner;

THENCE North 2°12'37" East a distance of 735.25 feet to a 1/2" iron rod (set) for corner in the South right of way of West Chapman Road F.M. 455;

THENCE Easterly with the South right of way of West Chapman Road F.M. 455 South 87°47'23" East a distance of 60.00 feet to a 1/2" iron rod (set) for corner;

THENCE South 2°12'37" West a distance of 735.07 feet to a 1/2" iron rod (set) for corner;

THENCE South 42°52'36" East a distance of 14.12 feet to a 1/2" iron rod (set) for corner;

THENCE South 87°57'48" West a distance of 10.00 feet to a 1/2" iron rod (set) for corner;

THENCE South 2°02'12" West a distance of 50.00 feet to a 1/2" iron rod (set) for corner;

THENCE North 87°57'48" West a distance of 10.08 feet to a 1/2" iron rod (set) for corner;

THENCE South 47°02'12" West a distance of 14.14 feet to a 1/2" iron rod (set) for corner;

THENCE South 2°02'12" West a distance of 115.00 feet to a 1/2" iron rod (set) for corner;

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THENCE South 2°02'12" West a distance of 220.00 feet to a 1/2" iron rod (set) for corner;

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THENCE North 87°57'48" West a distance of 10.00 feet to a 1/2" iron rod (set) for corner;

THENCE South 47°02'12" West a distance of 14.14 feet to a 1/2" iron rod (set) for corner;

THENCE South 2°02'12" West a distance of 59.83 feet to a 1/2" iron rod (set) for the beginning of a curve to the right having a radius of 530.00 feet, a chord of South 41°45'18" West – 677.36 feet, a distance of 734.81 feet to a 1/2" iron rod (set) for the beginning of a curve to the left having a radius of 470.00 feet, a chord of South 78°51'20" West – 42.93 feet, a distance of 42.95 feet to a 1/2" iron rod (set) for corner;

THENCE South 28°47'56" West a distance of 13.68 feet to a 1/2" iron rod (set) for corner;

THENCE South 18°01'49" East a distance of 10.00 feet to a 1/2" iron rod (set) for corner;

THENCE South 71°58'11" West a distance of 50.00 feet to a 1/2" iron rod (set) for corner;

THENCE North 18°01'49" West a distance of 10.00 feet to a 1/2" iron rod (set) for corner;

THENCE North 64°51'35" West a distance of 13.68 feet to a 1/2" iron rod (set) for the beginning of a curve to the left having a radius of 470.00 feet, a chord of South 53°07'29" West – 236.58 feet, a distance of 239.15 feet to a 1/2" iron rod (set) for corner;

THENCE South 38°32'53" West a distance of 98.34 feet to a 1/2" iron rod (set) for corner;

THENCE North 88°11'32" West a distance of 74.87 feet to the place of beginning, containing 4.165 acres, or 181,428 square feet of land.

PRELIMINARY PLAT FOR REVIEW PURPOSES ONLY
APPROVED FOR PREPARATION OF FINAL PLAT
______________ ______________
CITY OF SANGER, TX DATE
PLANNING & ZONING COMMISSION

THESE CONSTRUCTION PLANS WERE PREPARED UNDER THE RESPONSIBLE SUPERVISION OF F.E. MIDDLETON JR., REGISTERED PROFESSIONAL ENGINEER NO. 67449.

No.	DATE	REVISION	APPROV.

Middleton & Assoc, LLC.
CONSULTING CIVIL ENGINEERS & LAND PLANNERS
TBPE #F-10900
© Copyright 2024
2785 ROCKBROOK DRIVE, SUITE 105
LEWISVILLE, TEXAS 75067 (972) 393-9800

STATE OF TEXAS
F. E. MIDDLETON, JR.
67449
LICENSED
PROFESSIONAL ENGINEER
11-14-24

LAKE RIDGE, PHASE 4
CITY OF SANGER DENTON COUNTY, TEXAS

MARION HILLS APARTMENTS, LLC
309 BROCK STREET
COPPELL, TEXAS 75019

PRELIMINARY PLAT
LAKE RIDGE, PHASE 4
100 RESIDENTIAL LOTS – 2 HOA LOTS
RUEBEN BEBEE SURVEY, ABST. NO. 29
37.128 ACRES – 4.620 ACRES ROW
CITY OF SANGER DENTON COUNTY TEXAS

Date: 11-12-24
Dwg Scale: Hor. 1"=80'
Vert.
Dwg File: 0001047ROW.DWG
Project No. 0001047

PPT4

COSERV GAS & ELECTRIC
7701 S. STEMMONS FRWY.
CORINTH, TEXAS 76210
MICHAEL THOMPSON
940-321-7800
mthompson@coserv.com

NORTEX COMMUNICATIONS
205 N. WALNUT ST.
MUENSTER, TEXAS 76252
SHAY EVANS
940-759-2251
sevans@nortex.com

PROPERTY OWNER
MARION HILLS APARTMENTS, LLC
JOSEPH PALMER
309 BROCK ST.
COPPELL, TX, 75019
jpalmer@prosperitypc.com

PROPERTY OWNER:
SANGER TOWN CENTER LLC
DUALBOND HOLDINGS LLC
HIEN & DUYET NGUYEN
101 FOREST BEND DRIVE
COPPELL, TEXAS 75019
JONATHAN WANG
214-316-2256

DEVELOPER
JTWSCM DEVELOPMENT LLC
CASEY McGINNIS
4029 VENETO DRIVE
FRISCO, TX, 75033
214-232-6180
mcginnisdevelopment@gmail.con

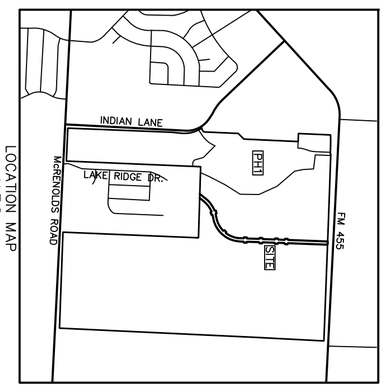
SURVEYOR
JOHN COWEN & ASSOC., INC.
PHIL CORNETT
10147 CR 135
FLINT, TEXAS
903-581-2238
www.txsurveys.com

0' 40' 80' 160'
Scale 1"=80

LEGEND

IRS	IRON ROD SET
IRF	IRON ROD FOUND
U.E.	UTILITY EASEMENT
D.E.	DRAINAGE EASEMENT
F.E.	FRANCHISE EASEMENT
S.B.	SETBACK EASEMENT
O.P.R.D.C.T.	PUBLIC RECORDS OF DENTON COUNTY, TEXAS
D.R.D.C.T.	DEED RECORDS OF DENTON COUNTY, TEXAS
DOC. NO.	DOCUMENT NUMBER
MFF	MIN. FINISHED FLOOR
FH	FIRE HYDRANT
MB	MAILBOX

LOCATION MAP
N.T.S.



Show centerline of existing streets. Dimensions from centerline to edges of existing and proposed right-of-way on both sides of the centerline.

It appears that the proposed road is encroaching effective floodplain. Please note that a flood study incorporating the encroachment needs to be provide for review.

Please provide the flood study for review. Please note that the flood study needs to be accepted prior to the final plat or construction plans.

PLAT NOTES
1. All lots comply with the minimum size requirements of PD Ord. 05-09-24.
2. This property may be subject to charges related to impact fees and the applicant should contact the City regarding any applicable fees due.
3. All common areas, drainage easements, and detention facilities will be owned and maintained by the HOA/POA. Any common area within the City's right-of-way will require a facilities agreement, to be reviewed and approved by the City.
4. Notice of 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 withholding of utilities and building permits.
5. This plat does not alter or remove existing deed restrictions, if any, on this property.
6. Minimum finished floor elevations are at least 2 feet above the 100 year flood plain.
7. The subject property lies within 100-year floodplain Zone a according to Community Panel No. 48121C0210G, dated APRIL 18 2011, of the National Flood Insurance Rate Maps for Denton County, Texas.
8. The purpose of this plat is subdivide the property into single family residential lots.
9. Bearings are based on the State Plane Coordinate System, Texas North Central Zone (4202), North American Datum of 1983 (NAD '83)

NOTE:
1. UNLESS OTHERWISE NOTED ALL CORNERS WILL BE A 1/2" IRON ROD SET.

No.	DATE	REVISION	APPROV.

ROW1

Date: 10-30-24
Dwg Scale: Hor. 1"=80' Vert.
Dwg File: 0001045ROW.DWG
Project No. 0001045

FINAL PLAT - LAKE RIDGE DRIVE
4.165 ACRES
4.165 AC. RIGHT-OF-WAY DEDICATION
REUBEN BEBEE SURVEY, ABST. NO. 29
CITY OF SANGER, DENTON, COUNTY, TEXAS

SURVEYOR
JOHN COWAN & ASSOCIATES, INC.
10147 CR 135 FLINT, TEXAS 75762 PH: (903) 581-2238
WWW.TXSURVEYS.COM
FIRM REGISTRATION CERTIFICATION NO. 10025500

Middleton & Assoc, LLC
CONSULTING CIVIL ENGINEERS & LAND PLANNERS
TBPE #F-10900
© Copyright 2024
2785 ROCKBROOK DRIVE, SUITE 105
LEWISVILLE, TEXAS 75067 (972) 393-9800

Line Table		
Line #	Bearing	Distance
L1	N23°57'09"E	14.93
L2	N73°59'53"E	50.00
L3	S18°01'49"E	0.26
L4	S60°42'06"E	14.73
L5	N1°10'01"E	14.39
L6	N42°48'28"W	15.01
L7	N47°11'32"E	50.00
L8	N87°29'34"E	12.94
L9	S42°48'28"E	10.00
L10	N2°02'12"E	59.83
L11	N42°57'48"W	14.14
L12	N87°57'48"W	10.00
L13	N47°02'12"E	14.14
L14	S87°57'48"E	10.00
L15	N2°02'12"E	50.00
L16	N42°57'48"W	14.14
L17	N87°57'48"W	10.00
L18	N2°02'12"E	50.00
L19	N47°02'12"E	14.14
L20	S87°57'48"E	10.00
L21	N42°57'48"W	14.14
L22	N87°57'48"W	10.00
L23	N2°02'12"E	50.00
L24	N47°02'12"E	14.14
L25	S87°57'48"E	10.00
L26	N87°57'48"W	10.00
L27	N42°57'48"W	14.14
L28	N2°02'12"E	50.00
L29	S87°57'48"E	10.08
L30	N47°07'24"E	14.16
L31	S87°47'23"E	60.00
L32	S42°52'36"E	14.12
L33	S87°57'48"E	10.00
L34	S2°02'12"W	50.00
L35	N87°57'48"W	10.08
L36	S47°02'12"W	14.14
L37	S42°57'48"E	14.14
L38	S87°57'48"E	10.00
L39	S2°02'12"W	50.00
L40	N87°57'48"W	10.00

Line Table		
Line #	Bearing	Distance
L41	S47°02'12"W	14.14
L42	S42°57'48"E	14.14
L43	S87°57'48"E	10.00
L44	S2°02'12"W	50.00
L45	N87°57'48"W	10.00
L46	S47°02'12"W	14.14
L47	S42°57'48"E	14.14
L48	S87°57'48"E	10.00
L49	S2°02'12"W	50.00
L50	N87°57'48"W	10.00
L51	S47°02'12"W	14.14
L52	S2°02'12"W	59.83
L53	S28°47'56"W	13.68
L54	S18°01'49"E	10.00
L55	S18°01'49"E	50.67
L56	N18°01'49"W	39.94
L57	S42°48'28"E	53.32
L58	S87°57'48"E	50.00
L59	S87°57'48"E	50.00
L60	N87°57'48"W	50.00
L61	N87°57'48"W	50.00
L62	N87°57'48"W	50.00
L63	N87°57'48"W	50.00
L64	N87°57'48"W	50.08
L65	N87°57'48"W	50.00
L66	S71°58'11"W	50.00
L67	N64°51'35"W	13.68
L68	N18°01'49"W	10.00

Curve Table					
No.	Delta	Radius	Length	Ch. Dist.	Bearing
C1	2°01'43"	325.00'	11.51'	11.51'	N17°00'58"W
C2	2°01'43"	275.00'	9.74'	9.74'	S17°00'58"E
C3	5°43'09"	530.00'	52.90'	52.88'	N78°36'50"E
C4	35°43'21"	470.00'	293.03'	288.31'	N63°36'44"E
C5	35°08'51"	470.00'	288.32'	283.82'	N19°36'37"E
C6	79°26'13"	530.00'	734.81'	677.36'	S41°45'18"W
C7	5°14'08"	470.00'	42.95'	42.93'	S78°51'20"W
C8	29°09'12"	470.00'	239.15'	236.58'	S53°07'29"W
C9	29°38'13"	530.00'	274.15'	271.10'	N53°21'59"E
C22	42°55'32"	500.00'	374.59'	365.90'	S60°00'39"W
C23	79°26'13"	500.00'	693.22'	639.02'	S41°45'18"W
C27	2°01'43"	300.00'	10.62'	10.62'	S17°00'58"E

STATE OF TEXAS
COUNTY OF DENTON

We the undersigned owners of the land shown on this plat within the area described by metes and bounds as follows:

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COMMENCING at a 2" pipe found for an ell corner in the easterly South line of the Sanger Town Center, LLC, the Northwest corner of that tract of land described in a deed to Marion Hills Apartments, LLC tract recorded in Document No. 2017–92008 (OPRDCT);

THENCE South 88°11'55" East with the North line of the Marion Hills Apartments, LLC tract a distance of 508.26 feet to the place of BEGINNING;

THENCE North 38°32'53" East a distance of 143.31 feet to a 1/2" iron rod (set) for the beginning of a curve to the right having a radius of 530.00 feet, a chord of North 53°21'59" East – 271.10 feet, a distance of 274.15 feet to a 1/2" iron rod (set) for corner;

THENCE North 23°57'09" East a distance of 14.93 feet to a 1/2" iron rod (set) for the beginning of a curve to the right having a radius of 325.00 feet, a chord of North 17°00'58" West – 11.51 feet, a distance of 11.51 feet to a 1/2" iron rod (set) for corner;

THENCE North 73°59'53" East a distance of 50.00 feet to a 1/2" iron rod (set) for the beginning of a curve to the left having a radius of 275.00 feet, a chord of South 17°00'58" East – 9.74 feet, a distance of 9.74 feet to a 1/2" iron rod (set) for corner;

THENCE South 60°00'48" East a distance of 14.93 feet to a 1/2" iron rod (set) for the beginning of a curve to the right having a radius of 530.00 feet, a chord of North 78°36'50" East – 52.88 feet, a distance of 52.90 feet to a 1/2" iron rod (set) for the beginning of a curve to the left having a radius of 470.00 feet, a chord of North 63°36'44" East – 288.31 feet, a distance of 293.03 feet to a 1/2" iron rod (set) for corner;

THENCE North 1°10'01" East a distance of 14.39 feet to a 1/2" iron rod (set) for corner;

THENCE North 42°48'28" West a distance of 15.01 feet to a 1/2" iron rod (set) for corner;

THENCE North 47°11'32" East a distance of 50.00 feet to a 1/2" iron rod (set) for corner;

THENCE South 42°48'28" East a distance of 10.00 feet to a 1/2" iron rod (set) for corner;

THENCE North 87°29'34" East a distance of 12.94 feet to a 1/2" iron rod (set) for the beginning of a curve to the left having a radius of 470.00 feet, a chord of North 19°36'37" East – 283.82 feet, a distance of 288.32 feet to a 1/2" iron rod (set) for corner;

THENCE North 2°02'12" East a distance of 59.83 feet to a 1/2" iron rod (set) for corner;

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THENCE North 42°57'48" West a distance of 14.14 feet to a 1/2" iron rod (set) for corner;

THENCE North 87°57'48" West a distance of 10.00 feet to a 1/2" iron rod (set) for corner;

THENCE North 2°02'12" East a distance of 50.00 feet to a 1/2" iron rod (set) for corner;

THENCE North 87°57'48" West a distance of 10.08 feet to a 1/2" iron rod (set) for corner;

THENCE North 47°07'24" East a distance of 14.16 feet to a 1/2" iron rod (set) for corner;

THENCE North 2°12'37" East a distance of 735.25 feet to a 1/2" iron rod (set) for corner in the South right of way of West Chapman Road F.M. 455;

THENCE Easterly with the South right of way of West Chapman Road F.M. 455 South 87°47'23" East a distance of 60.00 feet to a 1/2" iron rod (set) for corner;

THENCE South 2°12'37" West a distance of 735.07 feet to a 1/2" iron rod (set) for corner;

THENCE South 42°52'36" East a distance of 14.12 feet to a 1/2" iron rod (set) for corner;

THENCE South 87°57'48" West a distance of 10.00 feet to a 1/2" iron rod (set) for corner;

THENCE South 2°02'12" West a distance of 50.00 feet to a 1/2" iron rod (set) for corner;

THENCE North 87°57'48" West a distance of 10.08 feet to a 1/2" iron rod (set) for corner;

THENCE South 47°02'12" West a distance of 14.14 feet to a 1/2" iron rod (set) for corner;

THENCE South 2°02'12" West a distance of 115.00 feet to a 1/2" iron rod (set) for corner;

THENCE South 42°57'48" East a distance of 14.14 feet to a 1/2" iron rod (set) for corner;

THENCE South 87°57'48" East a distance of 10.00 feet to a 1/2" iron rod (set) for corner;

THENCE South 2°02'12" West a distance of 50.00 feet to a 1/2" iron rod (set) for corner;

THENCE North 87°57'48" West a distance of 10.00 feet to a 1/2" iron rod (set) for corner;

THENCE South 47°02'12" West a distance of 14.14 feet to a 1/2" iron rod (set) for corner;

THENCE South 2°02'12" West a distance of 220.00 feet to a 1/2" iron rod (set) for corner;

THENCE South 42°57'48" East a distance of 14.14 feet to a 1/2" iron rod (set) for corner;

THENCE South 87°57'48" East a distance of 10.00 feet to a 1/2" iron rod (set) for corner;

THENCE South 2°02'12" West a distance of 50.00 feet to a 1/2" iron rod (set) for corner;

THENCE North 87°57'48" West a distance of 10.00 feet to a 1/2" iron rod (set) for corner;

THENCE South 47°02'12" West a distance of 14.14 feet to a 1/2" iron rod (set) for corner;

THENCE South 2°02'12" West a distance of 59.83 feet to a 1/2" iron rod (set) for the beginning of a curve to the right having a radius of 530.00 feet, a chord of South 41°45'18" West – 677.36 feet, a distance of 734.81 feet to a 1/2" iron rod (set) for the beginning of a curve to the left having a radius of 470.00 feet, a chord of South 78°51'20" West – 42.93 feet, a distance of 42.95 feet to a 1/2" iron rod (set) for corner;

THENCE South 28°47'56" West a distance of 13.68 feet to a 1/2" iron rod (set) for corner;

THENCE South 18°01'49" East a distance of 10.00 feet to a 1/2" iron rod (set) for corner;

THENCE South 71°58'11" West a distance of 50.00 feet to a 1/2" iron rod (set) for corner;

THENCE North 18°01'49" West a distance of 10.00 feet to a 1/2" iron rod (set) for corner;

THENCE North 64°51'35" West a distance of 13.68 feet to a 1/2" iron rod (set) for the beginning of a curve to the left having a radius of 470.00 feet, a chord of South 53°07'29" West – 236.58 feet, a distance of 239.15 feet to a 1/2" iron rod (set) for corner;

THENCE South 38°32'53" West a distance of 98.34 feet to a 1/2" iron rod (set) for corner:

THENCE North 88°11'32" West a distance of 74.87 feet to the place of beginning, containing 4.165 acres, or 181,428 square feet of land.

Please verify description for L3

please verify bearing for L33

STATE OF TEXAS
COUNTY OF DENTON

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

STATE OF TEXAS · REGISTERED · PHILIP W. CORNETT · 5515 · PROFESSIONAL · LAND SURVEYOR

_____
REGISTERED PUBLIC LAND SURVEYOR TEXAS R.P.L.S. NO. 5515 DATE

NOW, THEREFORE, KNOW ALL PERSONS BY THESE PRESENTS:

THAT, Jonathan Wang acting herein by and through its duly authorized officer, does hereby adopt this plat designating the hereinabove described property as LAKE RIDGE DRIVE, 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 utility entities shall have the right to access and maintain all respective easements without the necessity at any time of procuring permission from anyone.

WITNESS MY HAND this _____ day of _____, 2024.

_____, Owner

_____, Title and Company

State of Texas
County of Denton

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

Given under my hand and seal of office this _____ day of _____, 2024.

_____
Notary Public in and for the State of Texas

_____
Print Notary's Name

My Commission Expires _____

Approved and Accepted

_____
Chairman, Planning & Zoning Commission Date
City of Sanger, TX

_____
Mayor Date
City of Sanger, TX

Attested by

_____
City Secretary Date
City of Sanger, TX

PRELIMINARY PLAT FOR REVIEW PURPOSES ONLY

APPROVED FOR PREPARATION OF FINAL PLAT

_____ _____
CITY OF SANGER, TX DATE
PLANNING & ZONING COMMISSION

No.	DATE	REVISION	APPROV.

Middleton & Assoc, LLC
CONSULTING CIVIL ENGINEERS & LAND PLANNERS
TBPE #F–10900 2785 ROCKBROOK DRIVE, SUITE 105
LEWISVILLE, TEXAS 75067 (972) 393–9800

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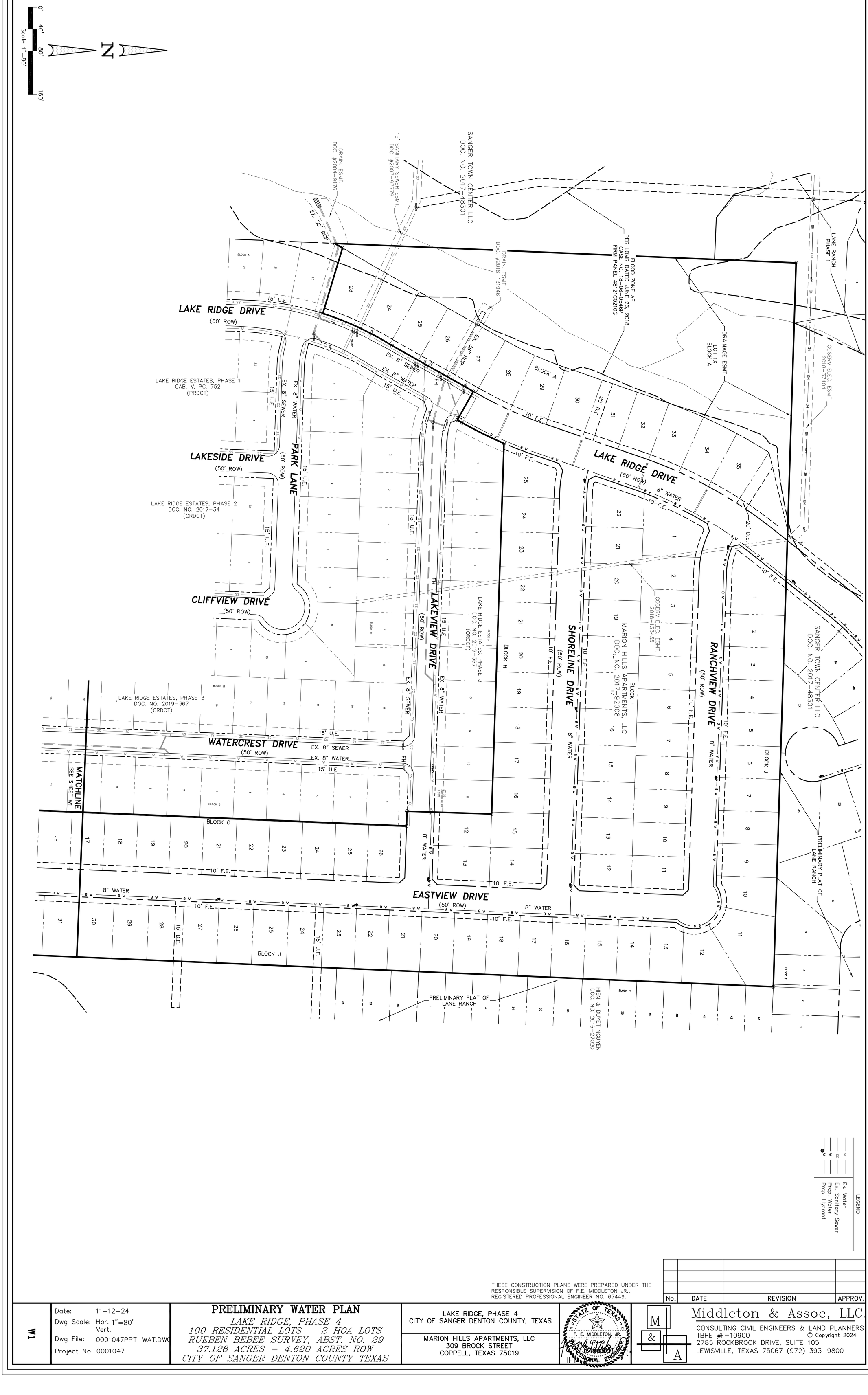
SURVEYOR
JOHN COWAN & ASSOCIATES, INC.
10147 CR 135 FLINT, TEXAS 75762 PH: (903) 581–2238
WWW.TXSURVEYS.COM
FIRM REGISTRATION CERTIFICATION NO. 10025500

FINAL PLAT – LAKE RIDGE DRIVE
4.165 ACRES
4.165 AC. RIGHT–OF–WAY DEDICATION
REUBEN BEBEE SURVEY, ABST. NO. 29
CITY OF SANGER, DENTON, COUNTY, TEXAS

Date: 10–30–24
Dwg Scale: Hor. 1"=80'
Vert.
Dwg File: 0001045ROW.DWG
Project No. 0001045

ROW2



THESE CONSTRUCTION PLANS WERE PREPARED UNDER THE RESPONSIBLE SUPERVISION OF F.E. MIDDLETON JR., REGISTERED PROFESSIONAL ENGINEER NO. 67449.

No.	DATE	REVISION	APPROV.

W1

Date: 11-12-24
Dwg Scale: Hor. 1"=80'
Vert.
Dwg File: 0001047PPT-WAT.DWG
Project No. 0001047

PRELIMINARY WATER PLAN

LAKE RIDGE, PHASE 4
100 RESIDENTIAL LOTS - 2 HOA LOTS
RUEBEN BEBEE SURVEY, ABST. NO. 29
37.128 ACRES - 4.620 ACRES ROW
CITY OF SANGER DENTON COUNTY TEXAS

LAKE RIDGE, PHASE 4
CITY OF SANGER DENTON COUNTY, TEXAS

MARION HILLS APARTMENTS, LLC
309 BROCK STREET
COPPELL, TEXAS 75019

STATE OF TEXAS
F. E. MIDDLETON, JR.
67449
REGISTERED
PROFESSIONAL ENGINEER

Middleton & Assoc, LLC
CONSULTING CIVIL ENGINEERS & LAND PLANNERS
TBPE #F-10900

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LEWISVILLE, TEXAS 75067 (972) 393-9800

Scale 1"=80'
0'
40'
80'
160'

N

5–9' BOX
EX. SEWER LIFT STATION
EX. 12" WATER
EX. 8" SEWER
EX. 8" WATER
LAKE RIDGE DRIVE
(60' ROW)
15' U.E.
LOT 1A OPEN SPACE
EX. FIRELANE
RIDGEVIEW CT.
(50' ROW)
LAKE RIDGE ESTATES, PHASE 1
CAB. V, PG. 752
(PRDCT)
LAKESIDE DRIVE
WATERFRONT DRIVE
CLIFFVIEW DRIVE
LAKE RIDGE ESTATES, PHASE 2
DOC. NO. 2017–34
(ORDCT)
4–7' BOX
McREYNOLDS ROAD
(80' ROW)
GAS ESMT.
VOL. 587, PG. 679
VOL. 183, PG. 244
FLOOD ZONE AE
PER LOMR DATED JUNE 26, 2018
CASE NO. 18–06–0546P
FIRM PANEL 48121C0210G
12" WATER EXTENSION WITH PLANS FOR LANE RANCH, PHASE 5
DRAINAGE ESMT.
MARION HILLS APARTMENTS, LLC
DOC. NO. 2017–92008
LOT 1X
BLOCK J
EX. 36" RCP
20' DRAIN. ESMT.
LAKE RIDGE ESTATES, PHASE 3
DOC. NO. 2019–367
(ORDCT)
WATERCREST DRIVE
EX. 21" RCP
8" WATER
10' F.E.
EASTVIEW DRIVE
8" WATER (50' ROW)
SEE SHEET W2
MATCHLINE
DRAIN. ESMT.
DOC. #2018–131946
SKY110 LAND HOLDINGS I, LLC
DOC. NO. 2024–49413
PRELIMINARY PLAT OF OASIS AT SANGER
BLOCK C
PRELIMINARY PLAT OF LANE RANCH
HIEN & DUYET NGUYEN
DOC. NO. 2016–27020

LEGEND
Ex. Water
Ex. Sanitary Sewer
Prop. Water
Prop. Hydrant

THESE CONSTRUCTION PLANS WERE PREPARED UNDER THE RESPONSIBLE SUPERVISION OF F.E. MIDDLETON JR., REGISTERED PROFESSIONAL ENGINEER NO. 67449.

No.	DATE	REVISION	APPROV.

W2

Date: 11–12–24
Dwg Scale: Hor. 1"=80'
Vert.
Dwg File: 0001047PPT–WAT.DWG
Project No. 0001047

PRELIMINARY WATER PLAN

LAKE RIDGE, PHASE 4
100 RESIDENTIAL LOTS – 2 HOA LOTS
RUEBEN BEBEE SURVEY, ABST. NO. 29
37.128 ACRES – 4.620 ACRES ROW
CITY OF SANGER DENTON COUNTY TEXAS

LAKE RIDGE, PHASE 4
CITY OF SANGER DENTON COUNTY, TEXAS

MARION HILLS APARTMENTS, LLC
309 BROCK STREET
COPPELL, TEXAS 75019

STATE OF TEXAS
F. E. MIDDLETON, JR.
67449
REGISTERED
PROFESSIONAL ENGINEER

Middleton & Assoc, LLC
CONSULTING CIVIL ENGINEERS & LAND PLANNERS
TBPE #F–10900
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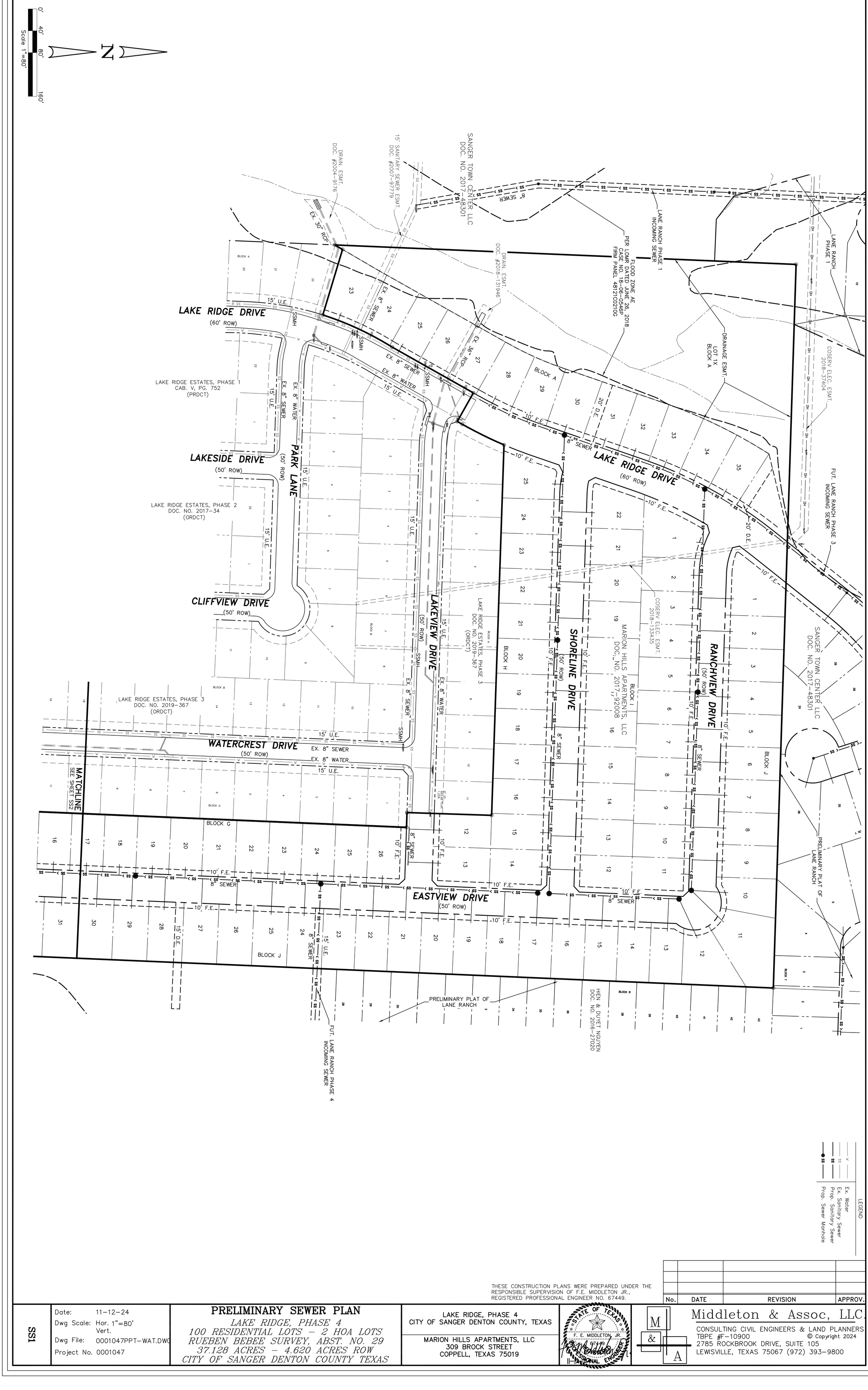
LEWISVILLE, TEXAS 75067 (972) 393–9800



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No.	DATE	REVISION	APPROV.

SS1

Date: 11-12-24
Dwg Scale: Hor. 1"=80'
Vert.
Dwg File: 0001047PPT-WAT.DWG
Project No. 0001047

PRELIMINARY SEWER PLAN

LAKE RIDGE, PHASE 4
100 RESIDENTIAL LOTS - 2 HOA LOTS
RUEBEN BEBEE SURVEY, ABST. NO. 29
37.128 ACRES - 4.620 ACRES ROW
CITY OF SANGER DENTON COUNTY TEXAS

LAKE RIDGE, PHASE 4
CITY OF SANGER DENTON COUNTY, TEXAS

MARION HILLS APARTMENTS, LLC
309 BROCK STREET
COPPELL, TEXAS 75019

STATE OF TEXAS
F. E. MIDDLETON, JR.
67449
REGISTERED
PROFESSIONAL ENGINEER

Middleton & Assoc, LLC
CONSULTING CIVIL ENGINEERS & LAND PLANNERS
TBPE #F-10900
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LEWISVILLE, TEXAS 75067 (972) 393-9800

Scale 1"=80'
0'
40'
80'
160'

N

5–9' BOX
EX. SEWER LIFT STATION
EX. 12" WATER
EX. 8" SEWER
15' U.E.
LAKE RIDGE DRIVE
(60' ROW)
EX. 8" WATER
EX. 8" SEWER
LOT 1A OPEN SPACE
EX. FIRELANE
RIDGEVIEW CT.
(50' ROW)
15' U.E.
LAKE RIDGE ESTATES, PHASE 1
CAB. V, PG. 752
(PRDCT)
SSMH
LAKESIDE DRIVE
(50' ROW)
WATERFRONT DRIVE
(50' ROW)
LAKE RIDGE ESTATES, PHASE 2
DOC. NO. 2017–34
(ORDCT)
CLIFFVIEW DRIVE
(50' ROW)
EX. 36" RCP
20' DRAIN. ESMT.
EX. 8" WATER
LAKE RIDGE ESTATES, PHASE 3
DOC. NO. 2019–367
(ORDCT)
WATERCREST DRIVE
(50' ROW)
4–7' BOX
McREYNOLDS ROAD
(80' ROW)
GAS ESMT.
VOL. 587, PG. 679
VOL. 183, PG. 244
FLOOD ZONE AE
PER LOMR DATED JUNE 26, 2018
CASE NO. 18–06–0546P
FIRM PANEL 48121C0210G
8" SEWER EXTENSION
WITH PLANS FOR LANE
RANCH, PHASE 5
DRAINAGE ESMT.
MARION HILLS APARTMENTS, LLC
DOC. NO. 2017–92008
LOT 1X
BLOCK J
8" SEWER TO SERVICE
LANE RANCH PHASE 5
PRELIMINARY PLAT OF
OASIS AT SANGER
SKY110 LAND
HOLDINGS I, LLC
DOC. NO. 2024–49413
DRAIN. ESMT.
DOC. #2018–131946
EX. 21" RCP
8" SEWER
10' F.E.
EASTVIEW DRIVE
(50' ROW)
SEE SHEET SS1
MATCHLINE
BLOCK C
LOT 1X
PRELIMINARY PLAT OF
LANE RANCH
HIEN & DUYET NGUYEN
DOC. NO. 2016–27020

LEGEND
Ex. Water
Ex. Sanitary Sewer
Prop. Sanitary Sewer
Prop. Sewer Manhole

THESE CONSTRUCTION PLANS WERE PREPARED UNDER THE RESPONSIBLE SUPERVISION OF F.E. MIDDLETON JR., REGISTERED PROFESSIONAL ENGINEER NO. 67449.

No.	DATE	REVISION	APPROV.

SS2

Date: 11–12–24
Dwg Scale: Hor. 1"=80'
Vert.
Dwg File: 0001047PPT–WAT.DWG
Project No. 0001047

PRELIMINARY SEWER PLAN

LAKE RIDGE, PHASE 4
100 RESIDENTIAL LOTS – 2 HOA LOTS
RUEBEN BEBEE SURVEY, ABST. NO. 29
37.128 ACRES – 4.620 ACRES ROW
CITY OF SANGER DENTON COUNTY TEXAS

LAKE RIDGE, PHASE 4
CITY OF SANGER DENTON COUNTY, TEXAS

MARION HILLS APARTMENTS, LLC
309 BROCK STREET
COPPELL, TEXAS 75019

STATE OF TEXAS
F. E. MIDDLETON, JR.
67449
LICENSED
PROFESSIONAL ENGINEER

Middleton & Assoc, LLC
CONSULTING CIVIL ENGINEERS & LAND PLANNERS
TBPE #F–10900
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2785 ROCKBROOK DRIVE, SUITE 105
LEWISVILLE, TEXAS 75067 (972) 393–9800

Scale 1"=80'
0'
40'
80'
160'
N

The storm drain layout and contours indicate high point here. Please label.

The drainage arrows are pointing away from curb inlet. This is misleading. Please revise.

This is a low point according to the contours. Suggest to put an inlet here to avoid ponding water

LAKE RIDGE DRIVE (60' ROW)
LAKESIDE DRIVE (50' ROW)
CLIFFVIEW DRIVE (50' ROW)
PARK LANE (50' ROW)
LAKEVIEW DRIVE (50' ROW)
SHORELINE DRIVE (50' ROW)
RANCHVIEW DRIVE (50' ROW)
WATERCREST DRIVE (50' ROW)
EASTVIEW DRIVE (50' ROW)
MATCHLINE SEE SHEET ST2

LAKE RIDGE ESTATES, PHASE 1 CAB. V, PG. 752 (PRDCT)
LAKE RIDGE ESTATES, PHASE 2 DOC. NO. 2017-34 (ORDCT)
LAKE RIDGE ESTATES, PHASE 3 DOC. NO. 2019-367 (ORDCT)
LAKE RIDGE ESTATES, PHASE 4 DOC. NO. 2019-367 (ORDCT)
SANGER TOWN CENTER LLC DOC. NO. 2017-48301
MARION HILLS APARTMENTS, LLC DOC. NO. 2017-92008
HIEN & DUYET NGUYEN DOC. NO. 2016-27020
LANE RANCH PHASE 1
PRELIMINARY PLAT OF LANE RANCH
FUT. LANE RANCH PHASE 3 STORM OUTFALL
DRAINAGE ESMT. LOT 1X BLOCK A
BLOCK A
BLOCK G
BLOCK H
BLOCK I
BLOCK J
BLOCK R
BLOCK T
BLOCK X LOT 1 4.59 AC.

FLOOD ZONE AE PER LOMR DATED JUNE 26, 2018 CASE NO. 18-06-0546P FIRM PANEL 48121C0210G

15' SANITARY SEWER ESMT. DOC. #2007-97779
DRAIN. ESMT. DOC. #2004-9176
DRAIN. ESMT. DOC. #2018-131946
COSERV ELEC. ESMT. 2018-37404
COSERV ELEC. ESMT. 2018-133435

EX. 30" RCP
Ex. 36" RCP
EX. 8" SEWER
EX. 8" WATER
15' U.E.
10' F.E.
18" RCP
21" RCP
24" RCP
27" RCP
20' D.E.
15' D.E.
15' DRAIN. ESMT. BY SEP. INST.
H.P.
EXISTING LAKE

LEGEND
Ex. Storm Drain
Prop. Storm Drain Centerline
Prop. Storm Drain Inlet
Prop. Flow Arrows

THESE CONSTRUCTION PLANS WERE PREPARED UNDER THE RESPONSIBLE SUPERVISION OF F.E. MIDDLETON JR., REGISTERED PROFESSIONAL ENGINEER NO. 67449.

No.	DATE	REVISION	APPROV.

ST1

Date: 11-12-24
Dwg Scale: Hor. 1"=80' Vert.
Dwg File: 0001047PPT-STM.DWG
Project No. 0001047

PRELIMINARY STORM DRAIN PLAN

LAKE RIDGE, PHASE 4
100 RESIDENTIAL LOTS - 2 HOA LOTS
RUEBEN BEBEE SURVEY, ABST. NO. 29
37.128 ACRES - 4.620 ACRES ROW
CITY OF SANGER DENTON COUNTY TEXAS

LAKE RIDGE, PHASE 4
CITY OF SANGER DENTON COUNTY, TEXAS

MARION HILLS APARTMENTS, LLC
309 BROCK STREET
COPPELL, TEXAS 75019

STATE OF TEXAS
F. E. MIDDLETON, JR.
67449
REGISTERED PROFESSIONAL ENGINEER
11-12-24

Middleton & Assoc, LLC
CONSULTING CIVIL ENGINEERS & LAND PLANNERS
TBPE #F-10900

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2785 ROCKBROOK DRIVE, SUITE 105
LEWISVILLE, TEXAS 75067 (972) 393-9800

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No.	DATE	REVISION	APPROV.

ST2

Date: 11-12-24
Dwg Scale: Hor. 1"=80'
Vert.
Dwg File: 0001047PPT-STM.DWG
Project No. 0001047

PRELIMINARY STORM DRAIN PLAN

LAKE RIDGE, PHASE 4
100 RESIDENTIAL LOTS - 2 HOA LOTS
RUEBEN BEBEE SURVEY, ABST. NO. 29
37.128 ACRES - 4.620 ACRES ROW
CITY OF SANGER DENTON COUNTY TEXAS

LAKE RIDGE, PHASE 4
CITY OF SANGER DENTON COUNTY, TEXAS

MARION HILLS APARTMENTS, LLC
309 BROCK STREET
COPPELL, TEXAS 75019

STATE OF TEXAS
F. E. MIDDLETON, JR.
67449
REGISTERED
PROFESSIONAL ENGINEER

Middleton & Assoc, LLC
CONSULTING CIVIL ENGINEERS & LAND PLANNERS
TBPE #F-10900
2785 ROCKBROOK DRIVE, SUITE 105
LEWISVILLE, TEXAS 75067 (972) 393-9800

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December 03, 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: **Lake Ridge Drive and Lake Ridge Phase 4 Civil Plans -Review #1**

Dear Ms. Hammonds,

Halff Associates, Inc. was requested by the City of Sanger to review the Civil Plans for Lake Ridge Drive and Lake Ridge Phase 4. The submittal was prepared by Middleton and Associates, LLC and was received November 18th, 2024.

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 note additional comments may be provided in subsequent reviews once additional data/responses is received.

Lake Ridge Phase 4 Preliminary Plat

1. Please provide legend with all symbols used.
2. Please ensure square footage acreage matches closure report.
3. Please provide the as-built drawings from previous phases.
4. It appears that the fully developed floodplain is within some lots. Please note that "Natural creeks including FEMA streams shall have a dedicated Floodplain Easement encompassing the 100-year fully developed floodplain plus ten (10) feet on each side of this floodplain." (Ordinance 10.105.(5).B). Please revise.
5. There are multiple locations showing fill in effective FEMA Flood Zone AE. Please note that it is required to:

    a. incorporate the fill to the flood study model and provide the digital data for review.
    b. show and label cross-sections with existing and fully developed 100-yr flood elevations.

6. The 100-yr fully developed floodplain shall not cross a proposed road as shown in the markups attached. Proposed road curb shall meet freeboard requirement for 100-yr fully developed flood elevation. (Section 3.6.3)

Lake Ridge Drive Final Plat

1. Please Show centerline of existing streets. Dimensions from centerline to edges of existing and proposed right-of-way on both sides of the centerline.
2. Please verify description and bearing for lines L3 and L33 respectively.
3. Please provide an Environmental Assessment if there's one already. If not, please acquire it.
4. Please provide the previously approved flood study for previous phases of Lake Ridge, which shall include the study report, the hydrologic/hydraulic calculations, and the digital models. Please note that the Lane Ranch Flood Study dated 4-22-2024 does not meet this requirement, as it only includes floodplain analysis in Lane Ranch Phase 1 and Addition, not Lake Ridge Phase 4. In addition, the Lane Ranch Flood Study has not been approved yet.
5. A portion of Lake Ridge Drive near the intersection with Ranchview Drive appears to be encroaching an affective floodplain. Please provide a flood study incorporating the encroachment for review.

Paving Plans

1. Please turn off existing contours from the paving plans.
2. Vertical curves are usually required at points of vertical intersection where algebraic difference in grades is greater than 1%. Please verify there will not be ponding in the sag vertical curves provided in areas where the algebraic difference in grades is less than 1%
3. Collector streets and alleys shall, at a minimum, be designed and constructed with eight-inch (8") thickness of four thousand (4,000) p.s.i. reinforced concrete pavement on a compacted sub-base. All steel reinforcing shall be deformed No. 4 bars on eighteen-inch (18") centers both ways per § 10.106(b)(2)(B)(ii)
4. Where the plasticity index of the soil is twelve (12) or greater, stabilization of the subbase with an eight-inch (8") thickness of six percent (6%) hydrated lime by weight will be required per § 10.106(b)(2)(B)(iii). Please verify and confirm with Geotechnical Report that hydrated lime stabilization is not required for the subgrade

Grading Plans

2. Please show valley gutters in the grading plans
3. The area east of the lots on Eastview Drive appear to be impacted by Ranger Branch Tributary which is in Zone AE of the FEMA flood maps. Please ensure minimum finished floor elevations of all adjacent lots is 2 feet above the 100-year elevation
4. Sheets G1 through G3

    a. There appears to be proposed grading in an existing channel. Please fill into the flood study hydraulics model and provide for review.
    b. Please show and label cross-section to match flood study with existing and fully developed 100-yr flood elevations. Please note that lots impacted by the channel shall be a minimum two (2) feet above fully developed 100-yr flood elevation. (10.105.(5).(B), 10.106.(d).(12))

c. Please show and label 100-yr fully developed floodplain boundary with 10' easement. (10.105.(5).(B))For Phase 4 Preliminary Civil Drawings, please provide existing and proposed drainage area maps for Phase 4 storm analysis.
d. Every outfall to a public channel shall have drainage easement. Please update.
e. The note says not retaining wall in easement, but the drawing shows retaining wall in Drainage Esmt. Open Space. Please revise.

5. Please provide ditch calculations and cross sections for all proposed ditches to verify capacity

Erosion Control Plans

1. Please fix arrow that appears to be pointing to a wrong object
2. Please consider adding a check dam at downstream of regraded ditch

Drainage Area Maps

1. Please clearly label existing Drainage Areas at the intersection of Watercrest Drive and Waterfront Drive
2. Please provide existing drainage area map runoff calculations
3. Please verify runoff coefficients used. C = 0.55 is for residential only. Future commercial site shall use 0.70 or 0.85. (10.106.(d).(2) Proposed roadway/street shall be 0.95 according to iSWM Hydrology Manual Table 1.6.
4. Please verify starting 10 year and 100-year intensities used for the Hydraulic Calculations per City of Sanger Ordinances Appendix A. Intensity - Duration - Frequency Curve
5. Please ensure minimum velocities in conduits are atleast 2.5 fps per Ordinance § 10.106(d)(6)(B)(i)
6. Please show offsite drainage arrows.
7. Please show fully developed 100-year floodplain boundary with 10’ easement (typical)
8. Please fix the callouts saying Fut. Lake Ridge Ph. 4. This submittal is Phase 4. (typical)
9. Please clarify the boundary of future commercial site and future lane ranch.
10. Please show and label riprap at outfalls
11. It appears that the proposed storm line is joining an existing storm system by Lake Ridge Phase 3. Please check the capacity of the downstream line and provide the calculations for review.
12. Please show and label drainage easements for all outfalls (typical) (10.105.(5).B
13. Please use a different title for this table. Lane Ranch Phase 3 is a different project and hasn't been reviewed yet. We suggest using Lake Ridge Drive to match the plat.
14. The starting Q for storm line hydraulics don’t appear to match drainage area calculations. Please reconcile.

Storm Drain Plan and Profile

1. Culvert hydraulic grade line calculations shall consider both inlet and outlet control. Please show headwater and tail water conditions per ordinance § 10.106(d)(7)
2. What is the basis of this starting HGL of storm drain lines 6, LR1 and LR5? Is the starting HGL the WSE of the receiving channel? Please provide more information

3. HGL cannot be below the flow line please show partial flow in all cases where the HGL is below the flow line along with the respective flow boxes
4. The hydraulic grade line shall in no case be closer to the surface of the ground or street than one (1) foot per Ordinance § 10.106(d)(6)(D)(ii). Please address cases where this is not met on the storm profiles
5. Where laterals tie into trunk lines, place the laterals on a 60-degree angle with the trunk line and connect them so that the longitudinal centers intersect per § 10.106(d)(5)(C)
6. Show the hydraulic grade line for all laterals
7. Please ensure no conflict between 8" sanitary sewer and lateral LR1-A
8. Please show flow boxes for Laterals LR5-A and LR5-B
9. Please provide manhole access for cleaning storm system on line LR5 between STA 2+67.08 and STA 9+24.28.

Sanitary Sewer

1. Please provide sheets SS5-SS9 for review.

Water Line

1. Spacing between fire hydrants shall not exceed a maximum of 500 feet along fire apparatus access roadways/fire lane per § 5.701(b). Please verify and ensure that fire hydrant spacing along Lake Ridge Drive and West Chapman Road FM 455 does not exceed 500 ft.
2. Please provide plan and profile sheets 12inch water line along West Chapman Road FM 455

Illumination

1. In no instance shall the spacing between streetlights exceed four hundred feet (400') per § 10.106(h)(1). Please verify and ensure that spacing between streetlights on Lake Ridge Phase 4 does not exceed 400 ft

Standard Details

1. Please reference the latest edition of the NCTCOG Standard Specification per Ordinance § 10.106(a)(2) for all developments in the City of Sanger.

If you have any questions or need additional information, please do not hesitate to call me at (817) 764-7498.

Sincerely,

Samson Lotigo, PE
HALFF ASSOCIATES, INC.
Firm No. 0312
Attachments: Civil Plans markups

CONSTRUCTION PLANS FOR
PAVING, GRADING, EROSION CONTROL,
STORM DRAINAGE, WATER & SANITARY SEWER

LAKE RIDGE DRIVE &
LAKE RIDGE PHASE 4

CITY OF SANGER, TEXAS

PROJECT DIRECTORY

SURVEYOR
JOHN COWAN & ASSOCIATES, INC.
10147 CR 135
FLINT, TEXAS 75762
903-581-2238

OWNER - DEVELOPER:
SANGER TOWN CENTER LLC
MARION PROPERTY HOLDING LLC
101 FOREST BEND DRIVE
COPPELL, TEXAS 75019
JONATHAN WANG
214-316-2256

GEOTECHNICAL ENGINEER:
FARGO CONSULTANTS, INC.
2324 FABESN ROAD
DALLAS, TEXAS 75229
MOE MUNIM, P.E.
214-352-4100

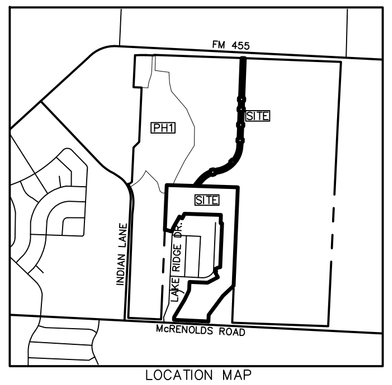
PROPERTY OWNER
MARION HILLS APARTMENTS, LLC
JOSEPH PALMER
309 BROCK ST.
COPPELL, TX, 75019
jpalmer@prosperitypc.com

COSERV GAS & ELECTRIC
7701 S. STEMMONS FRWY.
CORINTH, TEXAS 76210
MICHAEL THOMPSON
940-321-7800
mthompson@coserv.com

HYDROLOGIST:
CARDINAL STRATIGIES
2770 CAPITAL STREET
WYLIE, TEXAS 75098
BEN McWHORTER
469-547-1281

SANGER ELECTRIC UTILITIES
202 RAILROAD STREET
SANGER, TEXAS 76206
RONNIE GRACE
940-458-2064
rgrace@sangertexas.org

NORTEX COMMUNICATIONS
205 N. WALNUT ST.
MUENSTER, TEXAS 76252
SHAY EVANS
940-759-2251
sevans@nortex.com



LOCATION MAP
N.T.S.

FOR REVIEW ONLY
1st SUBMITTAL
11-11-24

COVER
FINAL PLAT LAKE RIDGE DRIVE
ROW1
ROW2

PRELIMINARY PLAT LAKE RIDGE PHASE 4
PPT1 PRELIMINARY PLAT
PPT2 PRELIMINARY PLAT

GENERAL CONSTRUCTION NOTES
NOTE1

DEMOLITION PLAN
DEMO1
DEMO2

PAVING PLAN & PROFILES
P1 LAKE RIDGE DRIVE STA. 20+00-27+00
P2 LAKE RIDGE DRIVE STA. 27+00-37+00
P3 LAKE RIDGE DRIVE STA. 37+00-46+00
P4 LAKE RIDGE DRIVE STA. 46+00-END
P13 LAKEVIEW DRIVE STA. 7+66.98-END
P14 SHORELINE DRIVE STA. 0+00-END
P15 RANCHVIEW DRIVE STA. 0+00-7+60
P16 RANCHVIEW DRIVE STA. 7+60-15+00
P17 EASTVIEW DRIVE STA. 15+00-20+30
P18 WATERFRONT DRIVE STA. 20+30-END

PAVING DETAILS
DT-P1

STREET GRADING PLAN
SG1
SG2

LOT GRADING PLAN
G1
G2
G3

LOT GRADING DETAILS
DT-GR1

EROSION CONTROL PLAN
ERO1 EROSION CONTROL PLAN
ERO2 EROSION CONTROL PLAN
ERO3 EROSION CONTROL PLAN
ERO4 EROSION CONTROL DETAILS
ERO5 EROSION CONTROL DETAILS

DRAINAGE AREA MAP & CALCULATIONS
DAM1 EXISTING CONDITIONS
DAM2 EXISTING CONDITIONS
DAM3 EXISTING CONDITIONS
DAM4 EXISTING CONDITIONS
DAM5 PROPOSED CONDITIONS
DAM6 PROPOSED CONDITIONS
DAM7 PROPOSED CONDITIONS
DAM8 PROPOSED CONDITIONS
CALC1 DRAINAGE AREA & INLET CALCS.
CALC2 HYDRAULIC CALCS.

STORM DRAIN PLAN & PROFILE
ST-ALL1 OVERALL STORM PLAN
ST-ALL2 OVERALL STORM PLAN
ST3 ST LINE 9
ST4 ST LINE 6 0+00-9+00
ST5 ST LINE 6 9+00-END
ST6 ST LINE 6 LATERALS
ST7 ST LINE 7
ST8 ST LINE 8
ST9 ST LINE LR1 & LR2
ST10 ST LINE LR3
ST11 ST LINE LR4
ST12 ST LINE LR5

STORM DRAIN DETAILS
DT-ST1
DT-ST2
DT-ST3
DT-ST4

SANITARY SEWER PLAN & PROFILE
SS-ALL1 OVERALL SEWER PLAN
SS-ALL2 OVERALL SEWER PLAN
SS1 SS LINE A STA. 0+00-7+00
SS2 SS LINE A STA. 7+00-16+00
SS3 SS LINE A STA. 16+00-END
SS4 SS LINE B STA. 0+00-0+20
SS10 SS LINE F & G
SS11 SS LINE H
SS12 SS LINE I
SS13 SS LINE J & L
SS14 SS LINE K STA. 2+21.83-5+00
SS15 SS LINE K STA. 5+00-END

SEWER DETAILS
DT-SS1

WATER PLAN
W-ALL1 OVERALL WATER PLAN
W-ALL2 OVERALL WATER PLAN
W1
W2
W3
W4
W5

WATER DETAILS
DT-W1
DT-W2

STREET LIGHT & SIGNAGE PLAN
LT1

CALL BEFORE YOU DIG
TEXAS 811
TEXAS ONE CALL SYSTEM

THE CONTRACTOR SHALL USE THE CITY OF SANGER'S STANDARD CONSTRUCTION DETAILS FOR THIS PROJECT.

CAUTION!!! UNDERGROUND UTILITIES!!!

EXISTING UTILITIES AND UNDERGROUND FACILITIES INDICATED ON THESE PLANS HAVE BEEN LOCATED FROM REFERENCE INFORMATION SUPPLIED BY VARIOUS OWNERS OF THE FACILITIES. THE ENGINEER DOES NOT ACCEPT THE RESPONSIBILITY FOR THE UTILITY LOCATIONS SHOWN. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY BOTH HORIZONTALLY AND VERTICALLY THE LOCATION OF ALL EXISTING UTILITIES AND UNDERGROUND FACILITIES PRIOR TO CONSTRUCTION, TO TAKE NECESSARY PRECAUTIONS IN ORDER TO PROTECT ALL FACILITIES ENCOUNTERED, AND TO NOTIFY THE ENGINEER PROMPTLY OF ALL CONFLICTS OF THE WORK WITH EXISTING FACILITIES. THE CONTRACTOR SHALL PRESERVE AND PROTECT ALL EXISTING UTILITIES FROM DAMAGE DURING CONSTRUCTION. ANY DAMAGE BY THE CONTRACTOR TO EXISTING UTILITIES SHALL BE REPAIRED BY THE CONTRACTOR AT HIS EXPENSE. CONTACT ALL POSSIBLE UTILITY AND UNDERGROUND FACILITY OWNERS.

STATE OF TEXAS
F. E. MIDDLETON, JR.
67449
REGISTERED
PROFESSIONAL ENGINEER
11-11-24

THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY FLOYD E. MIDDLETON, JR., PE REGISTRATION #67449 ON 11-11-24. ANY ALTERATION OF A SEALED DOCUMENT WITHOUT PROPER NOTIFICATION TO THE RESPONSIBLE ENGINEER IS AN OFFENSE UNDER THE TEXAS ENGINEERING PRACTICE ACT.

PROJECT ENGINEER:
Middleton & Associates, LLC.
CONSULTING CIVIL ENGINEERS & LAND PLANNERS
TBPE #F-10900

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2785 ROCKBROOK DRIVE, SUITE 105
LEWISVILLE, TEXAS 75067 (972) 393-9800

I AKF RIDGF DRIVF & I AKF RIDGF -PHASF 4

COSERV GAS & ELECTRIC
7701 S. STEMMONS FRWY.
CORINTH, TEXAS 76210
MICHAEL THOMPSON
940-321-7800
mthompson@coserv.com

NORTEX COMMUNICATIONS
205 N. WALNUT ST.
MUENSTER, TEXAS 76252
SHAY EVANS
940-759-2251
sevans@nortex.com

LOCATION MAP
N.T.S.

LEGEND

IRS	IRON ROD SET
IRF	IRON ROD FOUND
U.E.	UTILITY EASEMENT
D.E.	DRAINAGE EASEMENT
F.E.	FRANCHISE EASEMENT
S.B.	SETBACK
O.P.R.D.C.T.	PUBLIC RECORDS OF DENTON COUNTY, TEXAS
D.R.D.C.T.	DEED RECORDS OF DENTON COUNTY, TEXAS
DOC. NO.	DOCUMENT NUMBER
MFF	MIN. FINISHED FLOOR
FH	FIRE HYDRANT
MB	MAILBOX

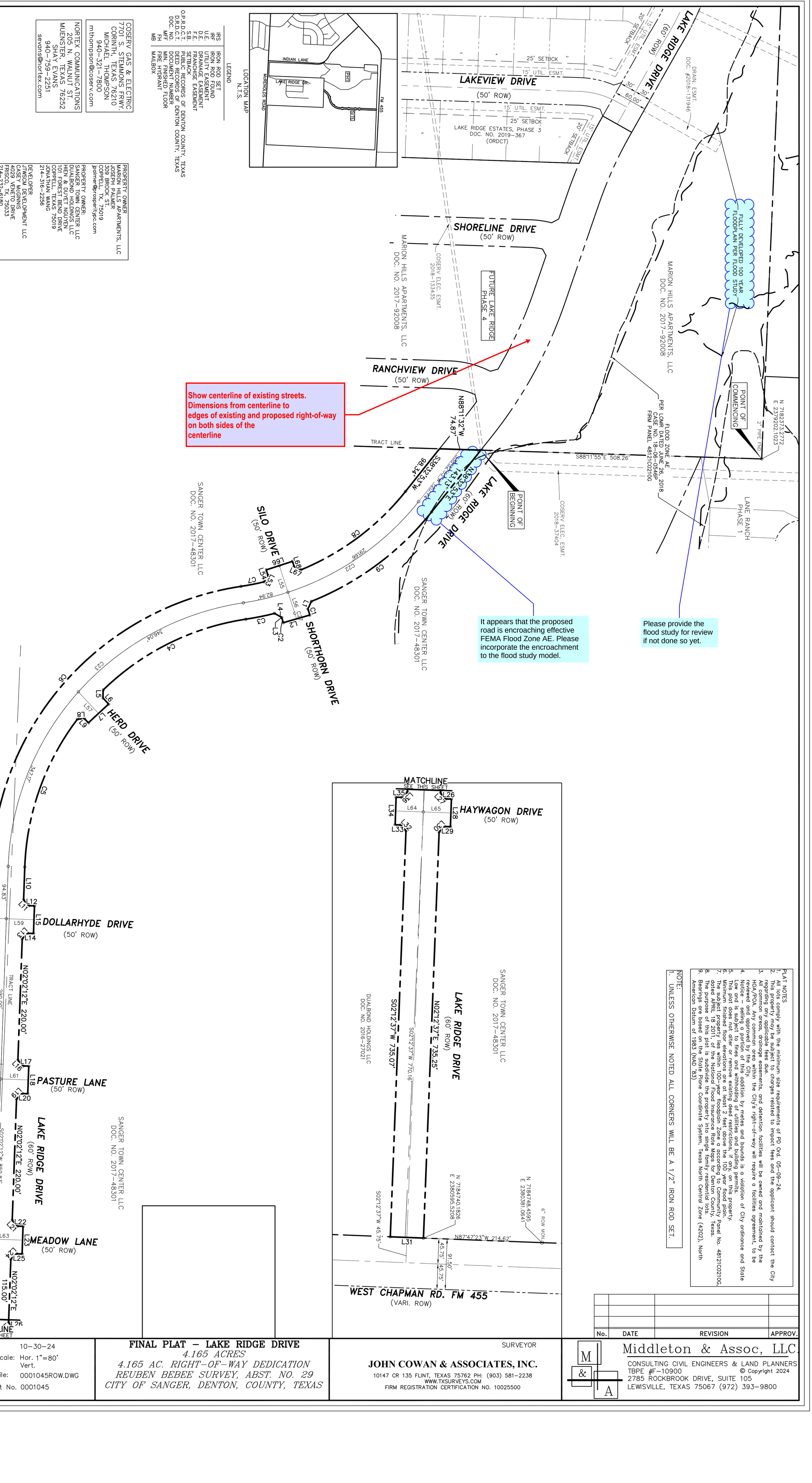
PROPERTY OWNER
MARION HILLS APARTMENTS, LLC
JOSEPH PALMER
309 BROCK ST.
COPPELL, TX, 75019
jpalmer@prosperitypc.com

PROPERTY OWNER:
SANGER TOWN CENTER LLC
DUALBOND HOLDINGS LLC
HIEN & DUYET NGUYEN
101 FOREST BEND DRIVE
COPPELL, TEXAS 75019
JONATHAN WANG
214-316-2256

DEVELOPER
JTWSCM DEVELOPMENT LLC
CASEY McGINNIS
4029 VENETO DRIVE
FRISCO, TX, 75033
214-232-6180
mcginnisdevelopment@gmail.com

SURVEYOR
JOHN COWEN & ASSOC., INC.
PHIL CORNETT
10147 CR 135
FLINT, TEXAS
903-581-2238
www.txsurveys.com

0' 40' 80' 160'
Scale 1"=80



PLAT NOTES
1. All lots comply with the minimum size requirements of PD Ord. 05-09-24.
2. This property may be subject to charges related to impact fees and the applicant should contact the City regarding any applicable fees due.
3. All common areas, drainage easements, and detention facilities will be owned and maintained by the HOA/POA. Any common area within the City's right-of-way will require a facilities agreement, to be reviewed and approved by the City.
4. Notice of 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 withholding of utilities and building permits.
5. This plat does not alter or remove existing deed restrictions, if any, on this property.
6. Minimum finished floor elevations are at least 2 feet above the 100 year flood plain.
7. The subject property lies within 100-year floodplain Zone a according to Community Panel No. 48121C0210G, dated APRIL 18 2011, of the National Flood Insurance Rate Maps for Denton County, Texas.
8. The purpose of this plat is subdivide the property into single family residential lots.
9. Bearings are based on the State Plane Coordinate System, Texas North Central Zone (4202), North American Datum of 1983 (NAD '83)

NOTE:
1. UNLESS OTHERWISE NOTED ALL CORNERS WILL BE A 1/2" IRON ROD SET.

No.	DATE	REVISION	APPROV.

ROW1

Date: 10-30-24
Dwg Scale: Hor. 1"=80' Vert.
Dwg File: 0001045ROW.DWG
Project No. 0001045

FINAL PLAT - LAKE RIDGE DRIVE
4.165 ACRES
4.165 AC. RIGHT-OF-WAY DEDICATION
REUBEN BEBEE SURVEY, ABST. NO. 29
CITY OF SANGER, DENTON, COUNTY, TEXAS

SURVEYOR
JOHN COWAN & ASSOCIATES, INC.
10147 CR 135 FLINT, TEXAS 75762 PH: (903) 581-2238
WWW.TXSURVEYS.COM
FIRM REGISTRATION CERTIFICATION NO. 10025500

Middleton & Assoc, LLC
CONSULTING CIVIL ENGINEERS & LAND PLANNERS
TBPE #F-10900
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2785 ROCKBROOK DRIVE, SUITE 105
LEWISVILLE, TEXAS 75067 (972) 393-9800

Line Table		
Line #	Bearing	Distance
L1	N23°57'09"E	14.93
L2	N73°59'53"E	50.00
L3	S18°01'49"E	0.26
L4	S60°42'06"E	14.73
L5	N1°10'01"E	14.39
L6	N42°48'28"W	15.01
L7	N47°11'32"E	50.00
L8	N87°29'34"E	12.94
L9	S42°48'28"E	10.00
L10	N2°02'12"E	59.83
L11	N42°57'48"W	14.14
L12	N87°57'48"W	10.00
L13	N47°02'12"E	14.14
L14	S87°57'48"E	10.00
L15	N2°02'12"E	50.00
L16	N42°57'48"W	14.14
L17	N87°57'48"W	10.00
L18	N2°02'12"E	50.00
L19	N47°02'12"E	14.14
L20	S87°57'48"E	10.00
L21	N42°57'48"W	14.14
L22	N87°57'48"W	10.00
L23	N2°02'12"E	50.00
L24	N47°02'12"E	14.14
L25	S87°57'48"E	10.00
L26	N87°57'48"W	10.00
L27	N42°57'48"W	14.14
L28	N2°02'12"E	50.00
L29	S87°57'48"E	10.08
L30	N47°07'24"E	14.16
L31	S87°47'23"E	60.00
L32	S42°52'36"E	14.12
L33	S87°57'48"E	10.00
L34	S2°02'12"W	50.00
L35	N87°57'48"W	10.08
L36	S47°02'12"W	14.14
L37	S42°57'48"E	14.14
L38	S87°57'48"E	10.00
L39	S2°02'12"W	50.00
L40	N87°57'48"W	10.00

Line Table		
Line #	Bearing	Distance
L41	S47°02'12"W	14.14
L42	S42°57'48"E	14.14
L43	S87°57'48"E	10.00
L44	S2°02'12"W	50.00
L45	N87°57'48"W	10.00
L46	S47°02'12"W	14.14
L47	S42°57'48"E	14.14
L48	S87°57'48"E	10.00
L49	S2°02'12"W	50.00
L50	N87°57'48"W	10.00
L51	S47°02'12"W	14.14
L52	S2°02'12"W	59.83
L53	S28°47'56"W	13.68
L54	S18°01'49"E	10.00
L55	S18°01'49"E	50.67
L56	N18°01'49"W	39.94
L57	S42°48'28"E	53.32
L58	S87°57'48"E	50.00
L59	S87°57'48"E	50.00
L60	N87°57'48"W	50.00
L61	N87°57'48"W	50.00
L62	N87°57'48"W	50.00
L63	N87°57'48"W	50.00
L64	N87°57'48"W	50.08
L65	N87°57'48"W	50.00
L66	S71°58'11"W	50.00
L67	N64°51'35"W	13.68
L68	N18°01'49"W	10.00

Curve Table					
No.	Delta	Radius	Length	Ch. Dist.	Bearing
C1	2°01'43"	325.00'	11.51'	11.51'	N17°00'58"W
C2	2°01'43"	275.00'	9.74'	9.74'	S17°00'58"E
C3	5°43'09"	530.00'	52.90'	52.88'	N78°36'50"E
C4	35°43'21"	470.00'	293.03'	288.31'	N63°36'44"E
C5	35°08'51"	470.00'	288.32'	283.82'	N19°36'37"E
C6	79°26'13"	530.00'	734.81'	677.36'	S41°45'18"W
C7	5°14'08"	470.00'	42.95'	42.93'	S78°51'20"W
C8	29°09'12"	470.00'	239.15'	236.58'	S53°07'29"W
C9	29°38'13"	530.00'	274.15'	271.10'	N53°21'59"E
C22	42°55'32"	500.00'	374.59'	365.90'	S60°00'39"W
C23	79°26'13"	500.00'	693.22'	639.02'	S41°45'18"W
C27	2°01'43"	300.00'	10.62'	10.62'	S17°00'58"E

STATE OF TEXAS
COUNTY OF DENTON

We the undersigned owners of the land shown on this plat within the area described by metes and bounds as follows:

All that certain lot, tract, or parcel of land, being part of the Rueben Bebee Survey, Abstract No. 29, Denton County, Texas, and being a part of that certain called 127.61 acre tract described in a deed from E.M.J. Lane, Inc. to Sanger Town Center, LLC on April 20, 2017, recorded in Document No. 2017–48301 of the Official Public Records of Denton, County, Texas (OPRDCT) and a part of that certain called 151.67 acre tract of land described in a deed from E.M.J. Lane, Inc. and Rodney V. Lane to Hien T. Nguyen and Duyet Nguyen on March 10, 2016, recorded in Document No. 2016–27020 of the (OPRDCT) and a part of tract of land described in a deed to Dualbond Holdings, LLC recorded in Document No. 2016–27021 (OPRDCT) and being an easement more completely described as follows, to–wit:

COMMENCING at a 2" pipe found for an ell corner in the easterly South line of the Sanger Town Center, LLC, the Northwest corner of that tract of land described in a deed to Marion Hills Apartments, LLC tract recorded in Document No. 2017–92008 (OPRDCT);

THENCE South 88°11'55" East with the North line of the Marion Hills Apartments, LLC tract a distance of 508.26 feet to the place of BEGINNING;

THENCE North 38°32'53" East a distance of 143.31 feet to a 1/2" iron rod (set) for the beginning of a curve to the right having a radius of 530.00 feet, a chord of North 53°21'59" East – 271.10 feet, a distance of 274.15 feet to a 1/2" iron rod (set) for corner;

THENCE North 23°57'09" East a distance of 14.93 feet to a 1/2" iron rod (set) for the beginning of a curve to the right having a radius of 325.00 feet, a chord of North 17°00'58" West – 11.51 feet, a distance of 11.51 feet to a 1/2" iron rod (set) for corner;

THENCE North 73°59'53" East a distance of 50.00 feet to a 1/2" iron rod (set) for the beginning of a curve to the left having a radius of 275.00 feet, a chord of South 17°00'58" East – 9.74 feet, a distance of 9.74 feet to a 1/2" iron rod (set) for corner;

THENCE South 60°00'48" East a distance of 14.93 feet to a 1/2" iron rod (set) for the beginning of a curve to the right having a radius of 530.00 feet, a chord of North 78°36'50" East – 52.88 feet, a distance of 52.90 feet to a 1/2" iron rod (set) for the beginning of a curve to the left having a radius of 470.00 feet, a chord of North 63°36'44" East – 288.31 feet, a distance of 293.03 feet to a 1/2" iron rod (set) for corner;

THENCE North 1°10'01" East a distance of 14.39 feet to a 1/2" iron rod (set) for corner;

THENCE North 42°48'28" West a distance of 15.01 feet to a 1/2" iron rod (set) for corner;

THENCE North 47°11'32" East a distance of 50.00 feet to a 1/2" iron rod (set) for corner;

THENCE South 42°48'28" East a distance of 10.00 feet to a 1/2" iron rod (set) for corner;

THENCE North 87°29'34" East a distance of 12.94 feet to a 1/2" iron rod (set) for the beginning of a curve to the left having a radius of 470.00 feet, a chord of North 19°36'37" East – 283.82 feet, a distance of 288.32 feet to a 1/2" iron rod (set) for corner;

THENCE North 2°02'12" East a distance of 59.83 feet to a 1/2" iron rod (set) for corner;

THENCE North 42°57'48" West a distance of 14.14 feet to a 1/2" iron rod (set) for corner;

THENCE North 87°57'48" West a distance of 10.00 feet to a 1/2" iron rod (set) for corner;

THENCE North 2°02'12" East a distance of 50.00 feet to a 1/2" iron rod (set) for corner;

THENCE South 87°57'48" East a distance of 10.00 feet to a 1/2" iron rod (set) for corner;

THENCE North 47°02'12" East a distance of 14.14 feet to a 1/2" iron rod (set) for corner;

THENCE North 2°02'12" East a distance of 220.00 feet to a 1/2" iron rod (set) for corner;

THENCE North 42°57'48" West a distance of 14.14 feet to a 1/2" iron rod (set) for corner;

THENCE North 87°57'48" West a distance of 10.00 feet to a 1/2" iron rod (set) for corner;

THENCE North 2°02'12" East a distance of 50.00 feet to a 1/2" iron rod (set) for corner;

THENCE South 87°57'48" East a distance of 10.00 feet to a 1/2" iron rod (set) for corner;

THENCE North 47°02'12" East a distance of 14.14 feet to a 1/2" iron rod (set) for corner;

THENCE North 2°02'12" East a distance of 115.00 feet to a 1/2" iron rod (set) for corner;

THENCE North 42°57'48" West a distance of 14.14 feet to a 1/2" iron rod (set) for corner;

THENCE North 87°57'48" West a distance of 10.00 feet to a 1/2" iron rod (set) for corner;

THENCE North 2°02'12" East a distance of 50.00 feet to a 1/2" iron rod (set) for corner;

THENCE South 87°57'48" East a distance of 10.08 feet to a 1/2" iron rod (set) for corner;

THENCE North 47°07'24" East a distance of 14.16 feet to a 1/2" iron rod (set) for corner;

THENCE North 2°12'37" East a distance of 735.25 feet to a 1/2" iron rod (set) for corner in the South right of way of West Chapman Road F.M. 455;

THENCE Easterly with the South right of way of West Chapman Road F.M. 455 South 87°47'23" East a distance of 60.00 feet to a 1/2" iron rod (set) for corner;

THENCE South 2°12'37" West a distance of 735.07 feet to a 1/2" iron rod (set) for corner;

THENCE South 42°52'36" East a distance of 14.12 feet to a 1/2" iron rod (set) for corner;

THENCE South 87°57'48" West a distance of 10.00 feet to a 1/2" iron rod (set) for corner;

THENCE South 2°02'12" West a distance of 50.00 feet to a 1/2" iron rod (set) for corner;

THENCE North 87°57'48" West a distance of 10.08 feet to a 1/2" iron rod (set) for corner;

THENCE South 47°02'12" West a distance of 14.14 feet to a 1/2" iron rod (set) for corner;

THENCE South 2°02'12" West a distance of 115.00 feet to a 1/2" iron rod (set) for corner;

THENCE South 42°57'48" East a distance of 14.14 feet to a 1/2" iron rod (set) for corner;

THENCE South 87°57'48" East a distance of 10.00 feet to a 1/2" iron rod (set) for corner;

THENCE South 2°02'12" West a distance of 50.00 feet to a 1/2" iron rod (set) for corner;

THENCE North 87°57'48" West a distance of 10.00 feet to a 1/2" iron rod (set) for corner;

THENCE South 47°02'12" West a distance of 14.14 feet to a 1/2" iron rod (set) for corner;

THENCE South 2°02'12" West a distance of 220.00 feet to a 1/2" iron rod (set) for corner;

THENCE South 42°57'48" East a distance of 14.14 feet to a 1/2" iron rod (set) for corner;

THENCE South 87°57'48" East a distance of 10.00 feet to a 1/2" iron rod (set) for corner;

THENCE South 2°02'12" West a distance of 50.00 feet to a 1/2" iron rod (set) for corner;

THENCE North 87°57'48" West a distance of 10.00 feet to a 1/2" iron rod (set) for corner;

THENCE South 47°02'12" West a distance of 14.14 feet to a 1/2" iron rod (set) for corner;

THENCE South 2°02'12" West a distance of 220.00 feet to a 1/2" iron rod (set) for corner;

THENCE South 42°57'48" East a distance of 14.14 feet to a 1/2" iron rod (set) for corner;

THENCE South 87°57'48" East a distance of 10.00 feet to a 1/2" iron rod (set) for corner;

THENCE South 2°02'12" West a distance of 50.00 feet to a 1/2" iron rod (set) for corner;

THENCE North 87°57'48" West a distance of 10.00 feet to a 1/2" iron rod (set) for corner;

THENCE South 47°02'12" West a distance of 14.14 feet to a 1/2" iron rod (set) for corner;

THENCE South 2°02'12" West a distance of 220.00 feet to a 1/2" iron rod (set) for corner;

THENCE South 42°57'48" East a distance of 14.14 feet to a 1/2" iron rod (set) for corner;

THENCE South 87°57'48" East a distance of 10.00 feet to a 1/2" iron rod (set) for corner;

THENCE South 2°02'12" West a distance of 50.00 feet to a 1/2" iron rod (set) for corner;

THENCE North 87°57'48" West a distance of 10.00 feet to a 1/2" iron rod (set) for corner;

THENCE South 47°02'12" West a distance of 14.14 feet to a 1/2" iron rod (set) for corner;

THENCE South 2°02'12" West a distance of 59.83 feet to a 1/2" iron rod (set) for the beginning of a curve to the right having a radius of 530.00 feet, a chord of South 41°45'18" West – 677.36 feet, a distance of 734.81 feet to a 1/2" iron rod (set) for the beginning of a curve to the left having a radius of 470.00 feet, a chord of South 78°51'20" West – 42.93 feet, a distance of 42.95 feet to a 1/2" iron rod (set) for corner;

THENCE South 28°47'56" West a distance of 13.68 feet to a 1/2" iron rod (set) for corner;

THENCE South 18°01'49" East a distance of 10.00 feet to a 1/2" iron rod (set) for corner;

THENCE South 71°58'11" West a distance of 50.00 feet to a 1/2" iron rod (set) for corner;

THENCE North 18°01'49" West a distance of 10.00 feet to a 1/2" iron rod (set) for corner;

THENCE North 64°51'35" West a distance of 13.68 feet to a 1/2" iron rod (set) for the beginning of a curve to the left having a radius of 470.00 feet, a chord of South 53°07'29" West – 236.58 feet, a distance of 239.15 feet to a 1/2" iron rod (set) for corner;

THENCE South 38°32'53" West a distance of 98.34 feet to a 1/2" iron rod (set) for corner:

THENCE North 88°11'32" West a distance of 74.87 feet to the place of beginning, containing 4.165 acres, or 181,428 square feet of land.

STATE OF TEXAS
COUNTY OF DENTON

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

STATE OF TEXAS
REGISTERED
PHILIP W. CORNETT
5515
PROFESSIONAL
LAND SURVEYOR

_____
REGISTERED PUBLIC LAND SURVEYOR TEXAS R.P.L.S. NO. 5515 DATE

Please refer to comments in Plat Review Submitted on 11/27/2024

NOW, THEREFORE, KNOW ALL PERSONS BY THESE PRESENTS:

THAT, Jonathan Wang acting herein by and through its duly authorized officer, does hereby adopt this plat designating the hereinabove described property as LAKE RIDGE DRIVE, 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 utility entities shall have the right to access and maintain all respective easements without the necessity at any time of procuring permission from anyone.

WITNESS MY HAND this _____ day of _____, 2024.

_____, Owner

_____, Title and Company

State of Texas
County of Denton

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

Given under my hand and seal of office this _____ day of _____, 2024.

_____
Notary Public in and for the State of Texas

_____
Print Notary's Name

My Commission Expires _____

Approved and Accepted

_____
Chairman, Planning & Zoning Commission Date
City of Sanger, TX

_____
Mayor Date
City of Sanger, TX

Attested by

_____
City Secretary Date
City of Sanger, TX

PRELIMINARY PLAT FOR REVIEW PURPOSES ONLY

APPROVED FOR PREPARATION OF FINAL PLAT

_____ _____
CITY OF SANGER, TX DATE
PLANNING & ZONING COMMISSION

No.	DATE	REVISION	APPROV.

Middleton & Assoc, LLC
CONSULTING CIVIL ENGINEERS & LAND PLANNERS
TBPE #F–10900 2785 ROCKBROOK DRIVE, SUITE 105
LEWISVILLE, TEXAS 75067 (972) 393–9800

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SURVEYOR
JOHN COWAN & ASSOCIATES, INC.
10147 CR 135 FLINT, TEXAS 75762 PH: (903) 581–2238
WWW.TXSURVEYS.COM
FIRM REGISTRATION CERTIFICATION NO. 10025500

FINAL PLAT – LAKE RIDGE DRIVE

4.165 ACRES
4.165 AC. RIGHT–OF–WAY DEDICATION
REUBEN BEBBEE SURVEY, ABST. NO. 29
CITY OF SANGER, DENTON, COUNTY, TEXAS

Date: 10–30–24
Dwg Scale: Hor. 1"=80'
Vert.
Dwg File: 0001045ROW.DWG
Project No. 0001045

ROW2

Natural creeks including FEMA streams shall have a dedicated Floodplain Easement encompassing the 100-year fully developed floodplain plus ten (10) feet on each side of this floodplain. (10.105.(5).B). It appears that the fully developed floodplain is within the lot.

There are multiple locations showing fill in effective FEMA Flood Zone AE. Please:
1. incorporate the fill to the flood study model.
2. show and label cross-sections with existing and fully-developed 100-yr flood elevation.

Scale 1"=80'
0' 40' 80' 160'

N

LOCATION MAP
N.T.S.

INDIAN LANE
LAKE RIDGE DR.
SITE
MCREYNOLDS ROAD
FM 455

FLOOD NOTE

According to the Federal Emergency Management Agency, Flood Insurance Rate Map, Community Panel No. 48121 C 0210G dated April 11, 2011, a portion of this property is within Flood Zone A.

Flood Zone AE scaled per LOMR dated June 26, 2018.

This flood statement does not imply that the property and/or the structure thereon will be free from flooding or flood damage. On rare occasions, greater floods can and will occur and flood heights may be increased by man-made or natural causes. This flood statement shall not create liability on the port of the Engineer.

SANGER ELECTRIC UTILITIES
202 RAILROAD STREET
SANGER, TEXAS 76206
RONNIE GRACE
940-458-2064
rgrace@sangertexas.org

COSERV GAS & ELECTRIC
7701 S. STEMMONS FRWY.
CORINTH, TEXAS 76210
MICHAEL THOMPSON
940-321-7800
mthompson@coserv.com

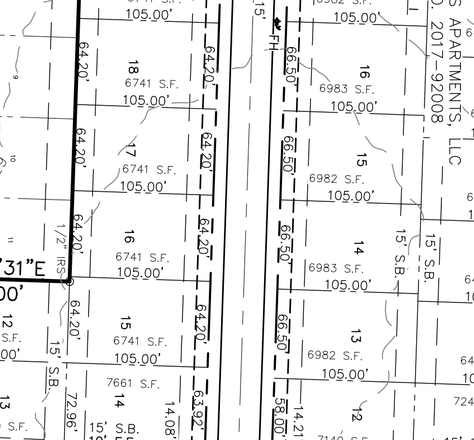
NORTEX COMMUNICATIONS
205 N. WALNUT ST.
MUENSTER, TEXAS 76252
SHAY EVANS
940-759-2251
sevans@nortex.com

PROPERTY OWNER
MARION HILLS APARTMENTS, LLC
JOSEPH PALMER
309 BROCK ST.
COPPELL, TX. 75019
jpalmer@prosperitypc.com

DEVELOPER
UTWSCM DEVELOPMENT LLC
CASEY McGINNIS
4029 VENETO DRIVE
FRISCO, TX. 75033
214-232-6180
mcginnisdevelopment@gmail.com

SURVEYOR
JOHN COWEN & ASSOC., INC.
PHIL CORNETT
1014 7 CR 135
FLINT, TEXAS
903-581-2238
www.txsurveys.com

60' LOTS



THESE CONSTRUCTION PLANS WERE PREPARED UNDER THE RESPONSIBLE SUPERVISION OF F.E. MIDDLETON JR., REGISTERED PROFESSIONAL ENGINEER NO. 67449.

PLAT NOTES:
1. DEDICATED RIGHT-OF-WAY AREA IS 4.620 ACRES.
2. ALL OPEN SPACE AREAS WILL EITHER BE DEDICATED TO THE HOA OR AS PARKLAND TO THE CITY.
3. MINIMUM FINISHED FLOOR ELEVATIONS ARE AT LEAST 2 FEET ABOVE THE 100 YEAR FLOOD PLAIN.
3. REFER TO FLOOD STUDY BY CARDINAL STRATEGIES FOR LANE RANCH DATED 4-22-24 FOR ALL FULLY DEVELOPED FLOODPLAIN AND HYDROLOGY INFORMATION.
4. ALL LOTS COMPLY WITH THE MINIMUM SIZE REQUIREMENTS OF PD ORD. 00-00-24.
5. THE DRAINAGE EASEMENTS SHOWN IN THE FLOOD ZONE IS MEANT TO ENCOMPASS THE FULLY DEVELOPED 100 YEAR FLOODPLAIN PER THE FLOOD STUDY.

LEGEND

IRS	IRON ROD SET
IRF	IRON ROD FOUND
U.E.	UTILITY EASEMENT
D.E.	DRAINAGE EASEMENT
F.E.	FRANCHISE EASEMENT
S.B.	SETBACK
O.P.R.C.C.T.	OFFICIAL PUBLIC RECORDS OF COLLIN COUNTY, TEXAS
D.R.D.C.T.	DEED RECORDS OF DENTON COUNTY, TEXAS
DOC. NO.	DOCUMENT NUMBER
MFF	MIN. FINISHED FLOOR
FH	FIRE HYDRANT
MB	MAILBOX

No.	DATE	REVISION	APPROV.

