CIVIL CONSTRUCTION PLANS
PAVING, GRADING & UTILITIES
FOR
HENDRICK FARM
CITY OF LUCAS, COLLIN COUNTY, TEXAS

APPROVED
CITY OF LUCAS
CITY ENGINEER DATE
3-1?-22

PLAN SUBMITTAL/REVIEW LOG

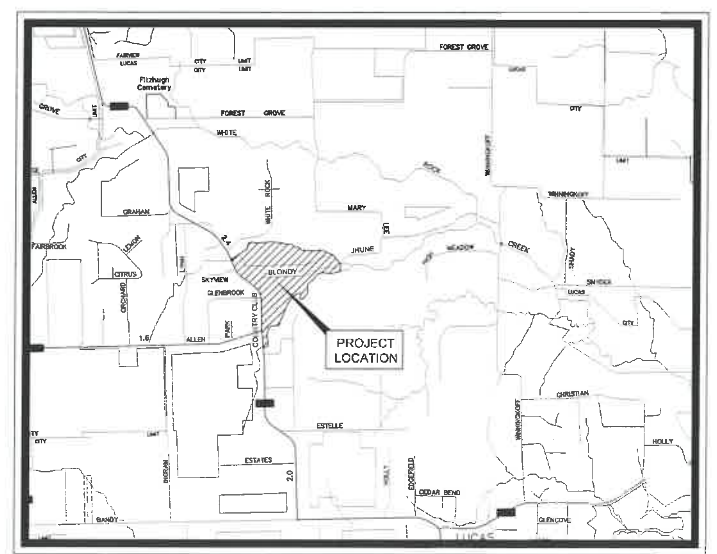
1ST SUBMITTAL TO CITY	03/02/2018
2ND SUBMITTAL TO CITY	04/30/2018
3RD SUBMITTAL TO CITY	05/14/2018
4TH SUBMITTAL TO CITY	09/08/2021
5TH SUBMITTAL TO CITY	10/08/2021
6TH SUBMITTAL TO CITY	12/10/2021
7TH SUBMITTAL TO CITY	01/31/2022

ENGINEER

Kimley»Horn
13455 NOEL ROAD
SUITE 700
DALLAS, TEXAS 75204
TEL: (972) 770-1300
CONTACT: SARAH E. SCOTT, P.E.
STATE OF TEXAS
REGISTRATION NO. F-928

OWNER/DEVELOPER

HENDRICK FARM, LLC
800 CENTRAL PARKWAY EAST, SUITE 100
PLANO, TEXAS 75074
TEL: (972) 422-4515
CONTACT: RUTLEDGE HAGGARD



VICINITY MAP
N.T.S.

SHEET INDEX

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

STATE OF TEXAS
SARAH E. SCOTT
113285
LICENSED
PROFESSIONAL ENGINEER
01/31/2022

JANUARY 2022

LOT 22, BLOCK A
WHITE ROCK CREEK ESTATES
VOL. F, PG. 510
O.P.R.C.C.T.

LOT 21

LOT 6

LOT 7, BLOCK 2
FOREST CREEK ESTATES
VOL. K, PG. 44
O.P.R.C.C.T.

LOT 9

LOT 8

LOT 25, BLOCK A
WHITE ROCK
CREEK ESTATES
VOL. 2015, PG. 181
O.P.R.C.C.T.

WHITE ROCK TRAIL
(50-FOOT WIDE RIGHT-OF-WAY)

LOT 23, BLOCK A
WHITE ROCK
CREEK ESTATES
VOL. I, PG. 594
O.P.R.C.C.T.

LOT 23A, BLOCK A
WHITE ROCK
CREEK ESTATES
VOL. I, PG. 594
O.P.R.C.C.T.

LOT 24A, BLOCK A
WHITE ROCK
CREEK ESTATES
VOL. I, PG. 594
O.P.R.C.C.T.

LOT 24, BLOCK A
WHITE ROCK
CREEK ESTATES
VOL. I, PG. 594
O.P.R.C.C.T.

LOT 12, BLOCK A
2.0129 ACRES
87,682 SQ. FT.

LOT 13, BLOCK A
2.0332 ACRES
88,565 SQ. FT.

LOT 14, BLOCK A
2.0315 ACRES
88,493 SQ. FT.

LOT 15, BLOCK A
2.1930 ACRES
95,527 SQ. FT.

LOT 16, BLOCK A
2.0114 ACRES
87,617 SQ. FT.

LOT 11, BLOCK A
2.0006 ACRES
87,146 SQ. FT.

LOT 10, BLOCK A
2.0004 ACRES
87,139 SQ. FT.

LOT 17, BLOCK A
2.0395 ACRES
88,842 SQ. FT.

LOT 3, BLOCK A
2.0234 ACRES
88,138 SQ. FT.

LOT 4, BLOCK A
2.0003 ACRES
87,134 SQ. FT.

LOT 9, BLOCK A
2.0001 ACRES
87,123 SQ. FT.

LOT 18, BLOCK A
2.0018 ACRES
87,200 SQ. FT.

LOT 2, BLOCK A
2.0248 ACRES
88,200 SQ. FT.

LOT 8, BLOCK A
2.0003 ACRES
87,132 SQ. FT.

LOT 5, BLOCK A
2.1564 ACRES
93,934 SQ. FT.

LOT 1, BLOCK A
2.0240 ACRES
88,166 SQ. FT.

LOT 19, BLOCK A
2.0072 ACRES
87,434 SQ. FT.

LOT 7, BLOCK A
2.2821 ACRES
99,408 SQ. FT.

LOT 6, BLOCK A
2.0326 ACRES
88,541 SQ. FT.

R.O.W. DEDICATION
3.5608 ACRES
155,108 SQ. FT.

LOT 2, BLOCK B
2.1796 ACRES
94,944 SQ. FT.

LOT 3, BLOCK B
2.1201 ACRES
92,352 SQ. FT.

LOT 15, BLOCK B
2.1073 ACRES
91,795 SQ. FT.

LOT 14, BLOCK B
2.0129 ACRES
87,680 SQ. FT.

LOT 1, BLOCK B
2.1850 ACRES
95,179 SQ. FT.

LOT 4, BLOCK B
2.0871 ACRES
90,915 SQ. FT.

LOT 13, BLOCK B
2.1979 ACRES
95,739 SQ. FT.

LOT 12, BLOCK B
2.0000 ACRES
87,121 SQ. FT.

LOT 5, BLOCK B
2.0560 ACRES
89,561 SQ. FT.

LOT 11, BLOCK B
2.0007 ACRES
87,151 SQ. FT.

LOT 6, BLOCK B
2.0001 ACRES
87,126 SQ. FT.

LOT 10, BLOCK B
2.0234 ACRES

ESTATE 4
SKY VIEW ESTATES
VOL. C, PG. 787
O.P.R.C.C.T.

SKYVIEW DRIVE
(60-FOOT WIDE RIGHT-OF-WAY)

COUNTRY CLUB ROAD
(F.M. NO. 1378 - 80-FOOT WIDE RIGHT-OF-WAY)

BLONDY JHUNE ROAD
(80-FOOT WIDE RIGHT-OF-WAY)

GLENBROOK CIRCLE
(60-FOOT WIDE RIGHT-OF-WAY)

JANET BRAY TRAMELL
AND MIKE TRAMELL
VOL. 4766, PG. 385
L.R.C.C.T.

JANET B. STEENBERGEN
INST. NO. 94-0107146, O.P.R.C.C.T.

RICHARD LOGAR, MICHAEL W. HOPPER
AND ANN M. HOPPER
INST. NO. 20091202001451830
O.P.R.C.C.T.

TERI GIBSON
VOL. 5008, PG. 215
L.R.C.C.T.

LOT 34
GLENBROOK ESTATES
VOL. E, PG. 87
O.P.R.C.C.T.

LOT 35
GLENBROOK ESTATES
VOL. E, PG. 87
O.P.R.C.C.T.

JAMES GRAYUM SURVEY,
ABSTRACT NO. 354

JOHN W KIRBY SURVEY,
ABSTRACT NO. 506

PETER F LUCAS SURVEY,
ABSTRACT NO. 537

CALLED 73.353 ACRES
HENDRICK FARM, LLC
INST. NO. 20170510000499510
O.P.R.C.C.T.

JANA H. WILSON AND
RAYMOND P. WILSON
INST. NO. 20170829001159590
O.P.R.C.C.T.

TERRY A. HENDRICK AND
ELIZABETH A. HENDRICK
INST. NO. 20170829001159580
O.P.R.C.C.T.

JENNIFER D. BURTON AND
JOSH A. BURTON
INST. NO. 20110502000446040
O.P.R.C.C.T.

CALLED 0.35 ACRES
HENDRICK LIVING TRUST
INST. NO. 20131002001380180
O.P.R.C.C.T.

LOT 27, BLOCK 1
WILLOW CREEK
ACRES ADDITION
VOL. I, PG. 319
O.P.R.C.C.T.

LOT 16

LOT 15, BLOCK E
TARA PHASE TWO
VOL. N, PG. 946
O.P.R.C.C.T.

MATCHLINE
(SEE SHEET 2)

P.O.B.

Δ=4°22'15"
R=999.93'
L=76.28'
CB=N19°28'53"W
C=76.26'
N17°17'44"W
154.12'

Δ=35°38'00"
R=432.46'
L=268.96'
CB=N35°06'44"W
C=264.64'

Δ=27°45'47"
R=522.54'
L=253.20'
CB=N14°40'38"W
C=250.73'

N
GRAPHIC SCALE IN FEET
100 0 50 100 200
1" = 100' @ 24X36

VICINITY MAP
NOT TO SCALE

LEGEND

ROOF DRAIN		MAIL BOX	
CABLE TV BOX		SANITARY SEWER CLEAN OUT	
CABLE TV HANDHOLE		SANITARY SEWER MANHOLE	
CABLE TV MANHOLE		SANITARY SEWER MARKER FLAG	
CABLE TV MARKER FLAG		SANITARY SEWER MARKER SIGN	
CABLE TV MARKER SIGN		SANITARY SEWER SEPTIC TANK	
CABLE TV VAULT		SANITARY SEWER VAULT	
COMMUNICATIONS BOX		STORM SEWER BOX	
COMMUNICATIONS HANDHOLE		STORM SEWER DRAIN	
COMMUNICATIONS MANHOLE		STORM SEWER MANHOLE	
COMMUNICATIONS MARKER FLAG		STORM SEWER VAULT	
COMMUNICATIONS MARKER SIGN		TRAFFIC BARRIER	
COMMUNICATIONS VAULT		TRAFFIC BOLLARD	
ELEVATION BENCHMARK		TRAFFIC BOX	
FIBER OPTIC BOX		CROSS WALK SIGNAL	
FIBER OPTIC HANDHOLE		TRAFFIC HANDHOLE	
FIBER OPTIC MANHOLE		TRAFFIC MANHOLE	
FIBER OPTIC MARKER FLAG		TRAFFIC MARKER SIGN	
FIBER OPTIC MARKER SIGN		TRAFFIC SIGNAL	
FIBER OPTIC VAULT		TRAFFIC VAULT	
MONITORING WELL		UNIDENTIFIED BOX	
GAS HANDHOLE		UNIDENTIFIED HANDHOLE	
GAS METER		UNIDENTIFIED METER	
GAS MANHOLE		UNIDENTIFIED MANHOLE	
GAS MARKER FLAG		UNIDENTIFIED MARKER FLAG	
GAS SIGN		UNIDENTIFIED MARKER SIGN	
GAS TANK		UNIDENTIFIED POLE	
GAS VAULT		UNIDENTIFIED TANK	
GAS VALVE		UNIDENTIFIED VAULT	
TELEPHONE BOX		UNIDENTIFIED VALVE	
TELEPHONE HANDHOLE		TREE	
TELEPHONE MANHOLE		WATER BOX	
TELEPHONE MARKER FLAG		FIRE DEPT CONNECTION	
TELEPHONE MARKER SIGN		WATER HAND HOLE	
TELEPHONE VAULT		FIRE HYDRANT	
PIPELINE MARKER SIGN		WATER METER	
ELECTRIC BOX		WATER MANHOLE	
FLOOD LIGHT		WATER MARKER FLAG	
GUY ANCHOR		WATER MARKER SIGN	
GUY ANCHOR POLE		WATER VAULT	
ELECTRIC HANDHOLE		WATER VALVE	
LIGHT STANDARD		AIR RELEASE VALVE	
ELECTRIC METER		WATER WELL	
ELECTRIC MANHOLE		5/8" IRON ROD W/ "KHA" CAP SET	
ELECTRIC MARKER FLAG		IRON ROD WITH CAP FOUND	
ELECTRIC MARKER SIGN		MAG NAIL SET	
UTILITY POLE		PK NAIL FOUND	
ELECTRIC TRANSFORMER		IRON ROD FOUND	
ELECTRIC VAULT		IRON PIPE FOUND	
HANDICAPPED PARKING		ALUMINUM DISK FOUND	
SIGN		"X" CUT IN CONCRETE SET	
MARQUEE/BILLBOARD		"X" CUT IN CONCRETE FOUND	
SCRS LOCATION		P.O.B. POINT OF BEGINNING	
FLAG POLE		P.O.C. POINT OF COMMENCING	
GREASE TRAP			

LINE TYPE LEGEND

	BOUNDARY LINE
	EASEMENT LINE
	BUILDING LINE
W	WATER LINE
SS	SANITARY SEWER LINE
SD	STORM SEWER LINE
GAS	UNDERGROUND GAS LINE
OHE	OVERHEAD UTILITY LINE
UGE	UNDERGROUND ELECTRIC LINE
UGT	UNDERGROUND TELEPHONE LINE
	FENCE
	CONCRETE PAVEMENT
	ASPHALT PAVEMENT

LEGEND

P.O.B. = POINT OF BEGINNING
VOL. = VOLUME
PG. = PAGE
SQ. FT. = SQUARE FEET
INST. NO. = INSTRUMENT NUMBER
IRSC = 5/8" IRON ROD WITH CAP STAMPED "KHA" SET
IRFC = IRON ROD WITH CAP FOUND
IRF = IRON ROD FOUND
L.R.C.C.T. = LAND RECORDS OF COLLIN COUNTY, TEXAS
O.P.R.C.C.T. = OFFICIAL PUBLIC RECORDS OF COLLIN COUNTY, TEXAS
Δ = POINT IN BRANCH/CREEK (NO MONUMEMENT SET)

NOTES:

1. The purpose of this plat is to create 34 lots from an uplatted tract of land, and to dedicate easements and right-of-way.
2. The basis of bearings is based on grid north of the Texas State Plane Coordinate System, North Central Zone, North American Datum of 1983 (2011).
3. All corners are 5/8" iron rods with a plastic cap stamped "KHA" set unless otherwise noted.
4. 5/8" iron rods with a plastic cap stamped "KHA" set 100 feet from lot corners within creek/branch.

FLOOD STATEMENT:

According to Community Panel No. 48085C0405J, dated June 2, 2009 of the National Flood Insurance Program Map, Flood Insurance Rate Map of Collin County, Texas, Federal Emergency Management Agency, Federal Insurance Administration, this property is within "ZONE A" and is located within a special flood hazard area. If this site is not within an identified special flood hazard area, this flood statement does not imply that the property and/or the structures thereon will be free from flooding or flood damage. On rare occasions, greater floods can and will occur and flood heights may be increased by man-made or natural causes. This flood statement shall not create liability on the part of the surveyor.

PRELIMINARY PLAT
HENDRICK FARMS ADDITION
LOTS 1-19, BLOCK A,
AND LOTS 1-15, BLOCK B
BEING 73.4268 ACRES OUT OF
PETER F LUCAS SURVEY, ABSTRACT NO. 537
JOHN W KIRBY SURVEY, ABSTRACT NO. 506
JAMES GRAYUM SURVEY, ABSTRACT NO. 354
CITY OF LUCAS, COLLIN COUNTY, TEXAS

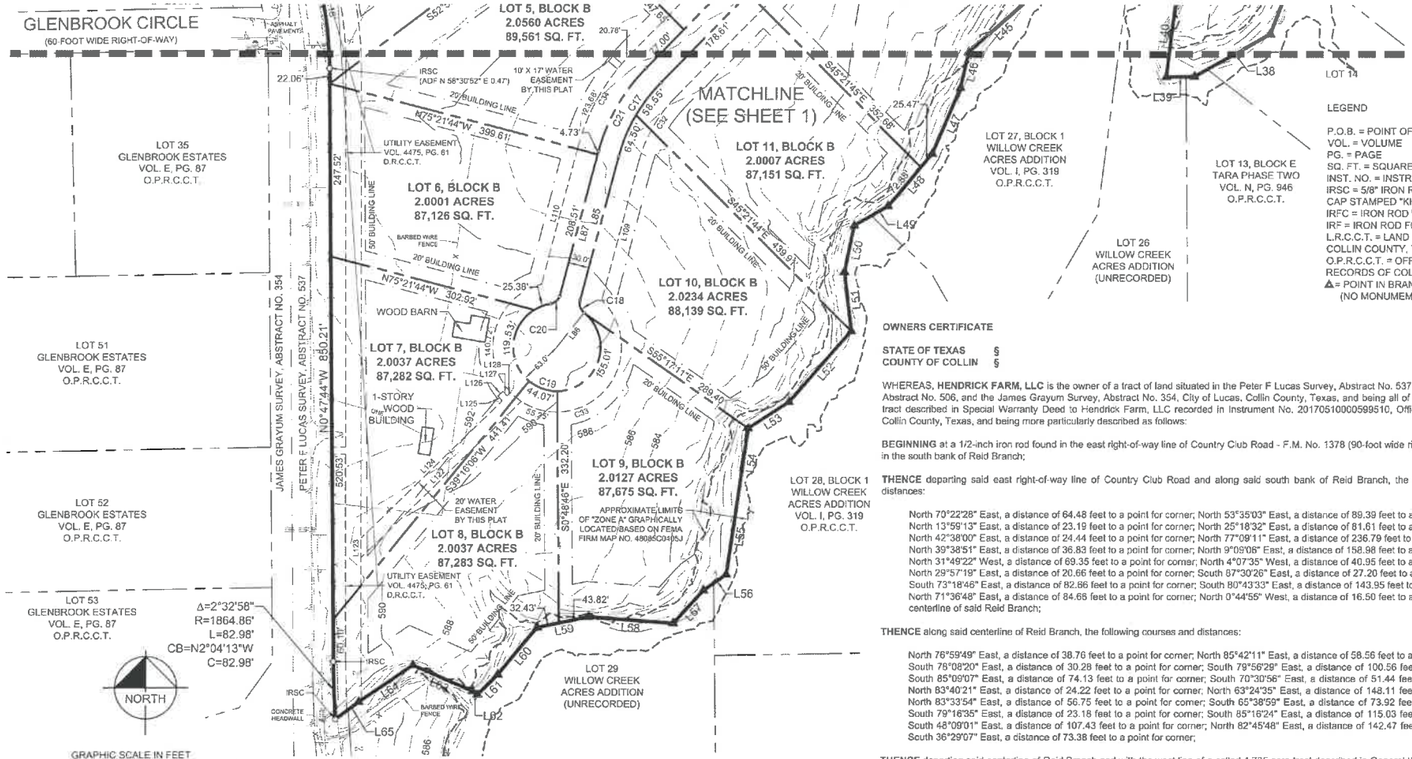
OWNER/APPLICANT:
HENDRICK FARM, LLC
800 EAST CENTRAL PARKWAY, SUITE 100
PLANO, TEXAS 75074
CONTACT: SEAN MCADAM
PHONE: 613-907-0130

ENGINEER:
KIMLEY-HORN AND ASSOC., INC.
13455 NOEL ROAD,
TWO GALLERIA OFFICE TOWER, SUITE 700,
DALLAS, TEXAS 75240
CONTACT: SARAH SCOTT, P.E
PHONE: 972-770-1300

Kimley»Horn
13455 Noel Road, Two Galleria Office Tower, Suite 700, Dallas, Texas 75240
Tel. No. (972) 770-1300
Fax No. (972) 239-3820
FIRM # 10115500

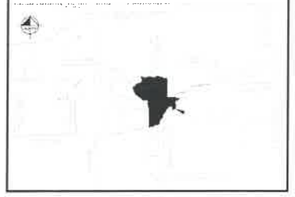
Scale	Drawn by	Checked by	Date	Project No.	Sheet No.
1" = 100'	JBH	JAD	FEB. 2018	064041015	1 OF 2

DWG NAME: K:\DAL_SURVEY\064041015_LUCAS HENDRICK FARM\PP\064041015 LUCAS HENDRICK FARM_PP.DWG PLOTTED BY: HOPPER, BROOK 2/28/2018 8:36 AM LAST SAVED: 2/28/2018 8:37 AM



VICINITY MAP

NOT TO SCALE



CURVE TABLE					
NO.	DELTA	RADIUS	LENGTH	CHORD BEARING	CHORD
C1	46°48'13"	195.00'	159.29'	N38°02'22"E	154.90'
C2	75°00'00"	225.00'	294.52'	S52°08'16"W	273.94'
C3	8°34'12"	252.60'	37.78'	S03°28'52"W	37.75'
C4	8°37'29"	247.00'	37.18'	N03°27'01"E	37.15'
C5	90°00'00"	17.00'	26.70'	N45°21'44"W	24.04'
C6	70°00'00"	185.00'	226.02'	S34°38'16"W	212.22'
C7	66°25'40"	17.00'	19.71'	S13°34'35"E	18.62'
C8	312°50'37"	63.00'	343.99'	N70°22'06"W	50.40'
C9	66°24'57"	17.00'	19.71'	N52°50'44"E	18.62'
C10	70°00'00"	215.00'	262.67'	S34°38'16"W	246.64'

CURVE TABLE					
C11	22°18'27"	20.00'	7.79'	N78°29'02"E	7.74'
C12	134°36'54"	38.00'	89.28'	N45°21'44"W	70.12'
C13	22°18'27"	20.00'	7.79'	S10°47'29"W	7.74'
C14	8°37'29"	247.00'	37.18'	S04°10'30"E	37.15'
C15	8°34'12"	252.60'	37.78'	N04°12'00"W	37.75'
C16	45°00'00"	215.00'	168.86'	N22°08'16"E	164.55'
C17	30°00'00"	235.00'	123.09'	N29°38'16"E	121.64'
C18	66°25'19"	17.00'	19.71'	N18°34'24"W	18.62'
C19	30°00'00"	63.00'	343.99'	S75°21'44"E	50.40'
C20	66°25'19"	17.00'	19.71'	**S47°50'55"W**	18.62'
C21	30°00'00"	255.00'	138.75'	S29°38'16"W	137.17'
C22	45°00'00"	185.00'	145.30'	**S22°08'16"W**	141.59'
C23	75°00'00"	195.00'	255.25'	N52°08'16"E	237.42'
C24	46°48'13"	225.00'	183.83'	N38°02'22"E	178.73'
C25	46°48'13"	165.00'	134.78'	N38°02'22"E	131.07'
C26	75°00'00"	255.00'	333.79'	N52°08'16"E	310.47'
C27	70°00'00"	155.00'	189.37'	S54°38'16"W	177.81'
C28	302°07'23"	93.00'	490.39'	**N70°22'04"W**	90.00'
C29	70°00'00"	245.00'	299.32'	N54°38'16"E	281.05'
C30	131°09'55"	68.00'	155.67'	S45°21'44"E	123.64'
C31	45°00'00"	245.00'	192.42'	S22°08'16"W	187.51'
C32	30°00'00"	205.00'	107.34'	S25°38'16"W	106.12'
C33	302°07'23"	93.00'	490.39'	N75°21'44"W	90.00'
C34	30°00'00"	295.00'	154.46'	N29°38'16"E	152.70'
C35	45°00'00"	155.00'	121.74'	N22°08'16"E	118.63'
C36	75°00'00"	165.00'	215.98'	S52°08'16"W	200.89'
C37	46°48'13"	255.00'	208.30'	S38°02'22"W	202.59'
C38	10°36'59"	240.00'	44.46'	N25°29'14"E	44.34'
C39	9°04'46"	280.00'	41.20'	S26°14'50"W	41.16'
C40	15°25'12"	145.00'	39.02'	N22°20'52"E	38.91'
C41	29°49'42"	275.00'	143.17'	N29°33'07"E	141.55'

LINE TABLE		
NO.	BEARING	LENGTH
L1	N70°22'28"E	64.48'
L2	N53°35'03"E	89.39'
L3	N13°59'13"E	23.19'
L4	N25°18'32"E	81.61'
L5	N42°38'00"E	24.44'
L6	N77°09'11"E	236.79'
L7	N39°38'51"E	36.83'
L8	N09°09'06"E	158.98'
L9	N31°49'22"W	69.35'
L10	N04°07'35"W	40.95'
L11	N29°57'19"E	20.66'
L12	S87°30'26"E	27.20'
L13	S73°18'46"E	82.66'
L14	S80°43'33"E	143.95'
L15	N71°36'48"E	84.66'
L16	N00°44'55"W	16.50'
L17	N75°59'49"E	38.76'
L18	N85°42'11"E	58.55'
L19	S78°08'20"E	30.28'
L20	S79°56'29"E	100.56'
L21	S85°09'07"E	74.13'
L22	S70°30'56"E	51.44'
L23	N83°40'21"E	24.22'
L24	N63°24'35"E	148.11'
L25	N83°33'54"E	56.75'
L26	S65°38'59"E	73.92'
L27	S79°16'35"E	23.18'
L28	S85°16'24"E	115.03'
L29	S48°09'01"E	107.43'

LINE TABLE		
NO.	BEARING	LENGTH
L30	N82°45'48"E	142.47'
L31	S36°29'07"E	73.38'
L32	S26°43'42"W	62.16'
L33	S59°29'56"W	79.87'
L34	S76°12'52"W	105.89'
L35	S15°28'19"W	90.78'
L36	S13°22'02"E	196.83'
L37	S20°40'03"W	152.80'
L38	S60°55'10"W	123.81'
L39	S89°16'41"W	40.57'
L40	N06°59'37"E	122.48'
L41	N38°53'24"W	69.31'
L42	N89°39'50"W	77.41'
L43	S72°53'26"W	65.39'
L44	S33°04'32"W	54.69'
L45	S48°26'32"W	114.31'
L46	S12°36'07"W	52.36'
L47	S22°58'11"W	102.29'
L48	S39°49'00"W	98.35'
L49	S60°46'48"W	56.44'
L50	S11°32'25"W	66.03'
L51	S07°07'12"E	85.19'
L52	S41°13'50"W	135.00'
L53	S57°23'24"W	69.71'
L54	S07°56'42"W	98.64'
L55	S88°21'52"W	113.48'
L56	S55°10'13"W	39.88'
L57	S42°37'02"W	64.35'
L58	N85°44'45"W	122.22'

LINE TABLE		
NO.	BEARING	LENGTH
L59	S78°23'27"W	76.25'
L60	S30°48'50"W	88.08'
L61	S45°09'00"W	40.26'
L62	N55°20'36"W	8.33'
L63	N06°33'54"W	93.86'
L64	S55°45'11"W	93.84'
L65	S53°27'57"W	42.06'
L66	N59°28'08"W	15.41'
L67	N61°26'29"E	51.76'
L68	N14°38'16"E	108.41'
L69	S89°38'16"W	155.56'
L70	S44°38'16"W	21.21'
L71	S00°21'44"E	62.26'
L72	N90°21'44"W	431.01'
L73	S89°38'16"W	359.50'
L74	N19°38'16"E	101.54'
L75	S19°38'16"W	101.54'
L76	S89°38'16"W	550.82'
L77	S22°40'11"E	38.60'
L78	N00°21'44"W	422.34'
L79	N00°21'44"W	62.26'
L80	N45°21'44"W	21.21'
L81	S89°38'16"W	380.00'
L82	S44°38'16"W	21.21'
L83	S00°21'44"E	57.81'
L84	N44°38'16"E	616.38'
L85	N14°38'16"E	213.24'
L86	S36°12'57"W	63.00'
L87	S14°38'16"W	213.24'

LINE TABLE		
NO.	BEARING	LENGTH
L88	S44°38'16"W	602.24'
L89	S00°21'44"E	67.81'
L90	S45°21'44"E	21.21'
L91	N89°38'16"E	592.56'
L92	N14°38'16"E	108.41'
L93	S61°26'29"W	52.62'
L94	S18°29'53"W	21.96'
L95	N24°11'12"W	20.96'
L96	N51°26'29"E	50.68'
L97	N14°38'16"E	108.41'
L98	N89°38'16"E	157.56'
L99	N00°21'44"W	540.00'
L100	S89°38'16"W	546.50'
L101	S19°38'16"W	93.47'
L102	N19°38'16"E	93.48'
L103	N89°38'16"E	548.93'
L104	S00°21'44"E	542.43'
L105	N89°38'16"E	370.00'
L106	S89°38'16"W	385.67'
L107	S00°21'44"E	42.81'
L108	S44°38'16"W	616.38'
L109	S14°38'16"W	205.18'
L110	N14°38'16"E	205.18'
L111	N44°38'16"E	602.24'
L112	N00°21'44"W	52.81'
L113	S89°38'16"W	567.56'
L114	S14°38'16"W	108.41'
L115	S61°26'29"W	70.21'
L116	N70°21'44"W	23.91'

LINE TABLE		
NO.	BEARING	LENGTH
L117	N19°38'16"E	10.00'
L118	S70°21'44"E	25.57'
L119	N14°38'16"E	108.41'
L120	N44°27'58"E	114.39'
L121	S45°38'43"W	320.01'
L122	N00°22'40"W	27.75'
L123	N45°38'43"E	281.60'
L124	N44°21'30"W	9.24'
L125	N44°21'30"W	9.24'

LINE TABLE		
L126	N45°38'30"E	10.00'
L127	S44°21'30"E	9.24'
L128	N45°38'43"E	5.94'

OWNERS CERTIFICATE

STATE OF TEXAS §
COUNTY OF COLLIN §

WHEREAS, **HENDRICK FARM, LLC** is the owner of a tract of land situated in the Peter F Lucas Survey, Abstract No. 537, John W Kirby Survey, Abstract No. 506, and the James Grayum Survey, Abstract No. 354, City of Lucas, Collin County, Texas, and being all of the called 73.353 acre tract described in Special Warranty Deed to Hendrick Farm, LLC recorded in Instrument No. 20170510000599510, Official Public Records of Collin County, Texas, and being more particularly described as follows:

BEGINNING at a 1/2-inch iron rod found in the east right-of-way line of Country Club Road - F.M. No. 1378 (90-foot wide right-of-way), and being in the south bank of Reid Branch;

THENCE departing said east right-of-way line of Country Club Road and along said south bank of Reid Branch, the following courses and distances:

North 70°22'28" East, a distance of 64.48 feet to a point for corner; North 53°35'03" East, a distance of 89.39 feet to a point for corner; North 13°59'13" East, a distance of 23.19 feet to a point for corner; North 25°18'32" East, a distance of 81.61 feet to a point for corner; North 42°38'00" East, a distance of 24.44 feet to a point for corner; North 77°09'11" East, a distance of 236.79 feet to a point for corner; North 39°38'51" East, a distance of 36.83 feet to a point for corner; North 9°09'06" East, a distance of 158.98 feet to a point for corner; North 31°49'22" West, a distance of 69.35 feet to a point for corner; North 4°07'35" West, a distance of 40.95 feet to a point for corner; North 29°57'19" East, a distance of 20.66 feet to a point for corner; South 87°30'26" East, a distance of 27.20 feet to a point for corner; South 73°18'46" East, a distance of 82.66 feet to a point for corner; South 80°43'33" East, a distance of 143.95 feet to a point for corner; North 71°36'48" East, a distance of 84.66 feet to a point for corner; North 0°44'55" West, a distance of 16.50 feet to a point for corner in the centerline of said Reid Branch;

THENCE along said centerline of Reid Branch, the following courses and distances:

North 76°59'49" East, a distance of 38.76 feet to a point for corner; North 85°42'11" East, a distance of 58.55 feet to a point for corner; South 78°08'20" East, a distance of 30.28 feet to a point for corner; South 79°56'29" East, a distance of 100.56 feet to a point for corner; South 85°09'07" East, a distance of 74.13 feet to a point for corner; South 70°30'56" East, a distance of 51.44 feet to a point for corner; North 83°40'21" East, a distance of 24.22 feet to a point for corner; North 63°24'35" East, a distance of 148.11 feet to a point for corner; North 83°33'54" East, a distance of 56.75 feet to a point for corner; South 65°38'59" East, a distance of 73.92 feet to a point for corner; South 79°16'35" East, a distance of 23.18 feet to a point for corner; South 85°16'24" East, a distance of 115.03 feet to a point for corner; South 48°09'01" East, a distance of 107.43 feet to a point for corner; North 82°45'48" East, a distance of 142.47 feet to a point for corner; South 36°29'07" East, a distance of 73.38 feet to a point for corner;

THENCE departing said centerline of Reid Branch and with the west line of a called 4.785 acre tract described in General Warranty Deed to Jana H. Wilson and Raymond P. Wilson recorded in Instrument No. 20170829001159590 of said Official Public Records, South 0°21'44" East, passing at a distance of 897.07 feet a 1/2-inch iron rod with plastic cap stamped "COLLINS RPS 1764" found, in all a total distance of 929.27 feet to a 5/8-inch iron rod with plastic cap stamped "KHA" set in the approximate centerline of Blondy Jhune Road (a generally recognized public road);

THENCE along said centerline of Blondy Jhune Road, North 89°42'16" East, a distance of 435.64 feet to a 1/2-inch iron rod with plastic cap stamped "ROOME" found for the northwest corner of a called 0.35 acre tract described in General Warranty Deed to Hendrick Living Trust recorded in Instrument No. 20170829001159590 of said Official Public Records;

THENCE with the west line of said 0.35 acre tract, South 1°16'44" East, a distance of 70.50 feet to a 1/2-inch iron rod with plastic cap stamped "ROOME" found for the southwest corner of said 0.35 acre tract;

THENCE with the south line of said 0.35 acre tract, South 89°48'44" East, a distance of 207.17 feet to a point in the centerline of a creek, for the southeast corner of said 0.35 acre tract;

THENCE with said centerline of creek, the following courses and distances:

South 29°43'42" West, a distance of 62.16 feet to a point for corner; South 59°29'56" West, a distance of 79.87 feet to a point for corner; South 76°12'52" West, a distance of 106.89 feet to a point for corner; South 19°28'19" West, a distance of 90.78 feet to a point for corner; South 13°22'02" East, a distance of 196.83 feet to a point for corner; South 20°40'03" West, a distance of 152.80 feet to a point for corner; South 60°55'10" West, a distance of 123.81 feet to a point for corner; South 89°16'41" West, a distance of 40.57 feet to a point for corner; North 6°59'37" East, a distance of 122.48 feet to a point for corner; North 38°53'24" West, a distance of 69.31 feet to a point for corner; North 89°39'50" West, a distance of 77.41 feet to a point for corner; South 72°53'26" West, a distance of 65.39 feet to a point for corner; South 33°04'32" West, a distance of 54.69 feet to a point for corner; South 48°26'32" West, a distance of 114.31 feet to a point for corner; South 12°36'07" West, a distance of 52.36 feet to a point for corner; South 22°58'11" West, a distance of 102.29 feet to a point for corner; South 39°49'00" West, a distance of 98.35 feet to a point for corner; South 60°46'48" West, a distance of 56.44 feet to a point for corner; South 11°32'25" West, a distance of 66.03 feet to a point for corner; South 7°07'12" East, a distance of 85.19 feet to a point for corner; South 41°13'50" West, a distance of 135.00 feet to a point for corner; South 57°23'24" West, a distance of 69.71 feet to a point for corner; South 7°56'42" West, a distance of 98.64 feet to a point for corner; South 8°21'52" West, a distance of 113.48 feet to a point for corner; South 55°10'13" West, a distance of 39.88 feet to a point for corner; South 42°37'02" West, a distance of 64.35 feet to a point for corner; North 85°44'45" West, a distance of 122.22 feet to a point for corner; South 78°23'27" West, a distance of 76.25 feet to a point for corner; South 39°48'50" West, a distance of 88.08 feet to a point for corner; South 45°09'00" West, a distance of 40.26 feet to a point for corner; North 55°20'36" West, a distance of 8.33 feet to a point for corner; North 06°33'54" West, a distance of 93.86 feet to a point for corner; South 55°45'11" West, a distance of 93.84 feet to a point for corner; South 53°27'57" West, a distance of 42.06 feet to a point for corner in the westerly right-of-way line of Country Club Road, and being the beginning of a non-tangent curve to the right having a central angle of 2°32'58", a radius of 1864.86 feet, a chord bearing and distance of North 2°04'13" West, 82.98 feet;

THENCE with said east right-of-way line of Country Club Road, the following courses and distances:

In a northwesterly direction, with said curve to the right, an arc distance of 82.98 feet to a 5/8-inch iron rod with plastic cap stamped "KHA" set for corner;
North 0°47'44" West, a distance of 850.21 feet to a 5/8-inch iron rod with plastic cap stamped "KHA" set at the beginning of a tangent curve to the left having a central angle of 27°45'47", a radius of 522.54 feet, a chord bearing and distance of North 14°40'38" West, 250.73 feet; from said point an aluminum disk in concrete stamped "TxDOT" found bears North 58°30'52" East, a distance of 0.47 feet;
In a northwesterly direction, with said curve to the left, an arc distance of 253.20 feet to a 5/8-inch iron rod with plastic cap stamped "KHA" set for the southeast corner of a called 0.596 acre tract described in Warranty Deed to Teri Gibson recorded in Volume 5098, Page 215, Land Records of Collin County, Texas;

THENCE departing said east right-of-way line of Country Club Road and with the east line of said 0.596 acre tract, North 0°22'44" West, a distance of 248.11 feet to a 1/2-inch iron rod with plastic cap stamped "ROOME" found for the northeast corner of said 0.596 acre tract;

THENCE with the north line of said 0.596 acre tract, South 89°24'47" West, a distance of 246.19 feet to a 1/2-inch iron rod with plastic cap stamped "ROOME" found in said east right-of-way line of Country Club Road, for the northwest corner of said 0.596 acre tract;

THENCE with said east right-of-way line of Country Club Road, the following courses and distances:

North 52°55'44" West, a distance of 398.20 feet to a 5/8-inch iron rod with plastic cap stamped "KHA" set at the beginning of a tangent curve to the right having a central angle of 35°38'00", a radius of 432.46 feet, a chord bearing and distance of North 35°06'44" West, 264.64 feet; from said point an aluminum disk in concrete stamped "TxDOT" found bears North 15°13'24" East, a distance of 1.05 feet;
In a northwesterly direction, with said curve to the right, an arc distance of 268.96 feet to a 5/8-inch iron rod with plastic cap stamped "KHA" set for corner; from said point an aluminum disk in concrete stamped "TxDOT" found bears North 8°45'11" West, a distance of 1.32 feet;
North 17°17'44" West, a distance of 154.12 feet to a 5/8-inch iron rod with plastic cap stamped "KHA" set at the beginning of a tangent curve to the left having a central angle of 4°22'15", a radius of 999.93 feet, a chord bearing and distance of North 19°28'53" West, 76.26 feet; from said point an aluminum disk in concrete stamped "TxDOT" found bears North 14°29'50" West, a distance of 1.24 feet;
In a northwesterly direction with said curve to the left, an arc distance of 76.28 feet to the **POINT OF BEGINNING** and containing 73.4268 acres or 3,198,472 square feet of land.

OWNER'S DEDICATION

STATE OF TEXAS §
COUNTY OF COLLIN §

NOW THEREFORE, KNOW ALL MEN BY THESE PRESENTS:

That WE, **HENDRICK FARM, LLC**, the Owner, do hereby bind themselves and their heirs, assignees and successors of title this plat designating the hereinabove described property as Preliminary Plat of **HENDRICK FARMS ADDITION**, an addition to the City of Lucas, and do hereby dedicate to the public use forever the streets, alleys, and right-of-way easements shown thereon, and do hereby reserve the easement strips shown on this plat for the mutual use and accommodation of garbage collection agencies and all public utilities desiring to use or using same. Any public utility shall have the right to remove and keep removed all or part of any buildings, fences, trees, shrubs, or other improvements or growths that in any way endanger or interfere with the construction, maintenance or efficiency of its respective systems on any of these easements strips, and any public utility shall at all times have the right of ingress and egress to and from and upon the said easement strips for the purpose of constructing, reconstructing, inspecting, patrolling, without the necessity at any time of procuring the permission of anyone. Additionally, we certify that we are the sole owners of the dedicated property and that no other's interest are attached to this property unless otherwise indicated on the required Mortgage Holder Certification that is included on this plat.

Furthermore, as the owner of the property described herein, and in consideration of establishing the subdivision described herein, we agree to the following:

- Every owner of fee simple title to every individual lot within the subdivision shall be a member of the homeowners' association.
- The homeowners' association shall have the authority to collect membership fees.
- As applicable as it pertains to condition shown herein, the homeowners' association shall be responsible for the maintenance of all common areas, screening walls, landscaped areas, private streets and alleys
- The homeowners' association shall grant the City the right of access to any areas to abate any nuisances on such areas, and attach a lien upon each individual lot for the prorated costs of abatement.
- The homeowners' association shall indemnify and hold the City harmless from any and all costs, expenses, suits, demands, liabilities, damages, or otherwise, including attorney fees and costs of suit, in connection with the City's maintenance of common areas.
- The homeowners' association shall, where additional right-of-way has been dedicated for the purpose of providing landscaping, additional areas for sidewalks, walls or other amenities, enter into a license agreement with the City and shall be responsible for the installation and maintenance of all landscape areas in the public rights-of-way.

This plat approved subject to all platting ordinances, rules, regulations and resolutions of the City of Lucas, Texas.

HENDRICK FARM, LLC

By: _____
Name: Sean McAdam
Title: President

STATE OF TEXAS §
COUNTY OF COLLIN §

BEFORE ME, the undersigned, a Notary Public in and for the said County and State, on this day personally appeared Sean McAdam, known to me to be the person whose name is subscribed to the foregoing instrument and acknowledged to me that he executed the same for the purpose therein expressed and under oath stated that the statements in the foregoing certificate are true.

GIVEN UNDER MY HAND AND SEAL OF OFFICE this _____ day of _____, 2018.

_____
Notary Public in and for the State of Texas

SURVEYORS CERTIFICATE

THAT I, J. Andy Dobbs, do hereby certify, that I prepared this plat from an actual on the ground survey of the land as described and that the corner monuments shown thereon were properly placed under my personal supervision in accordance with the Platting Rules and Regulations of the City of Lucas Planning and Zoning Commission.

Dated the _____ day of _____, 2018.

PRELIMINARY
THIS DOCUMENT SHALL
NOT BE RECORDED FOR
ANY PURPOSE AND
SHALL NOT BE USED OR
VIEWED OR RELIED
UPON AS A FINAL
SURVEY DOCUMENT

J. Andy Dobbs
Registered Professional Land Surveyor No. 6195
Kimley-Horn and Associates, Inc.
13455 Noel Road, Two Galleria
Office Tower, Suite 700
Dallas, Texas 75240
Ph. 972-770-1300
andy.dobbs@kimley-horn.com

STATE OF TEXAS
COUNTY OF DALLAS

BEFORE ME, the undersigned, a Notary Public in and for the said County and State, on this day personally appeared Andy Dobbs known to me to be the person whose name is subscribed to the foregoing instrument and acknowledged to me that he executed the same for the purpose therein expressed and under oath stated that the statements in the foregoing certificate are true.

GIVEN UNDER MY HAND AND SEAL OF OFFICE this _____ day of _____, 2018.

_____
Notary Public in and for the State of Texas

CERTIFICATE OF APPROVAL

This plat is hereby approved by the Planning and Zoning Commission of the City of Lucas.

_____ _____
Chairman, Planning and Zoning Commission — Date

ATTEST:

_____ _____
Signature — Date

_____
Print Name & Title

The Director of Public Works of the City of Lucas, Texas hereby certifies that to the best of his/her knowledge or belief, this subdivision plat conforms to all requirements of the Lucas Development Code and with engineering construction standards and processes adopted by the City of Lucas, Texas as to which his approval is required.

_____ _____
Director of Public Works — Date

The Director of Planning and Community Development hereby certifies that to the best of his/her knowledge or belief, this subdivision plat conforms to all requirements of the Code of Ordinances, or as may have been amended or modified, as allowed, by the Planning and Zoning Commission as to which his/her approval is required.

_____ _____
Director of Planning and Community Development — Date

PRELIMINARY PLAT
HENDRICK FARMS ADDITION
LOTS 1-19, BLOCK A,
AND LOTS 1-15, BLOCK B
BEING 73.4268 ACRES OUT OF
PETER F LUCAS SURVEY, ABSTRACT NO. 537
JOHN W KIRBY SURVEY, ABSTRACT NO. 506
JAMES GRAYUM SURVEY, ABSTRACT NO. 354
CITY OF LUCAS, COLLIN COUNTY, TEXAS

OWNER/APPLICANT:
HENDRICK FARM, LLC
800 EAST CENTRAL
PARKWAY, SUITE 100
PLANO, TEXAS 75074
CONTACT: SEAN MCADAM
PHONE: 613-907-0130

ENGINEER:
KIMLEY-HORN AND ASSOC., INC.
13455 NOEL ROAD,
TWO GALLERIA OFFICE
TOWER, SUITE 700,
DALLAS, TEXAS 75240
CONTACT: SARAH SCOTT, P.E.
PHONE: 972-770-1300

Kimley»Horn
13455 Noel Road, Two Galleria Office Tower, Suite 700, Dallas, Texas 75240
Tel. No. (972) 770-1300
FIRM # 10115500
Fax No. (972) 239-3820

Scale	Drawn by	Checked by	Date	Project No.	Sheet No.
1" = 100'	JBH	JAD	FEB. 2018	064041015	2 OF 2

DWG NAME: K:\DAL_SURVEY\064041015\LUCAS\HENDRICK FARM\064041015 LUCAS HENDRICK FARM_PP.DWG PLOTTED BY: HOPPER, BRADEN 2/28/2018 8:28 AM LAST SAVED: 2/28/2018 8:27 AM

KH GENERAL NOTES

OVERALL:

1. ALL CONSTRUCTION AND MATERIALS SHALL BE IN ACCORDANCE WITH THESE PLANS, CITY (OR TOWN) STANDARD DETAILS AND SPECIFICATIONS, THE FINAL GEOTECHNICAL REPORT AND ALL ISSUED ADDENDA, AND COMMONLY ACCEPTED CONSTRUCTION STANDARDS. THE CITY SPECIFICATIONS SHALL GOVERN WHERE OTHER SPECIFICATIONS DO NOT EXIST. IN CASE OF CONFLICTING SPECIFICATIONS OR DETAILS, THE MORE RESTRICTIVE SPECIFICATION AND DETAIL SHALL BE FOLLOWED.

2. THE CONTRACTOR SHALL COMPLY WITH CITY (OR TOWN) "GENERAL NOTES" FOR CONSTRUCTION, IF EXISTING AND REQUIRED BY THE CITY. FOR INSTANCES WHERE THEY CONFLICT WITH THESE KH GENERAL NOTES, THEN THE MORE RESTRICTIVE SHALL APPLY

3. THE CONTRACTOR SHALL FURNISH ALL MATERIAL AND LABOR TO CONSTRUCT THE FACILITY AS SHOWN AND DESCRIBED IN THE CONSTRUCTION DOCUMENTS IN ACCORDANCE WITH THE APPROPRIATE AUTHORITIES' SPECIFICATIONS AND REQUIREMENTS.

4. THE CONTRACTOR SHALL VISIT THE SITE PRIOR TO BIDDING TO DETERMINE EXISTING CONDITIONS.

5. THE EXISTING CONDITIONS SHOWN ON THESE PLANS WERE PROVIDED BY THE TOPOGRAPHIC SURVEY PREPARED BY THE PROJECT SURVEYOR, AND ARE BASED ON THE BENCHMARKS SHOWN. THE CONTRACTOR SHALL REFERENCE THE SAME BENCHMARKS.

6. THE CONTRACTOR SHALL REVIEW AND VERIFY THE EXISTING TOPOGRAPHIC SURVEY SHOWN ON THE PLANS REPRESENTS EXISTING FIELD CONDITIONS PRIOR TO CONSTRUCTION, AND SHALL REPORT ANY DISCREPANCIES FOUND TO THE OWNER AND ENGINEER IMMEDIATELY.

7. IF THE CONTRACTOR DOES NOT ACCEPT THE EXISTING TOPOGRAPHIC SURVEY AS SHOWN ON THE PLANS, WITHOUT EXCEPTION, THEN THE CONTRACTOR SHALL SUPPLY AT THEIR OWN EXPENSE, A TOPOGRAPHIC SURVEY BY A REGISTERED PROFESSIONAL LAND SURVEYOR TO THE OWNER AND ENGINEER FOR REVIEW.

8. CONTRACTOR SHALL PROVIDE ALL CONSTRUCTION SURVEYING AND STAKING.

9. CONTRACTOR SHALL VERIFY HORIZONTAL AND VERTICAL CONTROL, INCLUDING BENCHMARKS PRIOR TO COMMENCING CONSTRUCTION OR STAKING OF IMPROVEMENTS. PROPERTY LINES AND CORNERS SHALL BE HELD AS THE HORIZONTAL CONTROL.

10. THE CONTRACTOR SHALL REVIEW AND VERIFY ALL DIMENSIONS, ELEVATIONS, AND FIELD CONDITIONS THAT MAY AFFECT CONSTRUCTION. ANY DISCREPANCIES ON THE DRAWINGS SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE ARCHITECT AND ENGINEER BEFORE COMMENCING WORK. NO FIELD CHANGES OR DEVIATIONS FROM DESIGN ARE TO BE MADE WITHOUT PRIOR APPROVAL OF THE ARCHITECT, ENGINEER, AND IF APPLICABLE THE CITY AND OWNER. NO CONSIDERATION WILL BE GIVEN TO CHANGE ORDERS FOR WHICH THE CITY, ENGINEER, AND OWNER WERE NOT CONTACTED PRIOR TO CONSTRUCTION OF THE AFFECTED ITEM.

11. CONTRACTOR SHALL THOROUGHLY CHECK COORDINATION OF CIVIL, LANDSCAPE, MEP, ARCHITECTURAL, AND OTHER PLANS PRIOR TO COMMENCING CONSTRUCTION. OWNER/ENGINEER SHALL BE NOTIFIED OF ANY DISCREPANCY PRIOR TO COMMENCING WITH CONSTRUCTION.

12. IT IS THE CONTRACTOR'S RESPONSIBILITY TO CONTACT THE VARIOUS UTILITY COMPANIES WHICH MAY HAVE BURIED OR AERIAL UTILITIES WITHIN OR NEAR THE CONSTRUCTION AREA BEFORE COMMENCING WORK TO HAVE THEM LOCATE THEIR EXISTING UTILITIES PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL PROVIDE AN ADEQUATE MINIMUM NOTICE TO ALL UTILITY COMPANIES PRIOR TO BEGINNING CONSTRUCTION.

13. CONTRACTOR SHALL CALL TEXAS 811 AN ADEQUATE AMOUNT OF TIME PRIOR TO COMMENCING CONSTRUCTION OR ANY EXCAVATION.

14. CONTRACTOR SHALL USE EXTREME CAUTION AS THE SITE CONTAINS VARIOUS KNOWN AND UNKNOWN PUBLIC AND PRIVATE UTILITIES.

15. THE LOCATIONS, ELEVATIONS, DEPTH, AND DIMENSIONS OF EXISTING UTILITIES SHOWN ON THE PLANS WERE OBTAINED FROM AVAILABLE UTILITY COMPANY MAPS AND PLANS, AND ARE CONSIDERED APPROXIMATE AND INCOMPLETE. IT SHALL BE THE CONTRACTORS' RESPONSIBILITY TO VERIFY THE PRESENCE, LOCATION, ELEVATION, DEPTH, AND DIMENSION OF EXISTING UTILITIES SUFFICIENTLY IN ADVANCE OF CONSTRUCTION SO THAT ADJUSTMENTS CAN BE MADE TO PROVIDE ADEQUATE CLEARANCES. THE ENGINEER SHALL BE NOTIFIED WHEN A PROPOSED IMPROVEMENT CONFLICTS WITH AN EXISTING UTILITY.

16. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING ANY ADJUSTMENTS AND RELOCATIONS OF EXISTING UTILITIES THAT CONFLICT WITH THE PROPOSED IMPROVEMENTS, INCLUDING BUT NOT LIMITED TO, ADJUSTING EXISTING MANHOLES TO MATCH PROPOSED GRADE, RELOCATING EXISTING POLES AND GUY WIRES THAT ARE LOCATED IN PROPOSED DRIVEWAYS, ADJUSTING THE HORIZONTAL OR VERTICAL ALIGNMENT OF EXISTING UNDERGROUND UTILITIES TO ACCOMMODATE PROPOSED GRADE OR CROSSING WITH A PROPOSED UTILITY, AND ANY OTHERS THAT MAY BE ENCOUNTERED THAT ARE UNKNOWN AT THIS TIME AND NOT SHOWN ON THESE PLANS.

17. CONTRACTOR SHALL ARRANGE FOR OR PROVIDE, AT ITS EXPENSE, ALL GAS, TELECOMMUNICATIONS, CABLE, OVERHEAD AND UNDERGROUND POWER LINE, AND UTILITY POLE ADJUSTMENTS NEEDED.

18. CONTRACTOR IS RESPONSIBLE FOR COORDINATING INSTALLATION OF FRANCHISE UTILITIES THAT ARE NECESSARY FOR ON-SITE AND OFF-SITE CONSTRUCTION, AND SERVICE TO THE PROPOSED DEVELOPMENT.

19. THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR ALL DAMAGES DUE TO THE CONTRACTORS' FAILURE TO EXACTLY LOCATE AND PRESERVE ALL UTILITIES. THE OWNER OR ENGINEER WILL ASSUME NO LIABILITY FOR ANY DAMAGES SUSTAINED OR COST INCURRED BECAUSE OF THE OPERATIONS IN THE VICINITY OF EXISTING UTILITIES OR STRUCTURES. IF IT IS NECESSARY TO SHORE, BRACE, SWING OR RELOCATE A UTILITY, THE UTILITY COMPANY OR DEPARTMENT AFFECTED SHALL BE CONTACTED BY THE CONTRACTOR AND THEIR PERMISSION OBTAINED REGARDING THE METHOD TO USE FOR SUCH WORK.

20. BRACING OF UTILITY POLES MAY BE REQUIRED BY THE UTILITY COMPANIES WHEN TRENCHING OR EXCAVATING IN CLOSE PROXIMITY TO THE POLES. THE COST OF BRACING POLES WILL BE BORNE BY THE CONTRACTOR, WITH NO SEPARATE PAY ITEM FOR THIS WORK. THE COST IS INCIDENTAL TO THE PAY ITEM.

21. CONTRACTOR SHALL USE ALL NECESSARY SAFETY PRECAUTIONS TO AVOID CONTACT WITH OVERHEAD AND UNDERGROUND POWER LINES. CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE LOCAL, STATE, FEDERAL AND UTILITY OWNER REGULATIONS PERTAINING TO WORK SETBACKS FROM POWER LINES.

22. THE CONTRACTOR SHALL BE RESPONSIBLE TO OBTAIN ALL REQUIRED CONSTRUCTION PERMITS, APPROVALS, AND BONDS PRIOR TO CONSTRUCTION.

23. THE CONTRACTOR SHALL HAVE AVAILABLE AT THE JOB SITE AT ALL TIMES A COPY OF THE CONTRACT DOCUMENTS INCLUDING PLANS, GEOTECHNICAL REPORT AND ADDENDA, PROJECT AND CITY SPECIFICATIONS, AND SPECIAL CONDITIONS, COPIES OF ANY REQUIRED CONSTRUCTION PERMITS, EROSION CONTROL PLANS, SWPPP AND INSPECTION REPORTS.

24. ALL SHOP DRAWINGS AND OTHER DOCUMENTS THAT REQUIRE ENGINEER REVIEW SHALL BE SUBMITTED BY THE CONTRACTOR SUFFICIENTLY IN ADVANCE OF CONSTRUCTION OF THAT ITEM, SO THAT NO LESS THAN 10 BUSINESS DAYS FOR REVIEW AND RESPONSE IS AVAILABLE.

25. ALL NECESSARY INSPECTIONS AND/OR CERTIFICATIONS REQUIRED BY CODES, JURISDICTIONAL AGENCIES, AND/OR UTILITY SERVICE COMPANIES SHALL BE PERFORMED PRIOR TO USE OF THE FACILITY AND THE FINAL CONNECTION OF SERVICES.

26. CONTRACTOR SHALL ARRANGE FOR REQUIRED CITY INSPECTIONS.

27. CONTRACTOR'S BID PRICE SHALL INCLUDE ALL INSPECTION FEES.

28. ALL SYMBOLS SHOWN ON THESE PLANS (E.G. FIRE HYDRANT, METERS, VALVES, INLETS, ETC....) ARE FOR PRESENTATION PURPOSES ONLY AND ARE NOT TO SCALE. CONTRACTOR SHALL COORDINATE FINAL SIZES AND LOCATIONS WITH APPROPRIATE CITY INSPECTOR

29. THE SCOPE OF WORK FOR THE CIVIL IMPROVEMENTS SHOWN ON THESE PLANS TERMINATES 5-FEET FROM THE BUILDING. REFERENCE THE BUILDING PLANS (E.G. ARCHITECTURAL, STRUCTURAL, MEP) FOR AREAS WITHIN 5-FEET OF THE BUILDING AND WITHIN THE BUILDING FOOTPRINT.

30. REFER TO ARCHITECTURAL AND STRUCTURAL PLANS FOR ALL FINAL BUILDING DIMENSIONS.

31. THE PROPOSED BUILDING FOOTPRINT(S) SHOWN IN THESE PLANS WAS PROVIDED TO KIMLEY-HORN AND ASSOCIATES, INC. (KH) BY THE PROJECT ARCHITECT AT THE TIME THESE PLANS WERE PREPARED. IT MAY NOT BE THE FINAL CORRECT VERSION BECAUSE THE BUILDING DESIGN WAS ONGOING. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR CONFIRMING THE FINAL CORRECT VERSION OF THE BUILDING FOOTPRINT WITH THE ARCHITECT AND STRUCTURAL ENGINEER PRIOR TO LAYOUT. DIMENSIONS AND/OR COORDINATES SHOWN ON THESE PLANS WERE BASED ON THE ABOVE STATED ARCHITECTURAL FOOTPRINT, AND ARE THEREFORE A PRELIMINARY LOCATION OF THE BUILDING. THE CONTRACTOR IS SOLELY RESPONSIBLE TO VERIFY WHAT PART OF THE BUILDING THE ARCHITECT'S FOOTPRINT REPRESENTS (E.G. SLAB, OUTSIDE WALL, MASONRY LEDGE, ETC.....) AND TO CONFIRM ITS FINAL POSITION ON THE SITE BASED ON THE FINAL ARCHITECTURAL FOOTPRINT, CIVIL DIMENSION CONTROL PLAN, SURVEY BOUNDARY AND/OR PLAT. ANY DIFFERENCES FOUND SHALL BE REPORTED TO KH IMMEDIATELY.

32. ALL CONSTRUCTION SHALL COMPLY WITH THE PROJECT'S FINAL GEOTECHNICAL REPORT (OR LATEST EDITION), INCLUDING SUBSEQUENT ADDENDA ONLY IF GEOTECH REPORT EXCEEDS CITY STANDARDS.

33. CONTRACTOR IS RESPONSIBLE FOR ALL MATERIALS TESTING AND CERTIFICATION, UNLESS SPECIFIED OTHERWISE BY OWNER. ALL MATERIALS TESTING SHALL BE COORDINATED WITH THE APPROPRIATE CITY INSPECTOR AND COMPLY WITH CITY STANDARD SPECIFICATIONS AND GEOTECHNICAL REPORT. TESTING SHALL BE PERFORMED BY AN APPROVED INDEPENDENT AGENCY FOR TESTING MATERIALS. OWNER SHALL APPROVE THE AGENCY NOMINATED BY THE CONTRACTOR FOR MATERIALS TESTING.

34. ALL COPIES OF MATERIALS TEST RESULTS SHALL BE SENT TO THE OWNER, ENGINEER AND ARCHITECT DIRECTLY FROM THE TESTING AGENCY.

35. IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO SHOW, BY THE STANDARD TESTING PROCEDURES OF THE MATERIALS, THAT THE WORK CONSTRUCTED MEETS THE PROJECT REQUIREMENTS AND CITY SPECIFICATIONS.

36. DUE TO THE POTENTIAL FOR DIFFERENTIAL SOIL MOVEMENT ADJACENT TO THE BUILDING, THE CONTRACTOR SHALL ADHERE TO GEOTECHNICAL REPORT'S RECOMMENDATION FOR SUBGRADE PREPARATION SPECIFIC TO FLATWORK ADJACENT TO THE PROPOSED BUILDING. THE OWNER AND CONTRACTOR ARE ADVISED TO OBTAIN A GEOTECHNICAL ENGINEER RECOMMENDATION SPECIFIC TO FLATWORK ADJACENT TO THE BUILDING, IF NONE IS CURRENTLY EXISTING.

37. ALL CONTRACTORS MUST CONFINE THEIR ACTIVITIES TO THE WORK AREA. NO ENCROACHMENTS OUTSIDE OF THE WORK AREA WILL BE ALLOWED. ANY DAMAGE RESULTING THEREFROM SHALL BE CONTRACTOR'S SOLE RESPONSIBILITY TO REPAIR.

38. THE CONTRACTOR SHALL PROTECT ALL EXISTING STRUCTURES, UTILITIES, MANHOLES, POLES, GUY WIRES, VALVE COVERS, VAULT LIDS, FIRE HYDRANTS, COMMUNICATION BOXES/PEDESTALS, AND OTHER FACILITIES TO REMAIN AND SHALL REPAIR ANY DAMAGES AT NO COST TO THE OWNER.

39. THE CONTRACTOR SHALL IMMEDIATELY REPAIR OR REPLACE ANY PHYSICAL DAMAGE TO PRIVATE PROPERTY OR PUBLIC IMPROVEMENTS, INCLUDING BUT NOT LIMITED TO: FENCES, WALLS, SIGNS, PAVEMENT, CURBS, UTILITIES, SIDEWALKS, GRASS, TREES, LANDSCAPING, AND IRRIGATION SYSTEMS, ETC.... TO ORIGINAL CONDITION OR BETTER AT NO COST TO THE OWNER.

40. ALL AREAS IN EXISTING RIGHT-OF-WAY DISTURBED BY SITE CONSTRUCTION SHALL BE REPAIRED TO ORIGINAL CONDITION OR BETTER, INCLUDING AS NECESSARY GRADING, LANDSCAPING, CULVERTS, AND PAVEMENT.

41. THE CONTRACTOR SHALL SALVAGE ALL EXISTING POWER POLES, SIGNS, WATER VALVES, FIRE HYDRANTS, METERS, ETC... THAT ARE TO BE RELOCATED DURING CONSTRUCTION.

42. CONTRACTOR SHALL MAINTAIN ADEQUATE SITE DRAINAGE DURING ALL PHASES OF CONSTRUCTION, INCLUDING MAINTAINING EXISTING DITCHES OR CULVERTS FREE OF OBSTRUCTIONS AT ALL TIMES.

43. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING AND SUBMITTING A TRENCH SAFETY PLAN, PREPARED BY A PROFESSIONAL ENGINEER IN THE STATE OF TEXAS, TO THE CITY PRIOR TO CONSTRUCTION. CONTRACTOR IS RESPONSIBLE FOR MAINTAINING TRENCH SAFETY REQUIREMENTS IN ACCORDANCE WITH CITY, STATE, AND FEDERAL REQUIREMENTS, INCLUDING OSHA FOR ALL TRENCHES. NO OPEN TRENCHES SHALL BE ALLOWED OVERNIGHT WITHOUT PRIOR WRITTEN APPROVAL OF THE CITY.

44. THE CONTRACTOR SHALL KEEP TRENCHES FREE FROM WATER.

45. SITE SAFETY IS SOLELY THE RESPONSIBILITY OF THE CONTRACTOR.

46. THESE PLANS DO NOT EXTEND TO OR INCLUDE DESIGNS OR SYSTEMS PERTAINING TO THE SAFETY OF THE CONTRACTOR OR ITS EMPLOYEES, AGENTS OR REPRESENTATIVES IN THE PERFORMANCE OF THE WORK. THE ENGINEER'S SEAL HEREON DOES NOT EXTEND TO ANY SUCH SAFETY SYSTEM. THE CONTRACTOR SHALL BE RESPONSIBLE FOR IMPLEMENTATION OF ALL REQUIRED SAFETY PROCEDURES AND PROGRAMS.

47. SIGNS RELATED TO SITE OPERATION OR SAFETY ARE NOT INCLUDED IN THESE PLANS.

48. CONTRACTOR OFFICE AND STAGING AREA SHALL BE AGREED ON BY THE OWNER AND CONTRACTOR PRIOR TO BEGINNING OF CONSTRUCTION. CONTRACTOR IS RESPONSIBLE FOR ALL PERMITTING REQUIREMENTS FOR THE CONSTRUCTION OFFICE, TRAILER, STORAGE, AND STAGING OPERATIONS AND LOCATIONS.

49. LIGHT POLES, SIGNS, AND OTHER OBSTRUCTIONS SHALL NOT BE PLACED IN ACCESSIBLE ROUTES.

50. ALL SIGNS, PAVEMENT MARKINGS, AND OTHER TRAFFIC CONTROL DEVICES SHALL CONFORM TO THE "TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES".

51. TOP RIM ELEVATIONS OF ALL EXISTING AND PROPOSED MANHOLES SHALL BE COORDINATED WITH TOP OF PAVEMENT OR FINISHED GRADE AND SHALL BE ADJUSTED TO BE FLUSH WITH THE ACTUAL FINISHED GRADE AT THE TIME OF PAVING.

52. CONTRACTOR SHALL ADJUST ALL EXISTING AND PROPOSED VALVES, FIRE HYDRANTS, AND OTHER UTILITY APPURTENANCES TO MATCH ACTUAL FINISHED GRADES AT THE TIME OF PAVING.

53. THE CONTRACTOR IS RESPONSIBLE FOR CONSTRUCTION SEQUENCING AND PHASING, AND SHALL CONTACT THE APPROPRIATE CITY OFFICIALS, INCLUDING BUILDING OFFICIAL, ENGINEERING INSPECTOR, AND FIRE MARSHALL TO LEARN OF ANY REQUIREMENTS.

54. CONTRACTOR IS RESPONSIBLE FOR PREPARATION, SUBMITTAL, AND APPROVAL BY THE CITY OF A TRAFFIC CONTROL PLAN PRIOR TO THE START OF CONSTRUCTION, AND THEN THE IMPLEMENTATION OF THE PLAN.

55. CONTRACTOR SHALL KEEP A NEAT AND ACCURATE RECORD OF CONSTRUCTION, INCLUDING ANY DEVIATIONS OR VARIANCES FROM THE PLANS.

56. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING AS-BUILT PLANS TO THE ENGINEER AND CITY IDENTIFYING ALL DEVIATIONS AND VARIATIONS FROM THESE PLANS MADE DURING CONSTRUCTION.

EROSION CONTROL:

1. THE CONTRACTOR SHALL COMPLY WITH ALL LOCAL, STATE, AND FEDERAL EROSION CONTROL AND WATER QUALITY REQUIREMENTS, LAWS, AND ORDINANCES THAT APPLY TO THE CONSTRUCTION SITE LAND DISTURBANCE.

2. CONTRACTOR SHALL COMPLY WITH THE REQUIREMENTS OF THE "TCEQ GENERAL PERMIT TO DISCHARGE UNDER THE TEXAS POLLUTANT DISCHARGE ELIMINATION SYSTEM TXR 150000".

3. EROSION CONTROL DEVICES SHOWN ON THE EROSION CONTROL PLAN FOR THE PROJECT SHALL BE INSTALLED PRIOR TO THE START OF LAND DISTURBANCE.

4. ALL EROSION CONTROL DEVICES ARE TO BE INSTALLED IN ACCORDANCE WITH THE APPROVED PLANS AND SPECIFICATIONS FOR THE PROJECT.

5. CONTRACTOR IS SOLELY RESPONSIBLE FOR INSTALLATION, IMPLEMENTATION, MAINTENANCE, AND EFFECTIVENESS OF ALL EROSION CONTROL DEVICES, BEST MANAGEMENT PRACTICES (BMPS), AND FOR UPDATING THE EROSION CONTROL PLAN DURING CONSTRUCTION AS FIELD CONDITIONS CHANGE.

6. CONTRACTOR SHALL DOCUMENT THE DATES OF INSTALLATION, MAINTENANCE OR MODIFICATION, AND REMOVAL FOR EACH BMP EMPLOYED IN THE STORM WATER POLLUTION PREVENTION PLAN (SWPPP) IF APPLICABLE.

7. AS STORM SEWER INLETS ARE INSTALLED ON-SITE, TEMPORARY EROSION CONTROL DEVICES SHALL BE INSTALLED AT EACH INLET PER APPROVED DETAILS.

8. THE EROSION CONTROL DEVICES SHALL REMAIN IN PLACE UNTIL THE AREA IT PROTECTS HAS BEEN PERMANENTLY STABILIZED.

9. CONTRACTOR SHALL PROVIDE ADEQUATE EROSION CONTROL DEVICES NEEDED DUE TO PROJECT PHASING.

10. CONTRACTOR SHALL OBSERVE THE EFFECTIVENESS OF THE EROSION CONTROL DEVICES AND MAKE FIELD ADJUSTMENTS AND MODIFICATIONS AS NEEDED TO PREVENT SEDIMENT FROM LEAVING THE SITE. IF THE EROSION CONTROL DEVICES DO NOT EFFECTIVELY CONTROL EROSION AND PREVENT SEDIMENTATION FROM WASHING OFF THE SITE, THEN THE CONTRACTOR SHALL NOTIFY THE ENGINEER.

11. OFF-SITE SOIL BORROW, SPOIL, AND STORAGE AREAS (IF APPLICABLE) ARE CONSIDERED AS PART OF THE PROJECT SITE AND MUST ALSO COMPLY WITH THE EROSION CONTROL REQUIREMENTS FOR THIS PROJECT. THIS INCLUDES THE INSTALLATION OF BMP'S TO CONTROL EROSION AND SEDIMENTATION AND THE ESTABLISHMENT OF PERMANENT GROUND COVER ON DISTURBED AREAS PRIOR TO FINAL APPROVAL OF THE PROJECT. CONTRACTOR IS RESPONSIBLE FOR MODIFYING THE SWPPP AND EROSION CONTROL PLAN TO INCLUDE BMPS FOR ANY OFF-SITE THAT ARE NOT ANTICIPATED OR SHOWN ON THE EROSION CONTROL PLAN.

12. ALL STAGING, STOCKPILES, SPOIL, AND STORAGE SHALL BE LOCATED SUCH THAT THEY WILL NOT ADVERSELY AFFECT STORM WATER QUALITY. PROTECTIVE MEASURES SHALL BE PROVIDED IF NEEDED TO ACCOMPLISH THIS REQUIREMENT, SUCH AS COVERING OR ENCIRCLING THE AREA WITH AN APPROPRIATE BARRIER.

13. CONTRACTORS SHALL INSPECT ALL EROSION CONTROL DEVICES, BMPS, DISTURBED AREAS, AND VEHICLE ENTRY AND EXIT AREAS WEEKLY AND WITHIN 24 HOURS OF ALL RAINFALL EVENTS OF 0.5 INCHES OR GREATER, AND KEEP A RECORD OF THIS INSPECTION IN THE SWPPP BOOKLET IF APPLICABLE, TO VERIFY THAT THE DEVICES AND EROSION CONTROL PLAN ARE FUNCTIONING PROPERLY.

14. CONTRACTOR SHALL CONSTRUCT A STABILIZED CONSTRUCTION ENTRANCE AT ALL PRIMARY POINTS OF ACCESS IN ACCORDANCE WITH CITY SPECIFICATIONS. CONTRACTOR SHALL ENSURE THAT ALL CONSTRUCTION TRAFFIC USES THE STABILIZED ENTRANCE AT ALL TIMES FOR ALL INGRESS/EGRESS.

15. SITE ENTRY AND EXITS SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT THE TRACKING AND FLOWING OF SEDIMENT AND DIRT ONTO OFF-SITE ROADWAYS. ALL SEDIMENT AND DIRT FROM THE SITE THAT IS DEPOSITED ONTO AN OFF-SITE ROADWAY SHALL BE REMOVED IMMEDIATELY.

16. THE CONTRACTOR IS RESPONSIBLE FOR REMOVING ALL SILT AND DEBRIS FROM THE AFFECTED OFF-SITE ROADWAYS THAT ARE A RESULT OF THE CONSTRUCTION, AS REQUESTED BY OWNER AND CITY. AT A MINIMUM, THIS SHOULD OCCUR ONCE PER DAY FOR THE OFF-SITE ROADWAYS.

17. WHEN WASHING OF VEHICLES IS REQUIRED TO REMOVE SEDIMENT PRIOR TO EXITING THE SITE, IT SHALL BE DONE IN AN AREA STABILIZED WITH CRUSHED STONE THAT DRAINS INTO AN APPROVED SEDIMENT TRAP BMP.

18. CONTRACTOR SHALL INSTALL A TEMPORARY SEDIMENT BASIN FOR ANY ON-SITE DRAINAGE AREAS THAT ARE GREATER THAN 10 ACRES, PER TCEQ AND CITY STANDARDS. IF NO ENGINEERING DESIGN HAS BEEN PROVIDED FOR A SEDIMENTATION BASIN ON THESE PLANS, THEN THE CONTRACTOR SHALL ARRANGE FOR AN APPROPRIATE DESIGN TO BE PROVIDED.

19. ALL FINES IMPOSED FOR SEDIMENT OR DIRT DISCHARGED FROM THE SITE SHALL BE PAID BY THE RESPONSIBLE CONTRACTOR.

20. WHEN SEDIMENT OR DIRT HAS CLOGGED THE CONSTRUCTION ENTRANCE VOID SPACES BETWEEN STONES OR DIRT IS BEING TRACKED ONTO A ROADWAY, THE AGGREGATE PAD MUST BE WASHED DOWN OR REPLACED. RUNOFF FROM THE WASH-DOWN OPERATION SHALL NOT BE ALLOWED TO DRAIN DIRECTLY OFF SITE WITHOUT FIRST FLOWING THROUGH ANOTHER BMP TO CONTROL SEDIMENTATION. PERIODIC RE-GRADING OR NEW STONE MAY BE REQUIRED TO MAINTAIN THE EFFECTIVENESS OF THE CONSTRUCTION ENTRANCE

21. TEMPORARY SEEDING OR OTHER APPROVED STABILIZATION SHALL BE INITIATED WITHIN 14 DAYS OF THE LAST DISTURBANCE OF ANY AREA, UNLESS ADDITIONAL CONSTRUCTION IN THE AREA IS EXPECTED WITHIN 21 DAYS OF THE LAST DISTURBANCE

22. CONTRACTOR SHALL FOLLOW GOOD HOUSEKEEPING PRACTICES DURING CONSTRUCTION, ALWAYS CLEANING UP DIRT, LOOSE MATERIAL, AND TRASH AS CONSTRUCTION PROGRESSES.

23. UPON COMPLETION OF FINE GRADING, ALL SURFACES OF DISTURBED AREAS SHALL BE PERMANENTLY STABILIZED. STABILIZATION IS ACHIEVED WHEN THE AREA IS EITHER COVERED BY PERMANENT IMPERVIOUS STRUCTURES, SUCH AS BUILDINGS, SIDEWALK, PAVEMENT, OR A UNIFORM PERENNIAL VEGETATIVE COVER.

24. AT THE CONCLUSION OF THE PROJECT, ALL INLETS, DRAIN PIPE, CHANNELS, DRAINAGEWAYS AND BORROW DITCHES AFFECTED BY THE CONSTRUCTION SHALL BE DREDGED, AND THE SEDIMENT GENERATED BY THE PROJECT SHALL BE REMOVED AND DISPOSED IN ACCORDANCE WITH APPLICABLE REGULATIONS.

STORM WATER DISCHARGE AUTHORIZATION:

1. CONTRACTOR SHALL COMPLY WITH ALL TCEQ AND EPA STORM WATER POLLUTION PREVENTION REQUIREMENTS.

2. CONTRACTOR SHALL COMPLY WITH THE REQUIREMENTS OF THE TCEQ GENERAL PERMIT TO DISCHARGE UNDER THE TEXAS POLLUTANT DISCHARGE ELIMINATION SYSTEM TXR 150000.

3. THE CONTRACTOR SHALL ENSURE THAT ALL PRIMARY OPERATORS SUBMIT A NOI TO TCEQ AT LEAST SEVEN DAYS PRIOR TO COMMENCING CONSTRUCTION (IF APPLICABLE), OR IF UTILIZING ELECTRONIC SUBMITTAL, PRIOR TO COMMENCING CONSTRUCTION. ALL PRIMARY OPERATORS SHALL PROVIDE A COPY OF THE SIGNED NOI TO THE OPERATOR OF ANY MS4 (TYPICALLY THE CITY) RECEIVING DISCHARGE FROM THE SITE.

4. CONTRACTOR SHALL BE RESPONSIBLE FOR THE IMPLEMENTATION OF THE STORM WATER POLLUTION PREVENTION PLAN (SWPPP) IF APPLICABLE, INCLUDING POSTING SITE NOTICE, INSPECTIONS, DOCUMENTATION, AND SUBMISSION OF ANY INFORMATION REQUIRED BY THE TCEQ AND EPA (E.G. NOI).

5. ALL CONTRACTORS AND SUBCONTRACTORS PROVIDING SERVICES RELATED TO THE SWPPP SHALL SIGN THE REQUIRED CONTRACTOR CERTIFICATION STATEMENT ACKNOWLEDGING THEIR RESPONSIBILITIES AS SPECIFIED IN THE SWPPP.

6. A COPY OF THE SWPPP, INCLUDING NOI, SITE NOTICE, CONTRACTOR CERTIFICATIONS, AND ANY REVISIONS, SHALL BE SUBMITTED TO THE CITY BY THE CONTRACTOR AND SHALL BE RETAINED ON-SITE DURING CONSTRUCTION.

7. A NOTICE OF TERMINATION (NOT) SHALL BE SUBMITTED TO TCEQ BY ANY PRIMARY OPERATOR WITHIN 30 DAYS AFTER ALL SOIL DISTURBING ACTIVITIES AT THE SITE HAVE BEEN COMPLETED AND A UNIFORM VEGETATIVE COVER HAS BEEN ESTABLISHED ON ALL UNPAVED AREAS AND AREAS NOT COVERED BY STRUCTURES, A TRANSFER OF OPERATIONAL CONTROL HAS OCCURRED, OR THE OPERATOR HAS OBTAINED ALTERNATIVE AUTHORIZATION UNDER A DIFFERENT PERMIT. A COPY OF THE NOT SHALL BE PROVIDED TO THE OPERATOR OF ANY MS4 RECEIVING DISCHARGE FROM THE SITE.

DEMOLITION:

1. KH IS NOT RESPONSIBLE FOR THE MEANS AND METHODS EMPLOYED BY THE CONTRACTOR TO IMPLEMENT THIS DEMOLITION PLAN. THIS PRELIMINARY DEMOLITION PLAN SIMPLY INDICATES THE KNOWN OBJECTS ON THE SUBJECT TRACT THAT ARE TO BE DEMOLISHED AND REMOVED FROM THE SITE.

2. KH DOES NOT WARRANT OR REPRESENT THAT THE PLAN, WHICH WAS PREPARED BASED ON SURVEY AND UTILITY INFORMATION PROVIDED BY OTHERS, SHOWS ALL IMPROVEMENTS AND UTILITIES, THAT THE IMPROVEMENTS AND UTILITIES ARE SHOWN ACCURATELY, OR THAT THE UTILITIES SHOWN CAN BE REMOVED. THE CONTRACTOR IS RESPONSIBLE FOR PERFORMING ITS OWN SITE RECONNAISSANCE TO SCOPE ITS WORK AND TO CONFIRM WITH THE OWNERS OF IMPROVEMENTS AND UTILITIES THE ABILITY AND PROCESS FOR THE REMOVAL OF THEIR FACILITIES.

3. THIS PLAN IS INTENDED TO GIVE A GENERAL GUIDE TO THE CONTRACTOR, NOTHING MORE. THE GOAL OF THE DEMOLITION IS TO LEAVE THE SITE IN A STATE SUITABLE FOR THE CONSTRUCTION OF THE PROPOSED DEVELOPMENT. REMOVAL OR PRESERVATION OF IMPROVEMENTS, UTILITIES, ETC. TO ACCOMPLISH THIS GOAL ARE THE RESPONSIBILITY OF THE CONTRACTOR.

4. CONTRACTOR IS STRONGLY CAUTIONED TO REVIEW THE FOLLOWING REPORTS DESCRIBING SITE CONDITIONS PRIOR TO BIDDING AND IMPLEMENTING THE DEMOLITION PLAN:

   a. ENVIRONMENTAL SITE ASSESSMENT PROVIDED BY THE OWNER.
   b. ASBESTOS BUILDING INSPECTION REPORT(S) PROVIDED BY THE OWNER.
   c. GEOTECHNICAL REPORT PROVIDED BY THE OWNER.
   d. OTHER REPORTS THAT ARE APPLICABLE AND AVAILABLE.

5. CONTRACTOR SHALL CONTACT THE OWNER TO VERIFY WHETHER ADDITIONAL REPORTS OR AMENDMENTS TO THE ABOVE CITED REPORTS HAVE BEEN PREPARED AND TO OBTAIN/REVIEW/AND COMPLY WITH THE RECOMMENDATION OF SUCH STUDIES PRIOR TO STARTING ANY WORK ON THE SITE.

6. CONTRACTOR SHALL COMPLY WITH ALL LOCAL, STATE, AND FEDERAL REGULATIONS REGARDING THE DEMOLITION OF OBJECTS ON THE SITE AND THE DISPOSAL OF THE DEMOLISHED MATERIALS OFF-SITE. IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO REVIEW THE SITE, DETERMINE THE APPLICABLE REGULATIONS, RECEIVE THE REQUIRED PERMITS AND AUTHORIZATIONS, AND COMPLY.