PPT1

Date: 11-12-24
Dwg Scale: Hor. 1"=80' Vert.
Dwg File: 0001047PPT.DWG
Project No. 0001047

PRELIMINARY PLAT

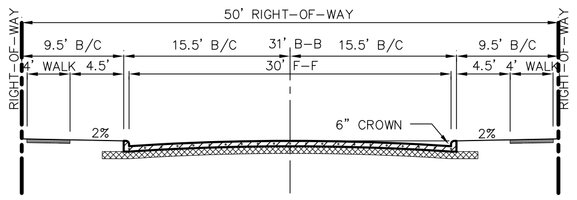
LAKE RIDGE, PHASE 4
100 RESIDENTIAL LOTS - 2 HOA LOTS
RUEBEN BEBEE SURVEY, ABST. NO. 29
37.128 ACRES - 4.620 ACRES ROW
CITY OF SANGER DENTON COUNTY TEXAS

LAKE RIDGE, PHASE 4
CITY OF SANGER DENTON COUNTY, TEXAS

MARION HILLS APARTMENTS, LLC
309 BROCK STREET
COPPELL, TEXAS 75019

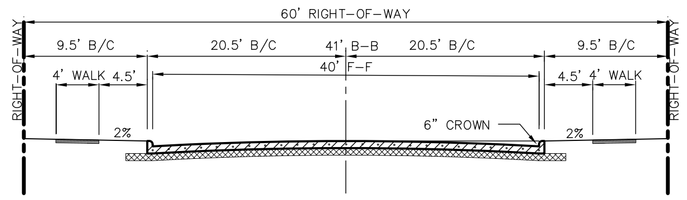
STATE OF TEXAS
F. E. MIDDLETON, JR.
97449
REGISTERED
PROFESSIONAL ENGINEER

Middleton & Assoc, LLC
CONSULTING CIVIL ENGINEERS & LAND PLANNERS
TBPE #F-10900 © Copyright 2024
2785 ROCKBROOK DRIVE, SUITE 105
LEWISVILLE, TEXAS 75067 (972) 393-9800



50' LOCAL RESIDENTIAL SECTION

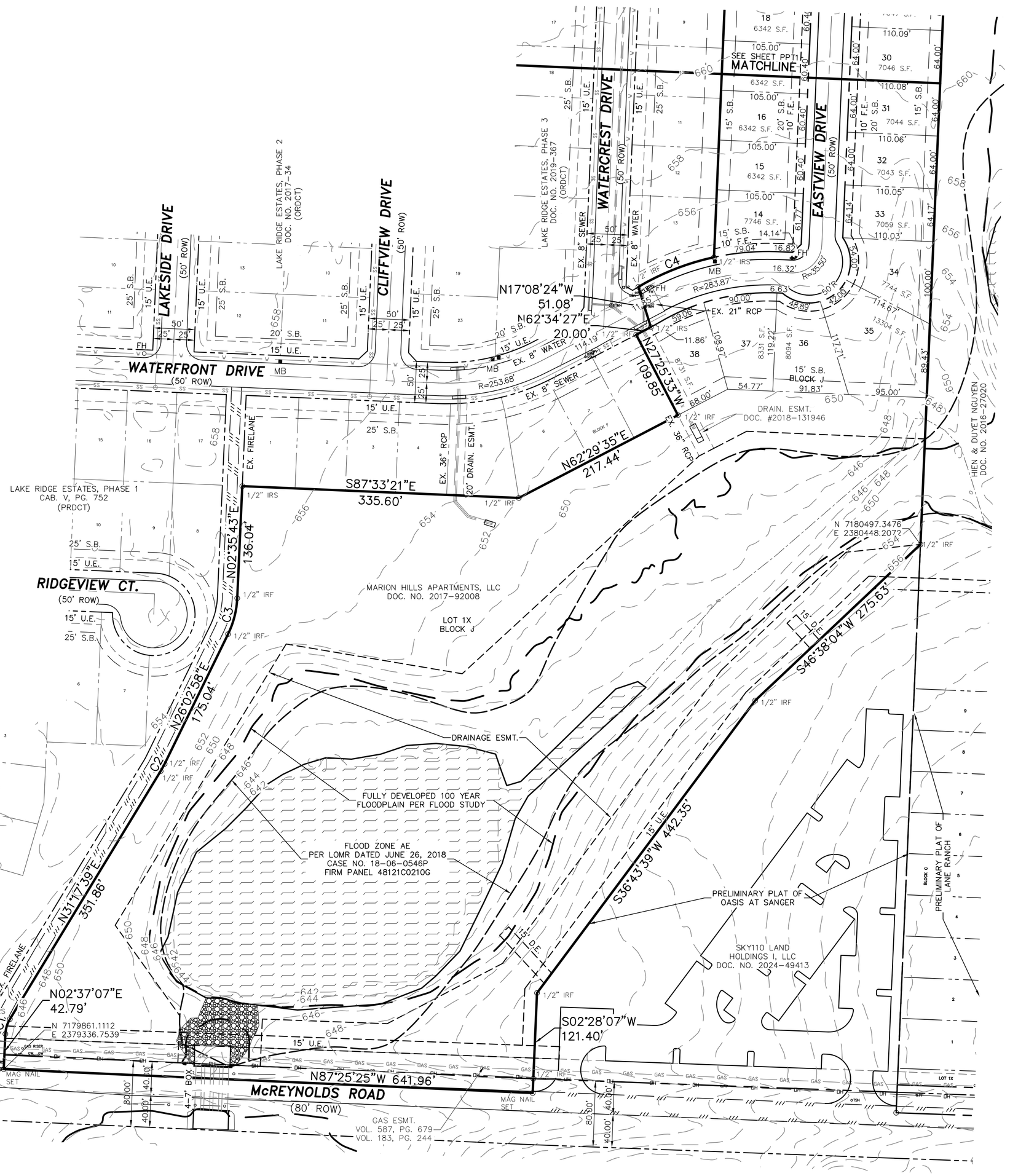
N.T.S.

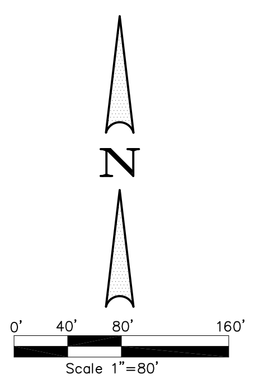


60' MINOR COLLECTOR SECTION
LAKE RIDGE DRIVE

N.T.S.

Curve Table					
No.	Delta	Radius	Length	Ch. Dist.	Bearing
C1	28°40'42"	38.00'	19.02'	18.82'	N16°57'18"E
C2	5°14'08"	110.00'	10.05'	10.05'	N28°40'38"E
C3	23°33'38"	110.01'	45.24'	44.92'	N14°22'32"E
C4	18°19'46"	308.87'	98.81'	98.39'	N68°36'31"E
C5	6°15'15"	779.99'	85.14'	85.10'	S26°16'36"W
C6	14°03'00"	572.68'	140.43'	140.08'	S24°55'07"W





LEGAL DESCRIPTION
TRACT 1

All that certain lot, tract, or parcel of land, being part of the Rueben Bebee Survey, Abstract No. 29, Denton County, Texas, and being a part of that tract of land described in a deed to Marion Hills Apartments, LLC recorded in Document No. 2017-92008 Real Property Records of Denton, County, Texas (RPRDCT), being more completely described as follows, to-wit:

BEGINNING at a 1/2" iron rod set for the southwest corner Lake Ridge Estates, Phase 1 an addition to the City of Sanger recorded in Cabinet V, Page 752 Plat Records of Denton County, Texas (PRDCT) the north right-of-way line of McReynolds Road;

THENCE North 2°37'07" East a distance of 42.79 feet to the beginning of a curve to the right having a radius of 38.00 feet, a chord of North 16°57'18" East – 18.82 feet, a distance of 19.02 feet to a 1/2" iron rod set for corner;

THENCE North 31°17'39" East a distance of 351.86 feet to a 1/2" iron rod set for the beginning of a curve to the left having a radius of 110.00 feet, a chord of North 28°40'38" East – 10.05 feet, a distance of 10.05 feet to a 1/2" iron rod set for corner;

THENCE North 26°02'58" East a distance of 175.04 feet to a 1/2" iron rod set for the beginning of a curve to the left having a radius of 110.01 feet, a chord of North 14°22'32" East – 44.92 feet, a distance of 45.24 feet to a 1/2" iron rod set for corner;

THENCE North 2°35'43" East a distance of 136.04 feet to a 1/2" iron rod set for corner;

THENCE South 87°33'21" East a distance of 335.60 feet to a 1/2" iron rod set for corner;

THENCE North 62°29'35" East a distance of 217.44 feet to a 1/2" iron rod set for the southeast corner of Lake Ridge Estates, Phase 3 an addition to the City of Sanger recorded in Document No. 2019-367 of the Official Records of Denton County, Texas (ORDCT);

THENCE with the east and north lines of Lake Ridge, Phase 3 North 27°25'33" West a distance of 109.85 feet to a 1/2" iron rod set for corner;

THENCE North 62°34'27" East a distance of 20.00 feet to a 1/2" iron rod set for corner;

THENCE North 17°08'24" West a distance of 51.08 feet to a 1/2" iron rod set for the beginning of a curve to the right having a radius of 308.87 feet, a chord of North 68°36'31" East – 98.39 feet, a distance of 98.81 feet to a 1/2" iron rod set for corner;

THENCE North 2°26'09" East a distance of 815.28 feet to a 1/2" iron rod set for corner;

THENCE North 88°06'08" West a distance of 27.01 feet to a 1/2" iron rod set for corner;

THENCE North 1°52'31" East a distance of 155.00 feet to a 1/2" iron rod set for corner;

THENCE North 88°05'14" West a distance of 678.52 feet to a 1/2" iron rod set for the beginning of a curve to the right having a radius of 779.99 feet, a chord of South 26°16'36" West – 85.10 feet, a distance of 85.14 feet to a 1/2" iron rod set for corner;

THENCE South 29°24'13" West a distance of 10.59 feet to a 1/2" iron rod set for corner;

THENCE North 60°35'47" West a distance of 60.00 feet to a 1/2" iron rod set for corner;

THENCE South 29°24'09" West a distance of 170.52 feet to a 1/2" iron rod set for the beginning of a curve to the left having a radius of 572.68 feet, a chord of South 24°55'07" West – 140.08 feet, a distance of 140.43 feet to a 1/2" iron rod set for corner;

THENCE North 73°15'04" West a distance of 125.18 feet to a 1/2" iron rod set for corner;

THENCE South 29°38'53" West a distance of 16.65 feet to a 1/2" iron rod set for corner in the west line of the Marion Hills Apartments, LLC tract;

THENCE with the west line of the Marion Hills Apartments, LLC tract North 2°25'03" East a distance of 845.55 feet to a 2" iron pipe found for northwest corner of the Marion Hills Apartments, LLC tract;

THENCE with the north line of the Marion Hills Apartments, LLC tract South 88°11'55" East a distance of 1,325.24 feet to a 1/2" iron rod set for the northeast corner of the Marion Hills Apartments, LLC tract;

THENCE with the east line of the Marion Hills Apartments, LLC tract South 2°27'00" West a distance of 1,835.95 feet to a 1/2" iron rod found for the north corner of that tract of land described in a deed to Winston Grove Apartments, LLC recorded in Document No. 2018-13037 (RPRDCT);

THENCE with the west line of the Winston Grove Apartments, LLC tract South 46°38'04" West a distance of 275.63 feet to a 1/2" iron rod found for corner;

THENCE South 36°43'39" West a distance of 442.35 feet to a 1/2" iron rod found for corner;

THENCE South 2°28'07" West a distance of 121.40 feet to a 1/2" iron rod found for corner;

THENCE with the north right-of-way line of McReynolds Road North 87°25'25" West a distance of 641.96 feet to the place of beginning, containing 37.128 acres, or 1,617,281 square feet of land.

PRELIMINARY PLAT FOR REVIEW PURPOSES ONLY

APPROVED FOR PREPARATION OF FINAL PLAT

CITY OF SANGER, TX DATE
PLANNING & ZONING COMMISSION

No.	DATE	REVISION	APPROV.

Middleton & Assoc, LLC
CONSULTING CIVIL ENGINEERS & LAND PLANNERS
TBPE #F-10900
2785 ROCKBROOK DRIVE, SUITE 105
LEWISVILLE, TEXAS 75067 (972) 393-9800
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THESE CONSTRUCTION PLANS WERE PREPARED UNDER THE RESPONSIBLE SUPERVISION OF T. E. MIDDLETON, JR., REGISTERED PROFESSIONAL ENGINEER NO. 87448

STATE OF TEXAS
T. E. MIDDLETON, JR.
87448
REGISTERED
PROFESSIONAL
ENGINEER

LAKE RIDGE, PHASE 4
CITY OF SANGER DENTON COUNTY, TEXAS

MARION HILLS APARTMENTS, LLC
309 BROCK STREET
COPPELL, TEXAS 75019

PRELIMINARY PLAT
LAKE RIDGE PHASE 4
100 RESIDENTIAL LOTS – 2 HOA LOTS
RUEBEN BEBEE SURVEY ABST NO. 29
37.128 ACRES 4.620 ACRES ROW
CITY OF SANGER DENTON COUNTY TEXAS

Date: 11-12-24
Dwg Scale: Hor. 1"=80'
Vert.
Dwg File: 0001047PPT.DWG
Project No. 0001047

PPT2

GRADING GENERAL NOTES:

1. TOP SOIL SHALL NOT BE REMOVED FROM RESIDENTIAL LOTS OR USED AS SPOIL, BUT SHALL BE STRIPPED AND REDISTRIBUTED SO AS TO PROVIDE AT LEAST SIX (6) INCHES OF COVER ON THE LOTS, PARKWAYS AND MEDIANS. PERMANENT EROSION CONTROL MEASURES SHALL BE PROVIDED THROUGHOUT THE DEVELOPMENT PRIOR TO FINAL ACCEPTANCE OF THE IMPROVEMENTS.
2. TEMPORARY EROSION CONTROL SHALL BE USED TO MINIMIZE THE SPREAD OF SILT AND MUD FROM THE PROJECT ON TO EXISTING STREETS, ALLEYS, DRAINAGE WAYS AND PUBLIC AND PRIVATE PROPERTY. TEMPORARY EROSION CONTROLS MAY INCLUDE SILT FENCES, STRAW BALES, BERMS, DIKES, SWALES, STRIPS OF UNDISTURBED VEGETATION, CHECK DAMS AND OTHER METHODS AS REQUIRED BY THE CITY ENGINEER OR HIS REPRESENTATIVE AND AS SPECIFIED IN THE NORTH CENTRAL TEXAS COUNCIL OF GOVERNMENTS CONSTRUCTION (N.C.T.C.O.G) ISWM DESIGN MANUAL FOR CONSTRUCTION.
3. ALL STREET RIGHTS-OF-WAY, REGARDLESS OF SLOPE; ALL FINISHED GRADE SLOPES THAT ARE STEEPER THAN 6:1; AND THE FLOW LINES OF ALL DRAINAGE DITCHES AND SWALES SHALL BE COMPLETELY COVERED WITH EROSION CONTROL MATTING AS SPECIFIED IN THE NORTH CENTRAL TEXAS COUNCIL OF GOVERNMENTS CONSTRUCTION (N.C.T.C.O.G) ISWM DESIGN MANUAL.
4. GRASS SHALL BE ESTABLISHED ON THE SLOPES OF ALL DRAINAGE CHANNELS THAT ARE STEEPER THAN 6:1. GRASS SHALL MEET THE REQUIREMENTS OF THE STANDARD SPECIFICATIONS OF THE TEXAS DEPARTMENT OF TRANSPORTATION.
5. ALL PERMEABLE SURFACES WITHIN THE DEVELOPMENT SHALL BE GRADED TO A SMOOTH AND UNIFORM APPEARANCE THAT CAN BE EASILY MOWED WITH A SMALL RESIDENTIAL RIDING LAWN MOWER.
6. ALL FILL DIRT PLACED WITHIN BUILDING PADS WILL BE COMPACTED TO AT LEAST 95% SPD WITHIN 2% POINTS OF THE OPTIMUM MOISTURE CONTENT PER THE GEOTECH REPORT BY FARGO, PROJECT NO. ______________, DATED __________ 2024.

PAVING GENERAL NOTES:

1. ALL EMBANKMENT, SUBGRADE, AND TREATED SOILS SHALL BE COMPACTED AT A MOISTURE CONTENT AT OR ABOVE THE OPTIMUM MOISTURE AT A MINIMUM DENSITY OF 95% STANDARD PROCTOR (ASTM D-698) SHOULD BE USED FOR CLAY SOILS AND TEX 113 E SHOULD BE USED FOR BASE MATERIALS AND TREATED SOILS IN ACCORDANCE WITH TXDOT METHODS.
2. THE MINIMUM 28 DAY COMPRESSIVE STRENGTH OF CONCRETE STREET PAVING SHALL NOT BE LESS THAN 3,600 PSI (CLASS "C") AND FLEXURAL STRENGTH OF 600 PSI AND SHALL BE AIR ENTRAINED. WATER MAY NOT BE APPLIED TO THE SURFACE OF CONCRETE PAVING TO IMPROVE WORKABILITY.
3. ALL CURB AND GUTTER SHALL BE INTEGRAL WITH THE PAVEMENT.
4. STREETS AND ALLEYS SHALL BE CONSTRUCTED WITH PROVISIONS FOR SIDEWALK RAMPS AT ALL INTERSECTIONS.

DRAINAGE GENERAL NOTES:

1. ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO THE NORTH CENTRAL TEXAS COUNCIL OF GOVERNMENTS "STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION" LATEST EDITION AND THE CITY OF SANGER'S ADDENDUM THERETO.
2. ALL STORM SEWER PIPE SHALL BE CLASS III RCP, ASTM C76, UNLESS OTHERWISE NOTED.
   ALL DITCHES SHALL BE TAMPED AND COMPACTED TO 95% OF THE MAXIMUM DRY DENSITY (ASTM D-698) BY MEANS OF TAMPING ONLY WITH A MINIMUM MOISTURE CONTENT AT OR ABOVE THE OPTIMUM MOISTURE CONTENT.
3. SEE WATER PLANS, SANITARY SEWER PLANS, AND PAVING PLAN AND PROFILE FOR ADDITIONAL INFORMATION RELATING TO PAVING, DRAINAGE AND OTHER UTILITY CONSTRUCTION.
4. SEE CITY OF SANGER STANDARDS SPECIFICATIONS FOR CONSTRUCTION STANDARDS.
5. THE LOCATION OF EXISTING UTILITIES INDICATED IN THESE PLANS ARE TAKEN FROM EXISTING PUBLIC RECORDS. THE EXACT LOCATION AND ELEVATION OF ALL PUBLIC UTILITIES SHALL BE DETERMINED BY THE CONTRACTOR AND CONTRACTOR SHALL DETERMINE WHETHER ANY ADDITIONAL FACILITIES OTHER THAN THOSE IN THESE PLANS MAY BE PRESENT.
6. ALL CONCRETE USED IN THE CONSTRUCTION OF STORM SEWER MANHOLES, INLETS, BOX CULVERTS, ETC. SHALL BE CLASS "C" CONCRETE AND MINIMUM STRENGTH OF 3600 PSI AT 28 DAYS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE TESTING OF THE CONCRETE.
7. CONTRACTOR SHALL COORDINATE WITH THE OWNER, ENGINEER OR HIS REPRESENTATIVE AND CITY REPRESENTATIVES REGARDING DEVIATION FROM THESE PLANS.
8. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING TRENCH SAFETY REQUIREMENTS IN ACCORDANCE WITH THE CITY OF SANGER STANDARDS, TEXAS STATE LAW, AND O.S.H.A. STANDARDS.
9. ALL BACKFILL FOR STORM SEWER FACILITIES SHALL CONFORM TO THE SPECIFICATIONS AND DETAILS SHOWN IN THIS PLAN SET. NO WATER JETTING IS ALLOWED.
10. GROUND ELEVATIONS SHOULD BE AT OR NEAR PROPOSED SUBGRADE TO WITHIN ONE-TENTH (0.1') FEET OF ESTABLISHED GRADE AFTER THE INSTALLATION OF ALL DRAINAGE FACILITIES.
11. ALL RECORDED INSPECTION INFORMATION FOR STORM DRAIN LINES BUILT IN THE SUBDIVISION, INCLUDING OFF-SITE STORM DRAIN LINES, MUST BE OBTAINED BY CONTRACTOR PRIOR TO CONSTRUCTION. RECORDED INSPECTION INFORMATION IS REQUIRED FOR ACCEPTANCE OF STORM DRAIN LINES THAT ARE TO BE CONNECTED TO EXISTING LINES.
12. PIPE ON CURVES SHALL HAVE A GROUTED JOINT UNLESS RADIAL PIPE IS SPECIFIED.
13. THE CONTRACTOR SHALL INSTALL PLUGS IN STORM SEWER LINES OR OTHERWISE PREVENT MUD FROM ENTERING THE STORM SEWER SYSTEM DURING CONSTRUCTION.
14. ALL STORM WATER BENDS AND FITTINGS SHALL BE FACTORY MADE.

WATER GENERAL NOTES

1. WATER SYSTEMS HAVE BEEN DESIGNED IN ACCORDANCE WITH THE CITY OF SANGER CONSTRUCTION SPECIFICATIONS.
2. APPLICABLE DESIGN AND DETAILS SHALL CONFORM TO THE CITY OF SANGER STANDARDS.
3. 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 AND RESPONSIBILITY FOR THE ACCURACY OF THIS DATA.
4. THE CONTRACTOR IS TO VERIFY LOCATION AND ELEVATION OF EXISTING UTILITIES PRIOR TO CONSTRUCTION.
5. DEVELOPER'S SURVEYOR IS RESPONSIBLE FOR ALL CONSTRUCTION SURVEYING TO COMPLETE THIS PROJECT.
6. HORIZONTAL BLOCKING FOR WATER LINES HAS BEEN OMITTED FOR CLARITY.HOWEVER BLOCKING SHALL BE CONSTRUCTED IN ACCORDANCE WITH NCTCOG SPECIFICATIONS.
7. ALL BACKFILL MATERIAL SHALL BE COMPACTED TO A MINIMUM OF 95% OF THE MAXIMUM DRY DENSITY (ASTM D-698) BY MEANS OF TAMPING ONLY WITH A MINIMUM MOISTURE CONTENT AT OR ABOVE THE OPTIMUM MOISTURE CONTENT.
8. TOP OF WATER LINES SHALL BE A MINIMUM OF 48" BELOW TOP OF CURB EXCEPT WHERE SHOWN OTHERWISE IN THESE PLANS.
9. TRACER TAPE SHALL BE INSTALLED OVER PVC MAINS.
10. FIRE HYDRANTS SHALL BE A MINIMUM OF 3' BEHIND THE FACE OF THE CURB UNLESS OTHERWISE DIRECTED BY THE CITY OF SANGER.
11. INSERT POLY PIG IN WATER MAIN WHERE DIRECTED. POLY PIG IS TO BE FURNISHED BY THE CONTRACTOR.
12. CORPORATION STOPS SHALL BE TESTED FOR FULL FLOW WHEN THE SYSTEM IS PRESSURE TESTED.
13. CONTRACTOR SHALL COMPLY WITH TEXAS HOUSE BILL 1569, SEPTEMBER 1, 1989, TO MAINTAIN A VIABLE TRENCH SAFETY SYSTEM AT ALL TIMES.
14. ALL NEW WATER MAINS SHALL BE FULLY PURGED. DO NOT TEST AGAINST EXISTING VALVES WHEN CONNECTING TO EXISTING MAINS.
15. METER BOXES SHALL BE AS SHOWN IN THE CONSTRUCTION DETAILS FOR 1-1/2" AND SMALLER METERS. LARGER METERS SHALL BE INSTALLED AS DIRECTED BY THE CITY OF SANGER.
16. ALL 6", 8", 10", & 12" WATER MAINS SHALL BE PVC AWWA C900, DR-18. ALL WATER MAINS USING POLY-WRAPPED DUCTILE IRON PIPE SHALL BE CLASS 51. NO COMPACT FITTINGS ALLOWED FULL BODY FITTING ARE REQUIRED.
17. FITTINGS SHALL BE DUCTILE IRON AND MECHANICAL JOINT TYPE, WITH "COR-BLUE" BOLTS AND SHALL BE CLASS 250.
18. WHEN CONSTRUCTED, ALL WATER MAINS SHALL BE SWABBED WITH KNOP POLY PIG BORE SWAB OR APPROVED EQUAL.
19. ALL WATER MAINS SHALL BE PLUGGED WITH A CAST IRON PLUG (OR EQUAL) AT THE END OF EACH WORKDAY.
20. IF LIVESTOCK ARE PRESENT DURING CONSTRUCTION, CONTRACTOR SHALL COORDINATE WITH DEVELOPER AND OWNER REPRESENTATIVES TO PROVIDE TEMPORARY FENCING DURING CONSTRUCTION TO PROTECT LIVESTOCK FROM INJURY.
21. CONTRACTOR IS REQUIRED TO SECURE STREET CUT PERMIT, ISSUED BY THE CITY OF SANGER, PRIOR TO OPEN CUTTING OR BORING. FAILURE TO ACQUIRE PROPER PERMIT & PERMISSION MAY RESULT IN A FINE OF $500/DAY TO THE CONTRACTOR PERFORMING THE WORK.
22. WHEN EXISTING GRADES ARE LOWER THAN PROPOSED MAINS, THE FILL AREA OVER THE PIPE SHALL BE FILLED AND COMPACTED TO A MINIMUM OF 95% +2% OF OPTIMUM MOISTURE CONTENT OF THE MAXIMUM DRY DENSITY TO THE PROPOSED FINISHED GRADE PRIOR TO INSTALLING ANY MAIN.
23. DEFLECT WATER MAINS AT JOINTS TO CLEAR CURB INLETS.

SANITARY SEWER GENERAL NOTES

1. THE CONTRACTOR SHALL FURNISH A TRAFFIC CONTROL PLAN, FOR ALL WORKING AREAS, TO THE CITY TRAFFIC ENGINEER FOR APPROVAL PRIOR TO THE PRE-CONSTRUCTION MEETING. TWO-WAY TRAFFIC MUST BE MAINTAINED AT ALL TIMES. ONE LANE OF TRAVEL AROUND CONSTRUCTION OPERATIONS IN PROGRESS WITH ADEQUATE SAFEGUARDS WILL BE ACCEPTABLE ON MINOR STREETS ONLY. ALL BARRICADES, WARNING SIGNS, LIGHT DEVICES, AND ETC., FOR THE GUIDANCE AND PROTECTION OF TRAFFIC AND PEDESTRIANS, MUST CONFORM TO THE INSTALLATION SHOWN IN THE 1980 TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, AS CURRENTLY AMENDED, TEXAS DEPARTMENT OF TRANSPORTATION. THE COST FOR TRAFFIC CONTROL SHALL BE SUBSIDIARY TO THE UNIT PRICES FOR THIS PROJECT.
2. CONTRACTOR IS RESPONSIBLE FOR ALL TRENCH SAFETY. THE CONTRACTOR SHALL CONSTRUCT THE PROPOSED WORK UTILIZING A TRENCH SAFETY PLAN, PREPARED BY A PROFESSIONAL ENGINEER FOR THIS PROJECT. A TRENCH SAFETY PLAN SHALL BE SUBMITTED AT THE PRE-CONSTRUCTION MEETING.
3. ALL SANITARY SEWER LINES AND LATERALS SHALL BE SDR 26. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH CITY OF SANGER WATER DEPARTMENT STANDARD SPECIFICATIONS AND DETAILS, EXCEPT WHERE MODIFIED IN THESE PLANS OR IN THE SPECIAL CONDITIONS OF THE CONTRACT DOCUMENTS.
4. THE CONTRACTOR SHALL DISTRIBUTE LETTERS TO ALL AFFECTED PROPERTY OWNERS PRIOR TO BEGINNING WORK ON EACH PROPERTY. THE LETTER SHALL INCLUDE NAMES AND TELEPHONE NUMBERS OF CONTRACTOR CONTACTS, A DESCRIPTION OF THE WORK TO BE DONE, AND THE TIME FRAME FOR DOING THE WORK. COPIES OF THE LETTER SHALL BE FORWARDED TO THE CITY INSPECTOR. THE CONTRACTOR SHALL NOTIFY RESIDENTS 48 HOURS IN ADVANCE OF PERFORMING ANY WORK ON PRIVATE PROPERTY. DISTRIBUTION OF LETTERS SHALL BE CONSIDERED AS SUBSIDIARY TO THE COST OF PROJECT AND NO ADDITIONAL COMPENSATION WILL BE ALLOWED.
5. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING GENERAL SAFETY AT AND ADJACENT TO THE PROJECT AREA, INCLUDING THE PERSONAL SAFETY OF THE CONSTRUCTION CREW AND PUBLIC AND THE SAFETY OF PUBLIC AND PRIVATE PROPERTY. CONTRACTOR SHALL PROVIDE TEMPORARY SANITARY SEWER FACILITIES TO AFFECTED PROPERTY OWNERS, IF NECESSARY. NOT A SEPARATE PAY ITEM.
6. WHEN IT IS REQUIRED THAT A CONTRACTOR WORK IN PRIVATE PROPERTY, THE CONTRACTOR SHALL CONTACT THE PROPERTY OWNER 48 HOURS PRIOR TO CONSTRUCTION. ONCE THE PIPE HAS BEEN INSTALLED OR REHABILITATED, THE CONTRACTOR SHALL IMMEDIATELY COMMENCE SURFACE RESTORATION. SURFACE RESTORATION MUST BE COMPLETED TO THE OWNER'S SATISFACTION WITHIN TEN (10) WORKING DAYS. FAILURE TO MAINTAIN SITE RESTORATION, AS NOTED ABOVE, MAY RESULT IN DEFERMENT OF FURTHER PIPE INSTALLATION ACTIVITIES.
7. THE CONTRACTOR SHALL VIDEO ALL POTENTIALLY IMPACTED PRIVATE PROPERTY AREAS PRIOR TO WORK. VIDEOS SHALL INCLUDE DATE NOTATION AND AUDIO IDENTIFICATION OF PROPERTY ADDRESS AND MAIN/LATERAL NAME. THIS PRE-CONSTRUCTION VIDEO TAPING OF IMPACTED PROPERTIES SHALL BE CONSIDERED SUBSIDIARY WORK.
8. CONTRACTOR'S PERSONNEL SHALL HAVE IDENTIFYING CLOTHING OR HATS AT ALL TIMES. THE CONTRACTOR SHALL ALSO HAVE IDENTIFICATION ON ALL VEHICLES.
9. THE LOCATION OF ALL SANITARY SEWER, WATER, STORM SEWER, TELEPHONE, GAS, ELECTRIC, CABLE TELEVISION UTILITIES, DRIVEWAYS, RETAINING WALLS, STRUCTURES, ETC., WHICH MAY BE SHOWN ON THESE PLANS ARE APPROXIMATE. THE CONTRACTOR SHALL VERIFY THE EXACT SIZE, LOCATION, ELEVATION, AND CONFIGURATION OF ALL UTILITIES AND STRUCTURES PRIOR TO CONSTRUCTION. CONTRACTOR SHALL COORDINATE WITH APPROPRIATE UTILITY COMPANIES AND PROPERTY OWNERS TO MARK AND LOCATE ALL UNDERGROUND FACILITIES PRIOR TO CONSTRUCTION. SUCH VERIFICATION SHALL BE CONSIDERED AS SUBSIDIARY TO THE COST OF PROJECT AND NO ADDITIONAL COMPENSATION WILL BE ALLOWED.
10. EXISTING VERTICAL DEFLECTIONS AND PIPE SLOPES SHOWN ON THE PLANS WERE OBTAINED FROM RECORD DRAWINGS AND HAVE NOT BEEN FIELD VERIFIED. SOME PIPE SLOPES WERE ADJUSTED TO MATCH SURVEYED MANHOLE FLOW LINES. RIM ELEVATIONS, FLOW LINES AND HORIZONTAL LOCATIONS OF EXISTING MANHOLES WERE DETERMINED FROM FIELD SURVEY.
11. THE PROPOSED SANITARY SEWER LINES AT TIMES WILL BE LAID CLOSE TO OTHER EXISTING UTILITIES AND STRUCTURES BOTH ABOVE AND BELOW GROUND. THE CONTRACTOR SHALL MAKE NECESSARY PROVISIONS FOR THE SUPPORT AND PROTECTION OF ALL UTILITY POLES, GAS MAINS, TELEPHONE CABLES, SANITARY SEWER LINES, WATER LINES, TU CABLES, DRAINAGE PIPES, UTILITY SERVICES, AND ALL OTHER UTILITIES AND STRUCTURES BOTH ABOVE AND BELOW GROUND DURING CONSTRUCTION. THE CONTRACTOR IS LIABLE FOR ALL DAMAGES DONE TO SUCH EXISTING FACILITIES AS A RESULT OF THE CONTRACTOR'S OPERATIONS.
12. CONTRACTOR SHALL CONDUCT A PRE-CONSTRUCTION TELEVISION INSPECTION OF ALL EXISTING SANITARY SEWER LINES, WHICH ARE TO BE ABANDONED OR REHABILITATED VIA TRENCHLESS METHODS, TO VERIFY LOCATIONS OF ALL SEWER SERVICE CONNECTIONS PRIOR TO CONSTRUCTION OF ENTIRE PROJECT.
13. CONTRACTOR SHALL ENSURE THAT ALL ACTIVE SERVICES CAN BE RECONNECTED AND/OR REROUTED TO NEW SEWER MAIN/LATERAL. CONTRACTOR SHALL NOTIFY THE CITY OF ANY POTENTIAL CONFLICTS PRIOR TO CONSTRUCTION SO MODIFICATIONS TO THE PLANS CAN BE MADE IF NECESSARY. NOT A SEPARATE PAY ITEM, THIS WORK SHALL BE SUBSIDIARY TO PRE-CONSTRUCTION TELEVISION INSPECTION OF SANITARY SEWER LINES.
14. CONTRACTOR SHALL VERIFY THAT ALL CONNECTIONS TO THE SANITARY SEWER SYSTEM ARE FOR SANITARY SEWER ONLY. CONTRACTOR SHALL NOTIFY CITY OF ALL KNOWN ILLICIT CONNECTIONS.
15. CONTRACTOR IS RESPONSIBLE FOR MAINTAINING WATER AND SEWER CONNECTIONS TO ALL HOMES AND BUSINESSES IN WORKING ORDER AT ALL TIMES, EXCEPT FOR BRIEF INTERRUPTIONS IN SERVICE FOR SEWER SERVICES TO BE REINSTALLED. IN NO CASE SHALL SERVICES BE ALLOWED TO REMAIN OUT OF SERVICE OVERNIGHT.
16. THE CONTRACTOR SHALL BE LIABLE FOR ALL DAMAGES TO PROPERTIES, HOMES, AND BASEMENTS FROM BACKUP, WHICH MAY RESULT DURING THE INSTALLATION OF THE NEW PIPE AND/OR ABANDONMENT OF EXISTING PIPE. THE CONTRACTOR WILL BE ALLOWED TO OPEN CLEAN OUTS WHERE AVAILABLE. THE CONTRACTOR WILL BE RESPONSIBLE FOR ALL CLEAN UP ASSOCIATED WITH OPENING CLEAN OUTS.
17. THE CONTRACTOR SHALL PRESERVE AND PROTECT OR REMOVE AND REPLACE (WITH PRIOR APPROVAL OF CITY PARKS AND COMMUNITY SERVICES AND/OR AFFECTED PROPERTY OWNERS) ALL TREES, SHRUBS, HEDGES, RETAINING WALLS, LANDSCAPING, BUILDINGS, WALKS, ETC., IN OR NEAR PROPOSED CONSTRUCTION AREA. THIS WORK SHALL BE CONSIDERED INCIDENTAL AND NOT A SEPARATE PAY ITEM.
18. THE CONTRACTOR SHALL REMOVE ALL FENCES, LOCATED WITHIN EASEMENTS, INTERFERING WITH CONSTRUCTION OPERATION AND PROVIDE TEMPORARY FENCING DURING CONSTRUCTION. REMOVED FENCES, WOODEN OR CHAIN LINK, SHALL BE REPLACED WITH A NEW FENCE OR UNDAMAGED ORIGINAL FENCING. ALL AFFECTED PROPERTY OWNERS SHALL BE NOTIFIED PRIOR TO CONSTRUCTION. REMOVAL AND REPLACEMENT OF EXISTING AND TEMPORARY FENCES SHALL BE CONSIDERED SUBSIDIARY TO THE PROJECT COST AND REFLECTED IN THE UNIT BID PRICES FOR VARIOUS ITEMS LISTED IN THE PROPOSAL.
19. CONTRACTOR SHALL SAWCUT EXISTING CURB AND GUTTER, PAVEMENT, DRIVEWAYS, AND SIDEWALKS AT AREAS WHERE PAVEMENT OR CONCRETE IS TO BE REMOVED. SAWCUTS WILL BE CONSIDERED SUBSIDIARY TO THE PRICE BID FOR LINEAR FEET OF SANITARY SEWER.
20. CONTRACTOR SHALL PROTECT CONCRETE CURB AND GUTTER, DRIVEWAYS, AND SIDEWALKS THAT ARE NOT DESIGNATED FOR REMOVAL. REMOVAL AND REPLACEMENT OF THESE ITEMS SHALL BE AS DESIGNATED. AT LOCATIONS WHERE THE CURB AND GUTTER ARE TO BE REPLACED, THE CONTRACTOR SHALL ASSUME ALL RESPONSIBILITY FOR THE RE-ESTABLISHMENT OF EXISTING STREET AND GUTTER GRADES. ESTABLISHMENT OF GRADES SHALL BE PERFORMED PRIOR TO CONSTRUCTION AND IS NOT A SEPARATE PAY ITEM, BUT SHALL BE CONSIDERED INCIDENTAL TO THE PROJECT PRICE.
21. ALL DRIVEWAYS, WHICH ARE OPEN CUT, SHALL HAVE AT LEAST A TEMPORARY RIDING SURFACE AT THE END OF EACH DAY. THE TEMPORARY SURFACE WILL BE CONSIDERED A NON-PAY ITEM.
22. CONTRACTOR SHALL BYPASS PUMP SEWAGE AROUND SECTIONS OF PIPE PRIOR TO BEING REPLACED OR REHABILITATED. NOT A SEPARATE PAY ITEM. PAYMENT SHALL BE INCIDENTAL TO REPLACEMENT OF SEWER.
23. NEW MANHOLES SHALL BE CONSTRUCTED SUCH THAT THE MANHOLE COVER IS AT FINISHED SURFACE GRADE, OR AS NOTED ON THE PLANS. CONCRETE COLLARS AND WATERTIGHT MANHOLE INSERTS SHALL BE PROVIDED WITH ALL NEW MANHOLES, AS REQUIRED FOR THIS PROJECT.
24. THE CONTRACTOR IS RESPONSIBLE FOR KEEPING STREETS AND SIDEWALKS ADJACENT TO PROJECT FREE OF MUD AND DEBRIS FROM THE CONSTRUCTION.
25. THE CONTRACTOR SHALL CLEANUP AND RESTORE THE AREA OF OPERATIONS TO A CONDITION AS GOOD AS OR BETTER THAN THAT WHICH EXISTED PRIOR TO REPLACEMENT OR REHABILITATION OF THE PIPE.
26. THE CONTRACTOR SHALL REMOVE FROM THE PROJECT AREA ALL SURPLUS MATERIAL. THIS SHALL BE INCIDENTAL AND NOT A SEPARATE PAY ITEM. SURPLUS MATERIALS FROM EXCAVATION INCLUDING DIRT, TRASH, ETC. SHALL BE PROPERLY DISPOSED OF AT A SITE ACCEPTABLE TO THE CITY'S FLOOD PLAIN ADMINISTRATOR IF WITHIN THE CITY LIMITS. IF THE LOCATION IS NOT WITHIN THE CITY LIMITS, THE CONTRACTOR SHALL PROVIDE A LETTER STATING SO. NO EXCESS EXCAVATED MATERIAL SHALL BE DEPOSITED IN LOW AREAS OR ALONG NATURAL DRAINAGE WAY WITHOUT WRITTEN PERMISSION FROM THE AFFECTED PROPERTY OWNER AND THE CITY'S FLOOD PLAIN ADMINISTRATOR. IF THE CONTRACTOR PLACES EXCESS MATERIAL IN THE AREAS WITHOUT WRITTEN PERMISSION, HE WILL BE RESPONSIBLE FOR ALL DAMAGE RESULTING FROM SUCH FILL AND HE SHALL REMOVE THE MATERIAL AT HIS OWN COST.
27. ALL SANITARY SEWER LINES AND MANHOLES SHALL BE LEAK TESTED BEFORE THE PROJECT IS ACCEPTED. DEFLECTION TESTING OF PVC SEWER LINES IS REQUIRED.
28. ALL SANITARY SEWER MAIN AND SERVICE CONNECTIONS SHALL BE VIDEO TAPED AFTER INSTALLATION OF THE SERVICE CONNECTIONS, PRIOR TO PAVING OF THE PROJECT. THE LINES SHALL BE FLUSHED WITH WATER AND TURNED OFF PRIOR TO MAKING THE VIDEO. THE SIZE AND SLOPE OF THE PIPE SHALL BE SHOWN ON THE VIDEO. ALL SANITARY SEWER WILL BE RE-VIDEO TAPED BY THE DEVELOPER THREE MONTHS PRIOR TO THE EXPIRATION OF THE TWO-YEAR MAINTENANCE AGREEMENT. THE PURPOSE OF THE SECOND SEWER VIDEO IS TO IDENTIFY ANY PROBLEMS THAT MAY HAVE OCCURRED SINCE ACCEPTANCE SUCH AS SETTLEMENT, CUTTING OF THE LINES BY FRANCHISE UTILITIES, ETC.

CONSTRUCTION MATERIALS ENGINEERING

1. THE DEVELOPER WILL BE RESPONSIBLE FOR HIRING THE DESIGN ENGINEER TO PROVIDE CONSTRUCTION MATERIALS ENGINEERING (CME) SERVICES TO REVIEW AND APPROVE ALL SUBMITTALS FOR MATERIALS AND SHOP DRAWINGS ASSOCIATED WITH IMPROVEMENTS TO BE MAINTAINED BY THE CITY OF SANGER. UPON REVIEW FOR CONFORMANCE WITH CITY OF SANGER STANDARDS, THE ENGINEER WILL SUBMIT THE INFORMATION TO THE CITY OF SANGER CITY ENGINEER WITH A LETTER, CONFIRMING CONFORMANCE WITH THE CITY OF SANGER REQUIREMENTS. THIS MUST OCCUR BEFORE INSTALLATION OF ANY IMPROVEMENTS.
2. THE ENGINEER PROVIDING CME SERVICES WILL BE RESPONSIBLE FOR ENSURING THAT THE PROPER NUMBER AND LOCATION OF TESTS ARE MADE AND WILL REVIEW RESULTS FOR CONFORMANCE WITH THE PROJECT SPECIFICATIONS. SANITARY SEWER TAPES SHALL BE REVIEWED AND APPROVED PRIOR TO THE PLACEMENT OF PAVEMENT. A SET OF TAPES SHALL BE MADE AVAILABLE TO THE CITY OF SANGER FOR THEIR REVIEW, ALSO, PRIOR TO PAVING OF THE PROJECT. UPON COMPLETION OF THE PROJECT, THE CME WILL PROVIDE A WRITTEN REPORT SUMMARIZING THE TESTING PERFORMED AND THAT RESULTS MEET THE REQUIREMENTS OF THE CITY OF SANGER. THE REPORT SHALL BE BOUND IN A THREE RING BINDER AND SHALL CONTAIN AT A MINIMUM THE CONFORMANCE LETTER FROM THE CME, COPIES OF ALL WARRANTIES AND BONDS, SHOP DRAWINGS AND APPROVALS, TESTING BY CATEGORY, AS-BUILT DRAWINGS, AND SANITARY SEWER TAPES ON CD.
3. THE DEVELOPER WILL NOTIFY THE CITY ENGINEER IN WRITING WITH THE NAME OF THE ENGINEER THAT WILL PROVIDE THE CME SERVICES.
4. THE CME SHALL ATTEND THE PRE-CONSTRUCTION CONFERENCE FOR THE PROJECT.

FINAL PLAT ACCEPTANCE

1. THE FINAL PLAT CANNOT BE FILED WITH DENTON COUNTY UNTIL AFTER ALL FRANCHISE UTILITIES ARE INSTALLED, GRASS IS ESTABLISHED, PUNCH LIST ITEMS ARE ADDRESSED, AND ALL PUBLIC IMPROVEMENTS ARE ACCEPTED BY THE CITY OF SANGER.

WARRANTY

1. THE CONTRACTOR SHALL MAINTAIN THE REQUIRED PUBLIC IMPROVEMENTS FOR A PERIOD OF TWO (2) YEARS FOLLOWING ACCEPTANCE BY THE CITY AND SHALL PROVIDE A MAINTENANCE BOND IN THE AMOUNT OF 100% OF THE COSTS OF THE IMPROVEMENTS.
2. THIRTY DAYS PRIOR TO THE EXPIRATION OF THE WARRANTY, THE CONTRACTOR SHALL NOTIFY THE CITY OF THE APPROACHING END OF THE TWO-YEAR WARRANTY AND SHALL REQUEST A FINAL INSPECTION OF THE IMPROVEMENTS TO IDENTIFY ANY ITEMS REQUIRING REPAIR. IN THE EVENT THE CONTRACTOR FAILS TO NOTIFY THE CITY OF THE END OF WARRANTY, THE WARRANTY AND BOND SHALL AUTOMATICALLY BE EXTENDED TO END THIRTY DAYS AFTER NOTICE OF END-OF-WARRANTY IS FILED WITH THE CITY.
3. IF THE CONTRACTOR FAILS TO RE-VIDEO THE SANITARY SEWER OR FAILS TO MAKE SATISFACTORY REPAIRS INDICATED NECESSARY ON THE SEWER RE-VIDEO OR FINAL INSPECTION, THE WARRANTY AND MAINTENANCE BOND SHALL AUTOMATICALLY TO EXTENDED TO 30 DAYS AFTER SATISFACTORY REPAIRS ARE MADE.

NOTE:
ALL UTILITY DITCH BACKFILL WILL BE INSTALLED IN 8" LIFTS AND EACH LIFT WILL BE TESTED TO 95% MAXIMUM DRY DENSITY WITH A MOISTURE CONTENT AT OR ABOVE THE OPTIMUM MOISTURE.

No.	DATE	REVISION	APPROV.

THESE CONSTRUCTION PLANS WERE PREPARED UNDER THE RESPONSIBLE SUPERVISION OF F.E. MIDDLETON JR., REGISTERED PROFESSIONAL ENGINEER NO. 67449.

Middleton & Assoc, LLC.
CONSULTING CIVIL ENGINEERS & LAND PLANNERS
TBPE #F-10900
2785 ROCKBROOK DRIVE, SUITE 105
LEWISVILLE, TEXAS 75067 (972) 393-9800

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STATE OF TEXAS — F. E. MIDDLETON, JR. — 67449 — PROFESSIONAL ENGINEER

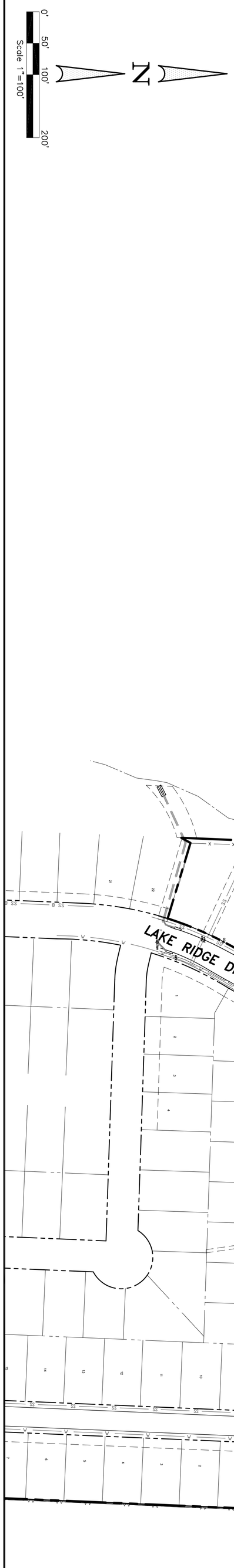
LAKE RIDGE DRIVE – LAKE RIDGE PHASE 4
CITY OF SANGER DENTON COUNTY, TEXAS

SANGER TOWN CENTER LLC &
DUAL BOND HOLDINGS LLC &
HIEN & DUYET NGUYEN
101 FOREST BEND DRIVE
COPPELL, TEXAS 75019
JONATHAN WANG – 214-316-2256

GENERAL CONSTRUCTION NOTES

Date: 10-30-24
Dwg Scale: Hor. NTS
Vert.
Dwg File: 0001045NOTE.DWG
Project No. 0001045

NOTE1



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No.	DATE	REVISION	APPROV.

DEM01

Date: 10-30-24
Dwg Scale: Hor. 1"=100'
Vert.
Dwg File: 0001045DEMO.DWG
Project No. 0001045

DEMOLITION PLAN

LAKE RIDGE DRIVE - LAKE RIDGE PHASE 4
CITY OF SANGER DENTON COUNTY, TEXAS

SANGER TOWN CENTER LLC &
DUAL BOND HOLDINGS LLC &
HIEN & DUYET NGUYEN
101 FOREST BEND DRIVE
COPPELL, TEXAS 75019
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STATE OF TEXAS
F. E. MIDDLETON, JR.
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REGISTERED
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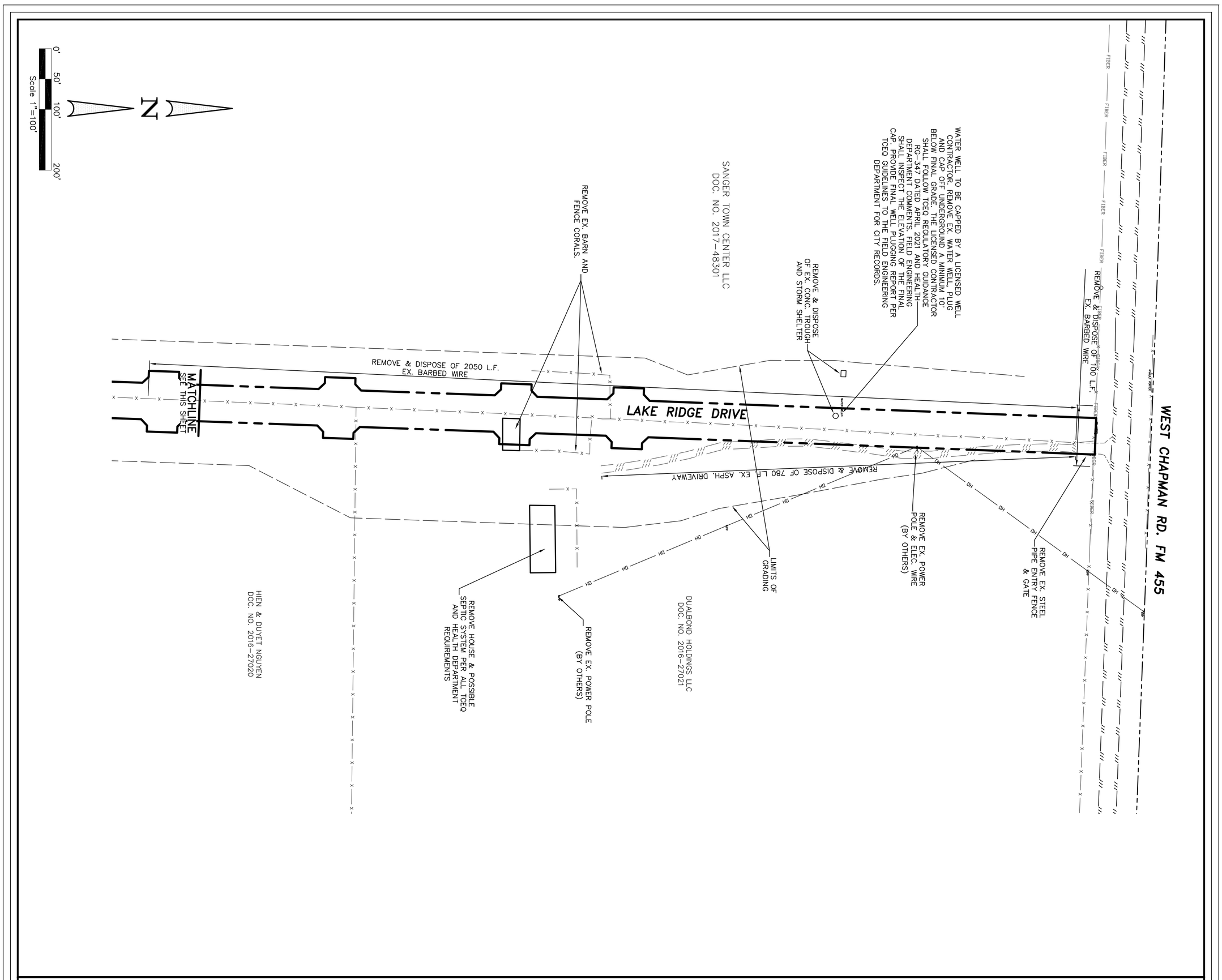

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No.	DATE	REVISION	APPROV.

DEMO2

Date: 10-30-24
Dwg Scale: Hor. 1"=100' Vert.
Dwg File: 0001045DEMO.DWG
Project No. 0001045

DEMOLITION PLAN

LAKE RIDGE DRIVE - LAKE RIDGE PHASE 4
CITY OF SANGER DENTON COUNTY, TEXAS

SANGER TOWN CENTER LLC &
DUAL BOND HOLDINGS LLC &
HIEN & DUYET NGUYEN
101 FOREST BEND DRIVE
COPPELL, TEXAS 75019
JONATHAN WANG - 214-316-2256

STATE OF TEXAS
F. E. MIDDLETON, JR.
67449
REGISTERED PROFESSIONAL ENGINEER

Middleton & Assoc, LLC
CONSULTING CIVIL ENGINEERS & LAND PLANNERS
TBPE #F-10900

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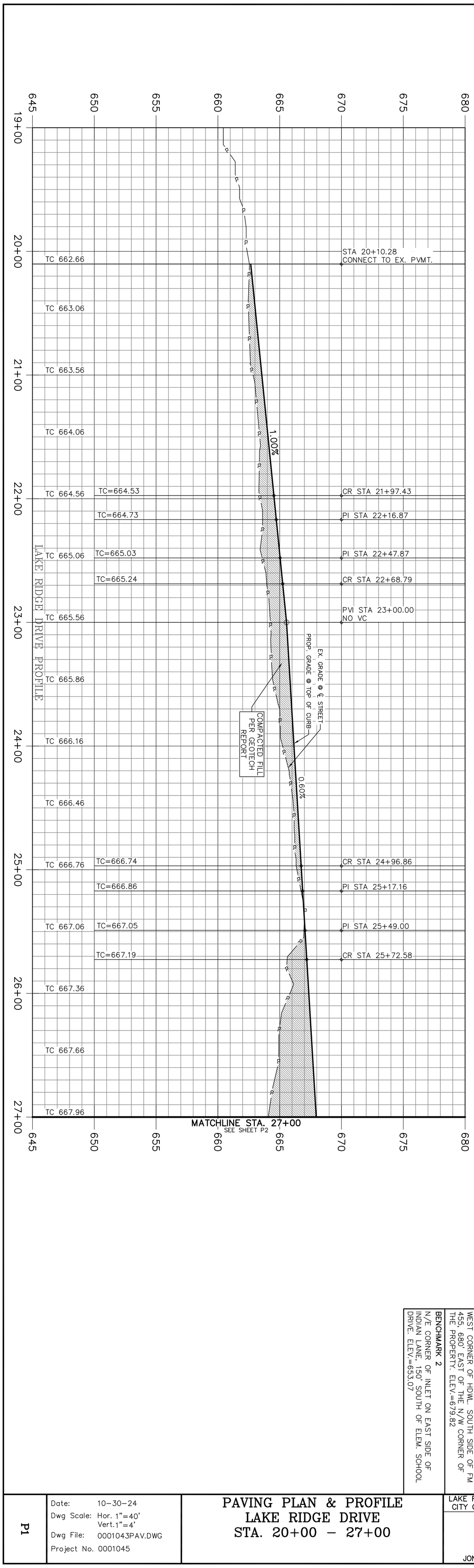
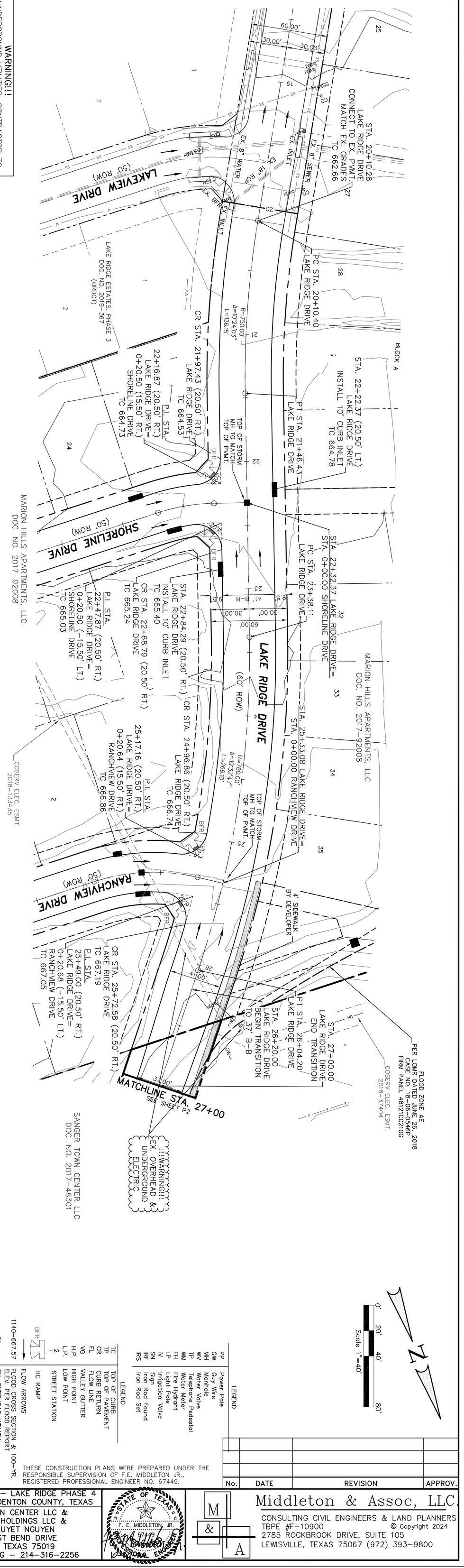
WARNING!!!
EXIST. UNDERGROUND UTILITIES. CONTRACTOR TO VERIFY LOCATION AND DEPTH OF EXISTING UTILITIES PRIOR TO CONSTRUCTION.





BENCHMARK 1
WEST CORNER OF HDWL. SOUTH SIDE OF FM 455, 680' EAST OF THE N/W CORNER OF THE PROPERTY. ELEV.=679.82

BENCHMARK 2
N/E CORNER OF INLET ON EAST SIDE OF INDIAN LANE, 150' SOUTH OF ELEM. SCHOOL DRIVE. ELEV.=653.07

THESE CONSTRUCTION PLANS WERE PREPARED UNDER THE RESPONSIBLE SUPERVISION OF F.E. MIDDLETON JR., REGISTERED PROFESSIONAL ENGINEER NO. 67449.

No.	DATE	REVISION	APPROV.

P1

Date: 10-30-24
Dwg Scale: Hor. 1"=40' Vert.1"=4'
Dwg File: 0001043PAV.DWG
Project No. 0001045

PAVING PLAN & PROFILE
LAKE RIDGE DRIVE
STA. 20+00 - 27+00

LAKE RIDGE DRIVE - LAKE RIDGE PHASE 4
CITY OF SANGER DENTON COUNTY, TEXAS
SANGER TOWN CENTER LLC &
DUAL BOND HOLDINGS LLC &
HIEN & DUYET NGUYEN
101 FOREST BEND DRIVE
COPPELL, TEXAS 75019
JONATHAN WANG - 214-316-2256

STATE OF TEXAS
F. E. MIDDLETON, JR.
67449
LICENSED PROFESSIONAL ENGINEER

Middleton & Assoc, LLC
CONSULTING CIVIL ENGINEERS & LAND PLANNERS
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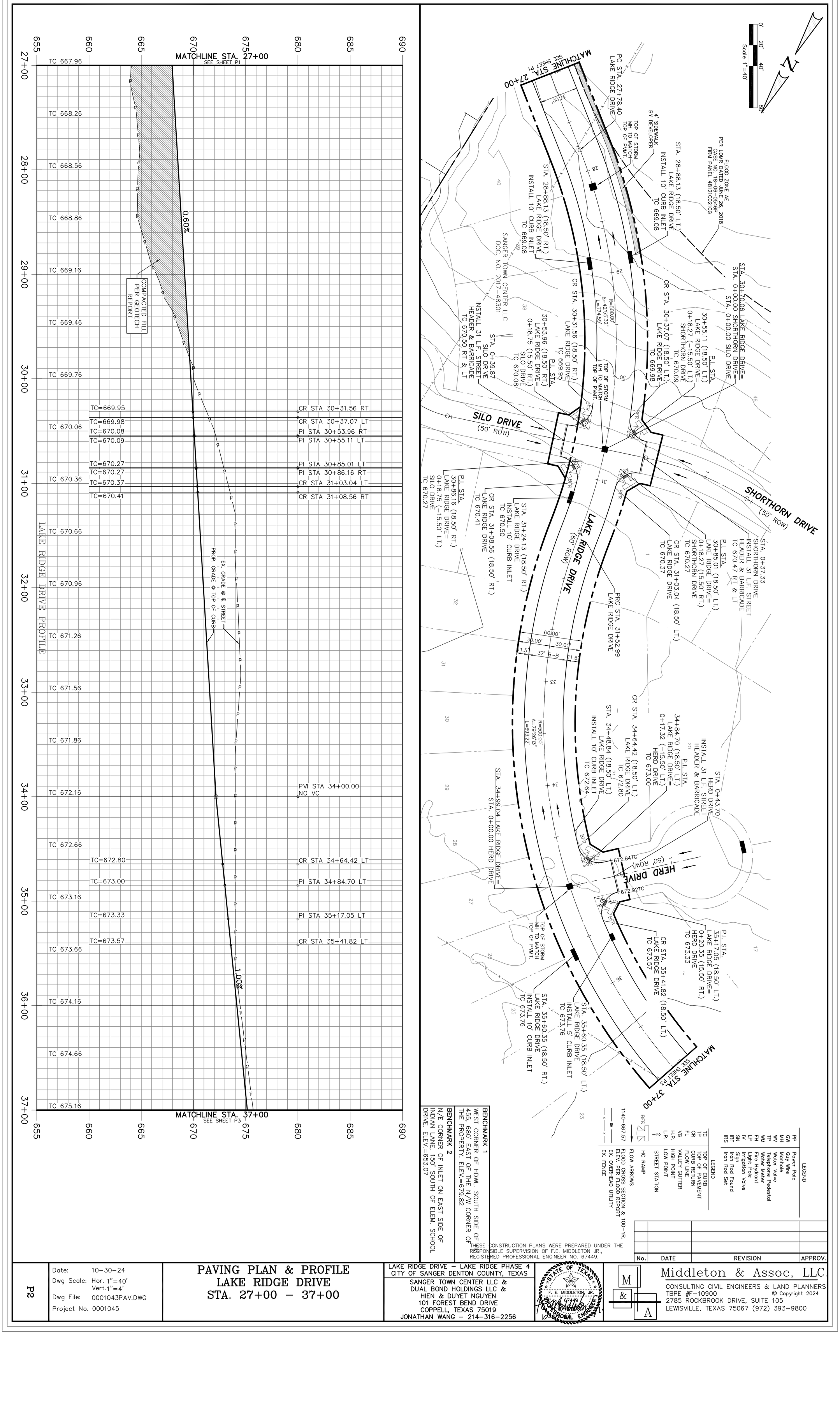

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No.	DATE	REVISION	APPROV.

P2

Date: 10-30-24
Dwg Scale: Hor. 1"=40'
Vert.1"=4'
Dwg File: 0001043PAV.DWG
Project No. 0001045

PAVING PLAN & PROFILE
LAKE RIDGE DRIVE
STA. 27+00 - 37+00

LAKE RIDGE DRIVE - LAKE RIDGE PHASE 4
CITY OF SANGER DENTON COUNTY, TEXAS

SANGER TOWN CENTER LLC &
DUAL BOND HOLDINGS LLC &
HIEN & DUYET NGUYEN
101 FOREST BEND DRIVE
COPPELL, TEXAS 75019
JONATHAN WANG - 214-316-2256

STATE OF TEXAS
F. E. MIDDLETON, JR.
67449
REGISTERED PROFESSIONAL ENGINEER
07-19-25

Middleton & Assoc, LLC
CONSULTING CIVIL ENGINEERS & LAND PLANNERS
TBPE #F-10900

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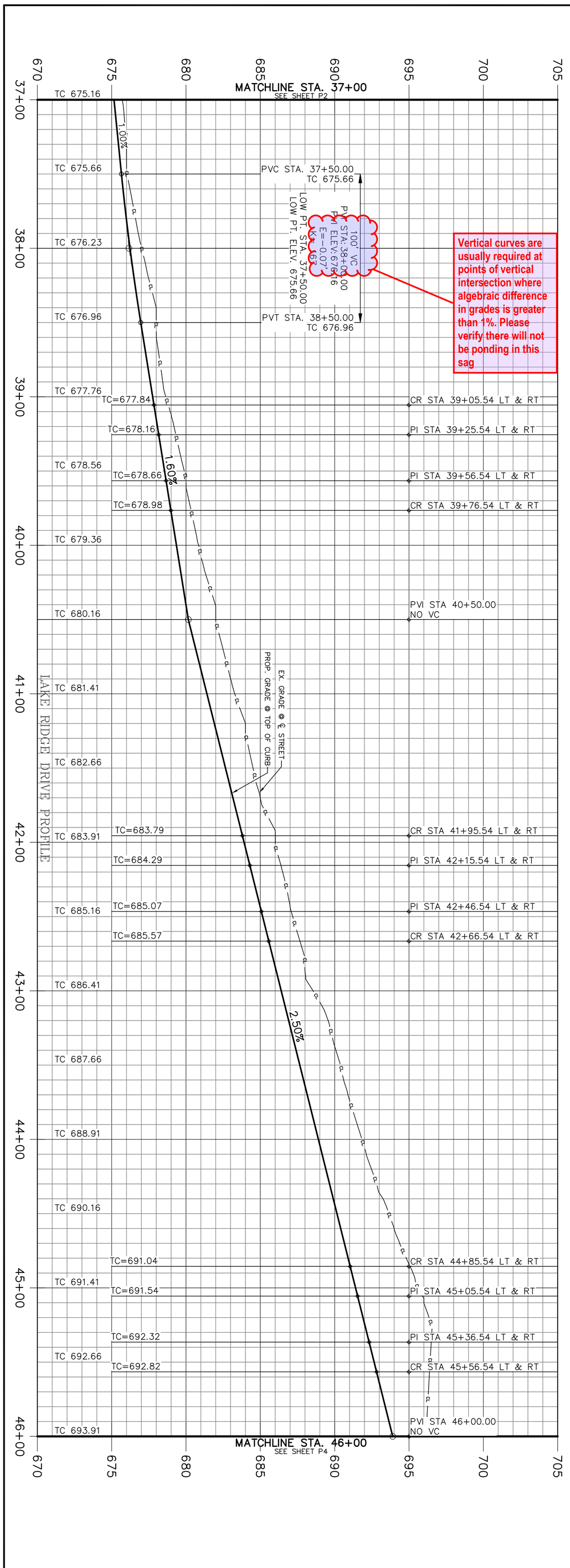
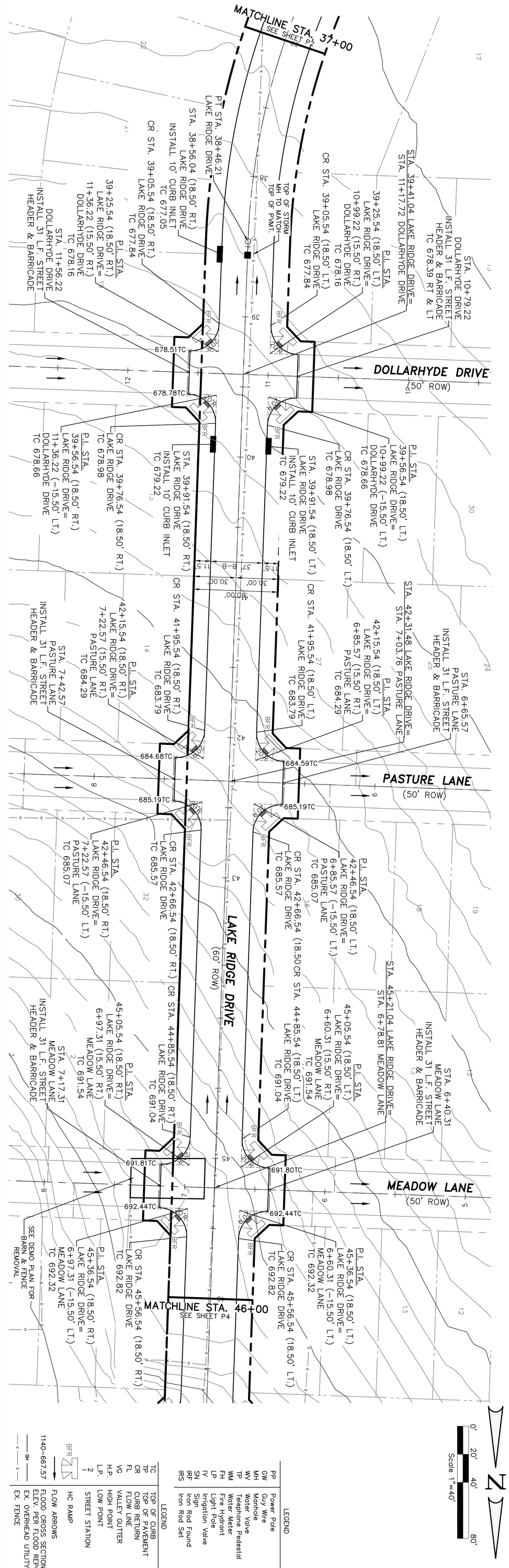
LEWISVILLE, TEXAS 75067 (972) 393-9800





BENCHMARK 1
WEST CORNER OF HDWL. SOUTH SIDE OF FM 455, 680' EAST OF THE N/W CORNER OF THE PROPERTY. ELEV.=679.82

BENCHMARK 2
N/E CORNER OF INLET ON EAST SIDE OF INDIAN LANE, 150' SOUTH OF ELEM. SCHOOL DRIVE. ELEV.=653.07

THESE CONSTRUCTION PLANS WERE PREPARED UNDER THE RESPONSIBLE SUPERVISION OF F.E. MIDDLETON JR., REGISTERED PROFESSIONAL ENGINEER NO. 67449.

No.	DATE	REVISION	APPROV.

P3

Date: 10-30-24
Dwg Scale: Hor. 1"=40'
Vert.1"=4'
Dwg File: 0001043PAV.DWG
Project No. 0001045

PAVING PLAN & PROFILE
LAKE RIDGE DRIVE
STA. 37+00 - 46+00

LAKE RIDGE DRIVE - LAKE RIDGE PHASE 4
CITY OF SANGER DENTON COUNTY, TEXAS

SANGER TOWN CENTER LLC &
DUAL BOND HOLDINGS LLC &
HIEN & DUYET NGUYEN
101 FOREST BEND DRIVE
COPPELL, TEXAS 75019
JONATHAN WANG - 214-316-2256

STATE OF TEXAS
F. E. MIDDLETON, JR.
97449
REGISTERED PROFESSIONAL ENGINEER

Middleton & Assoc, LLC
CONSULTING CIVIL ENGINEERS & LAND PLANNERS
TBPE #F-10900

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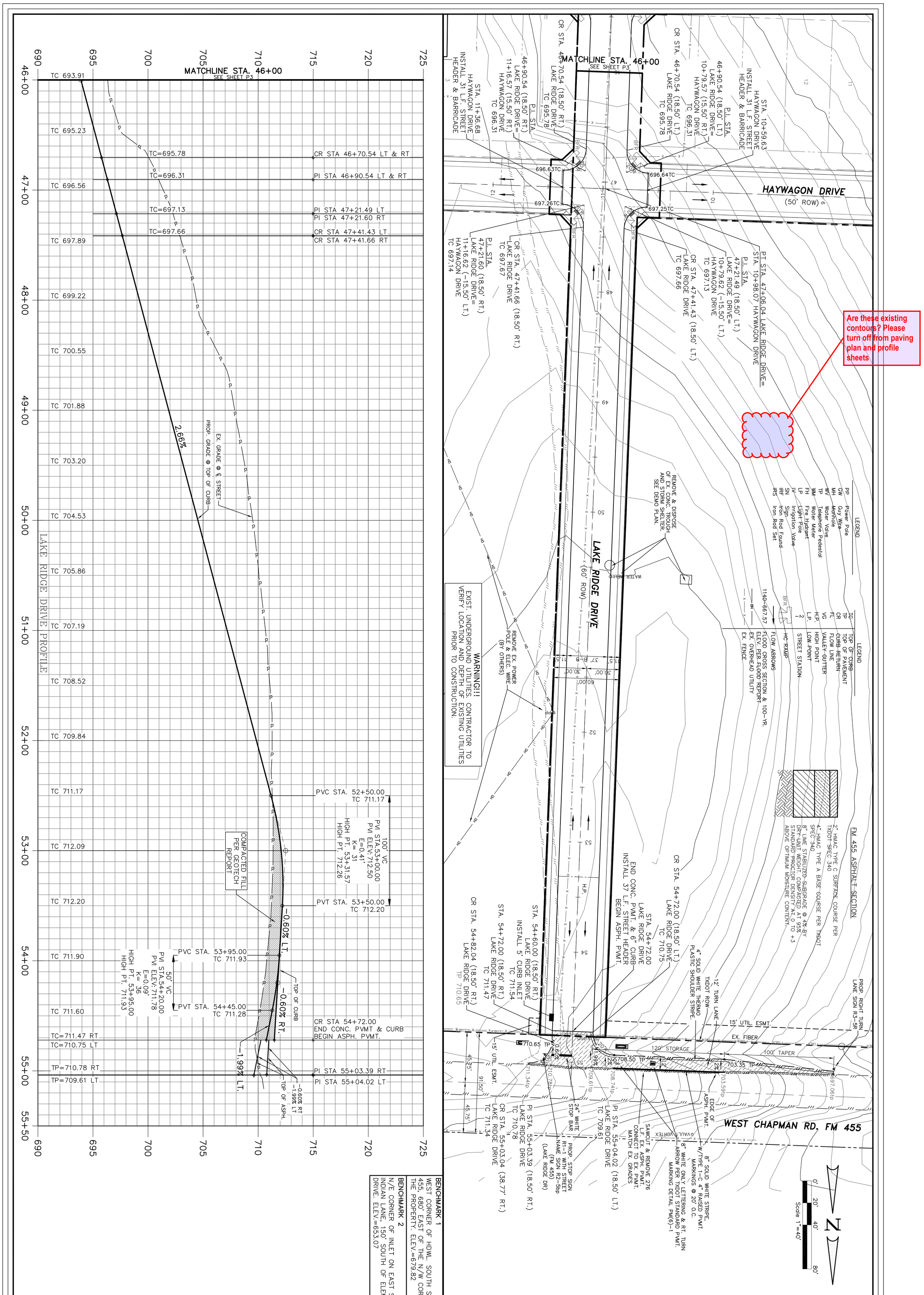
LEWISVILLE, TEXAS 75067 (972) 393-9800


MATCHLINE STA. 46+00
SEE SHEET P3
TC 693.91
TC 695.23
TC=695.78
CR STA 46+70.54 LT & RT
TC=696.31
PI STA 46+90.54 LT & RT
TC 696.56
TC=697.13
PI STA 47+21.49 LT
PI STA 47+21.60 RT
TC=697.66
CR STA 47+41.43 LT
CR STA 47+41.66 RT
TC 697.89
TC 699.22
TC 700.55
TC 701.88
TC 703.20
TC 704.53
TC 705.86
TC 707.19
TC 708.52
TC 709.84
TC 711.17
PVC STA. 52+50.00
TC 711.17
100' VC
PVI STA.53+00.00
PVI ELEV:712.50
E=0.41'
K= 31
HIGH PT. 53+31.57
HIGH PT. 712.26
TC 712.09
TC 712.20
PVT STA. 53+50.00
TC 712.20
COMPACTED FILL
PER GEOTECH
REPORT
-0.60% LT.
PVC STA. 53+95.00
TC 711.93
TC 711.90
50' VC
PVI STA.54+20.00
PVI ELEV:711.78
E=0.09'
K= 36
HIGH PT. 53+95.00
HIGH PT. 711.93
-0.60% RT.
TOP OF CURB
TC 711.60
PVT STA. 54+45.00
TC 711.28
CR STA 54+72.00
END CONC. PVMT & CURB
BEGIN ASPH. PVMT.
TC=711.47 RT
TC=710.75 LT
TP=710.78 RT
TP=709.61 LT
PI STA 55+03.39 RT
PI STA 55+04.02 LT
-1.99% LT.
-0.60% RT
-1.99% LT
TOP OF ASPH.
2.66%
EX. GRADE @ ℄ STREET
PROP. GRADE @ TOP OF CURB
LAKE RIDGE DRIVE PROFILE
46+00
47+00
48+00
49+00
50+00
51+00
52+00
53+00
54+00
55+00
55+50
690
695
700
705
710
715
720
725
MATCHLINE STA. 46+00
SEE SHEET P3
CR STA. 46+70.54 (18.50' RT.)
LAKE RIDGE DRIVE
TC 695.78
P.I. STA.
46+90.54 (18.50' LT.)
LAKE RIDGE DRIVE=
10+79.57 (15.50' RT.)
HAYWAGON DRIVE
TC 696.31
STA. 10+59.63
HAYWAGON DRIVE
INSTALL 31 L.F. STREET
HEADER & BARRICADE
CR STA. 46+70.54 (18.50' LT.)
LAKE RIDGE DRIVE
TC 695.78
P.I. STA.
46+90.54 (18.50' RT.)
LAKE RIDGE DRIVE=
11+16.57 (15.50' RT.)
HAYWAGON DRIVE
TC 696.31
STA. 11+36.68
HAYWAGON DRIVE
INSTALL 31 L.F. STREET
HEADER & BARRICADE
696.63TC
696.64TC
697.26TC
697.25TC
HAYWAGON DRIVE
(50' ROW)
PT STA. 47+06.04 LAKE RIDGE DRIVE
STA. 10+98.07 HAYWAGON DRIVE
P.I. STA.
47+21.49 (18.50' LT.)
LAKE RIDGE DRIVE=
10+79.62 (-15.50' LT.)
HAYWAGON DRIVE
TC 697.13
CR STA. 47+41.43 (18.50' LT.)
LAKE RIDGE DRIVE
TC 697.66
P.I. STA.
47+21.60 (18.50' RT.)
LAKE RIDGE DRIVE=
11+16.62 (-15.50' LT.)
HAYWAGON DRIVE
TC 697.14
CR STA. 47+41.66 (18.50' RT.)
LAKE RIDGE DRIVE
TC 697.67
Are these existing contours? Please turn off from paving plan and profile sheets
LEGEND
PP Power Pole
GW Guy Wire
MH Manhole
WV Water Valve
TP Telephone Pedestal
WM Water Meter
FH Fire Hydrant
LP Light Pole
IV Irrigation Valve
SN Sign
IRF Iron Rod Found
IRS Iron Rod Set
LEGEND
TC TOP OF CURB
TP TOP OF PAVEMENT
CR CURB RETURN
FL FLOW LINE
VG VALLEY GUTTER
H.P. HIGH POINT
L.P. LOW POINT
2 STREET STATION
1
HC RAMP
FLOW ARROWS
1140-667.57 FLOOD CROSS SECTION & 100-YR. ELEV. PER FLOOD REPORT
EX. OVERHEAD UTILITY
EX. FENCE
REMOVE & DISPOSE OF EX. CONC. TROUGH AND STORM SHELTER. SEE DEMO PLAN.
WATER WELL
LAKE RIDGE DRIVE
(60' ROW)
WARNING!!!
EXIST. UNDERGROUND UTILITIES. CONTRACTOR TO VERIFY LOCATION AND DEPTH OF EXISTING UTILITIES PRIOR TO CONSTRUCTION.
REMOVE EX. POWER POLE & ELEC. WIRE (BY OTHERS)
FM 455 ASPHALT SECTION
2" HMAC TYPE C SURFACE COURSE PER TXDOT SPEC 340
4" HMAC TYPE A BASE COURSE PER TXDOT SPEC 340
8" LIME STABILIZED SUBGRADE @ 4% BY DRY-UNIT WEIGHT. COMPACTED AT 95% STANDARD PROCTOR DENSITY AT 0 TO +3 ABOVE OPTIMUM MOISTURE CONTENT.
CR STA. 54+72.00 (18.50' LT.)
LAKE RIDGE DRIVE
TC 710.75
STA. 54+72.00
LAKE RIDGE DRIVE
PVMT. & 6" CURB
END CONC. PVMT. & 6" CURB
INSTALL 37 L.F. STREET HEADER
BEGIN ASPH. PVMT.
4" SOLID WHITE THERMO PLASTIC SHOULDER STRIPE.
12' TURN LANE
TXDOT ROW
PROP. RIGHT TURN LANE SIGN R3-5R
15' UTIL. ESMT.
EX. FIBER
120' STORAGE
100' TAPER
STA. 54+60.00 (18.50' RT.)
LAKE RIDGE DRIVE
INSTALL 5' CURB INLET
TC 711.54
STA. 54+72.00 (18.50' RT.)
LAKE RIDGE DRIVE
TC 711.47
CR STA. 54+82.04 (18.50' RT.)
LAKE RIDGE DRIVE
TP 710.65
710.65 TP
708.50 TP
703.35 TP
703.59tp
697.06tp
711.34tp
710.78tp
709.61tp
708.74tp
15' UTIL. ESMT.
45.75'
91.50'
45.75'
24" WHITE STOP BAR
PROP. STOP SIGN R1-1 WITH STREET NAME SIGN R2-5bp (FM 455) (LAKE RIDGE DR)
PI STA. 55+03.39
LAKE RIDGE DRIVE
TC 710.78
CR STA. 55+03.04
LAKE RIDGE DRIVE
TC 711.34
PI STA. 55+04.02
LAKE RIDGE DRIVE
TC 709.61
SAWCUT & REMOVE 276 L.F. EX. ASPH. PVMT. CONNECT TO EX. PVMT. MATCH EX. GRADES
EDGE OF ASPH. PVMT.
GAULT VORTEX
8" WHITE ONLY LETTERING & RT. TURN ARROW PER TXDOT STANDARD PVMT. MARKING DETAIL PM(6)-1
8" SOLID WHITE STRIPE, W/TYPE 1-C 4" RAISED PVMT. MARKINGS @ 20' O.C.
WEST CHAPMAN RD. FM 455
STA. 54+03.04 (38.77' RT.)
DRIVE
STA. 54+03.39 (18.50' RT.)
DRIVE
Scale 1"=40'
0'
20'
40'
80'
N
BENCHMARK 1
WEST CORNER OF HDWL. SOUTH SIDE OF FM 455, 680' EAST OF THE N/W CORNER OF THE PROPERTY. ELEV.=679.82
BENCHMARK 2
N/E CORNER OF INLET ON EAST SIDE OF INDIAN LANE, 150' SOUTH OF ELEM. SCHOOL DRIVE. ELEV.=653.07
THESE CONSTRUCTION PLANS WERE PREPARED UNDER THE RESPONSIBLE SUPERVISION OF F.E. MIDDLETON JR., REGISTERED PROFESSIONAL ENGINEER NO. 67449.
No. DATE REVISION APPROV.
P4
Date: 10-30-24
Dwg Scale: Hor. 1"=40' Vert.1"=4'
Dwg File: 0001043PAV.DWG
Project No. 0001045
PAVING PLAN & PROFILE
LAKE RIDGE DRIVE
STA. 46+00 - END
LAKE RIDGE DRIVE - LAKE RIDGE PHASE 4
CITY OF SANGER DENTON COUNTY, TEXAS
SANGER TOWN CENTER LLC &
DUAL BOND HOLDINGS LLC &
HIEN & DUYET NGUYEN
101 FOREST BEND DRIVE
COPPELL, TEXAS 75019
JONATHAN WANG - 214-316-2256
STATE OF TEXAS
F. E. MIDDLETON, JR.
67449
REGISTERED PROFESSIONAL ENGINEER
M & A
Middleton & Assoc, LLC
CONSULTING CIVIL ENGINEERS & LAND PLANNERS
TBPE #F-10900
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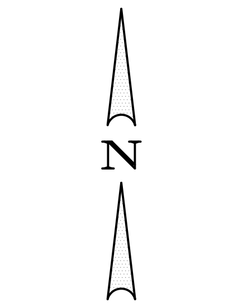
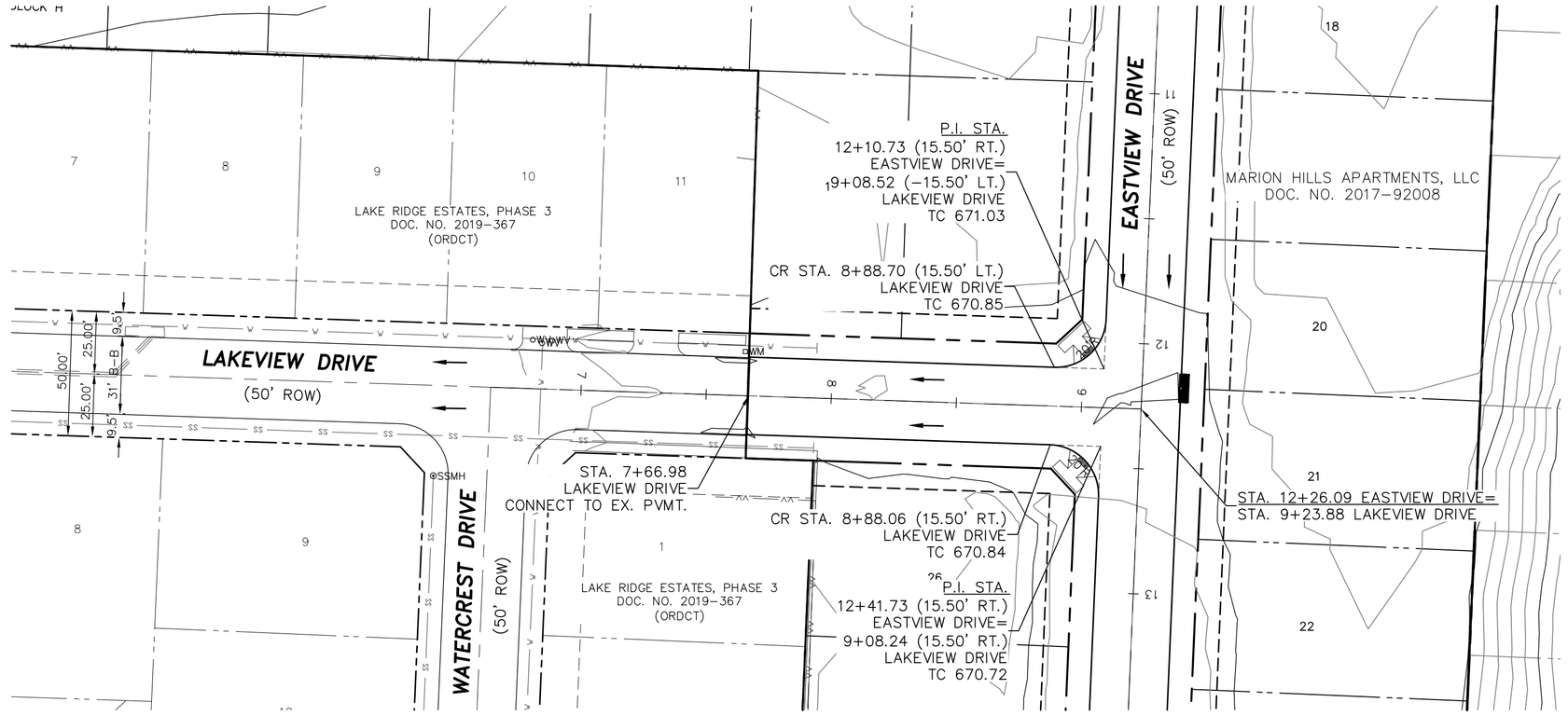
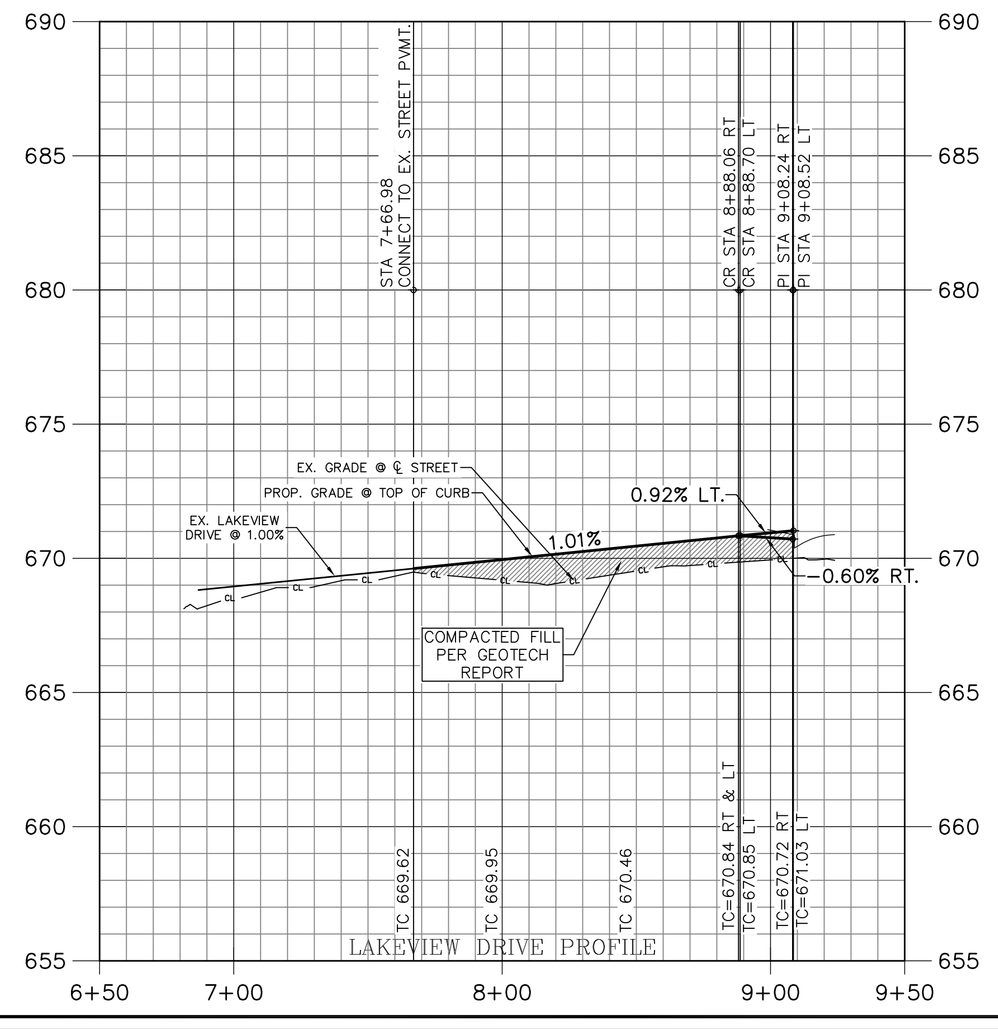
LEWISVILLE, TEXAS 75067 (972) 393-9800



LEGEND	
PP	Power Pole
GW	Guy Wire
MH	Manhole
WV	Water Valve
TP	Telephone Pedestal
WM	Water Meter
FH	Fire Hydrant
LP	Light Pole
IV	Irrigation Valve
SN	Sign
IRF	Iron Rod Found
IRS	Iron Rod Set

LEGEND	
TC	TOP OF CURB
TP	TOP OF PAVEMENT
CR	CURB RETURN
FL	FLOW LINE
VG	VALLEY GUTTER
H.P.	HIGH POINT
L.P.	LOW POINT
2 1	STREET STATION
BFR	HC RAMP
	FLOW ARROWS
1140–667.57	FLOOD CROSS SECTION & 100–YR. ELEV. PER FLOOD REPORT
—— OH ——	EX. OVERHEAD UTILITY
—— x —— x ——	EX. FENCE





BENCHMARK 1
WEST CORNER OF HDWL. SOUTH SIDE OF FM 455, 680' EAST OF THE N/W CORNER OF THE PROPERTY. ELEV.=679.82

BENCHMARK 2
N/E CORNER OF INLET ON EAST SIDE OF INDIAN LANE, 150' SOUTH OF ELEM. SCHOOL DRIVE. ELEV.=653.07

No.	DATE	REVISION	APPROV.