7. KH DOES NOT REPRESENT THAT THE REPORTS AND SURVEYS REFERENCED ABOVE ARE ACCURATE, COMPLETE, OR COMPREHENSIVE SHOWING ALL ITEMS THAT WILL NEED TO BE DEMOLISHED AND REMOVED.

8. SURFACE PAVEMENT INDICATED MAY OVERLAY OTHER HIDDEN STRUCTURES, SUCH AS ADDITIONAL LAYERS OF PAVEMENT, FOUNDATIONS OR WALLS, THAT ARE ALSO TO BE REMOVED.

GRADING:

1. THE CONTRACTOR AND GRADING SUBCONTRACTOR SHALL VERIFY THE SUITABILITY OF EXISTING AND PROPOSED SITE CONDITIONS INCLUDING GRADES AND DIMENSIONS BEFORE START OF CONSTRUCTION. THE CIVIL ENGINEER SHALL BE NOTIFIED IMMEDIATELY OF ANY DISCREPANCIES.

2. CONTRACTOR SHALL OBTAIN ANY REQUIRED GRADING PERMITS FROM THE CITY.

3. UNLESS OTHERWISE NOTED, PROPOSED CONTOURS AND SPOT ELEVATIONS SHOWN IN PAVED AREA REFLECT TOP OF PAVEMENT SURFACE. IN LOCATIONS ALONG A CURB LINE, ADD 6-INCHES (OR THE HEIGHT OF THE CURB) TO THE PAVING GRADE FOR TOP OF CURB ELEVATION.

4. PROPOSED SPOT ELEVATIONS AND CONTOURS OUTSIDE THE PAVEMENT ARE TO TOP OF FINISHED GRADE.

5. PROPOSED CONTOURS ARE APPROXIMATE. PROPOSED SPOT ELEVATIONS AND DESIGNATED GRADIENT ARE TO BE USED IN CASE OF DISCREPANCY.

6. ALL FINISHED GRADES SHALL TRANSITION UNIFORMLY BETWEEN THE FINISHED ELEVATIONS SHOWN.

7. CONTOURS AND SPOT GRADES SHOWN ARE ELEVATIONS OF TOP OF THE FINISHED SURFACE. WHEN PERFORMING THE GRADING OPERATIONS, THE CONTRACTOR SHALL PROVIDE AN APPROPRIATE ELEVATION HOLD-DOWN ALLOWANCE FOR THE THICKNESS OF PAVEMENT, SIDEWALK, TOPSOIL, MULCH, STONE, LANDSCAPING, RIP-RAP AND ALL OTHER SURFACE MATERIALS THAT WILL CONTRIBUTE TO THE TOP OF FINISHED GRADE. FOR EXAMPLE, THE LIMITS OF EARTHWORK IN PAVED AREAS IS THE BOTTOM OF THE PAVEMENT SECTION.

8. NO REPRESENTATIONS OF EARTHWORK QUANTITIES OR SITE BALANCE ARE MADE BY THESE PLANS. THE CONTRACTOR SHALL PROVIDE THEIR OWN EARTHWORK CALCULATION TO DETERMINE THEIR CONTRACT QUANTITIES AND COST. ANY SIGNIFICANT VARIANCE FROM A BALANCED SITE SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE CIVIL ENGINEER.

9. ALL GRADING AND EARTHWORK SHALL COMPLY WITH THE PROJECT'S FINAL GEOTECHNICAL REPORT (OR LATEST EDITION), INCLUDING SUBSEQUENT ADDENDA.

10. ALL EXCAVATION IS UNCLASSIFIED AND SHALL INCLUDE ALL MATERIALS ENCOUNTERED. UNUSABLE EXCAVATED MATERIAL AND ALL WASTE RESULTING FROM SITE CLEARING AND GRUBBING SHALL BE REMOVED FROM THE SITE AND APPROPRIATELY DISPOSED BY THE CONTRACTOR AT NO ADDITIONAL EXPENSE.

11. EROSION CONTROL DEVICES SHOWN ON THE EROSION CONTROL PLAN FOR THE PROJECT SHALL BE INSTALLED PRIOR TO THE START OF GRADING. REFERENCE EROSION CONTROL PLAN, DETAILS, GENERAL NOTES, AND SWPPP FOR ADDITIONAL INFORMATION AND REQUIREMENTS.

12. BEFORE ANY EARTHWORK IS PERFORMED, THE CONTRACTOR SHALL STAKE OUT AND MARK THE LIMITS OF THE PROJECT'S PROPERTY LINE AND SITE IMPROVEMENTS. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY ENGINEERING AND SURVEYING FOR LINE AND GRADE CONTROL POINTS RELATED TO EARTHWORK.

13. CONTRACTOR TO DISPOSE OF ALL EXCESS EXCAVATION MATERIALS IN A MANNER THAT ADHERES TO LOCAL, STATE AND FEDERAL LAWS AND REGULATIONS. THE CONTRACTOR SHALL KEEP A RECORD OF WHERE EXCESS EXCAVATION WAS DISPOSED, ALONG WITH THE RECEIVING LANDOWNER'S APPROVAL TO DO SO.

14. CONTRACTOR IS RESPONSIBLE FOR REMOVAL AND REPLACEMENT OF TOPSOIL AT THE COMPLETION OF FINE GRADING. CONTRACTOR SHALL REFER TO LANDSCAPE ARCHITECTURE PLANS FOR SPECIFICATIONS AND REQUIREMENTS FOR TOPSOIL.

15. CONTRACTOR SHALL MAINTAIN ADEQUATE SITE DRAINAGE DURING ALL PHASES OF CONSTRUCTION, INCLUDING MAINTAINING EXISTING DITCHES OR CULVERTS FREE OF OBSTRUCTIONS AT ALL TIMES.

16. NO EARTHWORK FILL SHALL BE PLACED IN ANY EXISTING DRAINAGE WAY, SWALE, CHANNEL, DITCH, CREEK, OR FLOODPLAIN FOR ANY REASON OR ANY LENGTH OF TIME, UNLESS THESE PLANS SPECIFICALLY INDICATE THIS IS REQUIRED.

17. TEMPORARY CULVERTS MAY BE REQUIRED IN SOME LOCATIONS TO CONVEY RUN-OFF.

18. REFER TO DIMENSION CONTROL PLAN, AND PLAT FOR HORIZONTAL DIMENSIONS.

19. THE CONTRACTOR SHALL CLEAR AND GRUB THE SITE AND PLACE, COMPACT, AND CONDITION FILL PER THE PROJECT GEOTECHNICAL ENGINEER'S SPECIFICATIONS. THE FILL MATERIAL TO BE USED SHALL BE APPROVED BY THE GEOTECHNICAL ENGINEER PRIOR TO PLACEMENT.

20. CONTRACTOR IS RESPONSIBLE FOR ALL SOILS TESTING AND CERTIFICATION, UNLESS SPECIFIED OTHERWISE BY OWNER. ALL SOILS TESTING SHALL BE COORDINATED WITH THE APPROPRIATE CITY INSPECTOR AND SHALL COMPLY WITH CITY STANDARD SPECIFICATIONS AND THE GEOTECHNICAL REPORT. SOILS TESTING SHALL BE PERFORMED BY AN APPROVED INDEPENDENT AGENCY FOR TESTING SOILS. THE OWNER SHALL APPROVE THE AGENCY NOMINATED BY THE CONTRACTOR FOR SOILS TESTING.

21. ALL COPIES OF SOILS TEST RESULTS SHALL BE SENT TO THE OWNER, ENGINEER AND ARCHITECT DIRECTLY FROM THE TESTING AGENCY.

22. IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO SHOW, BY THE STANDARD TESTING PROCEDURES OF THE SOILS, THAT THE WORK CONSTRUCTED MEETS THE PROJECT REQUIREMENTS AND CITY SPECIFICATIONS.

23. THE SCOPE OF WORK FOR CIVIL IMPROVEMENT SHOWN ON THESE PLANS TERMINATES 5-FEET FROM THE BUILDING. CONTRACTOR SHALL REFER TO THE GEOTECHNICAL REPORT AND STRUCTURAL PLANS AND SPECIFICATIONS FILL, CONDITIONING, AND PREPARATION IN THE BUILDING PAD.

24. DUE TO THE POTENTIAL FOR DIFFERENTIAL SOIL MOVEMENT ADJACENT TO THE BUILDING, THE CONTRACTOR SHALL ADHERE TO GEOTECHNICAL REPORT'S RECOMMENDATION FOR SUBGRADE PREPARATION SPECIFIC TO FLATWORK ADJACENT TO THE PROPOSED BUILDING. THE OWNER AND CONTRACTOR ARE ADVISED TO OBTAIN A GEOTECHNICAL ENGINEER RECOMMENDATION SPECIFIC TO FLATWORK ADJACENT TO THE BUILDING, IF NONE IS CURRENTLY EXISTING.

25. CONTRACTOR SHALL ENSURE THAT SUFFICIENT POSITIVE SLOPE AWAY FROM THE BUILDING PAD IS ACHIEVED FOR ENTIRE PERIMETER OF THE PROPOSED BUILDING(S) DURING GRADING OPERATIONS AND IN THE FINAL CONDITION. IF THE CONTRACTOR OBSERVES THAT THIS WILL NOT BE ACHIEVED, THE CONTRACTOR SHALL CONTACT THE ENGINEER TO REVIEW THE LOCATION.

26. THE CONTRACTOR SHALL TAKE ALL AVAILABLE PRECAUTIONS TO CONTROL DUST. CONTRACTOR SHALL CONTROL DUST BY SPRINKLING WATER, OR BY OTHER MEANS APPROVED BY THE CITY, AT NO ADDITIONAL COST TO THE OWNER.

27. CONTRACTOR SHALL COORDINATE WITH THE UTILITY COMPANIES FOR ANY REQUIRED UTILITY ADJUSTMENTS AND/OR RELOCATIONS NEEDED FOR GRADING OPERATIONS AND TO ACCOMMODATE PROPOSED GRADE, INCLUDING THE UNKNOWN UTILITIES NOT SHOWN ON THESE PLANS. CONTRACTOR SHALL REFER TO THE GENERAL NOTES "OVERALL" SECTION THESE PLANS FOR ADDITIONAL INFORMATION.

28. EXISTING TREE LOCATIONS SHOWN ON THESE PLANS ARE APPROXIMATE. CONTRACTOR SHALL REPORT ANY DISCREPANCIES FOUND IN THE FIELD THAT AFFECT THE GRADING PLAN TO THE CIVIL ENGINEER.

29. CONTRACTOR SHALL FIELD VERIFY ALL PROTECTED TREE LOCATIONS, INDIVIDUAL PROTECTED TREE CRITICAL ROOT ZONES, AND PROPOSED SITE GRADING, AND NOTIFY THE CIVIL ENGINEER AND LANDSCAPE ARCHITECT OF ANY CONFLICTS WITH THE TREE PRESERVATION PLAN BY THE LANDSCAPE ARCHITECT PRIOR TO COMMENCING THE WORK.

30. TREE PROTECTION MEASURES SHALL BE INSTALLED IN ACCORDANCE WITH THE CITY STANDARD TREE PROTECTION DETAILS AND THE APPROVED TREE PRESERVATION PLANS BY THE LANDSCAPE ARCHITECT.

31. CONTRACTOR SHALL REFER TO THE LANDSCAPING AND TREE PRESERVATIONS PLANS FOR ALL INFORMATION AND DETAILS REGARDING EXISTING TREES TO BE REMOVED AND PRESERVED.

32. NO TREE SHALL BE REMOVED UNLESS A TREE REMOVAL PERMIT HAS BEEN ISSUED BY THE CITY, OR CITY HAS OTHERWISE CONFIRMED IN WRITING THAT ONE IS NOT NEEDED FOR THE TREE(S).

33. NO TREE SHALL BE REMOVED OR DAMAGED WITHOUT PRIOR AUTHORIZATION OF THE OWNER OR OWNER'S REPRESENTATIVE. EXISTING TREES SHALL BE PRESERVED WHENEVER POSSIBLE AND GRADING IMPACT TO THEM HELD TO A MINIMUM.

34. AFTER PLACEMENT OF SUBGRADE AND PRIOR TO PLACEMENT OF PAVEMENT, CONTRACTOR SHALL TEST AND OBSERVE PAVEMENT AREAS FOR EVIDENCE OF PONDING AND INADEQUATE SLOPE FOR DRAINAGE. ALL AREAS SHALL ADEQUATELY DRAIN TOWARDS THE INTENDED STRUCTURE TO CONVEY STORMWATER RUNOFF. CONTRACTOR SHALL IMMEDIATELY NOTIFY OWNER AND ENGINEER IF ANY AREAS OF POOR DRAINAGE ARE DISCOVERED.

35. CONTRACTOR FIELD ADJUSTMENT OF PROPOSED SPOT GRADES IS ALLOWED, IF THE APPROVAL OF THE CIVIL ENGINEER IS OBTAINED.

PAVING:

1. ALL PAVING MATERIALS AND CONSTRUCTION SHALL BE IN ACCORDANCE WITH THESE PLANS, THE CITY STANDARD DETAILS AND SPECIFICATIONS, THE FINAL GEOTECHNICAL REPORT AND ALL ISSUED ADDENDA, AND COMMONLY ACCEPTED CONSTRUCTION STANDARDS. THE CITY SPECIFICATIONS SHALL GOVERN EXCEPT WHERE MORE RESTRICTIVE MEASURES ARE OUTLINED.

2. ALL PAVING AND PAVING SUBGRADE SHALL COMPLY WITH CITY STANDARDS AND DETAILS. IF THESE ARE DIFFERENT THAN THOSE IN THE GEOTECHNICAL REPORT, THEN THE MORE RESTRICTIVE SHALL BE FOLLOWED.

3. ALL PUBLIC PAVING AND PAVING SUBGRADE SHALL COMPLY WITH CITY STANDARD CONSTRUCTION DETAILS AND SPECIFICATIONS.

4. CONTRACTOR IS RESPONSIBLE FOR ALL PAVING AND PAVING SUBGRADE TESTING AND CERTIFICATION, UNLESS SPECIFIED OTHERWISE BY OWNER. ALL PAVING AND PAVING SUBGRADE TESTING SHALL BE COORDINATED WITH THE APPROPRIATE CITY INSPECTOR. TESTING SHALL BE PERFORMED BY AN APPROVED INDEPENDENT AGENCY FOR TESTING PAVING AND SUBGRADE. OWNER SHALL APPROVE THE AGENCY NOMINATED BY THE CONTRACTOR FOR PAVING AND PAVING SUBGRADE TESTING.

5. IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO SHOW, BY THE STANDARD TESTING PROCEDURES OF THE PAVING AND PAVING SUBGRADE, THAT THE WORK CONSTRUCTED MEETS THE PROJECT REQUIREMENTS AND CITY SPECIFICATIONS.

6. DUE TO THE POTENTIAL FOR DIFFERENTIAL SOIL MOVEMENT ADJACENT TO THE BUILDING, THE CONTRACTOR SHALL ADHERE TO GEOTECHNICAL REPORT'S RECOMMENDATION FOR SUBGRADE PREPARATION SPECIFIC TO FLATWORK ADJACENT TO THE PROPOSED BUILDING. THE OWNER AND CONTRACTOR ARE ADVISED TO OBTAIN A GEOTECHNICAL ENGINEER RECOMMENDATION SPECIFIC TO FLATWORK ADJACENT TO THE BUILDING, IF NONE IS CURRENTLY EXISTING.

7. ALL RAMPS ALONG PUBLIC STREETS AND IN THE PUBLIC RIGHT-OF-WAY SHALL BE CONSTRUCTED BASED ON THE CITY STANDARD CONSTRUCTION DETAIL AND SPECIFICATIONS.

8. ALL ACCESSIBLE RAMPS, CURB RAMPS, STRIPING, AND PAVEMENT MARKINGS SHALL CONFORM TO ADA AND TAS STANDARDS, LATEST EDITION.

9. CONTRACTOR SHALL CONSTRUCT PROPOSED PAVEMENT TO MATCH EXISTING PAVEMENT WITH A SMOOTH, FLUSH, CONNECTION.

10. CONTRACTOR SHALL FURNISH AND INSTALL ALL PAVEMENT MARKINGS FOR FIRE LANES, PARKING STALLS, HANDICAPPED PARKING SYMBOLS, AND MISCELLANEOUS STRIPING WITHIN PARKING LOT AND AROUND BUILDING AS SHOWN ON THE PLANS. ALL PAINT AND PAVEMENT MARKINGS SHALL ADHERE TO CITY AND OWNER STANDARDS.

11. ALL JOINTS SHALL EXTEND THROUGH THE CURB.

12. THE MINIMUM LENGTH OF OFFSET JOINTS AT RADIUS POINTS SHALL BE 2 FEET.

13. CONTRACTOR SHALL SUBMIT A JOINTING PLAN TO THE ENGINEER AND OWNER PRIOR TO BEGINNING ANY OF THE PAVING WORK.

14. ALL SAWCUTS SHALL BE FULL DEPTH FOR PAVEMENT REMOVAL AND CONNECTION TO EXISTING PAVEMENT.

15. FIRE LANES SHALL BE MARKED AND LABELED AS A FIRELANE PER CITY STANDARDS.

16. UNLESS THE PLANS SPECIFICALLY DICTATE TO THE CONTRARY, ON-SITE AND OTHER DIRECTIONAL SIGNS SHALL BE ORIENTED SO THEY ARE READILY VISIBLE TO THE ONCOMING TRAFFIC FOR WHICH THEY ARE INTENDED.

17. CONTRACTOR IS RESPONSIBLE FOR INSTALLING NECESSARY CONDUIT FOR LIGHTING, IRRIGATION, ETC. PRIOR TO PLACEMENT OF PAVEMENT. ALL CONSTRUCTION DOCUMENTS (CIVIL, MEP, LANDSCAPE, IRRIGATION, AND ARCHITECT) SHALL BE CONSULTED.

18. BEFORE PLACING PAVEMENT, CONTRACTOR SHALL VERIFY THAT SUITABLE ACCESSIBLE PEDESTRIAN ROUTES (PER ADA, TAS, AND FHA) EXIST TO AND FROM EVERY DOOR AND ALONG SIDEWALKS, ACCESSIBLE PARKING SPACES, ACCESS AISLES, AND ACCESSIBLE ROUTES. IN NO CASE SHALL AN ACCESSIBLE RAMP SLOPE EXCEED 1 VERTICAL TO 12 HORIZONTAL. IN NO CASE SHALL SIDEWALK CROSS SLOPE EXCEED 2.0 PERCENT. IN NO CASE SHALL LONGITUDINAL SIDEWALK SLOPE EXCEED 5.0 PERCENT. ACCESSIBLE PARKING SPACES AND ACCESS AISLES SHALL NOT EXCEED 2.0 PERCENT SLOPE IN ANY DIRECTION.

19. CONTRACTOR SHALL TAKE FIELD SLOPE MEASUREMENTS ON FINISHED SUBGRADE AND FORM BOARDS PRIOR TO PLACING PAVEMENT TO VERIFY THAT ADA/TAS SLOPE REQUIREMENTS ARE PROVIDED. CONTRACTOR SHALL CONTACT ENGINEER PRIOR TO PAVING IF ANY EXCESSIVE SLOPES ARE ENCOUNTERED. NO CONTRACTOR CHANGE ORDERS WILL BE ACCEPTED FOR ADA AND TAS SLOPE COMPLIANCE ISSUES.

STORM DRAINAGE:

1. ALL STORM SEWER MATERIALS AND CONSTRUCTION SHALL COMPLY WITH CITY STANDARD CONSTRUCTION DETAILS AND SPECIFICATIONS.

2. THE SITE UTILITY CONTRACTOR SHALL PROVIDE ALL MATERIALS AND APPURTENANCES NECESSARY FOR COMPLETE INSTALLATION OF THE STORM SEWER.

3. THE CONTRACTOR SHALL FIELD VERIFY THE SIZE, CONDITION, HORIZONTAL, AND VERTICAL LOCATIONS OF ALL EXISTING STORM SEWER FACILITIES THAT ARE TO BE CONNECTED TO, PRIOR TO START OF CONSTRUCTION OF ANY STORM SEWER, AND SHALL NOTIFY THE ENGINEER OF ANY CONFLICTS DISCOVERED.

4. THE CONTRACTOR SHALL VERIFY AND COORDINATE ALL DIMENSIONS SHOWN, INCLUDING THE HORIZONTAL AND VERTICAL LOCATION OF CURB INLETS AND GRATE INLETS AND ALL UTILITIES CROSSING THE STORM SEWER.

5. FLOW LINE, TOP-OF-CURB, RIM, THROAT, AND GRATE ELEVATIONS OF PROPOSED INLETS SHALL BE VERIFIED WITH THE GRADING PLAN AND FIELD CONDITIONS PRIOR TO THEIR INSTALLATION.

6. ALL PUBLIC STORM SEWER CONSTRUCTION, PIPE, STRUCTURES, AND FITTINGS SHALL ADHERE TO CITY PUBLIC WORKS STANDARD DETAILS AND SPECIFICATIONS. CONTRACTOR SHALL ARRANGE FOR REQUIRED CITY INSPECTIONS.

7. ALL PRIVATE STORM SEWER CONSTRUCTION, PIPE, STRUCTURES, AND FITTINGS SHALL ADHERE TO THE APPLICABLE PLUMBING CODE. CONTRACTOR SHALL ARRANGE FOR REQUIRED CITY INSPECTIONS.

8. ALL PVC TO RCP CONNECTIONS AND ALL STORM PIPE CONNECTIONS ENTERING STRUCTURES OR OTHER STORM PIPES SHALL HAVE A CONCRETE COLLAR AND BE GROUTED TO ASSURE THE CONNECTION IS WATERTIGHT.

9. ALL PUBLIC STORM SEWER LINES SHALL BE MINIMUM CLASS III RCP. PRIVATE STORM SEWER LINES 18-INCHES AND GREATER SHALL BE CLASS III RCP OR OTHER APPROVED MATERIAL.

10. WHERE COVER EXCEEDS 20-FEET OR IS LESS THAN 2-FEET, CLASS IV RCP SHALL BE USED.

11. IF CONTRACTOR PROPOSES TO USE HDPE OR PVC IN LIEU OF RCP FOR PRIVATE STORM SEWER, CONTRACTOR SHALL SUBMIT TECHNICAL DATA TO THE OWNER, ENGINEER AND CITY ENGINEER/INSPECTOR FOR APPROVAL PRIOR TO ORDERING THE MATERIAL. ANY PROPOSED HDPE AND PVC SHALL BE WATERTIGHT.

12. THE CONTRACTOR SHALL PROVIDE CONSTRUCTION SURVEYING FOR ALL STORM SEWER LINES.

13. EMBEDMENT FOR ALL STORM SEWER LINES, PUBLIC OR PRIVATE, SHALL BE PER CITY STANDARD DETAILS.

14. ALL WYE CONNECTIONS AND PIPE BENDS ARE TO BE PREFABRICATED AND INSTALLED PER MANUFACTURERS SPECIFICATIONS.

15. USE 4 FOOT JOINTS WITH BEVELED ENDS IF RADIUS OF STORM SEWER IS LESS THAN 100 FEET.

16. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING AND SUBMITTING A TRENCH SAFETY PLAN, PREPARED BY A PROFESSIONAL ENGINEER IN THE STATE OF TEXAS, TO THE CITY PRIOR TO CONSTRUCTION. CONTRACTOR IS RESPONSIBLE FOR MAINTAINING TRENCH SAFETY REQUIREMENTS IN ACCORDANCE WITH CITY, STATE, AND FEDERAL REQUIREMENTS, INCLUDING OSHA FOR ALL TRENCHES. NO OPEN TRENCHES SHALL BE ALLOWED OVERNIGHT WITHOUT PRIOR WRITTEN APPROVAL OF THE CITY.

17. THE CONTRACTOR SHALL KEEP TRENCHES FREE FROM WATER.

WATER AND WASTEWATER:

1. ALL WATER AND WASTEWATER MATERIALS AND CONSTRUCTION SHALL COMPLY WITH CITY STANDARD CONSTRUCTION DETAILS AND SPECIFICATIONS.

2. CONTRACTOR SHALL FIELD VERIFY THE SIZE, CONDITION, HORIZONTAL, AND VERTICAL LOCATIONS OF ALL EXISTING WATER FACILITIES THAT ARE TO BE CONNECTED TO, PRIOR TO START OF CONSTRUCTION OF ANY WATER OR WASTEWATER CONSTRUCTION, AND SHALL NOTIFY THE ENGINEER OF ANY CONFLICTS DISCOVERED.

3. CONTRACTOR SHALL VERIFY AND COORDINATE ALL DIMENSIONS SHOWN, INCLUDING THE HORIZONTAL AND VERTICAL LOCATION OF ALL UTILITY SERVICES ENTERING THE BUILDING.

4. THE CONTRACTOR SHALL FIELD VERIFY THE ELEVATION OF ALL UTILITY CROSSINGS PRIOR TO THE INSTALLATION OF ANY PIPE.

5. THE SITE UTILITY CONTRACTOR SHALL PROVIDE ALL MATERIALS AND APPURTENANCES NECESSARY FOR COMPLETE INSTALLATION OF THE WATER AND WASTEWATER IMPROVEMENTS.

6. ALL PUBLIC WATER CONSTRUCTION, PIPE, STRUCTURES, AND FITTINGS SHALL ADHERE TO CITY PUBLIC WORKS STANDARD DETAILS AND SPECIFICATIONS. CONTRACTOR SHALL ARRANGE FOR REQUIRED CITY INSPECTIONS.

7. ALL PRIVATE WATER CONSTRUCTION, PIPE, STRUCTURES, AND FITTINGS SHALL ADHERE TO THE APPLICABLE PLUMBING CODE. CONTRACTOR SHALL ARRANGE FOR REQUIRED CITY INSPECTIONS.

8. FIRE SPRINKLER LINES SHALL BE DESIGNED AND INSTALLED BY A LICENSED FIRE SPRINKLER CONTRACTOR, AND COMPLY TO THE APPLICABLE CODES AND INSPECTIONS REQUIRED. THESE PLANS WERE PREPARED WITHOUT THE BENEFIT OF THE FIRE SPRINKLER DESIGN. CONTRACTOR SHALL NOTIFY THE ENGINEER IF ANY DISCREPANCIES.

9. EMBEDMENT FOR ALL WATER LINES, PUBLIC OR PRIVATE, SHALL BE PER CITY STANDARD DETAILS.

10. CONTRACTOR SHALL TAKE REQUIRED SANITARY PRECAUTIONS, FOLLOWING ANY CITY, TCEQ, AND AWWA STANDARDS, TO KEEP WATER PIPE AND FITTINGS CLEAN AND CAPPED AT TIMES WHEN INSTALLATION IS NOT IN PROGRESS.

11. CONTRACTOR SHALL PROVIDE CONSTRUCTION SURVEYING FOR ALL WATER LINES.

12. ALL WATER SERVICES SHALL TERMINATE 5-FEET OUTSIDE THE BUILDING, UNLESS NOTED OTHERWISE.

13. CONTRACTOR SHALL COMPLY WITH CITY REQUIREMENTS FOR WATER SERVICE DISRUPTIONS AND THE AMOUNT OF PRIOR NOTICE THAT IS REQUIRED, AND SHALL COORDINATE DIRECTLY WITH THE APPROPRIATE CITY DEPARTMENT.

14. CONTRACTOR SHALL SEQUENCE WATER CONSTRUCTION TO AVOID INTERRUPTION OF SERVICE TO SURROUNDING PROPERTIES.

15. CONTRACTOR SHALL MAINTAIN WATER SERVICE TO ALL CUSTOMERS THROUGHOUT CONSTRUCTION (IF NECESSARY, BY USE OF TEMPORARY METHODS APPROVED BY THE CITY AND OWNER). THIS WORK SHALL BE CONSIDERED SUBSIDIARY TO THE PROJECT AND NO ADDITIONAL COMPENSATION SHALL BE ALLOWED.

16. THE CONTRACTOR IS RESPONSIBLE TO PROTECT ALL WATER LINES CROSSING THE PROJECT. THE CONTRACTOR SHALL REPAIR ALL DAMAGED LINES IMMEDIATELY. ALL REPAIRS OF EXISTING WATER MAINS, WATER SERVICES, SEWER MAINS, AND SANITARY SEWER SERVICES ARE SUBSIDIARY TO THE WORK, AND NO ADDITIONAL COMPENSATION SHALL BE ALLOWED.

17. VALVE ADJUSTMENTS SHALL BE CONSTRUCTED SUCH THAT THE COVERS ARE AT FINISHED SURFACE GRADE OF THE PROPOSED PAVEMENT.

18. THE ENDS OF ALL EXISTING WATER MAINS THAT ARE CUT, BUT NOT REMOVED, SHALL BE PLUGGED AND ABANDONED IN PLACE. THIS WORK SHALL BE CONSIDERED AS A SUBSIDIARY COST TO THE PROJECT AND NO ADDITIONAL COMPENSATION SHALL BE ALLOWED.

19. ALL FIRE HYDRANTS, VALVES, TEES, BENDS, WYES, REDUCERS, FITTINGS, AND ENDS SHALL BE MECHANICALLY RESTRAINED AND/OR THRUST BLOCKED TO CITY STANDARDS.

20. ALL WATER SHALL BE TESTED IN ACCORDANCE WITH THE CITY, AWWA, AND TCEQ STANDARDS AND SPECIFICATIONS. AT A MINIMUM, THIS SHALL CONSIST OF THE FOLLOWING:

    ALL WATERLINES SHALL BE HYDROSTATICALLY TESTED AND CHLORINATED BEFORE BEING PLACED INTO SERVICE. CONTRACTOR SHALL COORDINATE WITH THE CITY FOR THEIR REQUIRED PROCEDURES AND SHALL ALSO COMPLY WITH TCEQ REGULATIONS.

24. CONTRACTOR SHALL INSTALL DETECTABLE WIRING OR MARKING TAPE A MINIMUM OF 12" ABOVE WATER LINES. MARKER DECALS SHALL BE LABELED "CAUTION - WATER LINE". DETECTABLE WIRING AND MARKING TAPE SHALL COMPLY WITH CITY STANDARDS, AND SHALL BE INCLUDED IN THE COST OF THE WATER PIPE.

25. DUCTILE IRON PIPE SHALL BE PROTECTED FROM CORROSION BY A LOW-DENSITY POLYETHYLENE LINER WRAP THAT IS AT LEAST A SINGLE LAYER OF 8-MIL. ALL DUCTILE IRON JOINTS SHALL BE BONDED.

26. WATERLINES SHALL BE INSTALLED AT NO LESS THAN THE MINIMUM COVER REQUIRED BY THE CITY.

27. CONTRACTOR SHALL PROVIDE CLEAN-OUTS FOR PRIVATE SANITARY SEWER LINES AT ALL CHANGES IN DIRECTION AND 100-FOOT INTERVALS, OR AS REQUIRED BY THE APPLICABLE PLUMBING CODE. CLEAN-OUTS REQUIRED IN PAVEMENT OR SIDEWALKS SHALL HAVE CAST IRON COVERS FLUSH WITH FINISHED GRADE.

28. CONTRACTOR SHALL PROVIDE BACKWATER VALVES FOR PLUMBING FIXTURES AS REQUIRED BY THE APPLICABLE PLUMBING CODE (E.G. FLOOR ELEVATION OF FIXTURE UNIT IS BELOW THE ELEVATION OF THE MANHOLE COVER OF THE NEXT UPSTREAM MANHOLE IN THE PUBLIC SEWER). CONTRACTOR SHALL REVIEW BOTH MEP AND CIVIL PLANS TO CONFIRM WHERE THESE ARE REQUIRED.

29. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING AND SUBMITTING A TRENCH SAFETY PLAN, PREPARED BY A PROFESSIONAL ENGINEER IN THE STATE OF TEXAS, TO THE CITY PRIOR TO CONSTRUCTION. CONTRACTOR IS RESPONSIBLE FOR MAINTAINING TRENCH SAFETY REQUIREMENTS IN ACCORDANCE WITH CITY, STATE, AND FEDERAL REQUIREMENTS, INCLUDING OSHA FOR ALL TRENCHES. NO OPEN TRENCHES SHALL BE ALLOWED OVERNIGHT WITHOUT PRIOR WRITTEN APPROVAL OF THE CITY.

30. THE CONTRACTOR SHALL KEEP TRENCHES FREE FROM WATER.

UTILITY CONTACTS

NORTH TEXAS MUNICIPAL WATER DISTRICT	972-442-5405
GRAYSON COLLIN ELECTRIC COOPERATIVE CONTACT: MICHAEL LAUER	903-482-7183
ATMOS ENERGY CONTACT: DAVID COKER	214-435-5122

NOTE

PUBLIC IMPROVEMENTS WITHIN THE R.O.W. SHALL ADHERE TO THE CITY GENERAL NOTES WHEN IN CONTRADICTION TO PRIVATE NOTES THROUGHOUT THE PLAN SET.

ALL RESPONSIBILITY FOR ADEQUACY OF DESIGN REMAINS WITH THE DESIGN ENGINEER. CITY OF LUCAS, IN REVIEWING AND RELEASING PLANS FOR CONSTRUCTION ASSUMES NO RESPONSIBILITY FOR ADEQUACY OR ACCURACY OF DESIGN

GEOTECHNICAL REPORT
REPORT NO. G181528

WARNING: CONTRACTOR TO VERIFY PRESENCE AND EXACT LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION.

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

No.	REVISIONS	DATE	BY

Kimley»Horn

13455 NOEL ROAD, SUITE 700, DALLAS, TX 75240
PHONE: 972-770-1300
WWW.KIMLEY-HORN.COM
TEXAS REGISTERED ENGINEERING FIRM F-928

STATE OF TEXAS
SARAH E. SCOTT
113285
LICENSED PROFESSIONAL ENGINEER
1/31/2022

KHA PROJECT	DATE	SCALE:	DESIGNED BY:	DRAWN BY:	CHECKED BY:
064041015	JANUARY 2022	AS SHOWN	CRA	RFH	SES

GENERAL NOTES

HENDRICK FARM

CITY OF LUCAS
COLLIN COUNTY, TEXAS

SHEET NUMBER
C-02


MATCH LINE "A"
MATCH LINE "B"
845± LF OF FENCE TO BE REMOVED (CONT)
JANA H. WILSON AND RAYMOND P. WILSON INST. NO. 20170629001159590 O.P.R.C.C.T.
TERRY A. HENDRICK AND ELIZABETH A. HENDRICK INST. NO. 20170629001159580 O.P.R.C.C.T.
EXISTING FIRE HYDRANT TO REMAIN CONTRACTOR TO ADJUST TO PROPOSED GRADE
103± LF OF EXST. WATER LINE TO BE REMOVED
RELOCATE TRAFFIC SPEED LIMIT SIGNAGE
RELOCATE POWER POLE AND ASSOCIATED GUY WIRES
RELOCATE POWER POLE AND ASSOCIATED GUY WIRES
RELOCATE CABLE LINE AND ASSOCIATED CABLE RISERS AND ASSOC. SIGNAGE
RELOCATE POWER POLE AND ASSOCIATED GUY WIRES (AS NECESSARY)
RELOCATE CABLE LINE AND ASSOCIATED CABLE RISERS AND ASSOC. SIGNAGE
1125± LF OF FENCE TO BE REMOVED (CONT)
845± LF OF FENCE TO BE REMOVED (CONT)
EXISTING FIRE HYDRANT TO REMAIN
PAVEMENT SAWCUT LINE
BLONDY JHUNE ROAD
PAVEMENT SAWCUT LINE
4,792± SY ASPHALT PAVEMENT (HATCHING) TO BE REMOVED (CONT)
RELOCATE POWER POLE AND ASSOCIATED GUY WIRES
EXISTING CABLE LINE, ASSOCIATED CABLE RISERS, AND ASSOC. SIGNAGE TO REMAIN
2962± LF OF FENCE TO BE REMOVED (CONT)
TREES TO BE REMOVED (TYP.)
EXISTING POWER POLE TO REMAIN
2962± LF OF FENCE TO BE REMOVED (CONT)
CABLE LINE, ASSOCIATED CABLE RISERS AND ASSOCIATED SIGNAGE TO REMAIN
REMOVE DRIVE (HATCHED AREA)
EXISTING UNDERGROUND FIBER OPTIC CABLE AND ASSOC. SIGNAGE TO REMAIN
TREES ALONG CREEK TO REMAIN AND TO BE PROTECTED DURING DEMOLITION PHASE
EXISTING TOP OF CREEK BANK
CREEK
TREES TO BE REMOVED (TYP.)
TREES TO BE REMOVED (TYP.)
TREES TO REMAIN
EXISTING TOP OF CREEK BANK
TREES ALONG CREEK TO REMAIN AND TO BE PROTECTED DURING DEMOLITION PHASE
CAUTION!!
CONTRACTOR IS TO VERIFY PRESENCE AND EXACT LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION
811
Know what's below. Call before you dig.

N
W E
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0 50' 100'
GRAPHIC SCALE 50'

EXISTING SITE FEATURES

SIGN	MONITORING WELL
FLAG POLE	FIBER OPTIC BOX
GREASE TRAP	GAS STORAGE TANK
ELEVATION BENCHMARK	TRAFFIC BOLLARD
FUEL TANK	FIRE HYDRANT
GUY ANCHOR	WATER METER
UTILITY POLE	TELEPHONE MANHOLE
WATER VALVE	LIGHT POLE
SANITARY SEWER CLEAN OUT	TRANSFORMER
SANITARY SEWER MANHOLE	GAS METER
ELECTRIC BOX	EXISTING TREE TO REMAIN
EXISTING TREE TO BE REMOVED	

LINE TYPE LEGEND

- BOUNDARY LINE
- EASEMENT LINE
- BUILDING LINE
- WATER LINE
- SANITARY SEWER LINE
- STORM SEWER LINE
- UNDERGROUND GAS LINE
- UNDERGROUND ELECTRIC LINE
- UNDERGROUND TELEPHONE LINE
- OVERHEAD ELECTRIC LINE
- FENCE
- ASPHALT PAVEMENT

DEMOLITION LEGEND

- EXISTING PAVEMENT TO BE REMOVED
- EXISTING CURB TO BE REMOVED
- PROPOSED FULL DEPTH SAWCUT

DEMOLITION NOTES

1. THE CONTRACTOR SHALL FIELD VERIFY AND LOCATE ALL EXISTING UTILITIES ON SITE PRIOR TO DEMOLITION.
2. THE CONTRACTOR SHALL PERFORM DEMOLITION ACTIVITIES AS NOTED AND SHOWN ON THESE PLANS AND AS DIRECTED BY THE OWNER.
3. IT WILL BE THE RESPONSIBILITY OF THE CONTRACTOR TO OBTAIN ANY PERMITS AND PAY ANY FEES REQUIRED FOR DEMOLITION AND HAUL-OFF FROM THE APPROPRIATE AUTHORITIES.
4. THE DEMOLITION PLAN IS INTENDED TO DEPICT GENERAL DEMOLITION AND UTILITY WORK. IT IS NOT INTENDED TO IDENTIFY EACH ELEMENT OF DEMOLITION OR RELOCATION. THE CONTRACTOR SHALL COORDINATE WITH THE OWNER AND APPROPRIATE UTILITY COMPANY PRIOR TO WORK.
5. REMOVE AND DISPOSE OF ANY SIDEWALK, FENCES, STAIRS, WALLS, FOUNDATIONS, CONDUITS, LIGHT POLE BASES, DEBRIS AND RUBBISH REQUIRING REMOVAL FROM THE WORK AREA IN AN APPROVED LANDFILL.
6. REMOVE AND/OR PLUG EXISTING UTILITIES SUCH AS STORM DRAINAGE, SANITARY SEWER, WATER, GAS, ELECTRIC, AND TELEPHONE AS SHOWN OR AS NEEDED. THE CONTRACTOR IS RESPONSIBLE FOR CONTACTING EACH UTILITY COMPANY TO COORDINATE REMOVAL OF ALL UTILITIES AND FOR DETERMINING HORIZONTAL AND VERTICAL LOCATIONS OF UTILITIES PRIOR TO COMMENCING WORK.
7. ALL SERVICES MAY NOT BE SHOWN ON THIS PLAN. THE CONTRACTOR SHALL INVESTIGATE THE SITE PRIOR TO BIDDING TO DETERMINE THE EXTENT OF SERVICE PIPING TO BE REMOVED, CUT OR PLUGGED.
8. THE CONTRACTOR SHALL ARRANGE FOR THE RESETTING OF CURB BOXES, VALVE BOXES AND REMOVAL AND/OR RELOCATION OF OVERHEAD UTILITIES AND POLES WITH THE FRANCHISE UTILITY COMPANY.
9. INSTALL ALL EROSION AND SEDIMENT CONTROL DEVICES AND TREE PROTECTION PRIOR TO BEGINNING DEMOLITION WORK. CONTRACTOR SHALL PROVIDE AND IMPLEMENT AN EROSION CONTROL PLAN AND SWPPP.
10. THE CONTRACTOR SHALL TAKE ALL PRECAUTIONS TO AVOID UNNECESSARY DAMAGE TO EXISTING ROAD SURFACE.
11. FINISH SURFACE TO BE REMOVED OR DEMOLISHED SHALL BE CUT ALONG LINES OF JOINTS WHICH WILL PERMIT A NEAT SURFACE WHEN RESTORED.
12. ALL EXISTING ITEMS TO REMAIN WHICH ARE DAMAGED DURING CONSTRUCTION SHALL BE RESTORED TO ITS ORIGINAL CONDITION AT THE SOLE EXPENSE OF THE CONTRACTOR.
13. DO NOT INTERRUPT EXISTING UTILITIES SERVICING FACILITIES OCCUPIED AND USED BY THE OWNER OR OTHERS DURING OCCUPIED HOURS EXCEPT WHEN SUCH INTERRUPTIONS HAVE BEEN AUTHORIZED IN WRITING BY THE OWNER AND THE LOCAL MUNICIPALITIES. INTERRUPTIONS SHALL ONLY OCCUR AFTER ACCEPTABLE TEMPORARY SERVICE HAS BEEN PROVIDED.
14. SHOULD ANY UNCHARTED OR INCORRECTLY CHARTED EXISTING PIPING OR OTHER UTILITY BE UNCOVERED DURING EXCAVATION, CONTACT THE ENGINEER IMMEDIATELY FOR DIRECTIONS BEFORE PROCEEDING FURTHER WITH WORK IN THE AREA.
15. ASBESTOS OR HAZARDOUS MATERIAL, IF FOUND ON SITE, SHALL BE REMOVED BY A LICENSED HAZARDOUS MATERIAL CONTRACTOR.
16. PUBLIC IMPROVEMENTS WITHIN THE R.O.W. SHALL ADHERE TO THE CITY GENERAL NOTES WHEN IN CONTRADICTION TO PRIVATE NOTES THROUGHOUT THE PLAN SET.
17. REFERENCE THE TREE SURVEY & CONSERVATION PLAN PRIOR TO REMOVING ANY TREES.

NOTES

1. KIMLEY-HORN AND ASSOCIATES, INC. IS NOT RESPONSIBLE FOR THE MEANS AND METHODS EMPLOYED BY THE CONTRACTOR TO IMPLEMENT THIS DEMOLITION PLAN. THIS DEMOLITION PLAN SIMPLY INDICATES THE KNOWN OBJECTS ON THE SUBJECT TRACTS THAT ARE TO BE DEMOLISHED AND REMOVED FROM THE SITE. KIMLEY-HORN AND ASSOCIATES, INC. DOES NOT WARRANT OR REPRESENT THAT THE PLAN, WHICH WAS PREPARED BASED ON SURVEY AND UTILITY INFORMATION PROVIDED BY OTHERS, SHOWS ALL IMPROVEMENTS AND UTILITIES, AND THAT THE IMPROVEMENTS AND UTILITIES ARE SHOWN ACCURATELY. THE CONTRACTOR IS RESPONSIBLE FOR PERFORMING HIS OWN SITE RECONNAISSANCE TO SCOPE HIS WORK AND TO CONFIRM WITH THE OWNERS OF EXISTING IMPROVEMENTS AND UTILITIES THE ABILITY AND PROCESS FOR THE REMOVAL OF PROPOSED DEMOLITION. THE GOAL OF THE DEMOLITION IS TO LEAVE THE SITE IN A STATE SUITABLE FOR THE CONSTRUCTION OF THE PROPOSED IMPROVEMENTS REMOVAL, RELOCATION, OR PRESERVATION OF EXISTING IMPROVEMENTS, UTILITIES, ETC. TO ACCOMPLISH THIS GOAL ARE THE RESPONSIBILITY OF THE CONTRACTOR.
2. CONTRACTOR SHALL COMPLY WITH ALL LOCAL, STATE, AND FEDERAL REGULATIONS REGARDING THE DEMOLITION OF OBJECTS ON THE SITE AND THE DISPOSAL OF THE DEMOLISHED MATERIALS OFF-SITE. IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO REVIEW THE SITE, DETERMINE THE APPLICABLE REGULATIONS, RECEIVE THE REQUIRED PERMITS AND AUTHORIZATIONS, AND COMPLY.

BENCHMARKS

ELEVATIONS BASED ON CITY OF ALLEN GPS CONTROL

BM#1 (CITY OF ALLEN MONUMENT NO. 2) 3-1/2-INCH ALUMINUM DISC FOUND IN CONCRETE, LOCATED ±350 FEET EAST FROM THE INTERSECTION OF MAIN STREET AND RICHARDSON COURT, ±16 FEET FROM THE NORTHEAST CORNER OF A BRIDGE

ELEV= 647.13

BM#2 SQUARE WITH "X" CUT SET ON CONCRETE HEADWALL, EAST SIDE OF COUNTRY CLUB ROAD (F.M. NO. 1378), AT THE INTERSECTION OF COUNTRY CLUB ROAD AND ESTATES PARKWAY (F.M. NO. 2170)

ELEV= 587.52

BM#3 SQUARE WITH "X" CUT SET ON CONCRETE HEADWALL, EAST SIDE OF COUNTRY CLUB ROAD (F.M. NO. 1378), ±240 FEET NORTH FROM THE CENTERLINE INTERSECTION OF COUNTRY CLUB ROAD AND SKYVIEW DRIVE.

ELEV= 589.81

No.	REVISIONS	DATE	BY

Kimley»Horn
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WWW.KIMLEY-HORN.COM
TEXAS REGISTERED ENGINEERING FIRM F-928

STATE OF TEXAS
SARAH E. SCOTT
113285
LICENSED PROFESSIONAL ENGINEER
1/31/2022

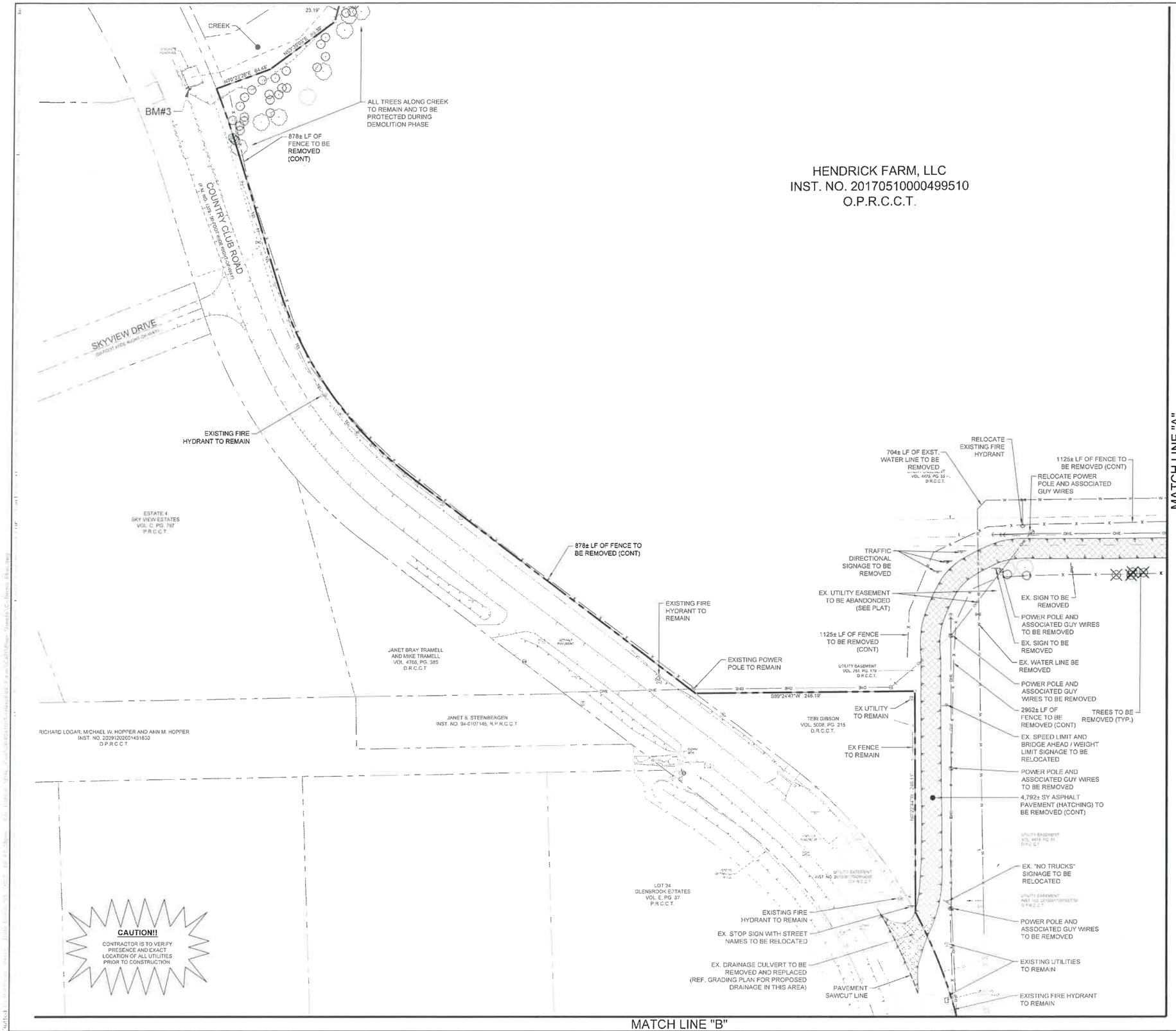
KHA PROJECT 064041015
DATE JANUARY 2022
SCALE: AS SHOWN
DESIGNED BY: CRA
DRAWN BY: MSM
CHECKED BY: SES

DEMOLITION PLAN (1 OF 3)

HENDRICK FARM

CITY OF LUCAS
COLLIN COUNTY, TEXAS

SHEET NUMBER
C-03



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0 50' 100'
GRAPHIC SCALE 50'

EXISTING SITE FEATURES

SIGN		MONITORING WELL	
FLAG POLE		FIBER OPTIC BOX	
GREASE TRAP		GAS STORAGE TANK	
ELEVATION BENCHMARK		TRAFFIC BOLLARD	
FUEL TANK		FIRE HYDRANT	
GUY ANCHOR		WATER METER	
UTILITY POLE		TELEPHONE MANHOLE	
WATER VALVE		LIGHT POLE	
SANITARY SEWER CLEAN OUT		TRANSFORMER	
SANITARY SEWER MANHOLE		GAS METER	
ELECTRIC BOX		EXISTING TREE TO REMAIN	
EXISTING TREE TO BE REMOVED			

LINE TYPE LEGEND

	BOUNDARY LINE
	EASEMENT LINE
	BUILDING LINE
	WATER LINE
	SANITARY SEWER LINE
	STORM SEWER LINE
	UNDERGROUND GAS LINE
	UNDERGROUND ELECTRIC LINE
	UNDERGROUND TELEPHONE LINE
	OVERHEAD ELECTRIC LINE
	FENCE
	ASPHALT PAVEMENT

DEMOLITION LEGEND

EXISTING PAVEMENT TO BE REMOVED

EXISTING CURB TO BE REMOVED

PROPOSED FULL DEPTH SAWCUT

DEMOLITION NOTES

1. THE CONTRACTOR SHALL FIELD VERIFY AND LOCATE ALL EXISTING UTILITIES ON SITE PRIOR TO DEMOLITION.
2. THE CONTRACTOR SHALL PERFORM DEMOLITION ACTIVITIES AS NOTED AND SHOWN ON THESE PLANS AND AS DIRECTED BY THE OWNER.
3. IT WILL BE THE RESPONSIBILITY OF THE CONTRACTOR TO OBTAIN ANY PERMITS AND PAY ANY FEES REQUIRED FOR DEMOLITION AND HAUL-OFF FROM THE APPROPRIATE AUTHORITIES.
4. THE DEMOLITION PLAN IS INTENDED TO DEPICT GENERAL DEMOLITION AND UTILITY WORK. IT IS NOT INTENDED TO IDENTIFY EACH ELEMENT OF DEMOLITION OR RELOCATION. THE CONTRACTOR SHALL COORDINATE WITH THE OWNER AND APPROPRIATE UTILITY COMPANY PRIOR TO WORK.
5. REMOVE AND DISPOSE OF ANY SIDEWALK, FENCES, STAIRS, WALLS, FOUNDATIONS, CONDUITS, LIGHT POLE BASES, DEBRIS AND RUBBISH REQUIRING REMOVAL FROM THE WORK AREA IN AN APPROVED LANDFILL.
6. REMOVE AND/OR PLUG EXISTING UTILITIES SUCH AS STORM DRAINAGE, SANITARY SEWER, WATER, GAS, ELECTRIC, AND TELEPHONE AS SHOWN OR AS NEEDED. THE CONTRACTOR IS RESPONSIBLE FOR CONTACTING EACH UTILITY COMPANY TO COORDINATE REMOVAL OF ALL UTILITIES AND FOR DETERMINING HORIZONTAL AND VERTICAL LOCATIONS OF UTILITIES PRIOR TO COMMENCING WORK.
7. ALL SERVICES MAY NOT BE SHOWN ON THIS PLAN. THE CONTRACTOR SHALL INVESTIGATE THE SITE PRIOR TO BIDDING TO DETERMINE THE EXTENT OF SERVICE PIPING TO BE REMOVED, CUT OR PLUGGED.
8. THE CONTRACTOR SHALL ARRANGE FOR THE RESETTING OF CURB BOXES, VALVE BOXES AND REMOVAL AND/OR RELOCATION OF OVERHEAD UTILITIES AND POLES WITH THE FRANCHISE UTILITY COMPANY.
9. INSTALL ALL EROSION AND SEDIMENT CONTROL DEVICES AND TREE PROTECTION PRIOR TO BEGINNING DEMOLITION WORK. CONTRACTOR SHALL PROVIDE AND IMPLEMENT AN EROSION CONTROL PLAN AND SWPPP.
10. THE CONTRACTOR SHALL TAKE ALL PRECAUTIONS TO AVOID UNNECESSARY DAMAGE TO EXISTING ROAD SURFACE.
11. FINISH SURFACE TO BE REMOVED OR DEMOLISHED SHALL BE CUT ALONG LINES OF JOINTS WHICH WILL PERMIT A NEAT SURFACE WHEN RESTORED.
12. ALL EXISTING ITEMS TO REMAIN WHICH ARE DAMAGED DURING CONSTRUCTION SHALL BE RESTORED TO ITS ORIGINAL CONDITION AT THE SOLE EXPENSE OF THE CONTRACTOR.
13. DO NOT INTERRUPT EXISTING UTILITIES SERVICING FACILITIES OCCUPIED AND USED BY THE OWNER OR OTHERS DURING OCCUPIED HOURS EXCEPT WHEN SUCH INTERRUPTIONS HAVE BEEN AUTHORIZED IN WRITING BY THE OWNER AND THE LOCAL MUNICIPALITIES. INTERRUPTIONS SHALL ONLY OCCUR AFTER ACCEPTABLE TEMPORARY SERVICE HAS BEEN PROVIDED.
14. SHOULD ANY UNCHARTED OR INCORRECTLY CHARTED EXISTING PIPING OR OTHER UTILITY BE UNCOVERED DURING EXCAVATION, CONTACT THE ENGINEER IMMEDIATELY FOR DIRECTIONS BEFORE PROCEEDING FURTHER WITH WORK IN THE AREA.
15. ASBESTOS OR HAZARDOUS MATERIAL, IF FOUND ON SITE, SHALL BE REMOVED BY A LICENSED HAZARDOUS MATERIAL CONTRACTOR.
16. PUBLIC IMPROVEMENTS WITHIN THE R.O.W. SHALL ADHERE TO THE CITY GENERAL NOTES WHEN IN CONTRADICTION TO PRIVATE NOTES THROUGHOUT THE PLAN SET.
17. REFERENCE TREE SURVEY & CONSERVATION PLAN PRIOR TO REMOVING ANY TREES.

NOTES

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BENCHMARKS

ELEVATIONS BASED ON CITY OF ALLEN GPS CONTROL

BM#1 (CITY OF ALLEN MONUMENT NO. 2) 3-1/2-INCH ALUMINUM DISC FOUND IN CONCRETE, LOCATED ±350 FEET EAST FROM THE INTERSECTION OF MAIN STREET AND RICHARDSON COURT, ±16 FEET FROM THE NORTHEAST CORNER OF A BRIDGE.

ELEV= 547.13

BM#2 SQUARE WITH "X" CUT SET ON CONCRETE HEADWALL, EAST SIDE OF COUNTRY CLUB ROAD (F.M. NO. 1378), AT THE INTERSECTION OF COUNTRY CLUB ROAD AND ESTATES PARKWAY (F.M. NO. 2170).

ELEV= 587.52

BM#3 SQUARE WITH "X" CUT SET ON CONCRETE HEADWALL, EAST SIDE OF COUNTRY CLUB ROAD (F.M. NO. 1378), ±240 FEET NORTH FROM THE CENTERLINE INTERSECTION OF COUNTRY CLUB ROAD AND SKYVIEW DRIVE

ELEV= 589.81

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

No.	REVISIONS	DATE	BY

Kimley»Horn
© 2021 KIMLEY-HORN AND ASSOCIATES, INC.
13455 NOEL ROAD, SUITE 700, DALLAS, TX 75240
PHONE: 972.770.1300
WWW.KIMLEY-HORN.COM
TEXAS REGISTERED ENGINEERING FIRM F-928

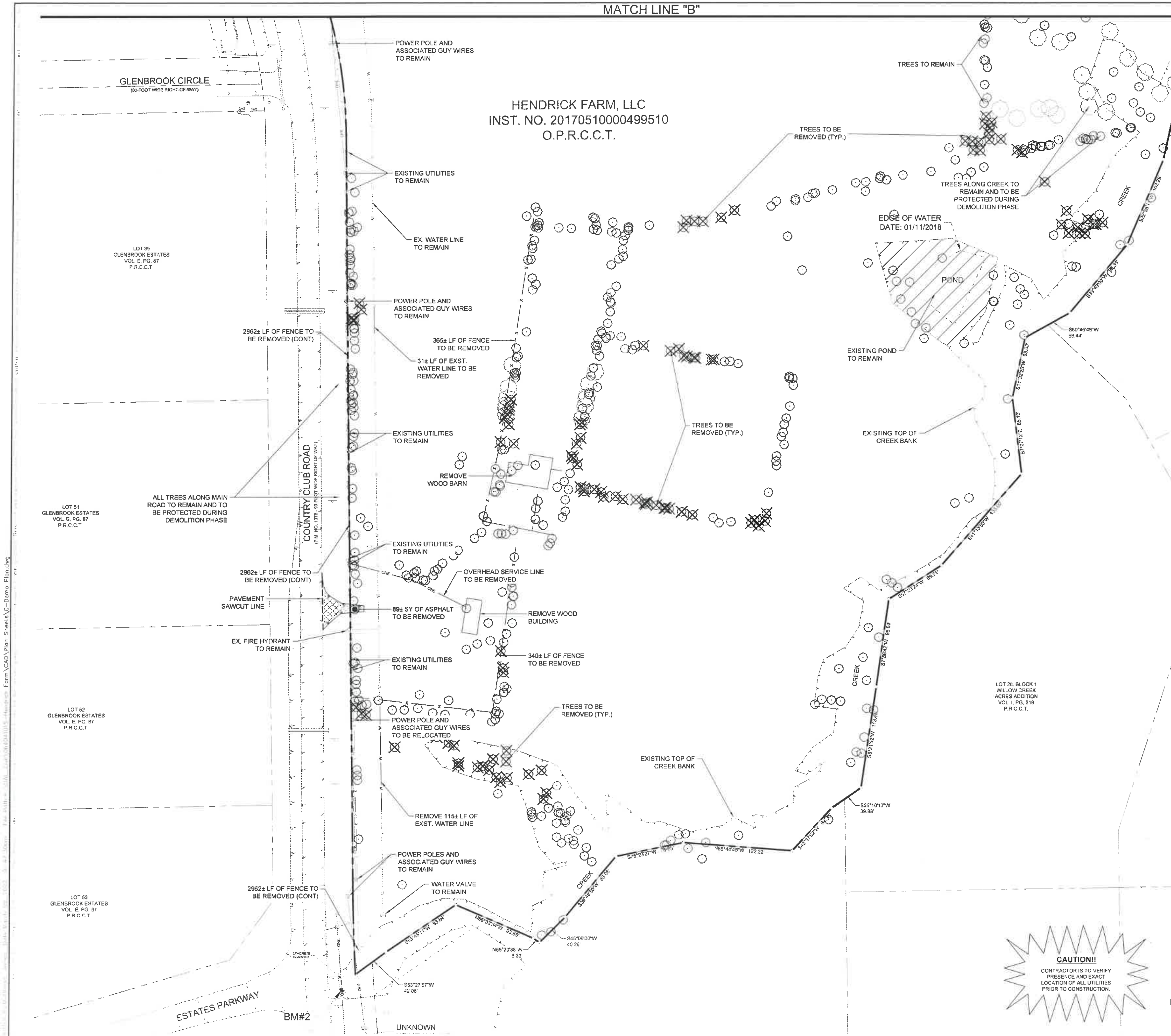
STATE OF TEXAS
SARAH E. SCOTT
113285
LICENSED
PROFESSIONAL ENGINEER
1/31/2022

KHA PROJECT 064041015
DATE JANUARY 2022
SCALE: AS SHOWN
DESIGNED BY: CRA
DRAWN BY: WSM
CHECKED BY: SES

HENDRICK FARM
CITY OF LUCAS
COLLIN COUNTY, TEXAS

DEMOLITION PLAN (2 OF 3)

SHEET NUMBER
C-04


MATCH LINE "B"
GLENBROOK CIRCLE
(50-FOOT WIDE RIGHT-OF-WAY)
HENDRICK FARM, LLC
INST. NO. 20170510000499510
O.P.R.C.C.T.
POWER POLE AND ASSOCIATED GUY WIRES TO REMAIN
EXISTING UTILITIES TO REMAIN
EX. WATER LINE TO REMAIN
POWER POLE AND ASSOCIATED GUY WIRES TO REMAIN
2962± LF OF FENCE TO BE REMOVED (CONT)
365± LF OF FENCE TO BE REMOVED
31± LF OF EXST. WATER LINE TO BE REMOVED
LOT 35 GLENBROOK ESTATES VOL. E, PG. 87 P.R.C.C.T.
LOT 51 GLENBROOK ESTATES VOL. E, PG. 87 P.R.C.C.T.
LOT 52 GLENBROOK ESTATES VOL. E, PG. 87 P.R.C.C.T.
LOT 53 GLENBROOK ESTATES VOL. E, PG. 87 P.R.C.C.T.
COUNTRY CLUB ROAD
ALL TREES ALONG MAIN ROAD TO REMAIN AND TO BE PROTECTED DURING DEMOLITION PHASE
EXISTING UTILITIES TO REMAIN
REMOVE WOOD BARN
TREES TO BE REMOVED (TYP.)
TREES TO REMAIN
TREES ALONG CREEK TO REMAIN AND TO BE PROTECTED DURING DEMOLITION PHASE
EDGE OF WATER DATE: 01/11/2018
POND
EXISTING POND TO REMAIN
EXISTING TOP OF CREEK BANK
CREEK
EXISTING UTILITIES TO REMAIN
2962± LF OF FENCE TO BE REMOVED (CONT)
OVERHEAD SERVICE LINE TO BE REMOVED
PAVEMENT SAWCUT LINE
89± SY OF ASPHALT TO BE REMOVED
REMOVE WOOD BUILDING
EX. FIRE HYDRANT TO REMAIN
EXISTING UTILITIES TO REMAIN
340± LF OF FENCE TO BE REMOVED
POWER POLE AND ASSOCIATED GUY WIRES TO BE RELOCATED
TREES TO BE REMOVED (TYP.)
LOT 28, BLOCK 1 WILLOW CREEK ACRES ADDITION VOL. I, PG. 319 P.R.C.C.T.
EXISTING TOP OF CREEK BANK
REMOVE 115± LF OF EXST. WATER LINE
POWER POLES AND ASSOCIATED GUY WIRES TO REMAIN
WATER VALVE TO REMAIN
2962± LF OF FENCE TO BE REMOVED (CONT)
S60°46'46"W 35.44'
S55°10'13"W 39.88'
N65°44'45"W 122.22
S45°00'00"W 40.26'
N55°20'36"W 8.33'
S53°27'57"W 42.06'
ESTATES PARKWAY
BM#2
UNKNOWN

N W E S

0 50' 100'
GRAPHIC SCALE 50'

EXISTING SITE FEATURES

SIGN	MONITORING WELL
FLAG POLE	FIBER OPTIC BOX
GREASE TRAP	GAS STORAGE TANK
ELEVATION BENCHMARK	TRAFFIC BOLLARD
FUEL TANK	FIRE HYDRANT
GUY ANCHOR	WATER METER
UTILITY POLE	TELEPHONE MANHOLE
WATER VALVE	LIGHT POLE
SANITARY SEWER CLEAN OUT	TRANSFORMER
SANITARY SEWER MANHOLE	GAS METER
ELECTRIC BOX	EXISTING TREE TO REMAIN
EXISTING TREE TO BE REMOVED	

LINE TYPE LEGEND

- BOUNDARY LINE
- EASEMENT LINE
- BUILDING LINE
- WATER LINE
- SANITARY SEWER LINE
- STORM SEWER LINE
- UNDERGROUND GAS LINE
- UNDERGROUND ELECTRIC LINE
- UNDERGROUND TELEPHONE LINE
- OVERHEAD ELECTRIC LINE
- FENCE
- ASPHALT PAVEMENT

DEMOLITION LEGEND

- EXISTING PAVEMENT TO BE REMOVED
- EXISTING CURB TO BE REMOVED
- PROPOSED FULL DEPTH SAWCUT

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ELEV= 647.13

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ELEV= 587.52

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ELEV= 589.81

No.	REVISIONS	DATE	BY

Kimley»Horn

13455 NOEL ROAD, SUITE 700, DALLAS, TX 75240
PHONE: 972-770-1300
WWW.KIMLEY-HORN.COM
TEXAS REGISTERED ENGINEERING FIRM F-928

STATE OF TEXAS
SARAH E. SCOTT
113285
LICENSED PROFESSIONAL ENGINEER
1/31/2022

KHA PROJECT	064041015
DATE	JANUARY 2022
SCALE:	AS SHOWN
DESIGNED BY:	CRA
DRAWN BY:	MSM
CHECKED BY:	SES

DEMOLITION PLAN (3 OF 3)

HENDRICK FARM

CITY OF LUCAS
COLLIN COUNTY, TEXAS

SHEET NUMBER
C-05

LOT 23, BLOCK A
WHITE ROCK
CREEK ESTATES
VOL. I, PG. 594
P.R.C.C.T

LOT 24, BLOCK A
WHITE ROCK
CREEK ESTATES
VOL. I, PG. 594
P.R.C.C.T

577.22

4459

100 YR-FLOODPLAIN

INSTALL 8 SY OF 1.125"
THICK STONE PROTECTION
RIPRAP PER TXDOT ITEM 432
MINIMUM D_{50}=6"

582.49

5003

STA: 1+06.84 CULVERT A
N: 7092178.6073
E: 2551920.1386
INSTALL:
18" TXDOT 4:1 SLOPED END HEADWALL
(TXDOT SETP-PD)
REF. SHEET C-45
FOR DETAIL

INSTALL 4' PILOT CHANNEL

STA: 1+53.68 CULVERT A
N: 7092131.8560
E: 2551917.2540
CONST OUTFALL STRUCTURE
REF. SHEET C-26 FOR DETAIL

POND 1
SEE SHEET C-26

0.50%

0.50%

5484

5391

590.33

586.61

COUNTRY CLUB ROAD

SKYVIEW DRIVE

12
MFFE: 587.0

11
MFFE: 588.0

10
MFFE: 590.4

9
MFFE: 590.4

4
MFFE: 590.8

5
MFFE: 595.0

MFFE: 598.0

20' BUILDING LINE

50' BUILDING LINE

HENDRICK CIRCLE

HENDRICK FARM, LLC
INST. NO. 20170510000499510
O.P.R.C.C.T.

PROP. DRAINAGE
EASEMENT

30' DRAINAGE AND
UTILITY EASEMENT

MATCH LINE SEE SHEET C-07

MATCH LINE SEE SHEET C-08

N
W E
S

0 40' 80'
GRAPHIC SCALE 40'

GRADING GENERAL NOTES

1. CONTRACTOR SHALL CUT 5' BEHIND BACK OF CURB TO SUBGRADE ELEVATION.
2. ALL SLOPES TO NATURAL GROUND ARE TO BE 4:1 MAX, UNLESS OTHERWISE NOTED.
3. PROPOSED CONTOURS SHOWN ARE FOR REFERENCE ONLY. CONTRACTOR TO USE SPOT ELEVATIONS FOR GRADING CONSTRUCTION.
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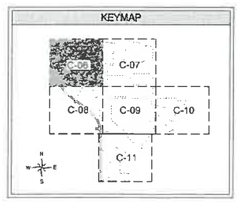
5. SEE SHEET C-24 FOR CULVERT PLAN AND PROFILES.
6. SEE SHEET C-23 FOR DETENTION POND CALCULATIONS.
7. HOME BUILDER SHALL INSTALL DRIVEWAY CULVERTS AT TIME OF CONSTRUCTION. THE HOME BUILDER TO INSTALL 24" RCP @ 1.00% OR 2-18" RCP @ 0.50%.

LEGEND

	HIGH POINT
55.5 +	PROPOSED SPOT ELEVATION
EX. 55.5 +	EXISTING SPOT ELEVATION
	PROPOSED SWALE
	LOT DRAINAGE FLOW DIRECTION
	STREET DRAINAGE FLOW DIRECTION
555	PROPOSED CONTOUR
	EXISTING CONTOUR
	TOP OF BANK
	EXISTING TREE TO REMAIN

KEYMAP



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ELEV= 599.91

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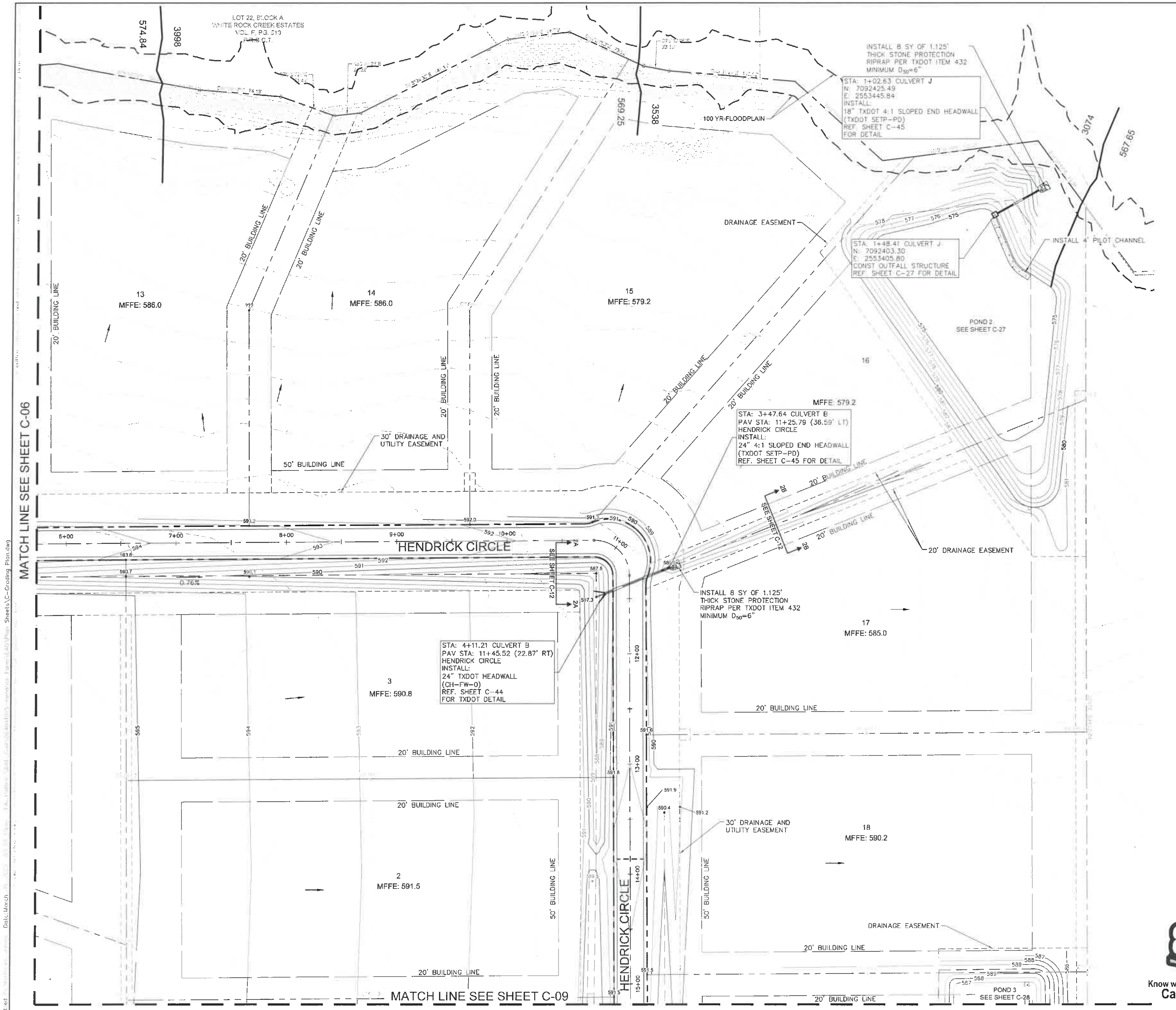
CHECKED BY: SES

HENDRICK FARM

CITY OF LUCAS
COLLIN COUNTY, TEXAS

GRADING AND DRAINAGE PLAN (1 OF 6)

SHEET NUMBER
C-06



N
W E
S

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GRAPHIC SCALE 40'

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LEGEND

— — — —	HIGH POINT
55.5 •	PROPOSED SPOT ELEVATION
•	EXISTING SPOT ELEVATION
- - - -	PROPOSED SWALE
→	LOT DRAINAGE FLOW DIRECTION
➔	STREET DRAINAGE FLOW DIRECTION
—555—	PROPOSED CONTOUR
	EXISTING CONTOUR
	TOP OF BANK
○	EXISTING TREE TO REMAIN

KEYMAP

C-06 C-07 C-08 C-09 C-10 C-11

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GRADING AND DRAINAGE PLAN (2 OF 6)

HENDRICK FARM

CITY OF LUCAS
COLLIN COUNTY, TEXAS

SHEET NUMBER
C-07

MATCH LINE SEE SHEET C-06

MFFE: 598.0

MFFE: 598.0

MFFE: 595.0

20' BUILDING LINE

20' BUILDING LINE

20' BUILDING LINE

ESTATE 4
SKY VIEW ESTATES
VOL. C, PG. 75
P.R.C.C.T.

COUNTRY CLUB ROAD
(F.M. NO. 1378, 80-FOOT WIDE RIGHT-OF-WAY)

JANET BRAY TRAMEL
AND MIKE TRAMELL
VOL. 4766, PG. 386
D.R.C.C.T.

JANET B. STEENBERGEN
INST. NO. 54-0107146, R.P.R.C.C.T.

LOCAR, MICHAEL W. HOPPER AND ANN M. HOPPER
INST. NO. 20191202031461630
O.P.R.C.C.T.

LOT 34
GLENBROOK ESTATES
VOL. E, PG. 87
P.R.C.C.T.

GLENBROOK CIRCLE

MATCH LINE SEE SHEET C-09

STA: 0+74.56 CULVERT I
PAV STA: 1+25.86 (23.90' LT)
BLONDY JHUNE ROAD
INSTALL:
18" 4:1 SLOPED END HEADWALL
(TXDOT SETP-PD)
REF. SHEET C-45 FOR DETAIL

STA: 0+25.34 CULVERT I
PAV STA: 1+23.46 (25.26' RT)
BLONDY JHUNE ROAD
INSTALL:
18" 4:1 SLOPED END HEADWALL
(TXDOT SETP-PD)
REF. SHEET C-45 FOR DETAIL

N
W E
S

0 40' 80'
GRAPHIC SCALE 40'

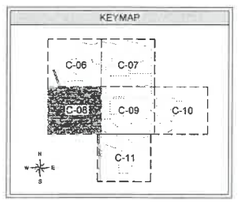
GRADING GENERAL NOTES

1. CONTRACTOR SHALL CUT 5' BEHIND BACK OF CURB TO SUBGRADE ELEVATION.
2. ALL SLOPES TO NATURAL GROUND ARE TO BE 4:1 MAX, UNLESS OTHERWISE NOTED.
3. PROPOSED CONTOURS SHOWN ARE FOR REFERENCE ONLY. CONTRACTOR TO USE SPOT ELEVATIONS FOR GRADING CONSTRUCTION.
4. PUBLIC IMPROVEMENTS WITHIN THE R.O.W. SHALL ADHERE TO THE CITY GENERAL NOTES WHEN IN CONTRADICTION TO PRIVATE NOTES THROUGHOUT THE PLAN SET.
5. SEE SHEET C-24 FOR CULVERT PLAN AND PROFILES.
6. SEE SHEET C-23 FOR DETENTION POND CALCULATIONS.
7. HOME BUILDER SHALL INSTALL DRIVEWAY CULVERTS AT TIME OF CONSTRUCTION. THE HOME BUILDER TO INSTALL 24" RCP @ 1.00% OR 2-18" RCP @ 0.50%.

LEGEND

- - - - - -	HIGH POINT
55.5 +	PROPOSED SPOT ELEVATION
EX 55.5 +	EXISTING SPOT ELEVATION
- - - - - -	PROPOSED SWALE
——→	LOT DRAINAGE FLOW DIRECTION
➡	STREET DRAINAGE FLOW DIRECTION
555	PROPOSED CONTOUR
555	EXISTING CONTOUR
	TOP OF BANK
	EXISTING TREE TO REMAIN

KEYMAP



CAUTION!!
CONTRACTOR IS TO VERIFY PRESENCE AND EXACT LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION.

BENCHMARKS

ELEVATIONS BASED ON CITY OF ALLEN GPS CONTROL

BM#1 (CITY OF ALLEN MONUMENT NO. 2) 3-1/2-INCH ALUMINUM DISC FOUND IN CONCRETE, LOCATED ±350 FEET EAST FROM THE INTERSECTION OF MAIN STREET AND RICHARDSON COURT, ±18 FEET FROM THE NORTHEAST CORNER OF A BRIDGE

ELEV= 647.13

BM#2 SQUARE WITH "X" CUT SET ON CONCRETE HEADWALL, EAST SIDE OF COUNTRY CLUB ROAD (F.M. NO. 1378), AT THE INTERSECTION OF COUNTRY CLUB ROAD AND ESTATES PARKWAY (F.M. NO. 2170).