Middleton & Assoc, LLC
CONSULTING CIVIL ENGINEERS & LAND PLANNERS
TBPE #F–10900
2785 ROCKBROOK DRIVE, SUITE 105
LEWISVILLE, TEXAS 75067 (972) 393–9800
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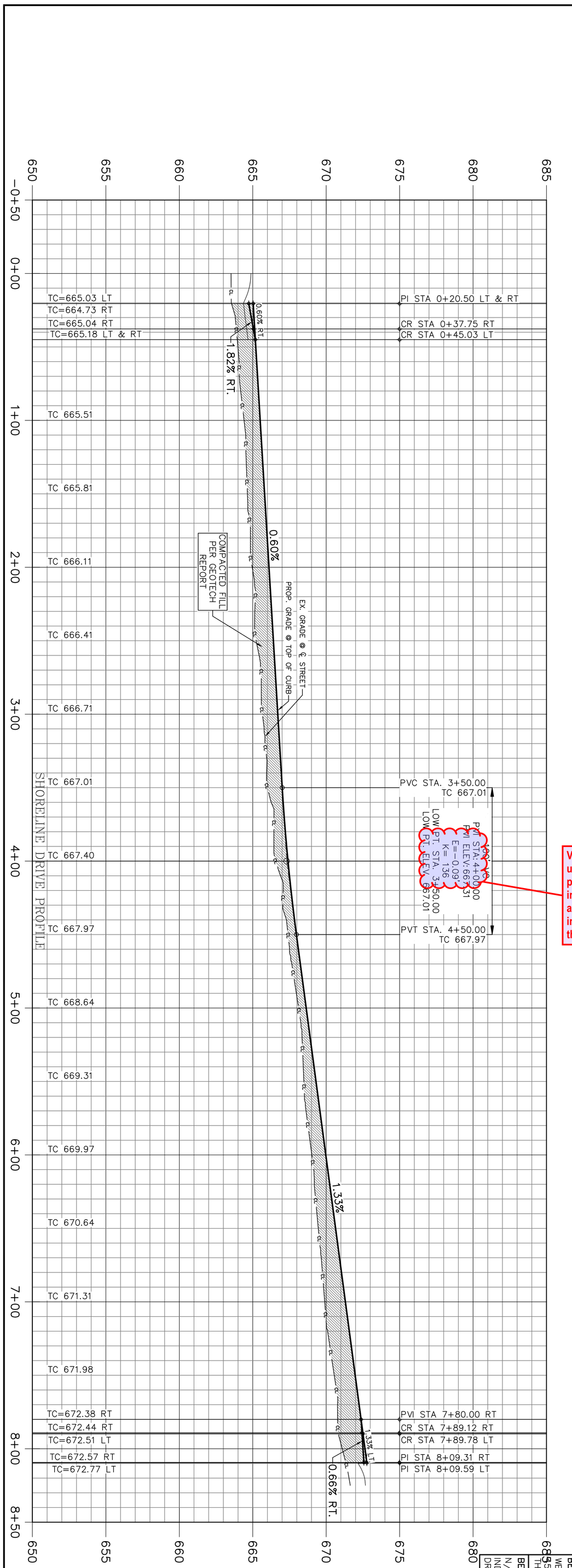
LAKE RIDGE DRIVE – LAKE RIDGE PHASE 4
CITY OF SANGER DENTON COUNTY, TEXAS
SANGER TOWN CENTER LLC &
DUAL BOND HOLDINGS LLC &
HIEN & DUYET NGUYEN
101 FOREST BEND DRIVE
COPPELL, TEXAS 75019
JONATHAN WANG – 214–316–2256

PAVING PLAN & PROFILE
LAKEVIEW DRIVE
STA. 7+66.98 – END

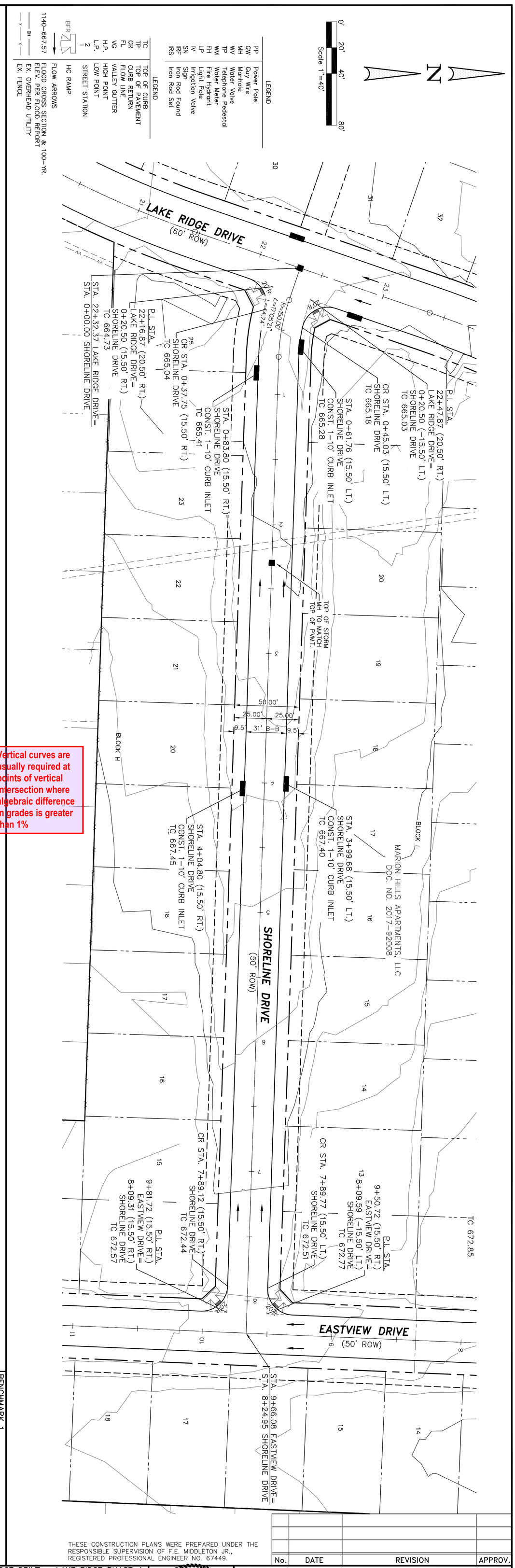
Date: 10–30–24
Dwg Scale: Hor. 1"=40'
Vert. 1"=4'
Dwg File: 0001043PAV.DWG
Project No. 0001045

P13



BENCHMARK 1
WEST CORNER OF HDWL. SOUTH SIDE OF FM 455, 680' EAST OF THE N/W CORNER OF THE PROPERTY. ELEV.=679.82

BENCHMARK 2
N/E CORNER OF INLET ON EAST SIDE OF INDIAN LANE, 150' SOUTH OF ELEM. SCHOOL DRIVE. ELEV.=653.07



Vertical curves are usually required at points of vertical intersection where algebraic difference in grades is greater than 1%

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No.	DATE	REVISION	APPROV.

P14

Date: 10-30-24
Dwg Scale: Hor. 1"=40'
Vert.1"=4'
Dwg File: 0001043PAV.DWG
Project No. 0001045

PAVING PLAN & PROFILE
SHORELINE DRIVE
STA. 0+00 - END

LAKE RIDGE DRIVE - LAKE RIDGE PHASE 4
CITY OF SANGER DENTON COUNTY, TEXAS
SANGER TOWN CENTER LLC &
DUAL BOND HOLDINGS LLC &
HIEN & DUYET NGUYEN
101 FOREST BEND DRIVE
COPPELL, TEXAS 75019
JONATHAN WANG - 214-316-2256

STATE OF TEXAS
F. E. MIDDLETON, JR.
97449
REGISTERED PROFESSIONAL ENGINEER

Middleton & Assoc, LLC
CONSULTING CIVIL ENGINEERS & LAND PLANNERS
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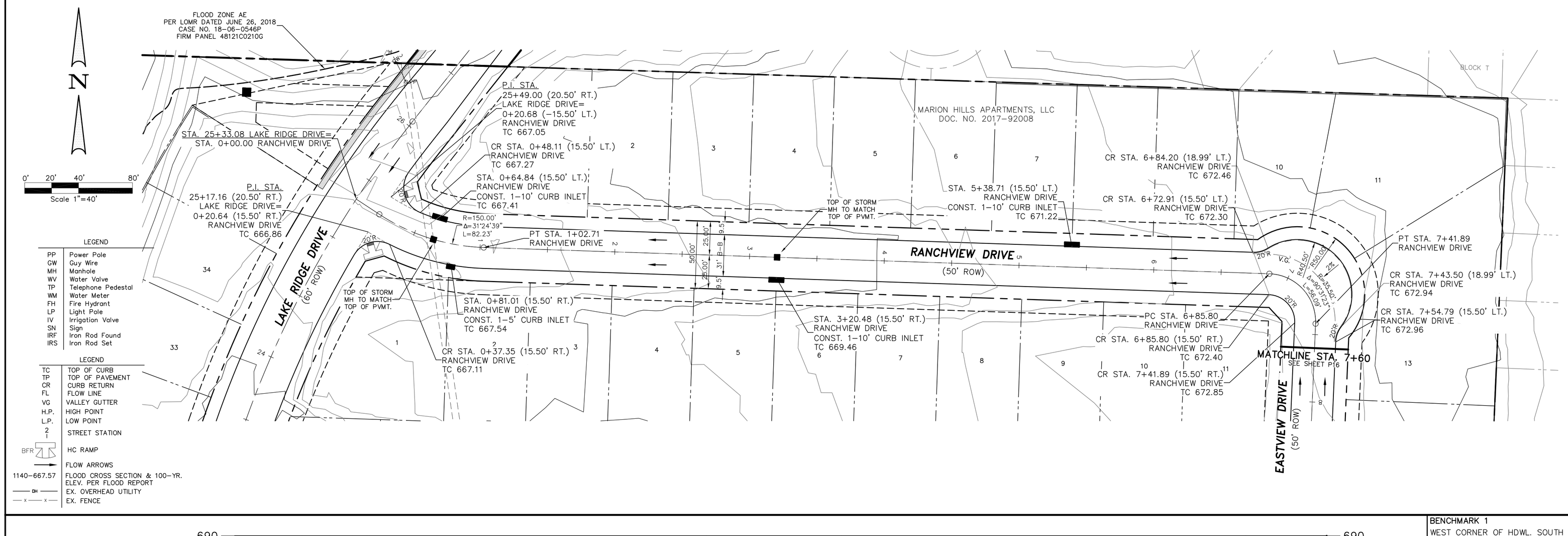

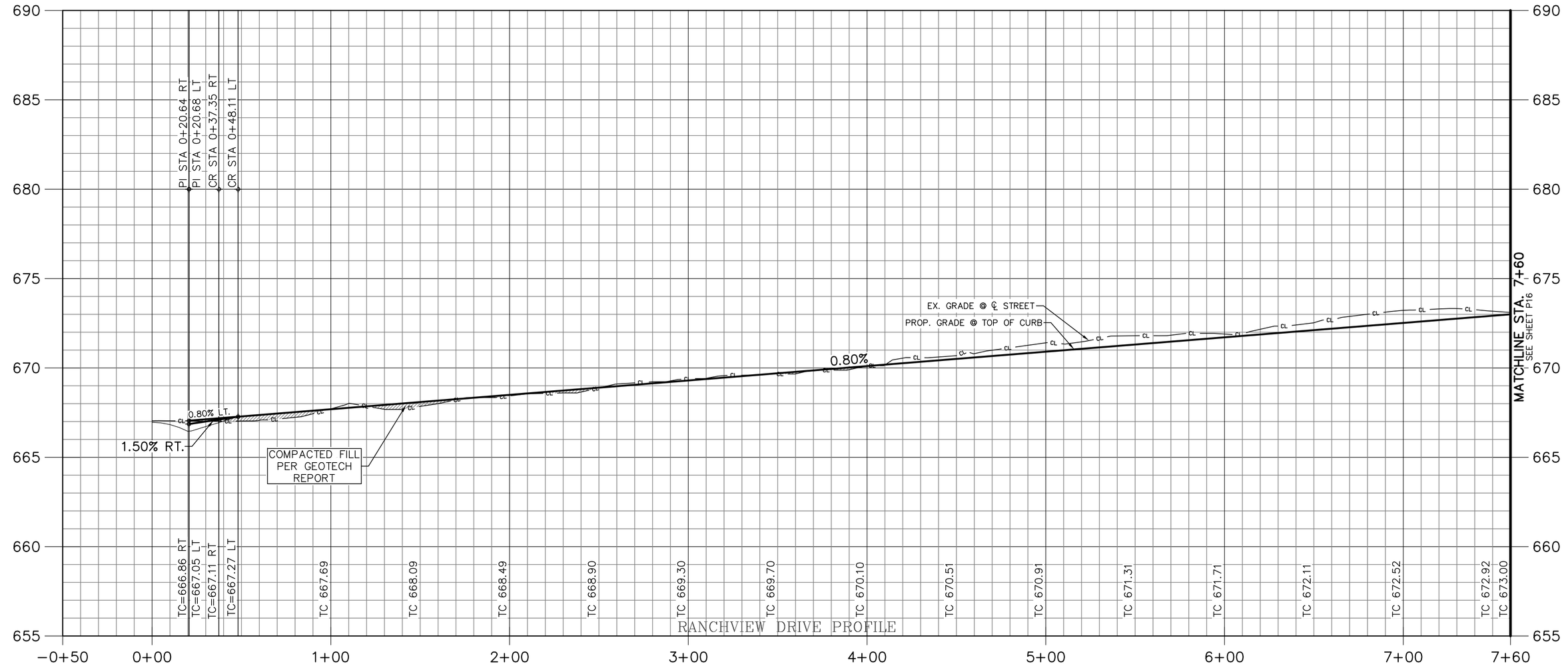

BENCHMARK 1
WEST CORNER OF HDWL. SOUTH SIDE OF FM 455, 680' EAST OF THE N/W CORNER OF THE PROPERTY. ELEV.=679.82

BENCHMARK 2
N/E CORNER OF INLET ON EAST SIDE OF INDIAN LANE, 150' SOUTH OF ELEM. SCHOOL DRIVE. ELEV.=653.07

No.	DATE	REVISION	APPROV.

Middleton & Assoc, LLC
CONSULTING CIVIL ENGINEERS & LAND PLANNERS
TBPE #F-10900
2785 ROCKBROOK DRIVE, SUITE 105
LEWISVILLE, TEXAS 75067 (972) 393-9800

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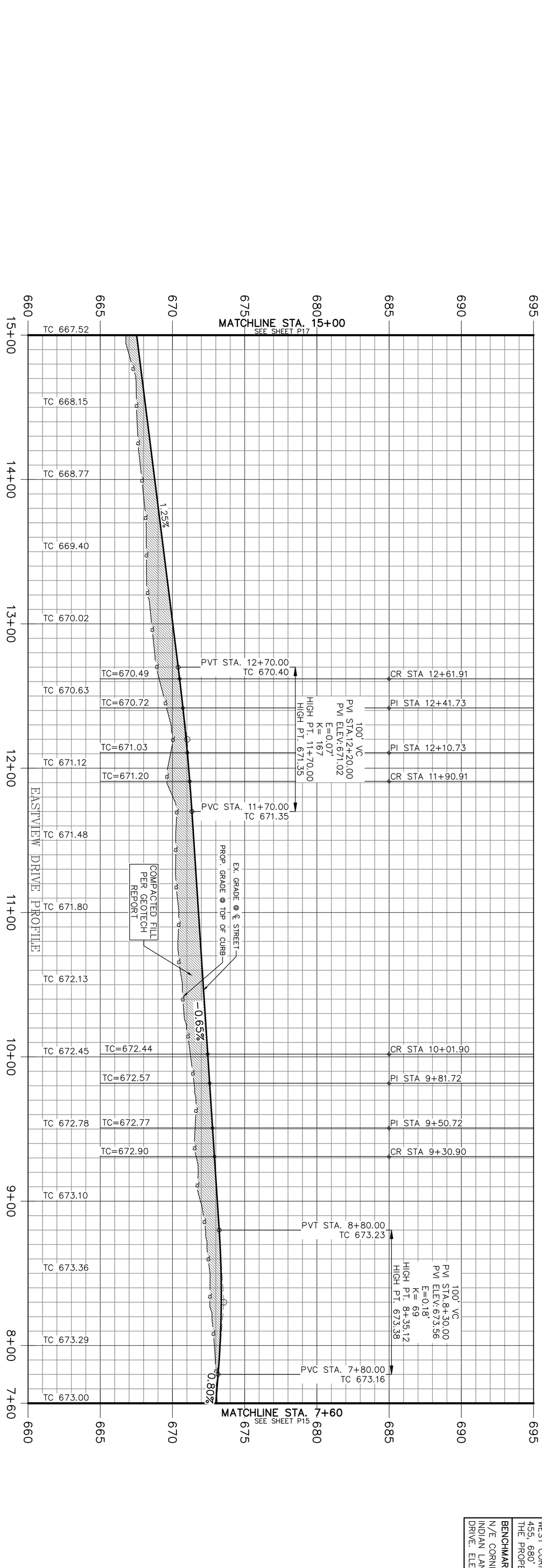
STATE OF TEXAS — T. E. MIDDLETON, JR. — 83194 — REGISTERED PROFESSIONAL ENGINEER

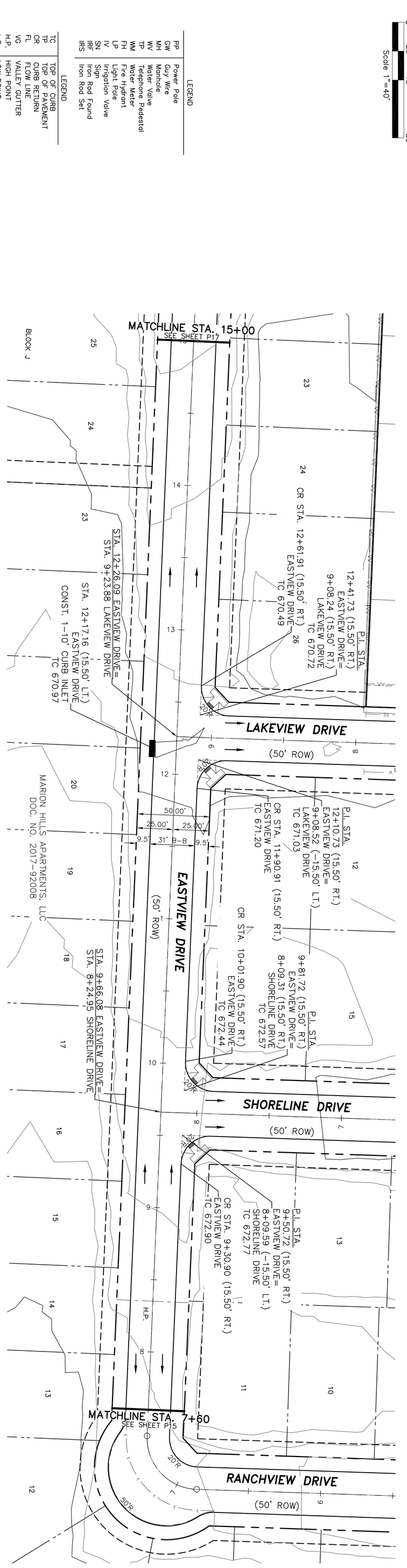
LAKE RIDGE DRIVE – LAKE RIDGE PHASE 4
CITY OF SANGER DENTON COUNTY, TEXAS
SANGER TOWN CENTER LLC &
DUAL BOND HOLDINGS LLC &
HIEN & DUYET NGUYEN
101 FOREST BEND DRIVE
COPPELL, TEXAS 75019
JONATHAN WANG – 214-316-2256

PAVING PLAN & PROFILE
RANCHVIEW DRIVE
STA. 0+00 – 7+60

Date: 10-30-24
Dwg Scale: Hor. 1"=40'
Vert.1"=4'
Dwg File: 0001043PAV.DWG
Project No. 0001045

P15





LEGEND

PP	Power Pole
GW	Guy Wire
MH	Manhole
WV	Water Valve
TP	Telephone Pedestal
WM	Water Meter
FH	Fire Hydrant
LP	Light Pole
IV	Irrigation Valve
SN	Sign
IRF	Iron Rod Found
IRS	Iron Rod Set

LEGEND

TC	TOP OF CURB
TP	TOP OF PAVEMENT
CR	CURB RETURN
FL	FLOW LINE
VG	VALLEY GUTTER
H.P.	HIGH POINT
L.P.	LOW POINT
2	STREET STATION
	HC RAMP
	FLOW ARROWS
1140-667.57	FLOOD CROSS SECTION & 100-YR. ELEV. PER FLOOD REPORT
DH	EX. OVERHEAD UTILITY
X	EX. FENCE

BENCHMARK 1
WEST CORNER OF HDWL. SOUTH SIDE OF FM 455, 680' EAST OF THE N/W CORNER OF THE PROPERTY. ELEV.=679.82

BENCHMARK 2
N/E CORNER OF INLET ON EAST SIDE OF INDIAN LANE, 150' SOUTH OF ELEM. SCHOOL DRIVE. ELEV.=653.07

THESE CONSTRUCTION PLANS WERE PREPARED UNDER THE RESPONSIBLE SUPERVISION OF F.E. MIDDLETON JR., REGISTERED PROFESSIONAL ENGINEER NO. 67449.

No.	DATE	REVISION	APPROV.

P16

Date: 10-30-24
Dwg Scale: Hor. 1"=40'
Vert.1"=4'
Dwg File: 0001043PAV.DWG
Project No. 0001045

PAVING PLAN & PROFILE
EASTVIEW DRIVE
STA. 7+60 - 15+00

LAKE RIDGE DRIVE - LAKE RIDGE PHASE 4
CITY OF SANGER DENTON COUNTY, TEXAS

SANGER TOWN CENTER LLC &
DUAL BOND HOLDINGS LLC &
HIEN & DUYET NGUYEN
101 FOREST BEND DRIVE
COPPELL, TEXAS 75019
JONATHAN WANG - 214-316-2256

STATE OF TEXAS
F. E. MIDDLETON, JR.
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PROFESSIONAL ENGINEER

Middleton & Assoc, LLC
CONSULTING CIVIL ENGINEERS & LAND PLANNERS
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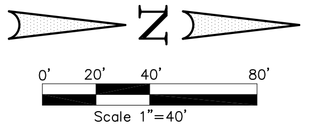

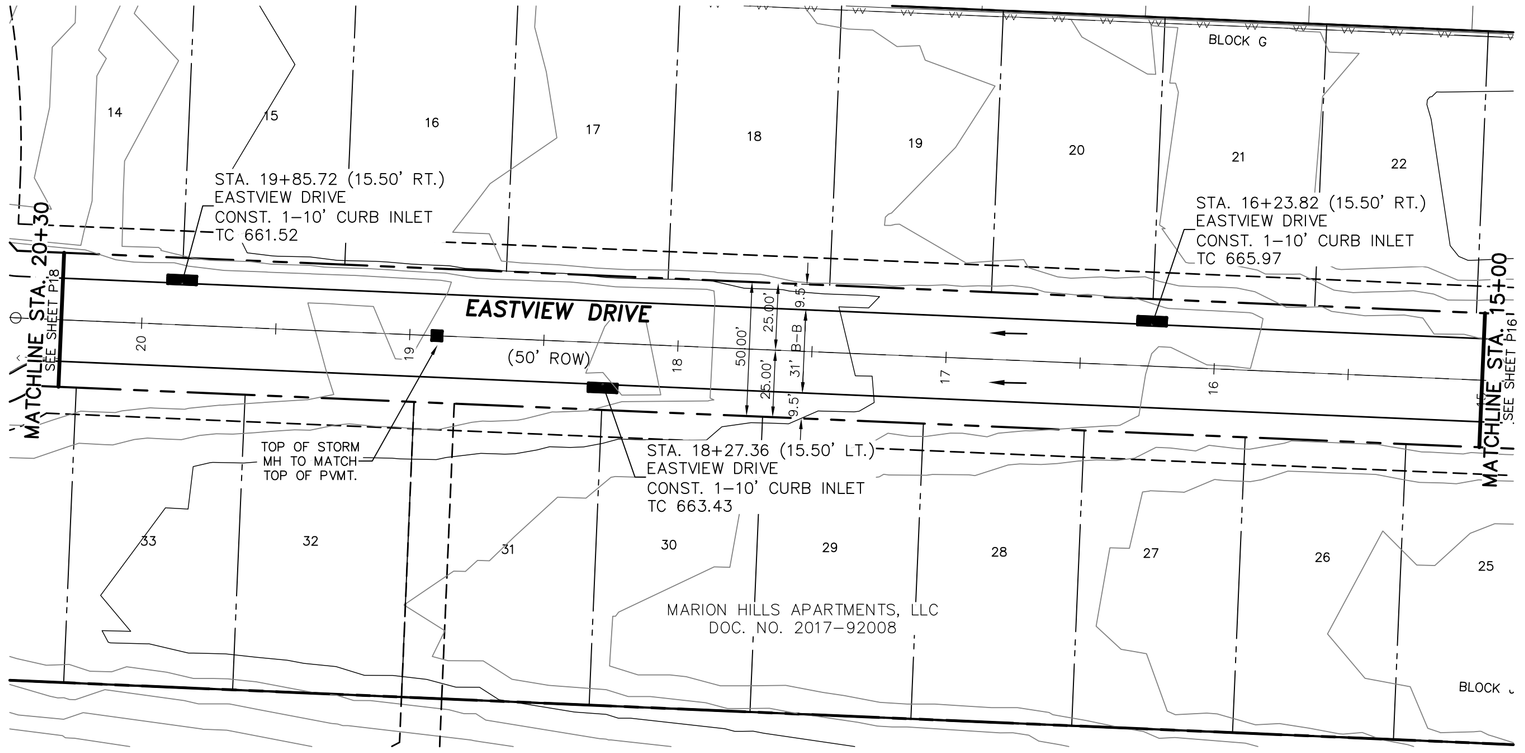

LEGEND

PP	Power Pole
GW	Guy Wire
MH	Manhole
WV	Water Valve
TP	Telephone Pedestal
WM	Water Meter
FH	Fire Hydrant
LP	Light Pole
IV	Irrigation Valve
SN	Sign
IRF	Iron Rod Found
IRS	Iron Rod Set

LEGEND

TC	TOP OF CURB
TP	TOP OF PAVEMENT
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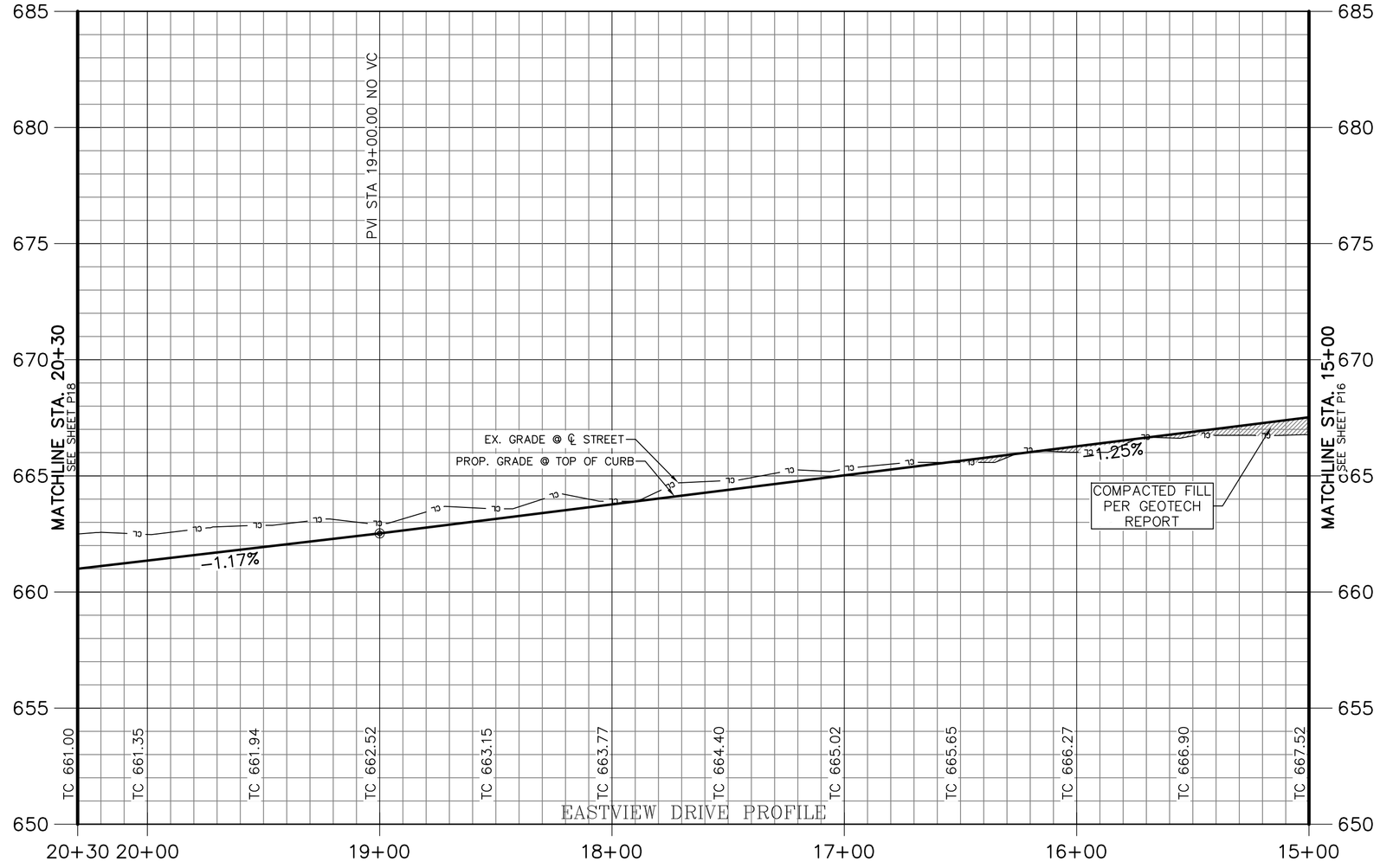
H.P.	HIGH POINT
L.P.	LOW POINT
2 1	STREET STATION
BFR	HC RAMP
	FLOW ARROWS
1140-667.57	FLOOD CROSS SECTION & 100-YR. ELEV. PER FLOOD REPORT
—— OH ——	EX. OVERHEAD UTILITY
—— x —— x ——	EX. FENCE



BENCHMARK 1
WEST CORNER OF HDWL. SOUTH SIDE OF FM 455, 680' EAST OF THE N/W CORNER OF THE PROPERTY. ELEV.=679.82

BENCHMARK 2
N/E CORNER OF INLET ON EAST SIDE OF INDIAN LANE, 150' SOUTH OF ELEM. SCHOOL DRIVE. ELEV.=653.07

No.	DATE	REVISION	APPROV.

Middleton & Assoc, LLC
CONSULTING CIVIL ENGINEERS & LAND PLANNERS
TBPE #F-10900
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THESE CONSTRUCTION PLANS WERE PREPARED UNDER THE RESPONSIBLE SUPERVISION OF T. E. MIDDLETON, JR., REGISTERED PROFESSIONAL ENGINEER NO. 67448

LAKE RIDGE DRIVE - LAKE RIDGE PHASE 4
CITY OF SANGER DENTON COUNTY, TEXAS
SANGER TOWN CENTER LLC &
DUAL BOND HOLDINGS LLC &
HIEN & DUYET NGUYEN
101 FOREST BEND DRIVE
COPPELL, TEXAS 75019
JONATHAN WANG - 214-316-2256

PAVING PLAN & PROFILE
EASTVIEW DRIVE
15+00 - 20+30

Date: 10-30-24
Dwg Scale: Hor. 1"=40'
Vert.1"=4'
Dwg File: 0001043PAV.DWG
Project No. 0001045

P17

N

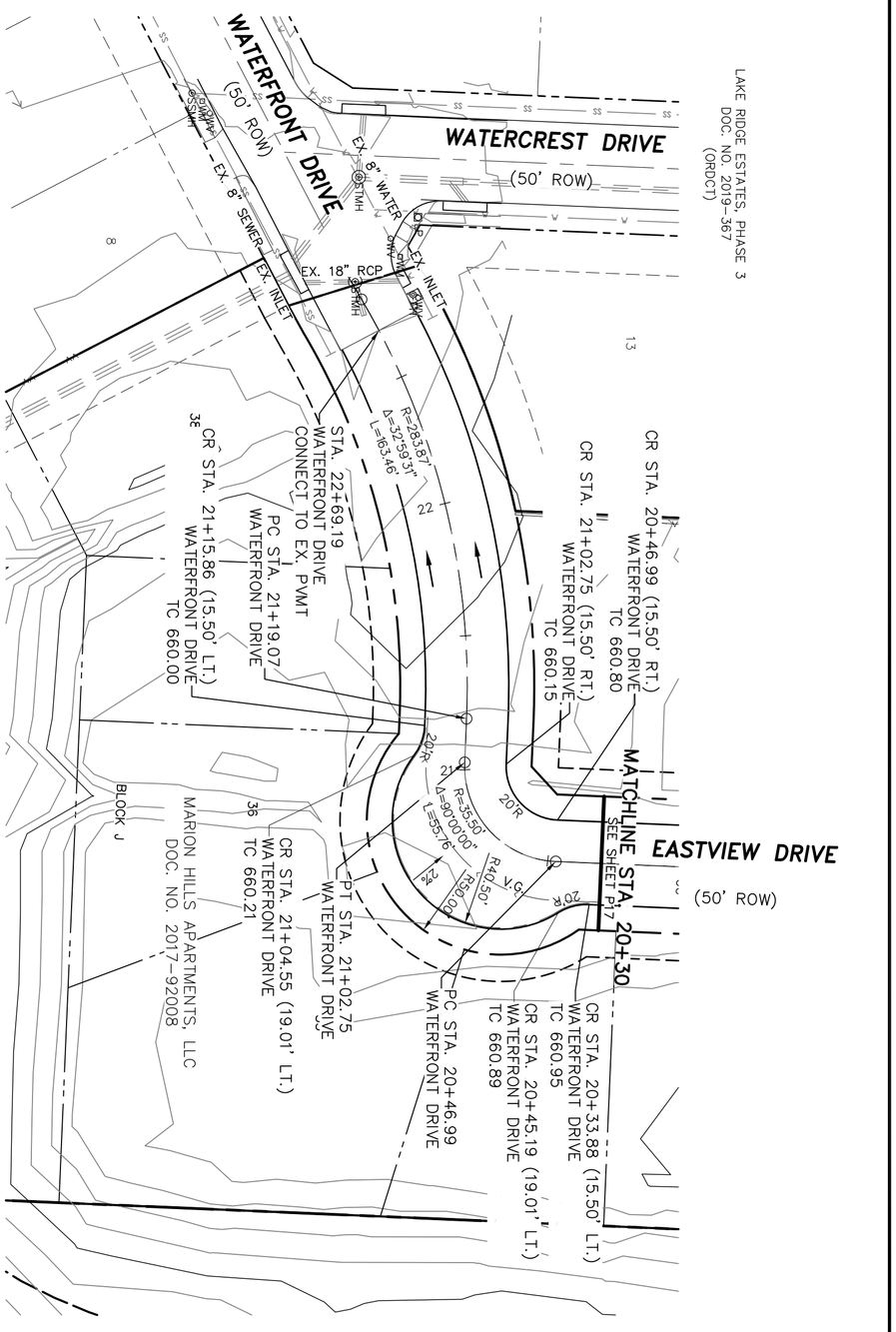
0' 20' 40' 80'
Scale 1"=40'

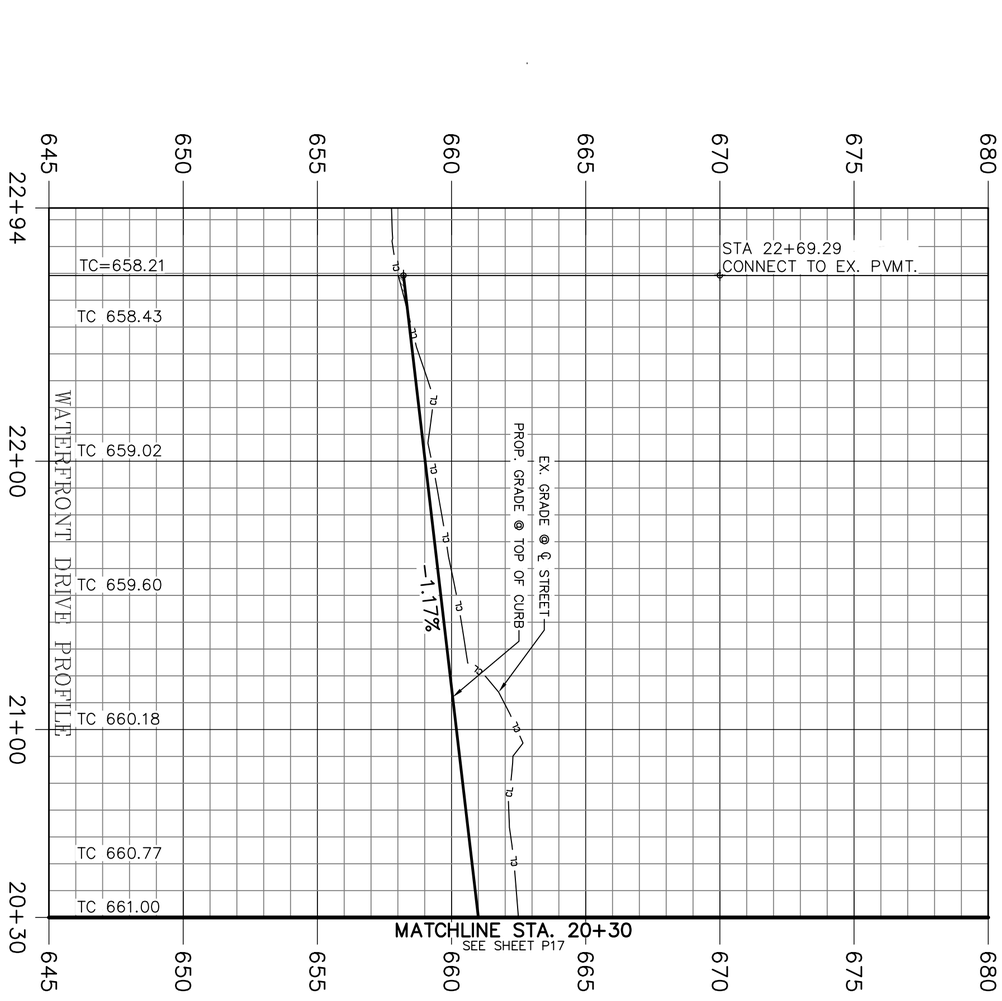
LEGEND

PP	Power Pole
GW	Guy Wire
MH	Manhole
WV	Water Valve
TP	Telephone Pedestal
WM	Water Meter
FH	Fire Hydrant
LP	Light Pole
IV	Irrigation Valve
SN	Sign
IRF	Iron Rod Found
IRS	Iron Rod Set

LEGEND

TC	TOP OF CURB
TP	TOP OF PAVEMENT
CR	CURB RETURN
FL	FLOW LINE
VG	VALLEY GUTTER
H.P.	HIGH POINT
L.P.	LOW POINT
2	STREET STATION
1	
BFR	HC RAMP
	FLOW ARROWS
1140-667.57	FLOOD CROSS SECTION & 100-YR. ELEV. PER FLOOD REPORT
DH	EX. OVERHEAD UTILITY
X	EX. FENCE





BENCHMARK 1
WEST CORNER OF HDWL. SOUTH SIDE OF FM 455, 680' EAST OF THE N/W CORNER OF THE PROPERTY. ELEV.=679.82

BENCHMARK 2
N/E CORNER OF INLET ON EAST SIDE OF INDIAN LANE, 150' SOUTH OF ELEM. SCHOOL DRIVE. ELEV.=653.07

THESE CONSTRUCTION PLANS WERE PREPARED UNDER THE RESPONSIBLE SUPERVISION OF F.E. MIDDLETON JR., REGISTERED PROFESSIONAL ENGINEER NO. 67449.

No.	DATE	REVISION	APPROV.

P18

Date: 10-30-24
Dwg Scale: Hor. 1"=40'
Vert.1"=4'
Dwg File: 0001043PAV.DWG
Project No. 0001045

PAVING PLAN & PROFILE
WATERFRONT DRIVE
20+30 - END

LAKE RIDGE DRIVE - LAKE RIDGE PHASE 4
CITY OF SANGER DENTON COUNTY, TEXAS

SANGER TOWN CENTER LLC &
DUAL BOND HOLDINGS LLC &
HIEN & DUYET NGUYEN
101 FOREST BEND DRIVE
COPPELL, TEXAS 75019
JONATHAN WANG - 214-316-2256

STATE OF TEXAS
F. E. MIDDLETON, JR.
67449
REGISTERED
PROFESSIONAL
ENGINEER

Middleton & Assoc, LLC
CONSULTING CIVIL ENGINEERS & LAND PLANNERS
TBPE #F-10900

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2785 ROCKBROOK DRIVE, SUITE 105
LEWISVILLE, TEXAS 75067 (972) 393-9800

REINFORCED CONCRETE PAVEMENT
JOINTS

North Central Texas Council of Governments

STANDARD SPECIFICATION REFERENCE	
303.5.4.	
DATE	STANDARD DRAWING NO.
OCT. '04	2050

NOTES:
1. SAWED TRANSVERSE CONTRACTION JOINTS SHALL BE SPACED: 20' IN PAVEMENT ≥ 8" THICK; 15' IN PAVEMENT < 8" THICK.
2. REFER TO TYPICAL PAVEMENT SECTION FOR LONGITUDINAL JOINT SPACING.

SPACING DIAGRAM FOR TRANSVERSE JOINTS
N.T.S.

REINFORCED CONCRETE PAVEMENT
TRANSVERSE JOINT SPACING

North Central Texas Council of Governments

STANDARD SPECIFICATION REFERENCE	
303.5.4.	
DATE	STANDARD DRAWING NO.
OCT. '04	2060

NOTES:
1. REINFORCEMENT SHALL BE NO. 4 BARS UNLESS OTHERWISE SPECIFIED.
2. CONCRETE SHALL BE CLASS "C".
3. "CF" IS 6" UNLESS OTHERWISE SPECIFIED.
4. ALL CURBS ARE CONSTRUCTED OF PORTLAND CEMENT CONCRETE UNLESS OTHERWISE SHOWN.
5. GRADE SHALL BE MEASURED AT BACK OF CURB.

CONCRETE CURB & GUTTER
INTEGRAL, SEPARATE, & DOWELED

North Central Texas Council of Governments

STANDARD SPECIFICATION REFERENCE	
305.1	
DATE	STANDARD DRAWING NO.
OCT. '04	2120

Collector streets and alleys shall, at a minimum, be designed and constructed with eight-inch (8") thickness of four thousand (4,000) p.s.i. reinforced concrete pavement on a compacted sub-base. All steel reinforcing shall be deformed No. 4 bars on eighteen-inch (18") centers both ways per § 10.106(b)(2)(B)(ii)

Where the plasticity index of the soil is twelve (12) or greater, stabilization of the subbase with an eight-inch (8") thickness of six percent (6%) hydrated lime by weight will be required per § 10.106(b)(2)(B)(iii). Please verify and confirm with Geotechnical Report that hydrated lime stabilization is not required for the subgrade

Please reference the latest edition of the NCTCOG Standard Specification per Ordinance § 10.106(a)(2)

CURB RAMPS NOTES:

GENERAL REQUIREMENTS
CURB RAMPS SHALL BE CONSTRUCTED AS PER THE REQUIREMENTS AND SPECIFICATIONS OF THE TEXAS ACCESSIBLITY STANDARDS AND THE ADA & ABA ACCESSIBILITY GUIDELINES FOR BUILDINGS AND FACILITIES. (FEDERAL REGISTER/ VOL. 69, NO. 141, FRIDAY, JULY 23, 2004)

LOCATION:
CURB RAMPS UNDER THESE PROVISIONS, SHALL BE WHEREVER AN ACCESSIBLE ROUTE CROSSES A CURB.

SLOPE:
SLOPES ON CURB RAMPS SHALL BE MEASURED AS FOLLOWS: (Y:X = VERTICAL:HORIZONTAL)
A) TRANSITIONS FROM RAMPS TO WALKS, GUTTERS, OR STREETS SHALL BE FLUSH AND FREE OF ABRUPT CHANGES.
B) MAXIMUM SLOPES OF ADJOINING GUTTERS, ROAD SURFACE IMMEDIATLEY ADJACENT TO THE CURB OR ACCESSIBLE ROUTE SHALL NOT EXCEED 1:20.
C) THE LEAST POSSIBLE SLOPE SHALL BE USED FOR ANY RAMP. THE MAXIMUM SLOPE OF A RAMP IN NEW CONSTRUCTION SHALL BE 1:12. THE MAXIMUM RISE FOR ANY RUN SHALL BE 30" (760 MM). CURB RAMPS AND RAMPS TO BE CONSTRUCTED ON EXISTING SITES OR IN EXISTING BUILDINGS OR FACILITIES MAY HAVE SLOPES AND RISES IF SPACE LIMITATIONS PROHIBIT THE USE OF A 1:12 SLOPE OR LESS, AS FOLLOWS:
1. A SLOPE BETWEEN 1:10 AND 1:12 IS ALLOWED FOR A MAXIMUM RISE OF 6".
2. A SLOPE BETWEEN 1:8 AND 1:10 IS ALLOWED FOR A MAXIMUM OF 3"
A SLOPE STEEPER THAN 1:8 IS NOT ALLOWED.

RAMP WIDTH:
THE MINIMUM WIDTH OF A CURB RAMP SHALL BE 36" EXCLUSIVE OF FLARED SIDES.

SURFACE:
SURFACES OF CURB RAMPS, SHALL BE STABLE FIRM, AND SLIP RESISTANT. SURFACE TEXTURES SHALL CONSIST OF EXPOSED CRUSHED STONE AGGREGATE, ROUGHENED CONCRETE, RUBBER, RAISED ABRASIVE STRIPS, OR GROOVES. EXTENDING THE FULL WIDTH AND DEPTH OF THE CURB RAMP. SURFACES THAT ARE RAISED, ETCHED, OR GROOVED IN A WAY THAT WOULD ALLOW WATER TO ACCUMULATE ARE PROHIBITED. FOR PURPOSES OF WARNING, THE FULL WIDTH AND DEPTH OF CURB RAMPS SHALL HAVE A LIGHT REFLECTIVE VALUE AND TEXTURE THAT SIGNIFICANTLY CONTRASTS WITH THAT OF ADJOINING PEDESTRIAN ROUTES.

SIDES OF CURB RAMPS:
IF A CURB RAMP IS LOCATED WHERE PEDESTRIANS MUST WALK ACROSS THE RAMP, OR WHERE IT IS NOT PROTECTED BY HANDRAILS OR GUARDRAILS, IT SHALL HAVE FLARED SIDES. THE MAXIMUM SLOPE OF THE FLARE SHALL BE 1:10 (SEE FIG. 1 (A)) CURB RAMPS WITH RETURNED CURBS MAY BE USED WHERE PEDESTRIANS WOULD NOT WALK ACROSS THE RAMP. (SEE FIG. 1 (B))

BUILT-UP RAMPS:
BUILT-UP CURB RAMPS SHALL BE LOCATED SO THEY DO NOT PROJECT INTO VEHICULAR TRAFFIC LANES (SEE FIG. 2)

OBSTRUCTIONS:
CURB RAMPS SHALL BE LOCATED OR PROTECTED TO PREVENT THEIR OBSTRUCTION BY PARKED VEHICLES.

LOCATION AT MARKED CROSSINGS:
CURB RAMPS AT MARKED CROSSINGS SHALL BE WHOLLY CONTAINED WITHIN THE MARKINGS, EXCLUDING ANY FLARED SIDES.

DIAGONAL CURB RAMPS:
IF DIAGONAL (OR CORNER TYPE) CURB RAMPS HAVE RETURNED CURBS OR OTHER WELL DEFINED EDGES, SUCH EDGES SHALL BE PARALLEL TO THE DIRECTION OF PEDESTRIAN FLOW. THE BOTTOM OF DIAGONAL CURB RAMPS SHALL HAVE 48" (1220 MM) MINIMUM. IF DIAGONAL CURB RAMPS ARE PROVIDED AT MARKED CROSSINGS, THE 48" (1220 MM) CLEAR SPACE SHALL BE WITHIN THE MARKINGS. IF DIAGONAL CURB RAMPS HAVE FLARED SIDES, THEY SHALL ALSO HAVE AT LEAST A 24" (610 MM) LONG SEGMENT OF STRAIGHT CURB LOCATED ON EACH SIDE OF THE CURB RAMP AND WITHIN THE MARKED CROSSING. ANY RAISED ISLANDS IN CROSSINGS SHALL BE CUT THROUGH LEVEL WITH THE STREET OR HAVE CURB RAMPS AT BOTH SIDES AND A LEVEL AREA AT LEAST 48" (1220 MM) LONG BETWEEN THE CURB RAMPS IN THE PART OF THE ISLAND INTERSECTED BY THE CROSSINGS.

CONSTRUCTION
(A.) THE CONTRACTOR SHALL SAWCUT, REMOVE AND DISPOSE OFF-SITE THE REQUIRED EXISTING CONCRETE SIDEWALK, CURB AND GUTTER, TO CONSTRUCT THE PROPOSED RAMPS.
(B.) CONCRETE SIDEWALKS AND RAMPS SHALL BE MINIMUM 4" THICK, 4000 PSI, 5 SACK CONCRETE, REINFORCED WITH #3 BARS AT 14" CENTERS BOTH WAYS, PLACED OVER A 2" THICK SAND CUSHION EMBEDMENT.
(C.) THE CONTRACTOR SHALL USE 1" PREMOLDED EXPANSION JOINT MATERIAL BETWEEN THE PROPOSED SIDEWALKS AND RAMPS AT THE BACK OF CURBS, AND AT JOINTS AT NO EXTRA PAY.
(D.) DUMMY JOINT REQUIRED EVERY 4' IN 4' WIDE SIDEWALKS AND EVERY 5' IN 6' WIDE SIDEWALK.

CURB RAMPS

North Central Texas Council of Governments

STANDARD SPECIFICATION REFERENCE	
DATE	STANDARD DRAWING NO.
OCT. '04	2125B

GENERAL NOTES:

1. REINFORCED CONCRETE PAVEMENT:
   - A. ALL CURBS SHALL BE PLACED INTEGRAL WITH PAVEMENT UNLESS OTHERWISE APPROVED BY THE OWNER.
   - B. CURBS SHALL MEET THE SAME COMPRESSIVE STRENGTH AS SPECIFIED FOR THE PAVEMENT.
   - C. BAR LAPS SHALL BE 30 DIAMETERS.
   - D. REINFORCING BARS SHALL BE SUPPORTED BY CHAIRS OR OTHER DEVICES APPROVED BY THE OWNER.
2. SUBGRADE: (UNLESS OTHERWISE SPECIFIED BY OWNER)
   - A. SUBGRADE UNDER ALL PAVEMENTS SHALL BE STABILIZED TO A MINIMUM DEPTH OF 8" WITH HYDRATED LIME OR CEMENT WHEN THE P.I. OF THE INPLACE MATERIAL IS GREATER THAN 12. LABORATORY TESTS MUST BE PERFORMED TO DETERMINE THE AMOUNT OF LIME OR CEMENT REQUIRED TO LOWER THE P.I. TO 12 OR BELOW. SATURATION P.I. (PH ≥ 12.4) WILL BE THE LIMIT WHEN A SOIL'S P.I. CANNOT BE BROUGHT TO 12 OR LOWER.
   - B. WHERE THE INPLACE MATERIAL HAS A P.I. OF LESS THAN 12, THE SUBGRADE SHALL BE SCARIFIED TO A MINIMUM DEPTH OF 6" AND RECOMPACTED.
3. IF THE ROADWAY IS A DESIGNATED BIKE ROUTE OR BIKE USAGE IS ANTICIPATED, REFER TO NCTCOG'S REGIONAL BICYCLE AND PEDESTRIAN FACILITIES DESIGN MANUAL FOR DESIGN GUIDANCE.

PAVEMENT SYSTEMS
GENERAL NOTES

North Central Texas Council of Governments

STANDARD SPECIFICATION REFERENCE	
302,303	
DATE	STANDARD DRAWING NO.
OCT. '04	2190

BARRIER FREE RAMP DETAIL

THESE CONSTRUCTION PLANS WERE PREPARED UNDER THE RESPONSIBLE SUPERVISION OF F.E. MIDDLETON JR., REGISTERED PROFESSIONAL ENGINEER NO. 67449.

No.	DATE	REVISION	APPROV.

DT-P1	Date: 10-30-24 Dwg Scale: Hor. NTS Vert. Dwg File: 0001043DT-PAV.DWG Project No. 0001045

PAVING DETAILS

LAKE RIDGE DRIVE – LAKE RIDGE PHASE 4
CITY OF SANGER DENTON COUNTY, TEXAS

SANGER TOWN CENTER LLC &
DUAL BOND HOLDINGS LLC &
HIEN & DUYET NGUYEN
101 FOREST BEND DRIVE
COPPELL, TEXAS 75019
JONATHAN WANG – 214-316-2256

STATE OF TEXAS
F. E. MIDDLETON, JR.
67449
PROFESSIONAL ENGINEER

M & A

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CONSULTING CIVIL ENGINEERS & LAND PLANNERS
TBPE #F-10900
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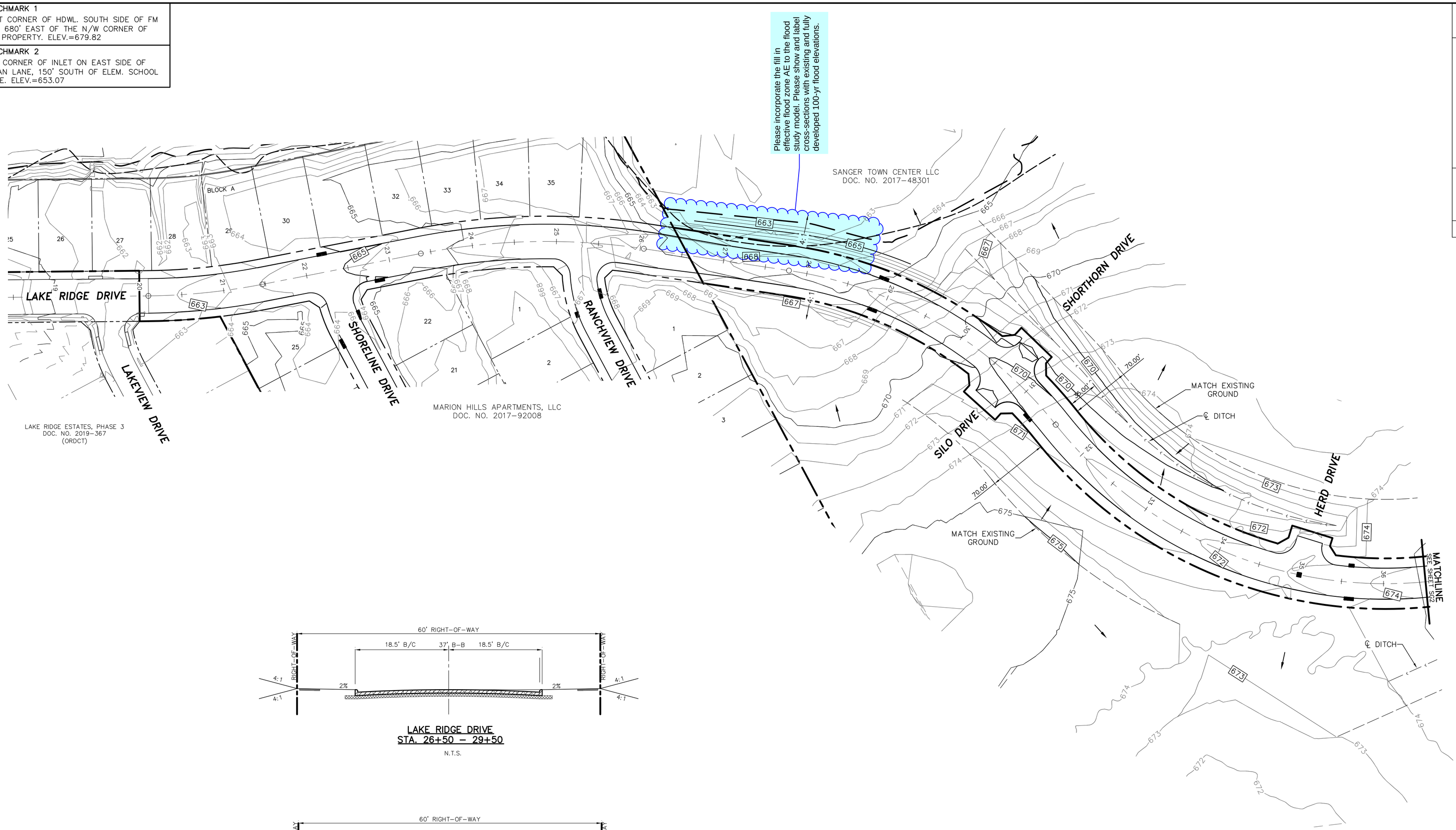
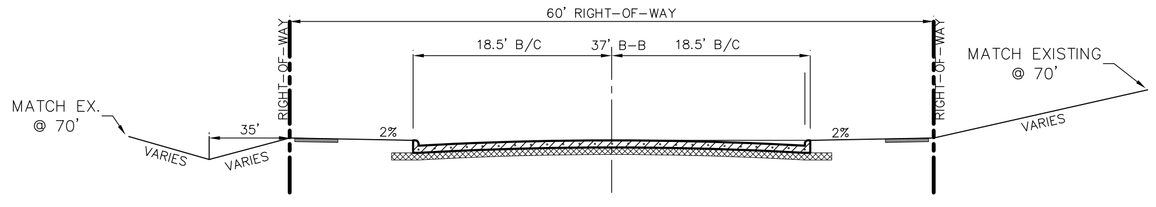
LEWISVILLE, TEXAS 75067 (972) 393-9800

BENCHMARK 1
WEST CORNER OF HDWL. SOUTH SIDE OF FM 455, 680' EAST OF THE N/W CORNER OF THE PROPERTY. ELEV.=679.82

BENCHMARK 2
N/E CORNER OF INLET ON EAST SIDE OF INDIAN LANE, 150' SOUTH OF ELEM. SCHOOL DRIVE. ELEV.=653.07



LAKE RIDGE DRIVE
STA. 26+50 – 29+50
N.T.S.



LAKE RIDGE DRIVE
STA. 29+50 – 36+00
N.T.S.

N

0' 30' 60' 120'
Scale 1"=60'

No.	DATE	REVISION	APPROV.

Middleton & Assoc, LLC
CONSULTING CIVIL ENGINEERS & LAND PLANNERS
TBPE #F-10900
2785 ROCKBROOK DRIVE, SUITE 105
LEWISVILLE, TEXAS 75067 (972) 393-9800

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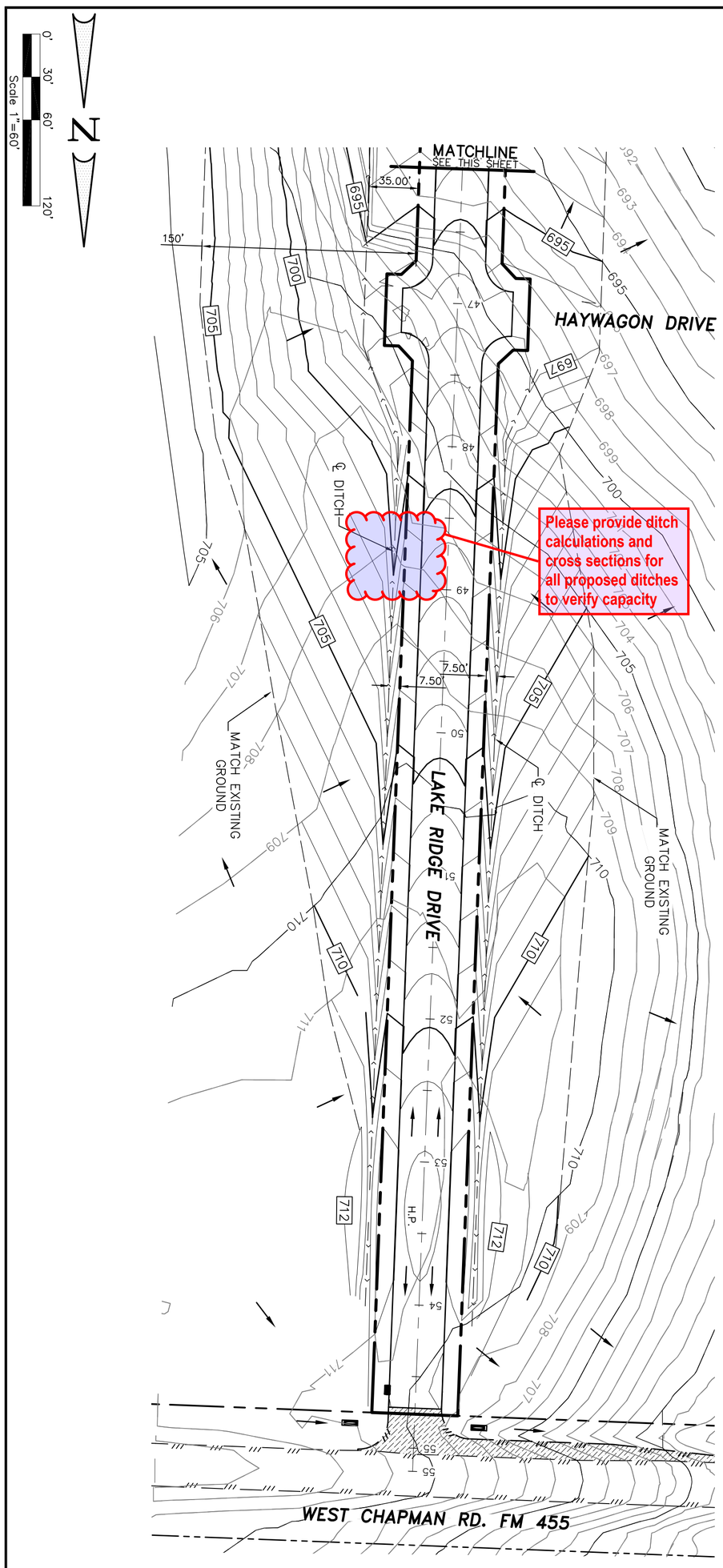
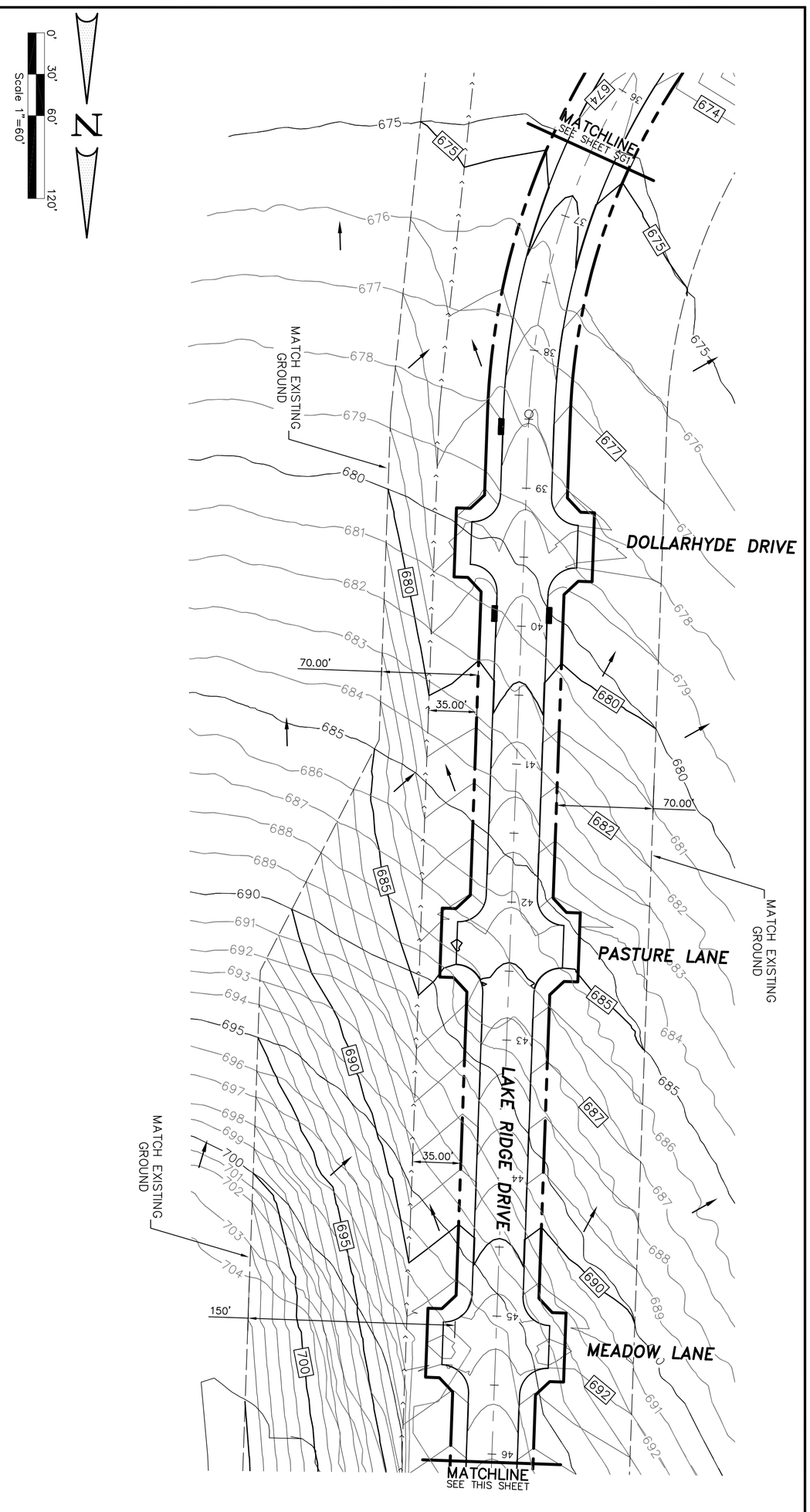
LAKE RIDGE DRIVE – LAKE RIDGE PHASE 4
CITY OF SANGER DENTON COUNTY, TEXAS
SANGER TOWN CENTER LLC &
DUAL BOND HOLDINGS LLC &
HIEN & DUYET NGUYEN
101 FOREST BEND DRIVE
COPPELL, TEXAS 75019
JONATHAN WANG – 214-316-2256

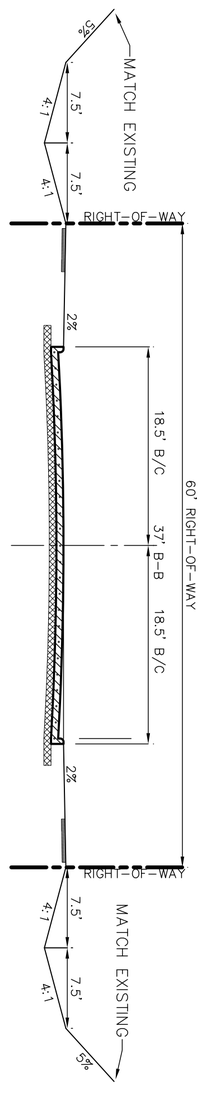
STREET GRADING PLAN

Date: 10-30-24
Dwg Scale: Hor. 1"=60'
Vert.
Dwg File: 0001045GRD-MASS
Project No. 0001045

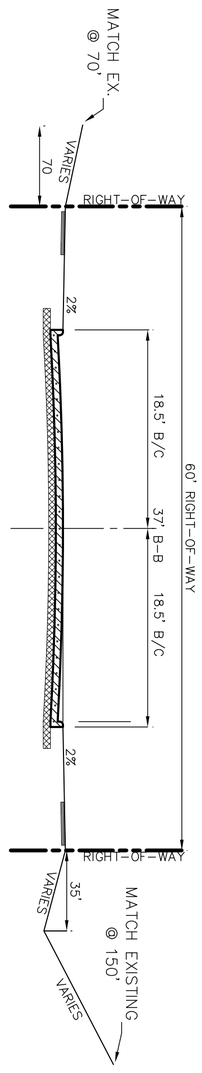
SG1



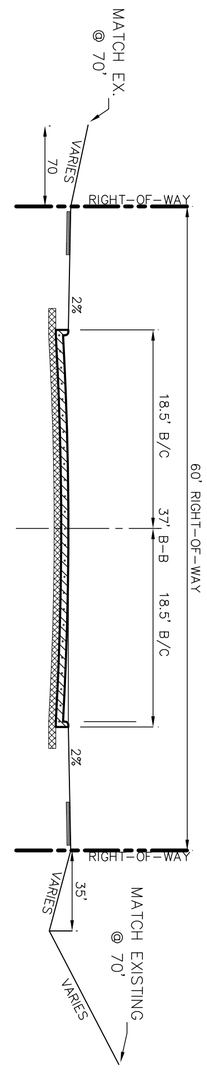




LAKE RIDGE DRIVE
STA. 48+00 – END
N.T.S.



LAKE RIDGE DRIVE
STA. 43+00 – 48+00
N.T.S.



LAKE RIDGE DRIVE
STA. 36+00 – 43+00
N.T.S.

BENCHMARK 1
WEST CORNER OF HDWL. SOUTH SIDE OF FM 455, 680' EAST OF THE N/W CORNER OF THE PROPERTY. ELEV.=679.82

BENCHMARK 2
N/E CORNER OF INLET ON EAST SIDE OF INDIAN LANE, 150' SOUTH OF ELEM. SCHOOL DRIVE. ELEV.=653.07

THESE CONSTRUCTION PLANS WERE PREPARED UNDER THE RESPONSIBLE SUPERVISION OF F.E. MIDDLETON JR., REGISTERED PROFESSIONAL ENGINEER NO. 67449.

No.	DATE	REVISION	APPROV.

SG2

Date: 10-30-24
Dwg Scale: Hor. 1"=60'
Vert.
Dwg File: 0001045GRD-MASS
Project No. 0001045

STREET GRADING PLAN

LAKE RIDGE DRIVE – LAKE RIDGE PHASE 4
CITY OF SANGER DENTON COUNTY, TEXAS

SANGER TOWN CENTER LLC &
DUAL BOND HOLDINGS LLC &
HIEN & DUYET NGUYEN
101 FOREST BEND DRIVE
COPPELL, TEXAS 75019
JONATHAN WANG – 214-316-2256

STATE OF TEXAS
F. E. MIDDLETON, JR.
67449
LICENSED PROFESSIONAL ENGINEER

Middleton & Assoc, LLC
CONSULTING CIVIL ENGINEERS & LAND PLANNERS
TBPE #F-10900
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LEWISVILLE, TEXAS 75067 (972) 393-9800

BENCHMARK 1
WEST CORNER OF HDWL. SOUTH SIDE OF FM 455, 680' EAST OF THE N/W CORNER OF THE PROPERTY. ELEV.=679.82

BENCHMARK 2
N/E CORNER OF INLET ON EAST SIDE OF INDIAN LANE, 150' SOUTH OF ELEM. SCHOOL DRIVE. ELEV.=653.07

NOTE:
1. FOR RETAINING WALL OVER 2' CONTRACTOR SHALL FURNISH A STRUCTURAL DESIGN FOR ALL WALLS, SIGNED AND SEALED BY A PROFESSIONAL ENGINEER.
2. NO RETAINING WALLS, INCLUDING FOOTINGS, SHALL BE PLACED IN A RIGHT-OF-WAY, EASEMENT OR OVERLAPPING RESIDENTIAL PROPERTY LINES.
3. REFER TO FLOOD STUDY BY CARDINAL STRATEGIES FOR LANE RANCH DATED 4-22-24 FOR ALL FULLY DEVELOPED FLOODPLAIN AND HYDROLOGY INFORMATION.

Please show valley gutters in the grading plans

The area east of these lots appears to be impacted by Ranger Branch Tributary which is in Zone AE of the FEMA flood maps. Please ensure minimum finished floor elevations of all adjacent lots is 2 feet above the 100 year elevation

Drainage Comments:
1. There appears to be proposed grading in an existing channel. Please the fill into the flood study hydraulics model and provide for review.
2. Please show and label cross-section to match flood study with existing and fully-developed 100-yr flood elevations. Please note that lots impacted by the channel shall be a minimum two (2) feet above fully developed 100-yr flood elevation. (10.105.(5).(B), 10.106.(d).(12))
3. Please show and label 100-yr fully developed floodplain boundary with 10' easement. (10.105.(5).(B))

LEGEND

Flow Arrows	
• TC XX.X	Top of Curb
• TP XX.X	Top of Pavement
• TW XX.X	Top of Wall
• BW XX.X	Bottom of Wall
• G XX.X	Ground Elev.
X tc XX.X	Ex. Top of Curb
	Grade Break Line
	Ex. Storm Sewer
	Prop. Storm Sewer
	Prop. Curb Inlet
660	Exist. Contours
660	Prop. Contours
L.P. H.P.	Low Point High Point
*	Indicates side of lot where driveway must be located due to grade differential.
	Exposed Grade Beam
	Prop. Retaining Wall
1140-667.57	Flood cross section & 100-yr. elev. per flood report

THESE CONSTRUCTION PLANS WERE PREPARED UNDER THE RESPONSIBLE SUPERVISION OF F.E. MIDDLETON JR., REGISTERED PROFESSIONAL ENGINEER NO. 67449.

No.	DATE	REVISION	APPROV.

G1

Date: 10-30-24
Dwg Scale: Hor. 1"=80' Vert.
Dwg File: 0001045ERO.DWG
Project No. 0001045

LOT GRADING PLAN

LAKE RIDGE DRIVE – LAKE RIDGE PHASE 4
CITY OF SANGER DENTON COUNTY, TEXAS
SANGER TOWN CENTER LLC &
DUAL BOND HOLDINGS LLC &
HIEN & DUYET NGUYEN
101 FOREST BEND DRIVE
COPPELL, TEXAS 75019
JONATHAN WANG – 214-316-2256

STATE OF TEXAS · F. E. MIDDLETON, JR. · 67449 · REGISTERED PROFESSIONAL ENGINEER

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LEWISVILLE, TEXAS 75067 (972) 393-9800

BENCHMARK 1
WEST CORNER OF HDWL. SOUTH SIDE OF FM 455, 680' EAST OF THE N/W CORNER OF THE PROPERTY. ELEV.=679.82

BENCHMARK 2
N/E CORNER OF INLET ON EAST SIDE OF INDIAN LANE, 150' SOUTH OF ELEM. SCHOOL DRIVE. ELEV.=653.07

LEGEND

Flow Arrows	
• TC XX.X	Top of Curb
• TP XX.X	Top of Pavement
• TW XX.X	Top of Wall
• BW XX.X	Bottom of Wall
• G XX.X	Ground Elev.
X tc XX.X	Ex. Top of Curb
	Grade Break Line
	Ex. Storm Sewer
	Prop. Storm Sewer
	Prop. Curb Inlet
660	Exist. Contours
660	Prop. Contours
L.P.	Low Point
H.P.	High Point
*	Indicates side of lot where driveway must be located due to grade differential.
	Exposed Grade Beam
	Prop. Retaining Wall
1140-667.57	Flood cross section & 100-yr. elev. per flood report

NOTE:
1. FOR RETAINING WALL OVER 2' CONTRACTOR SHALL FURNISH A STRUCTURAL DESIGN FOR ALL WALLS, SIGNED AND SEALED BY A PROFESSIONAL ENGINEER.
2. NO RETAINING WALLS, INCLUDING FOOTINGS, SHALL BE PLACED IN A RIGHT-OF-WAY, EASEMENT OR OVERLAPPING RESIDENTIAL PROPERTY LINES.
3. REFER TO FLOOD STUDY BY CARDINAL STRATEGIES FOR LANE RANCH DATED 4-22-24 FOR ALL FULLY DEVELOPED FLOODPLAIN AND HYDROLOGY INFORMATION.

Drainage Comments:
1. There appears to be proposed grading in an existing channel. Please the fill into the flood study hydraulics model and provide for review.
2. Please show and label cross-section to match flood study with existing and fully-developed 100-yr flood elevations. Please note that lots impacted by the channel shall be a minimum two (2) feet above fully developed 100-yr flood elevation. (10.106.d.(12))
3. Please show and label 100-yr fully developed floodplain boundary with 10' easement. (10.105.(5).(B))

N

Scale 1"=80'
0' 40' 80' 160'

Please show break lines for valley gutters

THESE CONSTRUCTION PLANS WERE PREPARED UNDER THE RESPONSIBLE SUPERVISION OF F.E. MIDDLETON JR., REGISTERED PROFESSIONAL ENGINEER NO. 67449.

No.	DATE	REVISION	APPROV.

G2

Date: 10-30-24
Dwg Scale: Hor. 1"=80' Vert.
Dwg File: 0001045ERO.DWG
Project No. 0001045

LOT GRADING PLAN

LAKE RIDGE DRIVE - LAKE RIDGE PHASE 4
CITY OF SANGER DENTON COUNTY, TEXAS

SANGER TOWN CENTER LLC &
DUAL BOND HOLDINGS LLC &
HIEN & DUYET NGUYEN
101 FOREST BEND DRIVE
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STATE OF TEXAS
F. E. MIDDLETON, JR.
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LEWISVILLE, TEXAS 75067 (972) 393-9800

BENCHMARK 1
WEST CORNER OF HDWL. SOUTH SIDE OF FM 455, 680' EAST OF THE N/W CORNER OF THE PROPERTY. ELEV.=679.82

BENCHMARK 2
N/E CORNER OF INLET ON EAST SIDE OF INDIAN LANE, 150' SOUTH OF ELEM. SCHOOL DRIVE. ELEV.=653.07

N

Scale 1"=80'
0' 40' 80' 160'

Drainage Comments:
1. There appears to be proposed grading in an existing channel. Please the fill into the flood study hydraulics model and provide for review.
2. Please show and label cross-section to match flood study with existing and fully-developed 100-yr flood elevations. Please note that lots impacted by the channel shall be a minimum two (2) feet above fully developed 100-yr flood elevation. (10.106.(d).(12))
3. Please show and label 100-yr fully developed floodplain boundary with 10' easement. (10.105.(5).(B))

NOTE:
1. FOR RETAINING WALL OVER 2' CONTRACTOR SHALL FURNISH A STRUCTURAL DESIGN FOR ALL WALLS, SIGNED AND SEALED BY A PROFESSIONAL ENGINEER.
2. NO RETAINING WALLS, INCLUDING FOOTINGS, SHALL BE PLACED IN A RIGHT-OF-WAY, EASEMENT OR OVERLAPPING RESIDENTIAL PROPERTY LINES.
3. REFER TO FLOOD STUDY BY CARDINAL STRATEGICS FOR LAKE RANCH DATED 4-22-24 FOR ALL FULLY DEVELOPED FLOODPLAIN AND HYDROLOGY INFORMATION.

This sheet is showing retaining wall in Drainage Esmt. Open Space. Please revise.

Every outfall to a public channel shall have drainage easement. Please update. (10.105.(5).B)

LEGEND

Flow Arrows	
Top of Curb	• TC XX.X
Top of Pavement	• TP XX.X
Top of Wall	• TW XX.X
Bottom of Wall	• BW XX.X
Ground Elev.	• G XX.X
Ex. Top of Curb	X tc XX.X
Grade Break Line	
Ex. Storm Sewer	
Prop. Storm Sewer	
Prop. Curb Inlet	
Exist. Contours	660
Prop. Contours	660
Low Point / High Point	L.P. / H.P.
Indicates side of lot where driveway must be located due to grade differential.	
Exposed Grade Beam	
Prop. Retaining Wall	
Flood cross section & 100-yr. elev. per flood report	1140-667.57

THESE CONSTRUCTION PLANS WERE PREPARED UNDER THE RESPONSIBLE SUPERVISION OF F.E. MIDDLETON JR., REGISTERED PROFESSIONAL ENGINEER NO. 67449.

No.	DATE	REVISION	APPROV.

G3

Date: 10-30-24
Dwg Scale: Hor. 1"=80' Vert.
Dwg File: 0001045ERO.DWG
Project No. 0001045

LOT GRADING PLAN

LAKE RIDGE DRIVE - LAKE RIDGE PHASE 4
CITY OF SANGER DENTON COUNTY, TEXAS

SANGER TOWN CENTER LLC &
DUAL BOND HOLDINGS LLC &
HIEN & DUYET NGUYEN
101 FOREST BEND DRIVE
COPPELL, TEXAS 75019
JONATHAN WANG - 214-316-2256

STATE OF TEXAS
F. E. MIDDLETON, JR.
67449
PROFESSIONAL ENGINEER

Middleton & Assoc, LLC
CONSULTING CIVIL ENGINEERS & LAND PLANNERS
TBPE #F-10900
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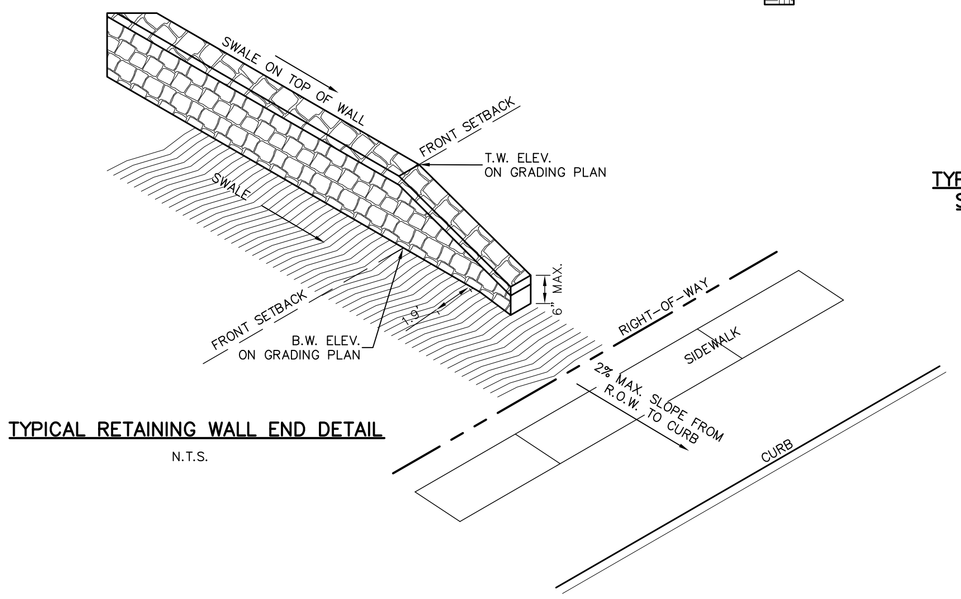
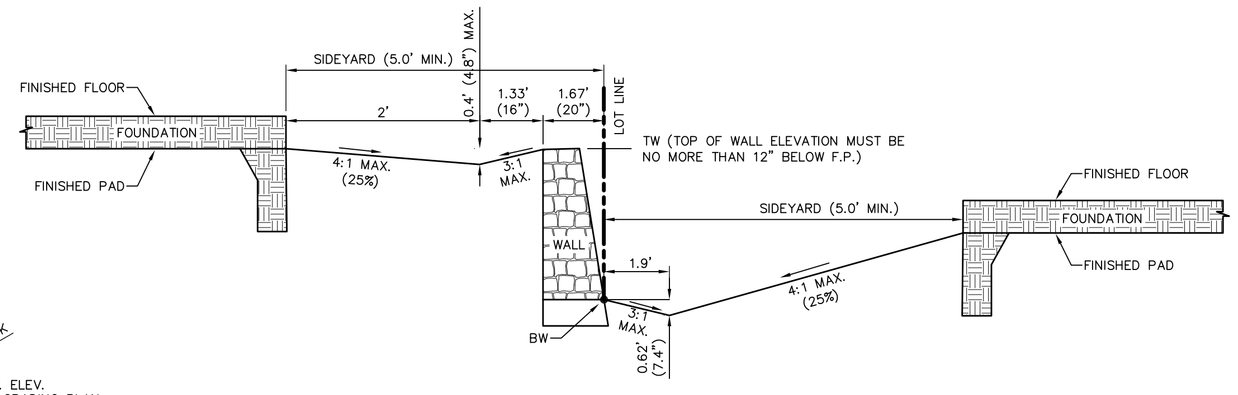
2785 ROCKBROOK DRIVE, SUITE 105
LEWISVILLE, TEXAS 75067 (972) 393-9800



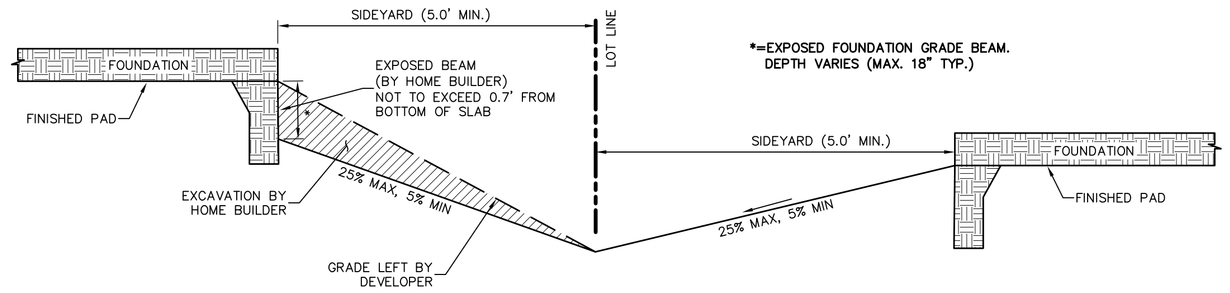
TYPICAL RETAINING WALL END DETAIL

N.T.S.