ELEV= 587.52

BM#3 SQUARE WITH "X" CUT SET ON CONCRETE HEADWALL, EAST SIDE OF COUNTRY CLUB ROAD (F.M. NO. 1378), ±240 FEET NORTH FROM THE CENTERLINE INTERSECTION OF COUNTRY CLUB ROAD AND SKYVIEW DRIVE

ELEV= 589.81

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

No.	REVISIONS	DATE	BY

Kimley»Horn

13455 NOEL ROAD, SUITE 700, DALLAS, TX 75240
PHONE: 972-770-1300
WWW.KIMLEY-HORN.COM
TEXAS REGISTERED ENGINEERING FIRM F-928

STATE OF TEXAS
SARAH E. SCOTT
113285
LICENSED
PROFESSIONAL ENGINEER
1/31/2022

KHA PROJECT 069401015
DATE JANUARY 2022
SCALE: AS SHOWN
DESIGNED BY: CRA
DRAWN BY: MSM
CHECKED BY: SES

GRADING AND DRAINAGE PLAN (3 OF 6)

HENDRICK FARM

CITY OF LUCAS
COLLIN COUNTY, TEXAS

SHEET NUMBER
C-08

MATCH LINE SEE SHEET C-07

MATCH LINE SEE SHEET C-08

MATCH LINE SEE SHEET C-10

MATCH LINE SEE SHEET C-11

20' BUILDING LINE

50' BUILDING LINE

PROP. WATER EASEMENT

DRAINAGE EASEMENT

30' DRAINAGE AND UTILITY EASEMENT

15' HORSE TRAIL EASEMENT

WAYNE TRAIL

SEE SHEET C-12

SEE SHEET C-30

SEE SHEET C-28

1
MFFE: 593.0

STA: 4+28.94 CULVERT C
STA: 16+83.48 HENDRICK CIRCLE
PAV STA: 9+23.21 (43.53' LT)
BLONDY JHUNE ROAD
INSTALL:
2 – 24" 4:1 SLOPED END HEADWALL (TXDOT SETP-PD)
REF. SHEET C-45 FOR DETAIL

INSTALL 21 SY OF 1.125" THICK STONE PROTECTION RIPRAP PER TXDOT ITEM 432 MINIMUM D_{50}=6"

STA: 3+46.95 CULVERT G
PAV STA: 13+51.77 (47.52' LT)
BLONDY JHUNE ROAD
INSTALL:
24" TXDOT HEADWALL (CH-FW-45)
REF. SHEET C-44 FOR DETAIL

STA: 1+38.30 CULVERT D
PAV STA: 13+46.59 (52.49' LT)
BLONDY JHUNE ROAD
45° BEND

MFFE: 590.2
19

STA: 1+57.74 CULVERT D
PAV STA: 13+27.15 (52.49' LT)
BLONDY JHUNE ROAD
CONST OUTFALL STRUCTURE
REF. SHEET C-28 FOR DETAIL

POND 3
SEE SHEET C-28

INSTALL 4' PILOT CHANNEL

6
MFFE: 594.0

STA: 3+56.97 CULVERT C
STA: 16+83.41 HENDRICK CIRCLE
PAV STA: 9+95.19 (43.60' LT)
BLONDY JHUNE ROAD
INSTALL:
2 – 24" 4:1 SLOPED END HEADWALL (TXDOT SETP-PD)
REF. SHEET C-45 FOR DETAIL

INSTALL 37 SY OF 1.125" THICK STONE PROTECTION RIPRAP PER TXDOT ITEM 432 MINIMUM D_{50}=6"

STA: 4+16.55 CULVERT E
PAV STA: 12+37.13 (23.23' LT)
WAYNE TRAIL
INSTALL:
18" TXDOT HEADWALL (CH-FW-0)
REF. SHEET C-44 FOR DETAIL

3
MFFE: 588.5

STA: 3+62.51 CULVERT E
PAV STA: 12+38.69 (30.78' RT)
WAYNE TRAIL
INSTALL:
18" TXDOT HEADWALL (SW-0)
REF. SHEET C-44 FOR DETAIL

2
MFFE: 588.1

INSTALL 6 SY OF 1.125" THICK STONE PROTECTION RIPRAP PER TXDOT ITEM 432 MINIMUM D_{50}=6"

INSTALL 4' PILOT CHANNEL

1
MFFE: 588.1

4
MFFE: 588.1

STA: 3+46.95 CULVERT G
PAV STA: 6+98.08
WAYNE TRAIL
INSTALL:
18" 45° BEND

STA: 3+61.09 CULVERT G
PAV STA: 6+86.08
WAYNE TRAIL
INSTALL:
18" 45° BEND

STA: 4+56.85 CULVERT G
PAV STA: 5+94.46 (15.00' RT)
WAYNE TRAIL
INSTALL:
18" 45° BEND

POND 5
SEE SHEET C-30

STA: 3+37.10 CULVERT G
PAV STA: 6+96.08
WAYNE TRAIL
INSTALL:
18" TXDOT HEADWALL (SW-0)
REF. SHEET C-44 FOR DETAIL

12
MFFE: 577.0

30' DRAINAGE AND UTILITY EASEMENT

INSTALL 6 SY OF 1.125" THICK STONE PROTECTION RIPRAP PER TXDOT ITEM 432 MINIMUM D_{50}=6"

100 YR-FLOODPLAIN

13
MFFE: 578.9

MFFE: 588.1
5

STA: 4+98.87 CULVERT G
PAV STA: 5+94.47 (27.01' LT)
WAYNE TRAIL
CONST OUTFALL STRUCTURE
REF. SHEET C-30 FOR DETAIL

STA: 4+42.71 CULVERT G
PAV STA: 6+04.46 (25.00' RT)
WAYNE TRAIL
INSTALL:
18" 45° BEND

HENDRICK FARM, LLC
INST. NO. 20170510000499510
O.P.R.C.C.T.

3716

N
W E
S

0 40' 80'
GRAPHIC SCALE 40'

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LEGEND

	HIGH POINT
55.5 +	PROPOSED SPOT ELEVATION
EX. 55.5 +	EXISTING SPOT ELEVATION
	PROPOSED SWALE
	LOT DRAINAGE FLOW DIRECTION
	STREET DRAINAGE FLOW DIRECTION
555	PROPOSED CONTOUR
	EXISTING CONTOUR
	TOP OF BANK
	EXISTING TREE TO REMAIN

KEYMAP

C-05 C-07 C-08 C-09 C-10 C-11

CAUTION!!
CONTRACTOR IS TO VERIFY PRESENCE AND EXACT LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION.

BENCHMARKS

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ELEV= 647.13

BM#2 SQUARE WITH "X" CUT SET ON CONCRETE HEADWALL, EAST SIDE OF COUNTRY CLUB ROAD (F.M. NO. 1378), AT THE INTERSECTION OF COUNTRY CLUB ROAD AND ESTATES PARKWAY (F.M. NO. 2170).

ELEV= 587.52

BM#3 SQUARE WITH "X" CUT SET ON CONCRETE HEADWALL, EAST SIDE OF COUNTRY CLUB ROAD (F.M. NO. 1378), ±240 FEET NORTH FROM THE CENTERLINE INTERSECTION OF COUNTRY CLUB ROAD AND SKYVIEW DRIVE.

ELEV= 589.81

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No.	REVISIONS	DATE	BY

Kimley»Horn

13455 NOEL ROAD, SUITE 700, DALLAS, TX 75240
PHONE: (972) 770-1300
WWW.KIMLEY-HORN.COM
TEXAS REGISTERED ENGINEERING FIRM F-928

STATE OF TEXAS
SARAH E. SCOTT
113285
LICENSED PROFESSIONAL ENGINEER
1/31/2022

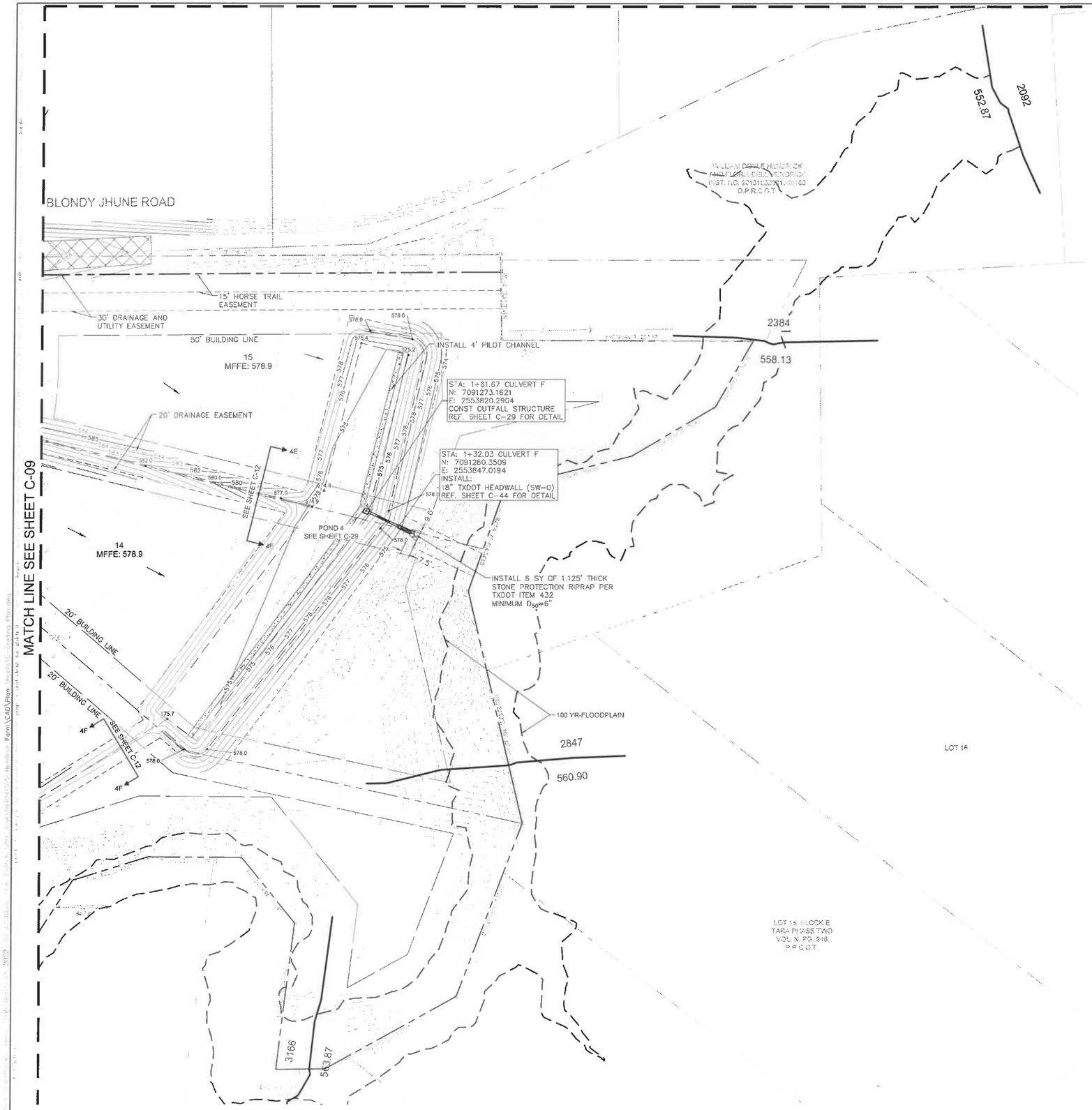
KHA PROJECT	064041015
DATE	JANUARY 2022
SCALE:	AS SHOWN
DESIGNED BY:	CRA
DRAWN BY:	MSM
CHECKED BY:	SES

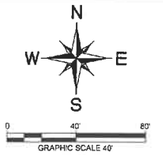
GRADING AND DRAINAGE PLAN (4 OF 6)

HENDRICK FARM

CITY OF LUCAS
COLLIN COUNTY, TEXAS

SHEET NUMBER
C-09





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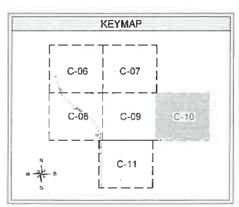
LEGEND

HIGH POINT	
55.5 +	PROPOSED SPOT ELEVATION
55.5 +	EXISTING SPOT ELEVATION
	PROPOSED SWALE
	LOT DRAINAGE FLOW DIRECTION
	STREET DRAINAGE FLOW DIRECTION
555	PROPOSED CONTOUR
555	EXISTING CONTOUR
	TOP OF BANK
	EXISTING TREE TO REMAIN



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ELEV= 599.81

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No.	REVISIONS	DATE	BY

Kimley»Horn
© 2021 KIMLEY-HORN AND ASSOCIATES, INC.
13455 NOEL ROAD, SUITE 700, DALLAS, TX 75240
PHONE: 972-770-1300
WWW.KIMLEY-HORN.COM
TEXAS REGISTERED ENGINEERING FIRM F-928

STATE OF TEXAS
SARAH E. SCOTT
113285
LICENSED PROFESSIONAL ENGINEER
1/31/2022

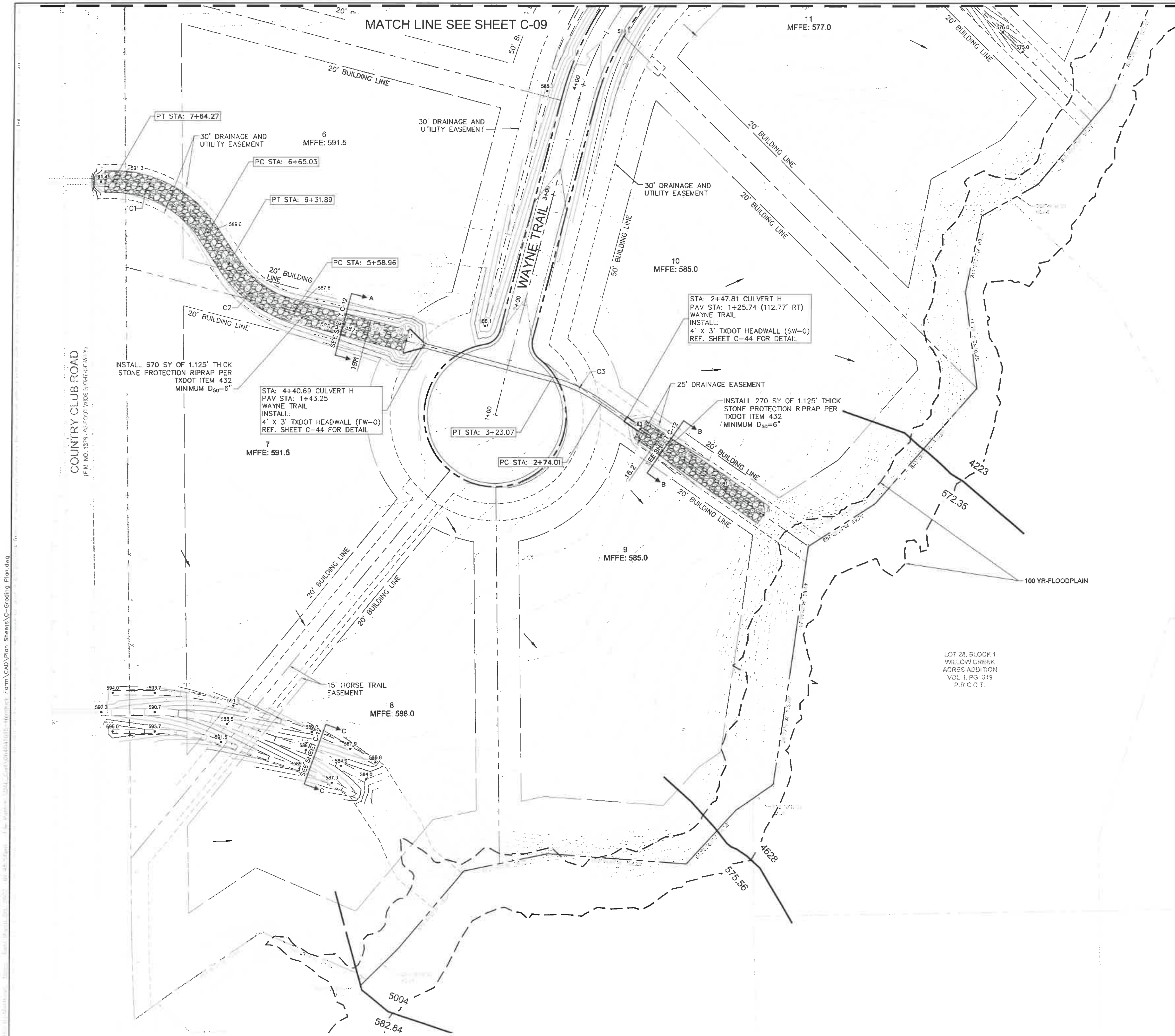
KHA PROJECT	064041015
DATE	JANUARY 2022
SCALE:	AS SHOWN
DESIGNED BY:	CRA
DRAWN BY:	MSM
CHECKED BY:	SES

GRADING AND DRAINAGE PLAN (5 OF 6)

HENDRICK FARM

CITY OF LUCAS
COLLIN COUNTY, TEXAS

SHEET NUMBER
C-10



N W E S

0 40' 80'
GRAPHIC SCALE 40'

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LEGEND

- HIGH POINT
- 55.5 • PROPOSED SPOT ELEVATION
- EXISTING SPOT ELEVATION
- PROPOSED SWALE
- LOT DRAINAGE FLOW DIRECTION
- STREET DRAINAGE FLOW DIRECTION
- 555 PROPOSED CONTOUR
- EXISTING CONTOUR
- TOP OF BANK
- EXISTING TREE TO REMAIN

CURVE TABLE

CURVE	RADIUS	LENGTH	CHORD BEARING	CHORD	DELTA	TANGENT
C1	100.00'	99.24'	N62°00'13"W	95.22'	56°51'45"	54.14'
C2	100.00'	72.94'	N54°28'03"W	71.33'	41°47'23"	38.18'
C3	140.00'	49.05'	N65°19'28"W	48.80'	20°04'33"	24.78'

KEYMAP

C-06 C-07 C-08 C-09 C-10 C-11

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TEXAS REGISTERED ENGINEERING FIRM F-928

STATE OF TEXAS SARAH E. SCOTT 113285 LICENSED PROFESSIONAL ENGINEER 1/31/2022

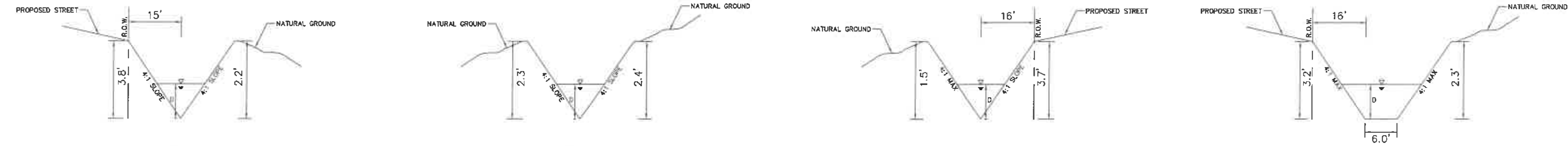
KHA PROJECT 064041015 | DATE JANUARY 2022 | SCALE: AS SHOWN | DESIGNED BY: CRA | DRAWN BY: MSM | CHECKED BY: SES

GRADING AND DRAINAGE PLAN (6 OF 6)

HENDRICK FARM

CITY OF LUCAS
COLLIN COUNTY, TEXAS

SHEET NUMBER
C-11



n = 0.03
Q_{25} = 15.0 CFS; Q_{100} = 23.3 CFS
S = 0.0076 FT/FT
V_{25} = 2.90 FPS; V_{100} = 3.24 FPS
D_{25} = 1.14 FT; D_{100} = 1.34 FT

SECTION 2A-2A
NTS
SEE SHEET C-07

n = 0.03
Q_{25} = 15.0 CFS; Q_{100} = 23.3 CFS
S = 0.0076 FT/FT
V_{25} = 2.90 FPS; V_{100} = 3.24 FPS
D_{25} = 1.14 FT; D_{100} = 1.34 FT

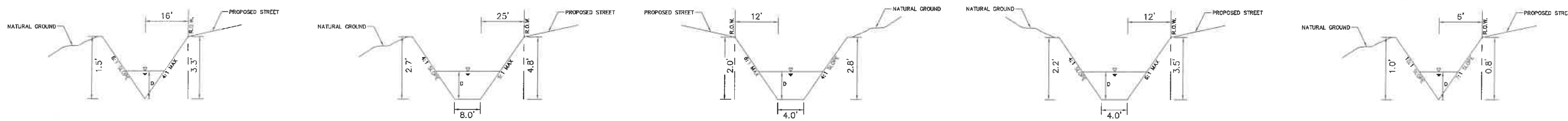
SECTION 2B-2B
NTS
SEE SHEET C-07

n = 0.03
Q_{25} = 10.5 CFS; Q_{100} = 16.30 CFS
S = 0.0210 FT/FT
V_{25} = 3.89 FPS; V_{100} = 4.34 FPS
D_{25} = 0.82 FT; D_{100} = 0.97 FT

SECTION 3A-3A
NTS
SEE SHEET C-09

n = 0.03
Q_{25} = 12.07 CFS; Q_{100} = 18.70 CFS
S = 0.0050 FT/FT
V_{25} = 2.18 FPS; V_{100} = 2.47 FPS
D_{25} = 0.65 FT; D_{100} = 0.82 FT

SECTION 3B-3B
NTS
SEE SHEET C-09



n = 0.03
Q_{25} = 0.59 CFS; Q_{100} = 0.91 CFS
S = 0.0080 FT/FT
V_{25} = 1.32 FPS; V_{100} = 1.47 FPS
D_{25} = 0.33 FT; D_{100} = 0.39 FT

SECTION 3C-3C
NTS
SEE SHEET C-09

n = 0.03
Q_{25} = 23.16 CFS; Q_{100} = 35.91 CFS
S = 0.0055 FT/FT
V_{25} = 2.58 FPS; V_{100} = 2.94 FPS
D_{25} = 0.78 FT; D_{100} = 0.98 FT

SECTION 3D-3D
NTS
SEE SHEET C-09

n = 0.03
Q_{25} = 3.28 CFS; Q_{100} = 5.03 CFS
S = 0.0157 FT/FT
V_{25} = 2.23 FPS; V_{100} = 2.54 FPS
D_{25} = 0.27 FT; D_{100} = 0.35 FT

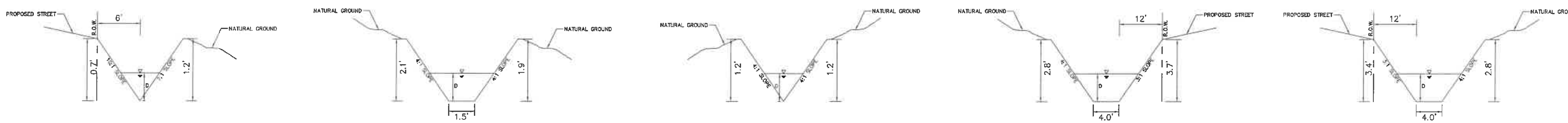
SECTION 4A-4A
NTS
SEE SHEET C-09

n = 0.03
Q_{25} = 5.40 CFS; Q_{100} = 8.27 CFS
S = 0.0270 FT/FT
V_{25} = 3.14 FPS; V_{100} = 3.57 FPS
D_{25} = 0.31 FT; D_{100} = 0.39 FT

SECTION 4B-4B
NTS
SEE SHEET C-09

n = 0.03
Q_{25} = 0.37 CFS; Q_{100} = 0.56 CFS
S = 0.0069 FT/FT
V_{25} = 0.93 FPS; V_{100} = 1.03 FPS
D_{25} = 0.22 FT; D_{100} = 0.25 FT

SECTION 4C-4C
NTS
SEE SHEET C-09



n = 0.03
Q_{25} = 0.37 CFS; Q_{100} = 0.56 CFS
S = 0.0137 FT/FT
V_{25} = 1.20 FPS; V_{100} = 1.33 FPS
D_{25} = 0.19 FT; D_{100} = 0.22 FT

SECTION 4D-4D
NTS
SEE SHEET C-09

n = 0.03
Q_{25} = 10.88 CFS; Q_{100} = 16.32 CFS
S = 0.0781 FT/FT
V_{25} = 6.32 FPS; V_{100} = 7.03 FPS
D_{25} = 0.50 FT; D_{100} = 0.60 FT

SECTION 4E-4E
NTS
SEE SHEET C-10

n = 0.03
Q_{25} = 4.03 CFS; Q_{100} = 6.05 CFS
S = 0.0077 FT/FT
V_{25} = 2.10 FPS; V_{100} = 2.32 FPS
D_{25} = 0.69 FT; D_{100} = 0.81 FT

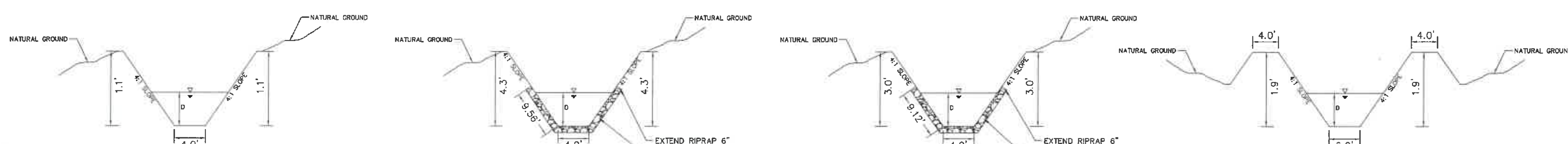
SECTION 4F-4F
NTS
SEE SHEET C-10

n = 0.03
Q_{25} = 14.36 CFS; Q_{100} = 21.54 CFS
S = 0.0098 FT/FT
V_{25} = 3.10 FPS; V_{100} = 3.47 FPS
D_{25} = 0.71 FT; D_{100} = 0.88 FT

SECTION 5A-5A
NTS
SEE SHEET C-09

n = 0.03
Q_{25} = 7.21 CFS; Q_{100} = 10.82 CFS
S = 0.0070 FT/FT
V_{25} = 2.26 FPS; V_{100} = 2.54 FPS
D_{25} = 0.54 FT; D_{100} = 0.67 FT

SECTION 5B-5B
NTS
SEE SHEET C-09



n = 0.03
Q_{25} = 14.45 CFS; Q_{100} = 21.68 CFS
S = 0.0405 FT/FT
V_{25} = 5.04 FPS; V_{100} = 5.66 FPS
D_{25} = 0.48 FT; D_{100} = 0.60 FT

SECTION 5C-5C
NTS
SEE SHEET C-09

n = 0.069
Q_{25} = 51.40 CFS; Q_{100} = 80.68 CFS
S = 0.0169 FT/FT
V_{25} = 2.83 FPS; V_{100} = 3.17 FPS
D_{25} = 1.69 FT; D_{100} = 2.07 FT

1.125' THICK STONE PROTECTION RIPRAP PER TXDOT ITEM 432 MINIMUM D_{50}=6"

SECTION A-A
NTS
SEE SHEET C-11

n = 0.069
Q_{25} = 51.40 CFS; Q_{100} = 80.68 CFS
S = 0.0222 FT/FT
V_{25} = 3.13 FPS; V_{100} = 3.51 FPS
D_{25} = 1.59 FT; D_{100} = 1.95 FT

1.125' THICK STONE PROTECTION RIPRAP PER TXDOT ITEM 432 MINIMUM D_{50}=6"

SECTION B-B
NTS
SEE SHEET C-11

n = 0.069
Q_{25} = 42.35 CFS; Q_{100} = 65.86 CFS
S = 0.0339 FT/FT
V_{25} = 3.41 FPS; V_{100} = 3.84 FPS
D_{25} = 1.17 FT; D_{100} = 1.45 FT

SECTION C-C
NTS
SEE SHEET C-11

BENCHMARKS

ELEVATIONS BASED ON CITY OF ALLEN GPS CONTROL

BM#1 (CITY OF ALLEN MONUMENT NO. 2) 3-1/2-INCH ALUMINUM DISC FOUND IN CONCRETE, LOCATED ±350 FEET EAST FROM THE INTERSECTION OF MAIN STREET AND RICHARDSON COURT, ±16 FEET FROM THE NORTHEAST CORNER OF A BRIDGE.

ELEV= 647.13

BM#2 SQUARE WITH "X" CUT SET ON CONCRETE HEADWALL, EAST SIDE OF COUNTRY CLUB ROAD (F.M. NO. 1378), AT THE INTERSECTION OF COUNTRY CLUB ROAD AND ESTATES PARKWAY (F.M. NO. 2170).

ELEV= 587.52

BM#3 SQUARE WITH "X" CUT SET ON CONCRETE HEADWALL, EAST SIDE OF COUNTRY CLUB ROAD (F.M. NO. 1378), ±240 FEET NORTH FROM THE CENTERLINE INTERSECTION OF COUNTRY CLUB ROAD AND SKYVIEW DRIVE.

ELEV= 589.81

No.	REVISIONS	DATE	BY

Kimley»Horn

13455 NOEL ROAD, SUITE 700, DALLAS, TX 75240
PHONE: 972-770-1300
WWW.KIMLEY-HORN.COM
TEXAS REGISTERED ENGINEERING FIRM F-928

STATE OF TEXAS
SARAH E. SCOTT
113285
LICENSED PROFESSIONAL ENGINEER
1/31/2022

KHA PROJECT	064041015
DATE	JANUARY 2022
SCALE:	AS SHOWN
DESIGNED BY:	CRA
DRAWN BY:	CDH
CHECKED BY:	SES

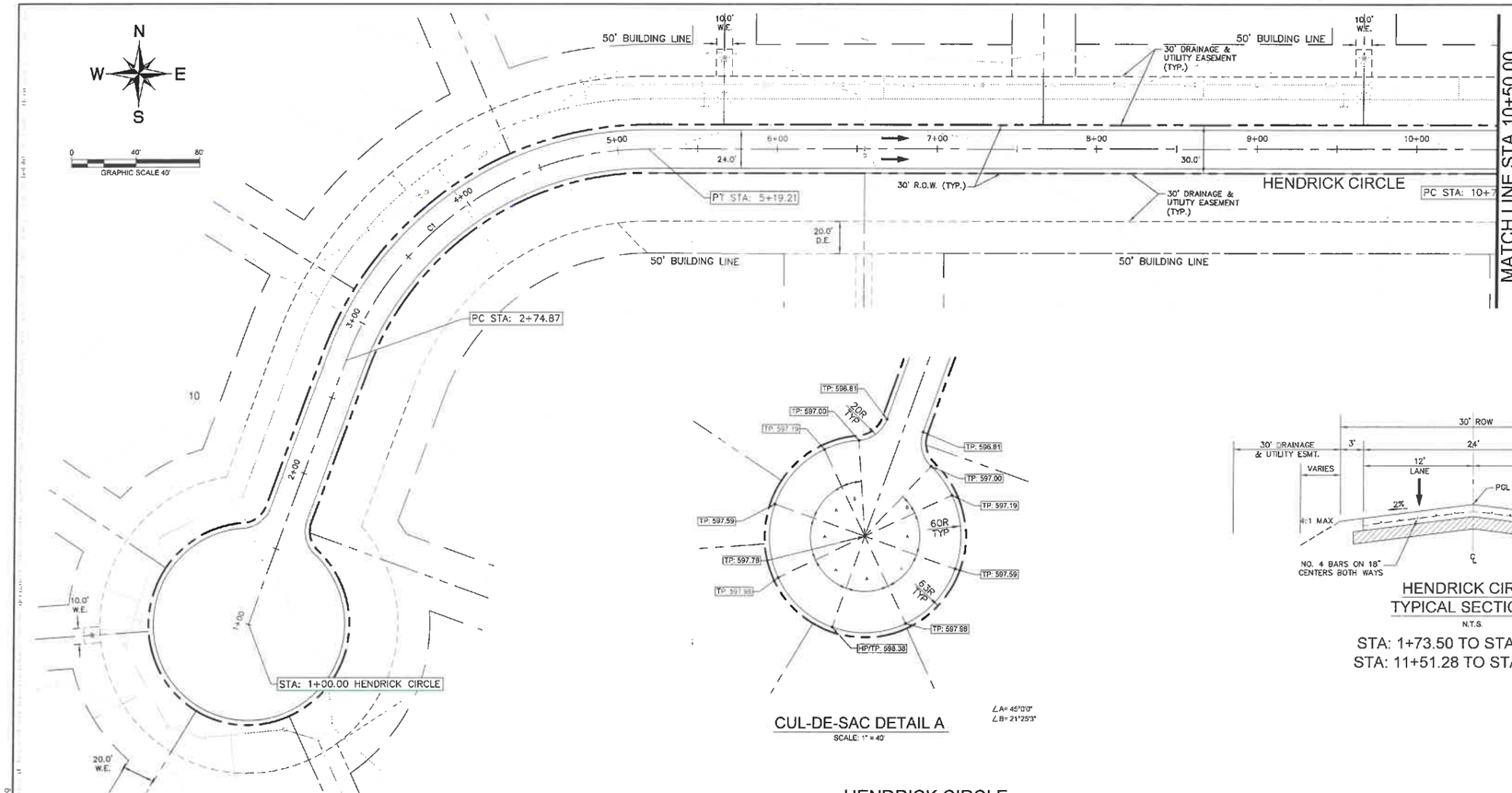
CHANNEL CROSS SECTIONS

HENDRICK FARM

CITY OF LUCAS
COLLIN COUNTY, TEXAS

SHEET NUMBER
C-12

CURVE TABLE						
CURVE	RADIUS	LENGTH	CHORD BEARING	CHORD	DELTA	TANGENT
C1	200.00'	244.35'	N54°35'16"E	229.43'	70°00'00"	140.04'



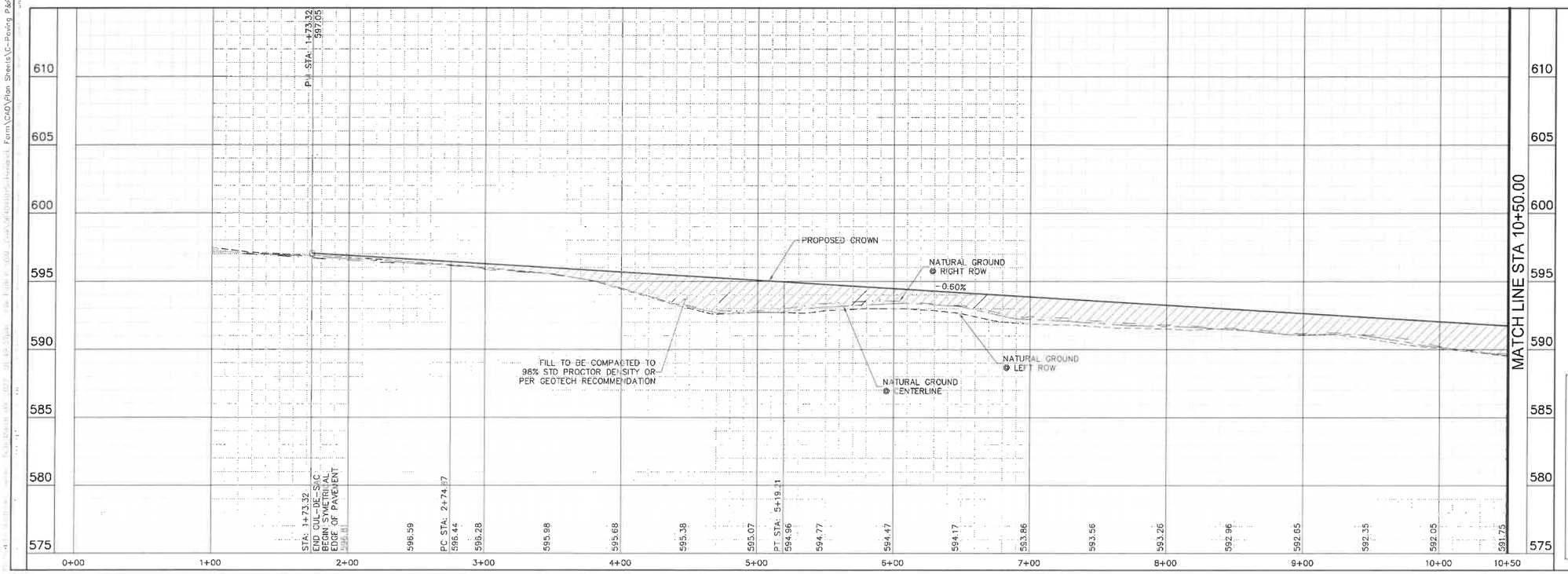
CUL-DE-SAC DETAIL A
SCALE: 1" = 40'

∠A= 46°00'
∠B= 21°25'3"

HENDRICK CIRCLE
TYPICAL SECTION - A
N.T.S.

STA: 1+73.50 TO STA: 10+70.14
STA: 11+51.28 TO STA: 15+73.61

HENDRICK CIRCLE



PROFILE SCALE
1" = 40' HORIZONTAL
1" = 4' VERTICAL

PAVING NOTES

1. SEE TYPICAL SECTION (THIS SHEET) FOR STANDARD PAVEMENT SECTIONS.
2. SEE SHEET C-10 FOR SIGNAGE.
3. PUBLIC IMPROVEMENTS WITHIN THE R.O.W. SHALL ADHERE TO THE CITY GENERAL NOTES WHEN IN CONTRADICTION TO PRIVATE NOTES THROUGHOUT THE PLAN SET.

BENCHMARKS

ELEVATIONS BASED ON CITY OF ALLEN GPS CONTROL

BM#1 (CITY OF ALLEN MONUMENT NO. 2) 3-1/2-INCH ALUMINUM DISC FOUND IN CONCRETE, LOCATED ±350 FEET EAST FROM THE INTERSECTION OF MAIN STREET AND RICHARDSON COURT, ±16 FEET FROM THE NORTHEAST CORNER OF A BRIDGE

ELEV= 647.13

BM#2 SQUARE WITH "X" CUT SET ON CONCRETE HEADWALL, EAST SIDE OF COUNTRY CLUB ROAD (F.M NO. 1378), AT THE INTERSECTION OF COUNTRY CLUB ROAD AND ESTATES PARKWAY (F.M NO. 2170).

ELEV= 587.52

BM#3 SQUARE WITH "X" CUT SET ON CONCRETE HEADWALL, EAST SIDE OF COUNTRY CLUB ROAD (F.M NO. 1378), ±240 FEET NORTH FROM THE CENTERLINE INTERSECTION OF COUNTRY CLUB ROAD AND SKYVIEW DRIVE.

ELEV= 589.81

No.	REVISIONS	DATE	BY

Kimley»Horn

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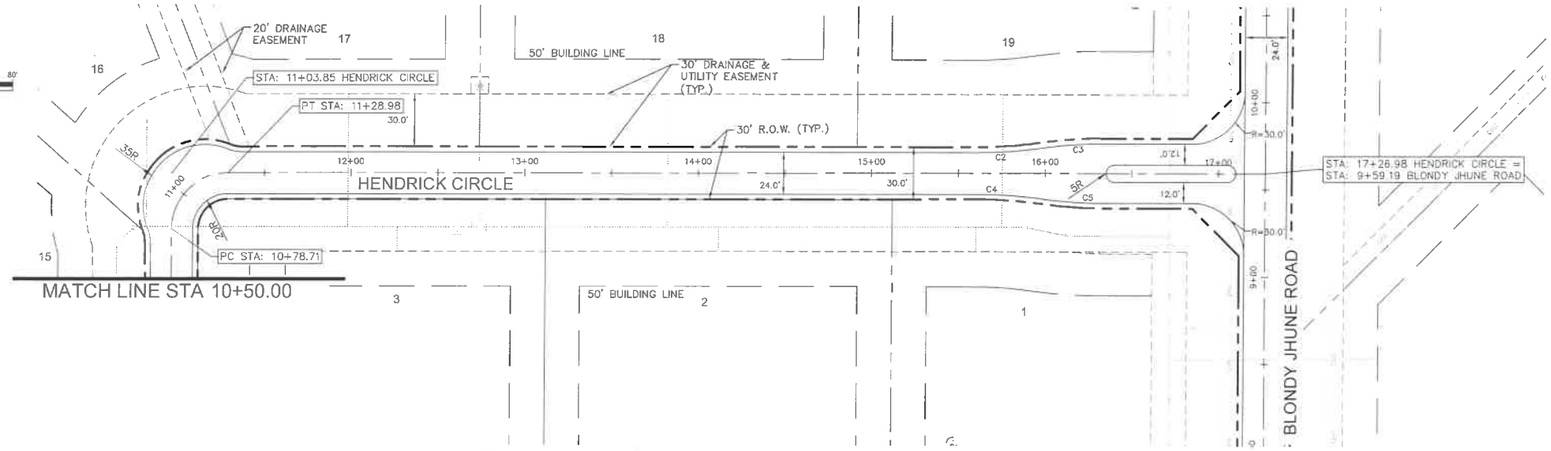
STATE OF TEXAS
SARAH E. SCOTT
113285
LICENSED
PROFESSIONAL ENGINEER
1/31/2022

KHA PROJECT	064341015
DATE	JANUARY 2022
SCALE:	AS SHOWN
DESIGNED BY:	CRA
DRAWN BY:	HCL
CHECKED BY:	SES

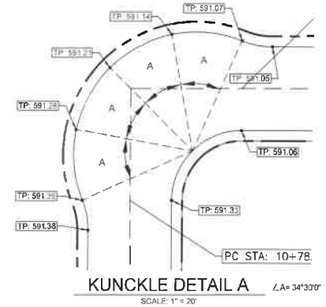
PAVING PLAN & PROFILE - HENDRICK CIRCLE

HENDRICK FARM
CITY OF LUCAS
COLLIN COUNTY, TEXAS

SHEET NUMBER
C-13

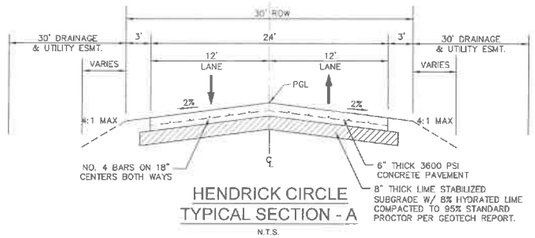


CURVE TABLE						
CURVE	RADIUS	LENGTH	CHORD BEARING	CHORD	DELTA	TANGENT
C2	250.00'	37.62'	S4°10'35"E	37.58'	8°37'18"	18.84'
C3	250.00'	37.62'	N4°10'35"W	37.58'	8°37'18"	18.84'
C4	250.00'	37.62'	N3°27'06"E	37.58'	8°37'18"	18.84'
C5	250.00'	37.62'	S3°27'06"W	37.58'	8°37'18"	18.84'



KUNCKLE DETAIL A

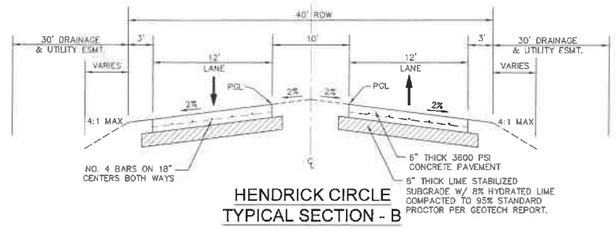
SCALE: 1" = 20'



HENDRICK CIRCLE
TYPICAL SECTION - A

N.T.S.