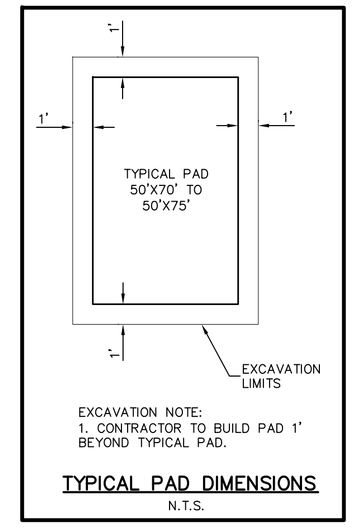
TYPICAL SECTION OF SIDEYARD SWALE & RETAINING WALL

N.T.S.



TYPICAL SECTION OF SIDEYARD SWALE & GRADE BEAM

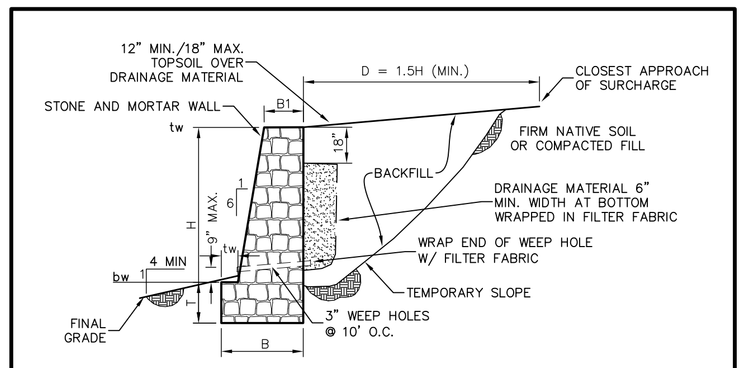
N.T.S.



EXCAVATION NOTE:
1. CONTRACTOR TO BUILD PAD 1' BEYOND TYPICAL PAD.

TYPICAL PAD DIMENSIONS

N.T.S.

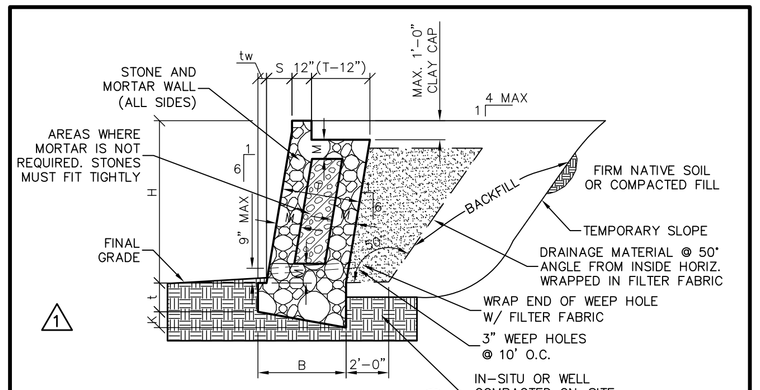


TYPICAL RETAINING WALL SECTION

WALLS 4'-0" OR LESS IN HEIGHT

WALL SCHEDULE				
HEIGHT (H)	1.5'	2'	3'	4'
BASE WIDTH (B)	15"	16"	22"	25"
TOP WIDTH (B1)	12"	12"	12"	12"
EMBEDMENT (t)	6"	9"	10"	12"
TOE WIDTH (tw)	0"	0"	2"	5"

FOR BIDDING PURPOSES ONLY

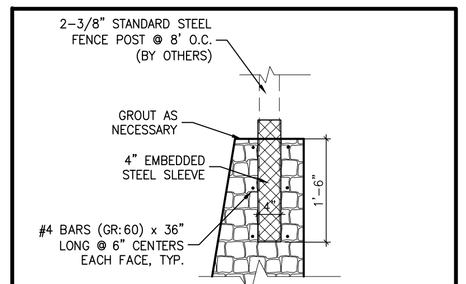


TYPICAL RETAINING WALL SECTION -(1)

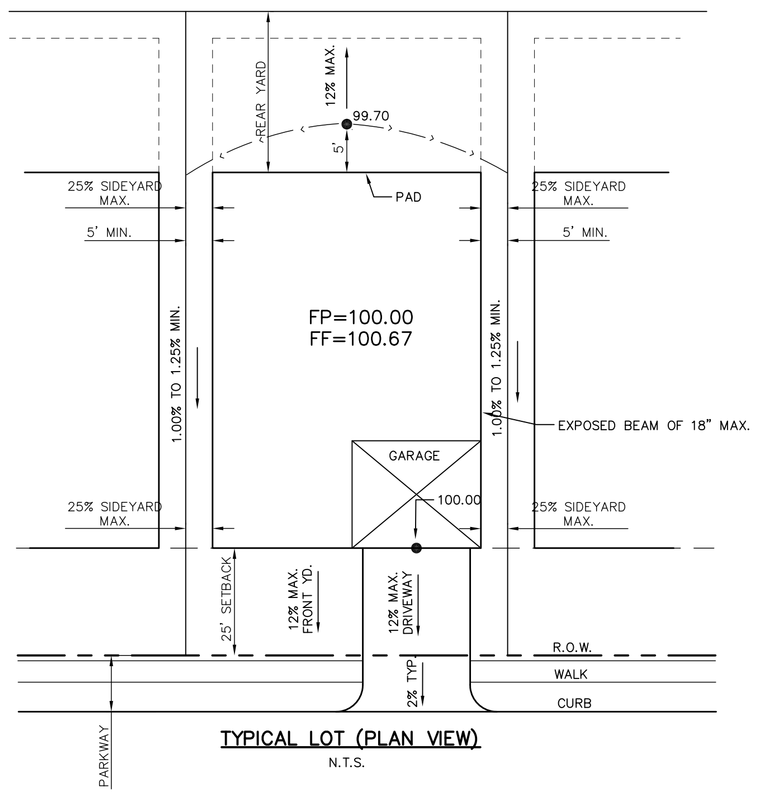
WALLS 5'-0" TO 10'-0" IN HEIGHT

WALL SCHEDULE-ALLOWABLE BRG PRESSURE-1500 PSF						
HEIGHT (H)	5'	6'	7'	8'	9'	10'
BASE WIDTH (B)	27"	30"	35"	41"	46"	51"
WALL THICK (T)	23"	27"	31"	36"	40"	44"
EMBEDMENT (t)	12"	12"	15"	18"	18"	18"
MORTAR THICK (M)	8"	10"	10"	12"	14"	15"
BATTER WIDTH (S)	10"	12"	14"	16"	18"	20"
KEY DEPTH (K)	5"	6"	7"	8"	8"	9"
TOE WIDTH (tw)	2"	3"	4"	5"	6"	7"

FOR BIDDING PURPOSES ONLY

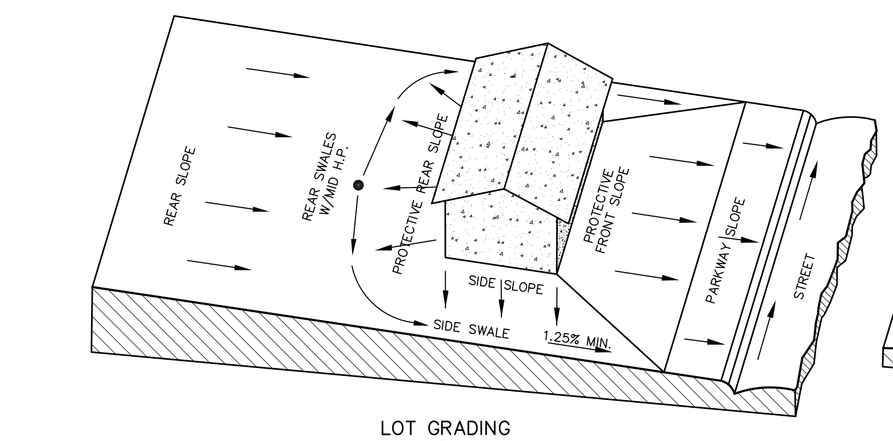


FENCE POST EMBEDMENT DETAIL FOR FENCES

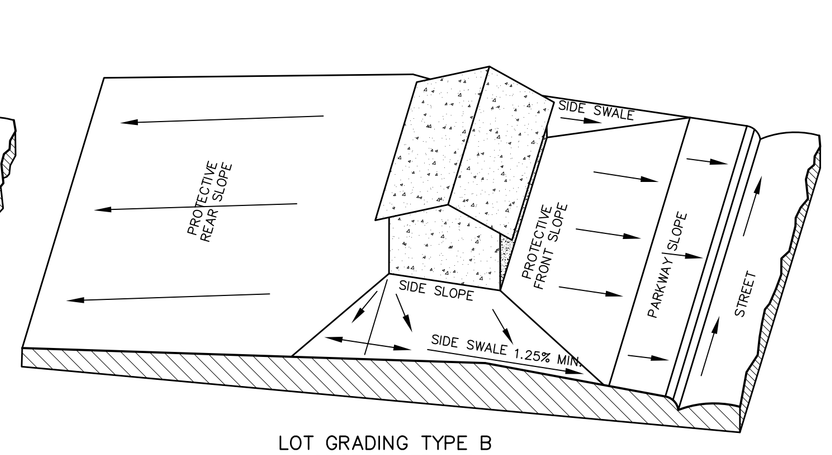


TYPICAL LOT (PLAN VIEW)

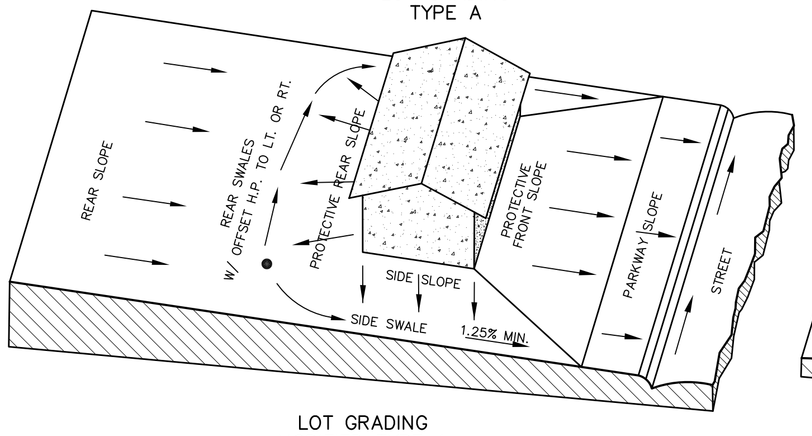
N.T.S.



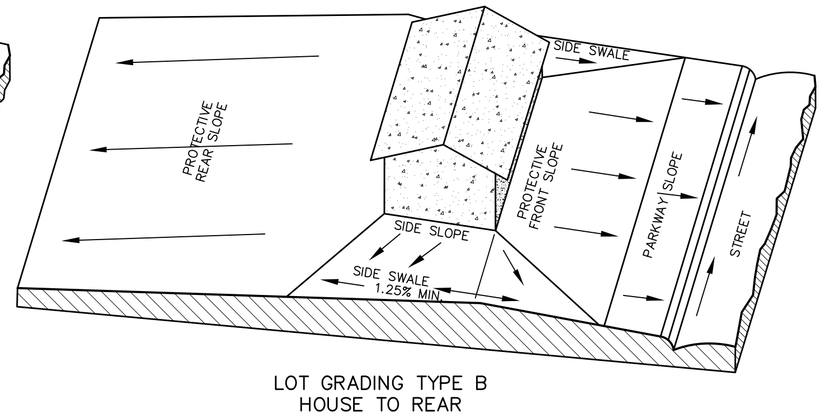
LOT GRADING
TYPE A



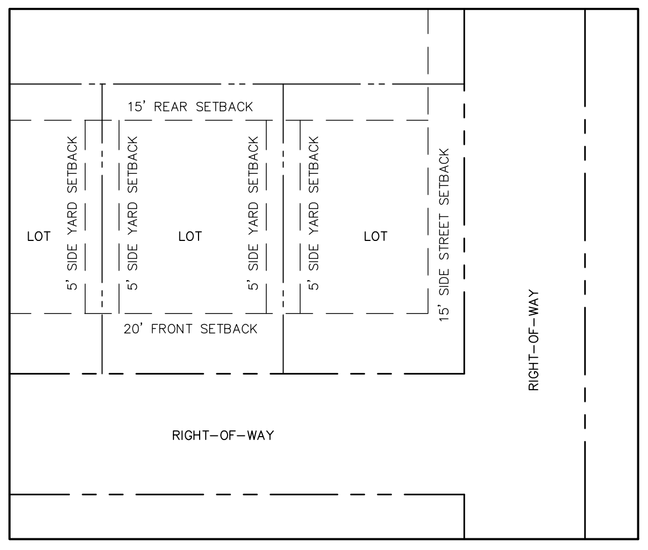
LOT GRADING TYPE B
HOUSE TO FRONT



LOT GRADING
MODIFIED TYPE A



LOT GRADING TYPE B
HOUSE TO REAR



TYPICAL LOT SETBACKS

N.T.S.

LOT GRADING AND RETAINING WALL CRITERIA

DRAINAGE TYPES: TYPE A = BACK TO FRONT
TYPE B = SPLIT DRAINAGE
TYPE C = FRONT TO BACK

LOT TO LOT DRAINAGE IS TO BE AVOIDED, EVEN IF PERMISSIBLE BY THE CITY

FRONT ENTRY: NO SWALES IN THE DRIVEWAYS WITH TYPE C DRAINAGE

MAXIMUM 12% GRADE ON DRIVEWAY (2% INSIDE ROW)

MAXIMUM 12% GRADE ON REAR YARD

MAXIMUM 12% GRADE ON FRONT YARD

MINIMUM 1.0% GRADE IN THE SIDE YARD SWALES FROM FRONT TO BACK

REAR YARD: WITH TYPE A DRAINAGE, REAR SWALE = 5' FROM PAD, 0.3' LOWER THAN PAD @ HIGHEST POINT, THEN AROUND TO SIDE SWALES. (MAXIMUM REAR YARD SLOPE FROM SWALE TO REAR PROPERTY LINE = 12%)

SIDE YARDS: MAXIMUM SLOPE FROM PAD TO SWALE = 25%
MAXIMUM BEAM EXPOSURE (FROM TOP OF SLAB TO GRADE) = 1.5'

RETAINING WALLS: MAX. 4'-0" HIGH FOR SIDE YARD WALLS. MAX. 1'-0" HIGH BETWEEN PAD AND TOP OF WALL.

ALL RETAINING WALLS ARE PRIVATE AND WILL BE OWNED AND MAINTAINED BY THE FUTURE HOME OWNER.

No.	DATE	REVISION	APPROV.

Middleton & Assoc, LLC
CONSULTING CIVIL ENGINEERS & LAND PLANNERS
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TBPE #F-10900
2785 ROCKBROOK DRIVE, SUITE 105
LEWISVILLE, TEXAS 75067 (972) 393-9800

THESE CONSTRUCTION PLANS WERE PREPARED UNDER THE RESPONSIBLE SUPERVISION OF T. E. MIDDLETON, JR., REGISTERED PROFESSIONAL ENGINEER NO. 83748

LAKE RIDGE DRIVE – LAKE RIDGE PHASE 4
CITY OF SANGER DENTON COUNTY, TEXAS
SANGER TOWN CENTER LLC &
DUAL BOND HOLDINGS LLC &
HIEN & DUYET NGUYEN
101 FOREST BEND DRIVE
COPPELL, TEXAS 75019
JONATHAN WANG – 214-316-2256

LOT GRADING DETAILS

Date: 10-30-24
Dwg Scale: Hor. NSA
Vert.
Dwg File: 000104301-GRD.DWG
Project No. 00001045

DT-GR1

LEGEND

- Ex. Storm Sewer
- Prop. Storm Sewer
- Prop. Curb Inlet
- 660 Exist. Contours
- 660 Prop. Contours
- Prop. Silt Fence
- Prop. Curb Inlet Protection
- Prop. Drop Inlet Protection
- Prop. Construction Entrance
- Prop. Curlex & Grass Seed
- Prop. Rock Check Dam

EROSION CONTROL SEQUENCING

PHASE	DEVICES
1. GRADING	SILT FENCE & EXISTING INLET(S) PROTECTION
2. UTILITY INSTALLATION	SILT FENCE
3. DRAINAGE INSTALLATION	SILT FENCE, INLET PROTECTION
4. PAVING OPERATIONS	SILT FENCE, CURB AND DROP INLET PROTECTION
5. LANDSCAPE INLET(S) PROTECTION	SILT FENCE, CURLEX, SEEDING AND SODDING,
6. FINAL CLEAN-UP	SILT FENCE

TOTAL DISTURBED AREA = 36.0 ACRES

NOTE:
1. A 8' BAND OF CURLEX BLANKET SHALL BE PLACED BEHIND THE CURB ONCE ALL FRANCHISE UTILITIES ARE COMPLETE.
2. ALL LOTS WILL BE SEEDED WITH GRASS AFTER FINAL LOT BENCHING.

Arrow appears to point to wrong object. Please update.

INSTALL CHECK DAM
LIMITS OF CONSTRUCTION
INSTALL SILT FENCE
INSTALL SILT FENCE
INSTALL EX. INLET PROTECTION
INSTALL INLET PROTECTION
INSTALL INLET PROTECTION
INSTALL SILT FENCE
INSTALL SILT FENCE
INSTALL INLET PROTECTION
INSTALL INLET PROTECTION
INSTALL SILT FENCE
LIMITS OF GRADING

LAKE RIDGE ESTATES, PHASE 3
DOC. NO. 2019-367
(ORDCT)

MARION HILLS APARTMENTS, LLC
DOC. NO. 2017-92008

SANGER TOWN CENTER LLC
DOC. NO. 2017-48301

HIEN & DUYET NGUYEN
DOC. NO. 2016-27020

LAKE RIDGE DRIVE
SHORELINE DRIVE
RANCHVIEW DRIVE
LAKEVIEW DRIVE
SILO DRIVE
HERD DRIVE
SHORTHORN DRIVE
DOLLARHYDE DRIVE
MATCHLINE SEE SHEET ER02

N

0' 40' 80' 160'
Scale 1"=80'

No.	DATE	REVISION	APPROV.

Middleton & Assoc, LLC
CONSULTING CIVIL ENGINEERS & LAND PLANNERS
TBPE #F-10900
2785 ROCKBROOK DRIVE, SUITE 105
LEWISVILLE, TEXAS 75067 (972) 393-9800
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THESE CONSTRUCTION PLANS WERE PREPARED UNDER THE RESPONSIBLE SUPERVISION OF T. E. MIDDLETON, JR., REGISTERED PROFESSIONAL ENGINEER NO. 61948

STATE OF TEXAS T. E. MIDDLETON, JR. 61948 REGISTERED PROFESSIONAL ENGINEER

LAKE RIDGE DRIVE – LAKE RIDGE PHASE 4
CITY OF SANGER DENTON COUNTY, TEXAS
SANGER TOWN CENTER LLC &
DUAL BOND HOLDINGS LLC &
HIEN & DUYET NGUYEN
101 FOREST BEND DRIVE
COPPELL, TEXAS 75019
JONATHAN WANG – 214-316-2256

EROSION CONTROL PLAN

Date: 10-30-24
Dwg Scale: Hor. 1"=80'
Vert.
Dwg File: 0001045ERO.DWG
Project No. 0001045

ER01

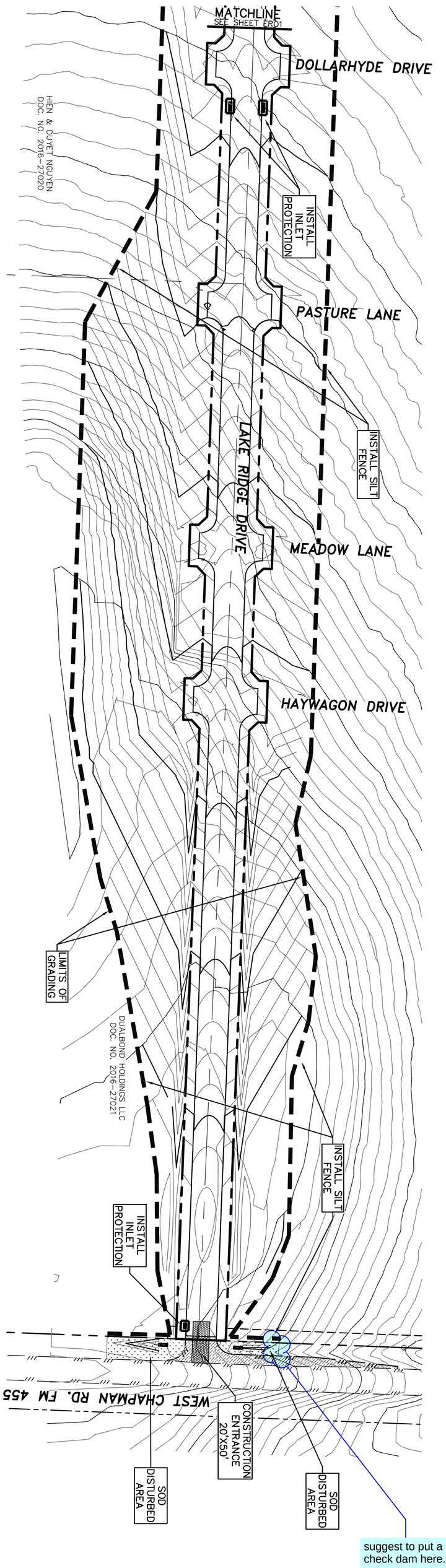
LEGEND

- Ex. Storm Sewer
- Prop. Storm Sewer
- Prop. Curb Inlet
- 660 — Exist. Contours
- Prop. Contours
- 660 — Prop. Silt Fence
- Prop. Curb Inlet Protection
- Prop. Drop Inlet Protection
- Prop. Construction Entrance
- Prop. Curlex & Grass Seed
- Prop. Rock Check Dam

N

0' 40' 80' 160'

Scale 1"=80'



EROSION CONTROL SEQUENCING

1. THE EROSION CONTROL CONTRACTOR SHALL INSTALL SILT FENCE ALONG THE PERIMETER OF THE SITE AND CONSTRUCT THE STABILIZED CONSTRUCTION ENTRANCES AT THE LOCATIONS SHOWN ON THIS PLAN PRIOR TO CONSTRUCTION.
2. THE GRADING CONTRACTOR SHALL STRIP, CLEAR AND MASS GRADE THE SITE. THE GRADING CONTRACTOR IS TO ASSUME RESPONSIBILITY OF THE EROSION CONTROL DEVICES DURING GRADING OPERATIONS AND ENSURE THAT THESE DEVICES REMAIN IN GOOD WORKING ORDER. AFTER GRADING IS COMPLETE, THE GRADING CONTRACTOR SHALL INSPECT THE DEVICES TO ENSURE THAT THEY REMAIN IN GOOD WORKING ORDER.
3. BEGIN UTILITY INSTALLATION. THE UTILITY CONTRACTOR SHALL ASSUME RESPONSIBILITY OF THE EROSION CONTROL DEVICES DURING UTILITY CONSTRUCTION AND ENSURE THAT THESE DEVICES REMAIN IN GOOD WORKING ORDER. AFTER THE STORM DRAIN INLET INVERT AND WALLS ARE ERECTED, THE CONTRACTOR SHALL PROTECT THE INLET FROM SILTATION BY SURROUNDING IT WITH SILT FENCE OR HAY BALES. AFTER THIS PHASE OF UTILITY INSTALLATION IS COMPLETE, THE UTILITY CONTRACTOR SHALL INSPECT THE DEVICES PRIOR TO MOVING OFF SITE TO ENSURE THAT THEY REMAIN IN GOOD WORKING ORDER.
4. BEGIN PAVING CONSTRUCTION. THE PAVING CONTRACTOR SHALL ASSUME RESPONSIBILITY OF THE EROSION CONTROL DEVICES DURING PAVING CONSTRUCTION AND ENSURE THAT THESE DEVICES REMAIN IN GOOD WORKING ORDER. AFTER PAVING CONSTRUCTION IS COMPLETE, THE PARKWAYS SHALL BE BACKFILLED TO A FINISHED SLOPE OF 1/4" PER FOOT. THE PAVING CONTRACTOR SHALL INSPECT THE DEVICES PRIOR TO MOVING OFF SITE TO ENSURE THAT THEY REMAIN IN GOOD WORKING ORDER.
5. THE UTILITY CONTRACTOR SHALL REMOBILIZE AND FINISH THE STORM DRAIN INLET CONSTRUCTION BY COMPLETING THE ERECTION OF THE WALLS AND TOP. AFTER PUBLIC UTILITY CONSTRUCTION IS COMPLETE, THE UTILITY CONTRACTOR SHALL INSPECT THE DEVICES TO ENSURE THAT THEY REMAIN IN GOOD WORKING ORDER.
6. THE EROSION CONTROL CONTRACTOR SHALL INSTALL THE CURB INLET PROTECTION DETAILED ON THIS PLAN.
7. BEGIN FRANCHISE UTILITY CONSTRUCTION. EACH FRANCHISE UTILITY CONTRACTOR SHALL ASSUME RESPONSIBILITY OF THE EROSION CONTROL DEVICES DURING FRANCHISE UTILITY CONSTRUCTION AND ENSURE THAT THESE DEVICES REMAIN IN GOOD WORKING ORDER. AFTER FRANCHISE UTILITY CONSTRUCTION IS COMPLETE, THE CONTRACTOR SHALL INSPECT THE DEVICES TO ENSURE THAT THEY REMAIN IN GOOD WORKING ORDER.
8. AFTER CONSTRUCTION IS COMPLETE, THE EROSION CONTROL CONTRACTOR SHALL SEED ALL DISTURBED AREAS AND PLACE AN 8' BAND OF CURLEX BEHIND THE CURB. WHEN SUFFICIENT GRASS GROWTH HAS BEEN ESTABLISHED, ALL SILT FENCE AND OTHER EROSION CONTROL DEVICES SHALL BE REMOVED FROM THE SITE.

EROSION CONTROL GENERAL NOTES:

1. THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE FEDERAL, STATE AND LOCAL EROSION, CONSERVATION, AND SILTATION ORDINANCES. THE CONTRACTOR SHALL REMOVE ALL TEMPORARY EROSION CONTROL DEVICES UPON COMPLETION OF PERMANENT DRAINAGE FACILITIES AND THE ESTABLISHMENT OF A STAND OF GRASS OR OTHER GROWTH TO PREVENT EROSION.
2. ALL SEEDING AND FERTILIZATION OF DISTURBED AREAS WILL BE THE RESPONSIBILITY OF THE EROSION CONTROL CONTRACTOR. SEEDING WILL BE DONE PRIOR TO ANY EROSION CONTROL BLANKET INSTALLATIONS.
3. EROSION PROTECTION WILL BE DELETED OR ADDED PER THE COUNTY.
4. THE SWPPP INSPECTOR SHALL MAKE INSPECTIONS OF THE EROSION CONTROL DEVICES EVERY 7 DAYS OR WITHIN 24 HOURS OF A STORM OF 0.5 INCHES OR MORE IN DEPTH.
5. THE EROSION CONTROL CONTRACTOR SHALL SEED, WATER, AND FERTILIZE ALL DISTURBED AREAS BY THE 14TH DAY AFTER THE LAST DISTURBANCE (EXCEPT THOSE WITHIN LANDSCAPED AREAS) UNTIL SUFFICIENT GRASS GROWTH HAS BEEN PROVIDED TO STOP EROSION. SILT FENCES SHALL REMAIN IN GOOD WORKING CONDITION UNTIL GRASS HAS BEEN ESTABLISHED.
6. THE POST DEVELOPMENT RUNOFF COEFFICIENT IS 0.55.
7. EROSION CONTROL MEASURES MAY ONLY BE PLACED IN FRONT OF INLETS, OR IN CHANNELS, DRAINAGE WAYS OR BORROW DITCHES AT RISK OF CONTRACTOR.
8. CONTRACTOR SHALL REMAIN LIABLE FOR ANY DAMAGE CAUSED BY THE MEASURES, INCLUDING FLOODING DAMAGE, WHICH MAY OCCUR DUE TO BLOCKED DRAINAGE.
9. AT THE CONCLUSION OF ANY PROJECT, ALL CHANNELS, DRAINAGE WAYS OR BORROW DITCHES IN THE WORK ZONE SHALL BE DREDGED OF ANY SEDIMENT GENERATED BY THE PROJECT OR DEPOSITED AS A RESULT OF EROSION CONTROL MEASURES.
10. SILT FENCES SHALL BE MIRAFI 100 X OR APPROVED EQUAL AND INSTALLED PER MANUFACTURER RECOMMENDATIONS.
11. EROSION CONTROL BLANKETS SHALL BE CURLEX I OR APPROVED EQUAL FOR ALL SLOPES FROM 4:1 TO FLATTER, ALL OTHER SLOPES FROM 4:1 OR GREATER SHALL BE CURLEX II OR APPROVED EQUAL. ALL AREAS REQUIRING EROSION CONTROL BLANKETS SHALL BE SEEDED AND FERTILIZED PRIOR TO EROSION CONTROL BLANKET INSTALLATION.
12. EACH CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ALL EROSION CONTROL DEVICES ALREADY IN PLACE. CONTRACTOR SHALL REMOVE AND REPLACE EROSION CONTROL AS NEEDED FOR CONSTRUCTION OR ACCESS. ALL EROSION CONTROL MUST BE IN PLACE AT THE END OF EACH DAY.
13. ALL PERIMETER PROTECTION SHALL BE INSTALLED PRIOR TO EXTENSIVE ON-SITE GRADING.
14. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO USE WHATEVER MEANS ARE NECESSARY TO CONTROL AND LIMIT SILT AND SEDIMENT LEAVING THE SITE. SPECIFICALLY, THE CONTRACTOR SHALL PROTECT ALL PUBLIC STREETS, ALLEYS, STREAMS, STORM DRAIN SYSTEMS AND INLETS FROM EROSION DEPOSITS.
15. USE OF ON-SITE FUEL STORAGE TANKS IS DISCOURAGED. HOWEVER, IF USED, THE CONTRACTOR IS THE SOLE RESPONSIBILITY OF THE PREVENTION OF HAZARDS TO THE GROUND WATER. SEE NCTCOG CONSTRUCTION BMP MANUAL SECTION 4 FOR STORAGE.
16. A CENTRALIZED PIT/WASH BASIN SHALL BE CONSTRUCTED ON-SITE FOR THE PURPOSE OF CONCRETE TRUCK WASHING. SEE NCTGOG CONSTRUCTION BMP MANUAL SECTION 4 HAZARDOUS WASTE MANAGEMENT.
17. "SEDIMENT BARRIER" INDICATES SILT FENCE OR CHECK DAM (OR A COMBINATION OF THE TWO), AS SELECTED BY THE CONTRACTOR AND APPROVED BY THE CONSULTANT ENGINEER.
18. CONTRACTORS SHALL PARK, STORE EQUIPMENT AND MATERIALS, AND SERVICE VEHICLES AT THE "PARKING AND STORAGE AREA". THE LOCATION OF SAID AREA IS TO BE APPROVED BY THE OWNER OR HIS REPRESENTATIVE.
19. CONSTRUCTION ENTRANCES ARE TO BE INSTALLED AT ALL POINTS WHERE EQUIPMENT ENTERS OR LEAVES THE SITE. THE LOCATION OF SAME IS TO BE APPROVED BY THE OWNER OR HIS REPRESENTATIVE.

No.	DATE	REVISION	APPROV.

THESE CONSTRUCTION PLANS WERE PREPARED UNDER THE RESPONSIBLE SUPERVISION OF F.E. MIDDLETON JR., REGISTERED PROFESSIONAL ENGINEER NO. 67449.

ERO2

Date: 10-30-24
Dwg Scale: Hor. 1"=80' Vert.
Dwg File: 0001045ERO.DWG
Project No. 0001045

EROSION CONTROL PLAN

LAKE RIDGE DRIVE – LAKE RIDGE PHASE 4
CITY OF SANGER DENTON COUNTY, TEXAS

SANGER TOWN CENTER LLC &
DUAL BOND HOLDINGS LLC &
HIEN & DUYET NGUYEN
101 FOREST BEND DRIVE
COPPELL, TEXAS 75019
JONATHAN WANG – 214-316-2256

STATE OF TEXAS * F. E. MIDDLETON, JR. 67449 REGISTERED PROFESSIONAL ENGINEER

Middleton & Assoc, LLC
CONSULTING CIVIL ENGINEERS & LAND PLANNERS
TBPE #F-10900
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2785 ROCKBROOK DRIVE, SUITE 105
LEWISVILLE, TEXAS 75067 (972) 393-9800

LEGEND

- Ex. Storm Sewer
- Prop. Storm Sewer
- Prop. Curb Inlet
- Exist. Contours (660)
- Prop. Contours (660)
- Prop. Silt Fence
- Prop. Curb Inlet Protection
- Prop. Drop Inlet Protection
- Prop. Construction Entrance
- Prop. Curlex & Grass Seed
- Prop. Rock Check Dam

N

0' 40' 80' 160'

Scale 1"=80'

LIMITS OF CONSTRUCTION

INSTALL SILT FENCE

INSTALL EX. INLET PROTECTION

INSTALL INLET PROTECTION

WATERFRONT DRIVE

WATERCREST DRIVE

EASTVIEW DRIVE

LAKEVIEW DRIVE

SHORELINE DRIVE

RANCHVIEW DRIVE

LAKE RIDGE DRIVE

LAKE RIDGE ESTATES, PHASE 3 DOC. NO. 2019-367 (ORDCT)

MARION HILLS APARTMENTS, LLC DOC. NO. 2017-92008

SANGER TOWN CENTER LLC DOC. NO. 2017-48301

HIEN & DUYET NGUYEN DOC. NO. 2016-27020

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No.	DATE	REVISION	APPROV.

ERO3

Date: 10-30-24
Dwg Scale: Hor. 1"=80' Vert.
Dwg File: 0001045ERO.DWG
Project No. 0001045

EROSION CONTROL PLAN

LAKE RIDGE DRIVE - LAKE RIDGE PHASE 4
CITY OF SANGER DENTON COUNTY, TEXAS

SANGER TOWN CENTER LLC &
DUAL BOND HOLDINGS LLC &
HIEN & DUYET NGUYEN
101 FOREST BEND DRIVE
COPPELL, TEXAS 75019
JONATHAN WANG - 214-316-2256

STATE OF TEXAS
F. E. MIDDLETON, JR.
97449
LICENSED PROFESSIONAL ENGINEER

Middleton & Assoc, LLC
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TBPE #F-10900
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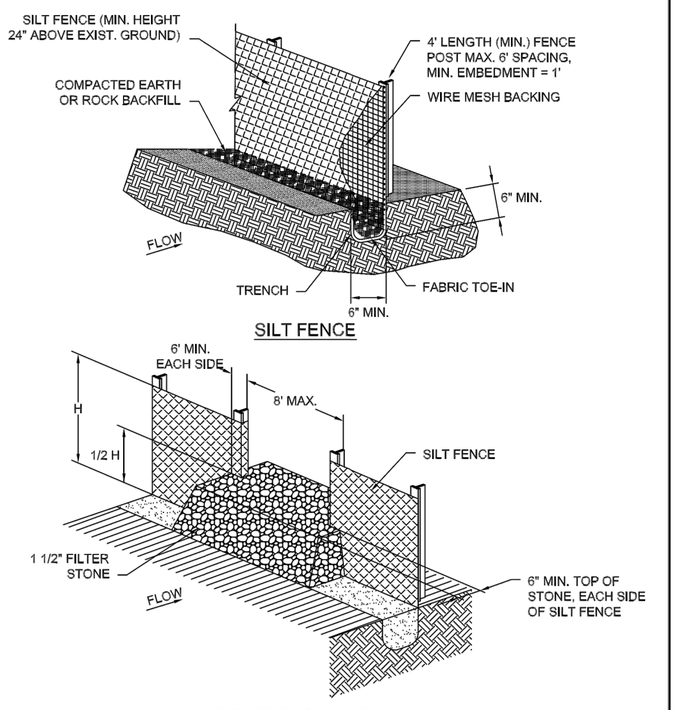


SILT FENCE	North Central Texas Council of Governments	STANDARD SPECIFICATION REFERENCE 202.5 *	
		DATE OCT. '04	STANDARD DRAWING NO. 1020A

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

SILT FENCE GENERAL NOTES:

1. 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 DOWNSLOPE 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 SUPPORT POST OR TO WIRE BACKING, WHICH IN TURN IS ATTACHED TO THE FENCE POST. THERE SHALL BE A 3 FOOT OVERLAP, SECURELY FASTENED WHERE ENDS OF FABRIC MEET.

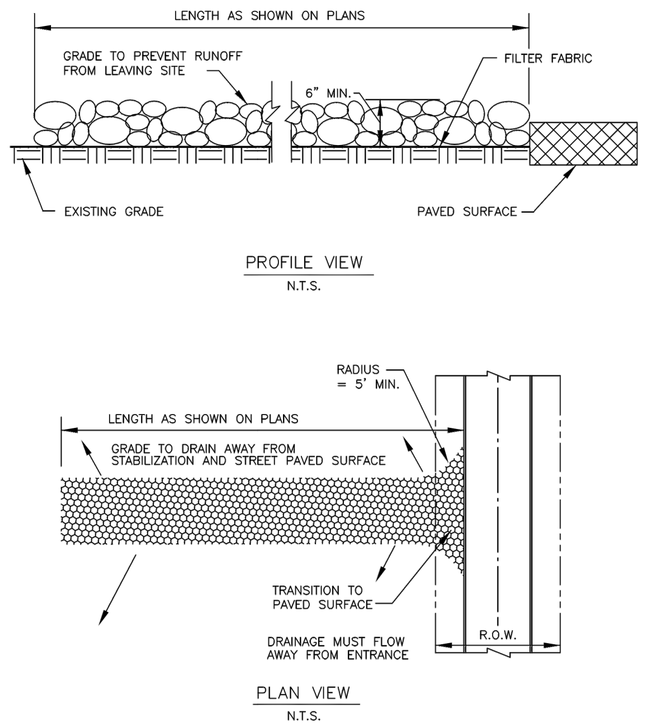
5. INSPECTION SHALL BE AS SPECIFIED IN THE SWPPP. REPAIR OR REPLACEMENT SHALL BE MADE PROMPTLY AS NEEDED.

6. SILT FENCE SHALL BE REMOVED WHEN FINAL STABILIZATION IS ACHIEVED OR ANOTHER EROSION OR SEDIMENT CONTROL DEVICE IS EMPLOYED.

7. ACCUMULATED SILT SHALL BE REMOVED WHEN IT REACHES A DEPTH OF HALF 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.

SILT FENCE	North Central Texas Council of Governments	STANDARD SPECIFICATION REFERENCE 202.5 *	
		DATE OCT. '04	STANDARD DRAWING NO. 1020B

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



STABILIZED CONSTRUCTION ENTRANCE	North Central Texas Council of Governments	STANDARD SPECIFICATION REFERENCE 202.11 *	
		DATE OCT. '04	STANDARD DRAWING NO. 1070A

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

STABILIZED CONSTRUCTION ENTRANCE GENERAL NOTES:

1. STONE SHALL BE 3 TO 5 INCH DIAMETER COARSE AGGREGATE.

2. LENGTH SHALL BE AS SPECIFIED IN THE SWPPP.

3. THE THICKNESS SHALL NOT BE LESS THAN 12 INCHES.

4. THE WIDTH SHALL BE NO LESS THAN THE FULL WIDTH OF ALL POINTS OF INGRESS OR EGRESS.

5. WHEN NECESSARY, VEHICLES SHALL BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTRANCE ONTO A PUBLIC ROADWAY. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE WITH DRAINAGE FLOWING AWAY FROM BOTH THE STREET AND THE STABILIZED ENTRANCE. ALL SEDIMENT SHALL BE PREVENTED FROM ENTERING ANY STORM DRAIN, DITCH OR WATERCOURSE USING APPROVED METHODS.

6. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PAVED SURFACES. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND. ALL SEDIMENT SPILLED, DROPPED, WASHED, OR TRACKED ONTO PAVED SURFACES MUST BE REMOVED IMMEDIATELY.

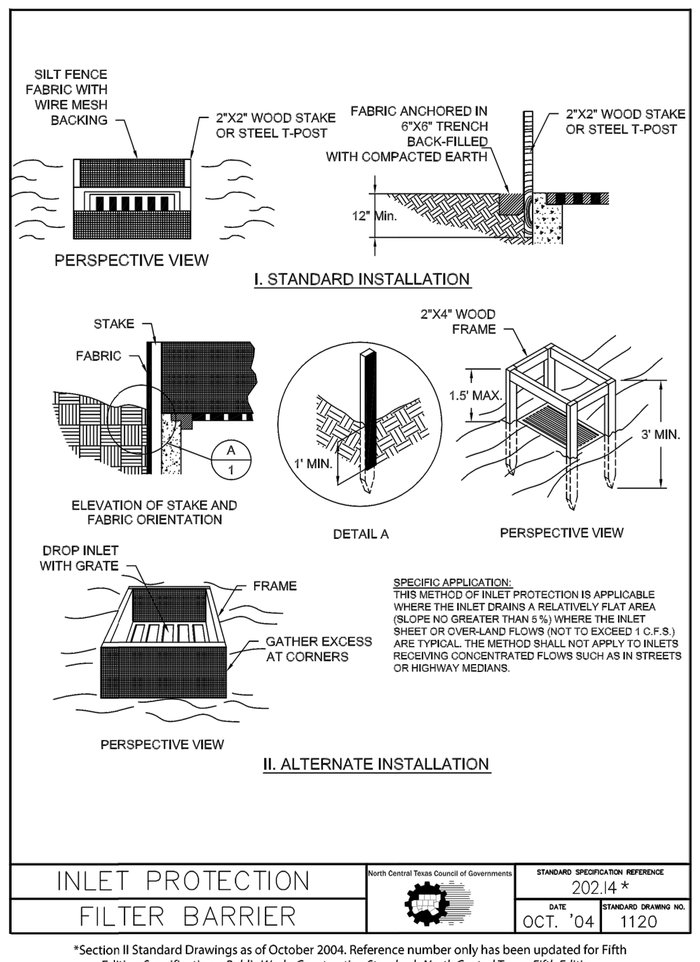
7. THE ENTRANCE MUST BE PROPERLY GRADED OR INCORPORATE A DRAINAGE SWALE TO PREVENT RUNOFF FROM LEAVING THE CONSTRUCTION SITE.

8. PREVENT SHORTCUTTING OF THE FULL LENGTH OF THE CONSTRUCTION ENTRANCE BY INSTALLING BARRIERS AS NECESSARY.

9. INSPECTION SHALL BE AS SPECIFIED IN THE SWPPP.

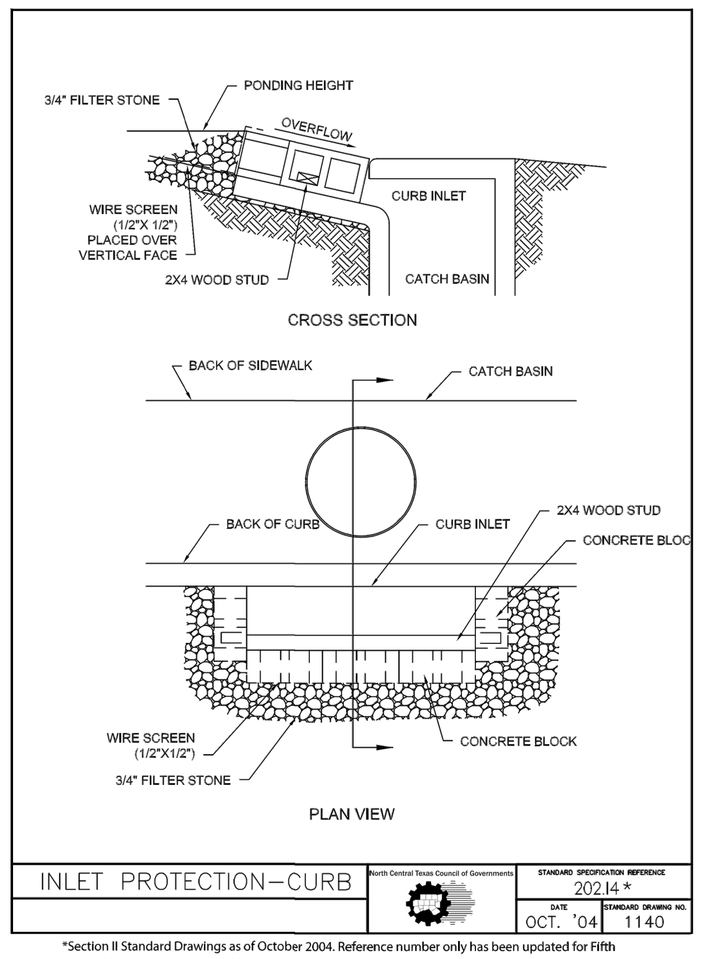
STABILIZED CONSTRUCTION ENTRANCE	North Central Texas Council of Governments	STANDARD SPECIFICATION REFERENCE 202.11 *	
		DATE OCT. '04	STANDARD DRAWING NO. 1070B

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



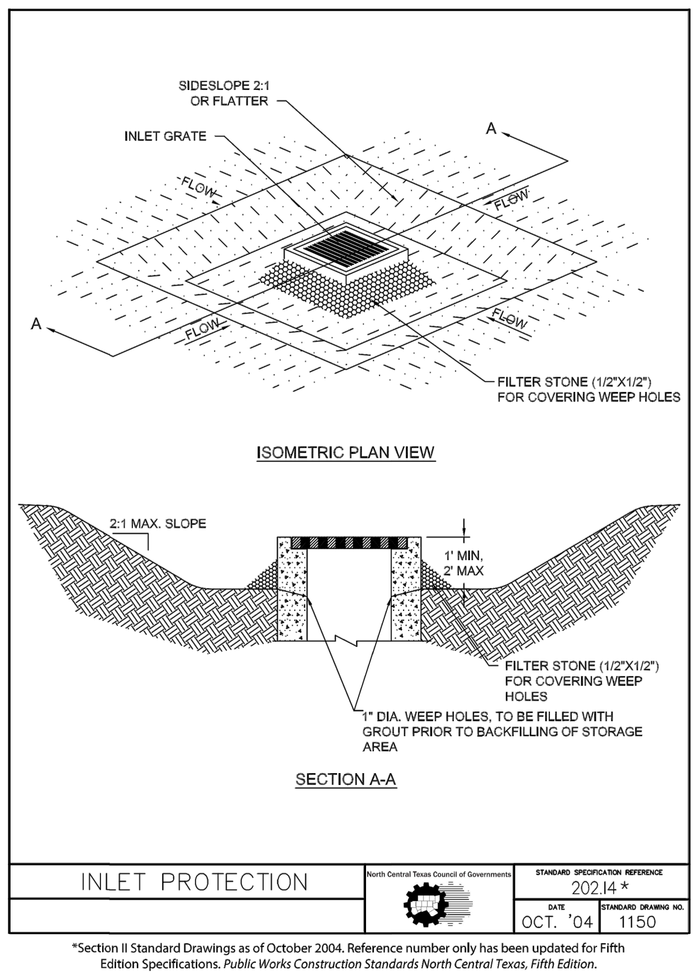
INLET PROTECTION FILTER BARRIER	North Central Texas Council of Governments	STANDARD SPECIFICATION REFERENCE 202.14 *	
		DATE OCT. '04	STANDARD DRAWING NO. 1120

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



INLET PROTECTION—CURB	North Central Texas Council of Governments	STANDARD SPECIFICATION REFERENCE 202.14 *	
		DATE OCT. '04	STANDARD DRAWING NO. 1140

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



INLET PROTECTION	North Central Texas Council of Governments	STANDARD SPECIFICATION REFERENCE 202.14 *	
		DATE OCT. '04	STANDARD DRAWING NO. 1150

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

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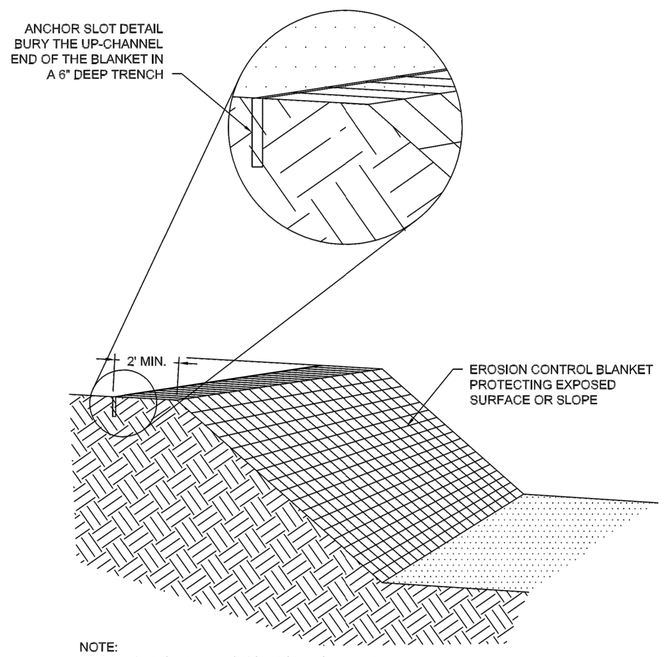
LAKE RIDGE DRIVE – LAKE RIDGE PHASE 4
CITY OF SANGER DENTON COUNTY, TEXAS
SANGER TOWN CENTER LLC &
DUAL BOND HOLDINGS LLC &
HIEN & DUYET NGUYEN
101 FOREST BEND DRIVE
COPPELL, TEXAS 75019
JONATHAN WANG – 214-316-2256

EROSION CONTROL DETAILS

Date: 10-30-24
Dwg Scale: Hor. NTS
Vert.
Dwg File: 0001043DT-ER0.DWG
Project No. 0001045

ER04



NOTE:
ANCHORING OF THE EROSION CONTROL BLANKETS SHALL BE DONE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

EROSION CONTROL BLANKETS	North Central Texas Council of Governments	STANDARD SPECIFICATION REFERENCE 202.15 *
		DATE OCT. '04 / STANDARD DRAWING NO. 1160A

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

EROSION CONTROL BLANKETS GENERAL NOTES:

1. PRIOR TO THE INSTALLATION OF ANY EROSION CONTROL BLANKETS, ALL ROCKS, DIRT CLODS, STUMPS, ROOTS, TRASH AND ANY OTHER OBSTRUCTIONS THAT WOULD PREVENT THE BLANKET FROM LYING IN DIRECT CONTACT WITH THE SOIL SHALL BE REMOVED. ANCHOR TRENCHING SHALL BE LOCATED ALONG THE ENTIRE PERIMETER OF THE INSTALLATION AREA, EXCEPT FOR SMALL AREAS WITH LESS THAN 2% SLOPE.

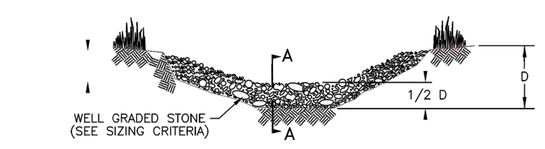
2. INSTALLATION AND ANCHORING SHALL CONFORM TO THE RECOMMENDATIONS SHOWN WITHIN THE MANUFACTURER'S PUBLISHED LITERATURE FOR THE APPROVED EROSION CONTROL BLANKET. PARTICULAR ATTENTION MUST BE PAID TO JOINTS AND OVERLAPPING MATERIAL.

3. AFTER APPROPRIATE INSTALLATION, THE BLANKETS SHOULD BE CHECKED FOR UNIFORM CONTACT WITH THE SOIL, SECURITY OF THE LAP JOINTS, AND FLUSHNESS OF THE STAPLES WITH THE GROUND.

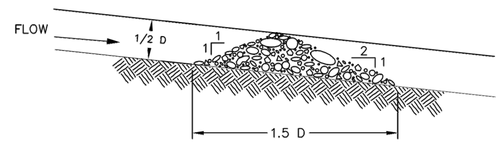
4. INSPECTION SHALL BE AS SPECIFIED IN THE SWPPP.

EROSION CONTROL BLANKETS	North Central Texas Council of Governments	STANDARD SPECIFICATION REFERENCE 202.15 *
		DATE OCT. '04 / STANDARD DRAWING NO. 1160B

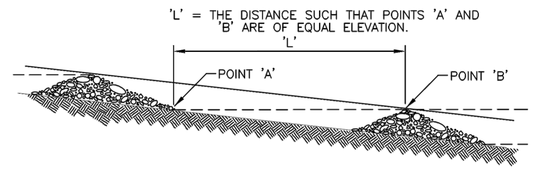
*Section II Standard Drawings as of October 2004. Reference number only has been updated for Fifth Edition Specifications. *Public Works Construction Standards North Central Texas, Fifth Edition.*



VIEW LOOKING UPSTREAM



SECTION A – A



SPACING BETWEEN CHECK DAMS

ROCK CHECK DAM	North Central Texas Council of Governments	STANDARD SPECIFICATION REFERENCE 202.9 *
		DATE OCT. '04 / STANDARD DRAWING NO. 1060A

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

ROCK CHECK DAM GENERAL NOTES:

1. STONE SHALL BE WELL GRADED WITH SIZE RANGE FROM 1½ TO 3½ INCHES IN DIAMETER DEPENDING ON EXPECTED FLOWS.

2. THE CHECK DAM SHALL BE INSPECTED AS SPECIFIED IN THE SWPPP AND SHALL BE REPLACED WHEN THE STRUCTURE CEASES TO FUNCTION AS INTENDED DUE TO SILT ACCUMULATION AMONG THE ROCKS, WASHOUT, CONSTRUCTION TRAFFIC DAMAGE, ETC.

3. WHEN SILT REACHES A DEPTH EQUAL TO ONE–THIRD OF THE HEIGHT OF THE CHECK DAM OR ONE FOOT, WHICHEVER IS LESS, THE SILT SHALL BE REMOVED AND DISPOSED OF PROPERLY.

4. WHEN THE SITE HAS ACHIEVED FINAL STABILIZATION OR ANOTHER EROSION OR SEDIMENT CONTROL DEVICE IS EMPLOYED, THE CHECK DAM AND ACCUMULATED SILT SHALL BE REMOVED AND DISPOSED OF IN AN APPROVED MANNER.

ROCK CHECK DAM	North Central Texas Council of Governments	STANDARD SPECIFICATION REFERENCE 202.9 *
		DATE OCT. '04 / STANDARD DRAWING NO. 1060B

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

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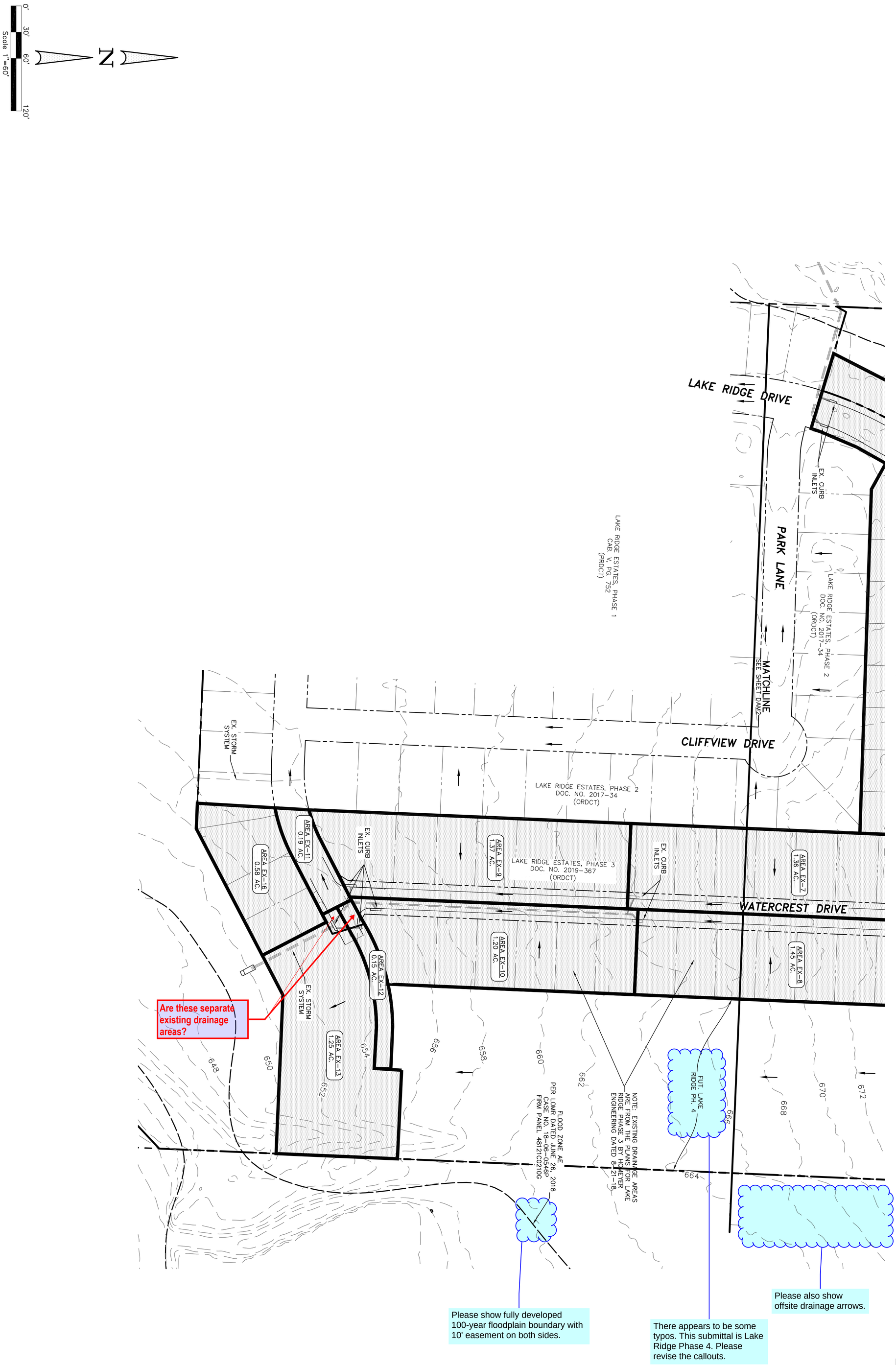
STATE OF TEXAS — T. E. MIDDLETON, JR. — 87448 — REGISTERED PROFESSIONAL ENGINEER

LAKE RIDGE DRIVE – LAKE RIDGE PHASE 4
CITY OF SANGER DENTON COUNTY, TEXAS
SANGER TOWN CENTER LLC &
DUAL BOND HOLDINGS LLC &
HIEN & DUYET NGUYEN
101 FOREST BEND DRIVE
COPPELL, TEXAS 75019
JONATHAN WANG – 214-316-2256

EROSION CONTROL DETAILS

Date: 10-30-24
Dwg Scale: Hor. NTS
Vert.
Dwg File: 0001045DT-ERO.DWG
Project No. 0001045

ER05



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DAM1

Date: 10-30-24
Dwg Scale: Hor. 1"=60' Vert.
Dwg File: 0001045DAM.DWG
Project No. 0001045

DRAINAGE AREA MAP EXISTING CONDITIONS

LAKE RIDGE DRIVE – LAKE RIDGE PHASE 4
CITY OF SANGER DENTON COUNTY, TEXAS

SANGER TOWN CENTER LLC &
DUAL BOND HOLDINGS LLC &
HIEN & DUYET NGUYEN
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COPPELL, TEXAS 75019
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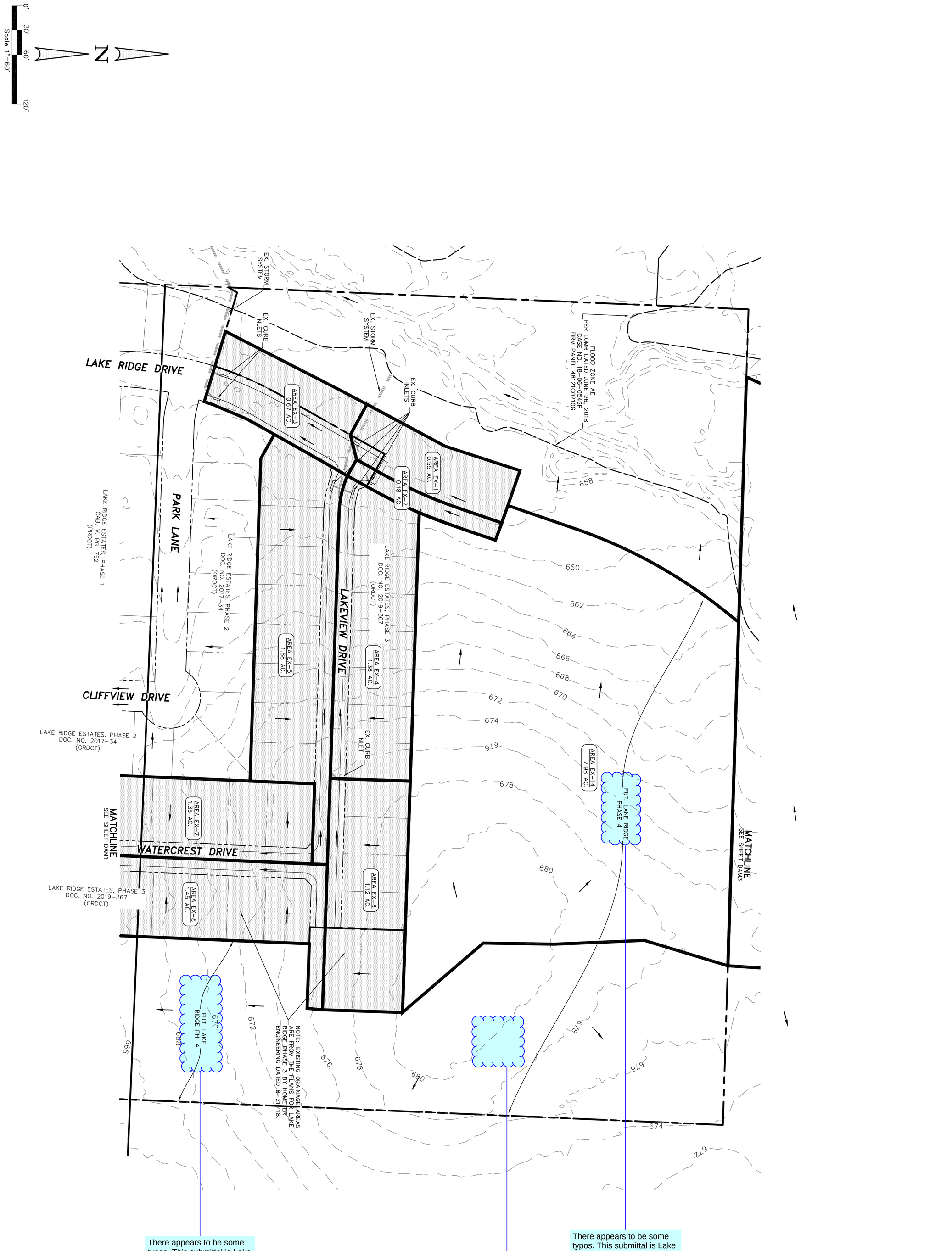

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No.	DATE	REVISION	APPROV.

DAM2

Date: 10-30-24
Dwg Scale: Hor. 1"=60'
Vert.
Dwg File: 0001045DAM.DWG
Project No. 0001045

DRAINAGE AREA MAP
EXISTING CONDITIONS

LAKE RIDGE DRIVE – LAKE RIDGE PHASE 4
CITY OF SANGER DENTON COUNTY, TEXAS

SANGER TOWN CENTER LLC &
DUAL BOND HOLDINGS LLC &
HIEN & DUYET NGUYEN
101 FOREST BEND DRIVE
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LEGEND

EX. STORM DRAIN

EX. CONTOURS

AREA #
ACRES
EX. AREA DESIGNATION
AREA IN ACRES

FLOW ARROW

DRAINAGE BOUNDARY

EX. DRAINAGE BOUNDARY

N

0' 40' 80' 160'
Scale 1"=80'

WINECUP LN.

GAILLARDIA LN.

PAINTBRUSH LN.

LANE RANCH PHASE 1

662

664

666

668

670

672

674

676

678

680

682

684

686

688

690

692

694

696

698

700

999

899

FLOOD ZONE AE
PER LOMR DATED JUNE 26, 2018
CASE NO. 18-06-0546P
FIRM PANEL 48121C0210G

There appears to be some typos. This submittal is Lake Ridge Phase 4. According to previous sheets, Lake Ridge Phase 3 is an existing phase done by Homeyer Engineering. Please revise the callouts.

FUT. LAKE RIDGE PHASE 4

FUT. LAKE RIDGE PHASE 3 & 4

MATCHLINE
SEE SHEET DAM2

MATCHLINE
SEE SHEET DAM4

There appears to be some typos. This submittal is Lake Ridge Phase 4. Please revise the callouts.

FLOOD ZONE AE
PER LOMR DATED JUNE 26, 2018
CASE NO. 18-06-0546P
FIRM PANEL 48121C0210G

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No.	DATE	REVISION	APPROV.

DAM3

Date: 10-30-24
Dwg Scale: Hor. 1"=80' Vert.
Dwg File: 0001045DAM.DWG
Project No. 0001045

DRAINAGE AREA MAP
EXISTING CONDITIONS

LAKE RIDGE DRIVE – LAKE RIDGE PHASE 4
CITY OF SANGER DENTON COUNTY, TEXAS

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DUAL BOND HOLDINGS LLC &
HIEN & DUYET NGUYEN
101 FOREST BEND DRIVE
COPPELL, TEXAS 75019
JONATHAN WANG – 214-316-2256

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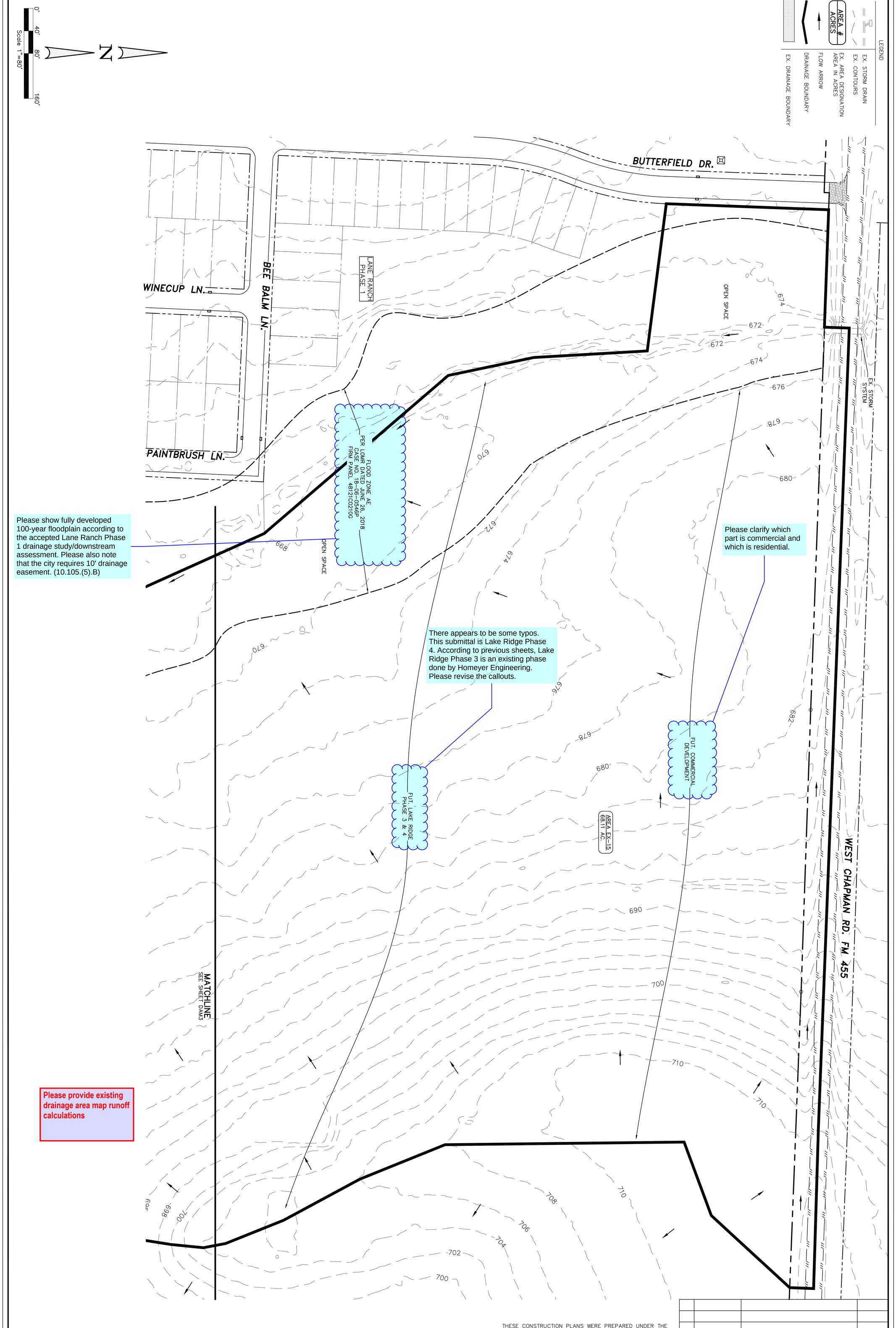

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No.	DATE	REVISION	APPROV.

DAM4

Date: 10-30-24
Dwg Scale: Hor. 1"=80' Vert.
Dwg File: 0001045DAM.DWG
Project No. 0001045

DRAINAGE AREA MAP EXISTING CONDITIONS

LAKE RIDGE DRIVE – LAKE RIDGE PHASE 4
CITY OF SANGER DENTON COUNTY, TEXAS

SANGER TOWN CENTER LLC &
DUAL BOND HOLDINGS LLC &
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LEWISVILLE, TEXAS 75067 (972) 393-9800

Scale 1"=80'
0'
40'
80'
160'

N

Please show and label ripraps.

Please show and label ripraps.

FLOOD ZONE AE
PER LOMR DATED JUNE 26, 2018
CASE NO. 18-06-0546P
FIRM PANEL 48121C0210G

OPEN SPACE

AREA OS-1
3.95 AC.

AREA OS-2
1.06 AC.

AREA EX-3
0.67 AC.

AREA EX-1
0.55 AC.

AREA EX-2
0.18 AC.

AREA EX-2.1
0.25 AC.

AREA L1-A
0.90 AC.

AREA L2
1.17 AC.

AREA L1-B
0.87 AC.

AREA L1-C
0.95 AC.

AREA L3-B
0.75 AC.

AREA L3-A
1.25 AC.

AREA EX-5
1.68 AC.

AREA EX-4
1.38 AC.

AREA EX-7
1.36 AC.

AREA EX-6
1.12 AC.

AREA L1
1.25 AC.

AREA L1-D
1.34 AC.

AREA L3-C
1.25 AC.

AREA L3
1.45 AC.

AREA 6-B.1
2.27 AC.

AREA EX-8
1.45 AC.

AREA L5-B
1.19 AC.

AREA L5-A
1.30 AC.

AREA EX-6.1
0.15 AC.

AREA L5
1.27 AC.

LAKE RIDGE DRIVE

PARK LANE

LAKEVIEW DRIVE

SHORELINE DRIVE

RANCHVIEW DRIVE

SILO DRIVE

CLIFFVIEW DRIVE

WATERCREST DRIVE

EASTVIEW DRIVE

LAKE RIDGE ESTATES, PHASE 1
CAB. V, PG. 752
(PRDCT)

LAKE RIDGE ESTATES, PHASE 2
DOC. NO. 2017-34
(ORDCT)

LAKE RIDGE ESTATES, PHASE 3
DOC. NO. 2019-367
(ORDCT)

MATCHLINE
SEE SHEET DAM6

MATCHLINE
SEE SHEET DAM7

LANE RANCH
PHASE 1

FUT. LANE RANCH
PHASE 3

FUT. LAKE RIDGE
PHASE 4

FUT. LANE RANCH
PHASE 4

FUT. LANE RANCH
PHASE 4

660 662 664 666 668 670 672 674 676 678 680

LEGEND

EX. STORM DRAIN	
PROP. STORM SEWER	
PROP. INLET	
EX. CONTOURS	
PROP. AREA DESIGNATION AREA IN ACRES	AREA # ACRES
FLOW ARROW	
DRAINAGE BOUNDARY	
EX. DRAINAGE BOUNDARY	

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No.	DATE	REVISION	APPROV.

DAM5

Date: 10-30-24
Dwg Scale: Hor. 1"=80'
Vert.
Dwg File: 0001045DAM.DWG
Project No. 0001045

DRAINAGE AREA MAP
PROPOSED CONDITIONS

LAKE RIDGE DRIVE - LAKE RIDGE PHASE 4
CITY OF SANGER DENTON COUNTY, TEXAS

SANGER TOWN CENTER LLC &
DUAL BOND HOLDINGS LLC &
HIEN & DUYET NGUYEN
101 FOREST BEND DRIVE
COPPELL, TEXAS 75019
JONATHAN WANG - 214-316-2256

STATE OF TEXAS
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No.	DATE	REVISION	APPROV.

DAM6

Date: 10-30-24
Dwg Scale: Hor. 1"=80'
Vert.
Dwg File: 0001045DAM.DWG
Project No. 0001045

DRAINAGE AREA MAP
PROPOSED CONDITIONS

LAKE RIDGE DRIVE – LAKE RIDGE PHASE 4
CITY OF SANGER DENTON COUNTY, TEXAS
SANGER TOWN CENTER LLC &
DUAL BOND HOLDINGS LLC &
HIEN & DUYET NGUYEN
101 FOREST BEND DRIVE
COPPELL, TEXAS 75019
JONATHAN WANG – 214-316-2256

STATE OF TEXAS
F. E. MIDDLETON, JR.
67449
REGISTERED
PROFESSIONAL ENGINEER

Middleton & Assoc, LLC
CONSULTING CIVIL ENGINEERS & LAND PLANNERS
TBPE #F-10900
© Copyright 2024
2785 ROCKBROOK DRIVE, SUITE 105
LEWISVILLE, TEXAS 75067 (972) 393-9800

LEGEND

PROP. STORM SEWER

PROP. INLET

EX. CONTOURS

AREA #
ACRES
PROP. AREA DESIGNATION
AREA IN ACRES

FLOW ARROW

DRAINAGE BOUNDARY

N

0' 40' 80' 160'
Scale 1"=80'

Please show riprap for proposed storm drain outfall.
Please show drainage easement according to 10.105.(5).B.

FLOOD ZONE AE
PER LOMR DATED JUNE 26, 2018
CASE NO. 18-06-0546P
FIRM PANEL 48121C0210G

AREA L1-A
0.90 AC.

AREA L2
1.17 AC.

AREA L3-A
1.25 AC.

AREA L3
1.45 AC.

AREA 6-A
0.32 AC.

AREA 6-B
0.17 AC.

AREA 6-C
0.31 AC.

AREA 6-B1
2.27 AC.

AREA OS-3
1.05 AC.

AREA 6-D
0.32 AC.

AREA 6-E
0.21 AC.

AREA 6-F
0.12 AC.

FUT. LAKE RIDGE PHASE 4

FUT. LANE RANCH PHASE 3

FUT. LANE RANCH PHASE 4

MATCHLINE SEE SHEET DAM6

MATCHLINE SEE SHEET DAM8

RANCHVIEW DRIVE

SHORTHORN DRIVE

SILO DRIVE

HERD DRIVE

DOLLARHYDE DRIVE

PASTURE LANE

LAKE RIDGE DRIVE

℄ DITCH

664 666 668 670 672 674 676 680 682 684 686 688 690 692 694 696 698 700

THESE CONSTRUCTION PLANS WERE PREPARED UNDER THE RESPONSIBLE SUPERVISION OF F.E. MIDDLETON JR., REGISTERED PROFESSIONAL ENGINEER NO. 67449.

No.	DATE	REVISION	APPROV.

DAM7

Date: 10-30-24
Dwg Scale: Hor. 1"=80' Vert.
Dwg File: 0001045DAM.DWG
Project No. 0001045

DRAINAGE AREA MAP
PROPOSED CONDITIONS

LAKE RIDGE DRIVE - LAKE RIDGE PHASE 4
CITY OF SANGER DENTON COUNTY, TEXAS

SANGER TOWN CENTER LLC &
DUAL BOND HOLDINGS LLC &
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101 FOREST BEND DRIVE
COPPELL, TEXAS 75019
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STATE OF TEXAS
F. E. MIDDLETON, JR.
67449
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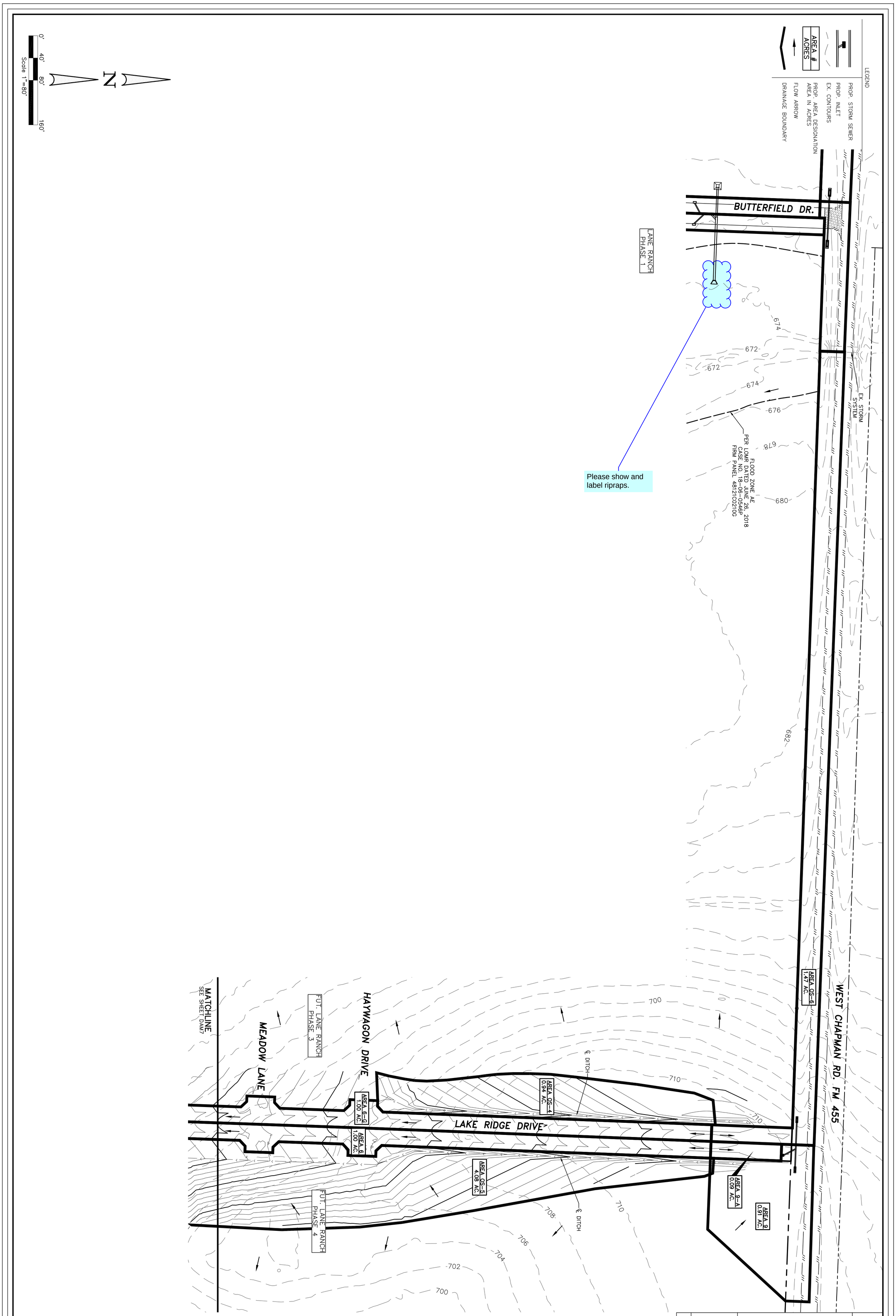
2785 ROCKBROOK DRIVE, SUITE 105
LEWISVILLE, TEXAS 75067 (972) 393-9800



THESE CONSTRUCTION PLANS WERE PREPARED UNDER THE RESPONSIBLE SUPERVISION OF F.E. MIDDLETON JR., REGISTERED PROFESSIONAL ENGINEER NO. 67449.

No.	DATE	REVISION	APPROV.

DAM8

Date: 10-30-24
Dwg Scale: Hor. 1"=80'
Vert.
Dwg File: 0001045DAM.DWG
Project No. 0001045

DRAINAGE AREA MAP
PROPOSED CONDITIONS

LAKE RIDGE DRIVE – LAKE RIDGE PHASE 4
CITY OF SANGER DENTON COUNTY, TEXAS

SANGER TOWN CENTER LLC &
DUAL BOND HOLDINGS LLC &
HIEN & DUYET NGUYEN
101 FOREST BEND DRIVE
COPPELL, TEXAS 75019
JONATHAN WANG – 214-316-2256

STATE OF TEXAS
F. E. MIDDLETON, JR.
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TBPE #F-10900
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2785 ROCKBROOK DRIVE, SUITE 105
LEWISVILLE, TEXAS 75067 (972) 393-9800

Please use a different title for this table. Lane Ranch Phase 3 is a different project and hasn't been reviewed yet. We suggest to use Lake Ridge Drive to match the plat.

Please use a different title for this table. Lane Ranch Phase 3 is a different project and hasn't been reviewed yet. We suggest using Lake Ridge Drive to match the plat.

C = 0.55 is for residential only. Future commercial site shall use 0.70 or 0.85. (10.106.(d).(2) Proposed roadway/street shall be 0.95 according to ISWM Hydrology Manual Table 1.6.

Please use a different title for this table. Lane Ranch Phase 3 is a different project and hasn't been reviewed yet. We suggest using Lake Ridge Drive to match the plat.

Please use a different title for this table. Lane Ranch Phase 3 is a different project and hasn't been reviewed yet. We suggest to use Lake Ridge Drive to match the plat.

LANE RANCH PHASE 3
DRAINAGE AREA CALCULATIONS
DEVELOPED CONDITIONS

Drainage Area	Area (ac)	Runoff Coefficient "C"	Time of Concentration (min)	Intensity 10 Year (in/hr)	Intensity 100 Year (in/hr)	Q 10 Year (cfs)	Q 100 Year (cfs)
L1-A	0.90	0.55	15	6.60	9.60	3.27	4.75
L2	1.17	0.55	15	6.60	9.60	4.25	6.18
6-B	1.74	0.55	15	6.60	9.60	6.32	9.19
6-A	1.15	0.55	15	6.60	9.60	4.17	6.07
6-C	1.44	0.55	15	6.60	9.60	5.23	7.60
7-A	2.35	0.55	15	6.60	9.60	8.53	12.41
7	2.60	0.55	15	6.60	9.60	9.44	13.73
8	1.95	0.55	15	6.60	9.60	7.08	10.30
9	0.91	0.55	15	6.60	9.60	3.30	4.80
9-A	0.09	0.55	15	6.60	9.60	0.33	0.48
6-D	0.56	0.55	15	6.60	9.60	2.03	2.96
6-E	1.17	0.55	15	6.60	9.60	4.25	6.18
6-F	0.84	0.55	15	6.60	9.60	3.05	4.44
6-G	1.71	0.55	15	6.60	9.60	6.21	9.03
6	2.31	0.55	15	6.60	9.60	8.39	12.20
1	1.32	0.55	15	6.60	9.60	4.79	6.97
1-C	1.20	0.55	15	6.60	9.60	4.36	6.34
1-B	1.67	0.55	15	6.60	9.60	6.06	8.82
1-A	1.61	0.55	15	6.60	9.60	5.84	8.50
OS-10	0.96	0.55	15	6.60	9.60	3.48	5.07
OS-11	1.61	0.55	15	6.60	9.60	5.84	8.50
2-B	0.41	0.55	15	6.60	9.60	1.49	2.16
2-A	0.41	0.55	15	6.60	9.60	1.49	2.16
2	1.46	0.55	15	6.60	9.60	5.30	7.71
2-C	1.34	0.55	15	6.60	9.60	4.86	7.08

NOTE: THE SHADED REGION OF THE CHART IS IRRELEVANT TO THE DESIGN OF THIS PHASE

LAKE RIDGE PHASE 4
DRAINAGE AREA CALCULATIONS
DEVELOPED CONDITIONS

Drainage Area	Area (ac)	Runoff Coefficient "C"	Time of Concentration (min)	Intensity 10 Year (in/hr)	Intensity 100 Year (in/hr)	Q 10 Year (cfs)	Q 100 Year (cfs)
L3-A	1.25	0.55	15	6.60	9.60	4.54	6.60
L3-B	0.75	0.55	15	6.60	9.60	2.72	3.96
L3-C	1.25	0.55	15	6.60	9.60	4.54	6.60
L3	1.45	0.55	15	6.60	9.60	5.26	7.66
L1-B	0.87	0.55	15	6.60	9.60	3.16	4.59
L1-C	0.95	0.55	15	6.60	9.60	3.45	5.02
L1-D	1.34	0.55	15	6.60	9.60	4.86	7.08
L1	1.25	0.55	15	6.60	9.60	4.54	6.60
EX-6.1	0.15	0.55	15	6.60	9.60	0.54	0.79
L5	1.27	0.55	15	6.60	9.60	4.61	6.71
OS-2	1.06	0.55	15	6.60	9.60	3.85	5.60
EX-2.1	0.25	0.55	15	6.60	9.60	0.91	1.32
EX-12.1	0.28	0.55	15	6.60	9.60	1.02	1.48
EX-13.1	1.07	0.55	15	6.60	9.60	3.88	5.65
L4	1.08	0.55	15	6.60	9.60	3.92	5.70
L5-A	1.30	0.55	15	6.60	9.60	4.72	6.86
L5-B	1.19	0.55	15	6.60	9.60	4.32	6.28
OS-12	1.39	0.55	15	6.60	9.60	5.05	7.34

ON GRADE INLET CALCULATIONS LANE RANCH PHASE 3

Inlet No.	Location	DRAINAGE AREA: Drainage Area	Area (Ac.)	Runoff Coefficient C	Time of Concentration (min.)	Gutter Slope S (ft/ft)	Street Section (type)	Pavement Cross Slope Sx (ft/ft)	Cross Slope of Gutter sx (ft/ft)	Mannings Coefficient for pavement (n)	100 Year Intensity (in./hr.)	100 Year Runoff (cfs)	100 Year Carryover Flow (cfs)	100 Year Total Flow Q (cfs)	Street Capacity Half Section (cfs)	Right of Way Capacity Half Section (cfs)	Design Storm of Inlet	Depth of Flow at Inlet for 100 Year Y (ft)	Spread of Flow for 100 Year T (ft)	Pick up per Foot Qo/Lo (cfs/ft)	Length of Inlet Required Lo (ft)	Length of Inlet Provided L (ft)	L/Lo	Q/Qo	Inlet Capacity Q (cfs)	100 Year Carryover Flow (cfs)	Comments
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
L1-A	LAKE RIDGE	L1-A	0.90	0.55	15 min.	0.0100	curved crown	0.0278	0.267	0.017	9.60	4.75	0.00	4.75	18.66	43.69	100 Yr	0.300	10.78	0.76	6.26	10	1.60	1.60	7.59	0.00	Curb Inlet
L2	LAKE RIDGE	L2	1.17	0.55	15 min.	0.0100	curved crown	0.0278	0.267	0.017	9.60	6.18	0.39	6.56	18.66	43.69	100 Yr	0.338	12.17	0.80	8.21	10	1.22	1.22	8.00	0.00	Curb Inlet
6-B	LAKE RIDGE	6-B	1.74	0.55	15 min.	0.0060	curved crown	0.0278	0.267	0.017	9.60	9.19	0.00	9.19	14.45	33.84	100 Yr	0.422	15.19	0.89	10.32	10	0.97	0.97	8.90	0.29	Curb Inlet
6-A	LAKE RIDGE	6-A	1.15	0.55	15 min.	0.0060	curved crown	0.0278	0.267	0.017	9.60	6.07	0.00	6.07	14.45	33.84	100 Yr	0.362	13.01	0.82	7.37	10	1.36	1.36	8.24	0.00	Curb Inlet
6-C	LAKE RIDGE	6-C	1.44	0.55	15 min.	0.0060	curved crown	0.0278	0.267	0.017	9.60	7.60	0.00	7.60	14.45	33.84	100 Yr	0.393	14.15	0.86	8.86	10	1.13	1.13	8.58	0.00	Curb Inlet
6-D	LAKE RIDGE	6-D	0.56	0.55	15 min.	0.0100	curved crown	0.0278	0.267	0.017	9.60	2.96	0.92	3.88	18.66	43.69	100 Yr	0.278	9.99	0.74	5.26	5	0.95	0.95	3.68	0.19	Curb Inlet
6-E	LAKE RIDGE	6-E	1.17	0.55	15 min.	0.0100	curved crown	0.0278	0.267	0.017	9.60	6.18	0.12	6.29	18.66	43.69	100 Yr	0.333	11.98	0.79	7.93	10	1.26	1.26	7.94	0.00	Curb Inlet
6-F	LAKE RIDGE	6-F	0.84	0.55	15 min.	0.0160	curved crown	0.0278	0.267	0.017	9.60	4.44	3.64	8.08	23.60	55.26	100 Yr	0.335	12.05	0.80	10.15	10	0.99	0.99	7.96	0.12	Curb Inlet
6-G	LAKE RIDGE	6-G	1.71	0.55	15 min.	0.0160	curved crown	0.0278	0.267	0.017	9.60	9.03	0.00	9.03	23.60	55.26	100 Yr	0.349	12.56	0.81	11.13	10	0.90	0.90	8.11	0.92	Curb Inlet
6	LAKE RIDGE	6	2.31	0.55	15 min.	0.0160	curved crown	0.0278	0.267	0.017	9.60	12.20	0.00	12.20	23.60	55.26	100 Yr	0.391	14.06	0.86	14.26	10	0.70	0.70	8.56	3.64	Curb Inlet
9-A	LAKE RIDGE	9-A	0.09	0.55	15 min.	0.0060	curved crown	0.0278	0.267	0.017	9.60	0.48	0.00	0.48	14.45	33.84	100 Yr	0.139	5.01	0.60	0.79	5	6.32	6.32	3.01	0.00	Curb Inlet
1	TYPICAL STREET	1	1.32	0.55	15 min.	0.0265	curved crown	0.0333	0.267	0.017	9.60	6.97	0.00	6.97	25.24	49.42	100 Yr	0.308	9.26	0.77	9.07	10	1.10	1.10	7.68	0.00	Curb Inlet
1-C	TYPICAL STREET	1-C	1.20	0.55	15 min.	0.0265	curved crown	0.0333	0.267	0.017	9.60	6.34	0.00	6.34	25.24	49.42	100 Yr	0.298	8.94	0.76	8.37	10	1.20	1.20	7.57	0.00	Curb Inlet
2-B	TYPICAL STREET	2-B	0.41	0.55	15 min.	0.0150	curved crown	0.0333	0.267	0.017	9.60	2.16	0.00	2.16	18.99	37.18	100 Yr	0.221	6.65	0.68	3.18	5	1.57	1.57	3.40	0.00	Curb Inlet
2-A	TYPICAL STREET	2-A	0.41	0.55	15 min.	0.0150	curved crown	0.0333	0.267	0.017	9.60	2.16	0.00	2.16	18.99	37.18	100 Yr	0.221	6.65	0.68	3.18	5	1.57	1.57	3.40	0.00	Curb Inlet
2	TYPICAL STREET	2	1.46	0.55	15 min.	0.0150	curved crown	0.0333	0.267	0.017	9.60	7.71	0.00	7.71	18.99	37.18	100 Yr	0.356	10.70	0.82	9.42	10	1.06	1.06	8.19	0.00	Curb Inlet
2-C	TYPICAL STREET	2-C	1.34	0.55	15 min.	0.0150	curved crown	0.0333	0.267	0.017	9.60	7.08	0.00	7.08	18.99	37.18	100 Yr	0.345	10.36	0.81	8.77	10	1.14	1.14	8.07	0.00	Curb Inlet

NOTES;
1) THE PAVEMENT SECTION FOR INTERIOR STREETS IS 30' F-F WITH A 6" CURB AND 6" CROWN.
2) THE PAVEMENT SECTION FOR LAKE RIDGE DRIVE IS 40' F-F WITH A 6" CURB AND 6" CROWN FOR THE SOUTHERN SECTION; AND 36' F-F WITH A 6" CURB AND 6" CROWN FOR THE NORTHERN SECTION.
3) THE SHADED REGION OF THE CHART IS IRRELEVANT TO THE DESIGN OF THIS PHASE.

ON GRADE INLET CALCULATIONS LAKE RIDGE PHASE 4

Inlet No.	Location	DRAINAGE AREA: Drainage Area	Area (Ac.)	Runoff Coefficient C	Time of Concentration (min.)	Gutter Slope S (ft/ft)	Street Section (type)	Pavement Cross Slope Sx (ft/ft)	Cross Slope of Gutter sx (ft/ft)	Mannings Coefficient for pavement (n)	100 Year Intensity (in./hr.)	100 Year Runoff (cfs)	100 Year Carryover Flow (cfs)	100 Year Total Flow Q (cfs)	Street Capacity Half Section (cfs)	Right of Way Capacity Half Section (cfs)	Design Storm of Inlet	Depth of Flow at Inlet for 100 Year Y (ft)	Spread of Flow for 100 Year T (ft)	Pick up per Foot Qo/Lo (cfs/ft)	Length of Inlet Required Lo (ft)	Length of Inlet Provided L (ft)	L/Lo	Q/Qo	Inlet Capacity Q (cfs)	100 Year Carryover Flow (cfs)	Comments
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
L3-A	TYPICAL STREET	L3-A	1.25	0.55	15 min.	0.0080	curved crown	0.0333	0.267	0.017	9.60	6.60	0.00	6.60	13.87	27.15	100 Yr	0.378	11.36	0.84	7.84	10	1.28	1.28	8.42	0.00	Curb Inlet
L3-B	TYPICAL STREET	L3-B	0.75	0.55	15 min.	0.0080	curved crown	0.0333	0.267	0.017	9.60	3.96	0.00	3.96	13.87	27.15	100 Yr	0.312	9.38	0.77	5.13	5	0.98	0.98	3.86	0.10	Curb Inlet
L3-C	TYPICAL STREET	L3-C	1.25	0.55	15 min.	0.0080	curved crown	0.0333	0.267	0.017	9.60	6.60	0.00	6.60	13.87	27.15	100 Yr	0.378	11.36	0.84	7.84	10	1.28	1.28	8.42	0.00	Curb Inlet
L3	TYPICAL STREET	L3	1.45	0.55	15 min.	0.0080	curved crown	0.0333	0.267	0.017	9.60	7.66	0.00	7.66	13.87	27.15	100 Yr	0.400	12.01	0.87	8.85	10	1.13	1.13	8.65	0.00	Curb Inlet
L1-B	TYPICAL STREET	L1-B	0.87	0.55	15 min.	0.0060	curved crown	0.0333	0.267	0.017	9.60	4.59	0.00	4.59	12.01	23.52	100 Yr	0.349	10.47	0.81	5.67	10	1.76	1.76	8.10	0.00	Curb Inlet
L1-C	TYPICAL STREET	L1-C	0.95	0.55	15 min.	0.0060	curved crown	0.0333	0.267	0.017	9.60	5.02	0.00	5.02	12.01	23.52	100 Yr	0.360	10.82	0.82	6.10	10	1.64	1.64	8.23	0.00	Curb Inlet
L1-D	TYPICAL STREET	L1-D	1.34	0.55	15 min.	0.0133	curved crown	0.0333	0.267	0.017	9.60	7.08	0.00	7.08	17.88	35.01	100 Yr	0.353	10.60	0.82	8.68	10	1.15	1.15	8.15	0.00	Curb Inlet
L1	TYPICAL STREET	L1	1.25	0.55	15 min.	0.0133	curved crown	0.0333	0.267	0.017	9.60	6.60	0.00	6.60	17.88	35.01	100 Yr	0.344	10.33	0.81	8.19	10	1.22	1.22	8.05	0.00	Curb Inlet
L5	TYPICAL STREET	L5	1.27	0.55	15 min.	0.0065	curved crown	0.0333	0.267	0.017	9.60	6.71	0.00	6.71	12.50	24.48	100 Yr	0.396	11.88	0.86	7.79	10	1.28	1.28	8.61	0.00	Curb Inlet
L4	TYPICAL STREET	L4	1.08	0.55	15 min.	0.0117	curved crown	0.0333	0.267	0.017	9.60	5.70	0.00	5.70	16.77	32.84	100 Yr	0.333	10.01	0.79	7.18	10	1.39	1.39	7.94	0.00	Curb Inlet
L5-A	TYPICAL STREET	L5-A	1.30	0.55	15 min.	0.0125	curved crown	0.0333	0.267	0.017	9.60	6.86	0.00	6.86	17.33	33.94	100 Yr	0.353	10.60	0.82	8.42	10	1.19	1.19	8.15	0.00	Curb Inlet
L5-B	TYPICAL STREET	L5-B	1.19	0.55	15 min.	0.0125	curved crown	0.0333	0.267	0.017	9.60	6.28	0.00	6.28	17.33	33.94	100 Yr	0.342	10.26	0.80	7.82	10	1.28	1.28	8.03	0.00	Curb Inlet

NOTES;
1) THE PAVEMENT SECTION FOR INTERIOR STREETS IS 30' F-F WITH A 6" CURB AND 6" CROWN.
2) THE PAVEMENT SECTION FOR LAKE RIDGE DRIVE IS 40' F-F WITH A 6" CURB AND 6" CROWN FOR THE SOUTHERN SECTION; AND 36' F-F WITH A 6" CURB AND 6" CROWN FOR THE NORTHERN SECTION.

Please use a different title for this table. Lane Ranch Phase 3 is a different project and hasn't been reviewed yet. We suggest using Lake Ridge Drive to match the plat.

SUMP INLET CALCULATIONS LANE RANCH PHASE 3

Inlet No.	Location	DRAINAGE AREA: Drainage Area	Area (Ac.)	Runoff Coefficient C	Time of Concentration (min.)	Minimum Incoming Gutter Slope S (ft/ft)	Street Section (type)	Pavement Cross Slope Sx (ft/ft)	Cross Slope of Gutter sx (ft/ft)	Mannings Coefficient for pavement (n)	100 Year Intensity (in./hr.)	100 Year Runoff (cfs)	100 Year Carryover Flow (cfs)	100 Year Total Flow Q (cfs)	Street Capacity Half Section (cfs)	Right of Way Capacity Half Section (cfs)	Design Storm of Inlet	Depth of Gutter Flow for 100 Year Yo (ft)	Depth of Depression a (ft)	Depth of Flow at Opening Y (ft)	Capacity of Inlet per Foot Q/L (cfs/ft)	Length of Inlet Required Lo (ft)	Length of Inlet Provided L (ft)	Inlet Capacity Q (cfs)	100 Year Carryover Flow (cfs)	Comments
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
7-A	TYPICAL STREET	7-A	2.35	0.55	15 min.	0.0060	curved crown	0.0333	0.267	0.017	9.60	12.41	0.00	12.41	12.01	27.04	100 Yr	0.500	0.420	0.920	2.65	4.69	10	26.47	0.00	Curb Inlet
7	TYPICAL STREET	7	2.60	0.55	15 min.	0.0060	curved crown	0.0333	0.267	0.017	9.60	13.73	0.00	13.73	19.54	34.59	100 Yr	0.500	0.420	0.920	2.65	5.19	10	26.47	0.00	Curb Inlet
8	CUL DE SAC	8	1.95	0.55	15 min.	0.0060	curved crown	0.0333	0.267	0.017	9.60	10.30	0.19	10.49	19.54	39.78	100 Yr	0.500	0.420	0.920	2.65	3.96	10	26.47	0.00	Curb Inlet
1-B	TYPICAL STREET	1-B	1.67	0.55	15 min.	0.0060	curved crown	0.0333	0.267	0.017	9.60	8.82	0.00	8.82	19.54	39.78	100 Yr	0.500	0.420	0.920	2.65	3.33	10	26.47	0.00	Curb Inlet
1-A	TYPICAL STREET	1-A	1.61	0.40	15 min.	0.0060	curved crown	0.0333	0.267	0.017	9.60	6.18	0.00	6.18	19.54	39.78	100 Yr	0.500	0.420	0.920	2.65	2.34	10	26.47	0.00	Curb Inlet

NOTES:
1) THE PAVEMENT SECTIONS IS 30' F-F WITH A 6" CURB AND 6" CROWN EXCEPT FOR LAKE RIDGE DRIVE WHICH IS 36' F-F.
2) STANDARD INLET DEPRESSION IS 5".
3) THE SHADED REGION OF THE CHART IS IRRELEVANT TO THE DESIGN OF THIS PHASE.

No.	DATE	REVISION	APPROV.

Middleton & Assoc, LLC
CONSULTING CIVIL ENGINEERS & LAND PLANNERS
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TBPE #F-10900
2785 ROCKBROOK DRIVE, SUITE 105
LEWISVILLE, TEXAS 75067 (972) 393-9800

THESE CONSTRUCTION PLANS WERE PREPARED UNDER THE RESPONSIBLE SUPERVISION OF T. E. MIDDLETON, JR., REGISTERED PROFESSIONAL ENGINEER NO. 67448

STATE OF TEXAS — T. E. MIDDLETON, JR. — 67448 — REGISTERED PROFESSIONAL ENGINEER

LAKE RIDGE DRIVE – LAKE RIDGE PHASE 4
CITY OF SANGER DENTON COUNTY, TEXAS
SANGER TOWN CENTER LLC &
DUAL BOND HOLDINGS LLC &
HIEN & DUYET NGUYEN
101 FOREST BEND DRIVE
COPPELL, TEXAS 75019
JONATHAN WANG – 214-316-2256

DRAINAGE AREA CALCULATIONS & INLET CALCULATIONS

Date: 10-30-24
Dwg Scale: Hor.
Vert.
Dwg File: 0001045CALC.DWG
Project No. 0001045

CALC1

Starting Q shall match the drainage calculations on Sheet Calc1.

Please verify starting 10 year and 100 year intensities per City of Sanger Ordinances Appendix A. Intensity - Duration - Frequency Curve

Please ensure minimum velocities in conduits are atleast 2.5 fps per Ordinance § 10.106(d)(6)(B)(i)

STORM SEWER HYDRAULIC CALCULATIONS

From	To Design Point	Pipe Length (ft)	Drainage Area – Incremental No.	Drainage Area – Incremental Area (ac)	Drainage Area – Total Area (ac)	Runoff "C"	Incr. CA	Total CA	Time of Concentration – Inlet (min)	Time of Concentration – Travel (min)	Time of Concentration – Total (min)	10 Yr Intensity (in/hr)	100 Yr Intensity (in/hr)	Q10 Runoff (cfs)	Q100 Runoff (cfs)	Total Carryover (cfs)	Q Pipe (cfs)	Pipe Size (in)	Pipe Coefficient "n"	Friction Slope Sf (ft/ft)	HGL D/S (elev)	HGL U/S (elev)	Head Loss – V1 IN (UPSTREAM) (fps)	Head Loss – V2 OUT (PIPE) (fps)	Head Loss – V1²/2G (ft)	Head Loss – V2²/2G (ft)	Head Loss – Kj	Head Loss – KjV1²/2G	Head Loss – Hj	Design HGL (elev)	Invert Elev. From (ft)	Invert Elev. To (ft)	U/S T/C Elev. (ft)	Partial Flow? (Y/N)	Partial Flow Depth (ft)
1.00	2.00	3.00	4	5.00	6	7	8	9	10.00	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34.00		
LINE 1																																			
351.02	368.92	17.90	AREA 1	1.32	1.32	0.55	0.73	0.73	15.00	0.12	15.12	5.64	8.04	4.10	5.84	0.00	5.84	21	0.013	0.0014	673.56	673.59	0.00	2.43	0.00	0.09	1.25	0.00	0.09	673.68	669.51	672.11	676.61	N	
344.47	351.02	6.55			1.32			0.73	15.12	0.05	15.17	[illegible]	[illegible]	4.09	5.83	0.00	5.83	21	0.013	0.0014	673.50	673.51	2.43	2.42	0.09	0.09	0.43	0.04	0.05	673.56	669.47	669.51		N	
230.12	344.47	114.35	LAT. 1-C	1.20	2.52	0.55	0.66	1.39	15.17	0.42	15.58	5.57	7.95	7.72	11.01	0.00	11.01	21	0.013	0.0048	672.67	673.22	2.42	4.58	0.09	0.33	0.50	0.05	0.28	673.50	668.65	669.47		N	
223.57	230.12	6.55	LAT. 1-B	1.67	4.19	0.55	0.92	2.30	15.58	0.02	15.60	5.57	7.94	12.83	18.30	0.00	18.30	24	0.013	0.0065	672.24	672.28	4.58	5.83	0.33	0.53	0.43	0.14	0.39	672.67	668.62	668.65		N	
123.86	223.57	99.71	LAT. 1-A	1.61	5.80	0.55	0.89	3.19	15.60	0.21	15.81	5.54	7.90	17.66	25.20	0.00	25.20	24	0.013	0.0124	670.27	671.50	5.83	8.02	0.53	1.00	0.50	0.26	0.74	672.24	668.12	668.62		N	
63.84	123.86	60.02	LINE 2	3.62	9.42	0.55	1.99	5.18	15.81	0.12	15.93	5.52	7.88	28.59	40.81	0.00	40.81	30	0.013	0.0099	668.95	669.54	8.02	8.31	1.00	1.07	0.35	0.35	0.72	670.27	667.32	667.62		N	
0.00	63.84	63.84			9.42			5.18	15.93	0.13	16.06	5.50	7.85	28.49	40.67	0.00	40.67	30	0.013	0.0098	667.63	668.26	8.31	8.29	1.07	1.07	0.35	0.38	0.69	668.95	667.00	667.32		N	
LAT. 1-A																																			
0.00	21.92	21.92	AREA 1-A	1.61	1.61	0.55	0.89	0.89	15.00	0.12	15.12	5.64	8.04	5.00	7.12	0.00	7.12	21	0.013	0.0020	672.24	672.29	0.00	2.96	0.00	0.14	1.25	0.00	0.14	672.42	668.74	669.81	674.31	N	
LAT. 1-B																																			
0.00	17.90	17.90	AREA 1-B	1.67	1.67	0.55	0.92	0.92	15.00	0.10	15.10	5.65	8.05	5.19	7.39	0.00	7.39	21	0.013	0.0022	672.67	672.71	0.00	3.07	0.00	0.15	1.25	0.00	0.15	672.86	668.78	670.34	674.84	N	
LAT. 1-C																																			
0.00	21.92	21.92	AREA 1-C	1.20	1.20	0.55	0.66	0.66	15.00	0.15	15.15	5.64	8.04	3.72	5.30	0.00	5.30	21	0.013	0.0011	673.50	673.53	0.00	2.21	0.00	0.08	1.25	0.00	0.08	673.60	669.47	672.11	676.61	N	
LINE 2																																			
476.86	494.76	17.90	AREA 2	1.46	1.46	0.55	0.80	0.80	15.00	0.11	15.11	5.65	8.04	4.53	6.46	0.00	6.46	21	0.013	0.0017	675.87	675.89	0.00	2.69	0.00	0.11	1.25	0.00	0.11	676.01	672.62	675.51	680.01	N	
470.31	476.86	6.55			1.46			0.80	15.11	0.04	15.15	5.64	8.04	4.53	6.45	0.00	6.45	21	0.013	0.0017	675.79	675.80	2.69	2.68	0.11	0.11	0.43	0.05	0.06	675.87	672.52	672.62		N	
356.05	470.31	114.26	LAT. 3-C	1.34	2.80	0.55	0.74	1.54	15.15	0.35	15.50	5.58	7.96	8.60	12.26	0.00	12.26	21	0.013	0.0060	674.76	675.44	2.68	5.10	0.11	0.40	0.50	0.06	0.35	675.79	670.81	672.52		N	
349.50	356.05	6.55	LAT. 3-B	0.41	3.21	0.55	0.23	1.77	15.50	0.02	15.52	5.58	7.96	9.85	14.05	0.00	14.05	21	0.013	0.0079	674.35	674.40	5.10	5.84	0.40	0.53	0.43	0.17	0.36	674.76	670.71	670.81		N	
290.00	349.50	59.50	LAT. 3-A	0.41	3.62	0.55	0.23	1.99	15.52	0.14	15.67	5.56	7.93	11.07	15.79	0.00	15.79	21	0.013	0.0099	673.36	673.95	5.84	6.56	0.53	0.67	0.50	0.27	0.40	674.35	669.82	670.71		N	
0.00	290.00	290.00			3.62			1.99	15.67	0.72	16.38	5.45	7.79	10.85	15.50	0.00	15.50	21	0.013	0.0096	670.27	673.04	6.56	6.45	0.67	0.65	0.50	0.33	0.31	673.36	668.37	669.82		N	
LAT. 2-A																																			
0.00	21.92	21.92	AREA 2-A	0.41	0.41	0.55	0.23	0.23	15.00	0.36	15.36	5.61	7.99	1.26	1.80	0.00	1.80	18	0.013	0.0003	674.35	674.36	0.00	1.02	0.00	0.02	1.25	0.00	0.02	674.37	670.84	672.93	677.43	N	
LAT. 2-B																																			
0.00	17.90	17.90	AREA 2-B	0.41	0.41	0.55	0.23	0.23	15.00	0.29	15.29	5.62	8.01	1.27	1.81	0.00	1.81	18	0.013	0.0003	674.76	674.76	0.00	1.02	0.00	0.02	1.25	0.00	0.02	674.78	670.94	672.93	677.43	N	
LAT. 2-C																																			
0.00	21.92	21.92	AREA 2-C	1.34	1.34	0.55	0.74	0.74	15.00	0.13	15.13	5.64	8.04	4.16	5.92	0.00	5.92	21	0.013	0.0014	675.79	675.82	0.00	2.46	0.00	0.09	1.25	0.00	0.09	675.92	672.52	676.01	680.51	N	
LINE 6																																			
1591.41	1612.77	21.36	AREA 6	2.31	2.31	0.55	1.27	1.27	15.00	0.08	15.08	5.65	8.05	7.18	10.23	0.00	10.23	21	0.013	0.0042	675.41	675.50	0.00	4.25	0.00	0.28	1.25	0.00	0.28	675.78	674.01	674.72	679.22	N	
1583.59	1591.41	7.82			2.31			1.27	15.08	0.03	15.11	5.64	8.04	7.17	10.22	0.00	10.22	21	0.013	0.0042	675.22	675.25	4.25	4.25	0.28	0.28	0.43	0.12	0.16	675.41	673.75	674.01		N	
1466.59	1583.59	117.00	LAT. 6-G	1.71	4.02	0.55	0.94	2.21	15.11	0.27	15.38	5.60	7.99	12.39	17.66	0.00	17.66	21	0.013	0.0124	673.07	674.52	4.25	7.34	0.28	0.84	0.50	0.14	0.70	675.22	669.87	673.75		N	
1160.14	1466.59	306.45	LAT. 6-F	0.84	4.86	0.55	0.46	2.67	15.38	0.77	16.15	5.49	7.83	14.67	20.94	0.00	20.94	24	0.013	0.0086	670.04	672.67	7.34	6.67	0.84	0.69	0.35	0.29	0.40	673.07	666.60	669.62		N	
1152.72	1160.14	7.42	LAT. 6-E	1.17	6.03	0.55	0.64	3.32	16.15	0.02	16.16	5.48	7.83	18.19	25.97	0.00	25.97	27	0.013	0.0070	669.63	669.68	6.67	6.53	0.69	0.66	0.43	0.30	0.37	670.04	666.23	666.30		N	
1109.58	1152.72	43.14	LAT. 6-D	0.56	6.59	0.55	0.31	3.62	16.16	0.10	16.27	5.47	7.81	19.82	28.31	0.00	28.31	27	0.013	0.0084	668.71	669.07	6.53	7.12	0.66	0.79	0.35	0.23	0.56	669.63	665.80	666.23		N	
724.06	1109.58	385.52	LINE 8	1.95	8.54	0.55	1.07	4.70	16.27	1.28	17.54	5.29	7.57	24.84	35.55	0.00	35.55	36	0.013	0.0028	667.61	668.71	7.12	5.03	0.79	0.39	0.50	0.39	0.00	668.71	663.12	665.05		N	
680.60	724.06	43.46	LAT. 6-C	1.44	9.98	0.55	0.79	5.49	17.54	0.12	17.67	5.27	7.55	28.93	41.42	0.00	41.42	36	0.013	0.0039	667.08	667.25	5.03	5.86	0.39	0.53	0.43	0.17	0.36	667.61	662.90	663.12		N	
488.06	680.60	192.54	LINE 7	4.95	14.93	0.55	2.72	8.21	17.67	0.50	18.17	5.20	7.46	42.73	61.23	0.00	61.23	42	0.013	0.0037	665.93	666.64	5.86	6.37	0.53	0.63	0.35	0.19	0.44	667.08	661.44	662.40		N	
479.81	488.06	8.25	LAT. 6-B	1.74	16.67	0.55	0.96	9.17	18.17	0.02	18.19	5.20	7.45	47.69	68.34	0.00	68.34	42	0.013	0.0046	665.38	665.41	6.37	7.10	0.63	0.78	0.43	0.27	0.51	665.93	661.40	661.44		N	
426.33	479.81	53.48	LAT. 6-A	1.15	17.82	0.55	0.63	9.80	18.19	0.12	18.31	5.19	7.43	50.83	72.85	0.00	72.85	42	0.013	0.0052	664.60	664.88	7.10	7.57	0.78	0.89	0.50	0.39	0.50	665.38	661.13	661.40		N	
237.00	426.33	189.33			17.82			9.80	18.31	0.42	18.73	5.13	7.36	50.30	72.14	0.00	72.14	42	0.013	0.0051	662.97	663.95	7.57	7.50	0.89	0.87	0.25	0.22	0.65	664.60	660.19	661.13		N	
100.00	237.00	137.00			17.82			9.80	18.73	0.31	19.03	5.09	7.31	49.92	71.63	0.00	71.63	42	0.013	0.0051	661.79	662.49	7.50	7.45	0.87	0.86	0.43	0.38	0.49	662.97	659.50	660.19		N	
10.00	100.00	90.00	LINE L3	4.70	22.52	0.55	2.59	12.39	19.03	0.21	19.24	5.07	7.27	62.76	90.09	0.00	90.09	48	0.013	0.0039	661.07	661.42	7.45	7.17	0.86	0.80	0.50	0.43	0.37	661.79	656.35	659.50		N	
LAT. 6-A																																			
0.00	26.67	26.67	AREA 6-A	1.15	1.15	0.55	0.63	0.63	15.00	0.22	15.22	5.63	8.02	3.56	5.07	0.00	5.07	21	0.013	0.0010	665.38	665.40	0.00	2.11	0.00	0.07	1.25	0.00	0.07	665.47	662.27	664.59	669.09	N	
LAT. 6-B																																			
0.00	21.23	21.23	AREA 6-B	1.74	1.74	0.55	0.96	0.96	15.00	0.11	15.11	5.65	8.04	5.40	7.70	0.00	7.70	21	0.013	0.0024	665.93	665.98	0.00	3.20	0.00	0.16	1.25	0.00	0.16	666.14	662.32	664.58	669.08	N	
LAT. 6-C																																			
0.00	21.23	21.23	AREA 6-C	1.44	1.44	0.55	0.79	0.79	15.00	0.13	15.13	5.64	8.04	4.47	6.37	0.00	6.37	21	0.013	0.0016	667.61	667.65	0.00	2.65	0.00	0.11	1.25	0.00	0.11	667.76	663.75	666.00	670.50	N	
LAT. 6-D																																			
0.00	25.70	25.70	AREA 6-D	0.56	0.56	0.55	0.31	0.31	15.00	0.33	15.33	5.61	8.00	1.73	2.46	0.00	2.46	18	0.013	0.0006	668.71	668.72	0.00	1.39	0.00	0.03	[illegible]	[illegible]	0.03	668.75	666.60	669.26	672.64	N	
LAT. 6-E																																			
0.00	21.50	21.50	AREA 6-E	1.17	1.17	0.55	0.64	0.64	15.00	0.17	15.17	5.64	8.03	3.63	5.17	0.00	5.17	21	0.013	0.0011	670.04	670.07	0.00	2.15	0.00	0.07	1.25	0.00	0.07	670.14	666.55	669.26	673.76	N	
LAT. 6-F																																			
0.00	18.50	18.50	AREA 6-F	0.84	0.84	0.55	0.46	0.46	15.00	0.20	15.20	5.63	8.03	2.60	3.71	0.00	3.71	21	0.013	0.0005	673.07	673.08	0.00	1.54	0.00	0.04	1.25	0.00	0.04	673.11	669.87	672.55	677.05	N	
LAT. 6-G																																			
0.00	26.16	26.16	AREA 6-G	1.71	1.71	0.55	0.94	0.94	15.00	0.18	15.18	5.63	8.03	5.30	7.55	0.00	7.55	21	0.013	0.0023	675.22	675.28	0.00	3.14	0.00	0.15	1.25	0.00	0.15	675.43	673.75	674.72	679.22	N	
LINE 7																																			
94.31	104.98	10.67	AREA 7	2.60	2.60	0.55	1.43	1.43	15.00	0.04	15.04	5.66	8.06	8.09	11.52	0.00	11.52	21	0.013	0.0053	668.66	668.71	0.00	4.79	0.00	0.36	1.25	0.00	0.36	669.07	666.29	667.34	671.74	N	
76.11	94.31	18.20			2.60			1.43	15.04	0.06	15.10	5.65	8.05	8.07	11.51	0.00	11.51	21	0.013	0.0053	668.36	668.46	4.79	4.78	0.36	0.36	0.43	0.15	0.20	668.66	665.98	666.29		N	
0.00	76.11	76.11	LAT. 7-A	2.35	4.95	0.55	1.29	2.72	15.10	0.18	15.28	5.62	8.01	15.30	21.80	0.00	21.80	24	0.013	0.0093	667.08	667.79	4.78	6.94	0.36	0.75	0.50	0.18	0.57	668.36	662.90	665.98		N	
LAT. 7-A																																			
0.00	18.07	18.07	AREA 7-A	2.35	2.35	0.55	1.29	1.29	15.00	0.07	15.07	5.65	8.05	7.30	10.41	0.00	10.41	21	0.013	0.0043	668.36	668.44	0.00	4.33	0.00	0.29	1.25	0.00	0.29	668.73	666.10	667.34	671.74	N	
LINE 8																																			
0.00	168.71	168.71	AREA 8	1.95	1.95	0.55	1.07	1.07	15.00	0.84	15.84	5.53	7.89	5.93	8.47	0.00	8.47	21	0.013	0.0029	669.63	670.11	0.00	3.52	0.00	0.19	1.25	0.00	0.19	670.30	665.80	667.53	671.75	N	
LINE 9																																			
47.42	80.00	32.58	AREA 9	0.91	0.91	0.55	0.50	0.50	15.00	0.24	15.24	5.62	8.02	2.82	4.01	0.00	4.01	18	0.013	0.0015	706.64	706.68	0.00	2.27	0.00	0.08		0.00	0.08	706.76	706.19	707.00		Y	0.50
0.00	47.42	47.42	LAT. 9-A	0.09	1.00	0.55	0.05	0.55	15.24	0.32	15.56	5.58	7.95	3.07	4.37	0.00	4.37	18	0.013	0.0017	706.50	706.58	2.27	2.48	0.08	0.10	0.50	0.04	0.06	706.64	705.00	706.19		N	
LAT. 9-A																																			
0.00	24.82	24.82	AREA 9-A	0.09	0.09	0.55	0.05	0.05	15.00	1.88	16.88	5.38	7.69	0.27	0.38	0.00	0.38	18	0.013	0.0000	706.64	706.64	0.00	0.22	0.00	0.00	1.25	0.00	0.00	706.64	706.19	708.04	711.54	Y	0.30
LINE L1																																			
565.85	583.75	17.90	AREA L1	1.25	1.25	0.55	0.69	0.69	15.00	0.13	15.13	5.64	8.04	3.88	5.53	0.00	5.53	21	0.013	0.0012	663.75	663.77	0.00	[illegible]	0.00	0.08	1.25	0.00	0.08	663.85	660.51	662.95	667.45	N	
554.68	565.85	11.17			1.25			0.69	15.13	0.08	15.21	5.63	8.02	3.87	5.52	0.00	5.52	21	0.013	0.0012	663.69	663.70	2.30	2.29	0.08	0.08	0.43	0.04	0.05	663.75	660.19	660.26		N	
400.00	554.68	154.68	LAT L1-D	1.34	2.59	0.55	0.74	1.42	15.21	0.57	15.78	5.54	7.91	7.89	11.26	0.00	11.26	21	0.013	0.0051	662.61	663.39	2.29	4.68	0.08	0.34	0.50	0.04	0.30	663.69	659.26	660.19		N	
244.85	400.00	155.15			2.59			1.42	15.78	0.57	16.35	5.46	7.79	7.77	11.10	0.00	11.10	21	0.013	0.0049	661.63	662.39	4.68	4.62	0.34	0.33	0.35	0.12	0.21	662.61	658.33	659.26		N	
216.97	244.85	27.88	LAT. L1-C	0.95	3.54	0.55	0.52	1.95	16.35	0.08	16.43	5.45	7.78	10.60	15.15	0.00	15.15	21	0.013	0.0091	660.90	661.16	4.62	6.30	0.33	0.62	0.43	0.14	0.47	661.63	657.91	658.33		N	
170.00	216.97	46.97	LAT. L1-B	0.87	4.41	0.55	0.48	2.43	16.43	0.14	16.56	5.43	7.75	13.16	18.80	0.00	18.80	24	0.013	0.0069	660.33	660.65	6.30	5.99	0.62	0.56	0.50	0.31	0.25	660.90	657.63	657.91		N	
145.36	170.00	24.64	LINE L2	1.17	5.58	0.55	0.64	3.07	16.56	0.07	16.63	5.42	7.74	16.62	23.75	0.00	23.75	24	0.013	0.0110	659.37	659.64	5.99	7.56	0.56	0.89	0.35	0.19	0.69	660.33	657.09	657.63		N	
0.00	145.36	145.36	LAT. L1-A	0.90	6.48	0.55	0.50	3.56	16.63	0.36	17.00	5.36	7.67	19.12	27.33	0.00	27.33	27	0.013	0.0078	657.88	659.01	7.56	6.88	0.89	0.73	0.43	0.38	0.35	659.37	652.00	657.09		N	
LAT. L1-A																																			
0.00	5.77	5.77	AREA L1-A	0.90	0.90	0.55	0.50	0.50	15.00	0.06	15.06	5.65	8.05	2.80	3.99	0.00	3.99	21	0.013	0.0006	659.37	659.37	0.00	1.66	0.00	0.04	1.25	0.00	0.04	659.41	657.34	660.28	664.78	N	
LAT. L1-B																																			
0.00	20.89	20.89	AREA L1-B	0.87	0.87	0.55	0.48	0.48	15.00	0.22	15.22	5.63	8.02	2.69	3.84	0.00	3.84	21	0.013	0.0006	660.90	660.92	0.00	1.60	0.00	0.04	1.25	0.00	0.04	660.96	658.04	660.84	665.28	N	
LAT. L1-C																																			
0.00	17.90	17.90	AREA L1-C	0.95	0.95	0.55	0.52	0.52	15.00	0.17	15.17	5.64	8.03	2.94	4.20	0.00	4.20	21	0.013	0.0007	661.63	661.64	0.00	1.74	0.00	0.05	1.25	0.00	0.05	661.69	658.33	661.00	665.41	N	
LAT. L1-D																																			
0.00	21.92	21.92	AREA L1-D	1.34	1.34	0.55	0.74	0.74	15.00	0.15	15.15	5.64	8.04	4.16	5.92	0.00	5.92	21	0.013	0.0014	663.69	663.72	0.00	2.46	0.00	0.09	1.25	0.00	0.09	663.81	660.31	662.90	667.40	N	
LINE L2																																			
31.41	60.41	29.00	AREA L2	1.17	1.17	0.55	0.64	0.64	15.00	0.22	15.22	5.63	8.02	3.62	5.16	0.00	5.16	21	0.013	0.0011	660.41	660.44	0.00	2.15	0.00	0.07	1.25	0.00	0.07	660.51	659.33	660.90	665.40	N	
0.00	31.41	31.41			1.17			0.64	15.22	0.25	15.47	5.59	7.97	3.60	5.13	0.00	5.13	21	0.013	0.0010	660.33	660.36	2.15	2.13	0.07	0.07	0.35	0.03	0.05	660.41	657.63	659.33		N	
LINE L3																																			
654.09	671.98	17.89	AREA L3	1.45	1.45	0.55	0.80	0.80	15.00	0.11	15.11	5.65	8.04	4.50	6.41	0.00	6.41	21	0.013	0.0016	666.16	666.19	0.00	2.67	0.00	0.11	1.25	0.00	0.11	666.30	664.38	666.72	671.98	N	
444.81	654.09	209.28			1.45			0.80	15.11	1.35	16.46	5.44	7.77	4.34	6.20	0.00	6.20	21	0.013	0.0015	665.78	666.10	2.67	2.58	0.11	0.10	0.43	0.05	0.06	666.16	662.70	664.38		N	
197.33	444.81	247.48	LAT. L3-C	1.25	2.70	0.55	0.69	1.49	16.46	0.88	17.34	5.32	7.61	7.89	11.29	0.00	11.29	21	0.013	0.0051	664.22	665.48	2.58	4.70	0.10	0.34	0.35	0.04	0.31	665.78	660.49	662.70		N	
189.17	197.33	8.16	LAT. L3-B	0.75	3.45	0.55	0.41	1.90	17.34	0.03	17.37	5.31	7.60	10.08	14.42	0.00	14.42	24	0.013	0.0041	664.01	664.04	4.70	4.59	0.34	0.33	0.43	0.15	0.18	664.22	660.45	660.49		N	
26.83	189.17	162.34	LAT. L3-A	1.25	4.70	0.55	0.69	2.59	17.37	0.44	17.81	5.25	7.52	13.58	19.44	0.00	19.44	24	0.013	0.0074	662.33	663.53	4.59	6.19	0.33	0.59	0.35	0.11	0.48	664.01	659.63	660.45		N	
0.00	26.83	26.83			4.70			2.59	17.81	0.07	17.88	5.24	7.51	13.55	19.41	0.00	19.41	24	0.013	0.0074	661.79	661.99	6.19	6.18	0.59	0.59	0.43	0.26	0.34	662.33	659.50	659.63		N	
LAT. L3-A																																			
0.00	18.10	18.10	AREA L3-A	1.25	1.25	0.55	0.69	0.69	15.00	0.13	15.13	5.64	8.04	3.88	5.53	0.00	5.53	21	0.013	0.0012	664.01	664.03	0.00	2.30	0.00	0.08	1.25	0.00	0.08	664.11	660.57	662.91	667.41	N	
LAT. L3-B																																			
0.00	17.64	17.64	AREA L3-B	0.75	0.75	0.55	0.41	0.41	15.00	0.21	15.21	5.63	8.02	2.32	3.31	0.00	3.31	18	0.013	0.0010	664.22	664.24	0.00	1.87	0.00	0.05	1.25	0.00	0.05	664.29	660.74	663.04	667.54	N	
LAT. L3-C																																			
0.00	15.50	15.50	AREA L3-C	1.25	1.25	0.55	0.69	0.69	15.00	0.11	15.11	5.64	8.04	3.88	5.53	0.00	5.53	21	0.013	0.0012	665.78	665.80	0.00	2.30	0.00	0.08	1.25	0.00	0.08	665.89	662.70	664.96	669.46	N	
LINE L4																																			
281.68	303.60	21.92	AREA L4	1.08	1.08	0.55	0.59	0.59	15.00	0.18	15.18	5.63	8.03	3.35	4.77	0.00	4.77	21	0.013	0.0009	655.40	655.42	0.00	1.98	0.00	0.06	1.25	0.00	0.06	655.48	655.13	657.02	661.52	N	
234.08	281.68	47.60			1.08			0.59	15.18	0.40	15.59	5.57	7.94	3.31	4.72	0.00	4.72	21	0.013	0.0009	655.32	655.36	1.98	1.96	0.06	0.06	0.43	0.03	0.03	655.40	654.65	655.13		N	
210.00	234.08	24.08			1.08			0.59	15.59	0.27	15.86	5.53	7.89	3.28	4.69	0.00	4.69	21	0.013	0.0009	655.26	655.28	1.96	1.95	0.06	0.06	0.35	0.02	0.04	655.32	654.41	654.65		N	
13.00	210.00	197.00			1.08			0.59	15.86	2.35	18.20	5.20	7.45	3.09	4.43	0.00	4.43	21	0.013	0.0008	655.08	655.23	1.95	1.84	0.06	0.05	0.43	0.03	0.03	655.26	652.44	654.41		N	
LINE L5																																			
924.28	946.20	21.92	AREA L5	1.27	1.27	0.55	0.70	0.70	15.00	0.16	15.16	5.64	8.03	3.94	5.61	0.00	5.61	21	0.013	0.0013	664.74	664.77	0.00	2.33	0.00	0.08	1.25	0.00	0.08	664.86	663.22	666.47	670.97	N	
524.18	924.28	400.10			1.27			0.70	15.16	3.09	18.24	5.19	7.44	3.63	5.20	0.00	5.20	21	0.013	0.0011	664.28	664.71	2.33	2.16	0.08	0.07	0.43	0.04	0.04	664.74	658.42	663.22		N	
320.64	524.18	203.54	LAT. L5-B	1.19	2.46	0.55	0.65	1.35	18.24	0.83	19.07	5.09	7.30	6.88	9.88	0.00	9.88	21	0.013	0.0039	663.25	664.05	2.16	4.11	0.07	0.26	0.43	0.03	0.23	664.28	655.98	658.42		N	
267.08	320.64	53.56	LAT. L5-A	1.30	3.76	0.55	0.72	2.07	19.07	0.19	19.26	5.07	7.27	10.48	15.04	0.00	15.04	21	0.013	0.0090	662.28	662.76	4.11	6.25	0.26	0.61	0.43	0.11	0.49	663.25	655.34	655.98		N	
110.80	267.08	156.28			3.76			2.07	19.26	0.55	19.81	5.00	7.18	10.34	14.85	0.00	14.85	21	0.013	0.0088	660.52	661.90	6.25	6.18	0.61	0.59	0.35	0.21	0.38	662.28	654.55	655.34		N	
0.00	110.80	110.80			3.76			2.07	19.81	0.39	20.20	4.95	7.12	10.24	14.72	0.00	14.72	21	0.013	0.0086	659.24	660.20	6.18	6.12	0.59	0.58	0.43	0.25	0.33	660.52	654.00	654.55		N	
LAT. L5-A																																			
0.00	18.10	18.10	AREA L5-A	1.30	1.30	0.55	0.72	0.72	15.00	0.13	15.13	5.64	8.04	4.03	5.75	0.00	5.75	21	0.013	0.0013	662.28	662.30	0.00	2.39	0.00	0.09	1.25	0.00	0.09	662.39	655.98	658.93	663.43	N	
LAT. L5-B																																			
0.00	17.64	17.64	AREA L5-B	1.19	1.19	0.55	0.65	0.65	15.00	0.13	15.13	5.64	8.04	3.69	5.26	0.00	5.26	21	0.013	0.0011	663.25	663.27	0.00	2.19	0.00	0.07	1.25	0.00	0.07	663.35	658.42	661.47	665.97	N	

NOTE: THE SHADED REGION OF THE CHART IS IRRELEVANT TO THE DESIGN OF THIS PHASE.

THESE CONSTRUCTION PLANS WERE PREPARED UNDER THE RESPONSIBLE SUPERVISION OF F.E. MIDDLETON JR., REGISTERED PROFESSIONAL ENGINEER NO. 67449.

No.	DATE	REVISION	APPROV.

CALC2

Date: 10–30–24
Dwg Scale: Hor. Vert.
Dwg File: 0001045CALC.DWG
Project No. 0001045

HYDRAULIC CALCULATIONS

LAKE RIDGE DRIVE – LAKE RIDGE PHASE 4
CITY OF SANGER DENTON COUNTY, TEXAS

SANGER TOWN CENTER LLC &
DUAL BOND HOLDINGS LLC &
HIEN & DUYET NGUYEN
101 FOREST BEND DRIVE
COPPELL, TEXAS 75019
JONATHAN WANG – 214–316–2256

STATE OF TEXAS
F. E. MIDDLETON, JR.
67449
LICENSED
PROFESSIONAL ENGINEER

Middleton & Assoc, LLC.
CONSULTING CIVIL ENGINEERS & LAND PLANNERS
TBPE #F–10900
2785 ROCKBROOK DRIVE, SUITE 105
LEWISVILLE, TEXAS 75067 (972) 393–9800

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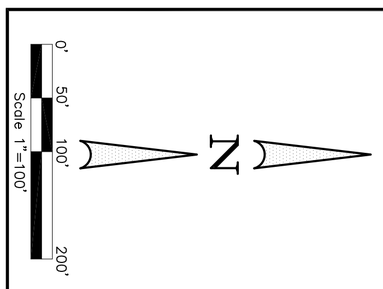

Please provide drainage easement according to 10.105.(5).(B)

Please provide drainage easement according to 10.105.(5).(B)

THESE CONSTRUCTION PLANS WERE PREPARED UNDER THE RESPONSIBLE SUPERVISION OF F.E. MIDDLETON JR., REGISTERED PROFESSIONAL ENGINEER NO. 67449.

No.	DATE	REVISION	APPROV.

ST-ALL1

Date: 10-30-24
Dwg Scale: Hor. 1"=80'
Vert.
Dwg File: 0001045UTIL.DWG
Project No. 0001045

OVERALL STORM DRAIN PLAN

LAKE RIDGE DRIVE – LAKE RIDGE PHASE 4
CITY OF SANGER DENTON COUNTY, TEXAS

SANGER TOWN CENTER LLC &
DUAL BOND HOLDINGS LLC &
HIEN & DUYET NGUYEN
101 FOREST BEND DRIVE
COPPELL, TEXAS 75019
JONATHAN WANG – 214-316-2256

STATE OF TEXAS
F. E. MIDDLETON, JR.
67449
REGISTERED PROFESSIONAL ENGINEER

Middleton & Assoc, LLC
CONSULTING CIVIL ENGINEERS & LAND PLANNERS
TBPE #F-10900
© Copyright 2024
2785 ROCKBROOK DRIVE, SUITE 105
LEWISVILLE, TEXAS 75067 (972) 393-9800

Please provide drainage easement according to 10.105.(5).(B)

Scale 1"=80'
0'
40'
80'
160'

N

MARION HILLS APARTMENTS, LLC
DOC. NO. 2017-92008

SANGER TOWN CENTER LLC
DOC. NO. 2017-48301

MATCHLINE SEE THIS SHEET

ST LINE 6

ST LINE 7

SILO DRIVE

SHORTHORN DRIVE

ST LINE 8

HERD DRIVE

FUTURE LANE
RANCH PHASE 3

FUTURE LANE
RANCH PHASE 4

DOLLARHYDE DRIVE

LAKE RIDGE DRIVE

HIEN & DUYET NGUYEN
DOC. NO. 2016-27020

DUALBOND HOLDINGS LLC
DOC. NO. 2016-27021

PASTURE LANE

MEADOW LANE

HAYWAGON DRIVE

TRACT LINE

WEST CHAPMAN RD. FM 455

No.	DATE	REVISION	APPROV.

THESE CONSTRUCTION PLANS WERE PREPARED UNDER THE RESPONSIBLE SUPERVISION OF F.E. MIDDLETON JR., REGISTERED PROFESSIONAL ENGINEER NO. 67449.

ST-ALL2

Date: 10-30-24
Dwg Scale: Hor. 1"=80'
Vert.
Dwg File: 0001045UTIL.DWG
Project No. 0001045

OVERALL STORM DRAIN PLAN

LAKE RIDGE DRIVE – LAKE RIDGE PHASE 4
CITY OF SANGER DENTON COUNTY, TEXAS

SANGER TOWN CENTER LLC &
DUAL BOND HOLDINGS LLC &
HIEN & DUYET NGUYEN
101 FOREST BEND DRIVE
COPPELL, TEXAS 75019
JONATHAN WANG – 214-316-2256

STATE OF TEXAS
F. E. MIDDLETON, JR.
67449
PROFESSIONAL ENGINEER

Middleton & Assoc, LLC
CONSULTING CIVIL ENGINEERS & LAND PLANNERS
TBPE #F-10900
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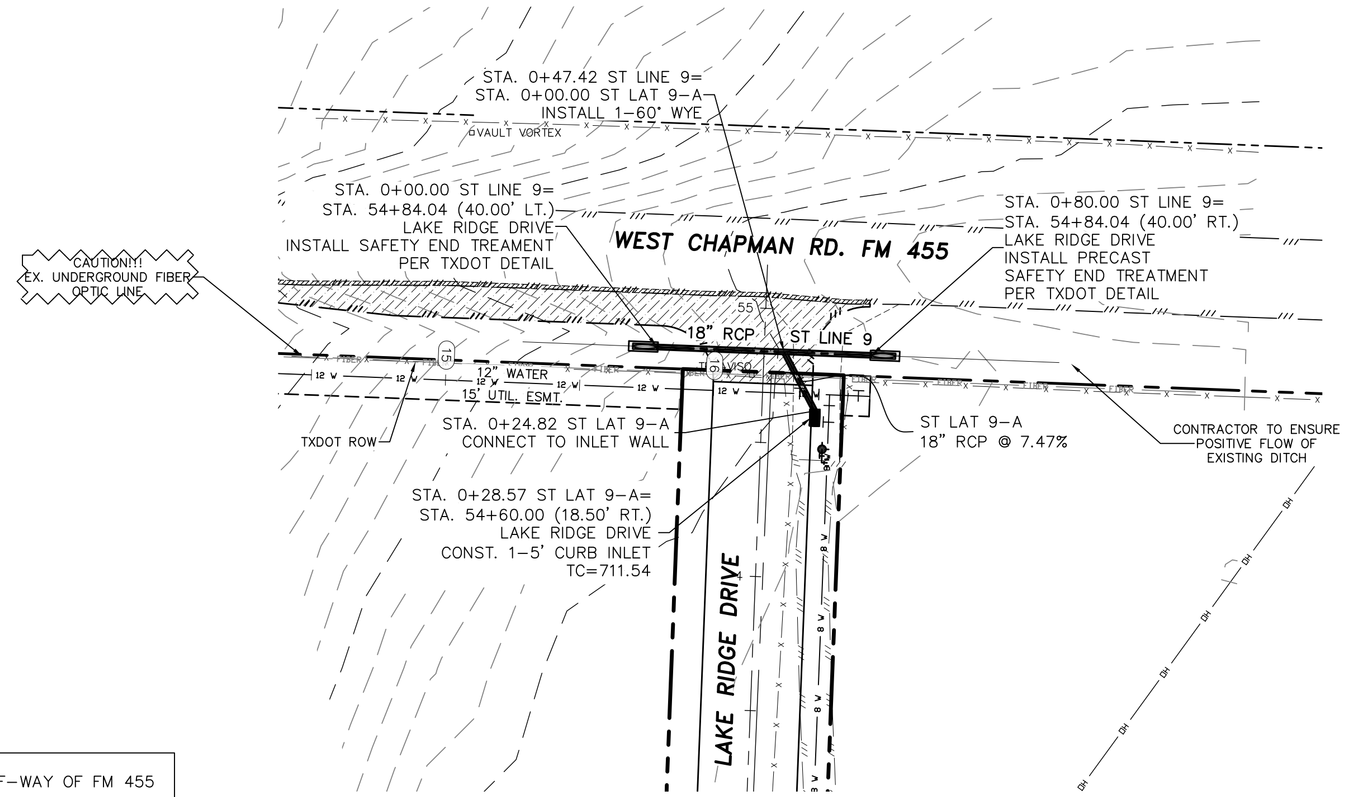
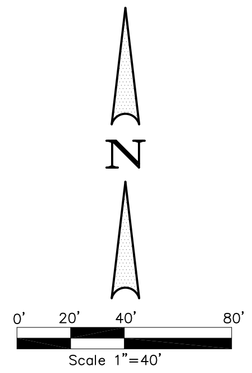
2785 ROCKBROOK DRIVE, SUITE 105
LEWISVILLE, TEXAS 75067 (972) 393-9800



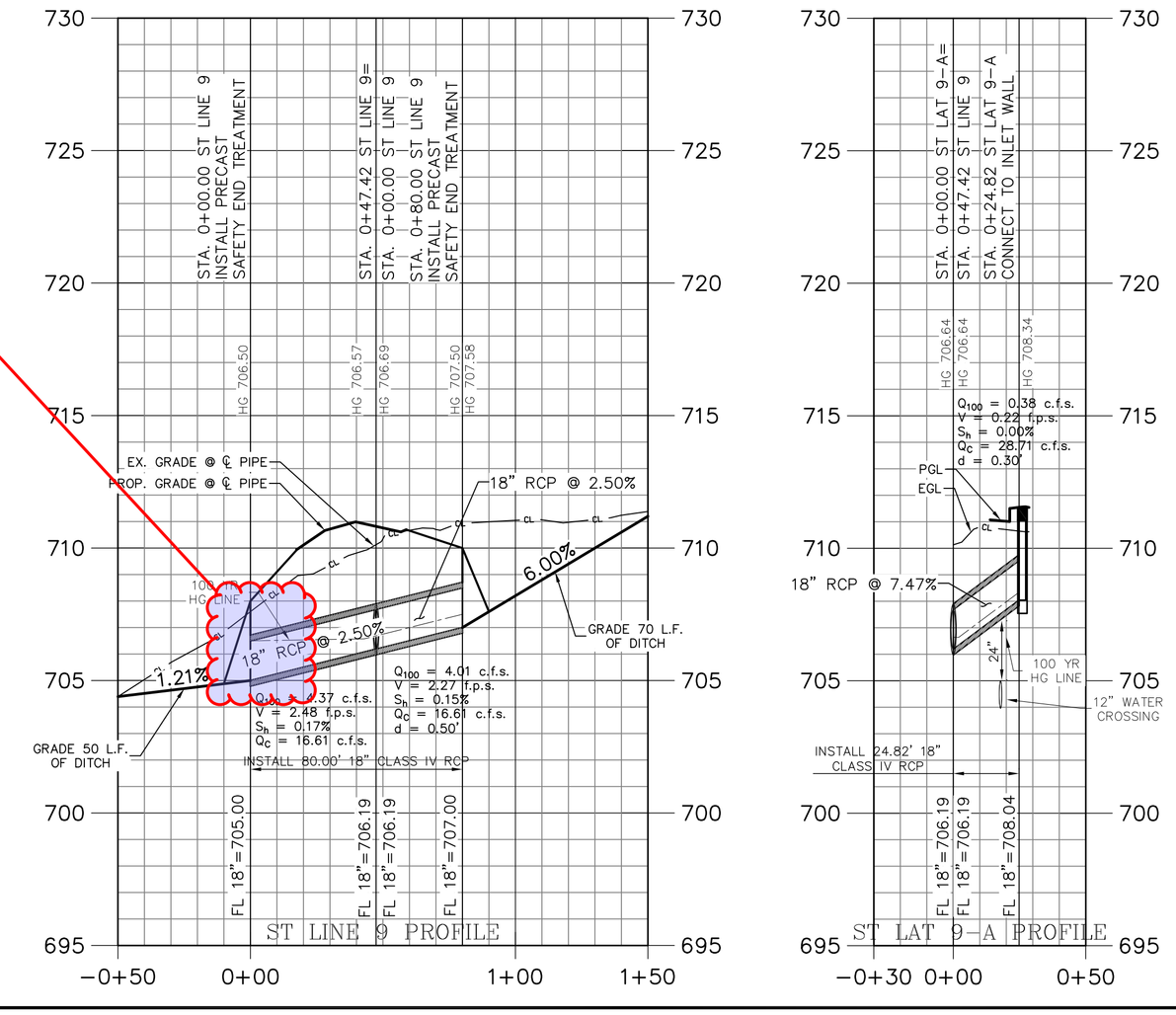


NOTE:
ALL WORK WITHIN THE RIGHT-OF-WAY OF FM 455
WILL REUIRE A TXDOT PERMIT.

BENCHMARK 1
WEST CORNER OF HDWL. SOUTH SIDE OF FM 455, 680' EAST OF THE N/W CORNER OF THE PROPERTY. ELEV.=679.82

BENCHMARK 2
N/E CORNER OF INLET ON EAST SIDE OF INDIAN LANE, 150' SOUTH OF ELEM. SCHOOL DRIVE. ELEV.=653.07

Culvert hydraulic grade line calculations shall consider both inlet and outlet control. Please show headwater and tail water conditions per ordinance §§ 10.106(d)(7)



No.	DATE	REVISION	APPROV.

LEGEND

	Ex. Water
	Ex. Fire Hydrant
SS	Ex. Sanitary Sewer
SS	Ex. Sewer Manhole
	Ex. Storm Sewer
OH	Ex. Overhead Utility
SS	Prop. Sanitary Sewer
	Prop. Sewer Manhole
W	Prop. Water
	Prop. Fire Hydrant
	Prop. Storm Drain
1	Street Stations
S	Sewer Stations
W	Water Stations
D	Storm Stations
1140-667.57	FLOOD CROSS SECTION & 100-YR. ELEV. PER FLOOD REPORT

Middleton & Assoc, LLC
CONSULTING CIVIL ENGINEERS & LAND PLANNERS
TBPE #F-10900
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2785 ROCKBROOK DRIVE, SUITE 105
LEWISVILLE, TEXAS 75067 (972) 393-9800

THESE CONSTRUCTION PLANS WERE PREPARED UNDER THE RESPONSIBLE SUPERVISION OF E. E. MIDDLETON, JR., REGISTERED PROFESSIONAL ENGINEER NO. 61948

STATE OF TEXAS E. E. MIDDLETON, JR. 61948 REGISTERED PROFESSIONAL ENGINEER

LAKE RIDGE DRIVE - LAKE RIDGE PHASE 4
CITY OF SANGER DENTON COUNTY, TEXAS

SANGER TOWN CENTER LLC &
DUAL BOND HOLDINGS LLC &
HIEN & DUYET NGUYEN
101 FOREST BEND DRIVE
COPPELL, TEXAS 75019

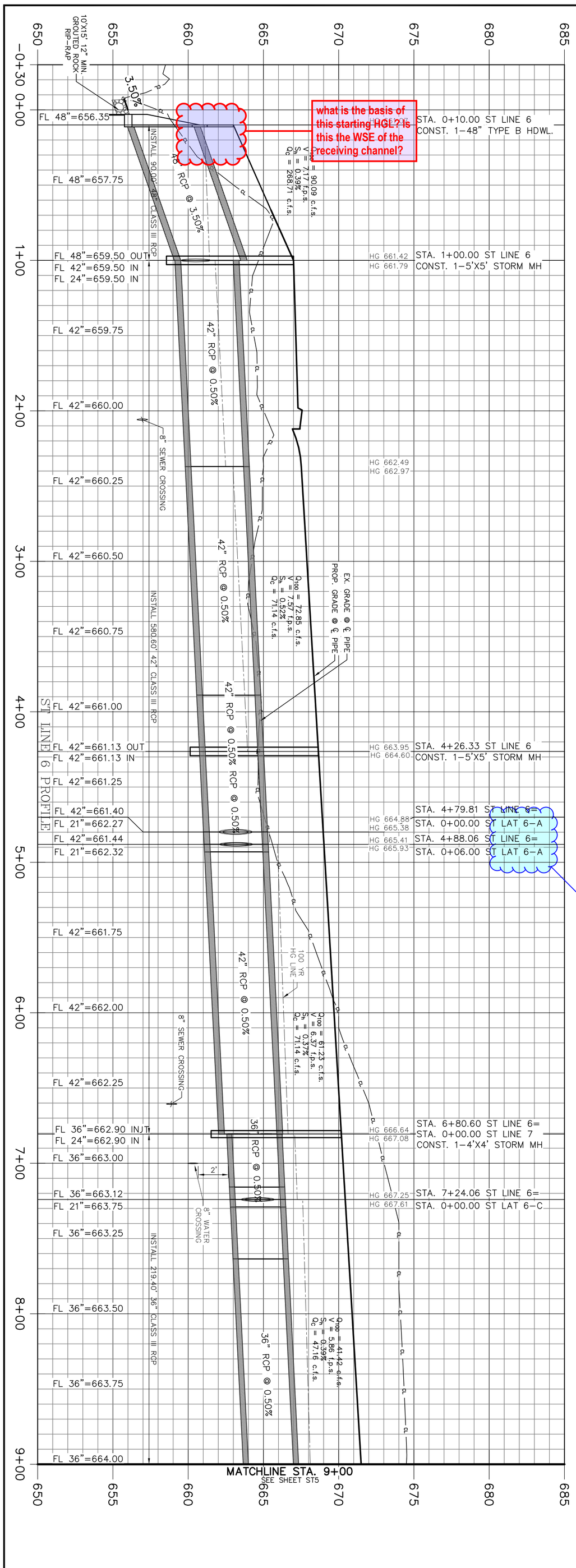
JONATHAN WANG - 214-316-2256

STORM DRAIN PLAN & PROFILE
ST LINE 9

Date: 10-30-24
Dwg Scale: Hor. 1"=40'
Vert.
Dwg File: 0001045UTIL.DWG
Project No. 0001045

ST3

WARNING!!!
EXIST. UNDERGROUND UTILITIES. CONTRACTOR TO VERIFY LOCATION AND DEPTH OF EXISTING UTILITIES PRIOR TO CONSTRUCTION.



BENCHMARK 1
WEST CORNER OF HDWL. SOUTH SIDE OF FM 455, 680' EAST OF THE N/W CORNER OF THE PROPERTY. ELEV.=679.82

BENCHMARK 2
N/E CORNER OF INLET ON EAST SIDE OF INDIAN LANE, 150' SOUTH OF ELEM. SCHOOL DRIVE. ELEV.=653.07

THESE CONSTRUCTION PLANS WERE PREPARED UNDER THE RESPONSIBLE SUPERVISION OF F.E. MIDDLETON JR., REGISTERED PROFESSIONAL ENGINEER NO. 67449.

No.	DATE	REVISION	APPROV.

ST4

Date: 10–30–24
Dwg Scale: Hor. 1"=40' Vert.
Dwg File: 0001045UTIL.DWG
Project No. 0001045

STORM DRAIN PLAN & PROFILE
ST LINE 6
STA. 0+00 – 9+00

LAKE RIDGE DRIVE – LAKE RIDGE PHASE 4
CITY OF SANGER DENTON COUNTY, TEXAS

SANGER TOWN CENTER LLC &
DUAL BOND HOLDINGS LLC &
HIEN & DUYET NGUYEN
101 FOREST BEND DRIVE
COPPELL, TEXAS 75019
JONATHAN WANG – 214–316–2256

STATE OF TEXAS
F. E. MIDDLETON, JR.
67449
LICENSED PROFESSIONAL ENGINEER

Middleton & Assoc, LLC
CONSULTING CIVIL ENGINEERS & LAND PLANNERS
TBPE #F–10900

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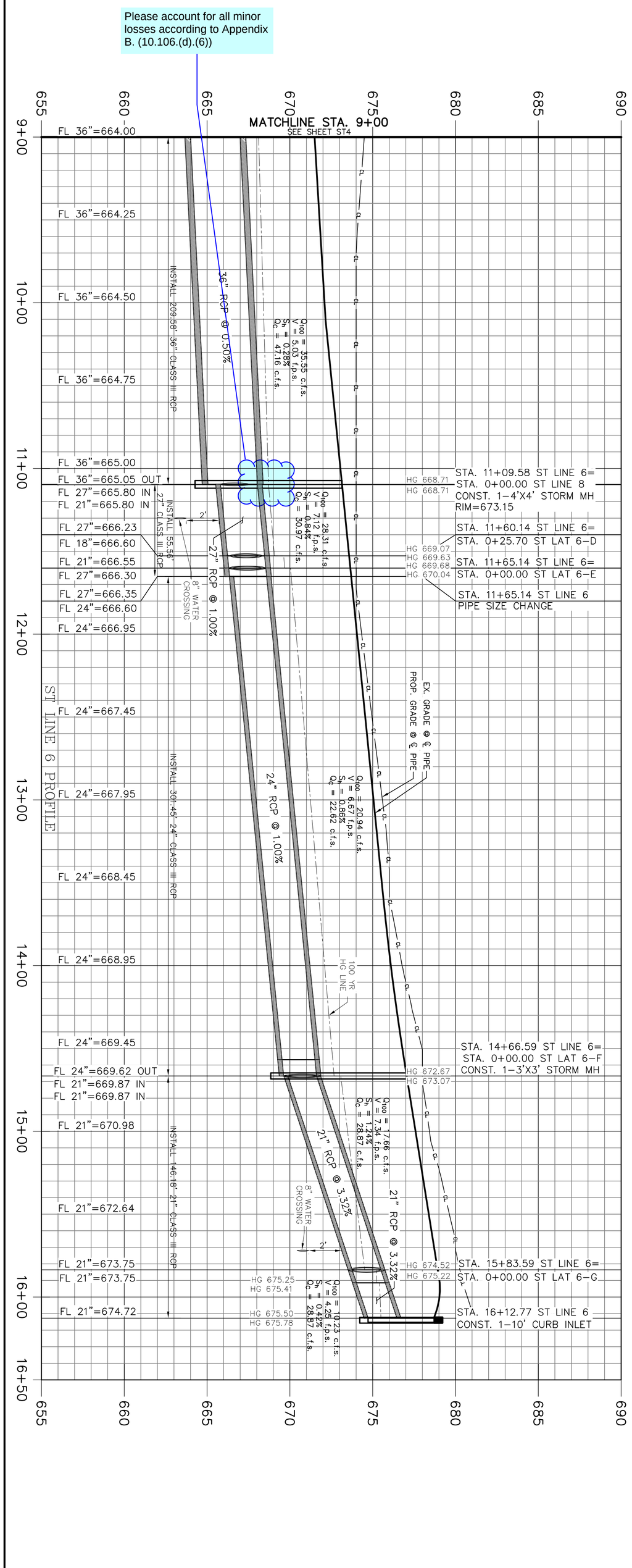
LEWISVILLE, TEXAS 75067 (972) 393–9800

Please account for all minor losses according to Appendix B. (10.106.(d).(6))

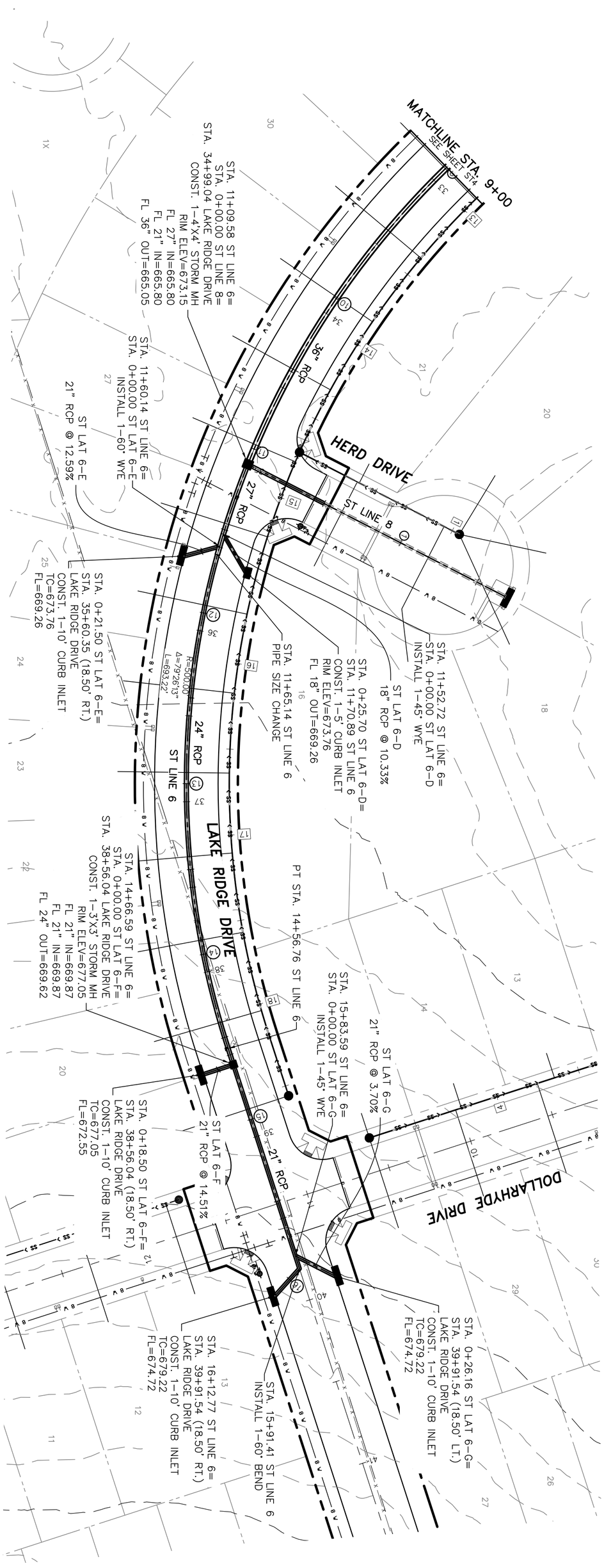


BENCHMARK 1
WEST CORNER OF HDWL. SOUTH SIDE OF FM 455, 680' EAST OF THE N/W CORNER OF THE PROPERTY. ELEV.=679.82
BENCHMARK 2
N/E CORNER OF INLET ON EAST SIDE OF INDIAN LANE, 150' SOUTH OF ELEM. SCHOOL DRIVE. ELEV.=653.07

LEGEND

- Ex. Water
- Ex. Fire Hydrant
- Ex. Sanitary Sewer
- Ex. Sewer Manhole
- Ex. Storm Sewer
- Ex. Overhead Utility
- Prop. Sanitary Sewer
- Prop. Sewer Manhole
- Prop. Water
- Prop. Fire Hydrant
- Prop. Storm Drain
- Street Stations
- Sewer Stations
- Water Stations
- Storm Stations
- 1140-667.57 FLOOD CROSS SECTION & 100-YR. ELEV. PER FLOOD REPORT

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



THESE CONSTRUCTION PLANS WERE PREPARED UNDER THE RESPONSIBLE SUPERVISION OF F.E. MIDDLETON JR., REGISTERED PROFESSIONAL ENGINEER NO. 67449.

No.	DATE	REVISION	APPROV.

ST5

Date: 10-30-24
Dwg Scale: Hor. 1"=40' Vert.
Dwg File: 0001045UTIL.DWG
Project No. 0001045

STORM DRAIN PLAN & PROFILE
ST LINE 6
STA. 9+00 - END

LAKE RIDGE DRIVE - LAKE RIDGE PHASE 4
CITY OF SANGER DENTON COUNTY, TEXAS
SANGER TOWN CENTER LLC &
DUAL BOND HOLDINGS LLC &
HIEN & DUYET NGUYEN
101 FOREST BEND DRIVE
COPPELL, TEXAS 75019
JONATHAN WANG - 214-316-2256

STATE OF TEXAS * F. E. MIDDLETON, JR. * 67449 * REGISTERED PROFESSIONAL ENGINEER

Middleton & Assoc, LLC
CONSULTING CIVIL ENGINEERS & LAND PLANNERS
TBPE #F-10900

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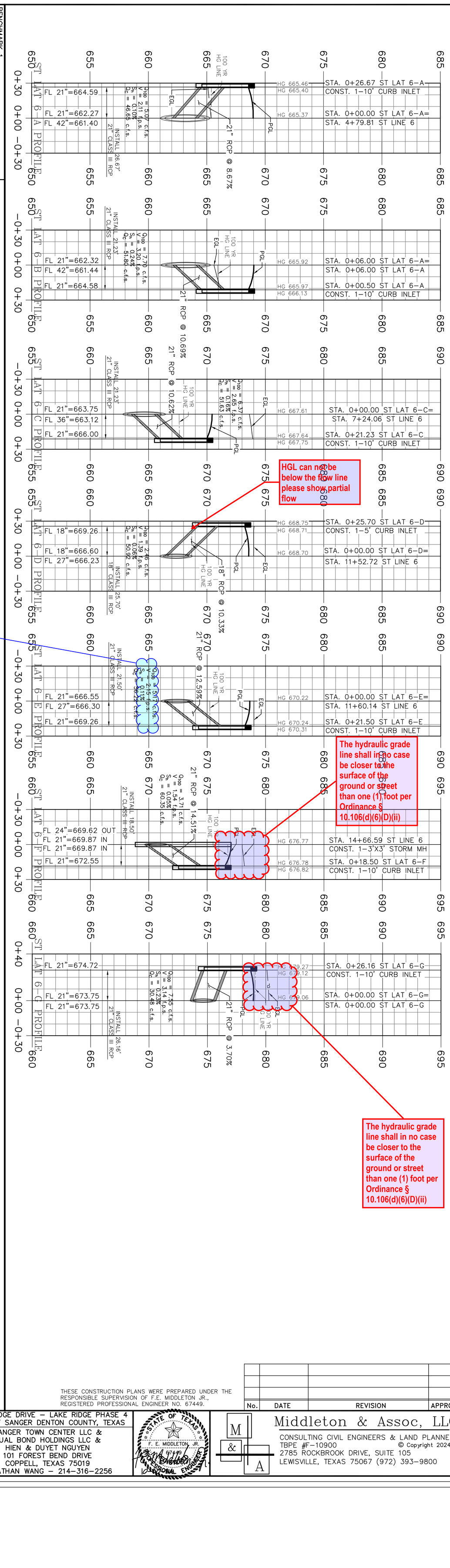
LEWISVILLE, TEXAS 75067 (972) 393-9800

BENCHMARK 1
WEST CORNER OF HDWL. SOUTH SIDE OF FM 455, 680' EAST OF THE N/W CORNER OF THE PROPERTY. ELEV.=679.82

BENCHMARK 2
N/E CORNER OF INLET ON EAST SIDE OF INDIAN LANE, 150' SOUTH OF ELEM. SCHOOL DRIVE. ELEV.=653.07



The minimum velocity in conduit shall be 2.5 fps. The proposed drain system is causing multiple occasions where velocity is below 2.5 fps. Please adjust your design to fix this issue (typical)

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No.	DATE	REVISION	APPROV.

ST6

Date: 10-30-24
Dwg Scale: Hor. 1"=40' Vert.
Dwg File: 0001045UTIL.DWG
Project No. 0001045

STORM DRAIN PLAN & PROFILE ST LAT 6-A TO 6-G

LAKE RIDGE DRIVE - LAKE RIDGE PHASE 4
CITY OF SANGER DENTON COUNTY, TEXAS

SANGER TOWN CENTER LLC &
DUAL BOND HOLDINGS LLC &
HIEN & DUYET NGUYEN
101 FOREST BEND DRIVE
COPPELL, TEXAS 75019
JONATHAN WANG - 214-316-2256

STATE OF TEXAS · F. E. MIDDLETON, JR. · 67449 · REGISTERED PROFESSIONAL ENGINEER

Middleton & Assoc, LLC
CONSULTING CIVIL ENGINEERS & LAND PLANNERS
TBPE #F-10900

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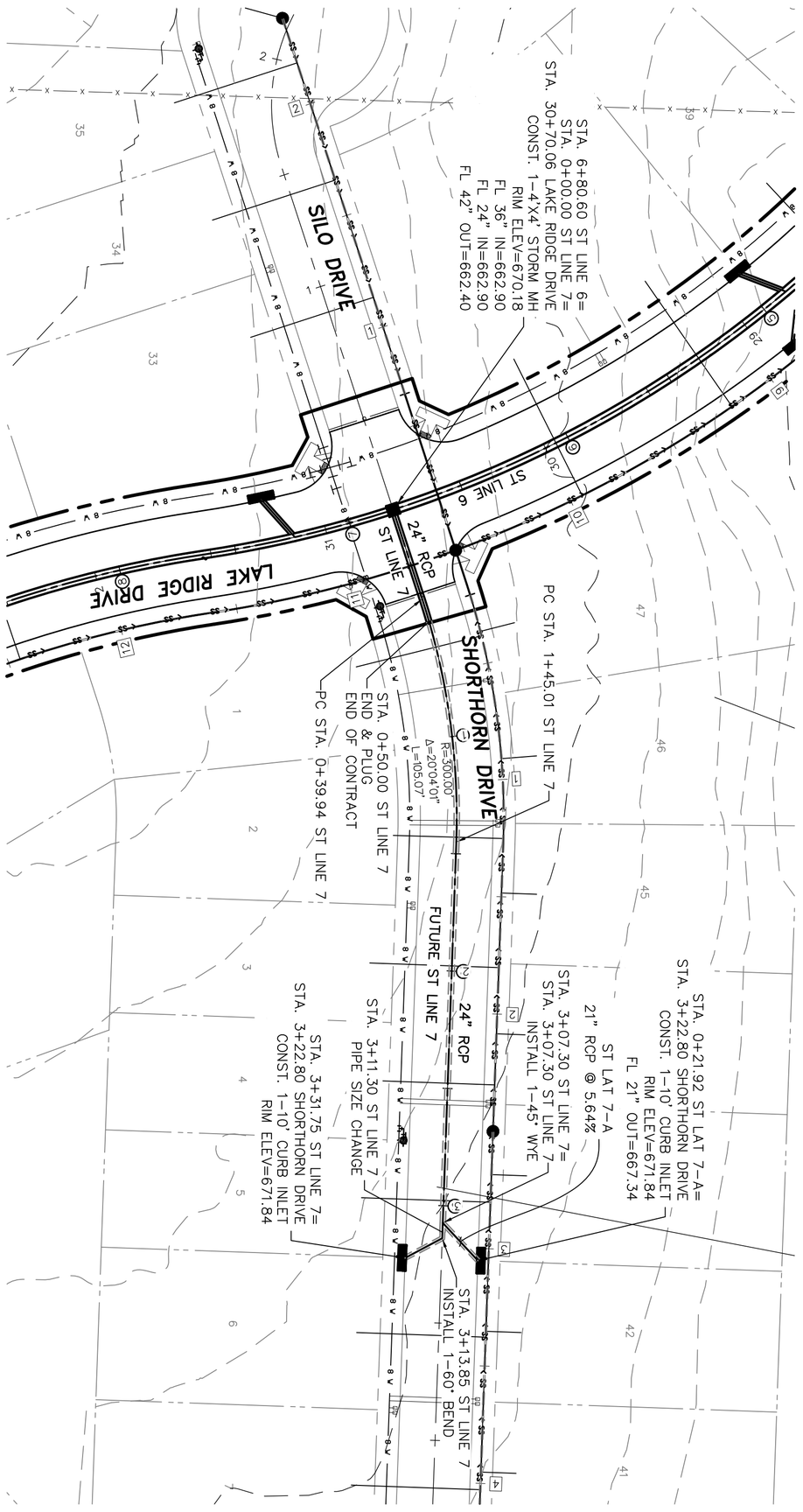
LEWISVILLE, TEXAS 75067 (972) 393-9800

BENCHMARK 1
WEST CORNER OF HDWL. SOUTH SIDE OF FM 455, 680' EAST OF THE N/W CORNER OF THE PROPERTY. ELEV.=679.82

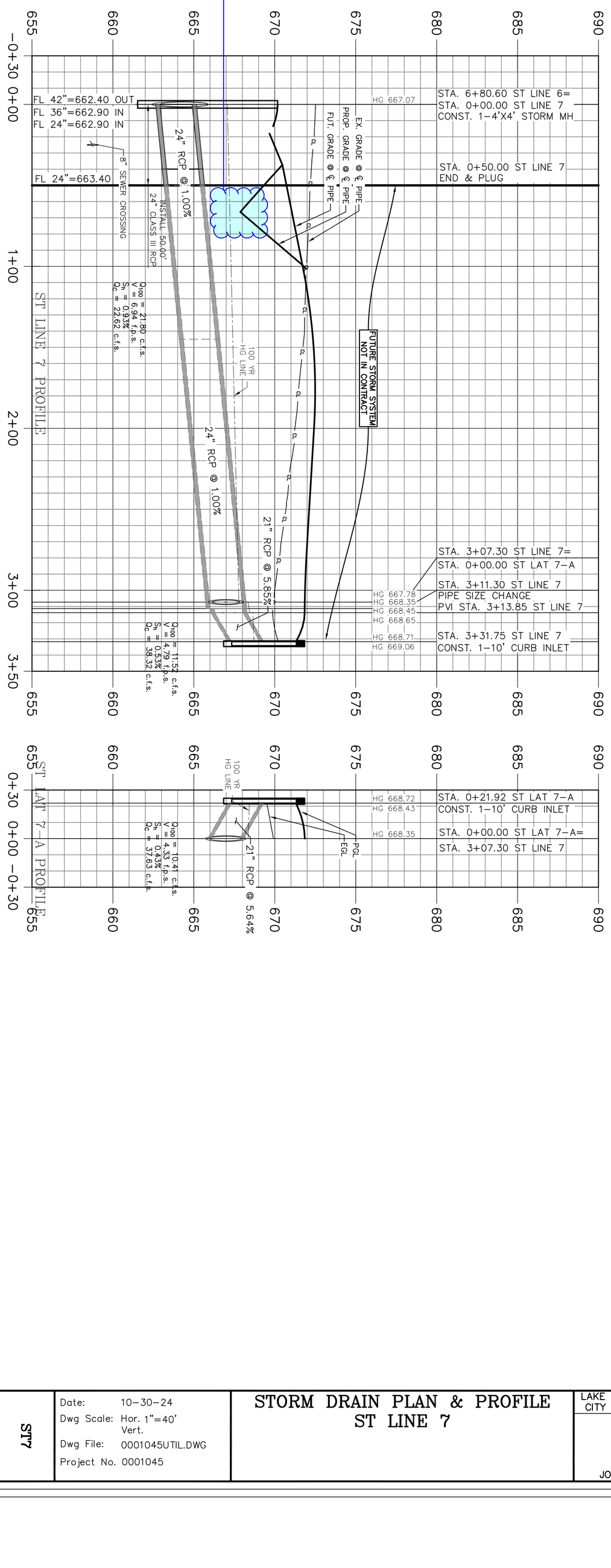
BENCHMARK 2
N/E CORNER OF INLET ON EAST SIDE OF INDIAN LANE, 150' SOUTH OF ELEM. SCHOOL DRIVE. ELEV.=653.07

N

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



The hydraulic grade line shall in no case be closer to the surface of the ground or street than one (1) foot. (10. 106.(d).(6))



LEGEND

- Ex. Water
- Ex. Fire Hydrant
- Ex. Sanitary Sewer
- Ex. Sewer Manhole
- Ex. Storm Sewer
- Ex. Overhead Utility
- Prop. Sanitary Sewer
- Prop. Sewer Manhole
- Prop. Water
- Prop. Fire Hydrant
- Prop. Storm Drain
- Street Stations
- Sewer Stations
- Water Stations
- Storm Stations
- FLOOD CROSS SECTION & 100-YR. ELEV. PER FLOOD REPORT

1140-667.57

THESE CONSTRUCTION PLANS WERE PREPARED UNDER THE RESPONSIBLE SUPERVISION OF F.E. MIDDLETON JR., REGISTERED PROFESSIONAL ENGINEER NO. 67449.

No.	DATE	REVISION	APPROV.