STA: 1+73.50 TO STA: 10+70.14
STA: 11+51.28 TO STA: 15+73.61

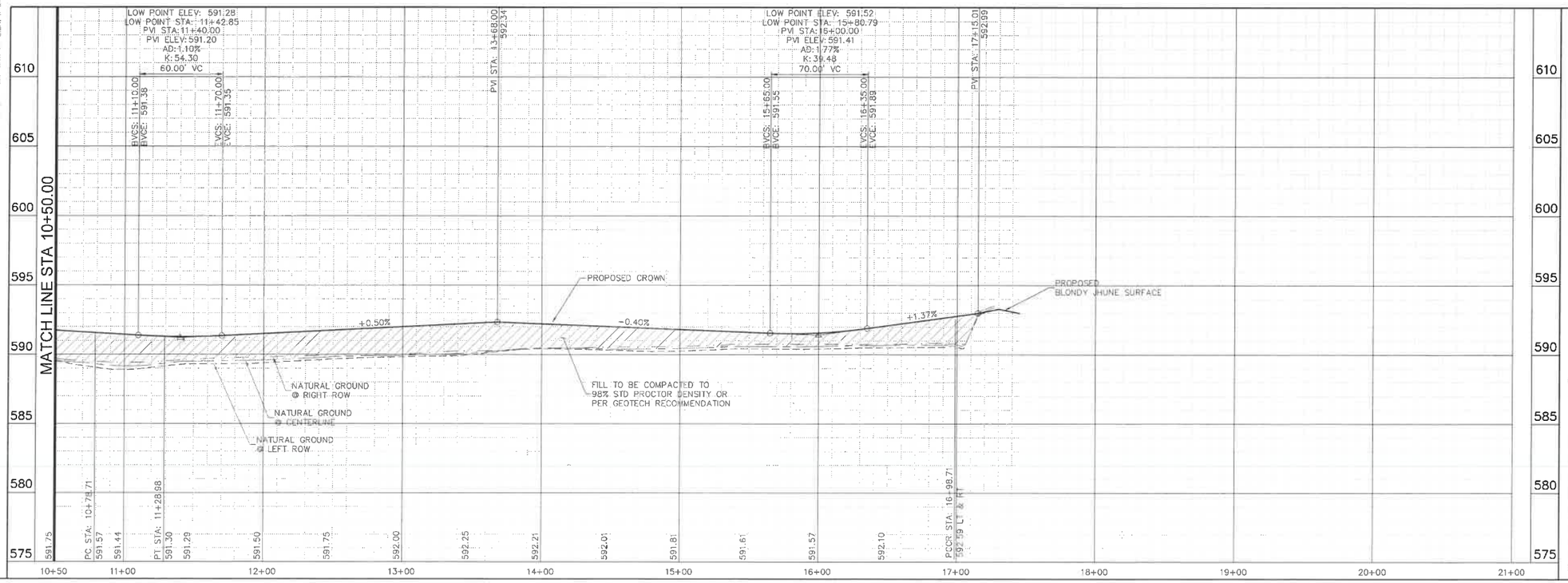


HENDRICK CIRCLE
TYPICAL SECTION - B

N.T.S.

STA: 16+53.74 TO STA: 16+98.60

HENDRICK CIRCLE



PROFILE SCALE

1" = 40' HORIZONTAL
1" = 4' VERTICAL

PAVING NOTES

1. SEE TYPICAL SECTION (THIS SHEET) FOR STANDARD PAVEMENT SECTIONS.
2. SEE SHEET C-19 FOR SIGNAGE.
3. PUBLIC IMPROVEMENTS WITHIN THE R.O.W. SHALL ADHERE TO THE CITY GENERAL NOTES WHEN IN CONTRADICTION TO PRIVATE NOTES THROUGHOUT THE PLAN SET.

BENCHMARKS

ELEVATIONS BASED ON CITY OF ALLEN GPS CONTROL

BM#1 (CITY OF ALLEN MONUMENT NO. 2) 3-1/2-INCH ALUMINUM DISC FOUND IN CONCRETE, LOCATED ±350 FEET EAST FROM THE INTERSECTION OF MAIN STREET AND RICHARDSON COURT, ±16 FEET FROM THE NORTHEAST CORNER OF A BRIDGE.

ELEV= 647.13

BM#2 SQUARE WITH "X" CUT SET ON CONCRETE HEADWALL, EAST SIDE OF COUNTRY CLUB ROAD (F.M. NO. 1378), AT THE INTERSECTION OF COUNTRY CLUB ROAD AND ESTATES PARKWAY (F.M. NO. 2170).

ELEV= 587.52

BM#3 SQUARE WITH "X" CUT SET ON CONCRETE HEADWALL, EAST SIDE OF COUNTRY CLUB ROAD (F.M. NO. 1378), ±243 FEET NORTH FROM THE CENTERLINE INTERSECTION OF COUNTRY CLUB ROAD AND SKYVIEW DRIVE.

ELEV= 589.81

No.	REVISIONS	DATE	BY

Kimley»Horn
© 2021 KIMLEY-HORN AND ASSOCIATES, INC.
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STATE OF TEXAS
SARAH E. SCOTT
113285
LICENSED
PROFESSIONAL ENGINEER
1/31/2022

KHA PROJECT	064141015
DATE	JANUARY 2022
SCALE:	AS SHOWN
DESIGNED BY:	CRA
DRAWN BY:	
CHECKED BY:	SES

PAVING PLAN & PROFILE - HENDRICK CIRCLE (CONT)

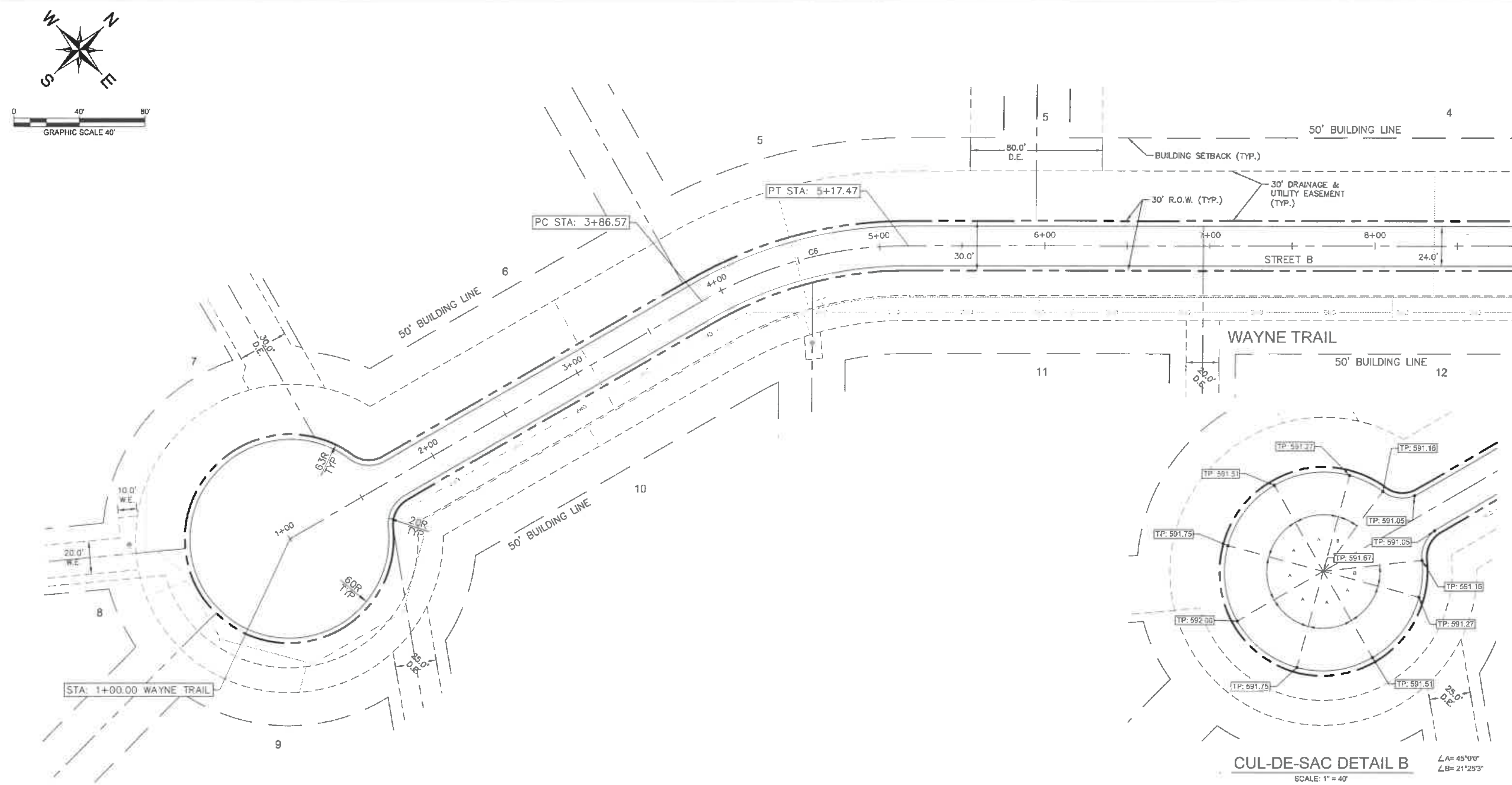
HENDRICK FARM

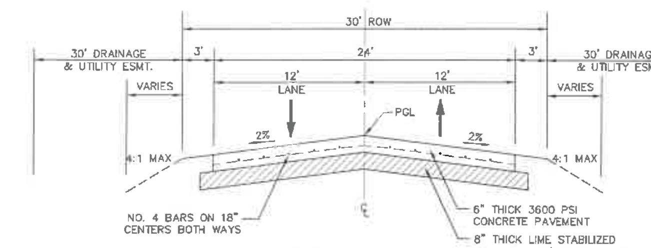
CITY OF LUCAS
COLLIN COUNTY, TEXAS

SHEET NUMBER

C-14

CURVE TABLE						
CURVE	RADIUS	LENGTH	CHORD BEARING	CHORD	DELTA	TANGENT
C6	250.00'	130.90'	N29°38'16"E	129.41'	30°00'00"	66.99'

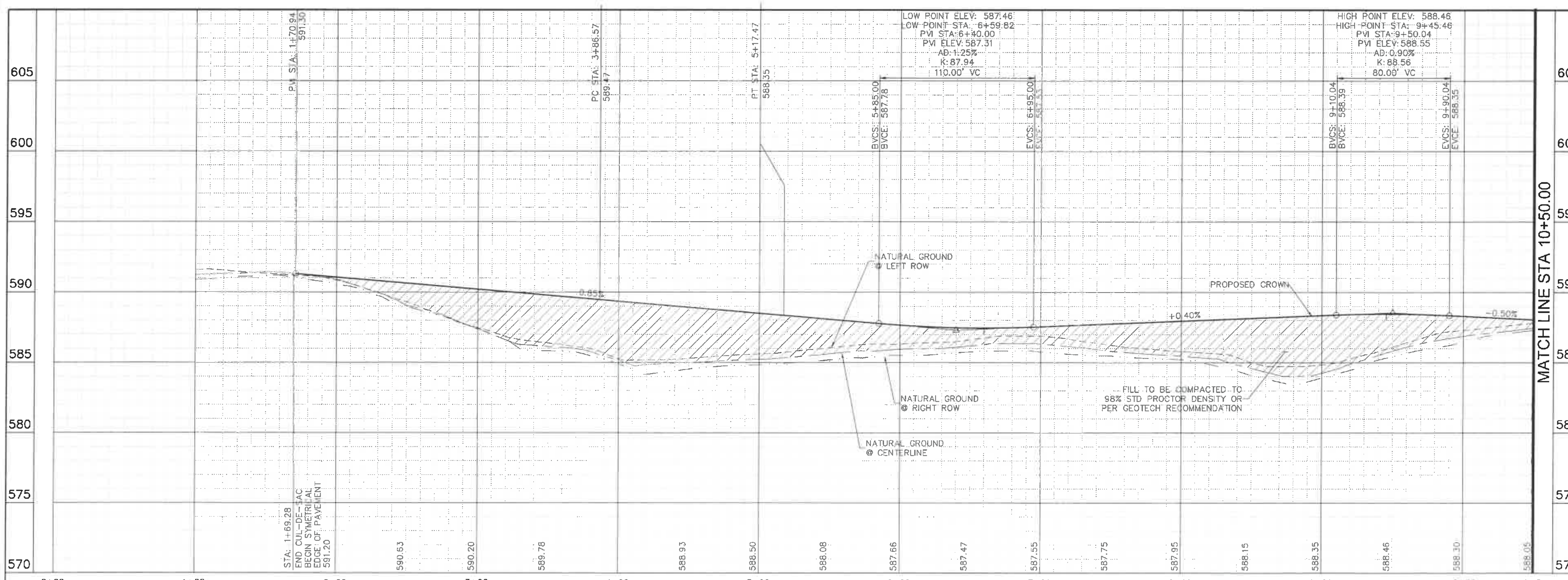




WAYNE TRAIL
TYPICAL SECTION - A
NTS

STA: 1+69.28 TO STA: 11+19.71

WAYNE TRAIL



PROFILE SCALE
1" = 40' HORIZONTAL
1" = 4' VERTICAL

PAVING NOTES

1. SEE TYPICAL SECTION (THIS SHEET) FOR STANDARD PAVEMENT SECTIONS.
2. SEE SHEET C-19 FOR SIGNAGE.
3. PUBLIC IMPROVEMENTS WITHIN THE R.O.W. SHALL ADHERE TO THE CITY GENERAL NOTES WHEN IN CONTRADICTION TO PRIVATE NOTES THROUGHOUT THE PLAN SET.

BENCHMARKS

ELEVATIONS BASED ON CITY OF ALLEN GPS CONTROL

BM#1 (CITY OF ALLEN MONUMENT NO. 2) 3-1/2-INCH ALUMINUM DISC FOUND IN CONCRETE, LOCATED ±350 FEET EAST FROM THE INTERSECTION OF MAIN STREET AND RICHARDSON COURT, ±16 FEET FROM THE NORTHEAST CORNER OF A BRIDGE.

ELEV= 647.13

BM#2 SQUARE WITH "X" CUT SET ON CONCRETE HEADWALL, EAST SIDE OF COUNTRY CLUB ROAD (F.M. NO. 1378), AT THE INTERSECTION OF COUNTRY CLUB ROAD AND ESTATES PARKWAY (F.M. NO. 2170).

ELEV= 587.52

BM#3 SQUARE WITH "X" CUT SET ON CONCRETE HEADWALL, EAST SIDE OF COUNTRY CLUB ROAD (F.M. NO. 1378), ±240 FEET NORTH FROM THE CENTERLINE INTERSECTION OF COUNTRY CLUB ROAD AND SKYVIEW DRIVE.

ELEV= 589.81

No.	REVISIONS	DATE	BY

Kimley»Horn

© 2021 KIMLEY-HORN AND ASSOCIATES, INC.
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TEXAS REGISTERED ENGINEERING FIRM F-928

STATE OF TEXAS
SARAH E. SCOTT
113285
LICENSED PROFESSIONAL ENGINEER
1/31/2022

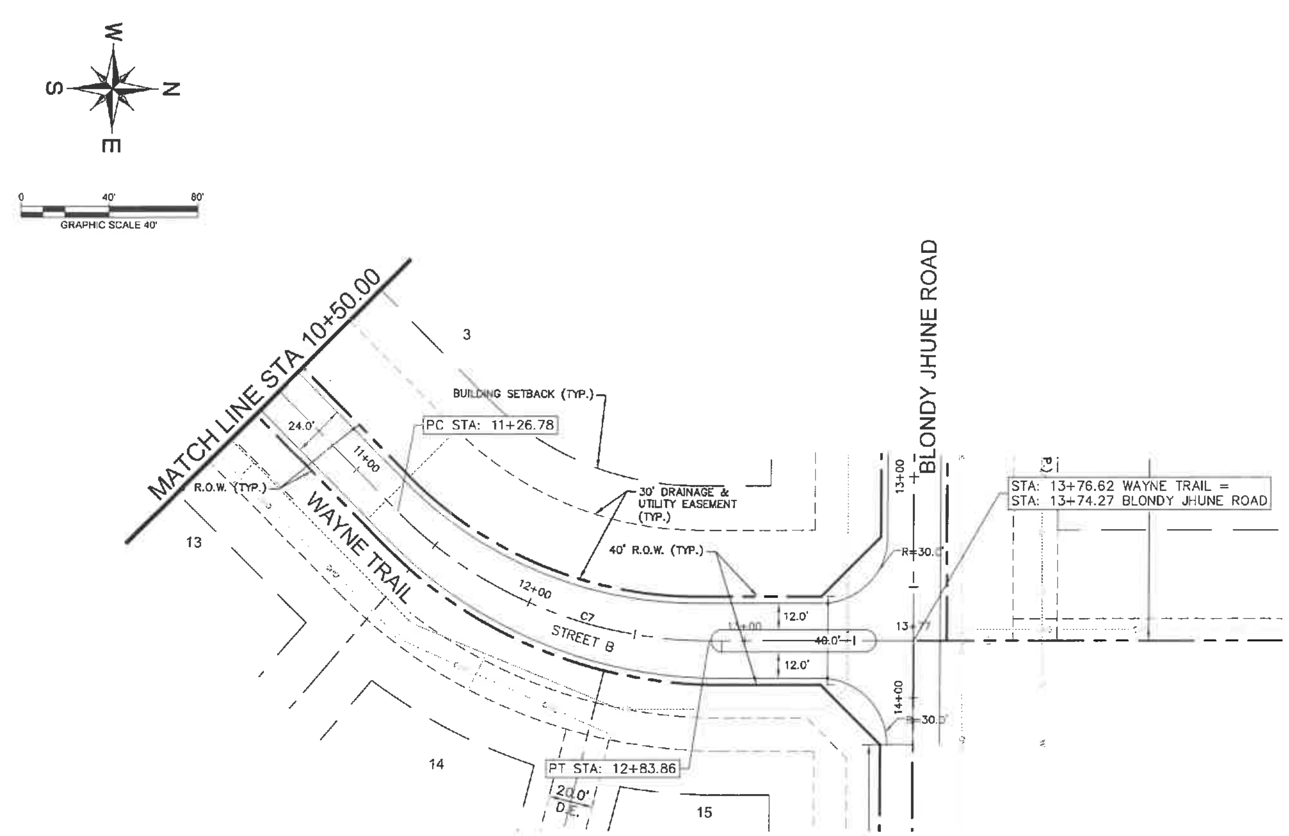
KHA PROJECT 064041015
DATE JANUARY 2022
SCALE: AS SHOWN
DESIGNED BY: CRA
DRAWN BY: HCL
CHECKED BY: SES

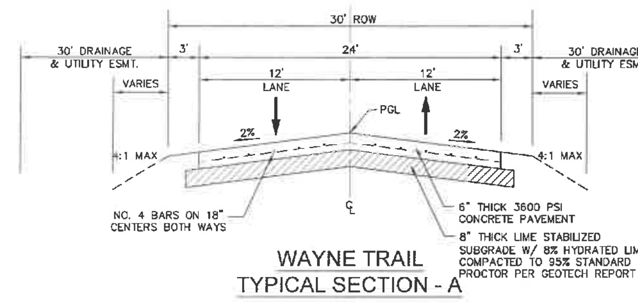
PAVING PLAN & PROFILE - WAYNE TRAIL

HENDRICK FARM
CITY OF LUCAS
COLLIN COUNTY, TEXAS

SHEET NUMBER
C-15

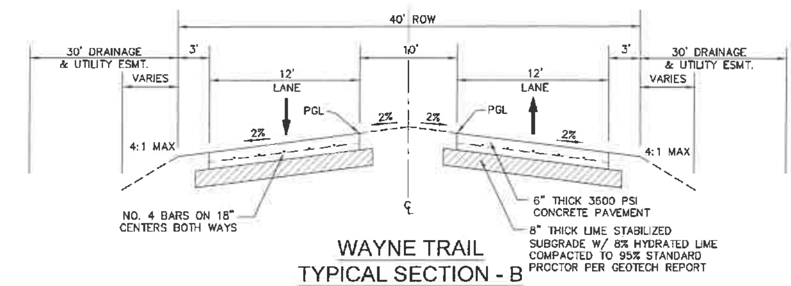
CURVE TABLE						
CURVE	RADIUS	LENGTH	CHORD BEARING	CHORD	DELTA	TANGENT
C7	200.00'	157.08'	N22°08'16"E	153.07'	45°00'00"	82.84'





WAYNE TRAIL
TYPICAL SECTION - A
N.T.S.

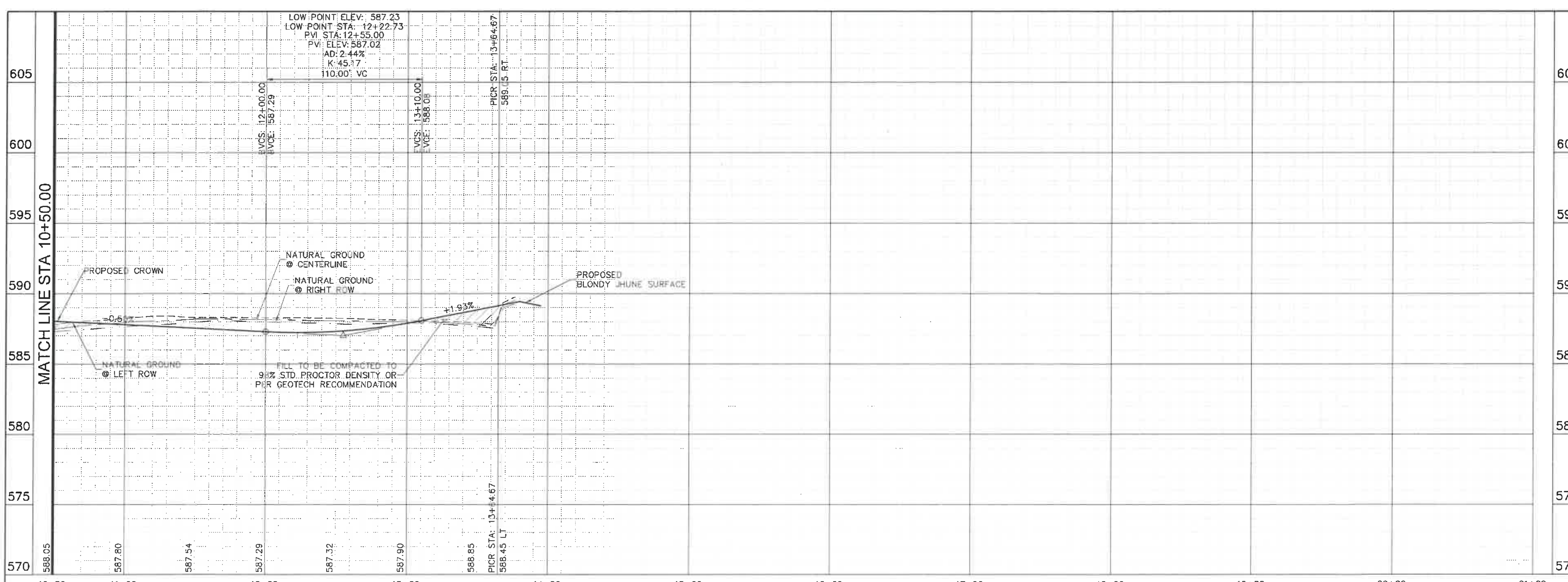
STA: 1+69.28 TO STA: 11+19.71



WAYNE TRAIL
TYPICAL SECTION - B
N.T.S.

STA: 12+88.86 TO STA: 13+34.67

WAYNE TRAIL



PROFILE SCALE
1" = 40' HORIZONTAL
1" = 4' VERTICAL

PAVING NOTES

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BENCHMARKS

ELEVATIONS BASED ON CITY OF ALLEN GPS CONTROL

BM#1 (CITY OF ALLEN MONUMENT NO. 2) 3-1/2-INCH ALUMINUM DISC FOUND IN CONCRETE, LOCATED ±350 FEET EAST FROM THE INTERSECTION OF MAIN STREET AND RICHARDSON COURT, ±16 FEET FROM THE NORTHEAST CORNER OF A BRIDGE.

ELEV= 647.13

BM#2 SQUARE WITH "X" CUT SET ON CONCRETE HEADWALL, EAST SIDE OF COUNTRY CLUB ROAD (F.M. NO. 1378), AT THE INTERSECTION OF COUNTRY CLUB ROAD AND ESTATES PARKWAY (F.M. NO. 2170).

ELEV= 587.52

BM#3 SQUARE WITH "X" CUT SET ON CONCRETE HEADWALL, EAST SIDE OF COUNTRY CLUB ROAD (F.M. NO. 1378), ±240 FEET NORTH FROM THE CENTERLINE INTERSECTION OF COUNTRY CLUB ROAD AND SKYVIEW DRIVE.

ELEV= 589.81

REVISIONS		
No.	DATE	BY

Kimley»Horn

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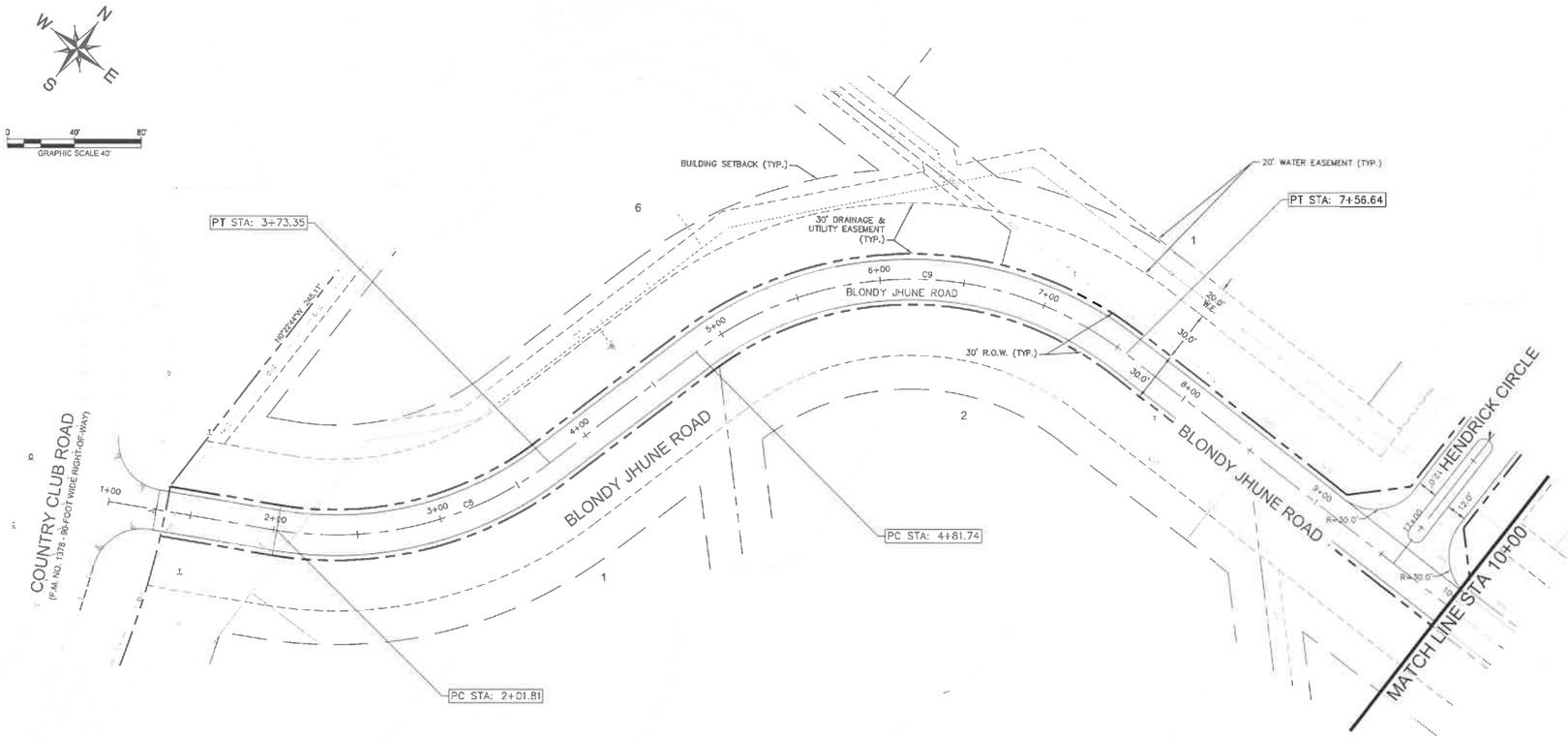
STATE OF TEXAS
SARAH E. SCOTT
113285
LICENSED PROFESSIONAL ENGINEER
1/31/2022

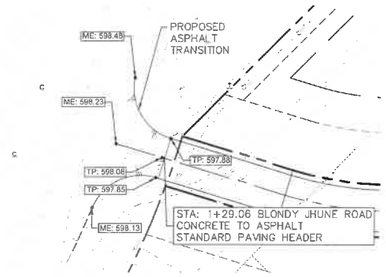
KHA PROJECT 064041015	DATE JANUARY 2022	SCALE: AS SHOWN	DESIGNED BY: CRA	DRAWN BY: HCL	CHECKED BY: SES

PAVING PLAN & PROFILE - WAYNE TRAIL (CONT)

HENDRICK FARM
CITY OF LUCAS
COLLIN COUNTY, TEXAS

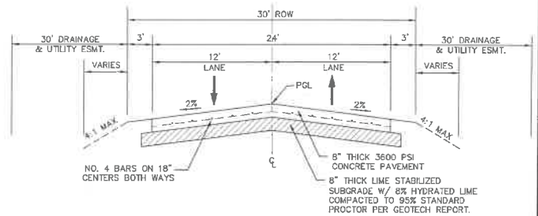
SHEET NUMBER
C-16





BLONDY JHUNE AND COUNTRY CLUB INTERSECTION

SCALE: 1" = 40'

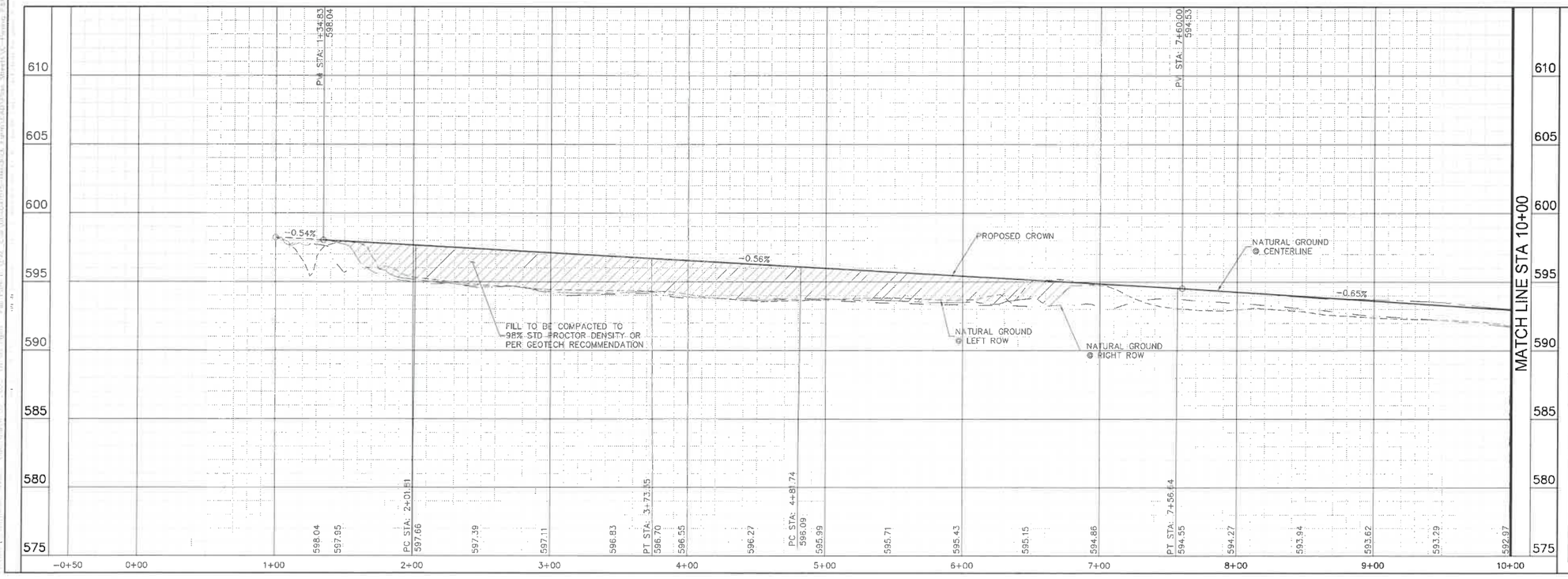


BLONDY JHUNE ROAD
TYPICAL SECTION - A

N.T.S.

STA: 1+29.06 TO STA: 9+12.19
STA: 10+06.19 TO STA: 13+27.19

BLONDY JHUNE ROAD



PROFILE SCALE
1" = 40' HORIZONTAL
1" = 4' VERTICAL

PAVING NOTES

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2. SEE SHEET C-19 FOR SIGNAGE.
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BENCHMARKS

ELEVATIONS BASED ON CITY OF ALLEN GPS CONTROL

BM#1 (CITY OF ALLEN MONUMENT NO. 2) 3-1/2-INCH ALUMINUM DISC FOUND IN CONCRETE, LOCATED ±350 FEET EAST FROM THE INTERSECTION OF MAIN STREET AND RICHARDSON COURT, ±15 FEET FROM THE NORTHEAST CORNER OF A BRIDGE

ELEV= 647.13

BM#2 SQUARE WITH "X" CUT SET ON CONCRETE HEADWALL, EAST SIDE OF COUNTRY CLUB ROAD (F.M. NO. 1378), AT THE INTERSECTION OF COUNTRY CLUB ROAD AND ESTATES PARKWAY (F.M. NO. 2170).

ELEV= 587.52

BM#3 SQUARE WITH "X" CUT SET ON CONCRETE HEADWALL, EAST SIDE OF COUNTRY CLUB ROAD (F.M. NO. 1378), ±240 FEET NORTH FROM THE CENTERLINE INTERSECTION OF COUNTRY CLUB ROAD AND SKYVIEW DRIVE.

ELEV= 589.81

CURVE TABLE						
CURVE	RADIUS	LENGTH	CHORD BEARING	CHORD	DELTA	TANGENT
C8	210.00'	171.54'	N38°02'22"E	166.81'	46°48'13"	90.88'
C9	210.00'	274.90'	N52°08'21"E	255.69'	75°00'11"	161.15'

No.	REVISIONS	DATE	BY

Kimley»Horn
© 2021 KIMLEY-HORN AND ASSOCIATES, INC.
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PHONE: 972 770 1300
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TEXAS REGISTERED ENGINEERING FIRM F-928

STATE OF TEXAS
SARAH E. SCOTT
113285
LICENSED
PROFESSIONAL ENGINEER
1/31/2022

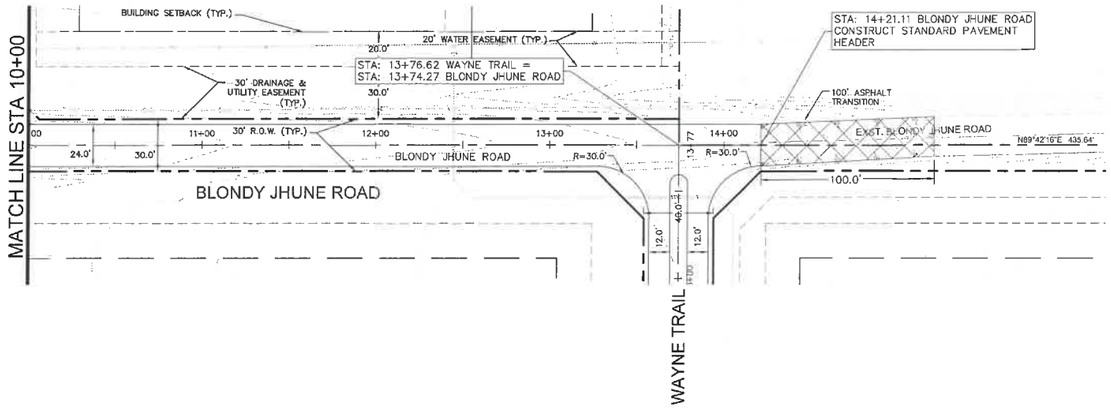
KHA PROJECT	064941015
DATE	JANUARY 2022
SCALE:	AS SHOWN
DESIGNED BY:	CRA
DRAWN BY:	HCL
CHECKED BY:	SES

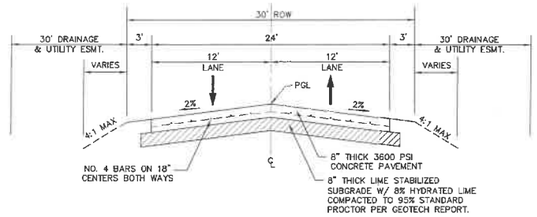
PAVING PLAN & PROFILE BLONDY JHUNE ROAD

HENDRICK FARM

CITY OF LUCAS
COLLIN COUNTY, TEXAS

SHEET NUMBER
C-17

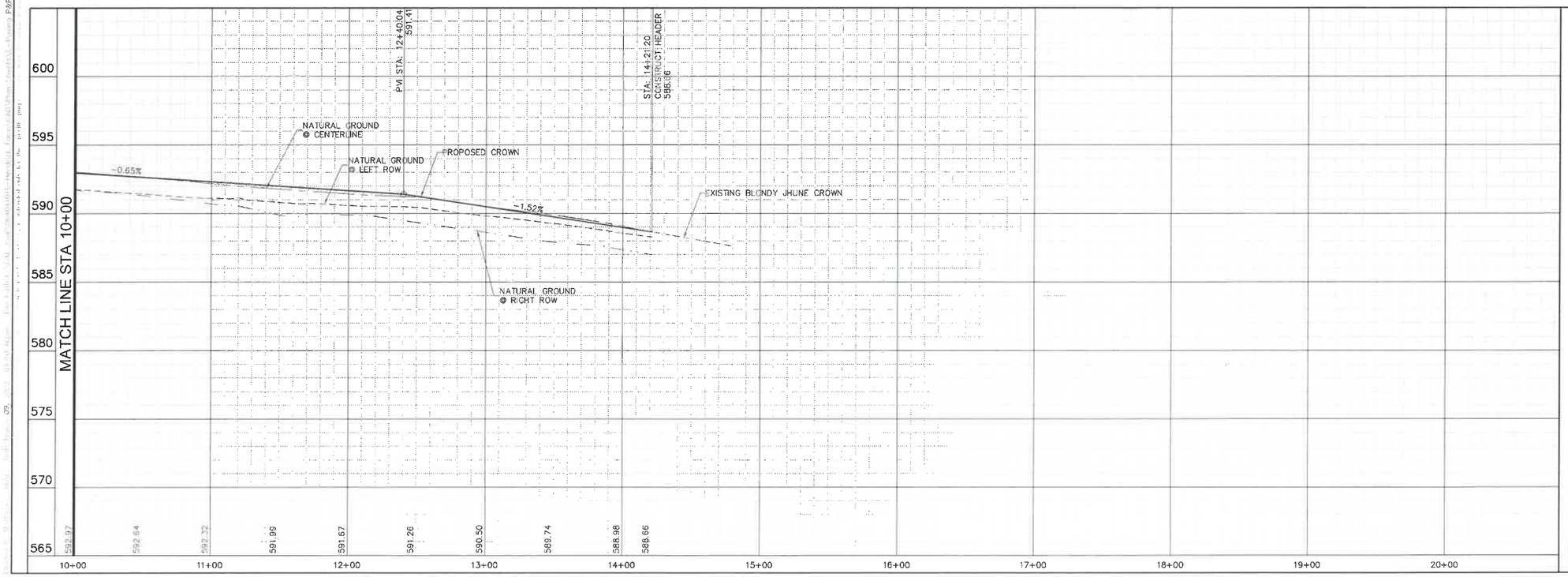




BLONDY JHUNE ROAD
TYPICAL SECTION - A
N.T.S.

STA: 1+29.06 TO STA: 9+12.19
STA: 10+06.19 TO STA: 13+27.19

BLONDY JHUNE ROAD



PROFILE SCALE
1" = 40' HORIZONTAL
1" = 4' VERTICAL

PAVING NOTES

1. SEE TYPICAL SECTION (THIS SHEET) FOR STANDARD PAVEMENT SECTIONS.
2. SEE SHEET C-19 FOR SIGNAGE.
3. PUBLIC IMPROVEMENTS WITHIN THE R.O.W. SHALL ADHERE TO THE CITY GENERAL NOTES WHEN IN CONTRADICTION TO PRIVATE NOTES THROUGHOUT THE PLAN SET.

BENCHMARKS

ELEVATIONS BASED ON CITY OF ALLEN GPS CONTROL

BM#1 (CITY OF ALLEN MONUMENT NO. 2) 3-1/2-INCH ALUMINUM DISC FOUND IN CONCRETE, LOCATED ±350 FEET EAST FROM THE INTERSECTION OF MAIN STREET AND RICHARDSON COURT, ±16 FEET FROM THE NORTHEAST CORNER OF A BRIDGE.

ELEV= 647.13

BM#2 SQUARE WITH "X" CUT SET ON CONCRETE HEADWALL, EAST SIDE OF COUNTRY CLUB ROAD (F.M. NO. 1378), AT THE INTERSECTION OF COUNTRY CLUB ROAD AND ESTATES PARKWAY (F.M. NO. 2170).

ELEV= 587.52

BM#3 SQUARE WITH "X" CUT SET ON CONCRETE HEADWALL, EAST SIDE OF COUNTRY CLUB ROAD (F.M. NO. 1378), ±240 FEET NORTH FROM THE CENTERLINE INTERSECTION OF COUNTRY CLUB ROAD AND SKYVIEW DRIVE.