ST7

Date: 10-30-24
Dwg Scale: Hor. 1"=40'
Vert.
Dwg File: 0001045UTIL.DWG
Project No. 0001045

STORM DRAIN PLAN & PROFILE
ST LINE 7

LAKE RIDGE DRIVE - LAKE RIDGE PHASE 4
CITY OF SANGER DENTON COUNTY, TEXAS

SANGER TOWN CENTER LLC &
DUAL BOND HOLDINGS LLC &
HIEN & DUYET NGUYEN
101 FOREST BEND DRIVE
COPPELL, TEXAS 75019
JONATHAN WANG - 214-316-2256

STATE OF TEXAS
F. E. MIDDLETON, JR.
67449
REGISTERED
PROFESSIONAL ENGINEER

Middleton & Assoc, LLC.
CONSULTING CIVIL ENGINEERS & LAND PLANNERS
TBPE #F-10900

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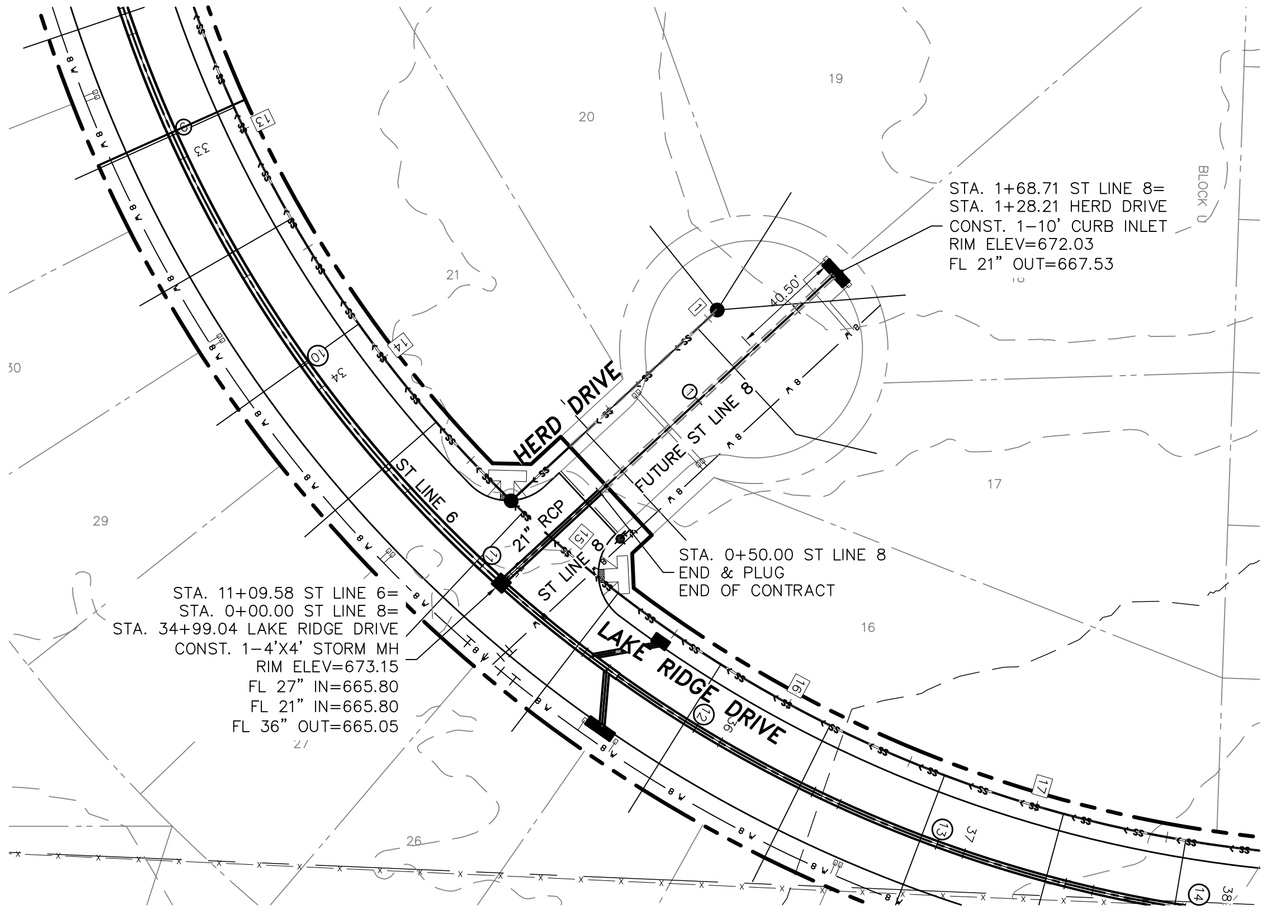


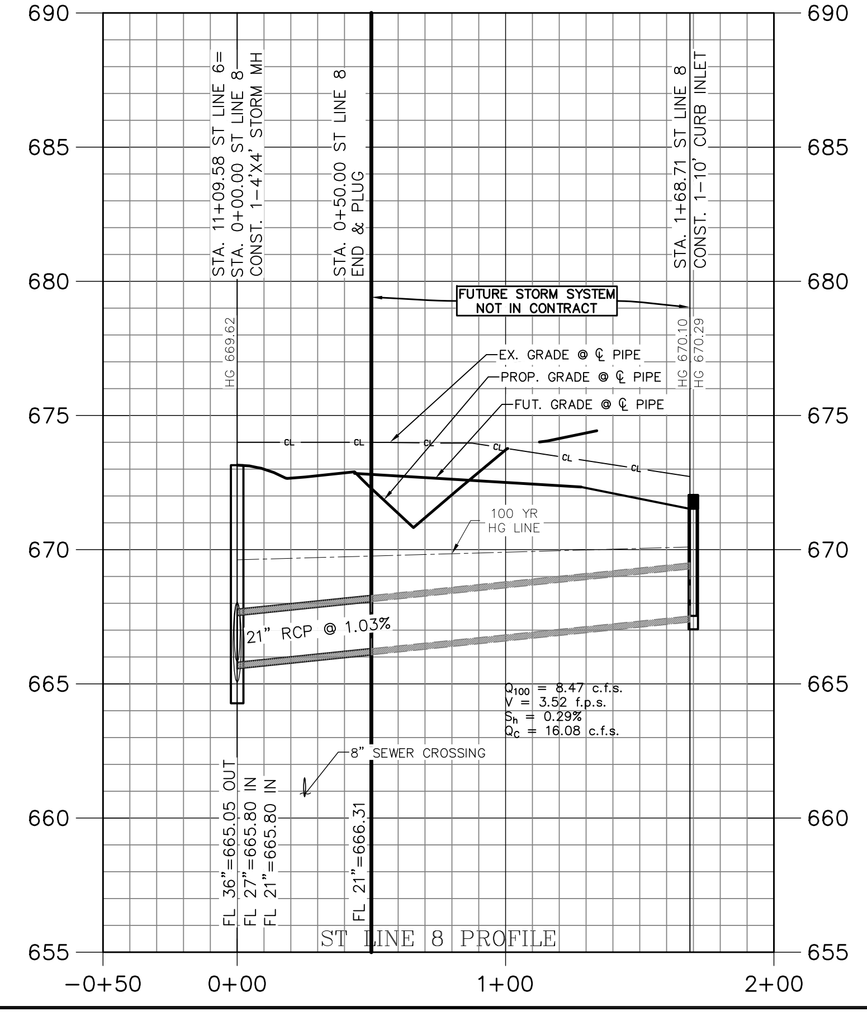
LEGEND

	Ex. Water
	Ex. Fire Hydrant
SS	Ex. Sanitary Sewer
	Ex. Sewer Manhole
	Ex. Storm Sewer
OH	Ex. Overhead Utility
SS	Prop. Sanitary Sewer
	Prop. Sewer Manhole
	Prop. Water
	Prop. Fire Hydrant
	Prop. Storm Drain
1	Street Stations
S	Sewer Stations
W	Water Stations
1	Storm Stations
1140-667.57	FLOOD CROSS SECTION & 100-YR. ELEV. PER FLOOD REPORT

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

BENCHMARK 1
WEST CORNER OF HDWL. SOUTH SIDE OF FM 455, 680' EAST OF THE N/W CORNER OF THE PROPERTY. ELEV.=679.82

BENCHMARK 2
N/E CORNER OF INLET ON EAST SIDE OF INDIAN LANE, 150' SOUTH OF ELEM. SCHOOL DRIVE. ELEV.=653.07



No.	DATE	REVISION	APPROV.

Middleton & Assoc, LLC
CONSULTING CIVIL ENGINEERS & LAND PLANNERS
TBPE #F-10900
2785 ROCKBROOK DRIVE, SUITE 105
LEWISVILLE, TEXAS 75067 (972) 393-9800

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STATE OF TEXAS — T. E. MIDDLETON, JR. — 61448 — REGISTERED PROFESSIONAL ENGINEER

LAKE RIDGE DRIVE – LAKE RIDGE PHASE 4
CITY OF SANGER DENTON COUNTY, TEXAS
SANGER TOWN CENTER LLC &
DUAL BOND HOLDINGS LLC &
HIEN & DUYET NGUYEN
101 FOREST BEND DRIVE
COPPELL, TEXAS 75019
JONATHAN WANG – 214-316-2256

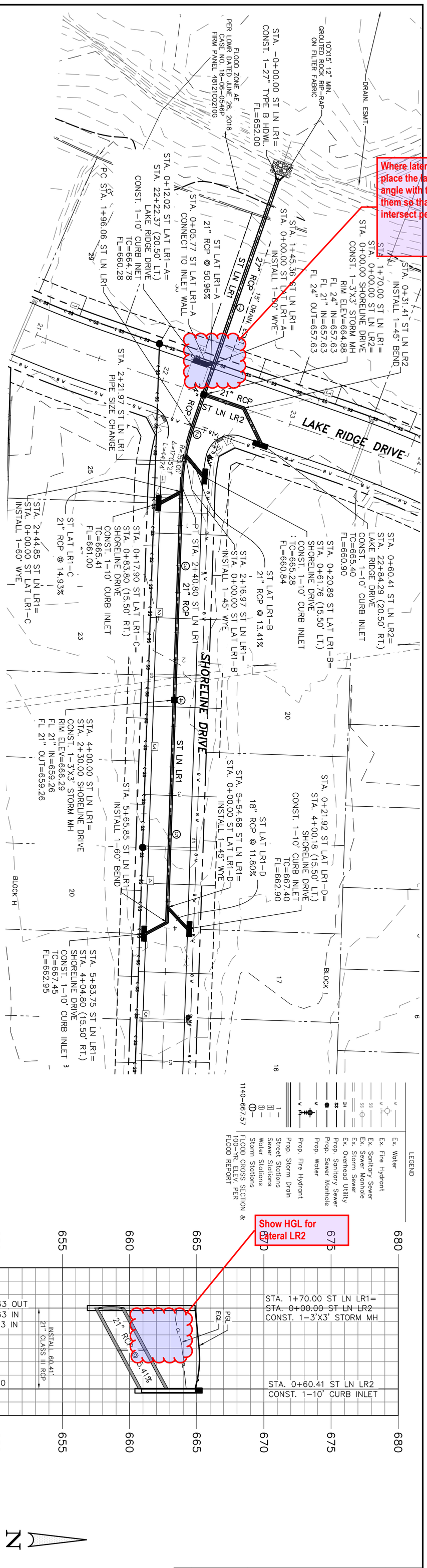
STORM DRAIN PLAN & PROFILE
ST LINE 8

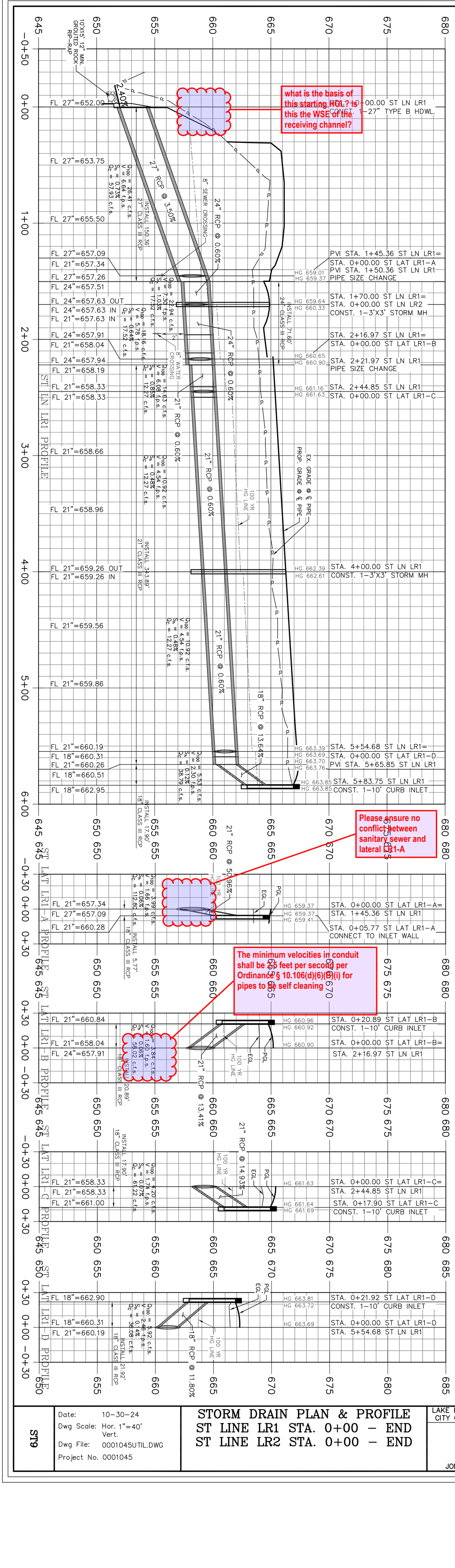
Date: 10-30-24
Dwg Scale: Hor. 1"=40'
Vert.
Dwg File: 0001045UTIL.DWG
Project No. 0001045

ST8

BENCHMARK 1
WEST CORNER OF HDWL. SOUTH SIDE OF FM 455, 680' EAST OF THE N/W CORNER OF THE PROPERTY. ELEV.=679.82

BENCHMARK 2
N/E CORNER OF INLET ON EAST SIDE OF INDIAN LANE. 150' SOUTH OF ELEM. SCHOOL DRIVE. ELEV.=653.07





THESE CONSTRUCTION PLANS WERE PREPARED UNDER THE RESPONSIBLE SUPERVISION OF F.E. MIDDLETON JR., REGISTERED PROFESSIONAL ENGINEER NO. 67449.

No.	DATE	REVISION	APPROV.

ST9

Date: 10-30-24
Dwg Scale: Hor. 1"=40'
Vert.
Dwg File: 0001045UTIL.DWG
Project No. 0001045

STORM DRAIN PLAN & PROFILE
ST LINE LR1 STA. 0+00 – END
ST LINE LR2 STA. 0+00 – END

LAKE RIDGE DRIVE – LAKE RIDGE PHASE 4
CITY OF SANGER DENTON COUNTY, TEXAS

SANGER TOWN CENTER LLC &
DUAL BOND HOLDINGS LLC &
HIEN & DUYET NGUYEN
101 FOREST BEND DRIVE
COPPELL, TEXAS 75019
JONATHAN WANG – 214-316-2256

STATE OF TEXAS
F. E. MIDDLETON, JR.
67449
REGISTERED PROFESSIONAL ENGINEER

Middleton & Assoc, LLC
CONSULTING CIVIL ENGINEERS & LAND PLANNERS
TBPE #F-10900

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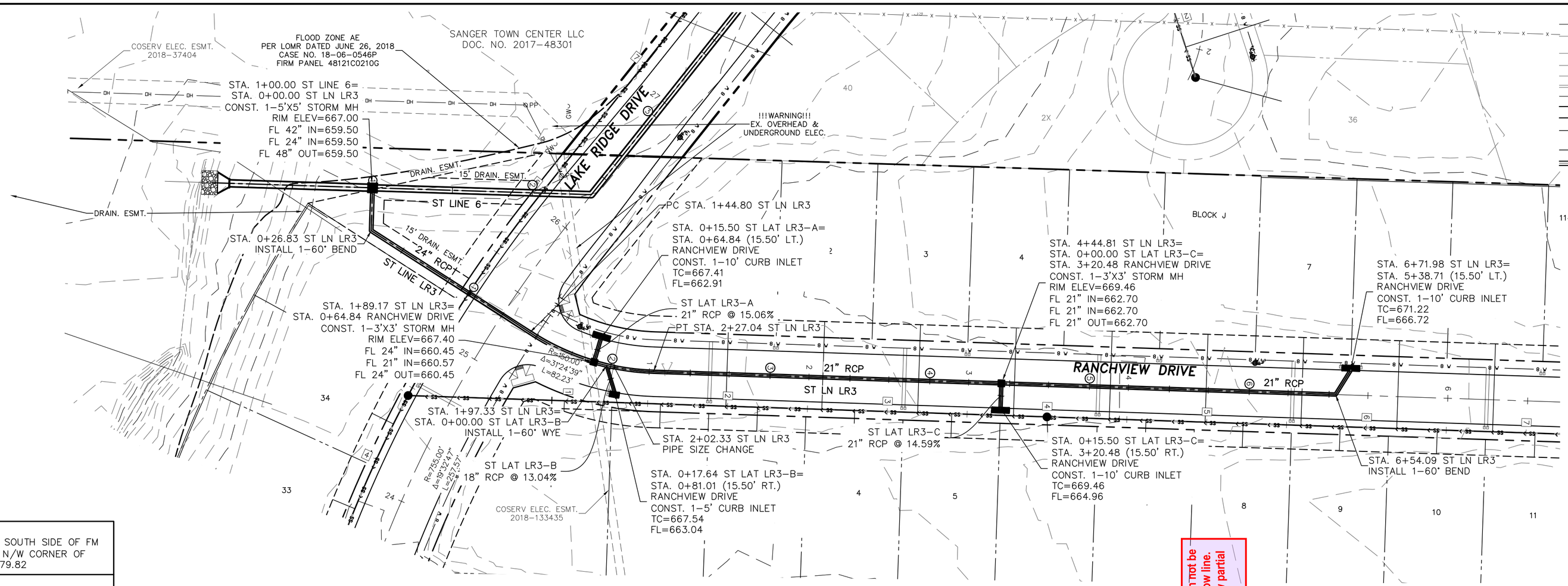
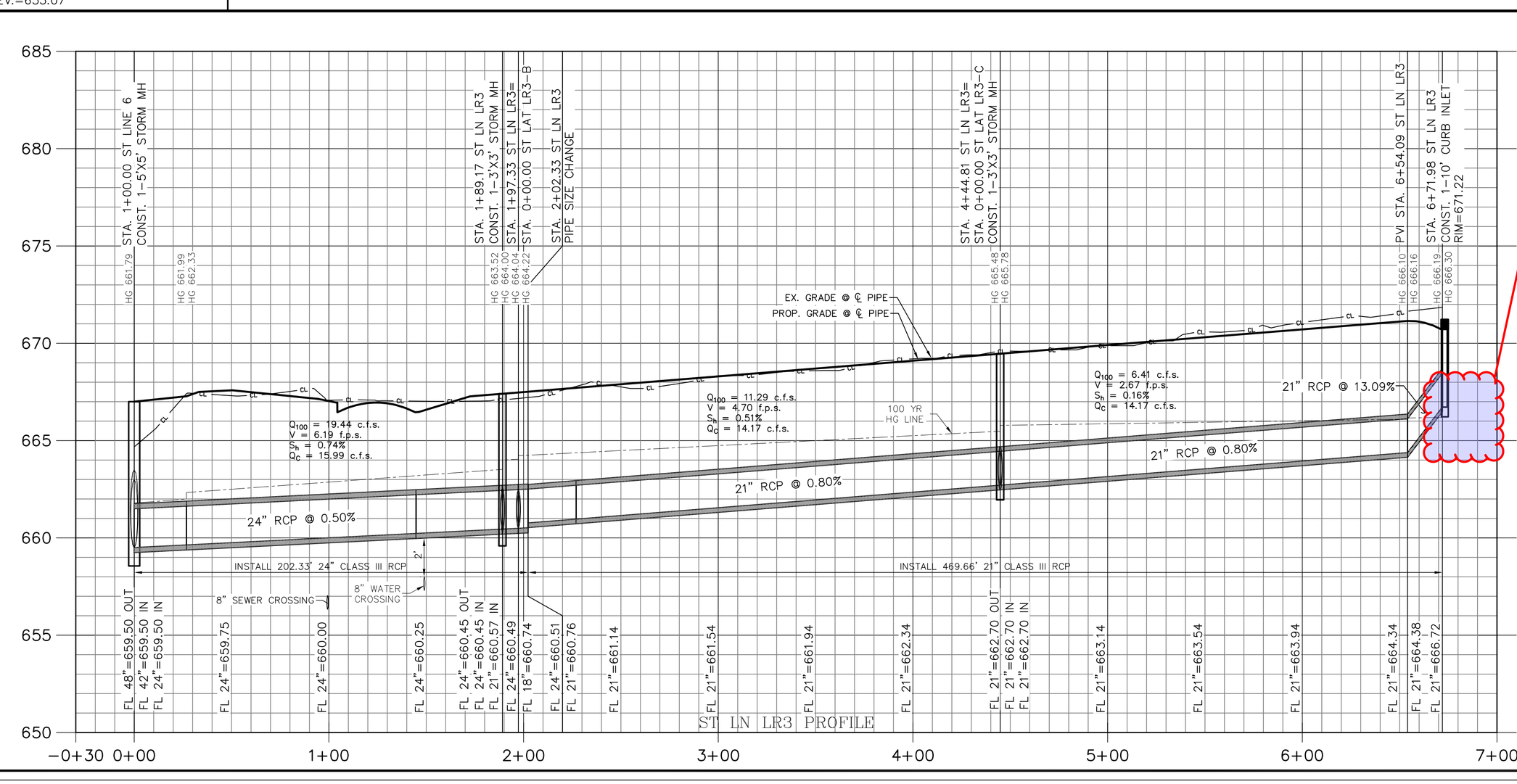


BENCHMARK 1

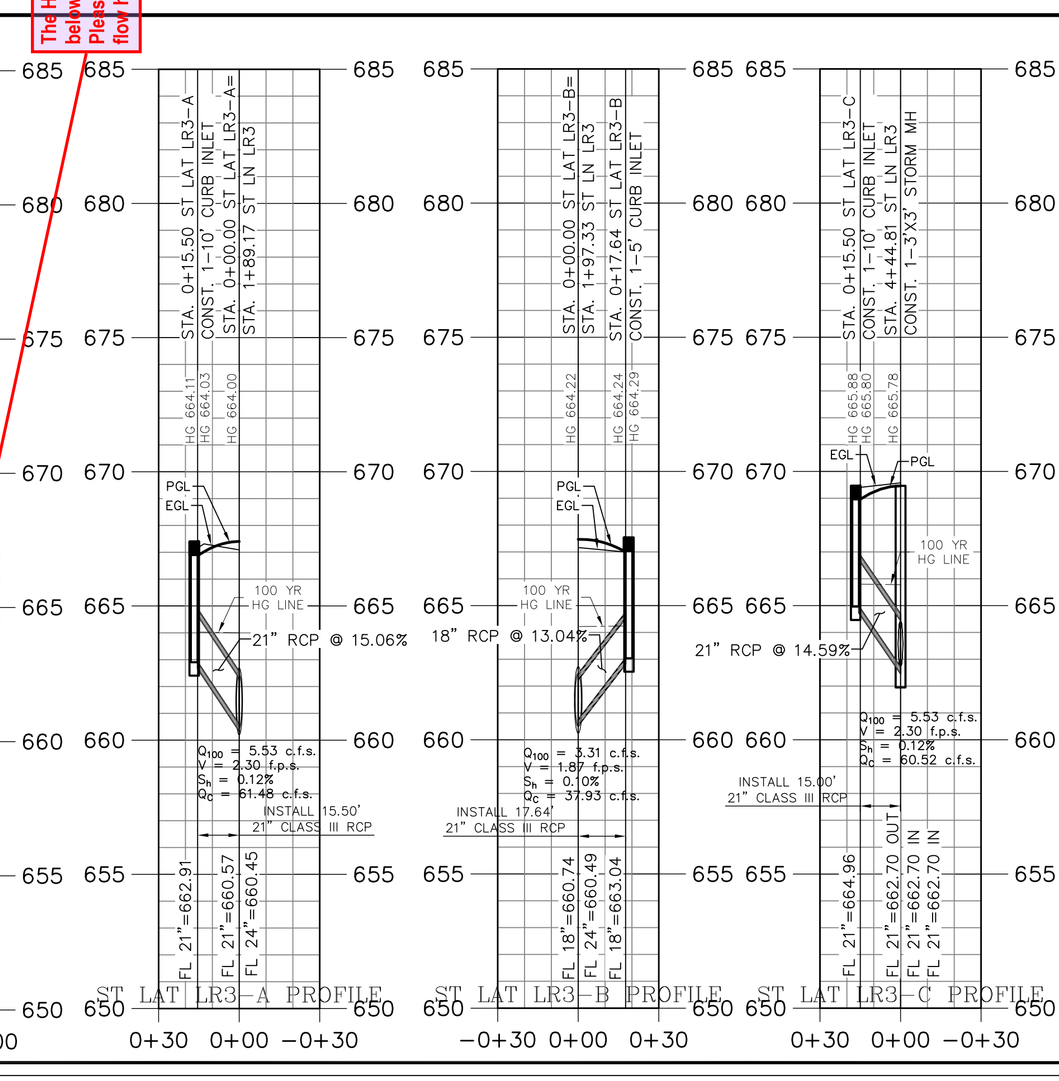
WEST CORNER OF HDWL. SOUTH SIDE OF FM 455, 680' EAST OF THE N/W CORNER OF THE PROPERTY. ELEV.=679.82

BENCHMARK 2

N/E CORNER OF INLET ON EAST SIDE OF INDIAN LANE, 150' SOUTH OF ELEM. SCHOOL DRIVE. ELEV.=653.07



The HGL can not be below the flow line. Please show partial flow here



No.	DATE	REVISION	APPROV.

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TBPE #F-10900
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LEWISVILLE, TEXAS 75067 (972) 393-9800

THESE CONSTRUCTION PLANS WERE PREPARED UNDER THE RESPONSIBLE SUPERVISION OF T. E. MIDDLETON, JR., REGISTERED PROFESSIONAL ENGINEER NO. 87144

STATE OF TEXAS — T. E. MIDDLETON, JR. — 87144 — REGISTERED PROFESSIONAL ENGINEER

LAKE RIDGE DRIVE – LAKE RIDGE PHASE 4
CITY OF SANGER DENTON COUNTY, TEXAS
SANGER TOWN CENTER LLC &
DUAL BOND HOLDINGS LLC &
HIEN & DUYET NGUYEN
101 FOREST BEND DRIVE
COPPELL, TEXAS 75019
JONATHAN WANG – 214-316-2256

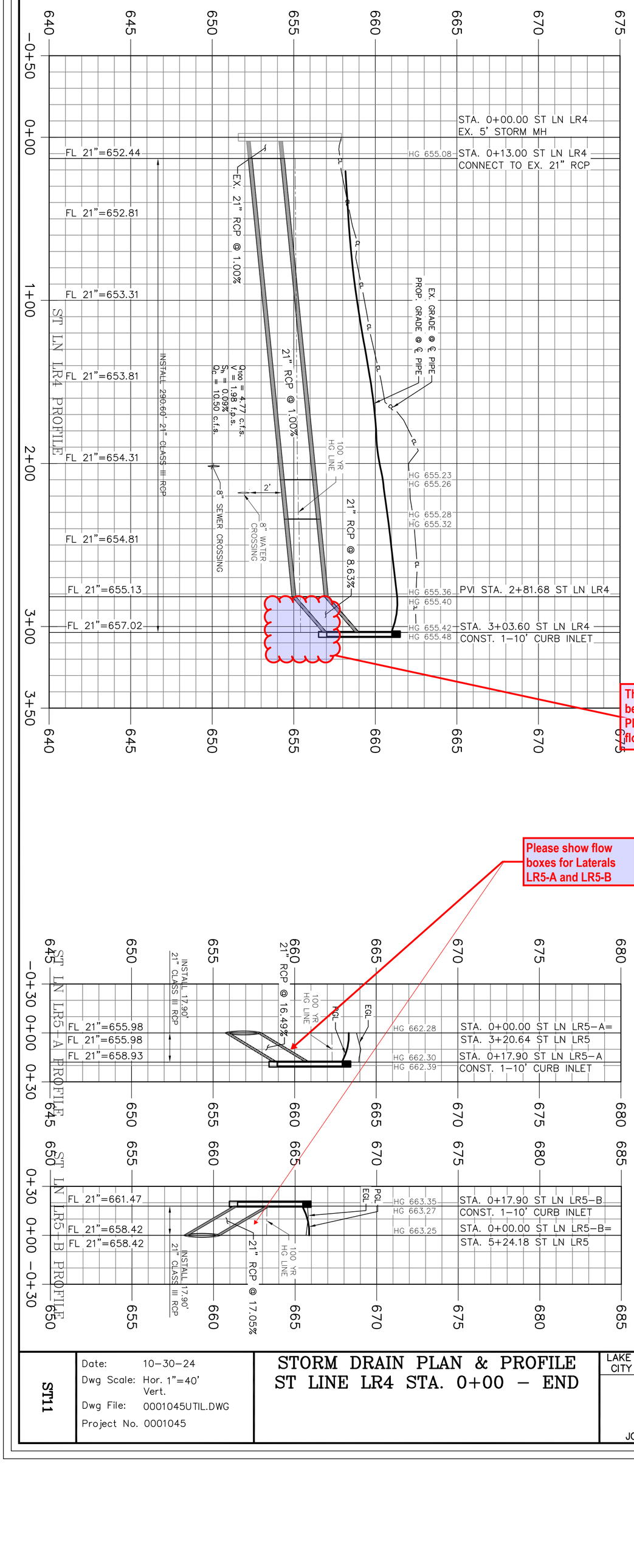
STORM DRAIN PLAN & PROFILE
ST LINE LR3 STA. 0+00 – END

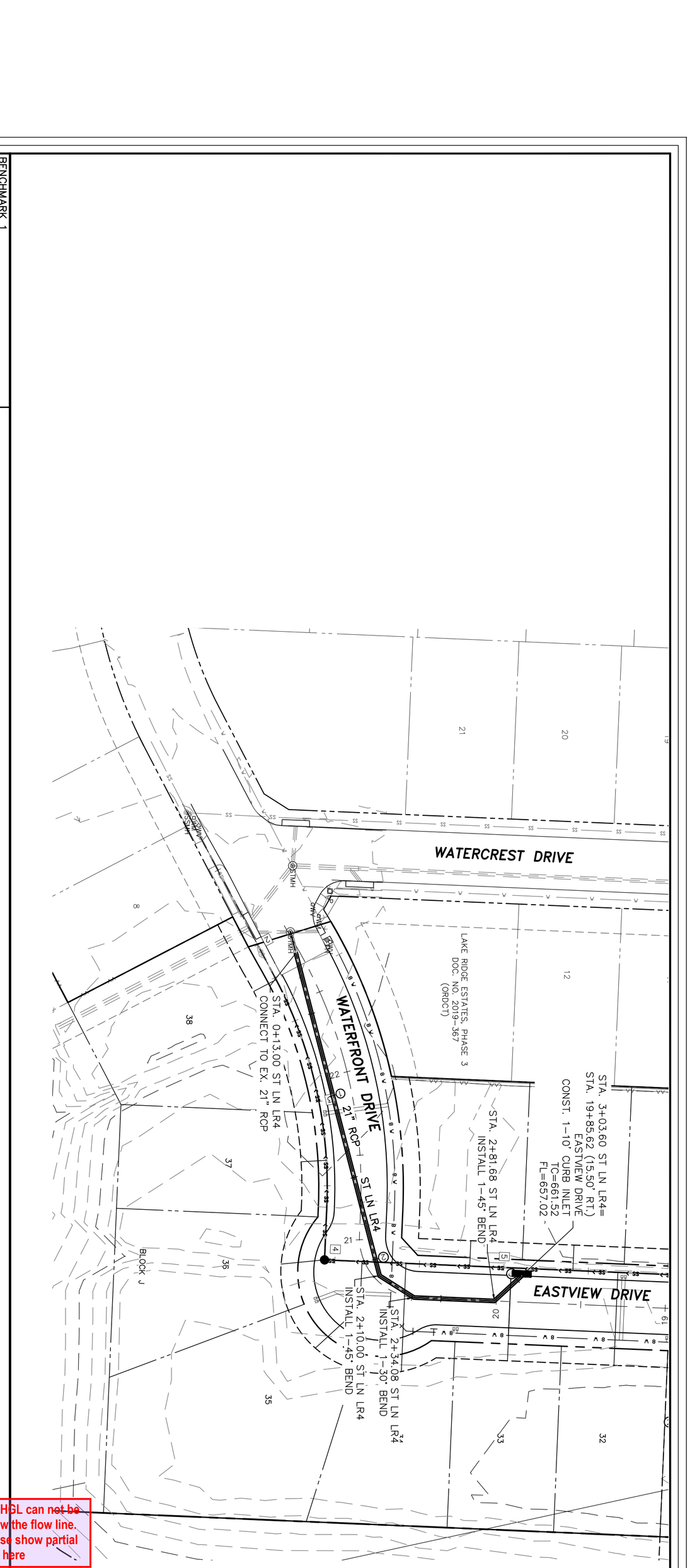
Date: 10-30-24
Dwg Scale: Hor. 1"=40'
Vert.
Dwg File: 0001045UTIL.DWG
Project No. 0001045

ST10

BENCHMARK 1
WEST CORNER OF HDWL. SOUTH SIDE OF FM 455, 680' EAST OF THE N/W CORNER OF THE PROPERTY. ELEV.=679.82

BENCHMARK 2
N/E CORNER OF INLET ON EAST SIDE OF INDIAN LANE, 150' SOUTH OF ELEM. SCHOOL DRIVE. ELEV.=653.07





Scale 1"=40'

LEGEND

- Ex. Water
- Ex. Fire Hydrant
- Ex. Sanitary Sewer
- Ex. Sanitary Sewer Manhole
- Ex. Storm Sewer
- Ex. Overhead Utility
- Prop. Sanitary Sewer
- Prop. Sewer Manhole
- Prop. Water
- Prop. Fire Hydrant
- Prop. Storm Drain
- Street Stations
- Sewer Stations
- Water Stations
- Storm Stations
- FLOOD CROSS SECTION & 100-YR. ELEV. PER FLOOD REPORT

THESE CONSTRUCTION PLANS WERE PREPARED UNDER THE RESPONSIBLE SUPERVISION OF F.E. MIDDLETON JR., REGISTERED PROFESSIONAL ENGINEER NO. 67449.

No.	DATE	REVISION	APPROV.

ST11

Date: 10-30-24
Dwg Scale: Hor. 1"=40' Vert.
Dwg File: 0001045UTIL.DWG
Project No. 0001045

STORM DRAIN PLAN & PROFILE ST LINE LR4 STA. 0+00 - END

LAKE RIDGE DRIVE - LAKE RIDGE PHASE 4
CITY OF SANGER DENTON COUNTY, TEXAS

SANGER TOWN CENTER LLC &
DUAL BOND HOLDINGS LLC &
HIEN & DUYET NGUYEN
101 FOREST BEND DRIVE
COPPELL, TEXAS 75019
JONATHAN WANG - 214-316-2256

STATE OF TEXAS
F. E. MIDDLETON, JR.
67449
REGISTERED PROFESSIONAL ENGINEER

Middleton & Assoc, LLC
CONSULTING CIVIL ENGINEERS & LAND PLANNERS
TBPE #F-10900
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2785 ROCKBROOK DRIVE, SUITE 105
LEWISVILLE, TEXAS 75067 (972) 393-9800

what is the basis of this starting HGL? Is this the WSE of the receiving channel?

The hydraulic grade line shall in no case be closer to the surface of the ground or street than one (1) foot per § 10.106(d)(6)(D)(ii)

The HGL can not be below the flow line. Please show partial flow here

Please provide manhole access for cleaning storm system

LEGEND

Ex. Water
Ex. Fire Hydrant
Ex. Sanitary Sewer
Ex. Sewer Manhole
Ex. Storm Sewer
Ex. Overhead Utility
Prop. Sanitary Sewer
Prop. Sewer Manhole
Prop. Water
Prop. Fire Hydrant
Prop. Storm Drain
Street Stations
Sewer Stations
Water Stations
Storm Stations
1140-667.57 FLOOD CROSS SECTION & 100-YR. ELEV. PER FLOOD REPORT

Scale 1"=40'

BENCHMARK 1
WEST CORNER OF HDWL SOUTH SIDE OF EM
455, 680' EAST OF THE N/W CORNER OF
THE PROPERTY. ELEV.=679.82

BENCHMARK 2
N/E CORNER OF INLET ON EAST SIDE OF
INDIAN LANE, 150' SOUTH OF ELEM. SCHOOL
DRIVE. ELEV.=653.07

ST LN LR5 PROFILE

FL 21"=654.00 — HG 659.24 — STA. 0+00.00 ST LN LR5
CONST. 1-21" TYPE B HDWL.
10'X15' 12" MIN. GROUTED ROCK RIP-RAP
2.00%
21" RCP @ 0.50%
FL 21"=654.25
FL 21"=654.50 — HG 660.20, HG 660.52
FL 21"=654.75
FL 21"=655.00
8" WATER CROSSING
2'
Q_{100} = 15.04 c.f.s.
V = 6.25 f.p.s.
S_h = 0.90%
Q_C = 11.20 c.f.s.
FL 21"=655.25
FL 21"=655.34 OUT — HG 661.90 — STA. 2+67.08 ST LN LR5
FL 21"=655.34 IN — HG 662.28 — CONST. 1-3'X3' STORM MH
FL 21"=655.73
FL 21"=655.98 — HG 662.76 — STA. 3+20.64 ST LN LR5=
FL 21"=655.98 — HG 663.25 — STA. 0+00.00 ST LN LR5-A
FL 21"=656.33
EX. GRADE @ ℄ PIPE
PROP. GRADE @ ℄ PIPE
FL 21"=656.93
Q_{100} = 9.88 c.f.s.
V = 4.11 f.p.s.
S_h = 0.39%
Q_C = 17.36 c.f.s.
INSTALL 946.20' 21" CLASS III RCP
21" RCP @ 1.20%
100 YR HG LINE
FL 21"=657.53
FL 21"=658.13
FL 21"=658.42 — HG 664.05 — STA. 5+24.18 ST LN LR5=
FL 21"=658.42 — HG 664.28 — STA. 0+00.00 ST LN LR5-B
FL 21"=658.73
FL 21"=659.33
FL 21"=659.93
FL 21"=660.53
21" RCP @ 1.20%
Q_{100} = 5.61 c.f.s.
V = 2.33 f.p.s.
S_h = 0.13%
Q_C = 17.36 c.f.s.
8" SEWER CROSSING
FL 21"=661.13
FL 21"=661.73
FL 21"=662.33
FL 21"=662.93
21" RCP @ 14.82%
FL 21"=663.22 — HG 664.71, HG 664.74 — PVI STA. 9+24.28 ST LN LR5
FL 21"=666.47 — HG 664.77, HG 664.86 — STA. 9+46.20 ST LN LR5
CONST. 1-10' CURB INLET

10'X15' 12" MIN. GROUTED ROCK RIP-RAP ON FILTER FABRIC
REMOVE & DISPOSE OF 50 L.F. OF BARBED WIRE FENCE
STA. 0+00.00 ST LN LR5= FL=654.00
CONST. 1-21" TYPE B HDWL.
15' DRAIN. ESMT.
21" RCP
ST LN LR5
STA. 1+10.80 ST LN LR5 INSTALL 1-60° BEND
FLOOD ZONE AE PER LOMR DATED JUNE 26, 2018 CASE NO. 18-06-0546P FIRM PANEL 48121C0210G
HIEN & DUYET NGUYEN DOC. NO. 2016-27020
STA. 2+67.08 ST LN LR5= STA. 18+89.86 EASTVIEW DRIVE CONST. 1-3'X3' STORM MH RIM ELEV=662.75 FL 21" IN=655.34 FL 21" OUT=655.34
ST LN LR4
STA. 0+17.90 ST LN LR5-A= STA. 18+27.36 (15.50' LT.) EASTVIEW DRIVE CONST. 1-10' CURB INLET TC=663.43 FL=658.93
ST LN LR5-A 21" RCP @ 16.49%
STA. 3+20.64 ST LN LR5= STA. 0+00.00 ST LN LR5-A INSTALL 1-60° WYE
STA. 0+17.90 ST LN LR5-B= STA. 16+23.82 (15.50' RT.) EASTVIEW DRIVE CONST. 1-10' CURB INLET TC=665.97 FL=661.47
ST LN LR5-B 21" RCP @ 17.05%
STA. 5+24.18 ST LN LR5= STA. 0+00.00 ST LN LR5-B INSTALL 1-60° WYE
EASTVIEW DRIVE
ST LN LR5
BLOCK G
BLOCK J
21" RCP
STA. 9+46.20 ST LN LR5= STA. 12+17.16 (15.50' LT.) EASTVIEW DRIVE CONST. 1-10' CURB INLET TC=670.97 FL=666.47
LAKEVIEW DRIVE
STA. 9+24.28 ST LN LR5 INSTALL 1-60° BEND

THESE CONSTRUCTION PLANS WERE PREPARED UNDER THE RESPONSIBLE SUPERVISION OF F.E. MIDDLETON JR., REGISTERED PROFESSIONAL ENGINEER NO. 67449.

No.	DATE	REVISION	APPROV.

ST12

Date: 10-30-24
Dwg Scale: Hor. 1"=40' Vert.
Dwg File: 0001045UTIL.DWG
Project No. 0001045

STORM DRAIN PLAN & PROFILE ST LINE LR5 STA. 0+00 – END

LAKE RIDGE DRIVE – LAKE RIDGE PHASE 4
CITY OF SANGER DENTON COUNTY, TEXAS
SANGER TOWN CENTER LLC &
DUAL BOND HOLDINGS LLC &
HIEN & DUYET NGUYEN
101 FOREST BEND DRIVE
COPPELL, TEXAS 75019
JONATHAN WANG – 214-316-2256

STATE OF TEXAS F. E. MIDDLETON, JR. 67449 REGISTERED PROFESSIONAL ENGINEER

Middleton & Assoc, LLC
CONSULTING CIVIL ENGINEERS & LAND PLANNERS
TBPE #F-10900
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2785 ROCKBROOK DRIVE, SUITE 105
LEWISVILLE, TEXAS 75067 (972) 393-9800

6020A STANDARD DRAWING NO.

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.

6020B STANDARD DRAWING NO.

CURB INLET

CROSS SECTION & INLET THROAT

North Central Texas Council of Governments

STANDARD SPECIFICATION REFERENCE 702 | DATE OCT. '04 | STANDARD DRAWING NO. 6020B

6020C STANDARD DRAWING NO.

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 F	BARS A	BARS B	BARS G	BARS F	BARS F	BARS F	BARS A	BARS B	BARS G	BARS F	BARS F	BARS F	BARS A	BARS B	BARS G	BARS M	BARS N	BARS F	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.

6020D STANDARD DRAWING NO.

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.

6020E STANDARD DRAWING NO.

CURB INLET

SUMMARY OF QUANTITIES

North Central Texas Council of Governments

STANDARD SPECIFICATION REFERENCE 702 | DATE OCT. '04 | STANDARD DRAWING NO. 6020E

NOTES:

1. FOR MAINS 42" DIAMETER AND LARGER LARGER, 1/8 Bc SHALL BE TAKEN AS 6".
2. Bc = OUTSIDE DIAMETER OF PIPE
3. Bd = TRENCH WIDTH

3020 STANDARD DRAWING NO.

EMBEDMENT

CLASS "B", "B+", & "B-1"

North Central Texas Council of Governments

STANDARD SPECIFICATION REFERENCE 504.5 | DATE OCT. '04 | STANDARD DRAWING NO. 3020

DETAIL OF CONCRETE COLLAR
FOR PIPE CONNECTIONS
N.T.S.

THESE CONSTRUCTION PLANS WERE PREPARED UNDER THE RESPONSIBLE SUPERVISION OF F.E. MIDDLETON JR., REGISTERED PROFESSIONAL ENGINEER NO. 67449.

No.	DATE	REVISION	APPROV.

Middleton & Assoc, LLC.
CONSULTING CIVIL ENGINEERS & LAND PLANNERS
TBPE #F-10900
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2785 ROCKBROOK DRIVE, SUITE 105
LEWISVILLE, TEXAS 75067 (972) 393-9800

STATE OF TEXAS
F. E. MIDDLETON, JR.
67449
PROFESSIONAL ENGINEER

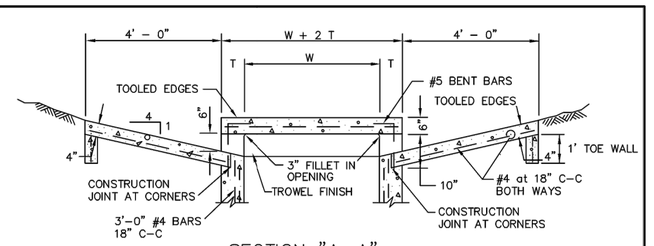
LAKE RIDGE DRIVE – LAKE RIDGE PHASE 4
CITY OF SANGER DENTON COUNTY, TEXAS

SANGER TOWN CENTER LLC &
DUAL BOND HOLDINGS LLC &
HIEN & DUYET NGUYEN
101 FOREST BEND DRIVE
COPPELL, TEXAS 75019
JONATHAN WANG – 214-316-2256

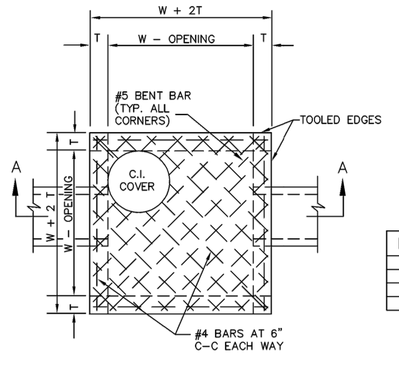
STORM DRAIN DETAILS

Date: 10-30-24
Dwg Scale: Hor. NTS
Vert.
Dwg File: 0001045DT-STM.DWG
Project No. 0001045

DT-ST1



SECTION "A–A"
N.T.S.



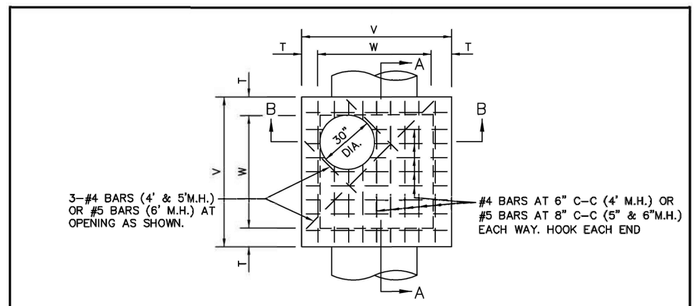
INLET SIZE	T	W
2' SQUARE	7"	2'–0"
4' SQUARE	7"	4'–0"
5' SQUARE	8"	5'–0"
6' SQUARE	9"	6'–0"

PLAN OF TOP SLAB
N.T.S.

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.

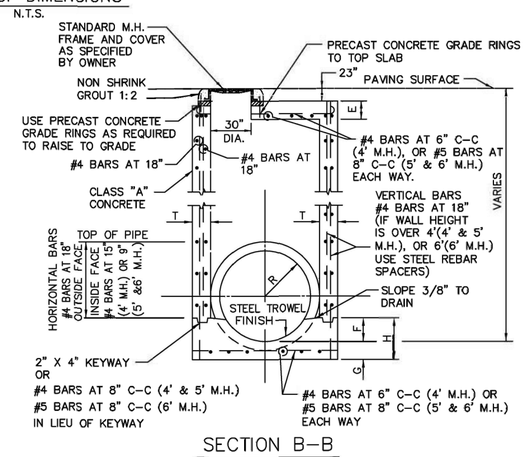
DROP INLET	North Central Texas Council of Governments	STANDARD SPECIFICATION REFERENCE 702	
2', 4', 5' OR 6' SQUARE		DATE OCT. '04	STANDARD DRAWING NO. 6040



PLAN
N.T.S.

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"

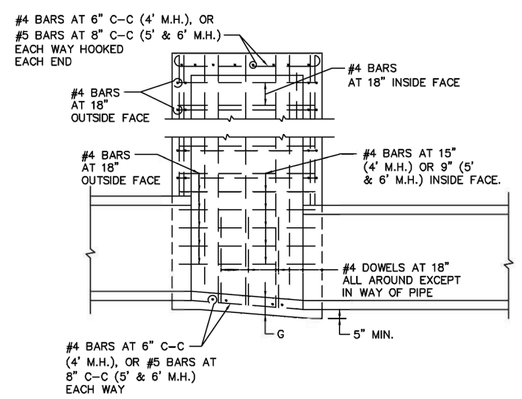
TABLE OF DIMENSIONS
N.T.S.



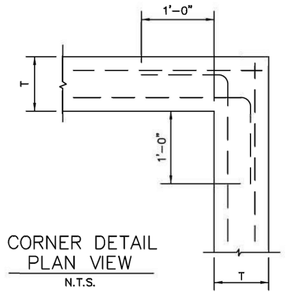
SECTION B–B
N.T.S.

STORM WATER MANHOLE	North Central Texas Council of Governments	STANDARD SPECIFICATION REFERENCE 502.1.4.1*	
4', 5', OR 6' SQUARE		DATE OCT. '04	STANDARD DRAWING NO. 6010A

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



SECTION A–A
N.T.S.



CORNER DETAIL PLAN VIEW
N.T.S.

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	North Central Texas Council of Governments	STANDARD SPECIFICATION REFERENCE 502.1.4.1*	
4', 5', OR 6' SQUARE		DATE OCT. '04	STANDARD DRAWING NO. 6010B

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

No.	DATE	REVISION	APPROV.

Middleton & Assoc, LLC
CONSULTING CIVIL ENGINEERS & LAND PLANNERS
TBPE #F–10900
2785 ROCKBROOK DRIVE, SUITE 105
LEWISVILLE, TEXAS 75067 (972) 393–9800
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THESE CONSTRUCTION PLANS WERE PREPARED UNDER THE RESPONSIBLE SUPERVISION OF T. E. MIDDLETON, JR., REGISTERED PROFESSIONAL ENGINEER NO. 61948

STATE OF TEXAS — T. E. MIDDLETON, JR. — 61948 — REGISTERED PROFESSIONAL ENGINEER

LAKE RIDGE DRIVE – LAKE RIDGE PHASE 4
CITY OF SANGER DENTON COUNTY, TEXAS
SANGER TOWN CENTER LLC &
DUAL BOND HOLDINGS LLC &
HIEN & DUYET NGUYEN
101 FOREST BEND DRIVE
COPPELL, TEXAS 75019
JONATHAN WANG – 214–316–2256

STORM DRAIN DETAILS

Date: 10–30–24
Dwg Scale: Hor. NTS
Vert.
Dwg File: 0001045DT–STM.DWG
Project No. 0001045

DT–ST2

DISCLAIMER:
The use of this standard is governed by the "Texas Engineering Practice Act." No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

DATE:
FILE:

TABLE OF VARIABLE DIMENSIONS AND QUANTITIES FOR ONE HEADWALL (5)

Slope	Dia of Pipe (D)	Values for One Pipe: W	X	Y	L	Reinf (Lbs)	Conc (CY) (1)	Values to be Added for Each Addt'l Pipe: X and W	Reinf (Lbs)	Conc (CY) (1)
2:1	12"	4' - 7 ½"	2' - 6"	2' - 10"	3' - 3 ¼"	88	0.6	1' - 9"	20	0.2
	15"	5' - 5 ¾"	2' - 9 ½"	3' - 4"	3' - 10 ¼"	103	0.7	2' - 2"	24	0.3
	18"	6' - 4 ¼"	3' - 1"	3' - 10"	4' - 5"	124	0.9	2' - 8"	32	0.3
	21"	7' - 2 ¾"	3' - 4 ½"	4' - 4"	5' - 0"	143	1.1	3' - 1"	43	0.4
	24"	8' - 2 ½"	3' - 9 ½"	4' - 10"	5' - 7"	164	1.3	3' - 7"	50	0.5
	27"	9' - 1"	4' - 1"	5' - 4"	6' - 2"	179	1.5	3' - 11"	56	0.6
	30"	9' - 11 ½"	4' - 4 ½"	5' - 10"	6' - 8 ¾"	203	1.7	4' - 4"	65	0.8
	33"	10' - 10"	4' - 8"	6' - 4"	7' - 3 ¾"	224	2.0	4' - 8"	71	0.9
	36"	11' - 8 ¼"	4' - 11 ½"	6' - 10"	7' - 10 ¾"	249	2.2	5' - 1"	81	1.0
	42"	13' - 5 ¼"	5' - 6 ½"	7' - 10"	9' - 0 ½"	298	2.8	5' - 10"	97	1.3
	48"	15' - 9"	6' - 1 ½"	9' - 4"	10' - 9 ¼"	360	3.8	6' - 7"	117	1.7
	54"	17' - 5 ¾"	6' - 8 ½"	10' - 4"	11' - 11 ¼"	427	4.5	7' - 6"	151	2.1
	60"	19' - 2 ¾"	7' - 3 ½"	11' - 4"	13' - 1"	481	5.3	8' - 3"	174	2.5
	66"	20' - 11 ½"	7' - 10 ½"	12' - 4"	14' - 3"	544	6.2	8' - 9"	194	2.9
	72"	22' - 8 ½"	8' - 5 ½"	13' - 4"	15' - 4 ¾"	601	7.1	9' - 4"	213	3.3
3:1	12"	6' - 3"	2' - 6"	4' - 3"	4' - 11"	118	0.8	1' - 9"	22	0.2
	15"	7' - 5"	2' - 9 ½"	5' - 0"	5' - 9 ¼"	137	1.1	2' - 2"	28	0.3
	18"	8' - 6 ¾"	3' - 1"	5' - 9"	6' - 7 ¾"	170	1.3	2' - 8"	37	0.5
	21"	9' - 8 ¾"	3' - 4 ½"	6' - 6"	7' - 6"	195	1.6	3' - 1"	48	0.6
	24"	11' - 0"	3' - 9 ½"	7' - 3"	8' - 4 ½"	227	2.0	3' - 7"	58	0.7
	27"	12' - 2"	4' - 1"	8' - 0"	9' - 2 ¾"	251	2.3	3' - 11"	67	0.8
	30"	13' - 4"	4' - 4 ½"	8' - 9"	10' - 1 ¼"	293	2.7	4' - 4"	77	1.0
	33"	14' - 5 ¾"	4' - 8"	9' - 6"	10' - 11 ¾"	318	3.1	4' - 8"	84	1.2
	36"	15' - 7 ¾"	4' - 11 ½"	10' - 3"	11' - 10"	351	3.5	5' - 1"	96	1.4
	42"	17' - 11 ½"	5' - 6 ½"	11' - 9"	13' - 6 ¾"	432	4.5	5' - 10"	119	1.7
	48"	21' - 1 ¾"	6' - 1 ½"	14' - 0"	16' - 2"	537	6.1	6' - 7"	146	2.3
	54"	23' - 5 ½"	6' - 8 ½"	15' - 6"	17' - 10 ¾"	630	7.3	7' - 6"	186	2.9
	60"	25' - 9 ¼"	7' - 3 ½"	17' - 0"	19' - 7 ½"	719	8.7	8' - 3"	219	3.4
	66"	28' - 1"	7' - 10 ½"	18' - 6"	21' - 4 ¼"	811	10.1	8' - 9"	242	3.9
	72"	30' - 4 ¾"	8' - 5 ½"	20' - 0"	23' - 1 ¼"	924	11.7	9' - 4"	272	4.4
4:1	12"	7' - 10 ¾"	2' - 6"	5' - 8"	6' - 6 ½"	148	1.1	1' - 9"	24	0.3
	15"	9' - 4"	2' - 9 ½"	6' - 8"	7' - 8 ½"	181	1.5	2' - 2"	32	0.4
	18"	10' - 9 ½"	3' - 1"	7' - 8"	8' - 10 ¼"	221	1.9	2' - 8"	42	0.5
	21"	12' - 2 ¾"	3' - 4 ½"	8' - 8"	10' - 0"	260	2.3	3' - 1"	57	0.7
	24"	13' - 9 ½"	3' - 9 ½"	9' - 8"	11' - 2"	301	2.8	3' - 7"	67	0.9
	27"	15' - 3"	4' - 1"	10' - 8"	12' - 3 ¾"	334	3.3	3' - 11"	77	1.0
	30"	16' - 8 ¼"	4' - 4 ½"	11' - 8"	13' - 5 ¾"	385	3.8	4' - 4"	89	1.3
	33"	18' - 1 ¾"	4' - 8"	12' - 8"	14' - 7 ½"	425	4.5	4' - 8"	101	1.4
	36"	19' - 7"	4' - 11 ½"	13' - 8"	15' - 9 ¼"	472	5.1	5' - 1"	115	1.7
	42"	22' - 5 ¾"	5' - 6 ½"	15' - 8"	18' - 1"	583	6.5	5' - 10"	141	2.1
	48"	26' - 6 ¼"	6' - 1 ½"	18' - 8"	21' - 6 ¾"	730	8.9	6' - 7"	175	2.8
	54"	29' - 5"	6' - 8 ½"	20' - 8"	23' - 10 ¼"	875	10.7	7' - 6"	226	3.6
	60"	32' - 3 ¾"	7' - 3 ½"	22' - 8"	26' - 2"	996	12.7	8' - 3"	264	4.3
	66"	35' - 2 ½"	7' - 10 ½"	24' - 8"	28' - 5 ¾"	1,140	14.9	8' - 9"	300	4.9
	72"	38' - 1 ¼"	8' - 5 ½"	26' - 8"	30' - 9 ½"	1,297	17.3	9' - 4"	334	5.6
6:1	12"	11' - 2"	2' - 6"	8' - 6"	9' - 9 ¾"	224	1.9	1' - 9"	28	0.4
	15"	13' - 2 ¼"	2' - 9 ½"	10' - 0"	11' - 6 ½"	268	2.5	2' - 2"	37	0.5
	18"	15' - 2 ½"	3' - 1"	11' - 6"	13' - 3 ¼"	330	3.2	2' - 8"	50	0.7
	21"	17' - 2 ¾"	3' - 4 ½"	13' - 0"	15' - 0 ¼"	387	3.9	3' - 1"	69	0.9
	24"	19' - 4 ½"	3' - 9 ½"	14' - 6"	16' - 9"	453	4.8	3' - 7"	80	1.2
	27"	21' - 4 ¾"	4' - 1"	16' - 0"	18' - 5 ¾"	512	5.7	3' - 11"	96	1.4
	30"	23' - 5 ¼"	4' - 4 ½"	17' - 6"	20' - 2 ½"	593	6.7	4' - 4"	110	1.7
	33"	25' - 5 ½"	4' - 8"	19' - 0"	21' - 11 ¼"	675	7.8	4' - 8"	127	2.0
	36"	27' - 5 ¾"	4' - 11 ½"	20' - 6"	23' - 8"	735	9.0	5' - 1"	144	2.3
	42"	31' - 6 ¼"	5' - 6 ½"	23' - 6"	27' - 1 ½"	922	11.5	5' - 10"	179	3.0
	48"	37' - 3 ½"	6' - 1 ½"	28' - 0"	32' - 4"	1,191	15.9	6' - 7"	231	4.0
	54"	41' - 4 ¼"	6' - 8 ½"	31' - 0"	35' - 9 ½"	1,424	19.2	7' - 6"	300	5.0
	60"	45' - 4 ¾"	7' - 3 ½"	34' - 0"	39' - 3"	1,631	22.9	8' - 3"	353	6.0

ELEVATION
(Showing dimensions.)

BARS V

BARS CL
(Length = 2'-5")

TABLE OF REINFORCING STEEL (5)

Bar	Size	Spa	No.
A	#4	1' - 0"	~
B	#3	1' - 6"	~
C	#4	1' - 0"	~
D	#3	1' - 0"	~
E	#5	~	4
F	#5	~	~
G	#3	~	2
S	#4	~	6
V	#4	1' - 0"	~
W	#5	~	4

TABLE OF CONSTANT DIMENSIONS

Dia of Pipe (D)	G	K (4)	H
12"	0' - 9"	1' - 0"	2' - 0"
15"	0' - 11"	1' - 0"	2' - 3"
18"	1' - 2"	1' - 0"	2' - 6"
21"	1' - 4"	1' - 0"	2' - 9"
24"	1' - 7"	1' - 0"	3' - 0"
27"	1' - 8"	1' - 0"	3' - 3"
30"	1' - 10"	1' - 0"	3' - 6"
33"	1' - 11"	1' - 0"	3' - 9"
36"	2' - 1"	1' - 0"	4' - 0"
42"	2' - 4"	1' - 0"	4' - 6"
48"	2' - 7"	1' - 3"	5' - 3"
54"	3' - 0"	1' - 3"	5' - 9"
60"	3' - 3"	1' - 3"	6' - 3"
66"	3' - 3"	1' - 3"	6' - 9"
72"	3' - 4"	1' - 3"	7' - 3"

BARS B and B1-x

PLAN

TYPICAL WING ELEVATION

SECTION A-A

(1) Quantities shown are for concrete pipe and will increase slightly for metal pipe installations.

(2) For vehicle safety, construct curbs no more than 3" above finished grade. Reduce curb heights, if necessary, to meet these requirements. No changes will be made in quantities and no additional compensation will be allowed for this work.

(3) Provide a 1'-0" footing as shown where required to maintain 4" minimum cover for pipes.

(4) Dimensions shown are usual and maximum.

(5) Quantities shown are for one structure end only (one headwall).

(6) Min Length = 6" + 3" x $\left(\frac{12 \times H - 7}{12 \times L}\right)$

Max Length = 12 x H - 3" x $\left(\frac{12 \times H - 7}{12 \times L}\right)$ - 1"

(7) Lengths of wings based on SL:1 slope along this line.

MATERIAL NOTES:
Provide Grade 60 reinforcing steel.
Provide Class C concrete (f'c = 3,600 psi).

GENERAL NOTES:
Designed according to AASHTO LRFD Bridge Design Specifications.
Do not mount bridge rails of any type directly to these culvert headwalls.
This standard may not be used for wall heights, H, exceeding the values shown.

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

Texas Department of Transportation — Bridge Division Standard

CONCRETE HEADWALLS WITH FLARED WINGS FOR 0° SKEW PIPE CULVERTS

CH-FW-0

FILE: CD-CH-FW0-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	DIST		COUNTY	SHEET NO.

No.	DATE	REVISION	APPROV.

THESE CONSTRUCTION PLANS WERE PREPARED UNDER THE RESPONSIBLE SUPERVISION OF F.E. MIDDLETON JR., REGISTERED PROFESSIONAL ENGINEER NO. 67449.

Middleton & Assoc, LLC.
CONSULTING CIVIL ENGINEERS & LAND PLANNERS
TBPE #F-10900
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LEWISVILLE, TEXAS 75067 (972) 393-9800

STATE OF TEXAS — F. E. MIDDLETON, JR. — 67449 — PROFESSIONAL ENGINEER

LAKE RIDGE DRIVE – LAKE RIDGE PHASE 4
CITY OF SANGER DENTON COUNTY, TEXAS
SANGER TOWN CENTER LLC &
DUAL BOND HOLDINGS LLC &
HIEN & DUYET NGUYEN
101 FOREST BEND DRIVE
COPPELL, TEXAS 75019
JONATHAN WANG – 214-316-2256

STORM DRAIN DETAILS

Date: 10-30-24
Dwg Scale: Hor. NTS
Vert.
Dwg File: 0001045DT-STM.DWG
Project No. 0001045

DT-ST3

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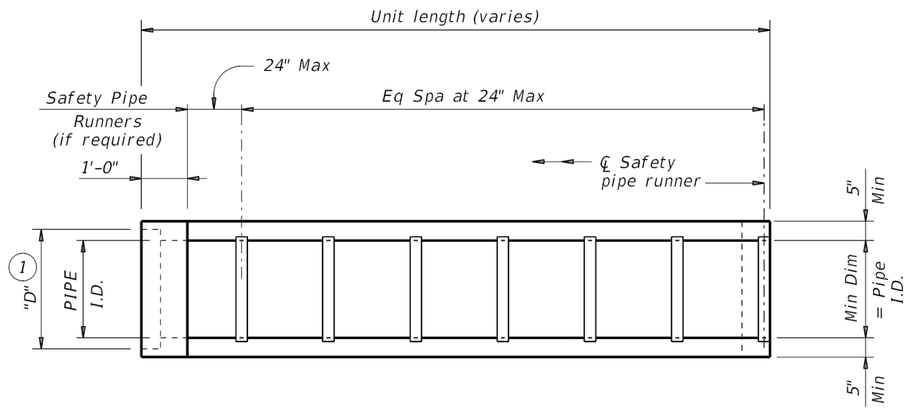
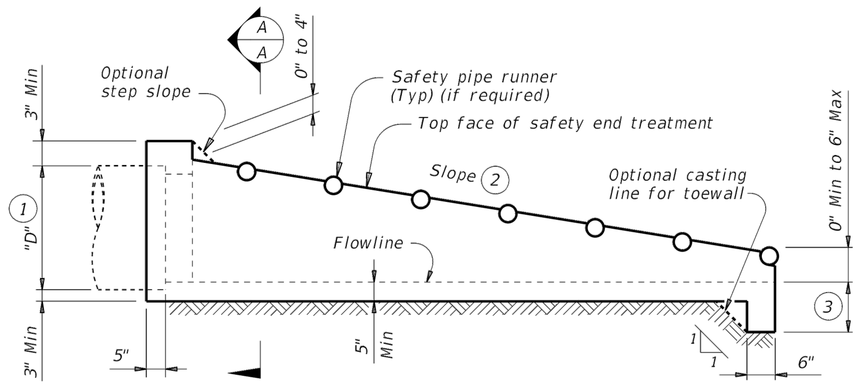
DATE:
FILE:



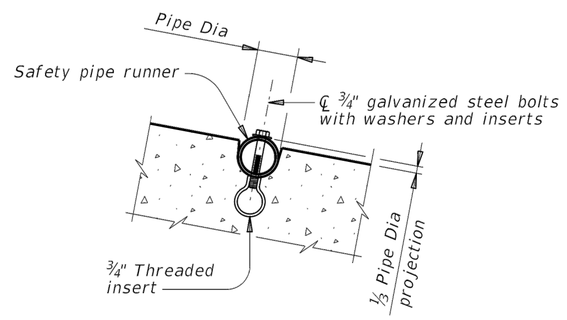
PLAN

(Showing bell end connection.)



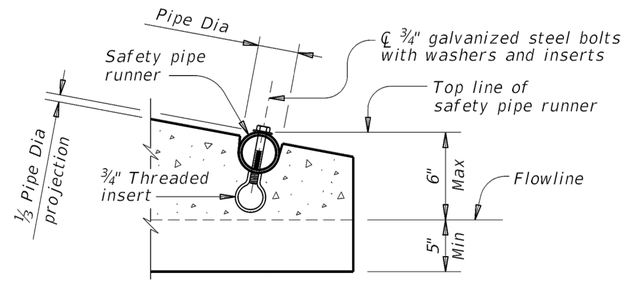
LONGITUDINAL ELEVATION

(Showing bell end connection.)

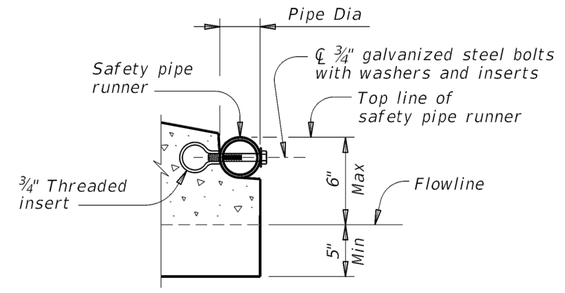


INSTALLATION DETAIL FOR SAFETY PIPE RUNNERS

(If required)



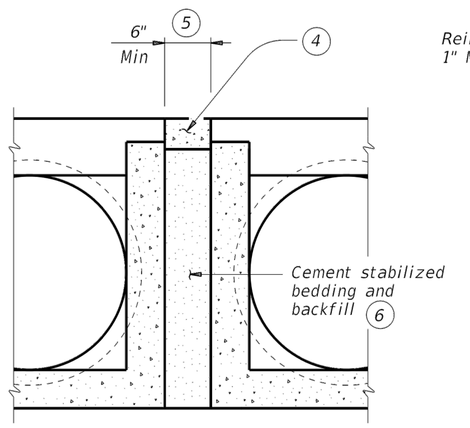
OPTION A



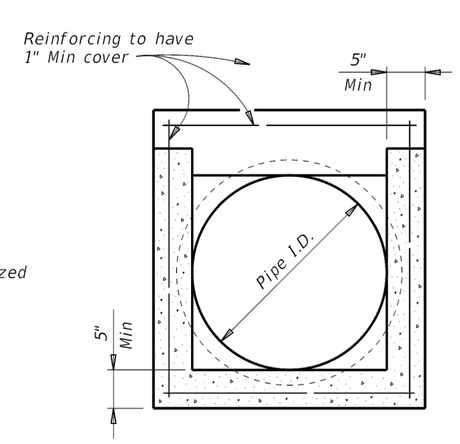
OPTION B

END DETAILS FOR INSTALLATION OF SAFETY PIPE RUNNERS

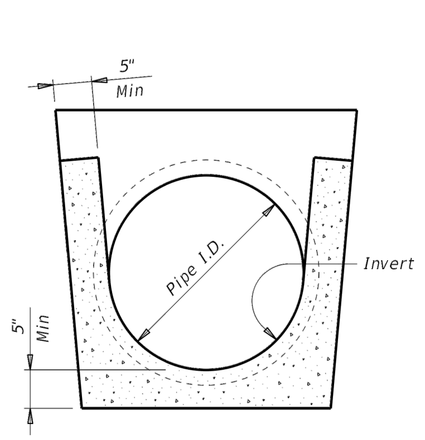
(If required)



MULTIPLE PIPE INSTALLATION

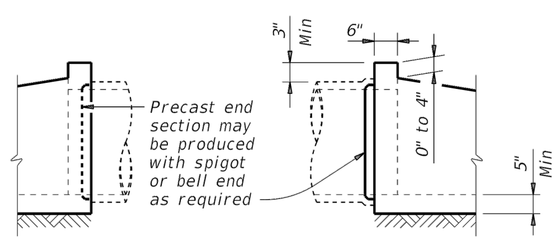


OPTION WITH SQUARE BOTTOM



OPTION WITH INVERT BOTTOM

SECTION A-A



OPTIONAL JOINT FOR RCP

(Showing joint between RCP and precast safety end treatment.)

REQUIREMENTS FOR CULVERT PIPES AND SAFETY PIPE RUNNERS

Pipe I.D.	RCP Wall "B" Thickness	TP Wall Thickness (7)	"D" (1)	Slope	Min Length	Pipe Runners Required		Required Pipe Runner Size		
						Single Pipe	Multiple Pipe	Nominal Dia.	O.D.	I.D.
12"	2"	1.15"	17.00"	6:1	4'-9"	No	Yes, for > 2 pipes	3" STD	3.500"	3.068"
15"	2 ¼"	1.30"	20.50"	6:1	6'-5"	No	Yes, for > 2 pipes	3" STD	3.500"	3.068"
18"	2 ½"	1.60"	24.00"	6:1	8'-0"	No	Yes, for > 2 pipes	3" STD	3.500"	3.068"
24"	3"	1.95"	31.00"	6:1	11'-3"	No	Yes, for > 2 pipes	3" STD	3.500"	3.068"
30"	3 ½"	2.65"	38.50"	6:1	14'-8"	No	Yes	4" STD	4.500"	4.026"
36"	4"	2.75"	45.50"	6:1	17'-11"	Yes	Yes	4" STD	4.500"	4.026"
42"	4 ½"	2.7"	52.50"	6:1	21'-2"	Yes	Yes	4" STD	4.500"	4.026"

(1) Dimension "D" is based on reinforced concrete pipe (RCP) meeting the requirements of ASTM C-76, Class III, (RCP Wall "B" thickness). Adjust "D" for any other wall thickness used. For thermoplastic pipe (TP) take into account the annular space requirements for grouted connections.

(2) Slope as shown elsewhere in the plans. Slope of 6:1 or flatter is required for vehicle safety.

(3) Toewall to be used only when dimension is shown elsewhere in the plans.

(4) Fill the top 4" of void between precast end treatments with concrete riprap. Concrete riprap is considered subsidiary to the Item 467, "Safety End Treatment."

(5) Adjust clear distance between pipes to provide for the minimum distance between safety end treatments.

(6) Provide cement stabilized bedding and backfill in accordance with the Item 400, "Excavation and Backfill for Structures." Bedding and backfill is considered subsidiary to the Item 467, "Safety End Treatment." When concrete riprap is specified around the safety end treatment, backfill as directed by Engineer.

(7) Thermoplastic pipe wall thickness may vary. Adjust accordingly. Thermoplastic pipe requires the safety end treatments to have a bell end for grouted connections.

GENERAL NOTES:

Precast safety end treatment for reinforced concrete pipe (RCP), and thermoplastic pipe (TP) may be used for TYPE II end treatment as specified in Item "Safety End Treatment."

When precast safety end treatment is used as a Contractor's alternate to mitered RCP, riprap will not be required unless noted otherwise on the plans.

Synthetic fibers listed on the "Fibers for Concrete" Material Producer List (MPL) may be used in lieu of steel reinforcing in riprap concrete unless noted otherwise.

Manufacture this product in accordance with Item 467, "Safety End Treatment" except as noted below :

A. Provide minimum reinforcing of #4 at 6" (Grade 40) or #4 at 9" (Grade 60) each way or 6"x6" - D12 x D12 or 5"x5" - D10 x D10 welded wire reinforcement (WWR).

B. For precast (steel formed) sections, provide Class "C" concrete (f'_c = 3,600 psi).

At the option and expense of the Contractor the next larger size of safety end treatment may be furnished; as long as the "D" dimension cast is that of the required size of pipe.

Pipe runners are designed for a traversing load of 10,000 Lbs at yield as recommended by Research Report 280-2F, "Safety Treatment of Roadside Parallel-Drainage Structures", Texas Transportation Institute, March 1981.

Provide pipe runners meeting the requirements of ASTM A53 (Type E or S, Grade B), ASTM A500 (Grade B), or API 5LX52.

Galvanize all steel components except reinforcing steel after fabrication. Repair galvanizing damaged during transport or construction in accordance with the specifications.

Connect RCP using the Optional Joint for RCP detail shown or in accordance with Item 464, "Reinforced Concrete Pipe." Connect TP by grouting. See Pipe and Box Grouted Connections (PBGC) standard for grouted connections with TP and precast safety end treatment.

Texas Department of Transportation — Bridge Division Standard

PRECAST SAFETY END TREATMENT

TYPE II ~ PARALLEL DRAINAGE

PSET-SP

FILE: CD-PSET-SP-21.dgn	DN: RLW	CK: KLR	DW: JTR	CK: GAF
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS 12-21: Added 42" TP	DIST	COUNTY		SHEET NO.

No.	DATE	REVISION	APPROV.

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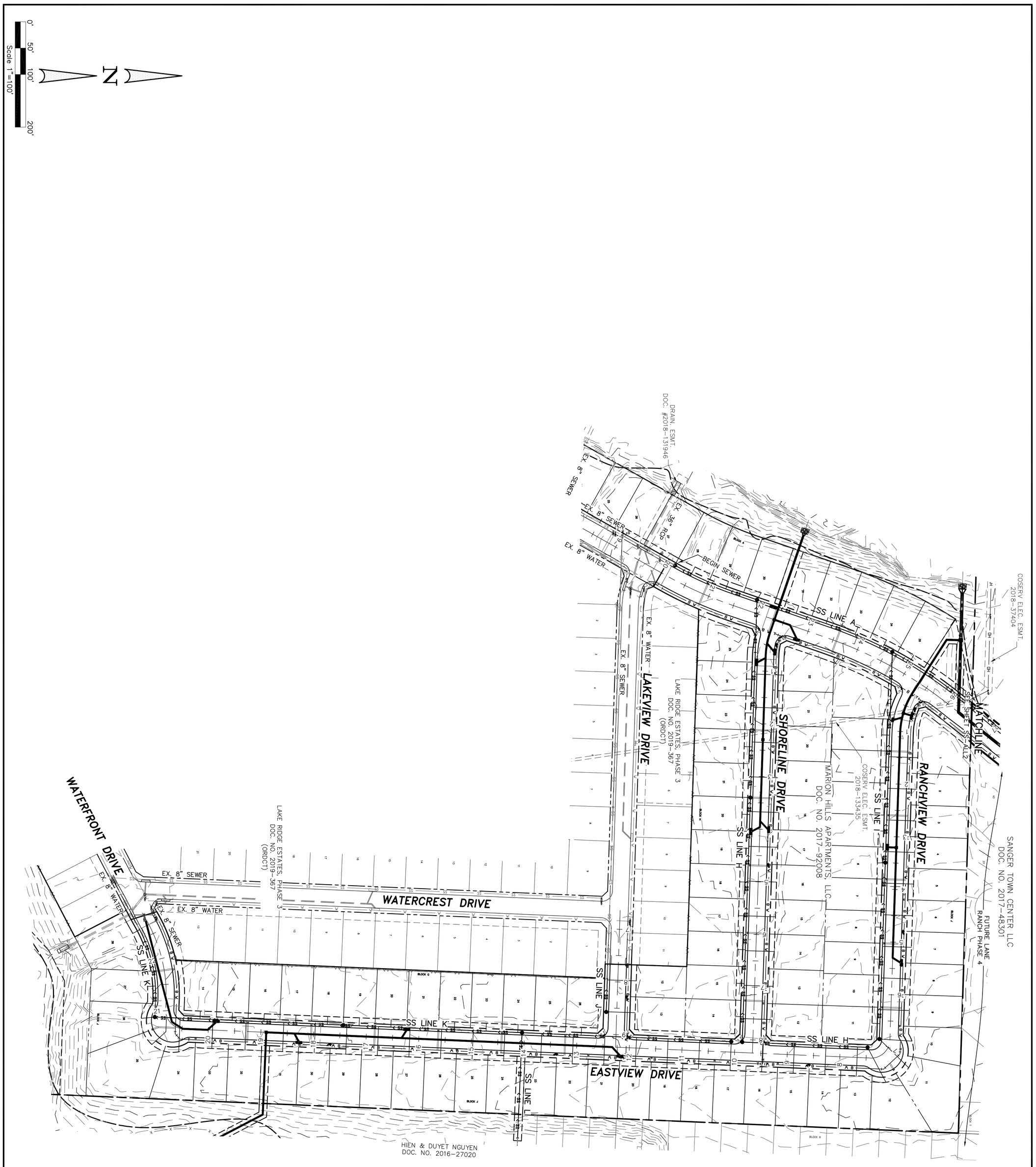
LAKE RIDGE DRIVE – LAKE RIDGE PHASE 4
CITY OF SANGER DENTON COUNTY, TEXAS
SANGER TOWN CENTER LLC &
DUAL BOND HOLDINGS LLC &
HIEN & DUYET NGUYEN
101 FOREST BEND DRIVE
COPPELL, TEXAS 75019
JONATHAN WANG – 214-316-2256

STORM DRAIN DETAILS

Date: 10-30-24
Dwg Scale: Hor. NTS
Vert.
Dwg File: 0001045DT-STM.DWG
Project No. 0001045

DT-ST4



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No.	DATE	REVISION	APPROV.

SS-ALL1

Date: 10-30-24
Dwg Scale: Hor. 1"=100'
Vert.
Dwg File: 0001045UTIL.DWG
Project No. 0001045

OVERALL SANITARY SEWER PLAN

LAKE RIDGE DRIVE - LAKE RIDGE PHASE 4
CITY OF SANGER DENTON COUNTY, TEXAS

SANGER TOWN CENTER LLC &
DUAL BOND HOLDINGS LLC &
HIEN & DUYET NGUYEN
101 FOREST BEND DRIVE
COPPELL, TEXAS 75019
JONATHAN WANG - 214-316-2256

STATE OF TEXAS
F. E. MIDDLETON, JR.
67449
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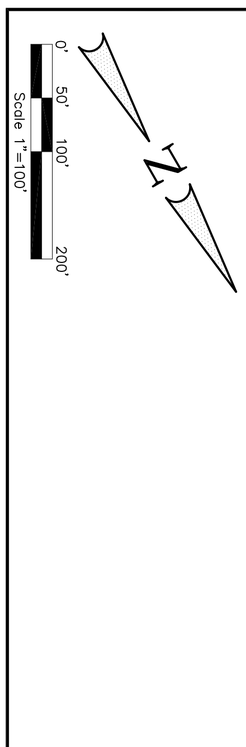

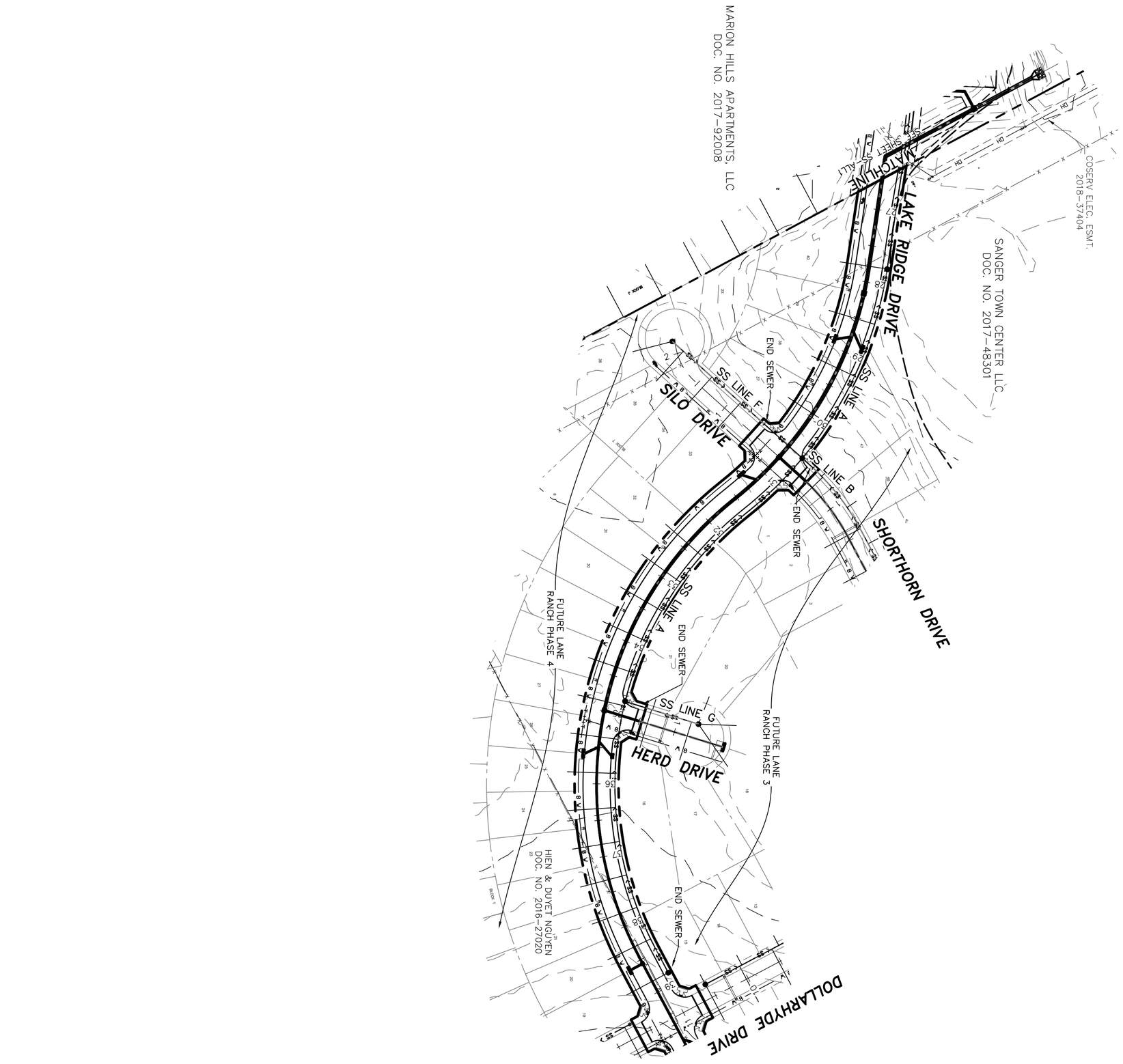

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No.	DATE	REVISION	APPROV.

SS-ALL2

Date: 10-30-24
Dwg Scale: Hor. 1"=100'
Vert.
Dwg File: 0001045UTIL.DWG
Project No. 0001045

OVERALL SANITARY SEWER PLAN

LAKE RIDGE DRIVE - LAKE RIDGE PHASE 4
CITY OF SANGER DENTON COUNTY, TEXAS

SANGER TOWN CENTER LLC &
DUAL BOND HOLDINGS LLC &
HIEN & DUYET NGUYEN
101 FOREST BEND DRIVE
COPPELL, TEXAS 75019
JONATHAN WANG - 214-316-2256

STATE OF TEXAS
F. E. MIDDLETON, JR.
67449
LICENSED
PROFESSIONAL ENGINEER

Middleton & Assoc, LLC
CONSULTING CIVIL ENGINEERS & LAND PLANNERS
TBPE #F-10900
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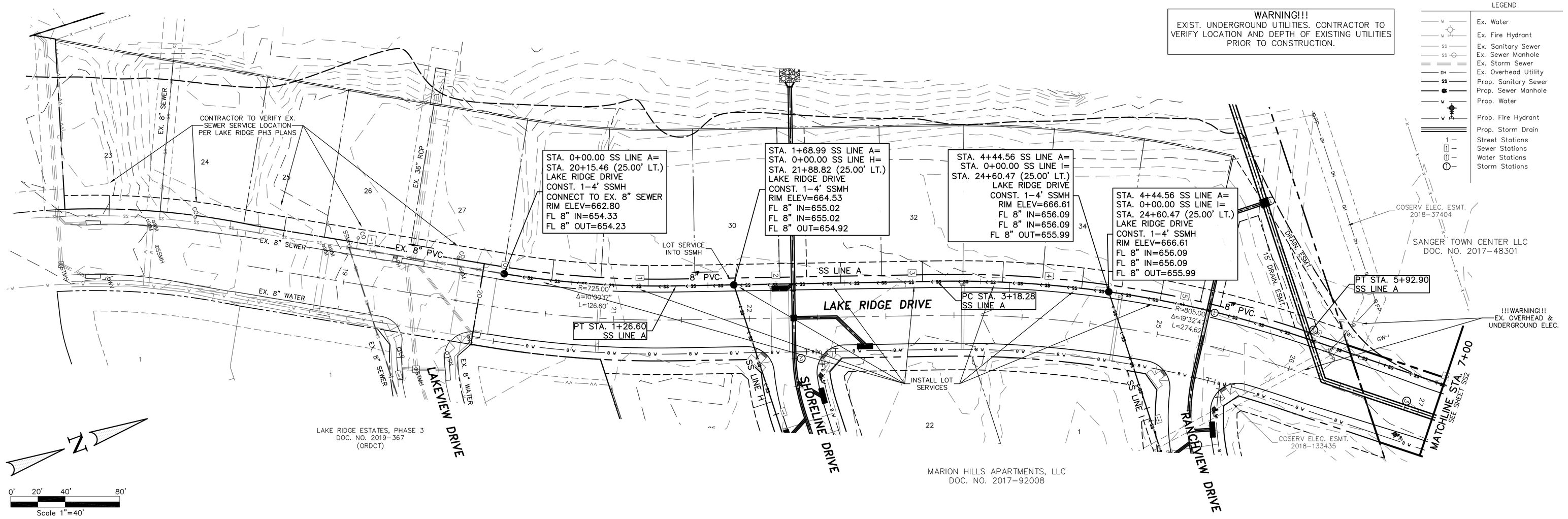
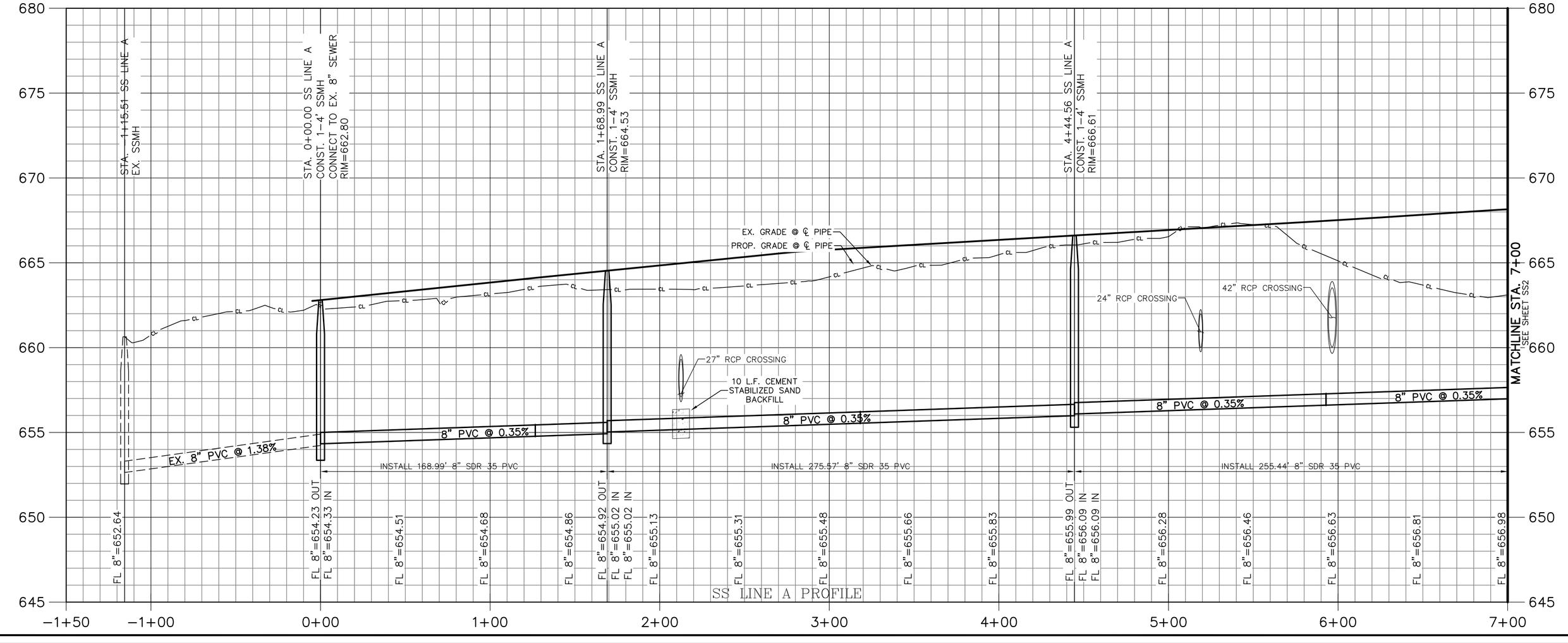
LEWISVILLE, TEXAS 75067 (972) 393-9800



BENCHMARK 1
WEST CORNER OF HDWL. SOUTH SIDE OF FM 455, 680' EAST OF THE N/W CORNER OF THE PROPERTY. ELEV.=679.82

BENCHMARK 2
N/E CORNER OF INLET ON EAST SIDE OF INDIAN LANE, 150' SOUTH OF ELEM. SCHOOL DRIVE. ELEV.=653.07



No.	DATE	REVISION	APPROV.