ELEV= 599.81

No.	REVISIONS	DATE	BY

Kimley»Horn
© 2021 KIMLEY-HORN AND ASSOCIATES, INC.
13455 NOEL ROAD, SUITE 700, DALLAS, TX 75240
PHONE: 972.770.1300
WWW.KIMLEY-HORN.COM
TEXAS REGISTERED ENGINEERING FIRM F-928

STATE OF TEXAS
SARAH E. SCOTT
113285
LICENSED
PROFESSIONAL ENGINEER
1/31/2022

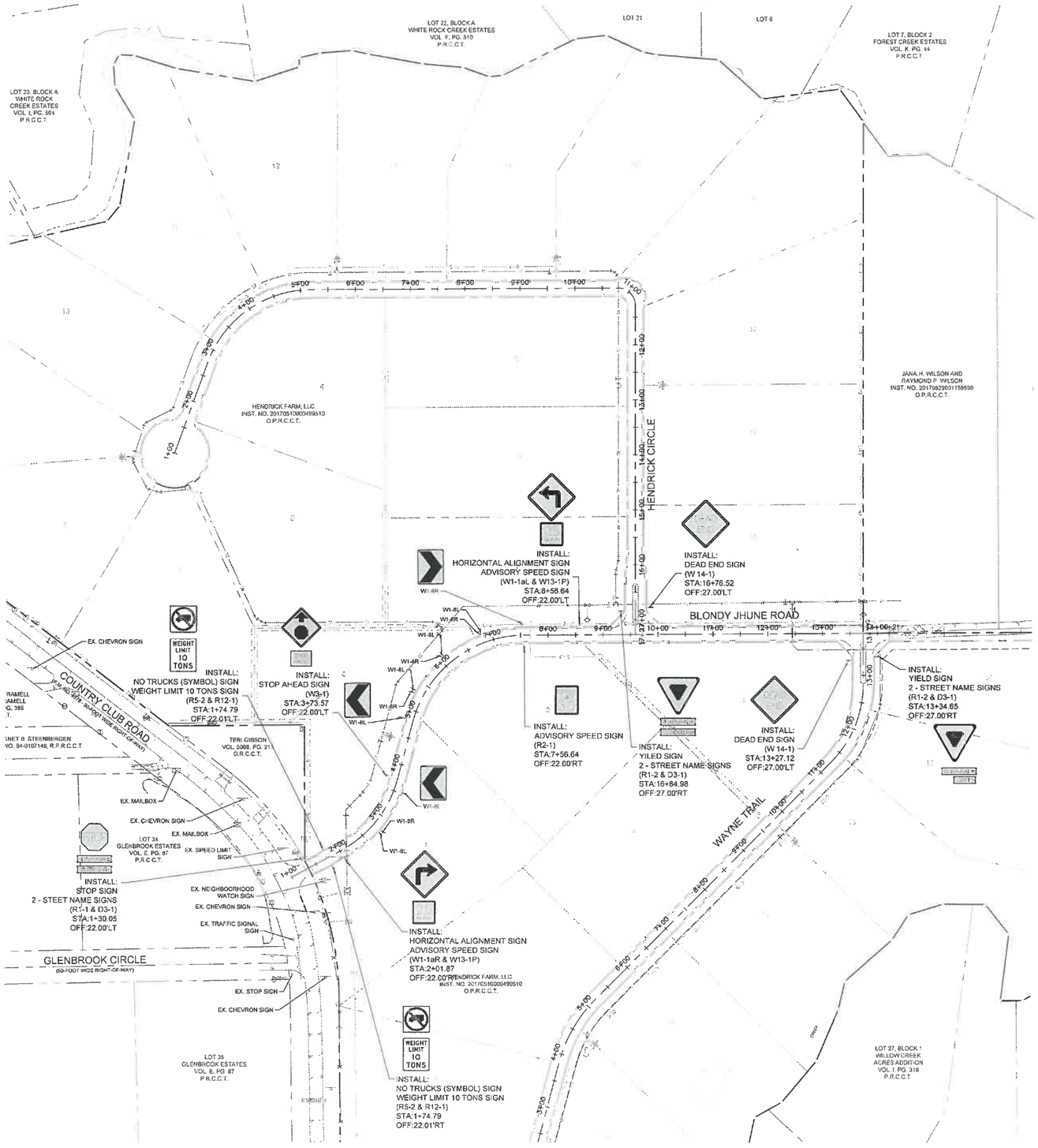
KHA PROJECT	064341015
DATE	JANUARY 2022
SCALE	AS SHOWN
DESIGNED BY:	CRA
DRAWN BY:	HCL
CHECKED BY:	SES

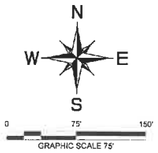
PAVING PLAN & PROFILE BLONDY JHUNE ROAD (CONT)

HENDRICK FARM

CITY OF LUCAS
COLLIN COUNTY, TEXAS

SHEET NUMBER
C-18



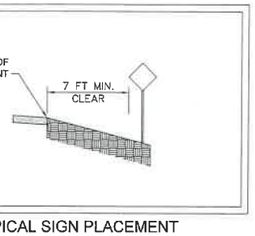


EXISTING SITE FEATURES

SIGN	MONITORING WELL
FLAG POLE	FIBER OPTIC BOX
GREASE TRAP	GAS STORAGE TANK
ELEVATION BENCHMARK	TRAFFIC BOLLARD
FUEL TANK	FIRE HYDRANT
GUY ANCHOR	WATER METER
UTILITY POLE	TELEPHONE MANHOLE
WATER VALVE	LIGHT POLE
SANITARY SEWER CLEAN OUT	TRANSFORMER
SANITARY SEWER MANHOLE	GAS METER
ELECTRIC BOX	

LINE TYPE LEGEND

BOUNDARY LINE
EASEMENT LINE
BUILDING LINE
WATER LINE
SANITARY SEWER LINE
STORM SEWER LINE
UNDERGROUND GAS LINE
UNDERGROUND ELECTRIC LINE
UNDERGROUND TELEPHONE LINE
OVERHEAD ELECTRIC LINE
FENCE
ASPHALT PAVEMENT



TYPICAL SIGN PLACEMENT

N.T.S.

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

CAUTION!!
CONTRACTOR IS TO VERIFY PRESENCE AND EXACT LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION.

BENCHMARKS

ELEVATIONS BASED ON CITY OF ALLEN GPS CONTROL

BM#1 (CITY OF ALLEN MONUMENT NO. 2) 3-1/2-INCH ALUMINUM DISC FOUND IN CONCRETE, LOCATED ±350 FEET EAST FROM THE INTERSECTION OF MAIN STREET AND RICHARDSON COURT, ±16 FEET FROM THE NORTHEAST CORNER OF A BRIDGE.

ELEV= 647.13

BM#2 SQUARE WITH "X" CUT SET ON CONCRETE HEADWALL, EAST SIDE OF COUNTRY CLUB ROAD (F.M. NO. 1378), AT THE INTERSECTION OF COUNTRY CLUB ROAD AND ESTATES PARKWAY (F.M. NO. 2170).

ELEV= 587.52

BM#3 SQUARE WITH "X" CUT SET ON CONCRETE HEADWALL, EAST SIDE OF COUNTRY CLUB ROAD (F.M. NO. 1378), ±240 FEET NORTH FROM THE CENTERLINE INTERSECTION OF COUNTRY CLUB ROAD AND SKYVIEW DRIVE.

ELEV= 589.81

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STATE OF TEXAS
SARAH E. SCOTT
113285
LICENSED
PROFESSIONAL ENGINEER
1/31/2022

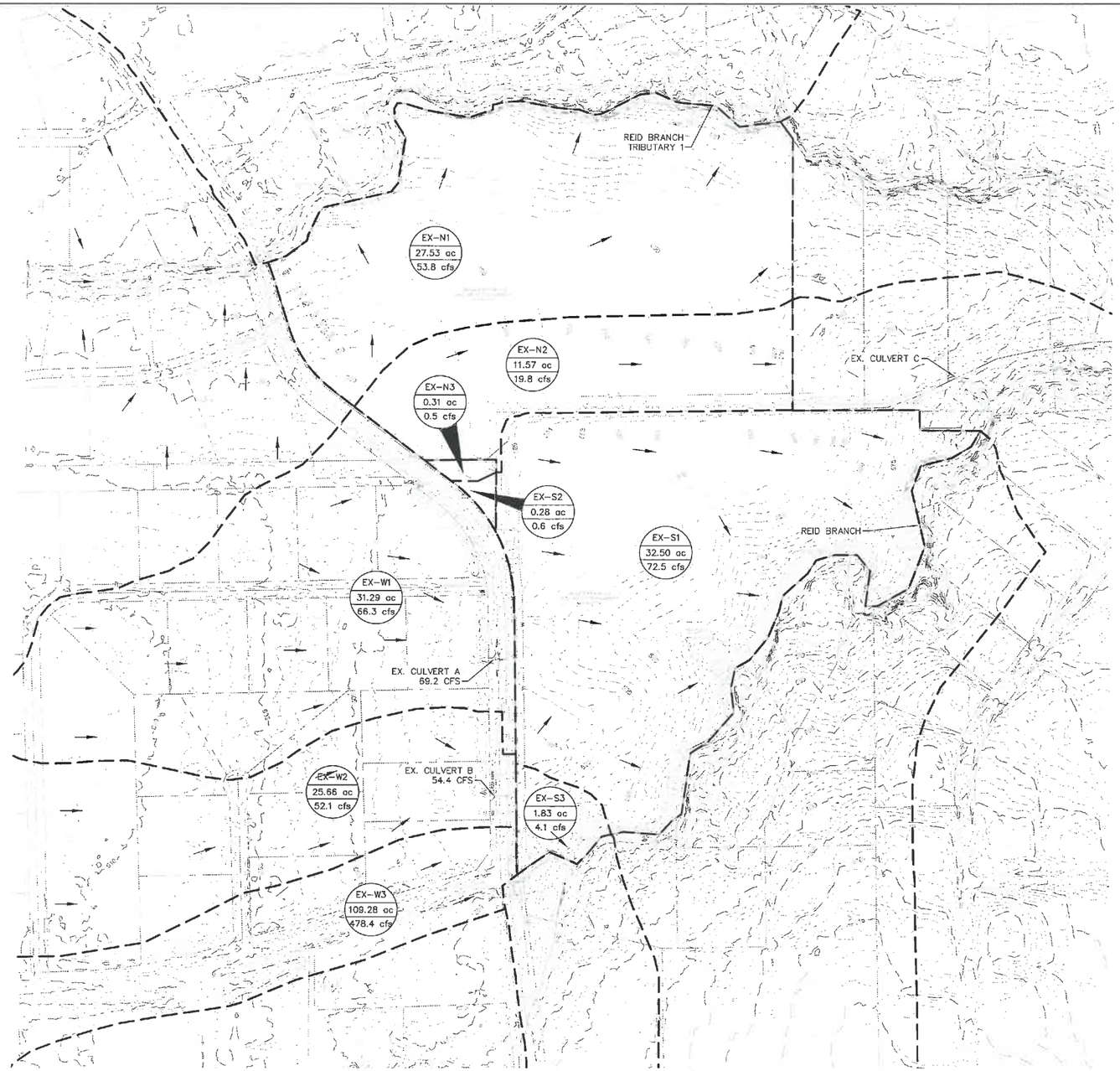
KHA PROJECT	064041015
DATE	JANUARY 2022
SCALE:	AS SHOWN
DESIGNED BY:	CRA
DRAWN BY:	WSM
CHECKED BY:	SES

SIGNAGE PLAN

HENDRICK FARM

CITY OF LUCAS
COLLIN COUNTY, TEXAS

SHEET NUMBER
C-19



0 200' 400'
GRAPHIC SCALE 200'

DRAINAGE DESIGN CRITERIA

Q100 = C*I*A

Q = FLOW IN CUBIC FEET PER SECOND (CFS)

C = RUNOFF COEFFICIENT = 0.55 (1 ACRE+ RESIDENTIAL)
0.35 (OPEN SPACE)

I = INTENSITY (TIME OF CONCENTRATION = TC)
I = B / (TC + D)^E (PER NOAA ATLAS 14)
E = 0.7172
B = 75.709
D = 8.121
TC = VARIES

A = DRAINAGE AREA IN ACRES

DRAINAGE GENERAL NOTES

1. CONTRACTOR TO FIELD VERIFY HORIZONTAL AND VERTICAL LOCATION OF EXISTING UTILITIES PRIOR TO CONSTRUCTION.
2. SEE STORM DRAIN PLAN & PROFILE SHEETS FOR DETAILED INFORMATION ON STORM DRAIN LINES.
3. ALL STORM DRAIN LINES SHALL BE RCP, CLASS III UNLESS OTHERWISE NOTED.
4. REFERENCE FLOODPLAIN STUDY PREPARED BY KIMLEY-HORN, DATED FEBRUARY 25, 2019, FOR FULL EXTENTS OF EXISTING DRAINAGE AREAS, FLOODPLAIN INFORMATION, AND EX TIMES OF CONCENTRATION.

DRAINAGE AREA TABLE

DRAINAGE AREA NO.	AREA (ac)	ANTECEDENT FACTOR	RUNOFF COEFFICIENT "C"	TIME OF CONCENTRATION (minutes)	RAINFALL INTENSITY "I" 100 (in/hr)	TOTAL FLOW Q100 (cfs)	COLLECTION POINT
EX-N1	27.53	1.00	0.35	30	5.58	53.8	REID BRANCH TRIBUTARY 1
EX-N2	11.57	1.00	0.35	37	4.90	19.8	REID BRANCH VIA EX. CULVERT C
EX-N3	0.31	1.00	0.35	37	4.90	0.5	REID BRANCH VIA EX. CULVERT C
EX-S1	32.50	1.00	0.35	23	6.37	72.5	REID BRANCH
EX-S2	0.28	1.00	0.35	23	6.37	0.6	REID BRANCH
EX-S3	1.83	1.00	0.35	23	6.37	4.1	REID BRANCH
EX-W1	31.29	1.00	0.55	56	3.85	66.3	EX. CULVERT A TO REID BRANCH
EX-W2	25.66	1.00	0.55	59	3.69	52.1	EX. CULVERT A TO REID BRANCH
EX-W3	109.28	1.00	0.55	15	7.96	478.4	REID BRANCH

!!WARNING!!

EXISTING UTILITIES IN THE AREA. CONTRACTOR SHALL FIELD VERIFY THE LOCATION OF ALL EXISTING UTILITIES WITH THE PROVIDER PRIOR TO START OF CONSTRUCTION AND SHALL IMMEDIATELY NOTIFY THE ENGINEER OF ANY CONFLICTS DISCOVERED. CONTRACTOR IS RESPONSIBLE FOR COORDINATING UTILITY RELOCATION WHERE NECESSARY AND PROTECTING EXISTING UTILITIES (SHOWN OR NOT SHOWN). IF ANY EXISTING UTILITIES ARE DAMAGED, THE CONTRACTOR SHALL REPLACE THEM AT THEIR OWN EXPENSE.

No.	REVISIONS	DATE	BY

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1/31/2022

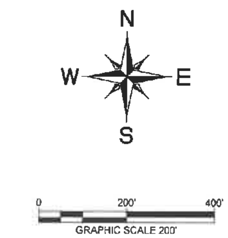
KHA PROJECT 064041015
DATE JANUARY 2022
SCALE: AS SHOWN
DESIGNED BY: CRA
DRAWN BY: SES
CHECKED BY:

EXISTING DRAINAGE AREA MAP

HENDRICK FARM

CITY OF LUCAS
COLLIN COUNTY, TEXAS

SHEET NUMBER
C-20



DRAINAGE DESIGN CRITERIA

Q100 = 1.25*C*I*A

Q = FLOW IN CUBIC FEET PER SECOND (CFS)

C = RUNOFF COEFFICIENT = 0.45 (1 ACRE+ RESIDENTIAL)

I = INTENSITY (TIME OF CONCENTRATION = TC)

I = B / (TC + D)^E
E = 0.73702
B = 86.709
D = 11
TC = VARIES

A = DRAINAGE AREA IN ACRES

DRAINAGE GENERAL NOTES

1. CONTRACTOR TO FIELD VERIFY HORIZONTAL AND VERTICAL LOCATION OF EXISTING UTILITIES PRIOR TO CONSTRUCTION.
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DRAINAGE AREA TABLE

DRAINAGE AREA NO.	AREA (ac)	ANTECEDENT FACTOR	PRE-DEVELOPMENT RUNOFF COEFFICIENT "C"	POST-DEVELOPMENT RUNOFF COEFFICIENT "C"	TIME OF CONCENTRATION (minutes)	RAINFALL INTENSITY "I"100 (in/hr)	PRE-DEVELOPMENT RUNOFF Q100 (cfs)	POST-DEVELOPMENT RUNOFF Q100 (cfs)	COLLECTION POINT
DA-N1	4.91	1.25	0.30	0.55	30	5.62	10.88	18.95	DETENTION POND 1
DA-N2	6.02	1.25	0.30	0.55	30	5.62	12.96	23.26	DETENTION POND 2
DA-N3	9.71	1.25	0.30	0.55	34	5.26	18.97	35.11	CULVERT C, DET. POND 3
DA-N4	3.67	1.25	0.30	0.55	31	5.53	6.21	13.97	DETENTION POND 3
DA-N5	15.50	1.25	0.30	0.55	30	5.63	36.42	60.01	BYPASS, REID BRANCH TRIBUTARY 1
DA-S1	12.49	1.25	0.30	0.55	15	7.86	36.81	67.49	DETENTION POND 5
DA-S2	2.46	1.25	0.30	0.55	15	7.86	7.25	13.27	CULVERT E, DET. POND 4
DA-S3	3.73	1.25	0.30	0.55	18	7.27	10.99	18.63	DETENTION POND 4
DA-S4	16.48	1.25	0.30	0.55	33	5.36	33.12	60.74	REID BRANCH
EX-W1	29.86	1.25	0.55	0.55	56	3.93	80.69	80.69	EX CULVERT A
EX-W2	25.41	1.25	0.55	0.55	59	3.77	65.86	65.86	EX CULVERT B

TIME OF CONCENTRATION
PRE-PROJECT WATERSHED CONDITIONS
TR-55 Methodology

	SHEET FLOW Tc = (0.007(nL)^0.8)/(P2^0.5)(s^0.4) 2-year/24-hr Rainfall Depth (in.) from iSWM = 4						SHALLOW CONCENTRATED FLOW Tc = L / 60*V							OPEN CHANNEL FLOW Tc = L / 60*V V = (1.49/n)*R^(2/3)*s^(1/2)													TOTAL
Basin	Length (ft)	$Elev_1$	$Elev_2$	Slope (ft/ft)	Manning's "n"	T_{c1} (min)	Length (ft)	$Elev_2$	$Elev_3$	Slope (ft/ft)	Condition TR-55 Fig. 3-1	V_{avg} (ft/s)	T_{c2} (min)	Length (ft)	Manning's "n"	Width (ft)	Side Slope (ft/ft)	Depth (ft)	Area (ft^2)	Perimeter (ft)	Radius (ft)	$Elev_3$	$Elev_4$	Slope (ft/ft)	V_{avg} (ft/s)	T_{c3} (min)	T_{cTOTAL} * (min)
EX DA-1	300	561.6	559.9	0.006	0.150	34.7	428.29	559.890	543.340	0.0386	Unpaved	3.17	2.3	N/A													37.0
DA-S1	22	603.2	600.9	0.105	0.150	1.3	866	600.900	585.400	0.0179	Unpaved	2.16	6.7	476	0.035	30	4	3.0	126.0	54.7	2.3	585.4	583	0.005	5.3	1.5	10.0
DA-S2	100	594.0	591.0	0.030	0.150	7.5	378	591.000	587.200	0.0101	Unpaved	1.62	3.9	163	0.035	0	4	2.0	16.0	16.5	1.0	587.2	585.4	0.011	6.0	0.5	11.8
DA-S3	300	589.0	579.1	0.033	0.150	17.3	26	579.100	575.500	0.1385	Unpaved	6.00	0.1	138	0.035	40	4	1.0	44.0	46.2	0.9	575.5	574	0.011	4.2	0.6	17.9
DA-S4	300	590.9	581.4	0.032	0.150	17.6	110	581.400	567.000	0.1309	Unpaved	5.84	0.3	2200	0.095	30	4	3.0	126.0	54.7	2.3	567.0	549	0.008	2.5	14.8	32.7
DA-N1	300	601.0	598.1	0.010	0.150	28.2	134	598.100	596.000	0.0157	Unpaved	2.02	1.1	253	0.035	0	4	1.5	9.0	12.4	0.7	596.0	587.8	0.032	6.2	0.7	30.0
DA-N2	300	601.0	598.0	0.010	0.150	27.8	27	598.000	597.800	0.0074	Unpaved	1.39	0.3	779	0.035	0	4	2.5	25.0	20.6	1.2	597.8	585.6	0.016	6.1	2.1	30.3
DA-N3	300	601.0	597.5	0.012	0.150	26.2	750	597.500	589.300	0.0109	Unpaved	1.69	7.4	93	0.035	0	4	4.0	64.0	33.0	1.9	589.3	588.2	0.012	7.2	0.2	33.8
DA-N4	290	591.7	589.5	0.008	0.150	30.3	9	589.500	587.200	0.2556	Unpaved	8.16	0.0	193	0.035	0	4	4.0	64.0	33.0	1.9	587.2	586	0.006	5.2	0.6	30.9
DA-N5	300	597.0	593.2	0.013	0.150	25.3	327	593.170	569.000	0.0739	Unpaved	4.39	1.2	1200	0.035	20	3	8.0	352.0	70.6	5.0	569.0	561	0.007	8.0	3.3	29.8

Detention Summary Table										
Outfall	Existing Contributing Drainage Area	Proposed Contributing Drainage Area	Existing Release (cfs)				Proposed Release (cfs)			
			2-yr	10-yr	25-yr	100-yr	2-yr	10-yr	25-yr	100-yr
1	EX-N1	Pond 1, Pond 2, DA-N5	23.69	33.13	38.95	48.25	23.23	32.07	38.47	48.21
2	EX-N2, EX-N3	Pond 3	10.05	14.06	16.54	20.49	9.68	13.64	16.30	20.47
3	EX-S1, EX-S2, EX-S3	Pond 4, Pond 5, DA-S4	29.43	41.17	48.41	59.98	29.13	40.64	48.23	59.93

BENCHMARKS

ELEVATIONS BASED ON CITY OF ALLEN GPS CONTROL

BM#1 (CITY OF ALLEN MONUMENT NO. 2) 3-1/2-INCH ALUMINUM DISC FOUND IN CONCRETE, LOCATED ±350 FEET EAST FROM THE INTERSECTION OF MAIN STREET AND RICHARDSON COURT, ±16 FEET FROM THE NORTHEAST CORNER OF A BRIDGE.

ELEV= 647.13

BM#2 SQUARE WITH "X" CUT SET ON CONCRETE HEADWALL, EAST SIDE OF COUNTRY CLUB ROAD (F.M. NO. 1378), AT THE INTERSECTION OF COUNTRY CLUB ROAD AND ESTATES PARKWAY (F.M. NO. 2170).

ELEV= 587.52

BM#3 SQUARE WITH "X" CUT SET ON CONCRETE HEADWALL, EAST SIDE OF COUNTRY CLUB ROAD (F.M. NO. 1378), ±240 FEET NORTH FROM THE CENTERLINE INTERSECTION OF COUNTRY CLUB ROAD AND SKYVIEW DRIVE.

ELEV= 589.81

No.	REVISIONS	DATE	BY

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1/31/2022

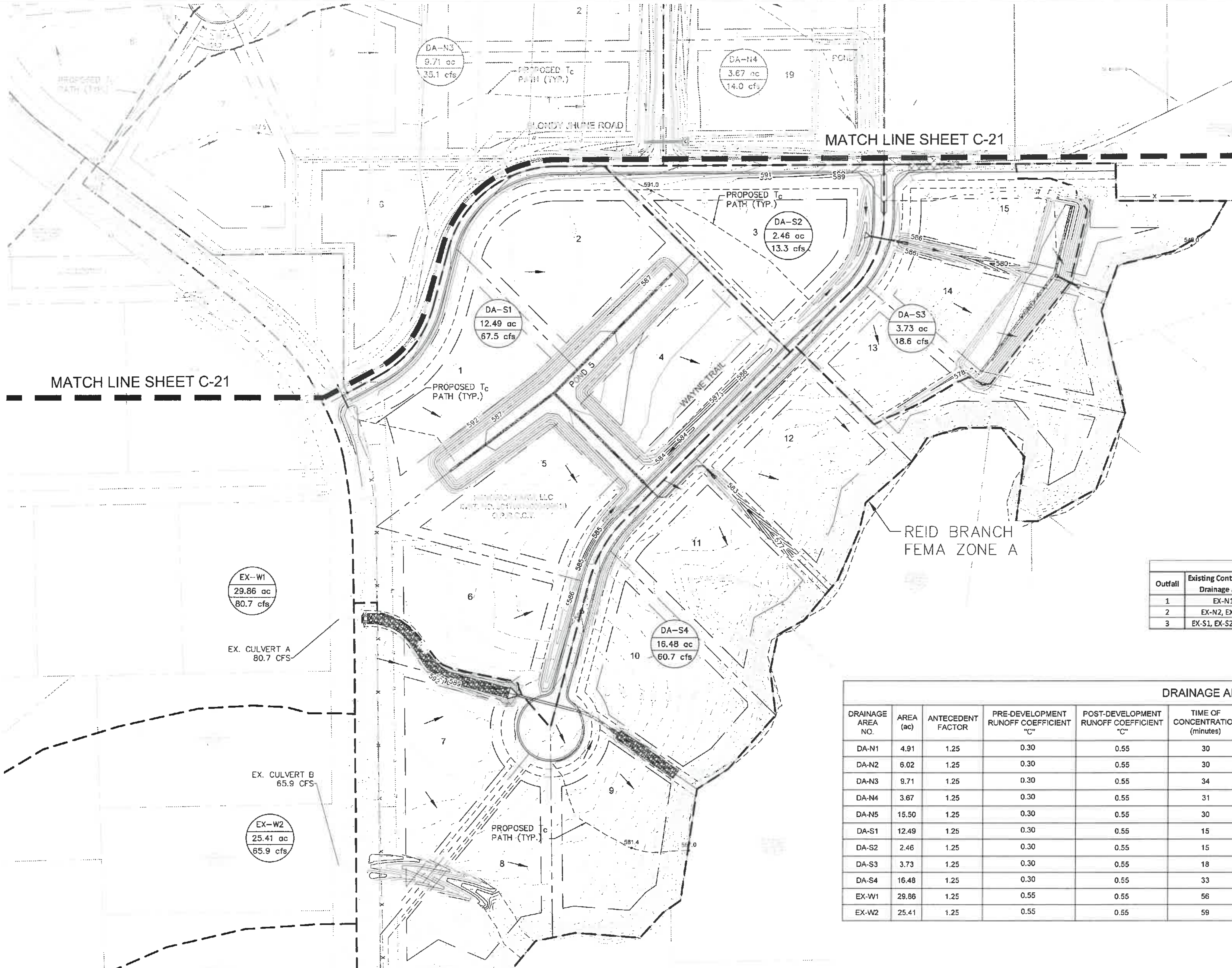
KHA PROJECT 064041015
DATE JANUARY 2022
SCALE: AS SHOWN
DESIGNED BY: CRA
DRAWN BY: HCL
CHECKED BY: SES

DRAINAGE AREA MAP (1 OF 2)

HENDRICK FARM

CITY OF LUCAS
COLLIN COUNTY, TEXAS

SHEET NUMBER
C-21



0 200' 400'
GRAPHIC SCALE 200'

DRAINAGE DESIGN CRITERIA

Q100 = 1.25*C*I*A

Q = FLOW IN CUBIC FEET PER SECOND (CFS)

C = RUNOFF COEFFICIENT = 0.45 (1 ACRE+ RESIDENTIAL)

I = INTENSITY (TIME OF CONCENTRATION = TC)

I = B / (TC + D)^E
E = 0.73702
B = 86.709
D = 11
TC = VARIES

A = DRAINAGE AREA IN ACRES

DRAINAGE GENERAL NOTES

1. CONTRACTOR TO FIELD VERIFY HORIZONTAL AND VERTICAL LOCATION OF EXISTING UTILITIES PRIOR TO CONSTRUCTION.
2. SEE STORM DRAIN PLAN & PROFILE SHEETS FOR DETAILED INFORMATION ON STORM DRAIN LINES.
3. ALL STORM DRAIN LINES SHALL BE RCP, CLASS III UNLESS OTHERWISE NOTED.

Detention Summary Table

Outfall	Existing Contributing Drainage Area	Proposed Contributing Drainage Area	Existing Release (cfs)				Proposed Release (cfs)			
			2-yr	10-yr	25-yr	100-yr	2-yr	10-yr	25-yr	100-yr
1	EX-N1	Pond 1, Pond 2, DA-N5	23.69	33.13	38.95	48.25	23.23	32.07	38.47	48.21
2	EX-N2, EX-N3	Pond 3	10.05	14.06	16.54	20.49	9.68	13.64	16.30	20.47
3	EX-S1, EX-S2, EX-S3	Pond 4, Pond 5, DA-S4	29.43	41.17	48.41	59.98	29.13	40.64	48.23	59.93

DRAINAGE AREA TABLE

DRAINAGE AREA NO.	AREA (ac)	ANTECEDENT FACTOR	PRE-DEVELOPMENT RUNOFF COEFFICIENT "C"	POST-DEVELOPMENT RUNOFF COEFFICIENT "C"	TIME OF CONCENTRATION (minutes)	RAINFALL INTENSITY "I"100 (in/hr)	PRE-DEVELOPMENT RUNOFF Q100 (cfs)	POST-DEVELOPMENT RUNOFF Q100 (cfs)	COLLECTION POINT
DA-N1	4.91	1.25	0.30	0.55	30	5.62	10.88	18.95	DETENTION POND 1
DA-N2	6.02	1.25	0.30	0.55	30	5.62	12.96	23.26	DETENTION POND 2
DA-N3	9.71	1.25	0.30	0.55	34	5.26	18.97	35.11	CULVERT C, DET. POND 3
DA-N4	3.67	1.25	0.30	0.55	31	5.53	6.21	13.97	DETENTION POND 3
DA-N5	15.50	1.25	0.30	0.55	30	5.63	36.42	60.01	BYPASS, REID BRANCH TRIBUTARY 1
DA-S1	12.49	1.25	0.30	0.55	15	7.86	36.81	67.49	DETENTION POND 5
DA-S2	2.46	1.25	0.30	0.55	15	7.86	7.25	13.27	CULVERT E, DET. POND 4
DA-S3	3.73	1.25	0.30	0.55	18	7.27	10.99	18.63	DETENTION POND 4
DA-S4	16.48	1.25	0.30	0.55	33	5.36	33.12	60.74	REID BRANCH
EX-W1	29.86	1.25	0.55	0.55	56	3.93	80.69	80.69	EX CULVERT A
EX-W2	25.41	1.25	0.55	0.55	59	3.77	65.86	65.86	EX CULVERT B

TIME OF CONCENTRATION
PRE-PROJECT WATERSHED CONDITIONS
TR-55 Methodology

SHEET FLOW: Tc = (0.007(nL)^0.8)/(P2^0.5)(s^0.4); 2-year/24-hr Rainfall Depth (in.) from iSWM = 4
SHALLOW CONCENTRATED FLOW: Tc = L / 60*V
OPEN CHANNEL FLOW: Tc = L / 60*V; V = (1.49/n)*R^(2/3)*s^(1/2)

Basin	SHEET FLOW Length (ft)	$Elev_1$	$Elev_2$	Slope (ft/ft)	Manning's "n"	T_{c1} (min)	SHALLOW CONCENTRATED FLOW Length (ft)	$Elev_2$	$Elev_3$	Slope (ft/ft)	Condition TR-55 Fig. 3-1	V_{avg} (ft/s)	T_{c2} (min)	OPEN CHANNEL FLOW Length (ft)	Manning's "n"	Width (ft)	Side Slope (ft/ft)	Depth (ft)	Area (ft^2)	Perimeter (ft)	Radius (ft)	$Elev_3$	$Elev_4$	Slope (ft/ft)	V_{avg} (ft/s)	T_{c3} (min)	TOTAL T_{cTOTAL} (min)
EX DA-1	300	561.6	559.9	0.006	0.150	34.7	428.29	559.890	543.340	0.0386	Unpaved	3.17	2.3	N/A													37.0
DA-S1	22	603.2	600.9	0.105	0.150	1.3	866	600.900	585.400	0.0179	Unpaved	2.16	6.7	478	0.035	30	4	3.0	126.0	54.7	2.3	585.4	583	0.005	5.3	1.5	10.0
DA-S2	100	594.0	591.0	0.030	0.150	7.5	378	591.000	587.200	0.0101	Unpaved	1.62	3.9	163	0.035	0	4	2.0	16.0	16.5	1.0	587.2	585.4	0.011	6.0	0.5	11.8
DA-S3	300	589.0	579.1	0.033	0.150	17.3	26	579.100	575.500	0.1385	Unpaved	6.00	0.1	138	0.035	40	4	1.0	44.0	48.2	0.9	575.5	574	0.011	4.2	0.6	17.9
DA-S4	300	590.9	581.4	0.032	0.150	17.6	110	581.400	567.000	0.1309	Unpaved	5.84	0.3	2200	0.095	30	4	3.0	126.0	54.7	2.3	567.0	549	0.008	2.5	14.8	32.7
DA-N1	300	601.0	598.1	0.010	0.150	28.2	134	598.100	596.000	0.0157	Unpaved	2.02	1.1	253	0.035	0	4	1.5	9.0	12.4	0.7	596.0	587.8	0.032	6.2	0.7	30.0
DA-N2	300	601.0	598.0	0.010	0.150	27.8	27	598.000	597.800	0.0074	Unpaved	1.39	0.3	779	0.035	0	4	2.5	25.0	20.6	1.2	597.8	585.6	0.016	6.1	2.1	30.3
DA-N3	300	601.0	597.5	0.012	0.150	26.2	750	597.500	589.300	0.0109	Unpaved	1.69	7.4	93	0.035	0	4	4.0	64.0	33.0	1.9	589.3	588.2	0.012	7.2	0.2	33.8
DA-N4	290	591.7	589.5	0.008	0.150	30.3	9	589.500	587.200	0.2556	Unpaved	8.16	0.0	193	0.035	0	4	4.0	64.0	33.0	1.9	587.2	586	0.006	5.2	0.6	30.9
DA-N5	300	597.0	593.2	0.013	0.150	25.3	327	593.170	589.000	0.0739	Unpaved	4.39	1.2	1200	0.035	20	3	8.0	352.0	70.6	5.0	589.0	581	0.007	6.0	3.3	29.8

BENCHMARKS

ELEVATIONS BASED ON CITY OF ALLEN GPS CONTROL

BM#1 (CITY OF ALLEN MONUMENT NO. 2) 3-1/2-INCH ALUMINUM DISC FOUND IN CONCRETE, LOCATED ±350 FEET EAST FROM THE INTERSECTION OF MAIN STREET AND RICHARDSON COURT, ±16 FEET FROM THE NORTHEAST CORNER OF A BRIDGE.

ELEV= 647.13

BM#2 SQUARE WITH "X" CUT SET ON CONCRETE HEADWALL. EAST SIDE OF COUNTRY CLUB ROAD (F.M. NO. 1378), AT THE INTERSECTION OF COUNTRY CLUB ROAD AND ESTATES PARKWAY (F.M. NO. 2170).