Middleton & Assoc, LLC
CONSULTING CIVIL ENGINEERS & LAND PLANNERS
TBPE #F-10900
2785 ROCKBROOK DRIVE, SUITE 105
LEWISVILLE, TEXAS 75067 (972) 393-9800
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STATE OF TEXAS — E. T. MIDDLETON, JR. — 83748 — REGISTERED PROFESSIONAL ENGINEER

LAKE RIDGE DRIVE – LAKE RIDGE PHASE 4
CITY OF SANGER DENTON COUNTY, TEXAS
SANGER TOWN CENTER LLC &
DUAL BOND HOLDINGS LLC &
HIEN & DUYET NGUYEN
101 FOREST BEND DRIVE
COPPELL, TEXAS 75019
JONATHAN WANG – 214-316-2256

SANITARY SEWER PLAN & PROFILE
SS LINE A
STA. 0+00 – 7+00

Date: 10-30-24
Dwg Scale: Hor. 1"=40'
Vert.
Dwg File: 0001045UTIL.DWG
Project No. 0001045

SS1

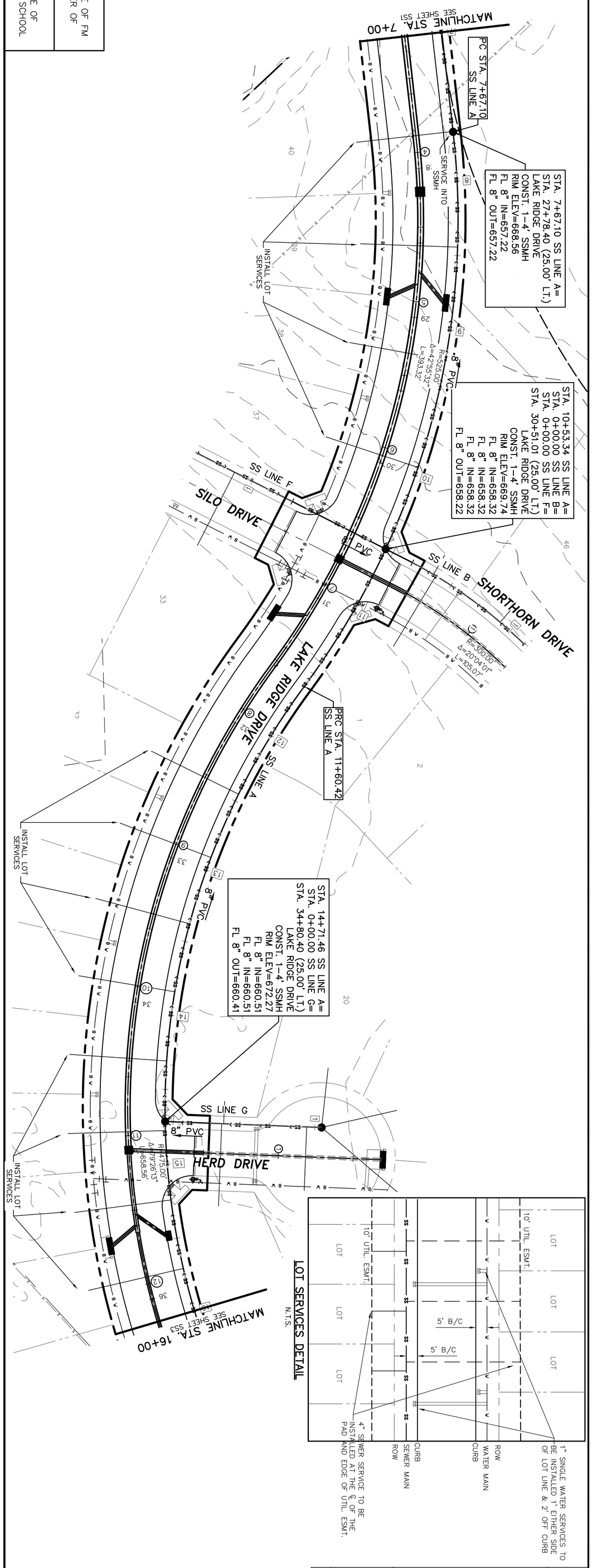
BENCHMARK 1
WEST CORNER OF HDWL. SOUTH SIDE OF FM 455, 680' EAST OF THE N/W CORNER OF THE PROPERTY. ELEV.=679.82

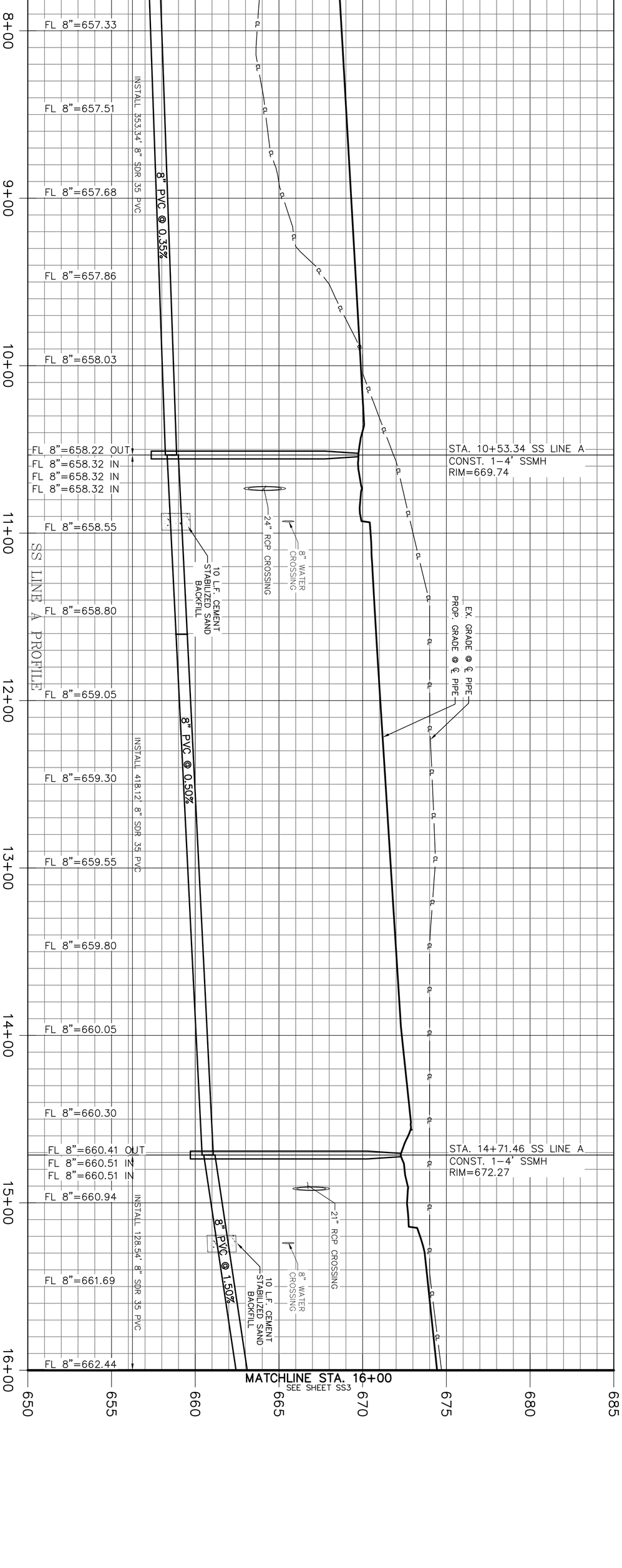
BENCHMARK 2
N/E CORNER OF INLET ON EAST SIDE OF INDIAN LANE. 150' SOUTH OF ELEM. SCHOOL DRIVE. ELEV.=653.07

LEGEND

- Ex. Water
- Ex. Fire Hydrant
- Ex. Sanitary Sewer
- Ex. Sewer Manhole
- Ex. Storm Sewer
- Ex. Overhead Utility
- Prop. Sanitary Sewer
- Prop. Sewer Manhole
- Prop. Water
- Prop. Fire Hydrant
- Prop. Storm Drain
- Street Stations
- Sewer Stations
- Water Stations
- Storm Stations

Scale 1"=40'





LOT SERVICES DETAIL

N.T.S.

THESE CONSTRUCTION PLANS WERE PREPARED UNDER THE RESPONSIBLE SUPERVISION OF F.E. MIDDLETON JR., REGISTERED PROFESSIONAL ENGINEER NO. 67449.

No.	DATE	REVISION	APPROV.

SS2

Date: 10-30-24
Dwg Scale: Hor. 1"=40' Vert.
Dwg File: 0001045UTIL.DWG
Project No. 0001045

SANITARY SEWER PLAN & PROFILE
SS LINE A
STA. 7+00 - 16+00

LAKE RIDGE DRIVE - LAKE RIDGE PHASE 4
CITY OF SANGER DENTON COUNTY, TEXAS
SANGER TOWN CENTER LLC &
DUAL BOND HOLDINGS LLC &
HIEN & DUYET NGUYEN
101 FOREST BEND DRIVE
COPPELL, TEXAS 75019
JONATHAN WANG - 214-316-2256

STATE OF TEXAS
F. E. MIDDLETON, JR.
67449
PROFESSIONAL ENGINEER

Middleton & Assoc, LLC
CONSULTING CIVIL ENGINEERS & LAND PLANNERS
TBPE #F-10900

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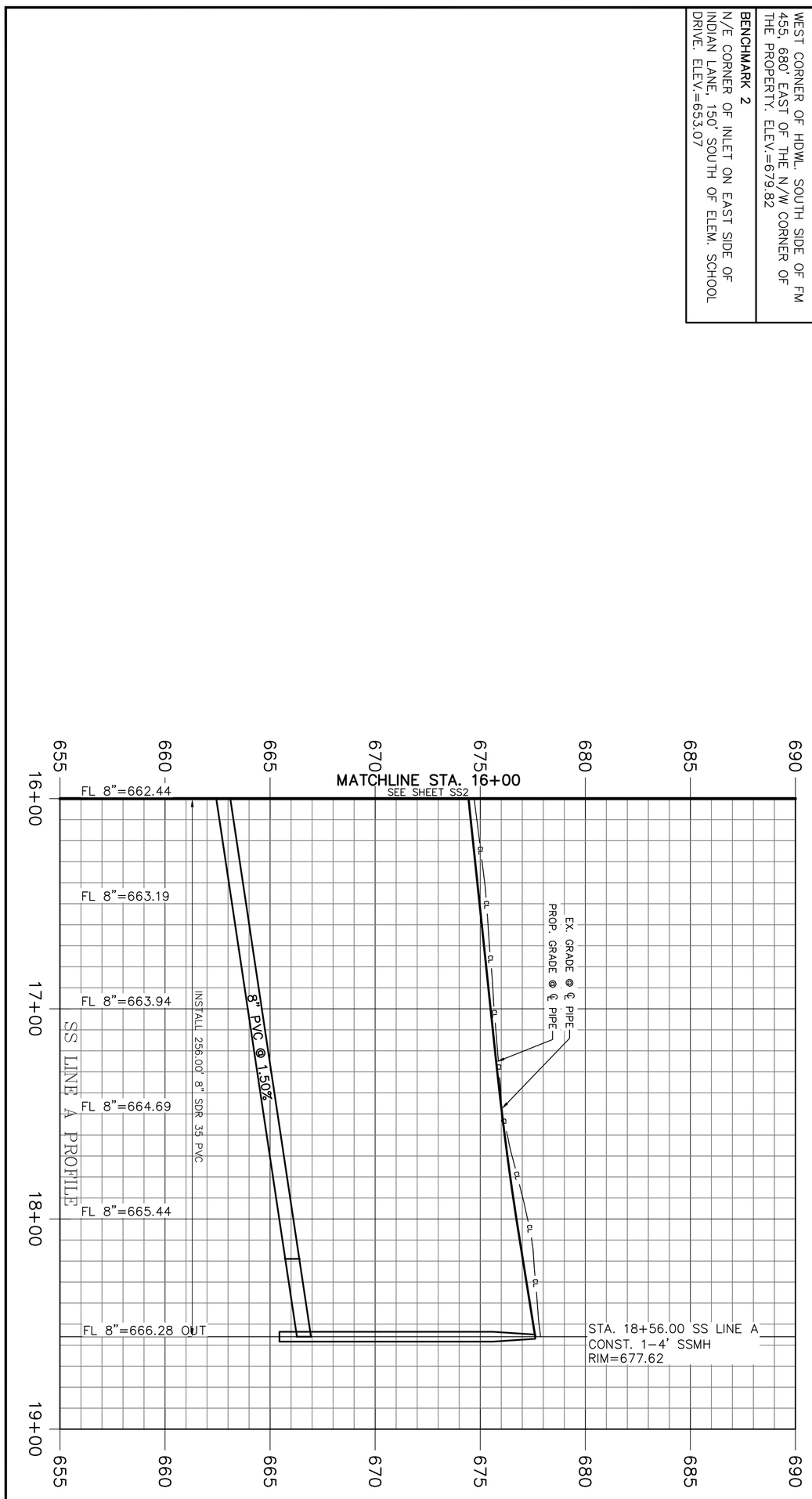
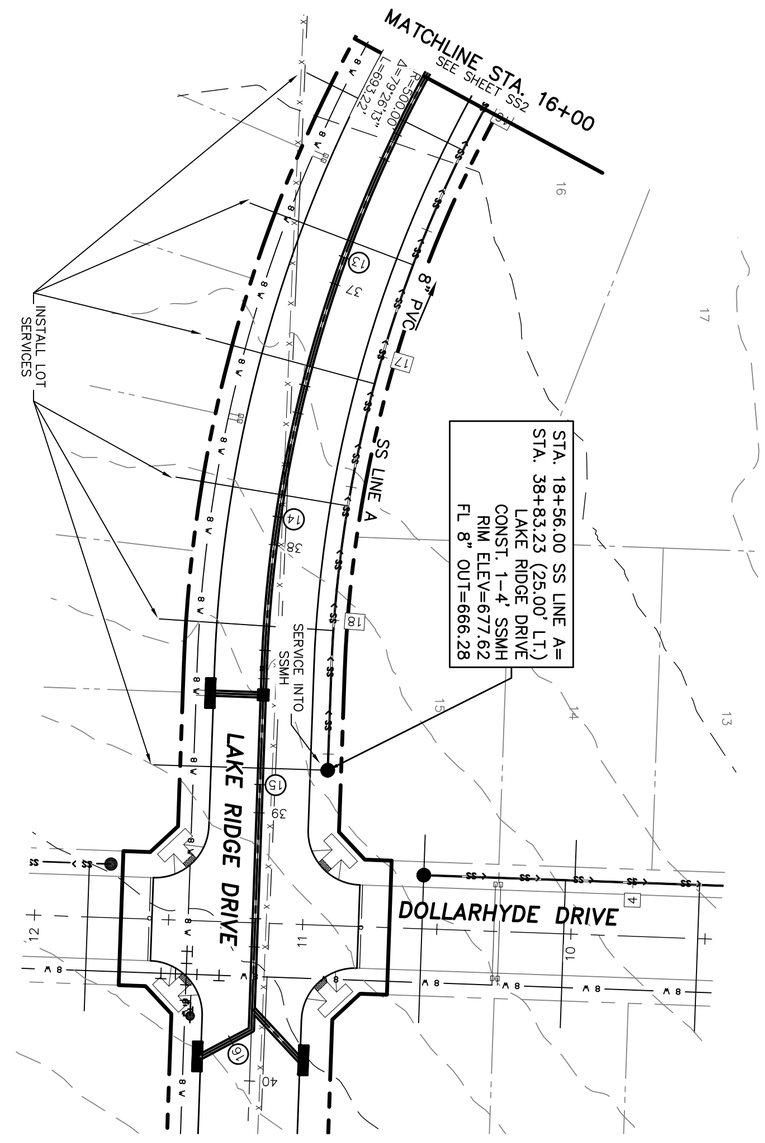
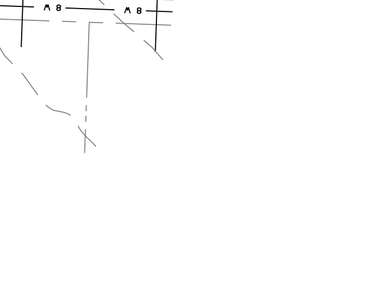
LEWISVILLE, TEXAS 75067 (972) 393-9800

BENCHMARK 1
WEST CORNER OF HDWL. SOUTH SIDE OF FM 455, 680' EAST OF THE N/W CORNER OF THE PROPERTY. ELEV.=679.82

BENCHMARK 2
N/E CORNER OF INLET ON EAST SIDE OF INDIAN LANE, 150' SOUTH OF ELEM. SCHOOL DRIVE. ELEV.=653.07







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No.	DATE	REVISION	APPROV.

SS3

Date: 10-30-24
Dwg Scale: Hor. 1"=40'
Vert.
Dwg File: 0001045UTIL.DWG
Project No. 0001045

SANITARY SEWER PLAN & PROFILE
SS LINE A
STA. 16+00 – END

LAKE RIDGE DRIVE – LAKE RIDGE PHASE 4
CITY OF SANGER DENTON COUNTY, TEXAS

SANGER TOWN CENTER LLC &
DUAL BOND HOLDINGS LLC &
HIEN & DUYET NGUYEN
101 FOREST BEND DRIVE
COPPELL, TEXAS 75019
JONATHAN WANG – 214-316-2256

STATE OF TEXAS
F. E. MIDDLETON, JR.
67449
LICENSED
PROFESSIONAL ENGINEER

Middleton & Assoc, LLC
CONSULTING CIVIL ENGINEERS & LAND PLANNERS
TBPE #F-10900

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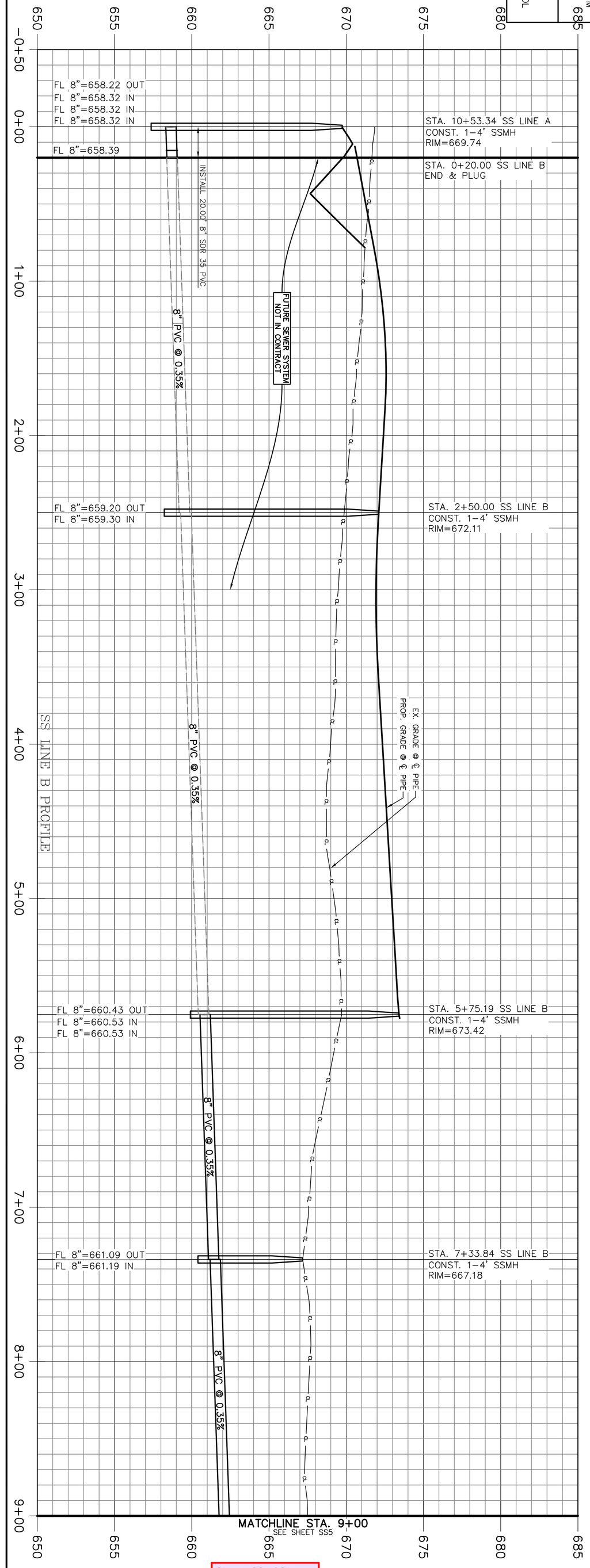
BENCHMARK 1
WEST CORNER OF HDWL. SOUTH SIDE OF FM 455, 680' EAST OF THE N/W CORNER OF THE PROPERTY. ELEV.=679.82

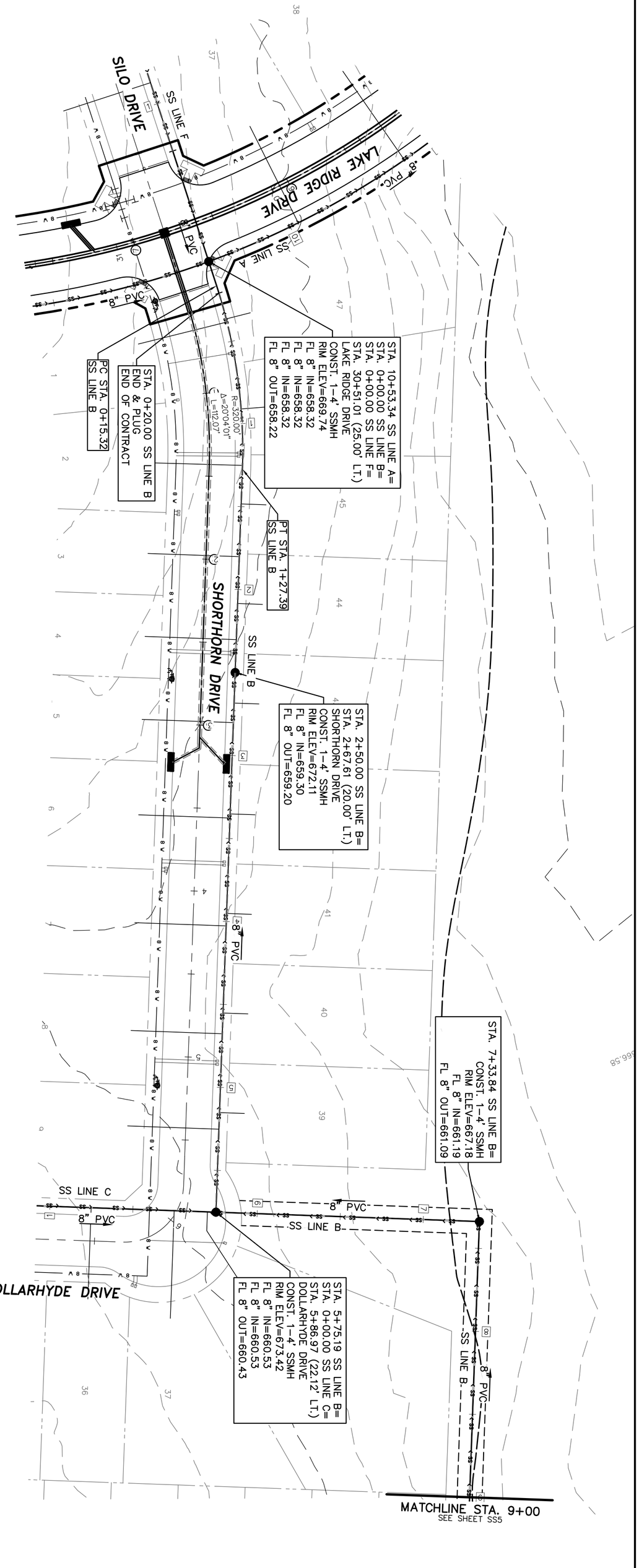
BENCHMARK 2
N/E CORNER OF INLET ON EAST SIDE OF INDIAN LANE, 150' SOUTH OF ELEM. SCHOOL DRIVE. ELEV.=653.07



Sheets SS5-SS9 missing. Please provide specified sheets for review

LEGEND

- Ex. Water
- Ex. Fire Hydrant
- Ex. Sanitary Sewer
- Ex. Sewer Manhole
- Ex. Storm Sewer
- Ex. Overhead Utility
- Prop. Sanitary Sewer
- Prop. Sewer Manhole
- Prop. Water
- Prop. Fire Hydrant
- Prop. Storm Drain
- Street Stations
- Sewer Stations
- Water Stations
- Storm Stations



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No.	DATE	REVISION	APPROV.

SS4

Date: 10-30-24
Dwg Scale: Hor. 1"=40'
Vert.
Dwg File: 0001045UTIL.DWG
Project No. 0001045

SANITARY SEWER PLAN & PROFILE
SS LINE B
STA. 0+00 - 9+00

LAKE RIDGE DRIVE - LAKE RIDGE PHASE 4
CITY OF SANGER DENTON COUNTY, TEXAS

SANGER TOWN CENTER LLC &
DUAL BOND HOLDINGS LLC &
HIEN & DUYET NGUYEN
101 FOREST BEND DRIVE
COPPELL, TEXAS 75019
JONATHAN WANG - 214-316-2256

STATE OF TEXAS
F. E. MIDDLETON, JR.
67449
REGISTERED
PROFESSIONAL ENGINEER

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TBPE #F-10900

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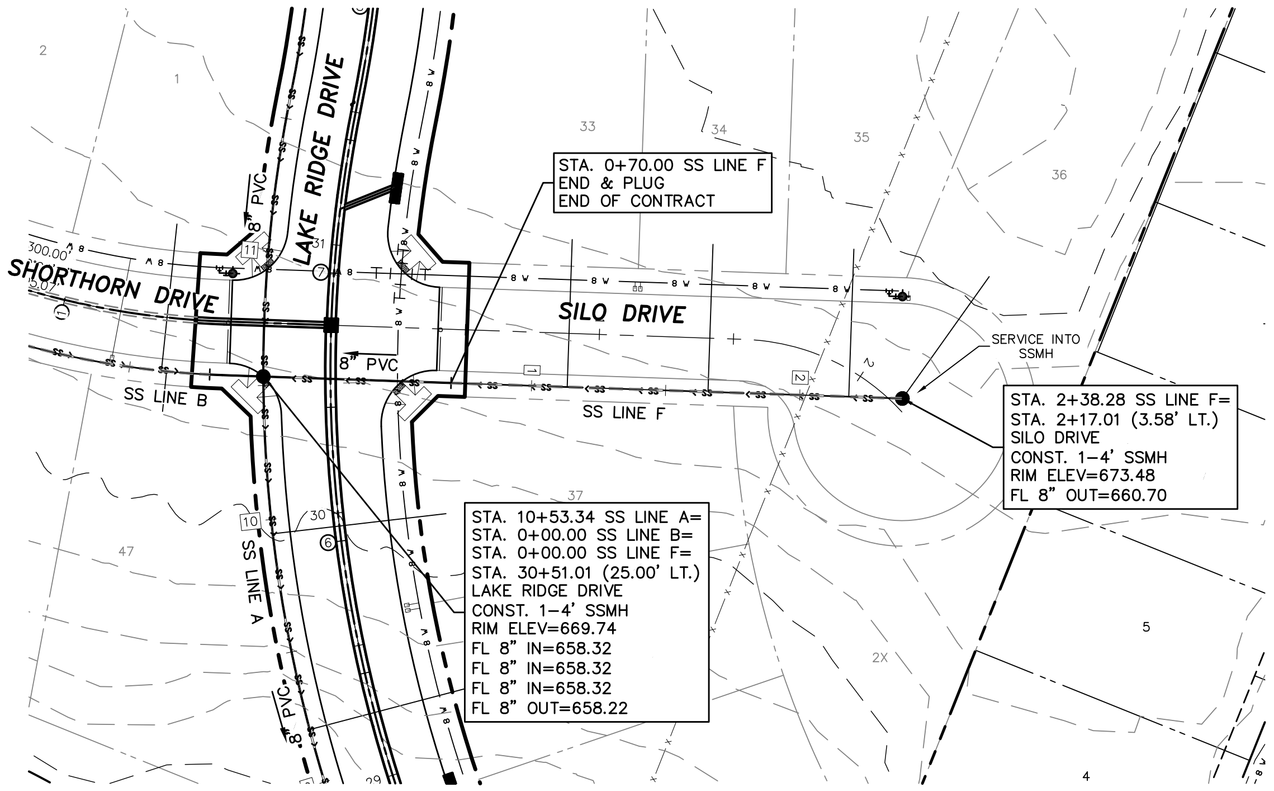

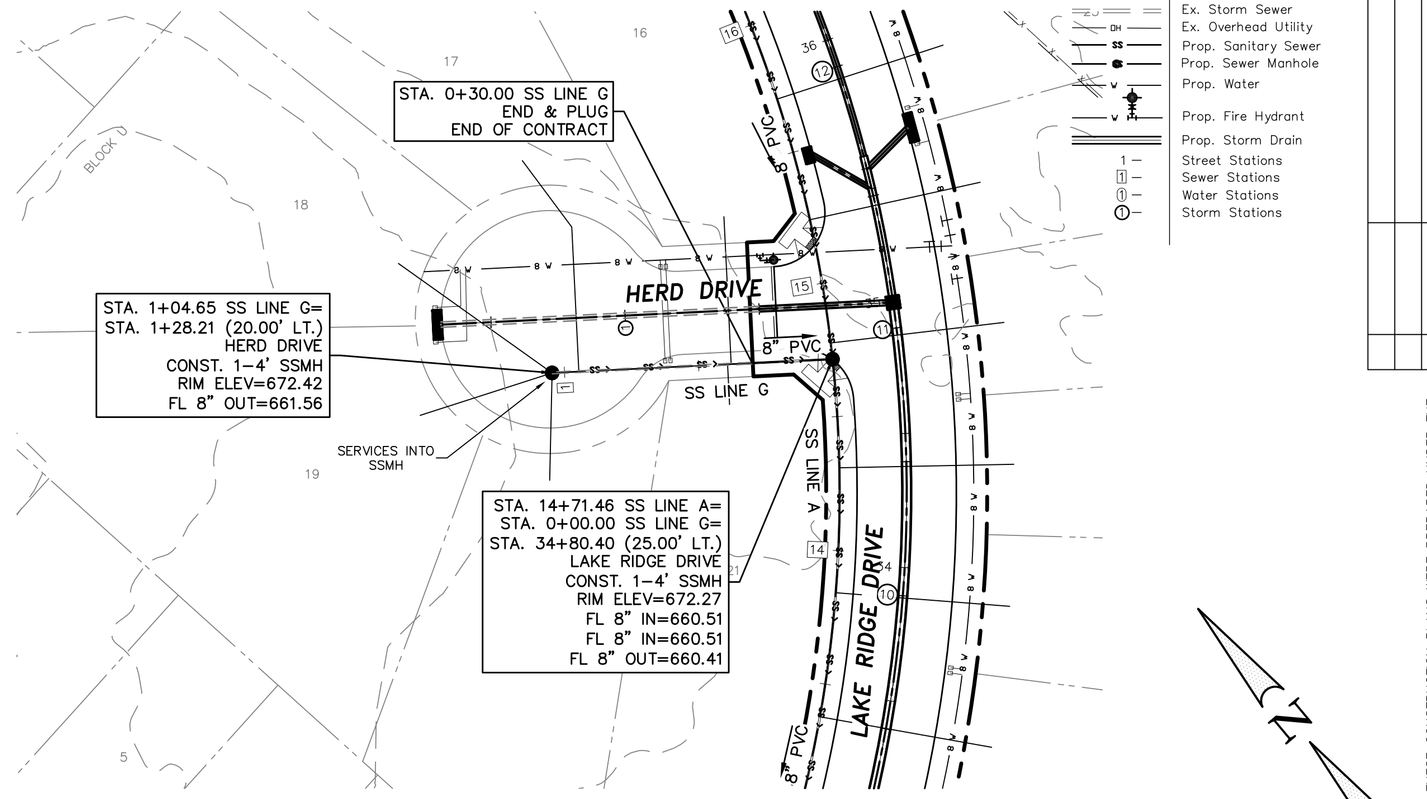

LEGEND

- Ex. Water
- Ex. Fire Hydrant
- Ex. Sanitary Sewer
- Ex. Sewer Manhole
- Ex. Storm Sewer
- Ex. Overhead Utility
- Prop. Sanitary Sewer
- Prop. Sewer Manhole
- Prop. Water
- Prop. Fire Hydrant
- Prop. Storm Drain
- Street Stations
- Sewer Stations
- Water Stations
- Storm Stations

No.	DATE	REVISION	APPROV.

Middleton & Assoc, LLC
CONSULTING CIVIL ENGINEERS & LAND PLANNERS
TBPE #F-10900
2785 ROCKBROOK DRIVE, SUITE 105
LEWISVILLE, TEXAS 75067 (972) 393-9800

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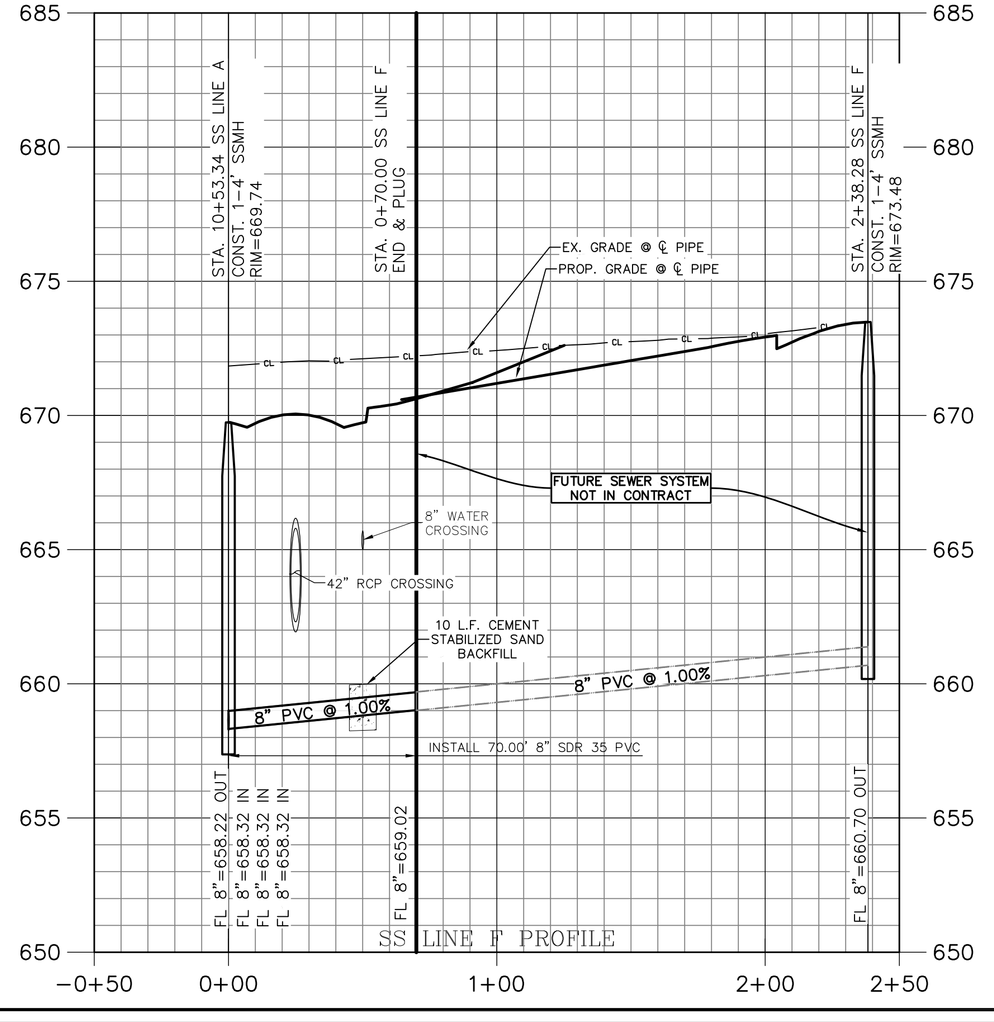
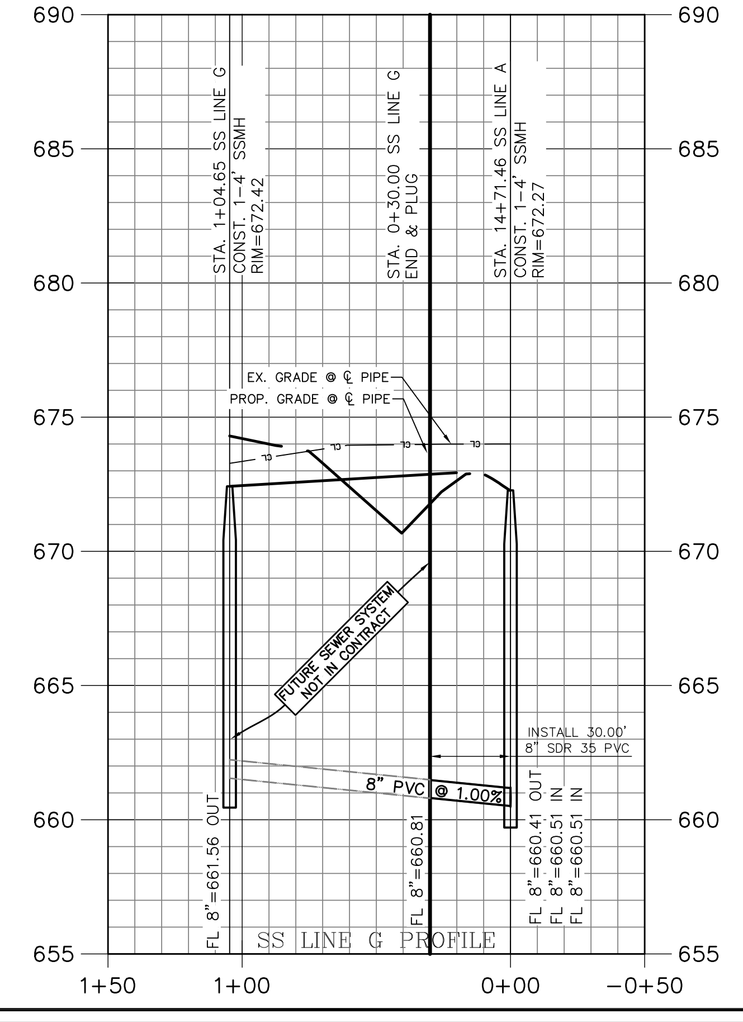
STATE OF TEXAS — E. E. MIDDLETON, JR. — 61448 — REGISTERED PROFESSIONAL ENGINEER

LAKE RIDGE DRIVE – LAKE RIDGE PHASE 4
CITY OF SANGER DENTON COUNTY, TEXAS
SANGER TOWN CENTER LLC &
DUAL BOND HOLDINGS LLC &
HIEN & DUYET NGUYEN
101 FOREST BEND DRIVE
COPPELL, TEXAS 75019
JONATHAN WANG – 214-316-2256

BENCHMARK 1
WEST CORNER OF HDWL. SOUTH SIDE OF FM 455, 680' EAST OF THE N/W CORNER OF THE PROPERTY. ELEV.=679.82

BENCHMARK 2
N/E CORNER OF INLET ON EAST SIDE OF INDIAN LANE, 150' SOUTH OF ELEM. SCHOOL DRIVE. ELEV.=653.07

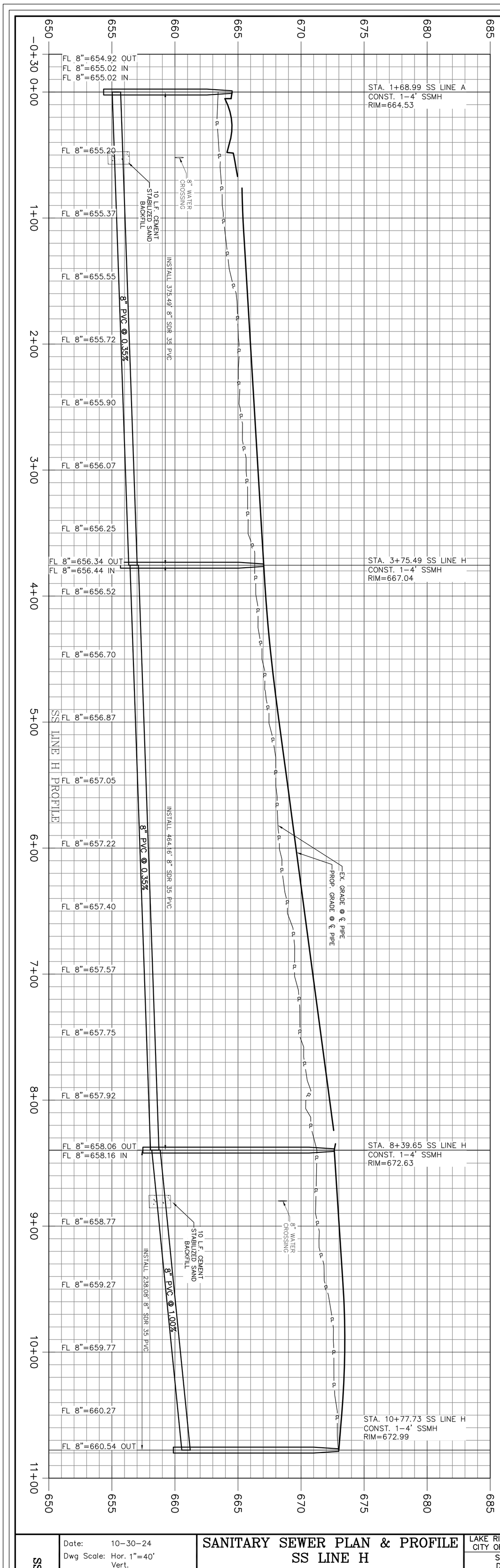


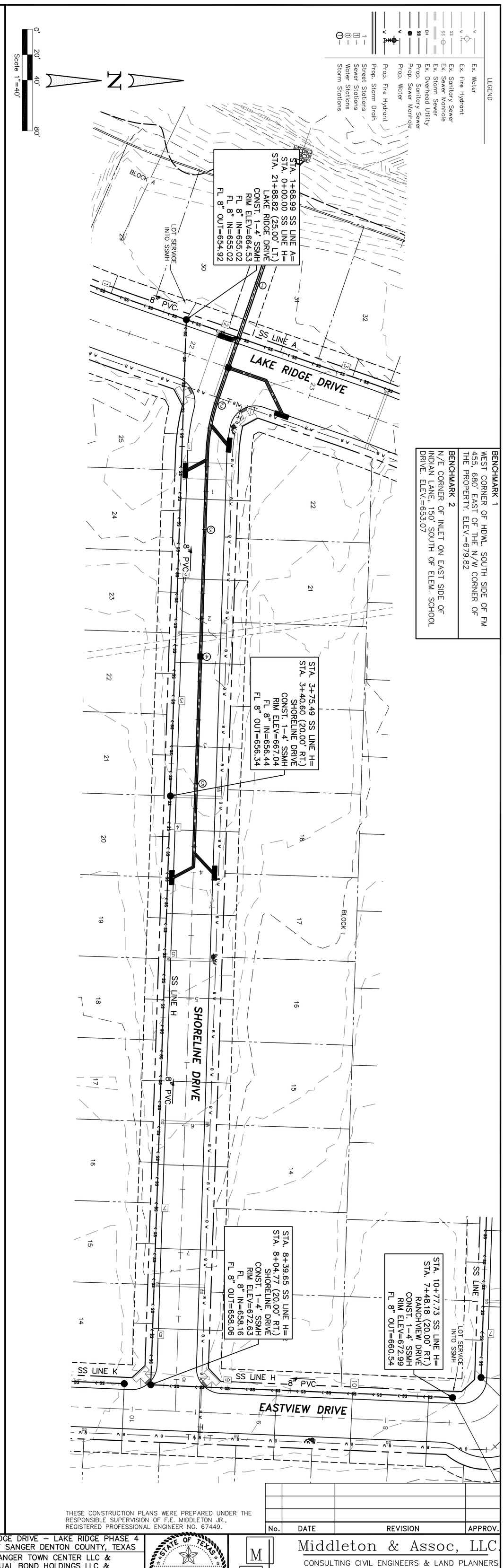


SANITARY SEWER PLAN & PROFILE
SS LINE F & G

Date: 10-30-24
Dwg Scale: Hor. 1"=40'
Vert.
Dwg File: 0001045UTIL.DWG
Project No. 0001045

SS10





BENCHMARK 1
WEST CORNER OF HDWL. SOUTH SIDE OF FM 455, 680' EAST OF THE N/W CORNER OF THE PROPERTY. ELEV.=679.82

BENCHMARK 2
N/E CORNER OF INLET ON EAST SIDE OF INDIAN LANE, 150' SOUTH OF ELEM. SCHOOL DRIVE. ELEV.=653.07

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No.	DATE	REVISION	APPROV.

SS11

Date: 10-30-24
Dwg Scale: Hor. 1"=40'
Vert.
Dwg File: 0001045UTIL.DWG
Project No. 0001045

SANITARY SEWER PLAN & PROFILE
SS LINE H

LAKE RIDGE DRIVE - LAKE RIDGE PHASE 4
CITY OF SANGER DENTON COUNTY, TEXAS

SANGER TOWN CENTER LLC &
DUAL BOND HOLDINGS LLC &
HIEN & DUYET NGUYEN
101 FOREST BEND DRIVE
COPPELL, TEXAS 75019
JONATHAN WANG - 214-316-2256

STATE OF TEXAS
F. E. MIDDLETON, JR.
67449
REGISTERED PROFESSIONAL ENGINEER

Middleton & Assoc, LLC
CONSULTING CIVIL ENGINEERS & LAND PLANNERS
TBPE #F-10900

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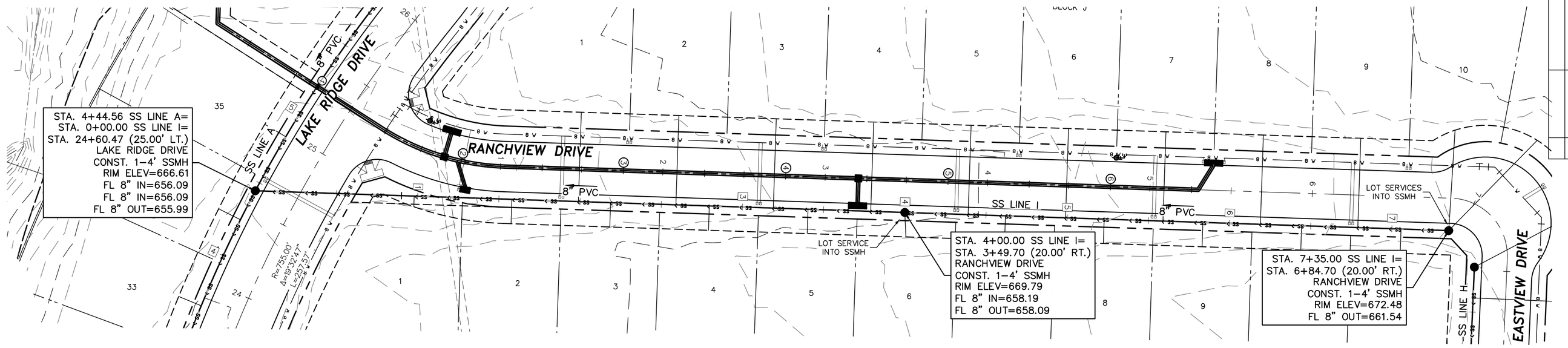
LEWISVILLE, TEXAS 75067 (972) 393-9800

LEGEND

- Ex. Water
- Ex. Fire Hydrant
- Ex. Sanitary Sewer
- Ex. Sewer Manhole
- Ex. Storm Sewer
- Ex. Overhead Utility
- Prop. Sanitary Sewer
- Prop. Sewer Manhole
- Prop. Water
- Prop. Fire Hydrant
- Prop. Storm Drain
- Street Stations
- Sewer Stations
- Water Stations
- Storm Stations

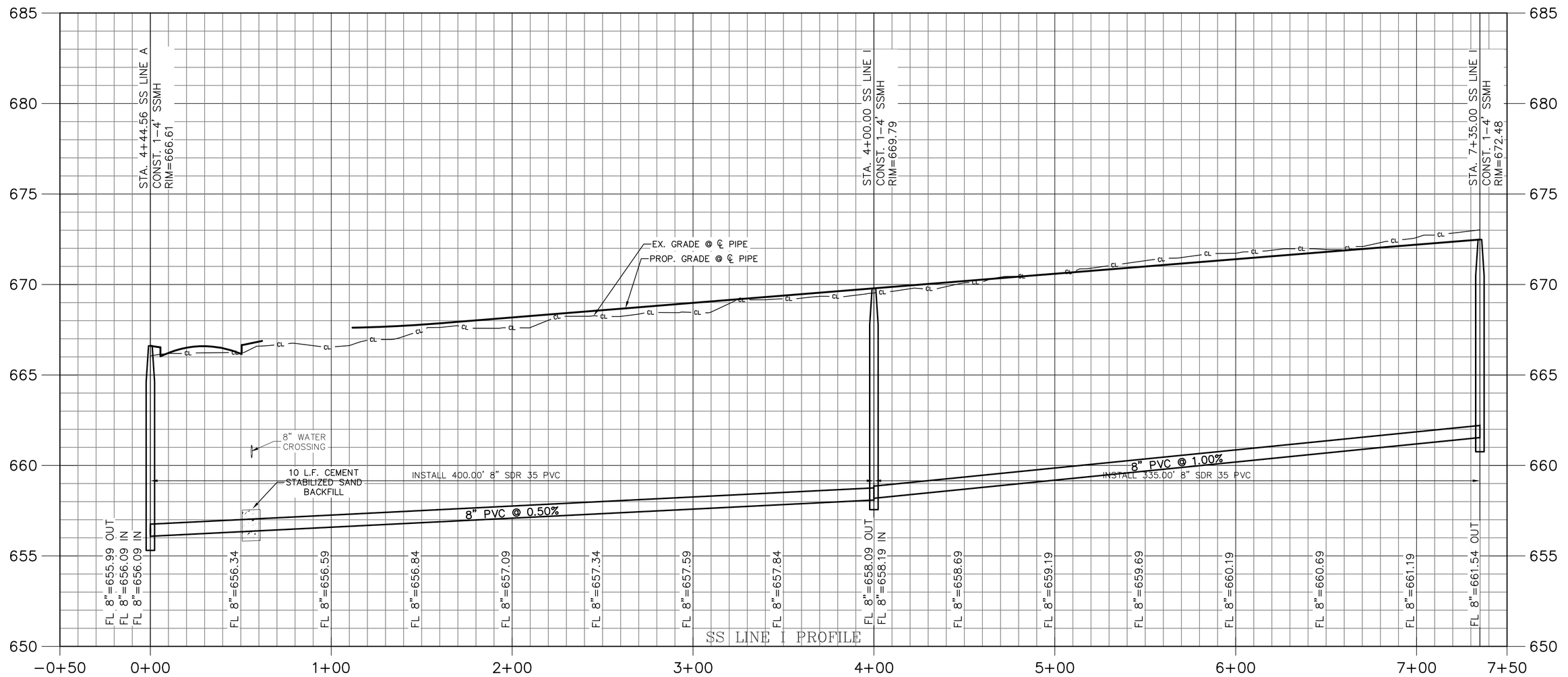


N

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

BENCHMARK 1
WEST CORNER OF HDWL. SOUTH SIDE OF FM 455, 680' EAST OF THE N/W CORNER OF THE PROPERTY. ELEV.=679.82

BENCHMARK 2
N/E CORNER OF INLET ON EAST SIDE OF INDIAN LANE, 150' SOUTH OF ELEM. SCHOOL DRIVE. ELEV.=653.07



No.	DATE	REVISION	APPROV.

Middleton & Assoc, LLC
CONSULTING CIVIL ENGINEERS & LAND PLANNERS
TBPE #F-10900
2785 ROCKBROOK DRIVE, SUITE 105
LEWISVILLE, TEXAS 75067 (972) 393-9800

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STATE OF TEXAS
F. E. MIDDLETON, JR.
PROFESSIONAL ENGINEER

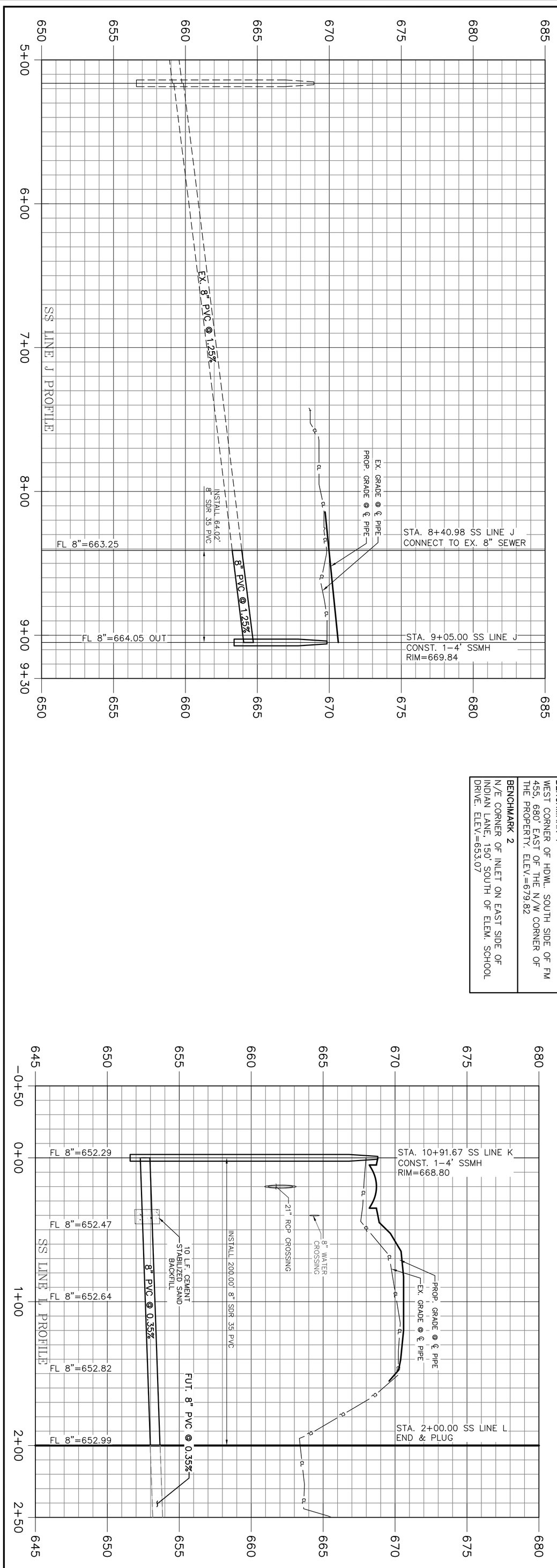
LAKE RIDGE DRIVE – LAKE RIDGE PHASE 4
CITY OF SANGER DENTON COUNTY, TEXAS

SANGER TOWN CENTER LLC &
DUAL BOND HOLDINGS LLC &
HIEN & DUYET NGUYEN
101 FOREST BEND DRIVE
COPPELL, TEXAS 75019
JONATHAN WANG – 214-316-2256

SANITARY SEWER PLAN & PROFILE
SS LINE I

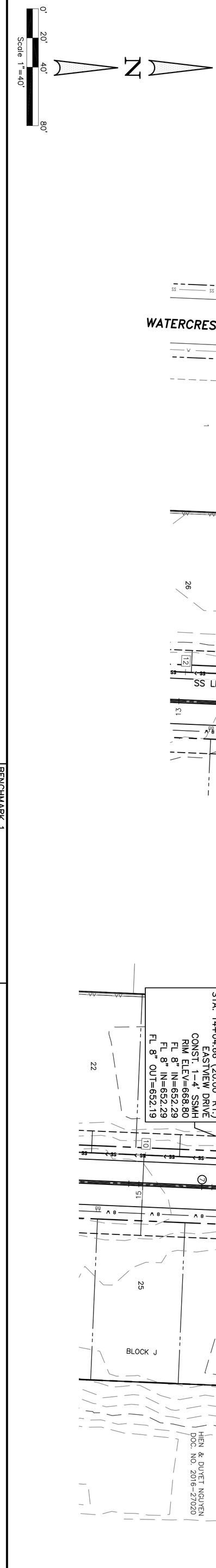
Date: 10-30-24
Dwg Scale: Hor. 1"=40' Vert.
Dwg File: 0001045UTIL.DWG
Project No. 0001045

SS12



BENCHMARK 1
WEST CORNER OF HDWL. SOUTH SIDE OF FM 455, 680' EAST OF THE N/W CORNER OF THE PROPERTY. ELEV.=679.82

BENCHMARK 2
N/E CORNER OF INLET ON EAST SIDE OF INDIAN LANE, 150' SOUTH OF ELEM. SCHOOL DRIVE. ELEV.=653.07



THESE CONSTRUCTION PLANS WERE PREPARED UNDER THE RESPONSIBLE SUPERVISION OF F.E. MIDDLETON JR., REGISTERED PROFESSIONAL ENGINEER NO. 67449.

No.	DATE	REVISION	APPROV.

SS13

Date: 10-30-24
Dwg Scale: Hor. 1"=40'
Vert.
Dwg File: 0001045UTIL.DWG
Project No. 0001045

SANITARY SEWER PLAN & PROFILE
SS LINE J
SS LINE L

LAKE RIDGE DRIVE - LAKE RIDGE PHASE 4
CITY OF SANGER DENTON COUNTY, TEXAS

SANGER TOWN CENTER LLC &
DUAL BOND HOLDINGS LLC &
HIEN & DUYET NGUYEN
101 FOREST BEND DRIVE
COPPELL, TEXAS 75019
JONATHAN WANG - 214-316-2256

STATE OF TEXAS
F. E. MIDDLETON, JR.
67449
REGISTERED
PROFESSIONAL ENGINEER

Middleton & Assoc, LLC
CONSULTING CIVIL ENGINEERS & LAND PLANNERS
TBPE #F-10900
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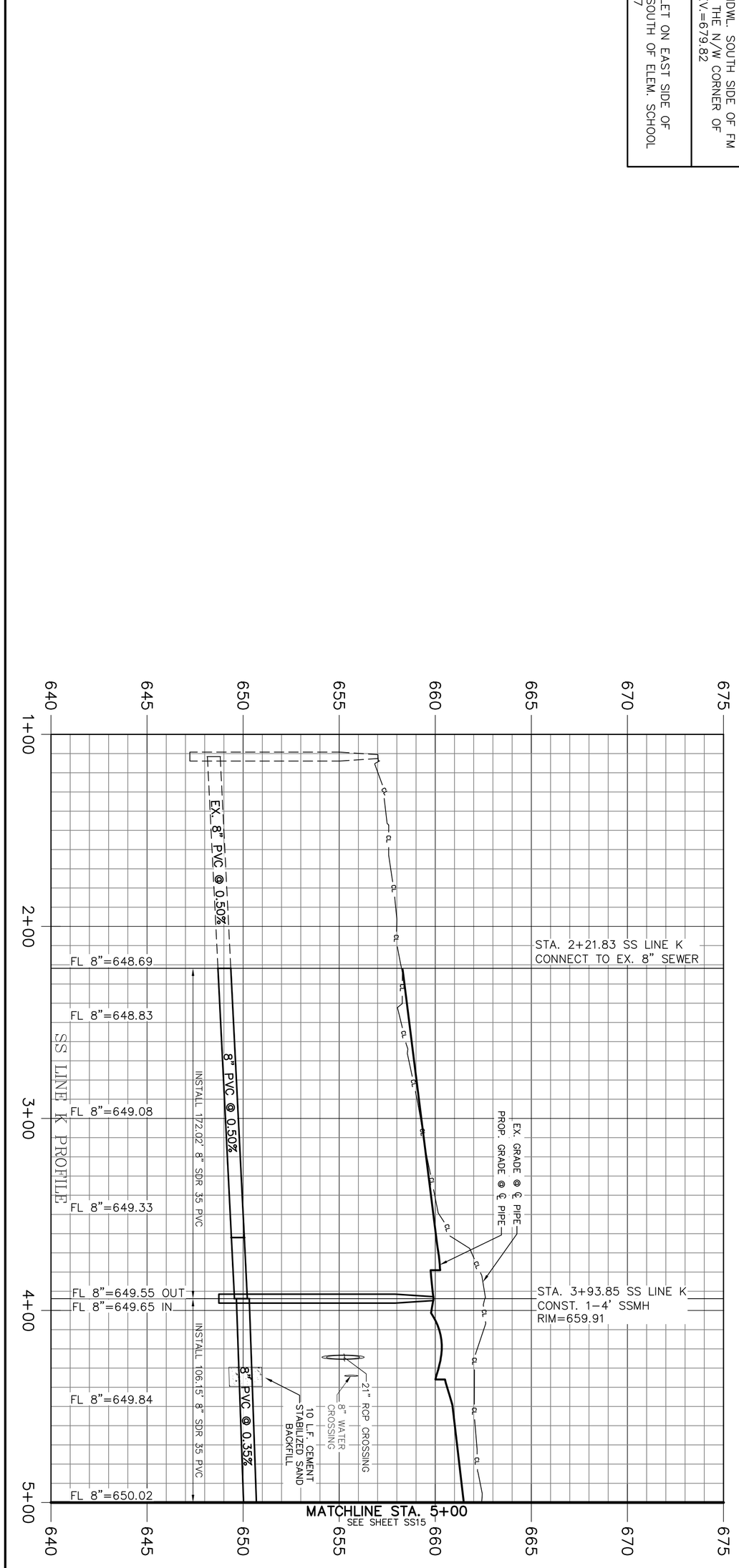
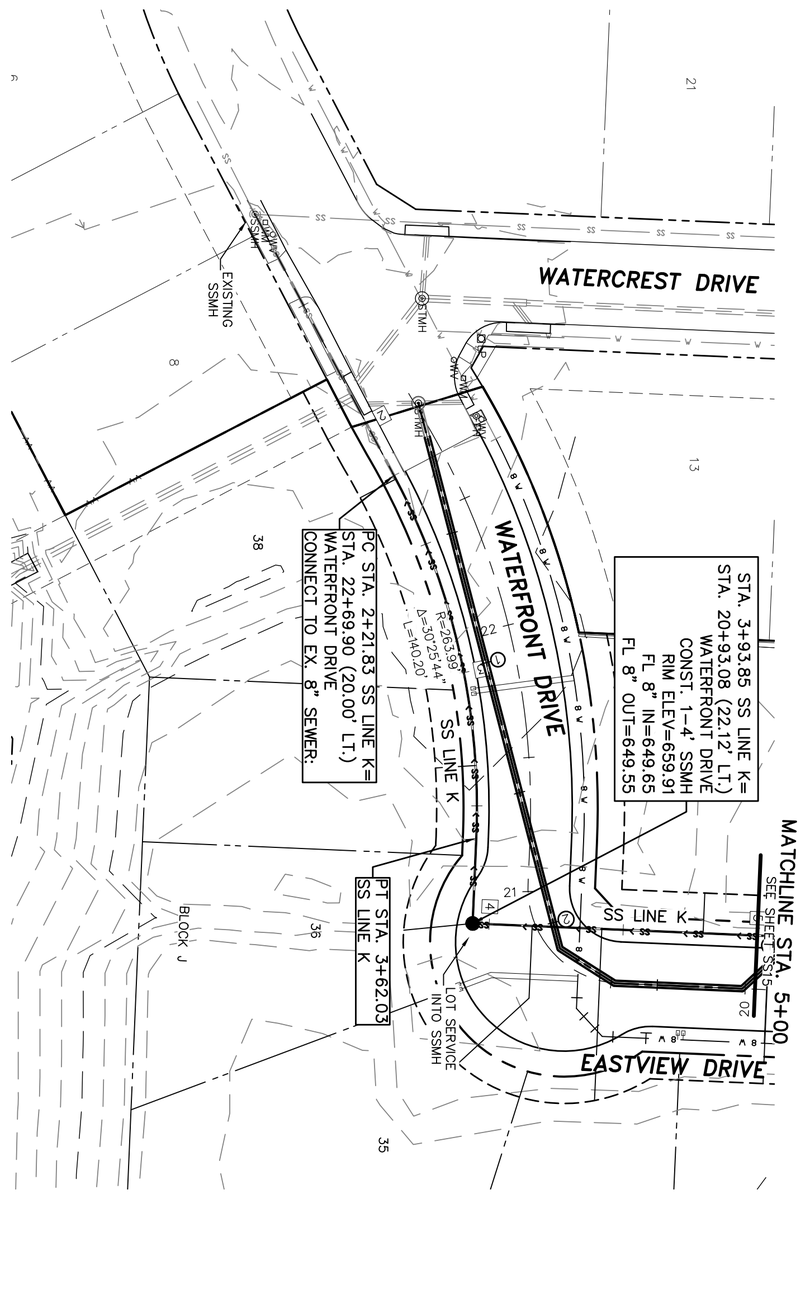
2785 ROCKBROOK DRIVE, SUITE 105
LEWISVILLE, TEXAS 75067 (972) 393-9800

BENCHMARK 1
WEST CORNER OF HDWL. SOUTH SIDE OF FM 455, 680' EAST OF THE N/W CORNER OF THE PROPERTY. ELEV.=679.82

BENCHMARK 2
N/E CORNER OF INLET ON EAST SIDE OF INDIAN LANE, 150' SOUTH OF ELEM. SCHOOL DRIVE. ELEV.=653.07





LEGEND

- Ex. Water
- Ex. Fire Hydrant
- Ex. Sanitary Sewer
- Ex. Sewer Manhole
- Ex. Storm Sewer
- Ex. Overhead Utility
- Prop. Sanitary Sewer
- Prop. Sewer Manhole
- Prop. Water
- Prop. Fire Hydrant
- Prop. Storm Drain
- Street Stations
- Sewer Stations
- Water Stations
- Storm Stations

THESE CONSTRUCTION PLANS WERE PREPARED UNDER THE RESPONSIBLE SUPERVISION OF F.E. MIDDLETON JR., REGISTERED PROFESSIONAL ENGINEER NO. 67449.

No.	DATE	REVISION	APPROV.

SS14

Date: 10-30-24
Dwg Scale: Hor. 1"=40'
Vert.
Dwg File: 0001045UTIL.DWG
Project No. 0001045

SANITARY SEWER PLAN & PROFILE
SS LINE K
STA. 2+21.83 – 5+00

LAKE RIDGE DRIVE – LAKE RIDGE PHASE 4
CITY OF SANGER DENTON COUNTY, TEXAS

SANGER TOWN CENTER LLC &
DUAL BOND HOLDINGS LLC &
HIEN & DUYET NGUYEN
101 FOREST BEND DRIVE
COPPELL, TEXAS 75019
JONATHAN WANG – 214-316-2256

STATE OF TEXAS
F. E. MIDDLETON, JR.
67449
REGISTERED
PROFESSIONAL
ENGINEER

Middleton & Assoc, LLC.
CONSULTING CIVIL ENGINEERS & LAND PLANNERS
TBPE #F-10900

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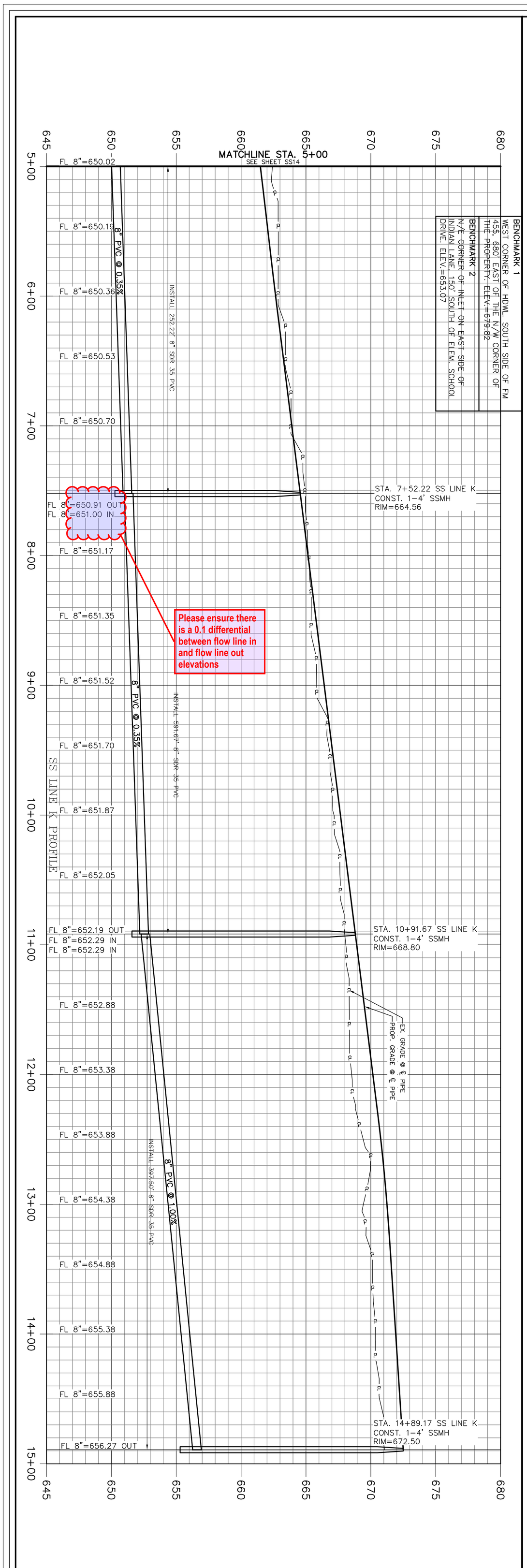
LEWISVILLE, TEXAS 75067 (972) 393-9800



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No.	DATE	REVISION	APPROV.

SS15

Date: 10-30-24
Dwg Scale: Hor. 1"=40' Vert.
Dwg File: 0001045UTIL.DWG
Project No. 0001045

SANITARY SEWER PLAN & PROFILE
SS LINE K
STA. 5+00 - END

LAKE RIDGE DRIVE - LAKE RIDGE PHASE 4
CITY OF SANGER DENTON COUNTY, TEXAS

SANGER TOWN CENTER LLC &
DUAL BOND HOLDINGS LLC &
HIEN & DUYET NGUYEN
101 FOREST BEND DRIVE
COPPELL, TEXAS 75019
JONATHAN WANG - 214-316-2256

STATE OF TEXAS
F. E. MIDDLETON, JR.
67449
REGISTERED
PROFESSIONAL ENGINEER

Middleton & Assoc, LLC
CONSULTING CIVIL ENGINEERS & LAND PLANNERS
TBPE #F-10900

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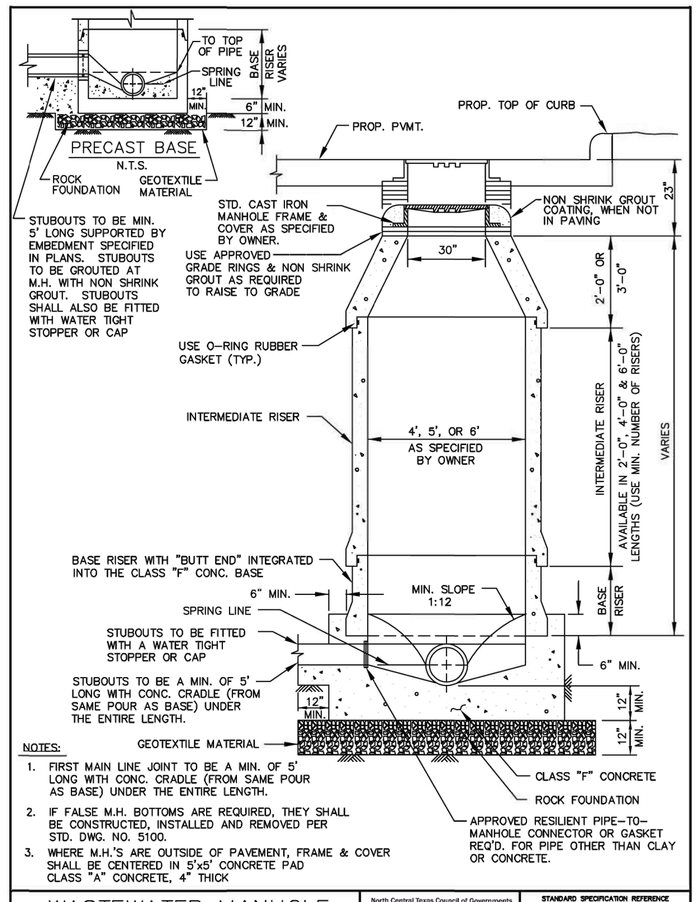
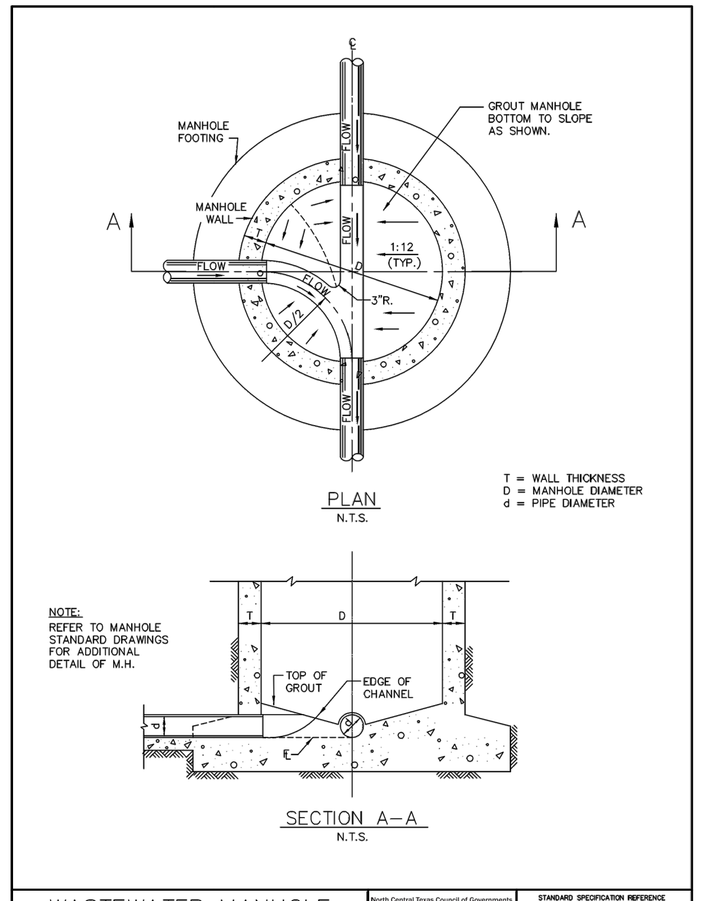
2785 ROCKBROOK DRIVE, SUITE 105
LEWISVILLE, TEXAS 75067 (972) 393-9800



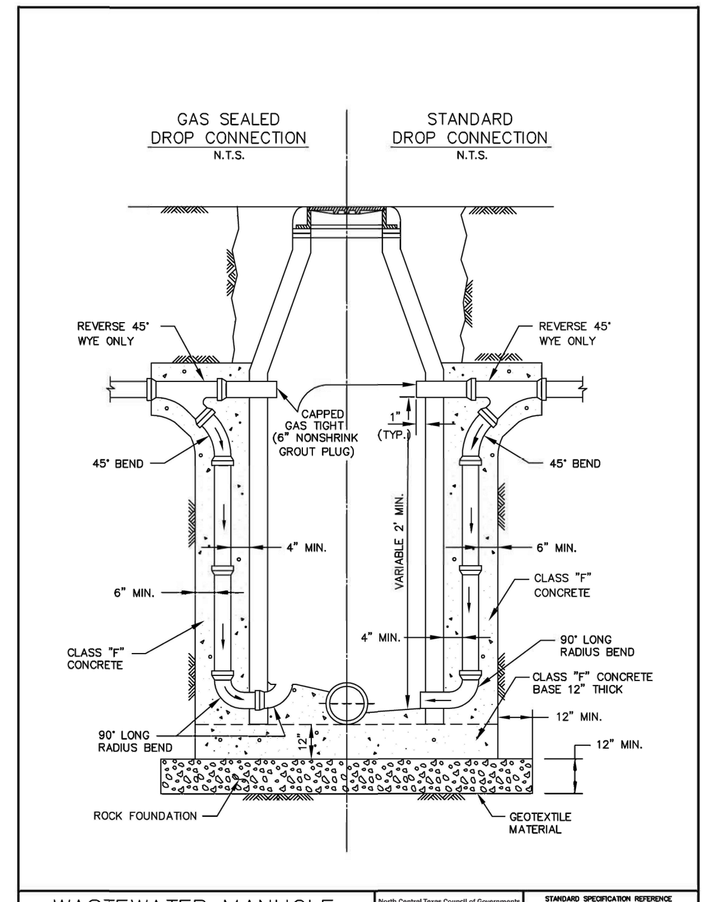
NOTES:
1. FIRST MAIN LINE JOINT TO BE A MIN. OF 5' LONG WITH CONC. CRADLE (FROM SAME POUR AS BASE) UNDER THE ENTIRE LENGTH.
2. IF FALSE M.H. BOTTOMS ARE REQUIRED, THEY SHALL BE CONSTRUCTED, INSTALLED AND REMOVED PER STD. DWG. NO. 5100.
3. WHERE M.H.'S ARE OUTSIDE OF PAVEMENT, FRAME & COVER SHALL BE CENTERED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

WASTEWATER MANHOLE	North Central Texas Council of Governments	STANDARD SPECIFICATION REFERENCE 502.1.4.12*
PRECAST		DATE OCT. '04 / STANDARD DRAWING NO. 5020

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

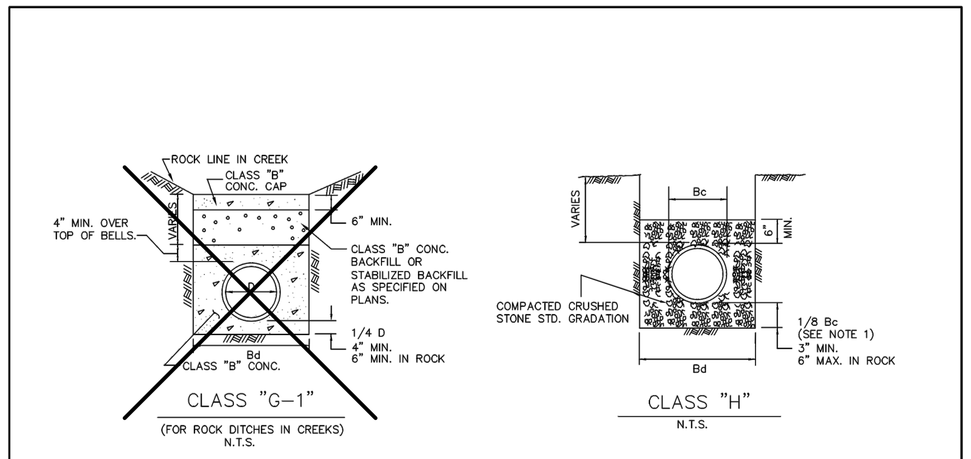


WASTEWATER MANHOLE	North Central Texas Council of Governments	STANDARD SPECIFICATION REFERENCE 502.1
LINE INTERSECTION		DATE OCT. '04 / STANDARD DRAWING NO. 5090



WASTEWATER MANHOLE	North Central Texas Council of Governments	STANDARD SPECIFICATION REFERENCE 502.14.14*
OUTSIDE DROP CONNECTIONS		DATE OCT. '04 / STANDARD DRAWING NO. 5070

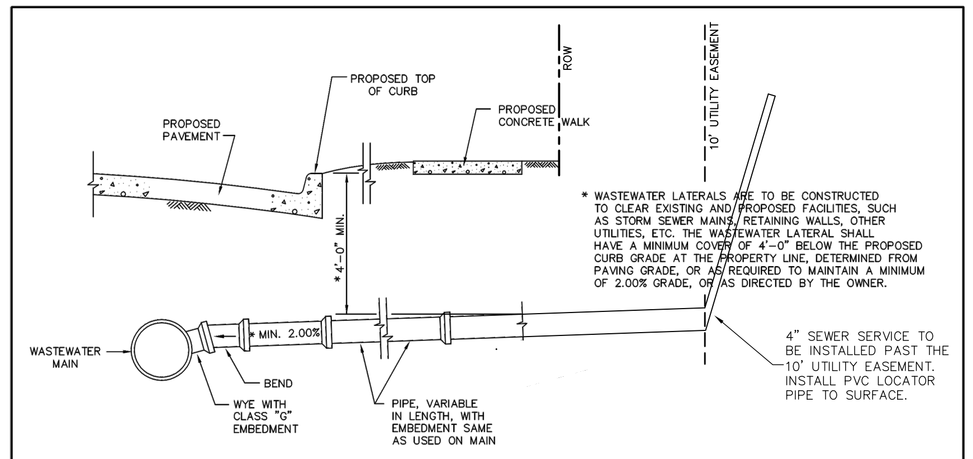
*Section II Standard Drawings as of October 2004. Reference number only has been updated for Fifth Edition Specifications. *Public Works Construction Standards North Central Texas, Fifth Edition.*



NOTES:
1. FOR MAINS 42" DIAMETER AND LARGER, 1/8 Bc SHALL BE TAKEN AS 6".
2. Bd = TRENCH WIDTH
3. Bc = OUTSIDE DIAMETER OF PIPE
4. D = INSIDE DIAMETER OF PIPE

3060 (STANDARD DRAWING NO.)

EMBEDMENT	North Central Texas Council of Governments	STANDARD SPECIFICATION REFERENCE 504.5
CLASS "G-1" & "H"		DATE OCT. '04 / STANDARD DRAWING NO. 3060



5150 (STANDARD DRAWING NO.)

WASTEWATER LATERAL STUBOUT	North Central Texas Council of Governments	STANDARD SPECIFICATION REFERENCE 502.10
IN ADVANCE OF PAVING		DATE OCT. '04 / STANDARD DRAWING NO. 5150

No.	DATE	REVISION	APPROV.

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LEWISVILLE, TEXAS 75067 (972) 393-9800

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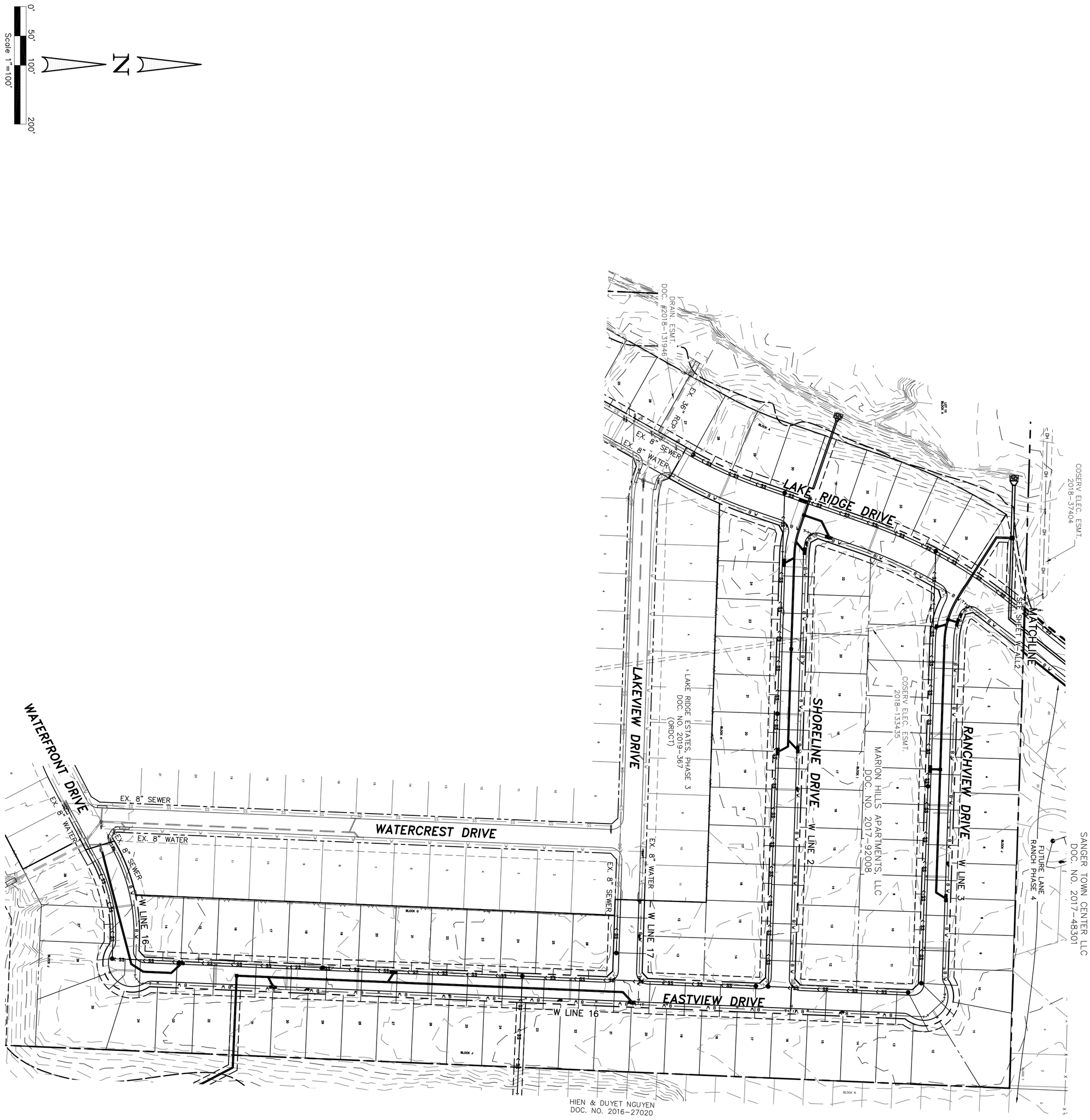
STATE OF TEXAS — T. E. MIDDLETON JR. — 64458 — REGISTERED PROFESSIONAL ENGINEER

LAKE RIDGE DRIVE – LAKE RIDGE PHASE 4
CITY OF SANGER DENTON COUNTY, TEXAS
SANGER TOWN CENTER LLC &
DUAL BOND HOLDINGS LLC &
HIEN & DUYET NGUYEN
101 FOREST BEND DRIVE
COPPELL, TEXAS 75019
JONATHAN WANG – 214-316-2256

SANITARY SEWER DETAILS

Date: 10-30-24
Dwg Scale: Hor. NTS
Vert.
Dwg File: 0001045DT-SS.DWG
Project No. 0001045

DT-SS1



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No.	DATE	REVISION	APPROV.

W-ALL1

Date: 10-30-24
Dwg Scale: Hor. 1"=100'
Vert.
Dwg File: 0001045UTIL.DWG
Project No. 0001045

OVERALL WATER PLAN

LAKE RIDGE DRIVE - LAKE RIDGE PHASE 4
CITY OF SANGER DENTON COUNTY, TEXAS

SANGER TOWN CENTER LLC &
DUAL BOND HOLDINGS LLC &
HIEN & DUYET NGUYEN
101 FOREST BEND DRIVE
COPPELL, TEXAS 75019
JONATHAN WANG - 214-316-2256

STATE OF TEXAS
F. E. MIDDLETON, JR.
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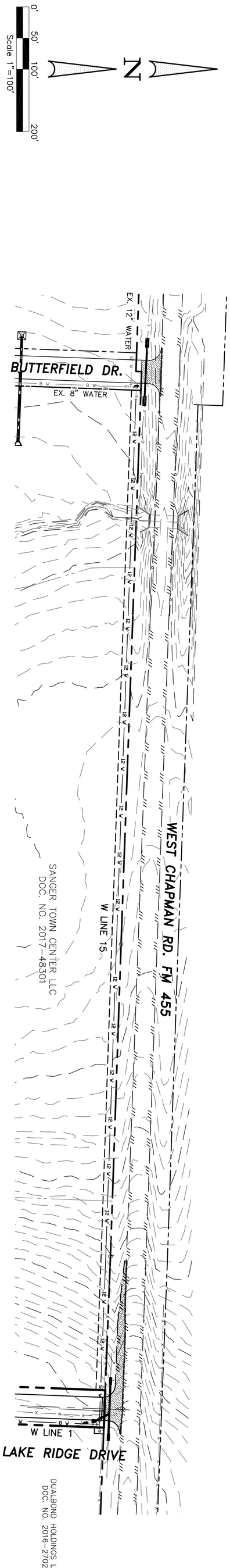

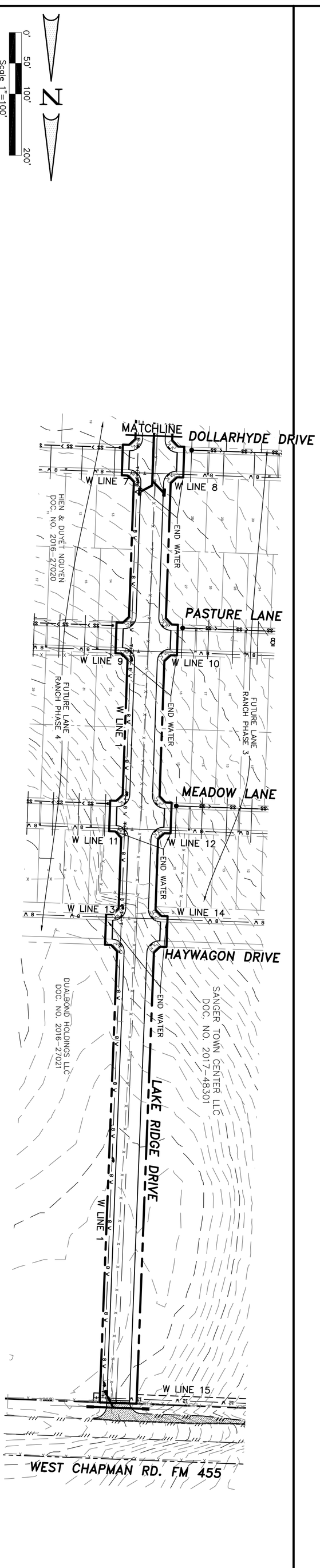

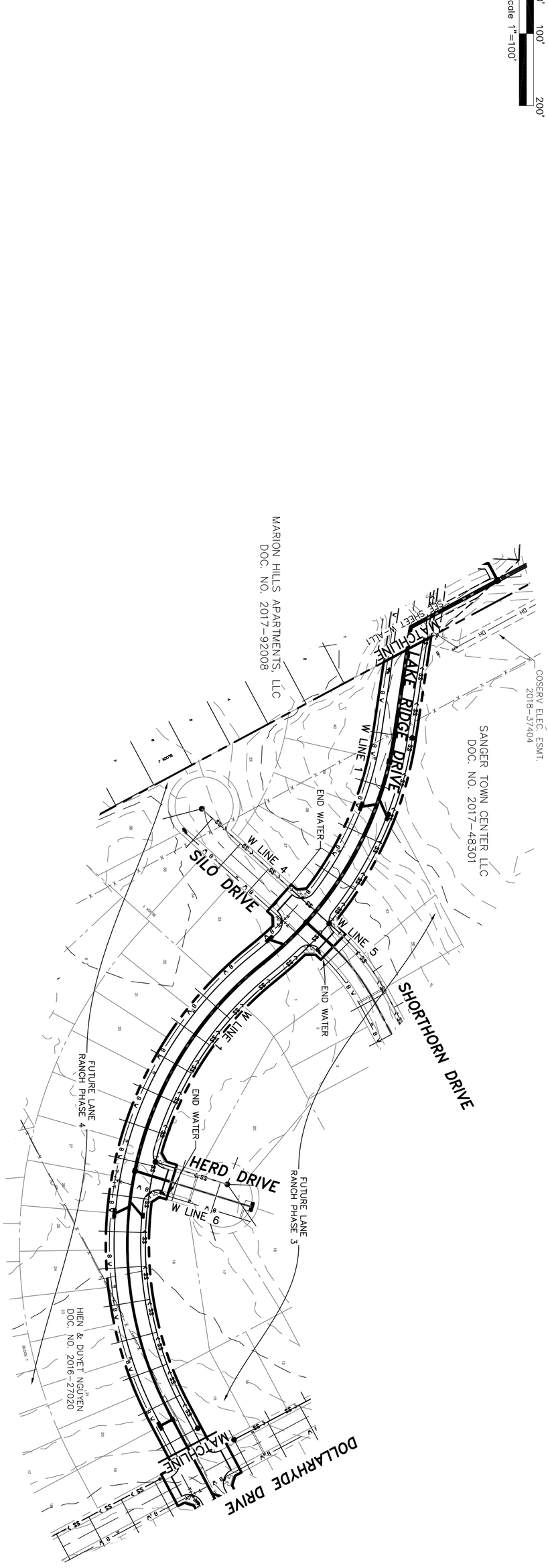

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No.	DATE	REVISION	APPROV.

W-ALL2

Date: 10-30-24
Dwg Scale: Hor. 1"=100'
Vert.
Dwg File: 0001045UTIL.DWG
Project No. 0001045

OVERALL WATER PLAN

LAKE RIDGE DRIVE – LAKE RIDGE PHASE 4
CITY OF SANGER DENTON COUNTY, TEXAS

SANGER TOWN CENTER LLC &
DUAL BOND HOLDINGS LLC &
HIEN & DUYET NGUYEN
101 FOREST BEND DRIVE
COPPELL, TEXAS 75019
JONATHAN WANG – 214-316-2256

STATE OF TEXAS
F. E. MIDDLETON, JR.
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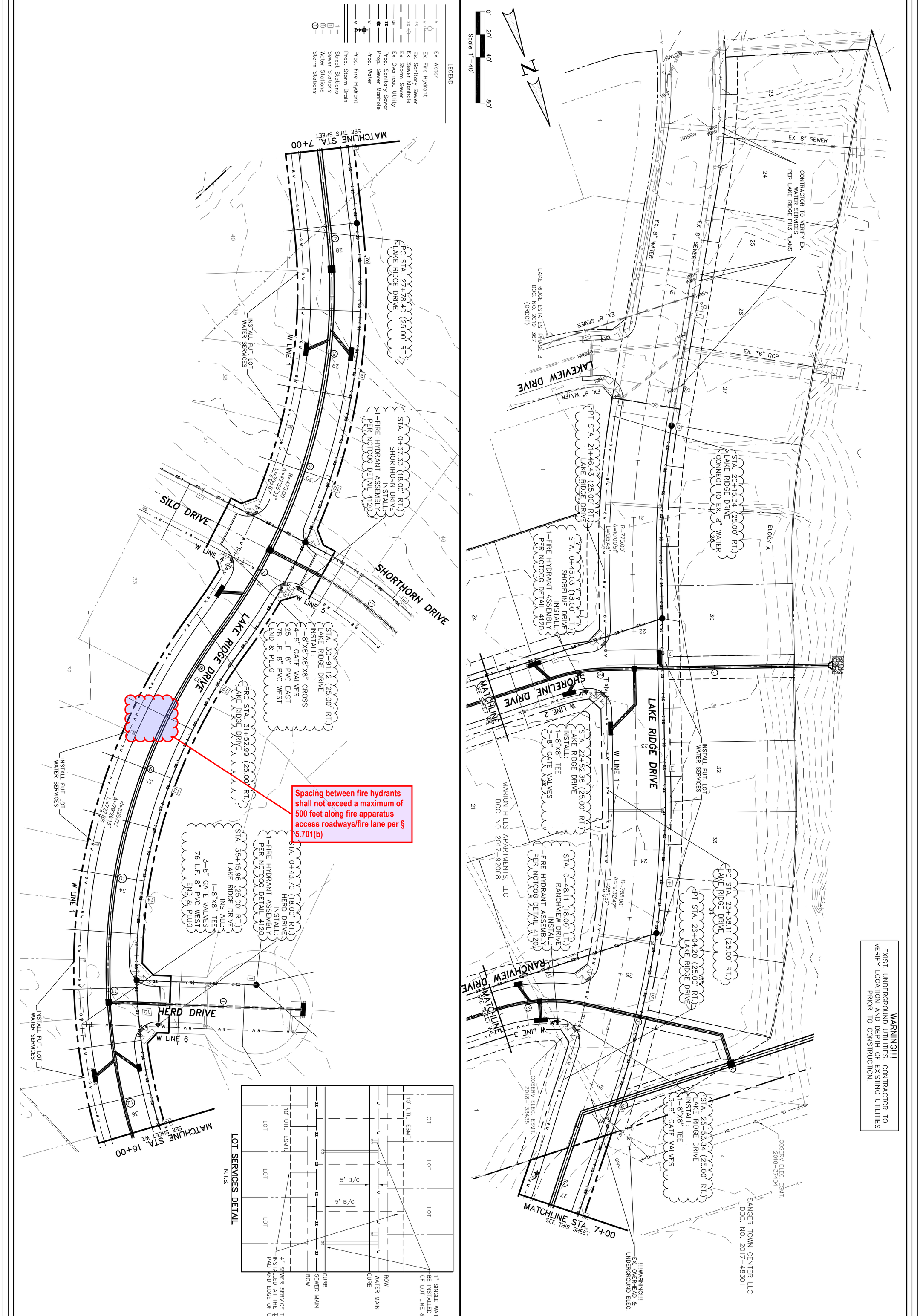
N
0' 20' 40' 80'
Scale 1"=40'
LEGEND
Ex. Water
Ex. Fire Hydrant
Ex. Sanitary Sewer
Ex. Sewer Manhole
Ex. Storm Sewer
Ex. Overhead Utility
Prop. Sanitary Sewer
Prop. Sewer Manhole
Prop. Water
Prop. Fire Hydrant
Prop. Storm Drain
Street Stations
Sewer Stations
Water Stations
Storm Stations
MATCHLINE STA. 7+00
SEE THIS SHEET
MATCHLINE STA. 16+00
SEE SHEET W2
MATCHLINE
SEE SHEET W1
LAKE RIDGE DRIVE
SHORTHORN DRIVE
SILO DRIVE
HERD DRIVE
LAKEVIEW DRIVE
SHORELINE DRIVE
RANCHVIEW DRIVE
W LINE 1
W LINE 2
W LINE 3
W LINE 4
W LINE 5
W LINE 6
PC STA. 27+78.40 (25.00' RT.)
LAKE RIDGE DRIVE
INSTALL FUT. LOT WATER SERVICES
STA. 0+37.33 (18.00' RT.)
SHORTHORN DRIVE
INSTALL:
1-FIRE HYDRANT ASSEMBLY
PER NCTCOG DETAIL 4120
PT STA. 21+46.43 (25.00' RT.)
LAKE RIDGE DRIVE
STA. 20+15.34 (25.00' RT.)
LAKE RIDGE DRIVE
CONNECT TO EX. 8" WATER
STA. 0+45.03 (18.00' LT.)
SHORELINE DRIVE
INSTALL:
1-FIRE HYDRANT ASSEMBLY
PER NCTCOG DETAIL 4120
STA. 30+91.12 (25.00' RT.)
LAKE RIDGE DRIVE
INSTALL:
1-8"X8"X8"X8" CROSS
4-8" GATE VALVES
25 L.F. 8" PVC EAST
78 L.F. 8" PVC WEST
END & PLUG
PRC STA. 31+52.99 (25.00' RT.)
LAKE RIDGE DRIVE
STA. 0+43.70 (18.00' RT.)
HERD DRIVE
INSTALL:
1-FIRE HYDRANT ASSEMBLY
PER NCTCOG DETAIL 4120
STA. 35+15.96 (25.00' RT.)
LAKE RIDGE DRIVE
INSTALL:
1-8"X8" TEE
3-8" GATE VALVES
76 L.F. 8" PVC WEST
END & PLUG
STA. 0+48.11 (18.00' LT.)
RANCHVIEW DRIVE
INSTALL:
1-FIRE HYDRANT ASSEMBLY
PER NCTCOG DETAIL 4120
STA. 22+52.38 (25.00' RT.)
LAKE RIDGE DRIVE
INSTALL:
1-8"X8" TEE
3-8" GATE VALVES
PC STA. 23+38.11 (25.00' RT.)
LAKE RIDGE DRIVE
PT STA. 26+04.20 (25.00' RT.)
LAKE RIDGE DRIVE
STA. 25+53.84 (25.00' RT.)
LAKE RIDGE DRIVE
INSTALL:
1-8"X8" TEE
3-8" GATE VALVES
Spacing between fire hydrants shall not exceed a maximum of 500 feet along fire apparatus access roadways/fire lane per § 5.701(b)
CONTRACTOR TO VERIFY EX. WATER SERVICES PER LAKE RIDGE PH3 PLANS
EX. 8" SEWER
EX. 8" WATER
EX. 8" SEWER
EX. 36" RCP
EX. 8" WATER
EX. 8" SEWER
LAKE RIDGE ESTATES, PHASE 3
DOC. NO. 2019-367
(ORDCT)
MARION HILLS APARTMENTS, LLC
DOC. NO. 2017-92008
COSERV ELEC. ESMT.
2018-133435
COSERV ELEC. ESMT.
2018-37404
SANGER TOWN CENTER LLC
DOC. NO. 2017-48301
!!!WARNING!!!
EX. OVERHEAD &
UNDERGROUND ELEC.
BLOCK A
R=775.00'
Δ=10°00'51"
L=135.45'
R=755.00'
Δ=19°32'47"
L=257.57'
R=475.00'
Δ=42°55'32"
L=355.87'
R=525.00'
Δ=19°26'13"
L=178.08'
LOT SERVICES DETAIL
N.T.S.
10' UTIL. ESMT.
5' B/C
4" SEWER SERVICE TO BE INSTALLED AT THE ℄ OF THE PAD AND EDGE OF UTIL. ESMT.
CURB
SEWER MAIN
ROW
CURB
WATER MAIN
ROW
1" SINGLE WATER SERVICES TO BE INSTALLED 1' EITHER SIDE OF LOT LINE & 2' OFF CURB
WARNING!!!
EXIST. UNDERGROUND UTILITIES. CONTRACTOR TO VERIFY LOCATION AND DEPTH OF EXISTING UTILITIES PRIOR TO CONSTRUCTION.
THESE CONSTRUCTION PLANS WERE PREPARED UNDER THE RESPONSIBLE SUPERVISION OF F.E. MIDDLETON JR., REGISTERED PROFESSIONAL ENGINEER NO. 67449.
No. DATE REVISION APPROV.
W1
Date: 10-30-24
Dwg Scale: Hor. 1"=40' Vert.
Dwg File: 0001045UTIL.DWG
Project No. 0001045
WATER PLAN
LAKE RIDGE DRIVE
LAKE RIDGE DRIVE - LAKE RIDGE PHASE 4
CITY OF SANGER DENTON COUNTY, TEXAS
SANGER TOWN CENTER LLC &
DUAL BOND HOLDINGS LLC &
HIEN & DUYET NGUYEN
101 FOREST BEND DRIVE
COPPELL, TEXAS 75019
JONATHAN WANG - 214-316-2256
STATE OF TEXAS
F. E. MIDDLETON, JR.
97449
REGISTERED
PROFESSIONAL ENGINEER
Middleton & Assoc, LLC
CONSULTING CIVIL ENGINEERS & LAND PLANNERS
TBPE #F-10900
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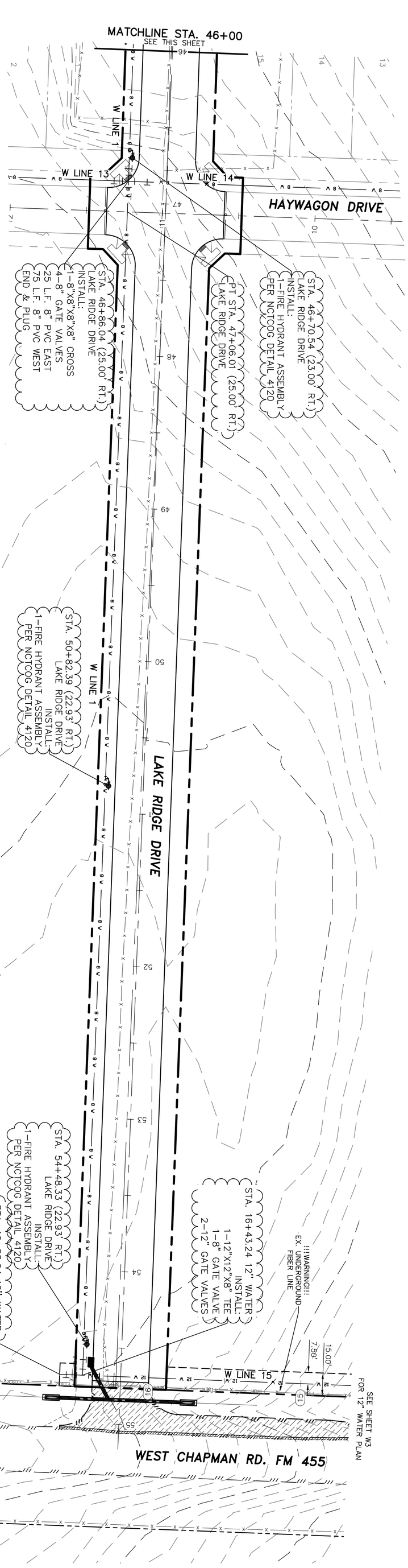

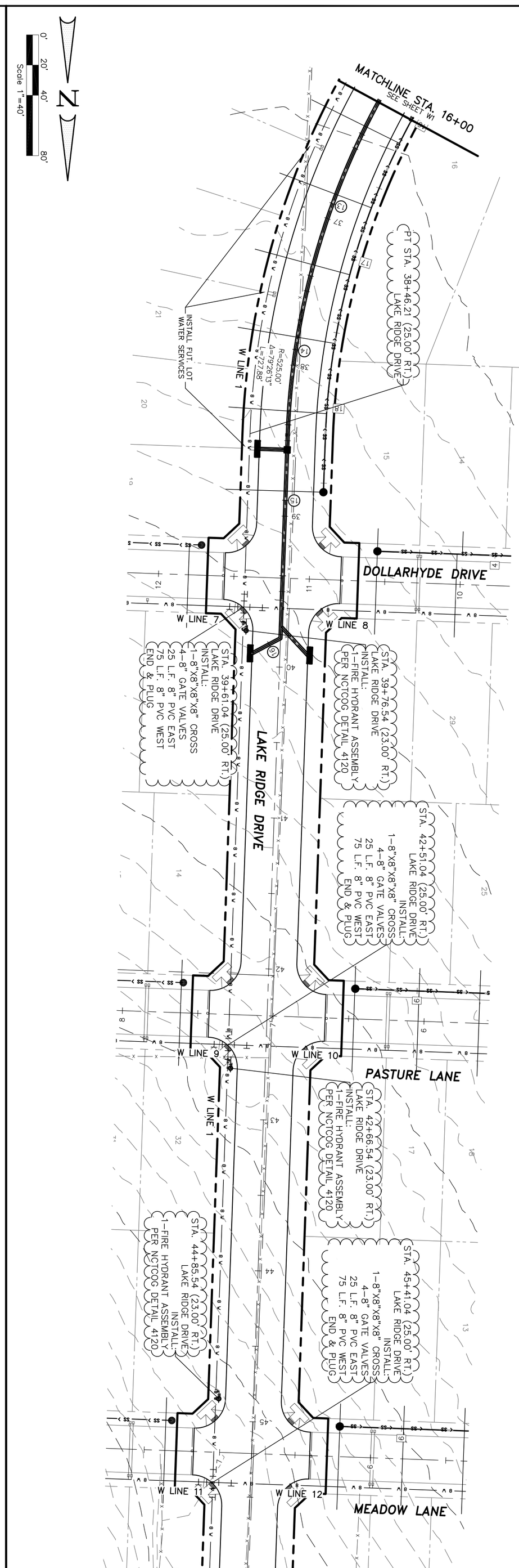

LEGEND

Ex. Water
Ex. Fire Hydrant
Ex. Sanitary Sewer
Ex. Sewer Manhole
Ex. Storm Sewer
Ex. Overhead Utility
Prop. Sanitary Sewer
Prop. Sewer Manhole
Prop. Water
Prop. Fire Hydrant
Prop. Storm Drain
Street Stations
Sewer Stations
Water Stations
Storm Stations

WARNING!!!
EXIST. UNDERGROUND UTILITIES. CONTRACTOR TO VERIFY LOCATION AND DEPTH OF EXISTING UTILITIES PRIOR TO CONSTRUCTION.

No.	DATE	REVISION	APPROV.

THESE CONSTRUCTION PLANS WERE PREPARED UNDER THE RESPONSIBLE SUPERVISION OF F.E. MIDDLETON JR., REGISTERED PROFESSIONAL ENGINEER NO. 67449.

W2

Date: 10-30-24
Dwg Scale: Hor. 1"=40'
Vert.
Dwg File: 0001045UTIL.DWG
Project No. 0001045

WATER PLAN
LAKE RIDGE DRIVE

LAKE RIDGE DRIVE – LAKE RIDGE PHASE 4
CITY OF SANGER DENTON COUNTY, TEXAS

SANGER TOWN CENTER LLC &
DUAL BOND HOLDINGS LLC &
HIEN & DUYET NGUYEN
101 FOREST BEND DRIVE
COPPELL, TEXAS 75019
JONATHAN WANG – 214-316-2256

STATE OF TEXAS
F. E. MIDDLETON, JR.
67449
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Middleton & Assoc, LLC
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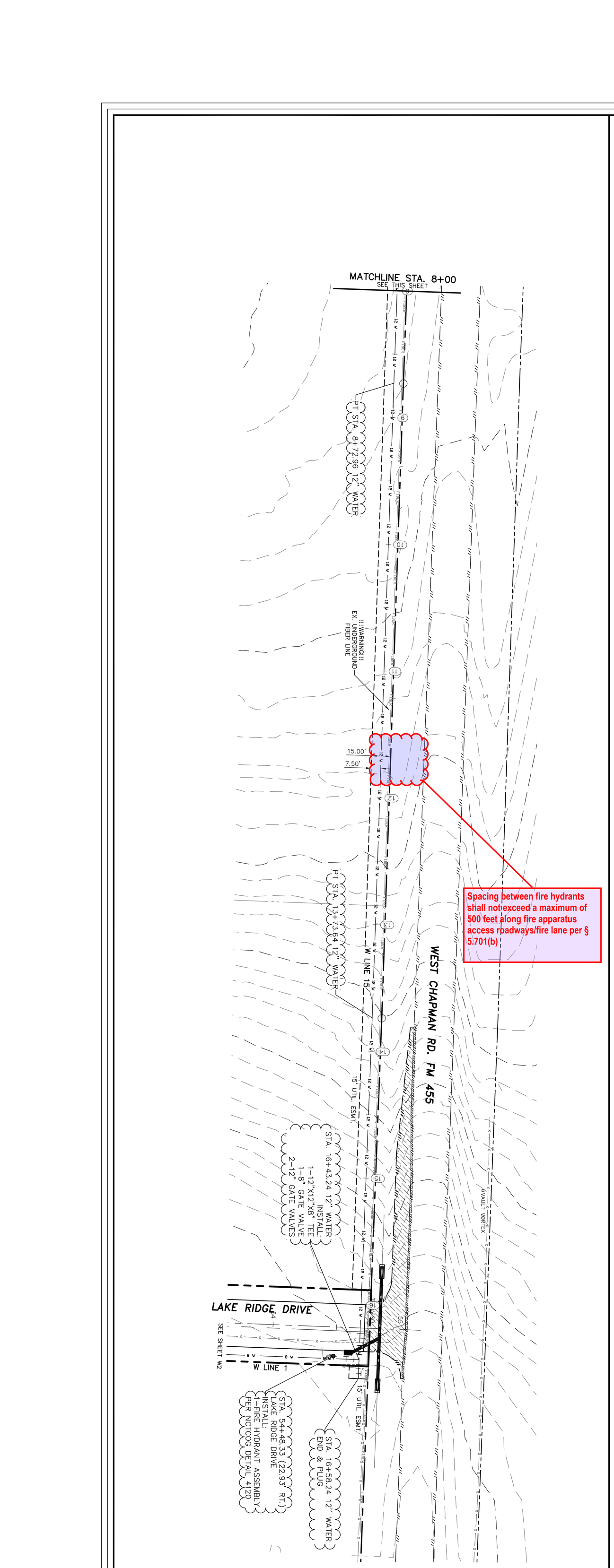

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No.	DATE	REVISION	APPROV.

W3

Date: 10-30-24
Dwg Scale: Hor. 1"=40'
Vert.
Dwg File: 0001045UTIL.DWG
Project No. 0001045

12" WATER PLAN
FM 455

LAKE RIDGE DRIVE – LAKE RIDGE PHASE 4
CITY OF SANGER DENTON COUNTY, TEXAS

SANGER TOWN CENTER LLC &
DUAL BOND HOLDINGS LLC &
HIEN & DUYET NGUYEN
101 FOREST BEND DRIVE
COPPELL, TEXAS 75019
JONATHAN WANG – 214-316-2256

STATE OF TEXAS
F. E. MIDDLETON, JR.
97449
LICENSED PROFESSIONAL ENGINEER

Middleton & Assoc, LLC
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LEWISVILLE, TEXAS 75067 (972) 393-9800

LEGEND

- Ex. Water
- Ex. Fire Hydrant
- Ex. Sanitary Sewer
- Ex. Sewer Manhole
- Ex. Storm Sewer
- Ex. Overhead Utility
- Prop. Sanitary Sewer
- Prop. Sewer Manhole
- Prop. Water
- Prop. Fire Hydrant
- Prop. Storm Drain
- Street Stations
- Sewer Stations
- Water Stations
- Storm Stations

WARNING!!!
EXIST. UNDERGROUND UTILITIES. CONTRACTOR TO VERIFY LOCATION AND DEPTH OF EXISTING UTILITIES PRIOR TO CONSTRUCTION.

N

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

MATCHLINE SEE SHEET W1

MATCHLINE SEE SHEET W1

MATCHLINE SEE SHEET W5

WATERCREST DRIVE

LAKEVIEW DRIVE

SHORELINE DRIVE

RANCHVIEW DRIVE

EASTVIEW DRIVE

BLOCK H

BLOCK I

BLOCK J

LAKE RIDGE ESTATES, PHASE 3
DOC. NO. 2019-367
(ORDCT)

MARION HILLS APARTMENTS, LLC
DOC. NO. 2017-92008

W LINE 2

W LINE 3

W LINE 16

W LINE 17

STA. 4+66.18 (18.00' LT.)
SHORELINE DRIVE
INSTALL:
1-FIRE HYDRANT ASSEMBLY
PER NCTCOG DETAIL 4120

STA. 4+78.71 (18.00' LT.)
RANCHVIEW DRIVE
INSTALL:
1-FIRE HYDRANT ASSEMBLY
PER NCTCOG DETAIL 4120

STA. 7+93.65 (20.00' LT.)
LAKEVIEW DRIVE
CONNECT TO EX. 8" WATER

STA. 8+27.11 (18.00' LT.)
LAKEVIEW DRIVE
INSTALL:
1-FIRE HYDRANT ASSEMBLY
PER NCTCOG DETAIL 4120

STA. 12+05.90 (20.00' LT.)
EASTVIEW DRIVE
INSTALL:
3-8" GATE VALVES
1-8"X8" TEE

STA. 9+45.89 (20.00' LT.)
EASTVIEW DRIVE
INSTALL:
3-8" GATE VALVES
1-8"X8" TEE

STA. 8+57.16 (18.00' LT.)
EASTVIEW DRIVE
INSTALL:
1-FIRE HYDRANT ASSEMBLY
PER NCTCOG DETAIL 4120

STA. 7+26.33 (25.79' LT.)
RANCHVIEW DRIVE
INSTALL:
1-45° BNED

STA. 7+01.36 (25.79' LT.)
RANCHVIEW DRIVE
INSTALL:
1-8" GATE VALVE
1-45° BEND

EX. 8" SEWER

EX. 8" WATER

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No.	DATE	REVISION	APPROV.

W4

Date: 10-30-24
Dwg Scale: Hor. 1"=40'
Vert.
Dwg File: 0001045UTIL.DWG
Project No. 0001045

WATER PLAN
LAKE RIDGE, PHASE 4

LAKE RIDGE DRIVE - LAKE RIDGE PHASE 4
CITY OF SANGER DENTON COUNTY, TEXAS

SANGER TOWN CENTER LLC &
DUAL BOND HOLDINGS LLC &
HIEN & DUYET NGUYEN
101 FOREST BEND DRIVE
COPPELL, TEXAS 75019
JONATHAN WANG - 214-316-2256

STATE OF TEXAS
F. E. MIDDLETON, JR.
67449
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TBPE #F-10900
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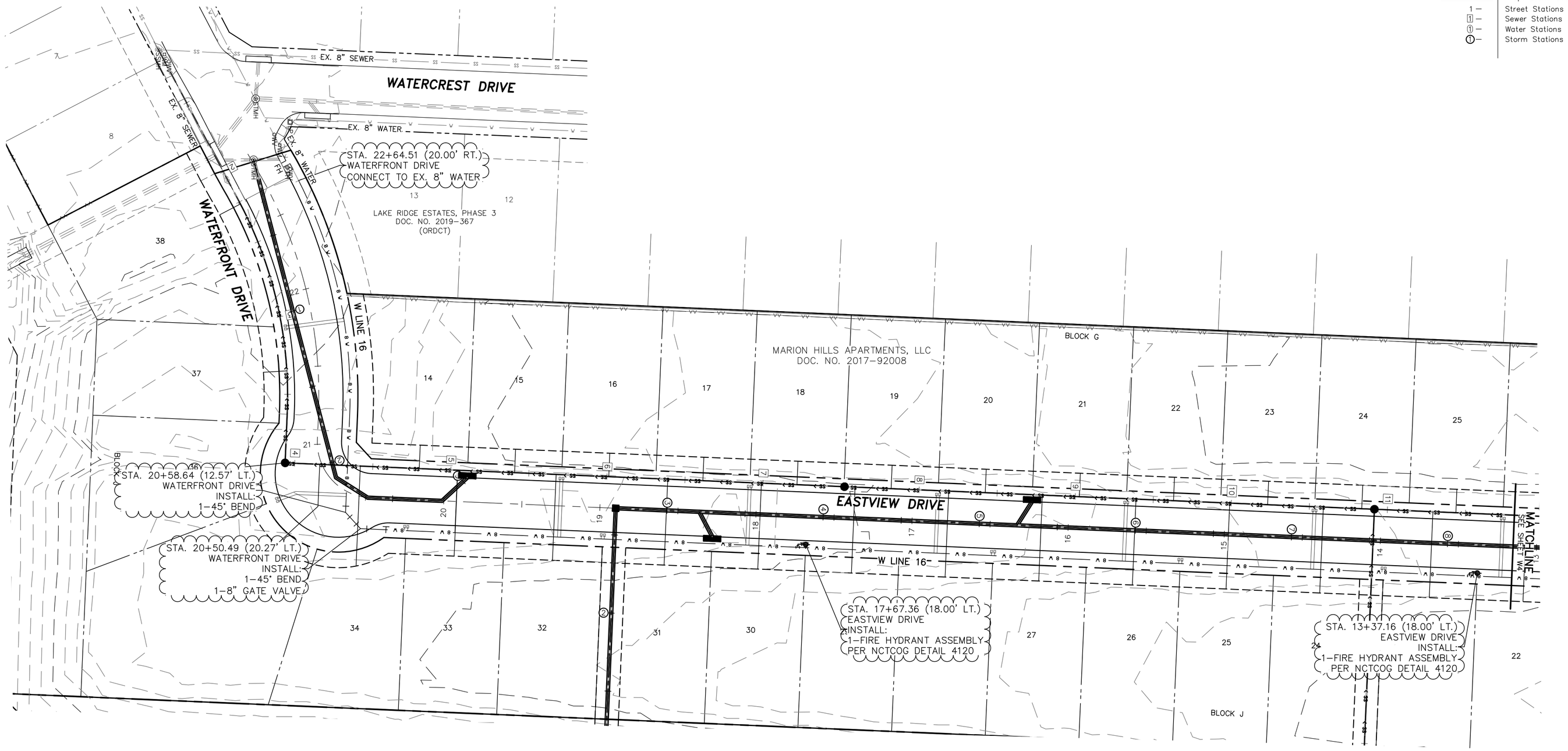
WARNING!!!
EXIST. UNDERGROUND UTILITIES. CONTRACTOR TO VERIFY LOCATION AND DEPTH OF EXISTING UTILITIES PRIOR TO CONSTRUCTION.



LEGEND

- Ex. Water
- Ex. Fire Hydrant
- Ex. Sanitary Sewer
- Ex. Sewer Manhole
- Ex. Storm Sewer
- Ex. Overhead Utility
- Prop. Sanitary Sewer
- Prop. Sewer Manhole
- Prop. Water
- Prop. Fire Hydrant
- Prop. Storm Drain
- Street Stations
- Sewer Stations
- Water Stations
- Storm Stations

N

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

No.	DATE	REVISION	APPROV.

Middleton & Assoc, LLC
CONSULTING CIVIL ENGINEERS & LAND PLANNERS
TBPE #F-10900
2785 ROCKBROOK DRIVE, SUITE 105
LEWISVILLE, TEXAS 75067 (972) 393-9800

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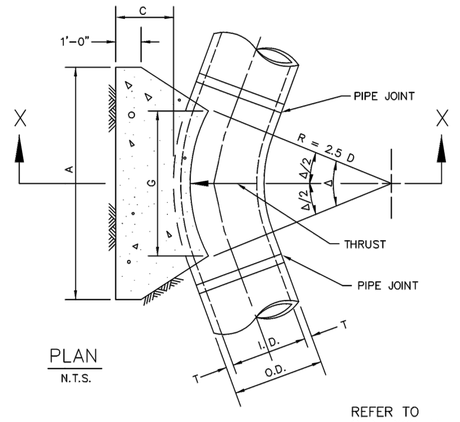
LAKE RIDGE DRIVE – LAKE RIDGE, PHASE 4
CITY OF SANGER DENTON COUNTY, TEXAS
SANGER TOWN CENTER LLC &
DUAL BOND HOLDINGS LLC &
HIEN & DUYET NGUYEN
101 FOREST BEND DRIVE
COPPELL, TEXAS 75019
JONATHAN WANG – 214-316-2256

WATER PLAN
LAKE RIDGE, PHASE 4

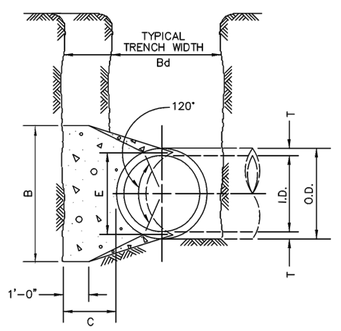
Date: 10-30-24
Dwg Scale: Hor. 1"=40'
Vert.
Dwg File: 0001045UTIL.DWG
Project No. 0001045

W5



PLAN
N.T.S.

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



SECTION X–X
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

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

HORIZONTAL THRUST BLOCK
AT PIPE BEND

North Central Texas Council of Governments

STANDARD SPECIFICATION REFERENCE: 502.4
DATE: OCT. '04
STANDARD DRAWING NO.: 4010B

		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

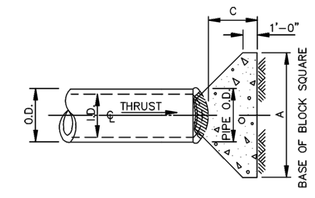
		Δ = 67.50°								Δ = 90°							
			EARTH			ROCK					EARTH			ROCK			
I.D. (IN.)	G (FT.)	THRUST (TONS)	A (FT.)	B (FT.)	VOL. (C.Y.)	A (FT.)	B (FT.)	VOL. (C.Y.)	I.D. (IN.)	G (FT.)	THRUST (TONS)	A (FT.)	B (FT.)	VOL. (C.Y.)	A (FT.)	B (FT.)	VOL. (C.Y.)
4,6,8	2.1	5.6	3.0	2.0	0.3	2.0	1.5	0.2	4,6,8	2.7	7.1	5.0	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

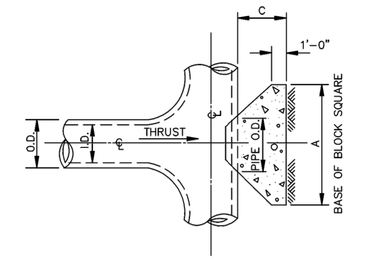
HORIZONTAL THRUST BLOCK
AT PIPE BEND

North Central Texas Council of Governments

STANDARD SPECIFICATION REFERENCE: 502.4
DATE: OCT. '04
STANDARD DRAWING NO.: 4010C



PLAN OF PLUG THRUST BLOCK
N.T.S.



PLAN OF TEE THRUST BLOCK
N.T.S.

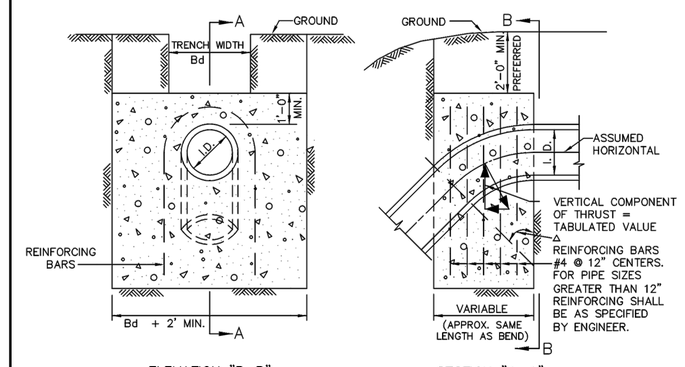
REFER TO
STD. DWG. No. 4040
FOR GENERAL NOTES.

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	63.0	3.0	7.5	4.1	5.5	2.4
36	79.3	3.0	9.0	5.3	6.5	4.2
42	104.0	4.0	10.5	11.0	7.5	6.9
48	136.0	5.0	12.0	15.6	8.5	8.9
54	172.0	5.0	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

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



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

VERTICAL THRUST BLOCK
AT PIPE BEND

North Central Texas Council of Governments

STANDARD SPECIFICATION REFERENCE: 502.4
DATE: OCT. '04
STANDARD DRAWING NO.: 4030

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.

THRUST BLOCK
GENERAL NOTES

North Central Texas Council of Governments

STANDARD SPECIFICATION REFERENCE: 502.4
DATE: OCT. '04
STANDARD DRAWING NO.: 4040

No.	DATE	REVISION	APPROV.

Middleton & Assoc, LLC
CONSULTING CIVIL ENGINEERS & LAND PLANNERS
TBPE #F-10900
2785 ROCKBROOK DRIVE, SUITE 105
LEWISVILLE, TEXAS 75067 (972) 393-9800

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THESE CONSTRUCTION PLANS WERE PREPARED UNDER THE RESPONSIBLE SUPERVISION OF: T. E. MIDDLETON, JR., P.E. REGISTERED PROFESSIONAL ENGINEER, STATE OF TEXAS

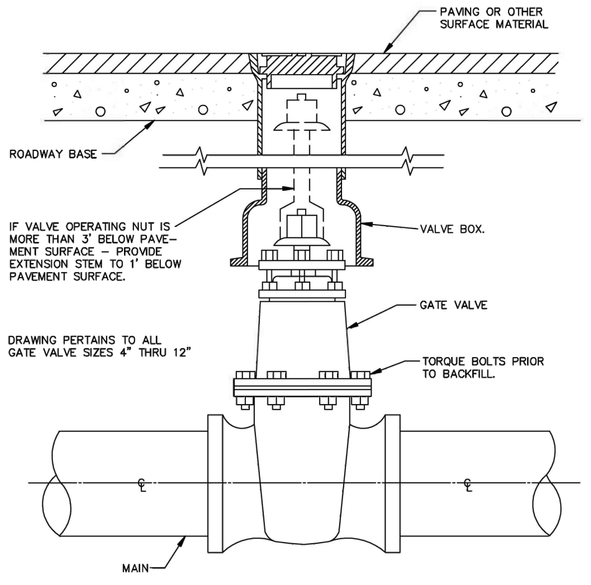
LAKE RIDGE DRIVE – LAKE RIDGE PHASE 4
CITY OF SANGER DENTON COUNTY, TEXAS
SANGER TOWN CENTER LLC &
DUAL BOND HOLDINGS LLC &
HIEN & DUYET NGUYEN
101 FOREST BEND DRIVE
COPPELL, TEXAS 75019
JONATHAN WANG – 214-316-2256

WATER DETAILS

Date: 10-30-24
Dwg Scale: Hor. NTS
Vert.
Dwg File: 0001045DT-WAT.DWG
Project No. 0001045

DT–W1

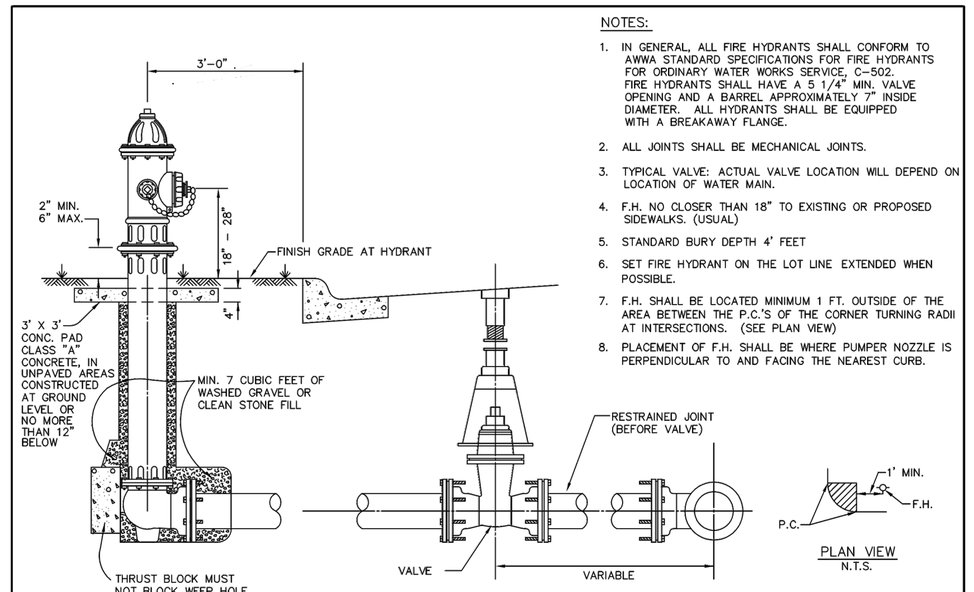
NOTE:
IN UNPAVED AREAS, INSTALL 2' x 2' x 6" CONCRETE VALVE PAD FLUSH WITH THE TOP OF VALVE BOX. REINFORCE WITH #3 BARS ON 6" CENTERS BOTH WAYS.



GATE VALVE BOX AND EXTENSION STEM
N.T.S.

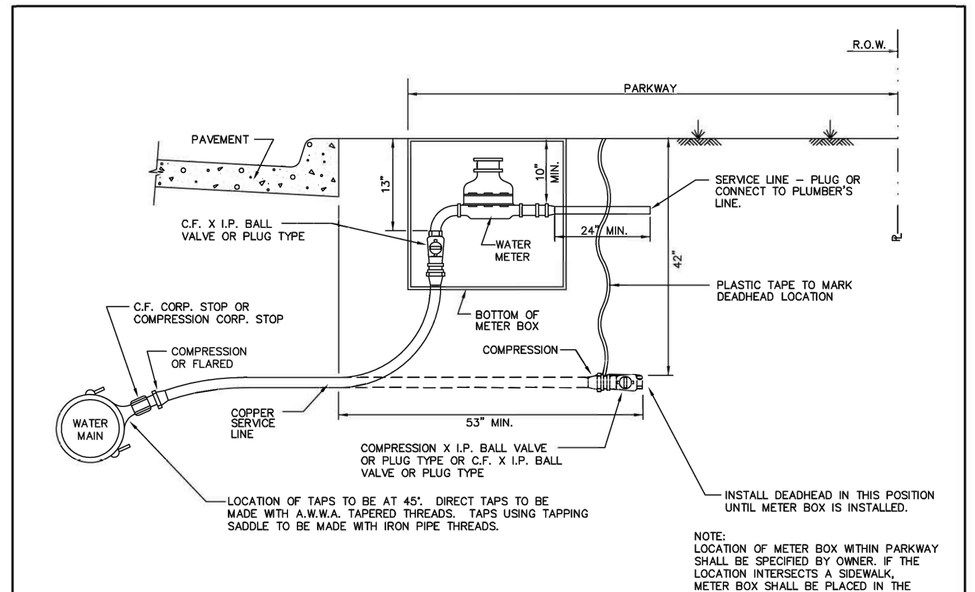
GATE VALVE 4" TO 12" BOX & EXTENSION STEM	North Central Texas Council of Governments	STANDARD SPECIFICATION REFERENCE 502.6.6*
		DATE OCT. '04
		STANDARD DRAWING NO. 4050

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



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.

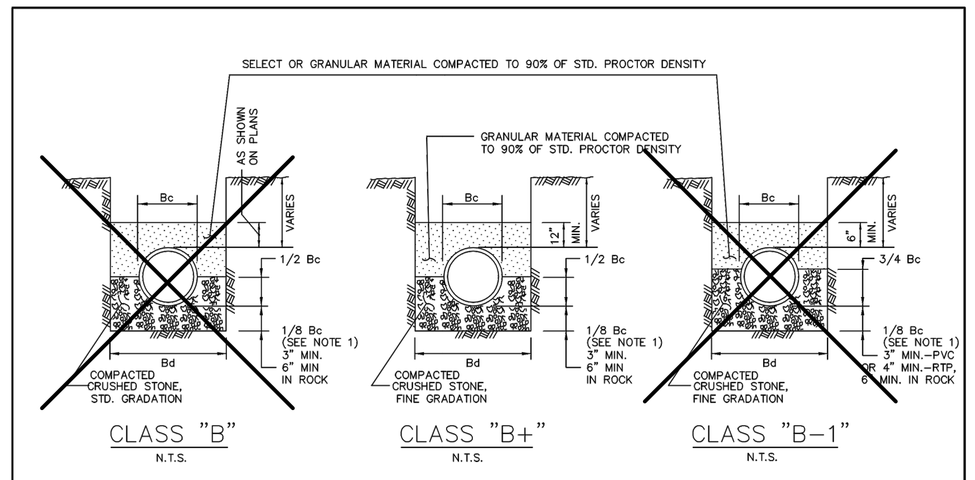
STANDARD DRAWING NO. 4120	FIRE HYDRANT INSTALLATION	North Central Texas Council of Governments	STANDARD SPECIFICATION REFERENCE 502.3
			DATE OCT. '04
			STANDARD DRAWING NO. 4120



NOTE:
LOCATION OF METER BOX WITHIN PARKWAY SHALL BE SPECIFIED BY OWNER. IF THE LOCATION INTERSECTS A SIDEWALK, METER BOX SHALL BE PLACED IN THE CENTER OF SIDEWALK.

STANDARD DRAWING NO. 4130	WATER SERVICE INSTALLATION 3/4" OR 1" LINE	North Central Texas Council of Governments	STANDARD SPECIFICATION REFERENCE 502.10.3*
			DATE OCT. '04
			STANDARD DRAWING NO. 4130

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



NOTES:
1. FOR MAINS 42" DIAMETER AND LARGER LARGER, 1/8 Bc SHALL BE TAKEN AS 6".
2. Bc = OUTSIDE DIAMETER OF PIPE
3. Bd = TRENCH WIDTH

STANDARD DRAWING NO. 3020	EMBEDMENT CLASS "B", "B+", & "B–1"	North Central Texas Council of Governments	STANDARD SPECIFICATION REFERENCE 504.5
			DATE OCT. '04
			STANDARD DRAWING NO. 3020

No.	DATE	REVISION	APPROV.

Middleton & Assoc, LLC
CONSULTING CIVIL ENGINEERS & LAND PLANNERS
TBPE #F-10900
2785 ROCKBROOK DRIVE, SUITE 105
LEWISVILLE, TEXAS 75067 (972) 393-9800

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THESE CONSTRUCTION PLANS WERE PREPARED UNDER THE RESPONSIBLE SUPERVISION OF T. E. MIDDLETON, JR., REGISTERED PROFESSIONAL ENGINEER NO. 57448

LAKE RIDGE DRIVE – LAKE RIDGE PHASE 4
CITY OF SANGER DENTON COUNTY, TEXAS
SANGER TOWN CENTER LLC &
DUAL BOND HOLDINGS LLC &
HIEN & DUYET NGUYEN
101 FOREST BEND DRIVE
COPPELL, TEXAS 75019
JONATHAN WANG – 214-316-2256

WATER DETAILS

Date: 10-30-24
Dwg Scale: Hor. NTS
Vert.
Dwg File: 00010431DT-WAT.DWG
Project No. 0001045

DT-W2

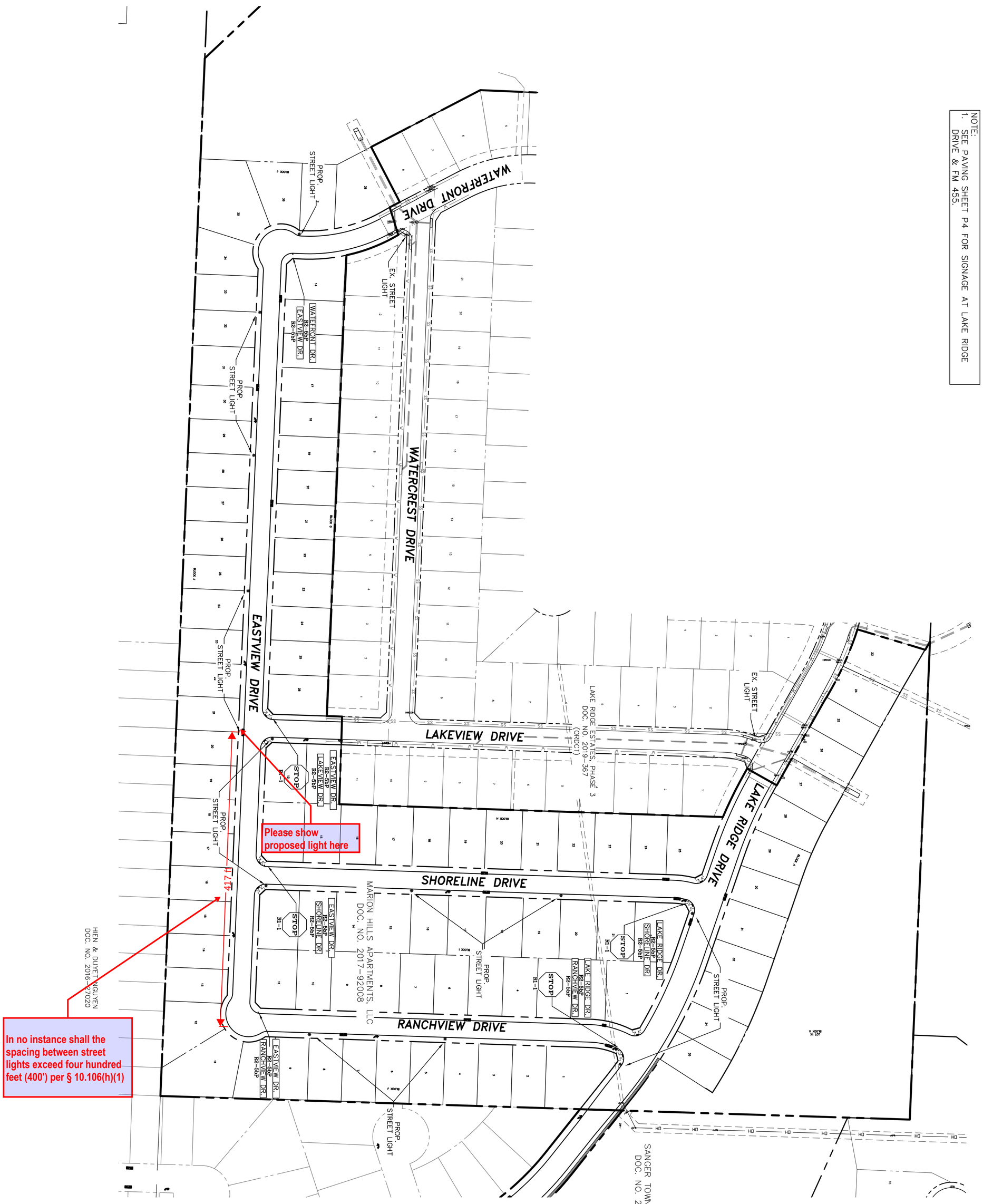
LEGEND

❋	PROP. STREET LIGHT
■	PROP. STREET NAME SIGN

NOTE:
1. SEE PAVING SHEET P4 FOR SIGNAGE AT LAKE RIDGE DRIVE & FM 455.

N

0' 40' 80' 160'
Scale 1"=80'



THESE CONSTRUCTION PLANS WERE PREPARED UNDER THE RESPONSIBLE SUPERVISION OF F.E. MIDDLETON JR., REGISTERED PROFESSIONAL ENGINEER NO. 67449.

No.	DATE	REVISION	APPROV.

LT1

Date: 10-30-24
Dwg Scale: Hor. 1"=80'
Vert.
Dwg File: 0001045LIGHT.DWG
Project No. 0001045

STREET LIGHT & SIGNAGE PLAN

LAKE RIDGE DRIVE – LAKE RIDGE PHASE 4
CITY OF SANGER DENTON COUNTY, TEXAS

SANGER TOWN CENTER LLC &
DUAL BOND HOLDINGS LLC &
HIEN & DUYET NGUYEN
101 FOREST BEND DRIVE
COPPELL, TEXAS 75019
JONATHAN WANG – 214-316-2256

STATE OF TEXAS
F. E. MIDDLETON, JR.
67449
REGISTERED PROFESSIONAL ENGINEER

Middleton & Assoc, LLC.
CONSULTING CIVIL ENGINEERS & LAND PLANNERS
TBPE #F-10900

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2785 ROCKBROOK DRIVE, SUITE 105
LEWISVILLE, TEXAS 75067 (972) 393-9800

November 27, 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: **Lake Ridge Drive and Phase 4 – Drainage Review #1**

Dear Ms. Hammonds,

Halff Associates, Inc. was requested by the City of Sanger to review the Lake Ridge Drive Plat, Lake Ridge Phase 4 Preliminary Plat and Preliminary Drawings for the development located east of Sanger High School, between Lane Ranch Subdivision and McReynolds Rd. The site is located within the City of Sanger. The 1st submittal was prepared by Middleton & Associates, LLC and received on November 14, 2024.

We have finished our review and offer comments as follows. Please note that additional comments may be forthcoming after receipt of requested documents.

General Comments

1. Please address comments on attached markups and provide annotated responses on markups. Please note, not all comments are included in this letter since some comments are easier to show and explain on the markups.
2. Please note, an accepted flood study is required prior to plan acceptance.

Hydrology and Hydraulics

1. Please provide an Environmental Assessment if there's one already. If not, please acquire it.
2. Please provide the previously approved flood study for previous phases of Lake Ridge, which shall include the study report, the hydrologic/hydraulic calculations, and the digital models. Please note that the Lane Ranch Flood Study dated 4-22-2024 does not meet this requirement, as it only includes floodplain analysis in Lane Ranch Phase 1 and Addition, not Lake Ridge Phase 4. In addition, the Lane Ranch Flood Study has not been approved yet.
3. Please provide the as-built drawings from previous phases.
4. In Lake Ridge Drive plat, it appears that the proposed road is encroaching effective floodplain. Please note that a flood study incorporating the encroachment needs to be provided for review.
5. In Lake Ridge Phase 4 Preliminary Plat, it appears that the fully developed floodplain is within the lot. Please note that "Natural creeks including FEMA streams shall have a dedicated Floodplain Easement encompassing the 100-year fully developed floodplain plus ten (10) feet on each side of this floodplain." (Drainage Section 3.7) Please revise.
6. In Lake Ridge Phase 4 Preliminary Plat (PPT1), there are multiple locations showing fill in effective FEMA Flood Zone AE. Please note that it is required to:
    a. incorporate the fill to the flood study model and provide the digital data for review.

b. show and label cross-sections with existing and fully developed 100-yr flood elevations.

7. In Lake Ridge Phase 4 Preliminary Plat (PPT2), the 100-yr fully developed floodplain shall not cross a proposed road like shown here. Proposed road curb shall meet freeboard requirement from 100-yr fully developed flood elevation. (Section 3.6.3)
8. For Phase 4 Preliminary Civil Drawings, please provide existing and proposed drainage area maps for Phase 4 storm analysis.
9. Please provide hydraulic calculations.
10. Please include tailwater conditions for the proposed pipes to tie in with water surface elevations from the approved flood study.
11. Please provide grading plans to be reviewed. Please note that if grading plans shows additional fill in floodplain, it may require an update of previously approved hydraulic models.

The Engineer shall revise the hydrologic study and/or plans in accordance with the above comments and/or provide a written response that addresses each comment. If you have any questions or need additional information, please do not hesitate to call me at (214) 937-3921.

Sincerely,
HALFF
TBPELS Firm No. 312

Yangbin Tong, PE, CFM
Project Manager

Attachments:

- Preliminary Plans markups

COSERV GAS & ELECTRIC
7701 S. STEMMONS FRWY.
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MICHAEL THOMPSON
940-321-7800
mthompson@coserv.com

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205 N. WALNUT ST.
MUENSTER, TEXAS 76252
SHAY EVANS
940-759-2251
sevans@nortex.com

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jpalmer@prosperitypc.com

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JONATHAN WANG
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mcginnisdevelopment@gmail.com

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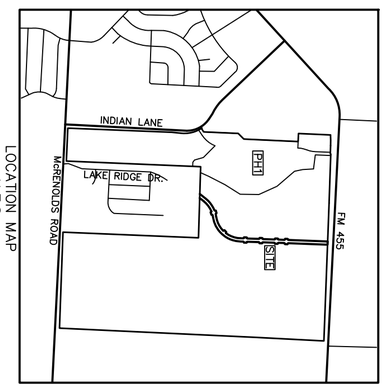
PHIL CORNETT
10147 CR 135
FLINT, TEXAS
903-581-2238
www.txsurveys.com

0' 40' 80' 160'
Scale 1"=80

LEGEND

IRS	IRON ROD SET
IRF	IRON ROD FOUND
U.E.	UTILITY EASEMENT
D.E.	DRAINAGE EASEMENT
F.E.	FRANCHISE EASEMENT
S.B.	SETBACK
O.P.R.D.C.T.	PUBLIC RECORDS OF DENTON COUNTY, TEXAS
D.R.D.C.T.	DEED RECORDS OF DENTON COUNTY, TEXAS
DOC. NO.	DOCUMENT NUMBER
MFF	MIN. FINISHED FLOOR
FH	FIRE HYDRANT
MB	MAILBOX

LOCATION MAP
N.T.S.



Show centerline of existing streets. Dimensions from centerline to edges of existing and proposed right-of-way on both sides of the centerline.

It appears that the proposed road is encroaching effective floodplain. Please note that a flood study incorporating the encroachment needs to be provide for review.

Please provide the flood study for review. Please note that the flood study needs to be accepted prior to the final plat or construction plans.

PLAT NOTES
1. All lots comply with the minimum size requirements of PD Ord. 05-09-24.
2. This property may be subject to charges related to impact fees and the applicant should contact the City regarding any applicable fees due.
3. All common areas, drainage easements, and detention facilities will be owned and maintained by the HOA/POA. Any common area within the City's right-of-way will require a facilities agreement, to be reviewed and approved by the City.
4. Notice - 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 withholding of utilities and building permits.
5. This plat does not alter or remove existing deed restrictions, if any, on this property.
6. Minimum finished floor elevations are at least 2 feet above the 100 year flood plain.
7. The subject property lies within 100-year floodplain Zone a according to Community Panel No. 48121C0210G, dated APRIL 18 2011, of the National Flood Insurance Rate Maps for Denton County, Texas.
8. The purpose of this plat is subdivide the property into single family residential lots.
9. Bearings are based on the State Plane Coordinate System, Texas North Central Zone (4202), North American Datum of 1983 (NAD '83)

NOTE:
1. UNLESS OTHERWISE NOTED ALL CORNERS WILL BE A 1/2" IRON ROD SET.

No.	DATE	REVISION	APPROV.

ROW1

Date: 10-30-24
Dwg Scale: Hor. 1"=80' Vert.
Dwg File: 0001045ROW.DWG
Project No. 0001045

FINAL PLAT - LAKE RIDGE DRIVE
4.165 ACRES
4.165 AC. RIGHT-OF-WAY DEDICATION
REUBEN BEBEE SURVEY, ABST. NO. 29
CITY OF SANGER, DENTON, COUNTY, TEXAS

SURVEYOR
JOHN COWAN & ASSOCIATES, INC.
10147 CR 135 FLINT, TEXAS 75762 PH: (903) 581-2238
WWW.TXSURVEYS.COM
FIRM REGISTRATION CERTIFICATION NO. 10025500

Middleton & Assoc, LLC
CONSULTING CIVIL ENGINEERS & LAND PLANNERS
TBPE #F-10900
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2785 ROCKBROOK DRIVE, SUITE 105
LEWISVILLE, TEXAS 75067 (972) 393-9800

Natural creeks including FEMA streams shall have a dedicated Floodplain Easement encompassing the 100-year fully developed floodplain plus ten (10) feet on each side of this floodplain. (Drainage Section 3.7). It appears that the fully developed floodplain is within the lot.

There are multiple locations showing fill in effective FEMA Flood Zone AE. Please:
1. incorporate the fill to the flood study model.
2. show and label cross-sections with existing and fully-developed 100-yr flood elevation.

Scale 1"=80'
0' 40' 80' 160'

N

LOCATION MAP
N.T.S.

INDIAN LANE
LAKE RIDGE DR.
SITE
MCREYNOLDS ROAD
FM 455

FULLY DEVELOPED 100 YEAR FLOODPLAIN PER FLOOD STUDY

SANGER TOWN CENTER LLC
DOC. NO. 2017-48301

15' SANITARY SEWER ESMT.
DOC. #2007-97779

DRAIN. ESMT.
DOC. #2004-9176

DRAIN. ESMT.
DOC. #2018-131946

PER LOMR DATED JUNE 26, 2018
CASE NO. 18-06-0546P
FIRM PANEL 48121C0210G

FLOOD ZONE AE

LANE RANCH
PHASE 1

N 7182373.2772
E 2379202.1023
2" PIPE FND.

DRAINAGE ESMT.
LOT 1X
BLOCK A
OPEN SPACE

COSERV ELEC. ESMT.
2018-37404

S29°38'53"W
16.65'

EX. 30" RCP

1/2" IRF

652

654

656

658

660

662

664

666

668

670

672

674

676

N02°25'03"E 845.55'

S29°15'04"W
125.18'

68.16'
60.35'

25' S.B.
15' U.E.
30'
60'
75.0'

LAKE RIDGE DRIVE
(60' ROW)

R=542.68'
C6
60.00'
55.00'
EX. 8" SEWER
EX. 8" WATER
171.19'
S29°24'09"W
170.52'

EX. 36" RCP

5.23'
54.82'
55.92'
4.95'
71.00'
68.00'
47.74
13.63'
68.15'
65.15'
60.00'
64.70'
60.87'
5.29'
10.59'

LAKE RIDGE ESTATES, PHASE 1
CAB. V, PG. 752
(PRDCT)

EX. 8" WATER
EX. 8" SEWER
MB
50.00'
20' S.B.
15' U.E.
25' S.B.

LAKESIDE DRIVE
(50' ROW)

LAKE RIDGE ESTATES, PHASE 2
DOC. NO. 2017-34
(ORDCT)

PARK LANE
(50' ROW)

CLIFFVIEW DRIVE
(50' ROW)

C5
R=750.00'
N60°35'47"W
60.00'
S29°24'13"W
10.59'

LAKEVIEW DRIVE
(50' ROW)

N88°05'14"W 678.52'

LAKE RIDGE ESTATES, PHASE 3
DOC. NO. 2019-367
(ORDCT)

EX. 8" SEWER
EX. 8" WATER

WATERCREST DRIVE
(50' ROW)
EX. 8" SEWER
EX. 8" WATER

N88°06'08"W
27.01'

N01°52'31"E
155.00'

BLOCK A
7250 S.F.
7810 S.F.
7480 S.F.
6660 S.F.
7048 S.F.
7045 S.F.
7048 S.F.

LAKE RIDGE DRIVE
(60' ROW)

R=150.00'
R=780.00'
191.68'
70.67'
24.68'
62.88'
13.63'
23.34'
10' F.E.
15' S.B.
20' D.E.
128.07'
14.46'
50.69'
25.31'
35.28'
61.00'
66.50'
53.45'
75.85'
62.53'
112.96'
45.56'
76.00'
17.62'
R=350.00'
S00°00'
41.99'

SEE SHEET PP13

SHORELINE DRIVE
754.15'
(50' ROW)

RANCHVIEW DRIVE
583.10'
(50' ROW)

BLOCK H
BLOCK I
BLOCK J

8376 S.F.
8405 S.F.
10364 S.F.
6983 S.F.
6420 S.F.
6405 S.F.
6982 S.F.
10912 S.F.
6584 S.F.
6590 S.F.
6597 S.F.
6604 S.F.
6661 S.F.
6618 S.F.
6625 S.F.
6632 S.F.
6713 S.F.
6741 S.F.
7661 S.F.
7560 S.F.
6356 S.F.
7241 S.F.
7140 S.F.

COSERV ELEC. ESMT.
2018-133435
TO BE ABANDONED

MARION HILLS APARTMENTS, LLC
DOC. NO. 2017-92008

SANGER TOWN CENTER LLC
DOC. NO. 2017-48301

PRELIMINARY PLAT OF
LANE RANCH

N 7182331.6165
E 2380526.6858

S88°11'55"E 1325.24'

BLOCK G
N02°26'09"E 815.28'
6342 S.F.
7250 S.F.
7050 S.F.
7051 S.F.
7052 S.F.
6612 S.F.
6613 S.F.
6614 S.F.
6615 S.F.
6616 S.F.
6617 S.F.
6618 S.F.
6619 S.F.
6620 S.F.
6558 S.F.
8559 S.F.
12266 S.F.
7044 S.F.
7046 S.F.
7047 S.F.
7048 S.F.
7049 S.F.

EASTVIEW DRIVE
(50' ROW)

1305.10'
S02°27'00"W 1835.95'
BLOCK J
15' U.E.
15' S.B.
10' F.E.
20' S.B.
15' D.E.
BY SEP INST.
15' UTIL. ESMT.
BY SEP INST.
131.14'
118.33'
50.00'

MATCHLINE
SEE SHEET PP12

ELECTRIC DIVISION LINE

PRELIMINARY PLAT OF
LANE RANCH

HIEN & DUYET NGUYEN
DOC. NO. 2016-27020

BLOCK R

SEE SHEET PP13

PLAT NOTES:
1. DEDICATED RIGHT-OF-WAY AREA IS 4.620 ACRES.
2. ALL OPEN SPACE AREAS WILL EITHER BE DEDICATED TO THE HOA OR AS PARKLAND TO THE CITY.
3. MINIMUM FINISHED FLOOR ELEVATIONS ARE AT LEAST 2 FEET ABOVE THE 100 YEAR FLOOD PLAIN.
3. REFER TO FLOOD STUDY BY CARDINAL STRATEGIES FOR LANE RANCH DATED 4-22-24 FOR ALL FULLY DEVELOPED FLOODPLAIN AND HYDROLOGY INFORMATION.
4. ALL LOTS COMPLY WITH THE MINIMUM SIZE REQUIREMENTS OF PD ORD. 00-00-24.
5. THE DRAINAGE EASEMENTS SHOWN IN THE FLOOD ZONE IS MEANT TO ENCOMPASS THE FULLY DEVELOPED 100 YEAR FLOODPLAIN PER THE FLOOD STUDY.

LEGEND

IRS	IRON ROD SET
IRF	IRON ROD FOUND
U.E.	UTILITY EASEMENT
D.E.	DRAINAGE EASEMENT
F.E.	FRANCHISE EASEMENT
S.B.	SETBACK
O.P.R.C.C.T.	OFFICIAL PUBLIC RECORDS OF COLLIN COUNTY, TEXAS
D.R.D.C.T.	DEED RECORDS OF DENTON COUNTY, TEXAS
DOC. NO.	DOCUMENT NUMBER
MFF	MIN. FINISHED FLOOR
FH	FIRE HYDRANT
MB	MAILBOX

60' LOTS

STREET RIGHT-OF-WAY
100' MIN.
50' PAD
20' FRONT SETBACK
60'
70
15' REAR SETBACK
5' SIDE SETBACK
5' SIDE SETBACK
50' PAD
15' SIDE STREET SETBACK
STREET RIGHT-OF-WAY

THESE CONSTRUCTION PLANS WERE PREPARED UNDER THE RESPONSIBLE SUPERVISION OF F.E. MIDDLETON JR., REGISTERED PROFESSIONAL ENGINEER NO. 67449.

No.	DATE	REVISION	APPROV.

FLOOD NOTE

According to the Federal Emergency Management Agency, Flood Insurance Rate Map Community Panel No. 48121 C 0210G dated April 11, 2011, a portion of this property is within Flood Zone A.

Flood Zone AE scaled per LOMR dated June 26, 2018.

This flood statement does not imply that the property and/or the structure thereon will be free from flooding or flood damage. On rare occasions, greater floods can and will occur and flood heights may be increased by man-made or natural causes. This flood statement shall not create liability on the part of the Engineer.

SANGER ELECTRIC UTILITIES
202 RAILROAD STREET
SANGER, TEXAS 76266
RONNIE GRACE
940-458-2064
rgrace@sangertexas.org

COSERV GAS & ELECTRIC
7701 S. STEMMONS FRWY.
CORINTH, TEXAS 76210
MICHAEL THOMPSON
940-321-7800
mthompson@coserv.com

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MUENSTER, TEXAS 76252
SHAY EVANS
940-759-2251
sevans@nortex.com

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jpalmer@prosperitypc.com

DEVELOPER
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mcginnisdevelopment@gmail.com

SURVEYOR
JOHN COWEN & ASSOC., INC.
PHIL CORNETT
1014 7 CR 135
FLINT, TEXAS
903-581-2238
www.txsurveys.com

PPT1

Date: 11-12-24
Dwg Scale: Hor. 1"=80' Vert.
Dwg File: 0001047PPT.DWG
Project No. 0001047

PRELIMINARY PLAT

LAKE RIDGE, PHASE 4
100 RESIDENTIAL LOTS - 2 HOA LOTS
RUEBEN BEBEE SURVEY, ABST. NO. 29
37.128 ACRES - 4.620 ACRES ROW
CITY OF SANGER DENTON COUNTY TEXAS

LAKE RIDGE, PHASE 4
CITY OF SANGER DENTON COUNTY, TEXAS

MARION HILLS APARTMENTS, LLC
309 BROCK STREET
COPPELL, TEXAS 75019

STATE OF TEXAS
F. E. MIDDLETON, JR.
97449
REGISTERED
PROFESSIONAL ENGINEER

Middleton & Assoc, LLC
CONSULTING CIVIL ENGINEERS & LAND PLANNERS
TBPE #F-10900
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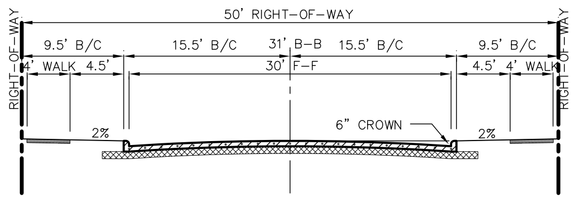
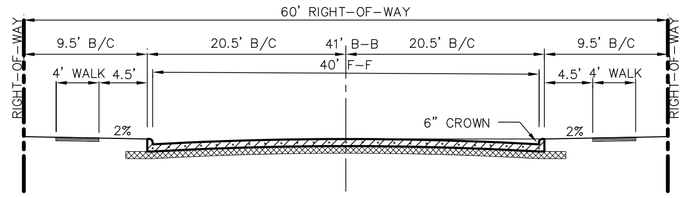
LEWISVILLE, TEXAS 75067 (972) 393-9800

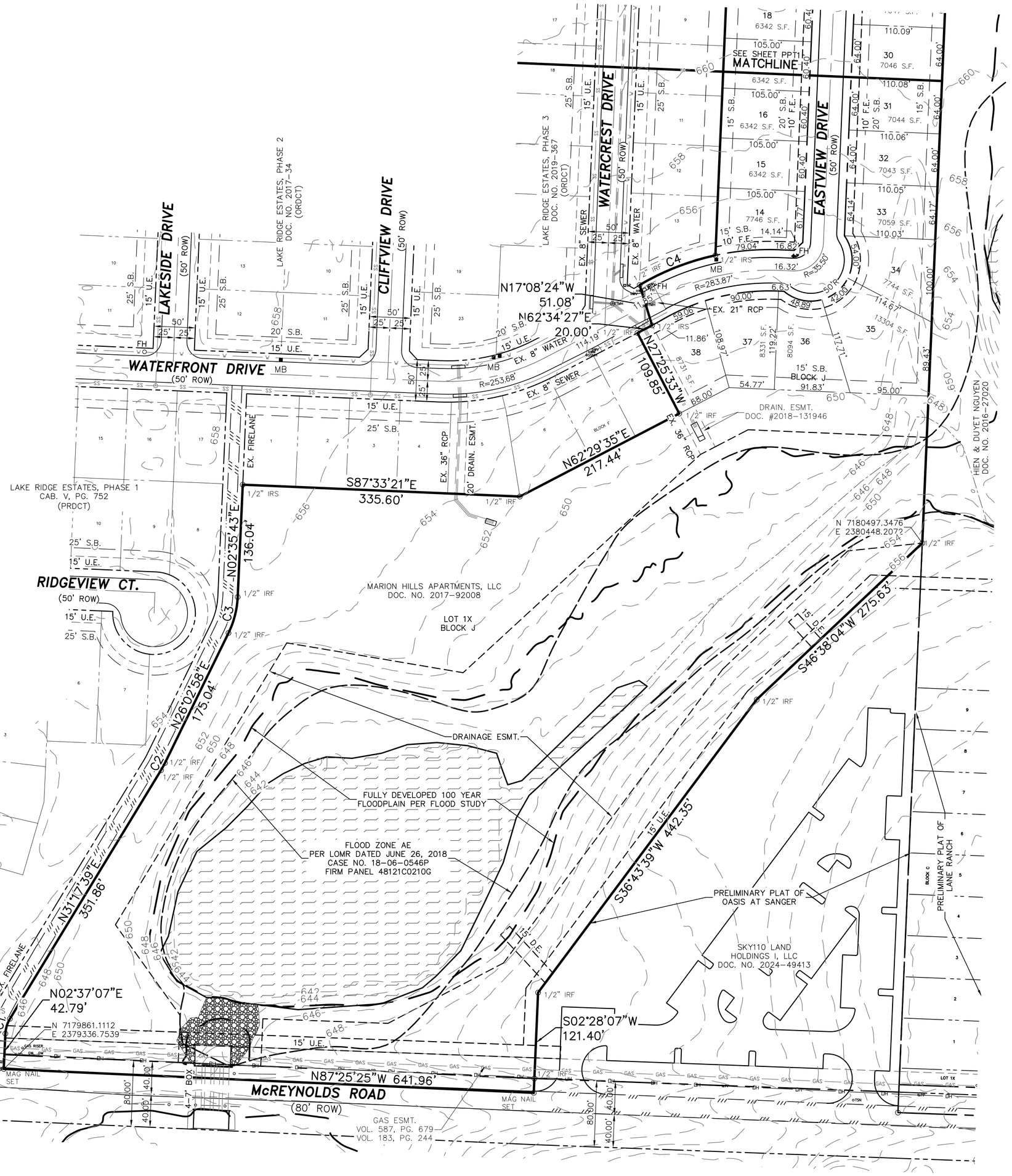


50' LOCAL RESIDENTIAL SECTION
N.T.S.



60' MINOR COLLECTOR SECTION
LAKE RIDGE DRIVE
N.T.S.

Curve Table					
No.	Delta	Radius	Length	Ch. Dist.	Bearing
C1	28°40'42"	38.00'	19.02'	18.82'	N16°57'18"E
C2	5°14'08"	110.00'	10.05'	10.05'	N28°40'38"E
C3	23°33'38"	110.01'	45.24'	44.92'	N14°22'32"E
C4	18°19'46"	308.87'	98.81'	98.39'	N68°36'31"E
C5	6°15'15"	779.99'	85.14'	85.10'	S26°16'36"W
C6	14°03'00"	572.68'	140.43'	140.08'	S24°55'07"W



N

0' 40' 80' 160'
Scale 1"=80'

LEGAL DESCRIPTION
TRACT 1

All that certain lot, tract, or parcel of land, being part of the Rueben Bebee Survey, Abstract No. 29, Denton County, Texas, and being a part of that tract of land described in a deed to Marion Hills Apartments, LLC recorded in Document No. 2017-92008 Real Property Records of Denton, County, Texas (RPRDCT), being more completely described as follows, to-wit:

BEGINNING at a 1/2" iron rod set for the southwest corner Lake Ridge Estates, Phase 1 an addition to the City of Sanger recorded in Cabinet V, Page 752 Plat Records of Denton County, Texas (PRDCT) the north right-of-way line of McReynolds Road;

THENCE North 2°37'07" East a distance of 42.79 feet to the beginning of a curve to the right having a radius of 38.00 feet, a chord of North 16°57'18" East – 18.82 feet, a distance of 19.02 feet to a 1/2" iron rod set for corner;

THENCE North 31°17'39" East a distance of 351.86 feet to a 1/2" iron rod set for the beginning of a curve to the left having a radius of 110.00 feet, a chord of North 28°40'38" East – 10.05 feet, a distance of 10.05 feet to a 1/2" iron rod set for corner;

THENCE North 26°02'58" East a distance of 175.04 feet to a 1/2" iron rod set for the beginning of a curve to the left having a radius of 110.01 feet, a chord of North 14°22'32" East – 44.92 feet, a distance of 45.24 feet to a 1/2" iron rod set for corner;

THENCE North 2°35'43" East a distance of 136.04 feet to a 1/2" iron rod set for corner;

THENCE South 87°33'21" East a distance of 335.60 feet to a 1/2" iron rod set for corner;

THENCE North 62°29'35" East a distance of 217.44 feet to a 1/2" iron rod set for the southeast corner of Lake Ridge Estates, Phase 3 an addition to the City of Sanger recorded in Document No. 2019-367 of the Official Records of Denton County, Texas (ORDCT);

THENCE with the east and north lines of Lake Ridge, Phase 3 North 27°25'33" West a distance of 109.85 feet to a 1/2" iron rod set for corner;

THENCE North 62°34'27" East a distance of 20.00 feet to a 1/2" iron rod set for corner;

THENCE North 17°08'24" West a distance of 51.08 feet to a 1/2" iron rod set for the beginning of a curve to the right having a radius of 308.87 feet, a chord of North 68°36'31" East – 98.39 feet, a distance of 98.81 feet to a 1/2" iron rod set for corner;

THENCE North 2°26'09" East a distance of 815.28 feet to a 1/2" iron rod set for corner;

THENCE North 88°06'08" West a distance of 27.01 feet to a 1/2" iron rod set for corner;

THENCE North 1°52'31" East a distance of 155.00 feet to a 1/2" iron rod set for corner;

THENCE North 88°05'14" West a distance of 678.52 feet to a 1/2" iron rod set for the beginning of a curve to the right having a radius of 779.99 feet, a chord of South 26°16'36" West – 85.10 feet, a distance of 85.14 feet to a 1/2" iron rod set for corner;

THENCE South 29°24'13" West a distance of 10.59 feet to a 1/2" iron rod set for corner;

THENCE North 60°35'47" West a distance of 60.00 feet to a 1/2" iron rod set for corner;

THENCE South 29°24'09" West a distance of 170.52 feet to a 1/2" iron rod set for the beginning of a curve to the left having a radius of 572.68 feet, a chord of South 24°55'07" West – 140.08 feet, a distance of 140.43 feet to a 1/2" iron rod set for corner;

THENCE North 73°15'04" West a distance of 125.18 feet to a 1/2" iron rod set for corner;

THENCE South 29°38'53" West a distance of 16.65 feet to a 1/2" iron rod set for corner in the west line of the Marion Hills Apartments, LLC tract;

THENCE with the west line of the Marion Hills Apartments, LLC tract North 2°25'03" East a distance of 845.55 feet to a 2" iron pipe found for northwest corner of the Marion Hills Apartments, LLC tract;

THENCE with the north line of the Marion Hills Apartments, LLC tract South 88°11'55" East a distance of 1,325.24 feet to a 1/2" iron rod set for the northeast corner of the Marion Hills Apartments, LLC tract;

THENCE with the east line of the Marion Hills Apartments, LLC tract South 2°27'00" West a distance of 1,835.95 feet to a 1/2" iron rod found for the north corner of that tract of land described in a deed to Winston Grove Apartments, LLC recorded in Document No. 2018-13037 (RPRDCT);

THENCE with the west line of the Winston Grove Apartments, LLC tract South 46°38'04" West a distance of 275.63 feet to a 1/2" iron rod found for corner;

THENCE South 36°43'39" West a distance of 442.35 feet to a 1/2" iron rod found for corner;

THENCE South 2°28'07" West a distance of 121.40 feet to a 1/2" iron rod found for corner;

THENCE with the north right-of-way line of McReynolds Road North 87°25'25" West a distance of 641.96 feet to the place of beginning, containing 37.128 acres, or 1,617,281 square feet of land.

PRELIMINARY PLAT FOR REVIEW PURPOSES ONLY
APPROVED FOR PREPARATION OF FINAL PLAT
CITY OF SANGER, TX DATE
PLANNING & ZONING COMMISSION

No.	DATE	REVISION	APPROV.

Middleton & Assoc, LLC
CONSULTING CIVIL ENGINEERS & LAND PLANNERS
TBPE #F-10900
2785 ROCKBROOK DRIVE, SUITE 105
LEWISVILLE, TEXAS 75067 (972) 393-9800
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THESE CONSTRUCTION PLANS WERE PREPARED UNDER THE RESPONSIBLE SUPERVISION OF T. E. MIDDLETON, JR., REGISTERED PROFESSIONAL ENGINEER NO. 61444

STATE OF TEXAS
T. E. MIDDLETON, JR.
61444
REGISTERED
PROFESSIONAL
ENGINEER

LAKE RIDGE, PHASE 4
CITY OF SANGER DENTON COUNTY, TEXAS

MARION HILLS APARTMENTS, LLC
309 BROCK STREET
COPPELL, TEXAS 75019

PRELIMINARY PLAT
LAKE RIDGE PHASE 4
100 RESIDENTIAL LOTS - 2 HOA LOTS
RUEBEN BEBEE SURVEY ABST NO. 29
37.128 ACRES 4 620 ACRES ROW
CITY OF SANGER DENTON COUNTY TEXAS

Date: 11-12-24
Dwg Scale: Hor. 1"=80'
Vert.
Dwg File: 0001047PPT.DWG
Project No. 0001047

PPT2

Scale 1"=80'
0'
40'
80'
160'
N

The storm drain layout and contours indicate high point here. Please label.

The drainage arrows are pointing away from curb inlet. This is misleading. Please revise.

This is a low point according to the contours. Suggest to put an inlet here to avoid ponding water

LAKE RIDGE DRIVE (60' ROW)
LAKESIDE DRIVE (50' ROW)
CLIFFVIEW DRIVE (50' ROW)
PARK LANE (50' ROW)
LAKEVIEW DRIVE (50' ROW)
SHORELINE DRIVE (50' ROW)
RANCHVIEW DRIVE (50' ROW)
WATERCREST DRIVE (50' ROW)
EASTVIEW DRIVE (50' ROW)
MATCHLINE SEE SHEET ST2

LAKE RIDGE ESTATES, PHASE 1 CAB. V, PG. 752 (PRDCT)
LAKE RIDGE ESTATES, PHASE 2 DOC. NO. 2017-34 (ORDCT)
LAKE RIDGE ESTATES, PHASE 3 DOC. NO. 2019-367 (ORDCT)
LAKE RIDGE ESTATES, PHASE 4 DOC. NO. 2019-367 (ORDCT)
SANGER TOWN CENTER LLC DOC. NO. 2017-48301
DRAIN. ESMT. DOC. #2004-9176
15' SANITARY SEWER ESMT. DOC. #2007-97779
DRAIN. ESMT. DOC. #2018-131946
FLOOD ZONE AE PER LOMR DATED JUNE 26, 2018 CASE NO. 18-06-0546P FIRM PANEL 48121C0210G
DRAINAGE ESMT. LOT 1X BLOCK A
LANE RANCH PHASE 1
COSERY ELEC. ESMT. 2018-37404
FUT. LANE RANCH PHASE 3 STORM OUTFALL
COSERY ELEC. ESMT. 2018-133435
MARION HILLS APARTMENTS, LLC DOC. NO. 2017-92008
PRELIMINARY PLAT OF LANE RANCH
HIEN & DUYET NGUYEN DOC. NO. 2016-27020
15' DRAIN. ESMT. BY SEP. INST.
EXISTING LAKE
BOOK A LOT 1 4.59 AC.

Ex. 30" RCP
Ex. 36" RCP
EX. 8" SEWER
EX. 8" WATER
15' U.E.
10' F.E.
18" RCP
21" RCP
24" RCP
27" RCP
20' D.E.
15' D.E.
H.P.

BLOCK A
BLOCK G
BLOCK H
BLOCK I
BLOCK J
BLOCK R
BLOCK T

LEGEND
Ex. Storm Drain
Prop. Storm Drain Centerline
Prop. Storm Drain Inlet
Prop. Flow Arrows

THESE CONSTRUCTION PLANS WERE PREPARED UNDER THE RESPONSIBLE SUPERVISION OF F.E. MIDDLETON JR., REGISTERED PROFESSIONAL ENGINEER NO. 67449.

No.	DATE	REVISION	APPROV.

ST1

Date: 11-12-24
Dwg Scale: Hor. 1"=80' Vert.
Dwg File: 0001047PPT-STM.DWG
Project No. 0001047

PRELIMINARY STORM DRAIN PLAN

LAKE RIDGE, PHASE 4
100 RESIDENTIAL LOTS - 2 HOA LOTS
RUEBEN BEBEE SURVEY, ABST. NO. 29
37.128 ACRES - 4.620 ACRES ROW
CITY OF SANGER DENTON COUNTY TEXAS

LAKE RIDGE, PHASE 4
CITY OF SANGER DENTON COUNTY, TEXAS

MARION HILLS APARTMENTS, LLC
309 BROCK STREET
COPPELL, TEXAS 75019

STATE OF TEXAS
F. E. MIDDLETON, JR.
67449
PROFESSIONAL ENGINEER
11-12-24

Middleton & Assoc, LLC
CONSULTING CIVIL ENGINEERS & LAND PLANNERS
TBPE #F-10900
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LEWISVILLE, TEXAS 75067 (972) 393-9800

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No.	DATE	REVISION	APPROV.

ST2

Date: 11-12-24
Dwg Scale: Hor. 1"=80'
Vert.
Dwg File: 0001047PPT-STM.DWG
Project No. 0001047

PRELIMINARY STORM DRAIN PLAN

LAKE RIDGE, PHASE 4
100 RESIDENTIAL LOTS - 2 HOA LOTS
RUEBEN BEBEE SURVEY, ABST. NO. 29
37.128 ACRES - 4.620 ACRES ROW
CITY OF SANGER DENTON COUNTY TEXAS

LAKE RIDGE, PHASE 4
CITY OF SANGER DENTON COUNTY, TEXAS

MARION HILLS APARTMENTS, LLC
309 BROCK STREET
COPPELL, TEXAS 75019

STATE OF TEXAS
F. E. MIDDLETON, JR.
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