ELEV= 587.52

BM#3 SQUARE WITH "X" CUT SET ON CONCRETE HEADWALL, EAST SIDE OF COUNTRY CLUB ROAD (F.M. NO. 1378). ±240 FEET NORTH FROM THE CENTERLINE INTERSECTION OF COUNTRY CLUB ROAD AND SKYVIEW DRIVE

ELEV= 589.81

REVISIONS | No. | DATE | BY

Kimley»Horn

13455 NOEL ROAD, SUITE 700, DALLAS, TX 75240
PHONE: 972-770-1300
WWW.KIMLEY-HORN.COM
TEXAS REGISTERED ENGINEERING FIRM F-928

STATE OF TEXAS
SARAH E. SCOTT
113285
LICENSED PROFESSIONAL ENGINEER
1/31/2022

KHA PROJECT 064041015
DATE JANUARY 2022
SCALE: AS SHOWN
DESIGNED BY: CRA
DRAWN BY: HCL
CHECKED BY: SES

DRAINAGE AREA MAP (2 OF 2)

HENDRICK FARM
CITY OF LUCAS
COLLIN COUNTY, TEXAS

SHEET NUMBER
C-22

Drainage / Detention Calculations for Pond 1
Modified Rational Method
100-Year Event

Existing Conditions	
Drainage Area	EX-N1
Area	27.53 acres
Time (T_c)	36.0 minutes
C value	0.35
I_{100}	5.01 in/hr
Q_{100}	**48.25 cfs**

Proposed Conditions to Pond		Bypass	
Drainage Area	DA-N1	Drainage Area	DA-N5 Bypass
Area	4.9 acres	Area	10.9 acres
Time (T_c)	29.8 minutes	Time (T_c)	31.3 minutes
C value	0.55	C value	0.55
I_{100}	5.58 in/hr	I_{100}	5.43 in/hr
Q_{100}	**15.04 cfs**	Q_{100}	**32.55 cfs**

5.14 cfs **Allowable Release**
5.00 cfs **Actual Release**

Runoff per Storm Event - Developed

Time (min.)	I_{100}	C value	Area (ac)	Runoff (cfs)
10	9.48	0.55	4.90	25.55
15	7.96	0.55	4.90	21.45
20	6.92	0.55	4.90	18.64
30	5.56	0.55	4.90	14.99
40	4.71	0.55	4.90	12.68
50	4.11	0.55	4.90	11.08
60	3.67	0.55	4.90	9.88
70	3.32	0.55	4.90	8.96
80	3.05	0.55	4.90	8.22
90	2.82	0.55	4.90	7.61
100	2.63	0.55	4.90	7.10
110	2.47	0.55	4.90	6.66
120	2.33	0.55	4.90	6.28
130	2.21	0.55	4.90	5.95
140	2.10	0.55	4.90	5.66
150	2.00	0.55	4.90	5.40
160	1.92	0.55	4.90	5.17
180	1.77	0.55	4.90	4.77
360	1.09	0.55	4.90	2.95
720	0.67	0.55	4.90	1.81
1440	0.41	0.55	4.90	1.10

Inflow per Storm Event

Storm Event	Runoff (cfs)	Inflow (ft^3)
10	25.55	15,329
15	21.45	19,307
20	18.64	22,371
30	14.99	26,978
40	12.68	30,436
50	11.08	33,227
60	9.88	35,581
70	8.96	37,628
80	8.22	39,444
90	7.61	41,082
100	7.10	42,578
110	6.66	43,957
120	6.28	45,238
130	5.95	46,436
140	5.66	47,563
150	5.40	48,628
160	5.17	49,638
180	4.77	51,518
360	2.95	63,664
720	1.81	78,070
1440	1.10	95,360

Outflow per Storm Event

Storm	Time	Release	Outflow (ft^3)
10	39.8	5.00	5,975
15	44.8	5.00	6,725
20	49.8	5.00	7,476
30	59.8	5.00	8,977
40	69.8	5.00	10,478
50	79.8	5.00	11,980
60	89.8	5.00	13,481
70	99.8	5.00	14,982
80	109.8	5.00	16,483
90	119.8	5.00	17,984
100	129.8	5.00	19,486
110	139.8	5.00	20,987
120	149.8	5.00	22,488
130	159.8	5.00	23,989
140	169.8	5.00	25,490
150	179.8	5.00	26,992
160	189.8	5.00	28,493
180	209.8	5.00	31,495
360	389.8	5.00	58,517
720	749.8	5.00	112,560
1440	1469.8	5.00	220,646

Detention Volume

Storm	Inflow	Outflow	Storage (ft^3)	
10	15,329	5,975	9,354	
15	19,307	6,725	12,582	
20	22,371	7,476	14,895	
30	26,978	8,977	18,000	
40	30,436	10,478	19,957	
50	33,227	11,980	21,247	
60	35,581	13,481	22,100	
70	37,628	14,982	22,646	
80	39,444	16,483	22,961	
90	41,082	17,984	23,098	**<== Controls 0.53 ac-ft**
100	42,578	19,486	23,092	
110	43,957	20,987	22,970	
120	45,238	22,488	22,750	
130	46,436	23,989	22,447	
140	47,563	25,490	22,073	
150	48,628	26,992	21,636	
160	49,638	28,493	21,145	
180	51,518	31,495	20,022	
360	63,664	58,517	5,147	
720	78,070	112,560	(34,490)	
1440	95,360	220,646	(125,287)	

Drainage / Detention Calculations for Pond 2
Modified Rational Method
100-Year Event

Existing Conditions	
Drainage Area	EX-N1
Area	27.53 acres
Time (T_c)	36.0 minutes
C value	0.35
I_{100}	5.01 in/hr
Q_{100}	**48.25 cfs**

Proposed Conditions to Pond		Bypass	
Drainage Area	DA-N5 East, N2	Drainage Area	DA-N5 Bypass
Area	10.61 acres	Area	10.9 acres
Time (T_c)	32.3 minutes	Time (T_c)	31.3 minutes
C value	0.55	C value	0.55
I_{100}	5.33 in/hr	I_{100}	5.43 in/hr
Q_{100}	**31.12 cfs**	Q_{100}	**32.55 cfs**

10.70 cfs **Allowable Release**
10.56 cfs **Actual Release**

Runoff per Storm Event - Developed

Time (min.)	I_{100}	C value	Area (ac)	Runoff (cfs)
10	9.48	0.55	10.61	55.32
15	7.96	0.55	10.61	46.45
20	6.92	0.55	10.61	40.37
30	5.56	0.55	10.61	32.45
40	4.71	0.55	10.61	27.46
50	4.11	0.55	10.61	23.98
60	3.67	0.55	10.61	21.40
70	3.32	0.55	10.61	19.40
80	3.05	0.55	10.61	17.79
90	2.82	0.55	10.61	16.47
100	2.63	0.55	10.61	15.37
110	2.47	0.55	10.61	14.42
120	2.33	0.55	10.61	13.60
130	2.21	0.55	10.61	12.89
140	2.10	0.55	10.61	12.26
150	2.00	0.55	10.61	11.70
160	1.92	0.55	10.61	11.20
180	1.77	0.55	10.61	10.33
360	1.09	0.55	10.61	6.38
720	0.67	0.55	10.61	3.91
1440	0.41	0.55	10.61	2.39

Inflow per Storm Event

Storm Event	Runoff (cfs)	Inflow (ft^3)
10	55.32	33,192
15	46.45	41,806
20	40.37	48,439
30	32.45	58,415
40	27.46	65,903
50	23.98	71,946
60	21.40	77,044
70	19.40	81,475
80	17.79	85,408
90	16.47	88,956
100	15.37	92,194
110	14.42	95,180
120	13.60	97,954
130	12.89	100,548
140	12.26	102,988
150	11.70	105,294
160	11.20	107,481
180	10.33	111,551
360	6.38	137,851
720	3.91	169,045
1440	2.39	206,483

Outflow per Storm Event

Storm	Time	Release	Outflow (ft^3)
10	42.3	10.56	13,406
15	47.3	10.56	14,990
20	52.3	10.56	16,575
30	62.3	10.56	19,744
40	72.3	10.56	22,913
50	82.3	10.56	26,083
60	92.3	10.56	29,252
70	102.3	10.56	32,421
80	112.3	10.56	35,590
90	122.3	10.56	38,759
100	132.3	10.56	41,929
110	142.3	10.56	45,098
120	152.3	10.56	48,267
130	162.3	10.56	51,436
140	172.3	10.56	54,605
150	182.3	10.56	57,775
160	192.3	10.56	60,944
180	212.3	10.56	67,282
360	392.3	10.56	124,328
720	752.3	10.56	238,419
1440	1472.3	10.56	466,601

Detention Volume

Storm	Inflow	Outflow	Storage (ft^3)	
10	33,192	13,406	19,787	
15	41,806	14,990	26,815	
20	48,439	16,575	31,864	
30	58,415	19,744	38,671	
40	65,903	22,913	42,990	
50	71,946	26,083	45,864	
60	77,044	29,252	47,793	
70	81,475	32,421	49,054	
80	85,408	35,590	49,818	
90	88,956	38,759	50,196	
100	92,194	41,929	50,266	**<== Controls 1.15 ac-ft**
110	95,180	45,098	50,082	
120	97,954	48,267	49,687	
130	100,548	51,436	49,112	
140	102,988	54,605	48,383	
150	105,294	57,775	47,519	
160	107,481	60,944	46,537	
180	111,551	67,282	44,269	
360	137,851	124,328	13,523	
720	169,045	238,419	(69,374)	
1440	206,483	466,601	(260,119)	

Drainage / Detention Calculations for Pond 3
Modified Rational Method
100-Year Event

Existing Conditions	
Drainage Area	EX-N2, EX-N3
Area	11.88 acres
Time (T_c)	37.0 minutes
C value	0.35
I_{100}	4.93 in/hr
Q_{100}	**20.49 cfs**

Proposed Conditions to Pond		Bypass	
Drainage Area	DA-N3, DA-N4	Drainage Area	
Area	13.38 acres	Area	0 acres
Time (T_c)	34.0 minutes	Time (T_c)	0.0 minutes
C value	0.55	C value	0.00
I_{100}	5.18 in/hr	I_{100}	16.86 in/hr
Q_{100}	**38.10 cfs**	Q_{100}	**0.00 cfs**

20.49 cfs **Allowable Release**
20.47 cfs **Actual Release**

Runoff per Storm Event - Developed

Time (min.)	I_{100}	C value	Area (ac)	Runoff (cfs)
10	9.48	0.55	13.38	69.76
15	7.96	0.55	13.38	58.58
20	6.92	0.55	13.38	50.90
30	5.56	0.55	13.38	40.93
40	4.71	0.55	13.38	34.63
50	4.11	0.55	13.38	30.24
60	3.67	0.55	13.38	26.99
70	3.32	0.55	13.38	24.46
80	3.05	0.55	13.38	22.44
90	2.82	0.55	13.38	20.77
100	2.63	0.55	13.38	19.38
110	2.47	0.55	13.38	18.19
120	2.33	0.55	13.38	17.16
130	2.21	0.55	13.38	16.26
140	2.10	0.55	13.38	15.46
150	2.00	0.55	13.38	14.75
160	1.92	0.55	13.38	14.12
180	1.77	0.55	13.38	13.03
360	1.09	0.55	13.38	8.05
720	0.67	0.55	13.38	4.93
1440	0.41	0.55	13.38	3.01

Inflow per Storm Event

Storm Event	Runoff (cfs)	Inflow (ft^3)
10	69.76	41,858
15	58.58	52,720
20	50.90	61,085
30	40.93	73,665
40	34.63	83,109
50	30.24	90,729
60	26.99	97,159
70	24.46	102,746
80	22.44	107,706
90	20.77	112,180
100	19.38	116,264
110	18.19	120,029
120	17.16	123,527
130	16.26	126,799
140	15.46	129,876
150	14.75	132,783
160	14.12	135,542
180	13.03	140,675
360	8.05	173,840
720	4.93	213,179
1440	3.01	260,390

Outflow per Storm Event

Storm	Time	Release	Outflow (ft^3)
10	44.0	20.47	27,020
15	49.0	20.47	30,091
20	54.0	20.47	33,161
30	64.0	20.47	39,302
40	74.0	20.47	45,443
50	84.0	20.47	51,584
60	94.0	20.47	57,725
70	104.0	20.47	63,866
80	114.0	20.47	70,007
90	124.0	20.47	76,148
100	134.0	20.47	82,289
110	144.0	20.47	88,430
120	154.0	20.47	94,571
130	164.0	20.47	100,712
140	174.0	20.47	106,853
150	184.0	20.47	112,994
160	194.0	20.47	119,135
180	214.0	20.47	131,417
360	394.0	20.47	241,955
720	754.0	20.47	463,031
1440	1474.0	20.47	905,183

Detention Volume

Storm	Inflow	Outflow	Storage (ft^3)	
10	41,858	27,020	14,838	
15	52,720	30,091	22,629	
20	61,085	33,161	27,924	
30	73,665	39,302	34,363	
40	83,109	45,443	37,665	
50	90,729	51,584	39,145	
60	97,159	57,725	39,433	**<== Controls 0.91 ac-ft**
70	102,746	63,866	38,880	
80	107,706	70,007	37,699	
90	112,180	76,148	36,031	
100	116,264	82,289	33,974	
110	120,029	88,430	31,598	
120	123,527	94,571	28,956	
130	126,799	100,712	26,087	
140	129,876	106,853	23,023	
150	132,783	112,994	19,789	
160	135,542	119,135	16,406	
180	140,675	131,417	9,257	
360	173,840	241,955	(68,115)	
720	213,179	463,031	(249,853)	
1440	260,390	905,183	(644,793)	

Drainage / Detention Calculations for Pond 4
Modified Rational Method
100-Year Event

Existing Conditions	
Drainage Area	EX-S1, EX-S2, EX-S3
Area	34.61 acres
Time (T_c)	36.7 minutes
C value	0.35
I_{100}	4.95 in/hr
Q_{100}	**59.98 cfs**

Proposed Conditions to Pond		Bypass	
Drainage Area	DA-S2, DA-S3	Drainage A	DA-S4
Area	6.19 acres	Area	16.48 acres
Time (T_c)	17.9 minutes	Time (T_c)	32.7 minutes
C value	0.55	C value	0.55
I_{100}	7.31 in/hr	I_{100}	5.29 in/hr
Q_{100}	**24.90 cfs**	Q_{100}	**47.99 cfs**

4.82 cfs **Allowable Release**
4.77 cfs **Actual Release**

Runoff per Storm Event - Developed

Time (min.)	I_{100}	C value	Area (ac)	Runoff (cfs)
10	9.48	0.55	6.19	32.27
15	7.96	0.55	6.19	27.10
20	6.92	0.55	6.19	23.55
30	5.56	0.55	6.19	18.93
40	4.71	0.55	6.19	16.02
50	4.11	0.55	6.19	13.99
60	3.67	0.55	6.19	12.49
70	3.32	0.55	6.19	11.32
80	3.05	0.55	6.19	10.38
90	2.82	0.55	6.19	9.61
100	2.63	0.55	6.19	8.96
110	2.47	0.55	6.19	8.41
120	2.33	0.55	6.19	7.94
130	2.21	0.55	6.19	7.52
140	2.10	0.55	6.19	7.15
150	2.00	0.55	6.19	6.83
160	1.92	0.55	6.19	6.53
180	1.77	0.55	6.19	6.03
360	1.09	0.55	6.19	3.72
720	0.67	0.55	6.19	2.28
1440	0.41	0.55	6.19	1.39

Inflow per Storm Event

Storm Event	Runoff (cfs)	Inflow (ft^3)
10	32.27	19,365
15	27.10	24,390
20	23.55	28,260
30	18.93	34,080
40	16.02	38,449
50	13.99	41,974
60	12.49	44,949
70	11.32	47,534
80	10.38	49,828
90	9.61	51,898
100	8.96	53,787
110	8.41	55,529
120	7.94	57,147
130	7.52	58,661
140	7.15	60,085
150	6.83	61,430
160	6.53	62,706
180	6.03	65,080
360	3.72	80,424
720	2.28	98,623
1440	1.39	120,464

Outflow per Storm Event

Storm	Time	Release	Outflow (ft^3)
10	27.9	4.77	3,992
15	32.9	4.77	4,708
20	37.9	4.77	5,423
30	47.9	4.77	6,854
40	57.9	4.77	8,285
50	67.9	4.77	9,716
60	77.9	4.77	11,147
70	87.9	4.77	12,578
80	97.9	4.77	14,009
90	107.9	4.77	15,440
100	117.9	4.77	16,871
110	127.9	4.77	18,302
120	137.9	4.77	19,733
130	147.9	4.77	21,164
140	157.9	4.77	22,595
150	167.9	4.77	24,026
160	177.9	4.77	25,457
180	197.9	4.77	28,319
360	377.9	4.77	54,077
720	737.9	4.77	105,593
1440	1457.9	4.77	208,625

Detention Volume

Storm	Inflow	Outflow	Storage (ft^3)	
10	19,365	3,992	15,372	
15	24,390	4,708	19,682	
20	28,260	5,423	22,836	
30	34,080	6,854	27,225	
40	38,449	8,285	30,163	
50	41,974	9,716	32,258	
60	44,949	11,147	33,801	
70	47,534	12,578	34,955	
80	49,828	14,009	35,819	
90	51,898	15,440	36,457	
100	53,787	16,871	36,916	
110	55,529	18,302	37,226	
120	57,147	19,733	37,414	
130	58,661	21,164	37,497	<== Controls 0.86 ac-ft
140	60,085	22,595	37,489	
150	61,430	24,026	37,403	
160	62,706	25,457	37,248	
180	65,080	28,319	36,761	
360	80,424	54,077	26,346	
720	98,623	105,593	(6,970)	
1440	120,464	208,625	(88,161)	

Drainage / Detention Calculations for Pond 5
Modified Rational Method
100-Year Event

Existing Conditions	
Drainage Area	EX-S1, EX-S2, EX-S3
Area	34.61 acres
Time (T_c)	36.7 minutes
C value	0.35
I_{100}	4.95 in/hr
Q_{100}	**59.98 cfs**

Proposed Conditions to Pond		Bypass	
Drainage Area	DA-S1	Drainage A	DA-S4
Area	12.49 acres	Area	16.48 acres
Time (T_c)	24.4 minutes	Time (T_c)	32.7 minutes
C value	0.55	C value	0.55
I_{100}	6.23 in/hr	I_{100}	5.29 in/hr
Q_{100}	**42.81 cfs**	Q_{100}	**47.99 cfs**

7.22 cfs **Allowable Release**
7.17 cfs **Actual Release**

Runoff per Storm Event - Developed

Time (min.)	I_{100}	C value	Area (ac)	Runoff (cfs)
10	9.48	0.55	12.49	65.12
15	7.96	0.55	12.49	54.68
20	6.92	0.55	12.49	47.52
30	5.56	0.55	12.49	38.20
40	4.71	0.55	12.49	32.33
50	4.11	0.55	12.49	28.23
60	3.67	0.55	12.49	25.19
70	3.32	0.55	12.49	22.84
80	3.05	0.55	12.49	20.95
90	2.82	0.55	12.49	19.39
100	2.63	0.55	12.49	18.09
110	2.47	0.55	12.49	16.98
120	2.33	0.55	12.49	16.02
130	2.21	0.55	12.49	15.17
140	2.10	0.55	12.49	14.43
150	2.00	0.55	12.49	13.77
160	1.92	0.55	12.49	13.18
180	1.77	0.55	12.49	12.16
360	1.09	0.55	12.49	7.51
720	0.67	0.55	12.49	4.61
1440	0.41	0.55	12.49	2.81

Inflow per Storm Event

Storm Event	Runoff (cfs)	Inflow (ft^3)
10	65.12	39,074
15	54.68	49,213
20	47.52	57,022
30	38.20	68,765
40	32.33	77,580
50	28.23	84,694
60	25.19	90,696
70	22.84	95,912
80	20.95	100,542
90	19.39	104,718
100	18.09	108,530
110	16.98	112,045
120	16.02	115,310
130	15.17	118,365
140	14.43	121,237
150	13.77	123,951
160	13.18	126,526
180	12.16	131,317
360	7.51	162,277
720	4.61	198,999
1440	2.81	243,070

Outflow per Storm Event

Storm	Time	Release	Outflow (ft^3)
10	34.4	7.17	7,394
15	39.4	7.17	8,469
20	44.4	7.17	9,544
30	54.4	7.17	11,693
40	64.4	7.17	13,843
50	74.4	7.17	15,992
60	84.4	7.17	18,142
70	94.4	7.17	20,291
80	104.4	7.17	22,441
90	114.4	7.17	24,590
100	124.4	7.17	26,740
110	134.4	7.17	28,889
120	144.4	7.17	31,039
130	154.4	7.17	33,188
140	164.4	7.17	35,338
150	174.4	7.17	37,487
160	184.4	7.17	39,637
180	204.4	7.17	43,936
360	384.4	7.17	82,627
720	744.4	7.17	160,009
1440	1464.4	7.17	314,773

Detention Volume

Storm	Inflow	Outflow	Storage (ft^3)	
10	39,074	7,394	31,679	
15	49,213	8,469	40,744	
20	57,022	9,544	47,478	
30	68,765	11,693	57,072	
40	77,580	13,843	63,738	
50	84,694	15,992	68,702	
60	90,696	18,142	72,554	
70	95,912	20,291	75,621	
80	100,542	22,441	78,101	
90	104,718	24,590	80,127	
100	108,530	26,740	81,790	
110	112,045	28,889	83,155	
120	115,310	31,039	84,272	
130	118,365	33,188	85,176	
140	121,237	35,338	85,899	
150	123,951	37,487	86,464	
160	126,526	39,637	86,889	<== Controls 1.99 ac-ft
180	131,317	43,936	87,382	
360	162,277	82,627	79,650	
720	198,999	160,009	38,990	
1440	243,070	314,773	(71,703)	

Detention Pond 1 - Outfall Structure Summary

Design Storm	Elevation	Opening #1			Opening #2			Opening #3			Total	
		Weir	Orifice	Actual	Weir	Orifice	Actual	Weir	Orifice	Actual	Actual	Max
2-year	587.70	2.3	3.1	2.3	0.0	0.0	0.0	0.0	0.0	0.0	2.32	3.65
10-year	587.93	3.6	3.6	3.6	0.0	0.0	0.0	0.0	0.0	0.0	3.58	4.23
25-year	588.10	4.6	3.9	3.9	0.2	0.0	0.2	0.0	0.0	0.0	4.12	4.76
100-year	588.34	6.2	3.8	3.8	1.2	1.4	1.2	0.0	0.0	0.0	5.00	5.14

Detention Pond 2 - Outfall Structure Summary

Design Storm	Elevation	Opening #1			Opening #2			Opening #3			Total	
		Weir	Orifice	Actual	Weir	Orifice	Actual	Weir	Orifice	Actual	Actual	Max
2-year	576.23	3.4	3.7	3.4	0.6	0.0	0.6	0.0	0.0	0.0	4.00	5.33
10-year	576.58	5.0	4.2	4.2	2.3	0.0	2.3	0.0	0.0	0.0	6.50	7.15
25-year	576.82	6.1	4.5	4.5	3.9	3.4	3.4	0.0	0.0	0.0	7.90	8.54
100-year	577.12	7.7	4.4	4.4	6.2	7.7	6.2	0.0	0.0	0.0	10.56	10.70

Detention Pond 3 - Outfall Structure Summary

Design Storm	Elevation	Opening #1			Opening #2			Opening #3			Total	
		Weir	Orifice	Actual	Weir	Orifice	Actual	Weir	Orifice	Actual	Actual	Max
2-year	587.55	9.7	16.7	9.7	0.0	0.0	0.0	0.0	0.0	0.0	9.68	10.05
10-year	587.95	13.6	18.7	13.6	0.0	0.0	0.0	0.0	0.0	0.0	13.64	14.06
25-year	588.14	15.7	19.6	15.7	0.6	0.0	0.6	0.0	0.0	0.0	16.30	16.54
100-year	588.44	19.1	17.0	17.0	3.5	4.2	3.5	0.0	0.0	0.0	20.47	20.49

Detention Pond 4 - Outfall Structure Summary

Design Storm	Elevation	Opening #1			Opening #2			Opening #3			Total	
		Weir	Orifice	Actual	Weir	Orifice	Actual	Weir	Orifice	Actual	Actual	Max
2-year	575.78	4.2	2.2	2.2	0.0	0.0	0.0	0.0	0.0	0.0	2.19	2.37
10-year	576.23	5.8	2.4	2.4	0.4	0.0	0.4	0.0	0.0	0.0	2.88	3.25
25-year	576.41	6.5	2.5	2.5	1.0	1.2	1.0	0.0	0.0	0.0	3.59	3.76
100-year	576.68	7.7	2.5	2.5	2.2	2.5	2.2	0.0	0.0	0.0	4.77	4.82

Detention Pond 5 - Outfall Structure Summary

Design Storm	Elevation	Opening #1			Opening #2			Opening #3			Total	
		Weir	Orifice	Actual	Weir	Orifice	Actual	Weir	Orifice	Actual	Actual	Max
2-year	585.39	7.4	3.3	3.3	0.0	0.0	0.0	0.0	0.0	0.0	3.31	3.61
10-year	585.84	9.6	3.6	3.6	1.2	1.4	1.2	0.0	0.0	0.0	4.75	5.29
25-year	586.06	10.7	3.7	3.7	2.1	2.4	2.1	0.0	0.0	0.0	5.88	6.06
100-year	586.38	12.4	3.7	3.7	3.9	3.4	3.4	0.0	0.0	0.0	7.17	7.22

No.	REVISIONS	DATE	BY

Kimley»Horn

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TEXAS REGISTERED ENGINEERING FIRM F-928

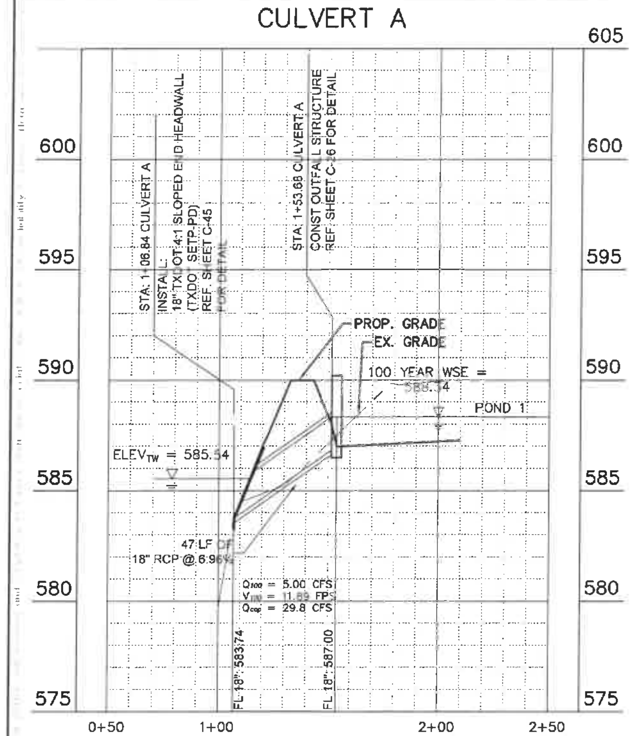
STATE OF TEXAS
SARAH E. SCOTT
113285
LICENSED
PROFESSIONAL ENGINEER
1/31/2022

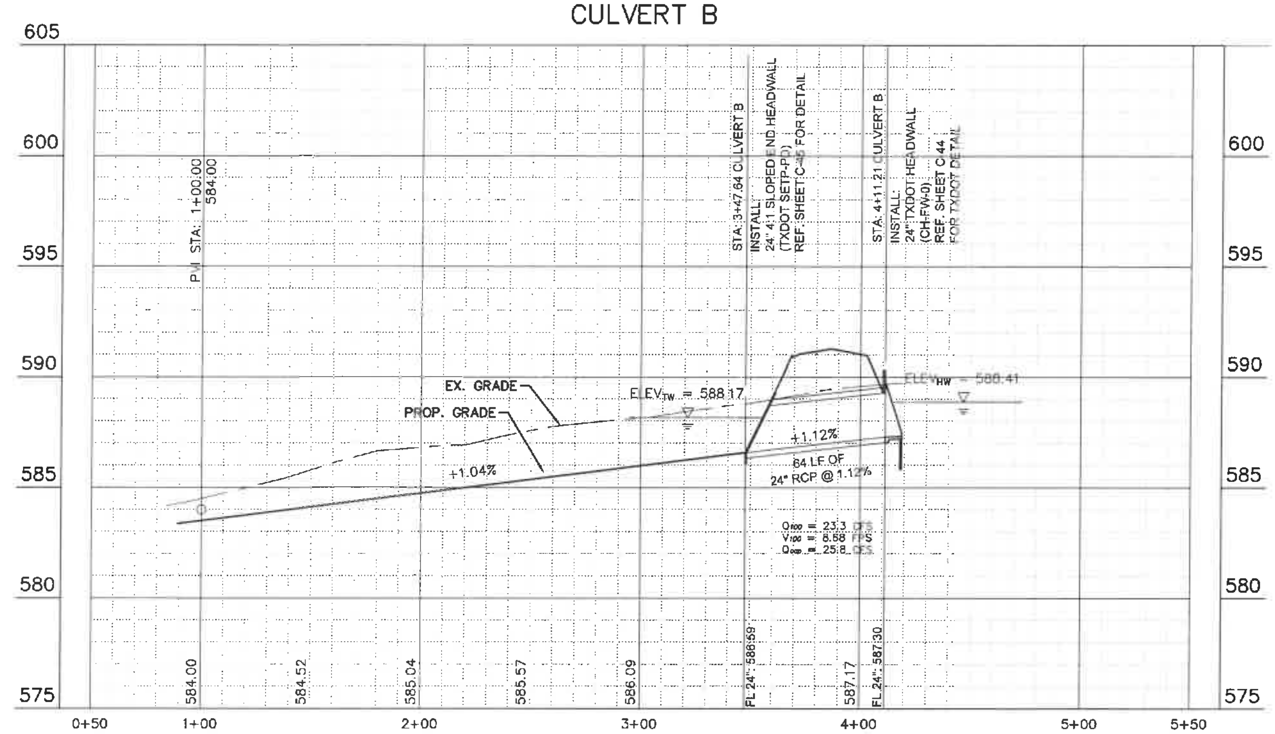
KHA PROJECT 064041015
DATE JANUARY 2022
SCALE: AS SHOWN
DESIGNED BY: CRA
DRAWN BY: HCL
CHECKED BY: SES

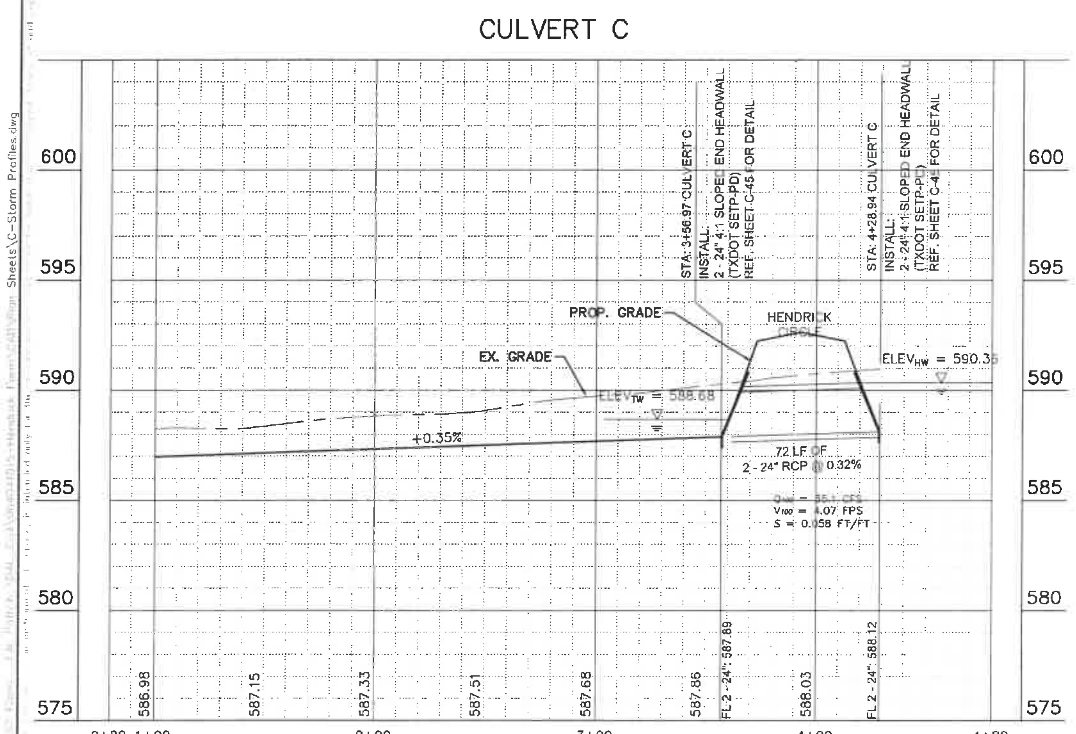
DRAINAGE CALCULATIONS

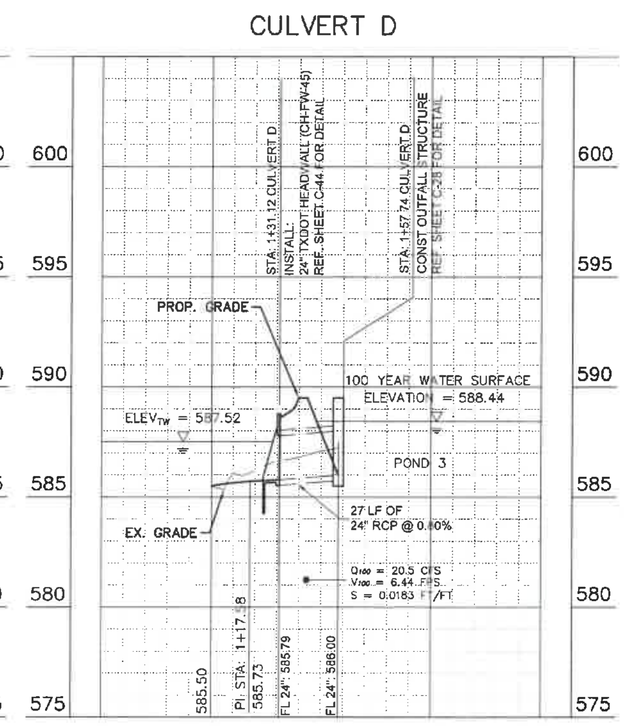
HENDRICK FARM
CITY OF LUCAS
COLLIN COUNTY, TEXAS

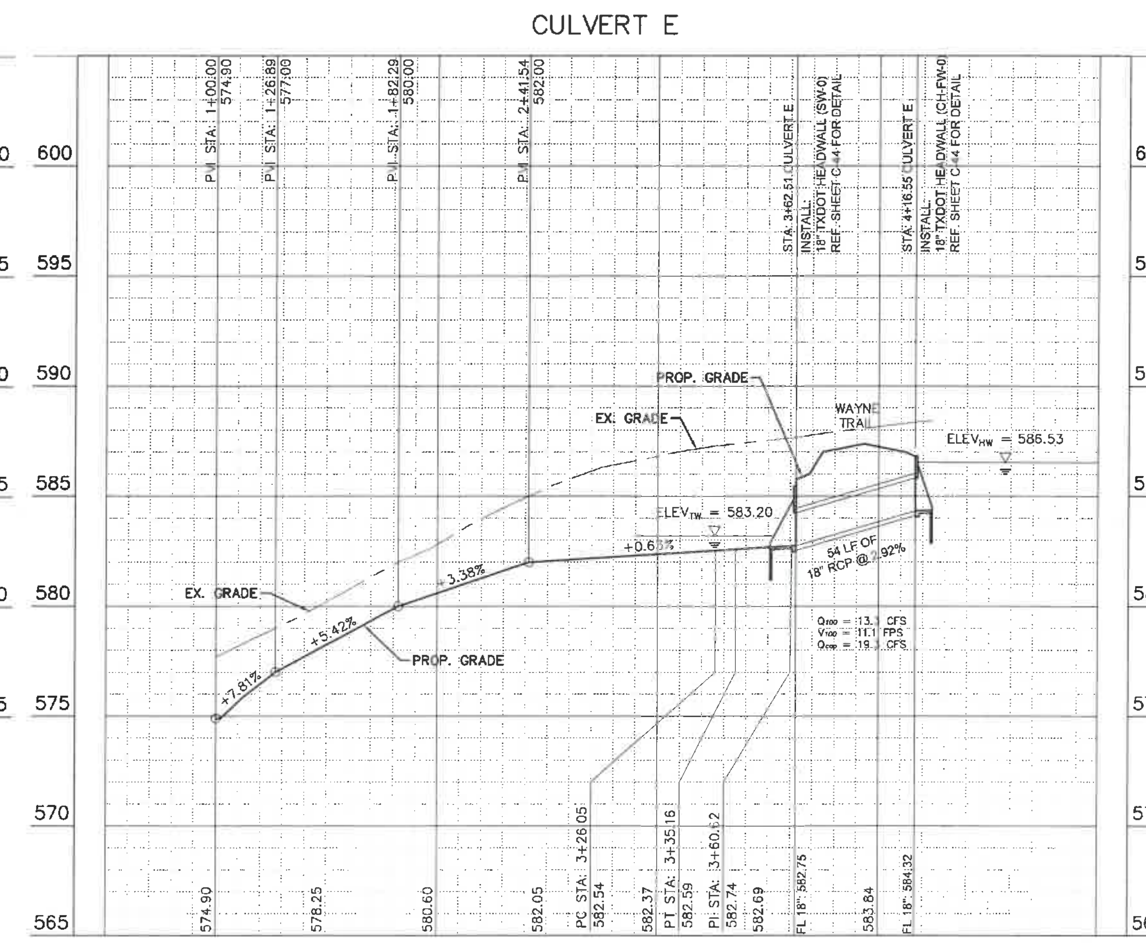
SHEET NUMBER
C-23











REVISIONS

No.	REVISIONS	DATE	BY

Kimley»Horn

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TEXAS REGISTERED ENGINEERING FIRM F-928

STATE OF TEXAS
SARAH E. SCOTT
113285
LICENSED
PROFESSIONAL ENGINEER
1/31/2022

KHA PROJECT	DATE	SCALE:	DESIGNED BY:	DRAWN BY:	CHECKED BY:
064041015	JANUARY 2022	AS SHOWN	CRA	HCL	SES

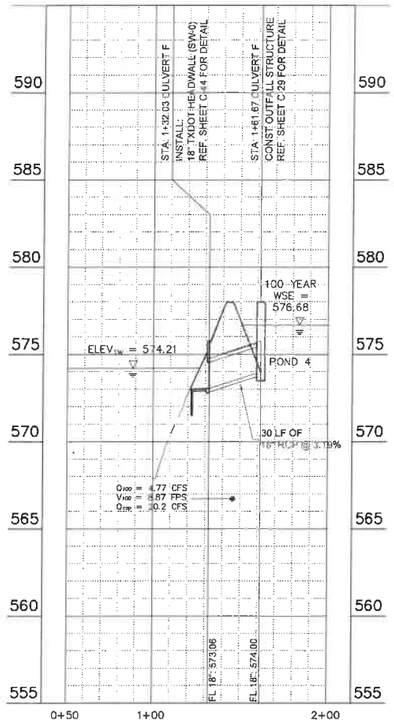
STORM PROFILES (1 OF 2)

HENDRICK FARM

CITY OF LUCAS
COLLIN COUNTY, TEXAS

SHEET NUMBER
C-24

CULVERT F



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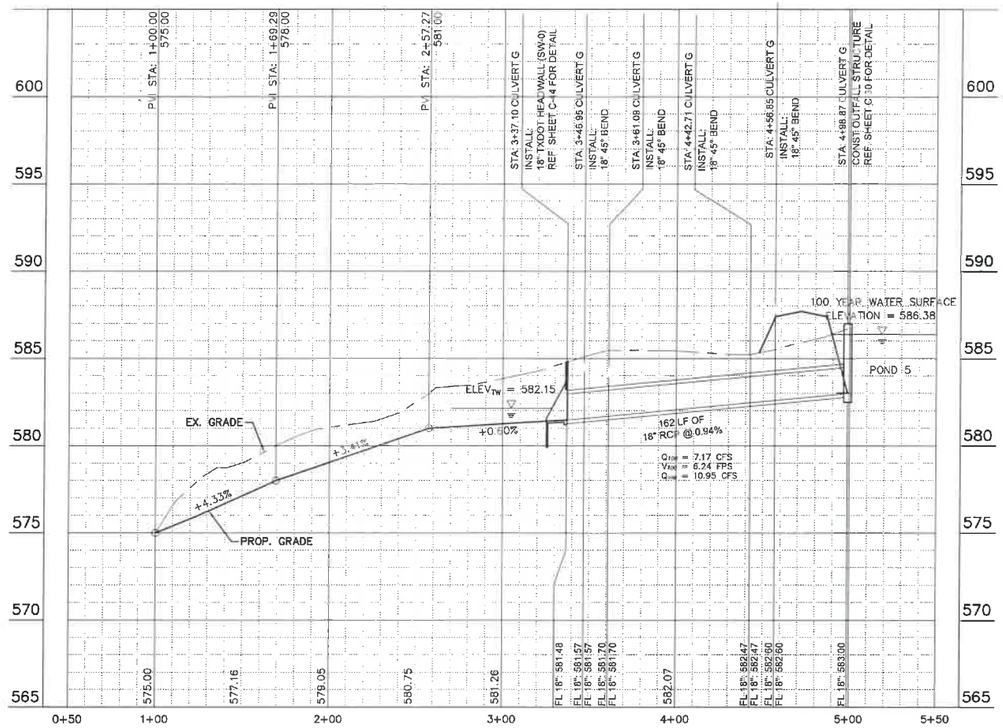

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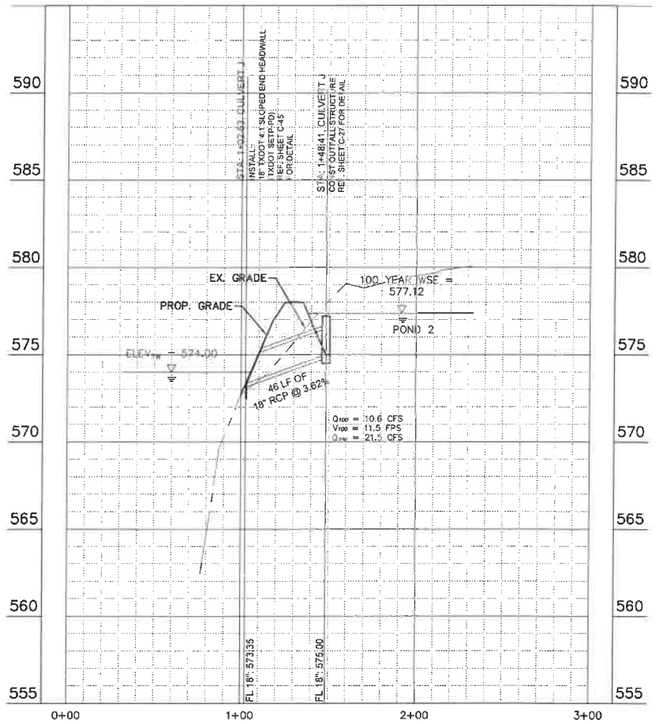

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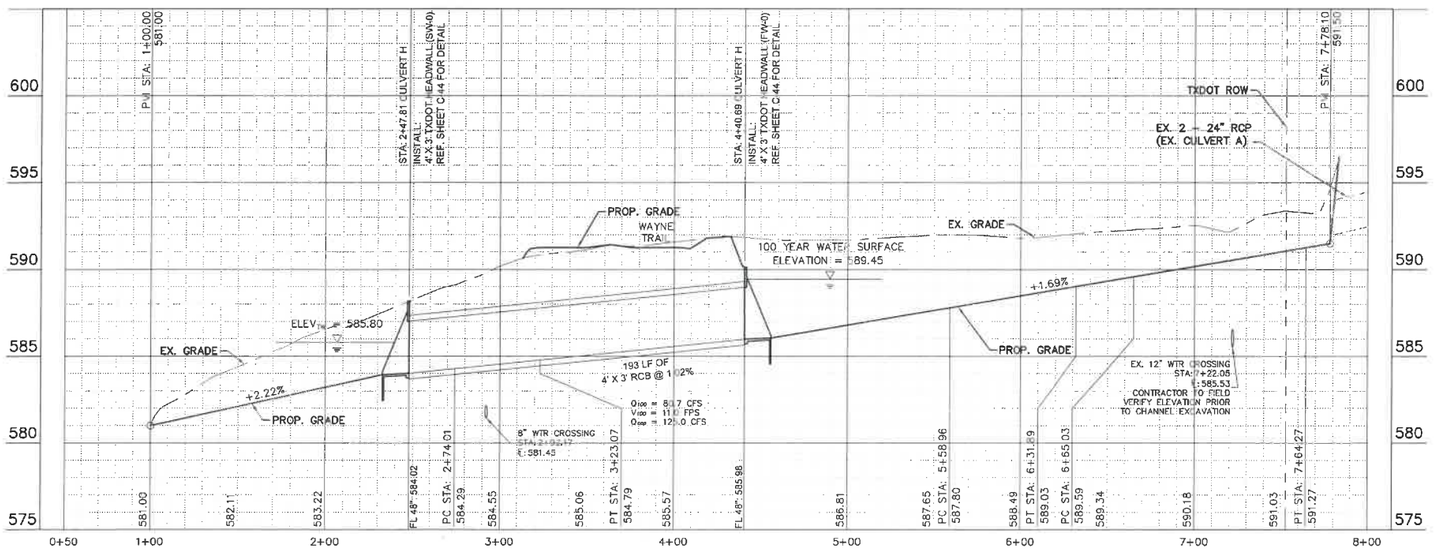

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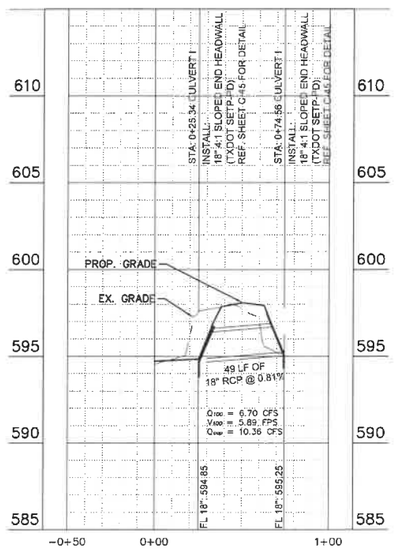

No.	REVISIONS	DATE	BY

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TEXAS REGISTERED ENGINEERING FIRM F-928

STATE OF TEXAS
SARAH E. SCOTT
113285
LICENSED
PROFESSIONAL ENGINEER
1/31/2022

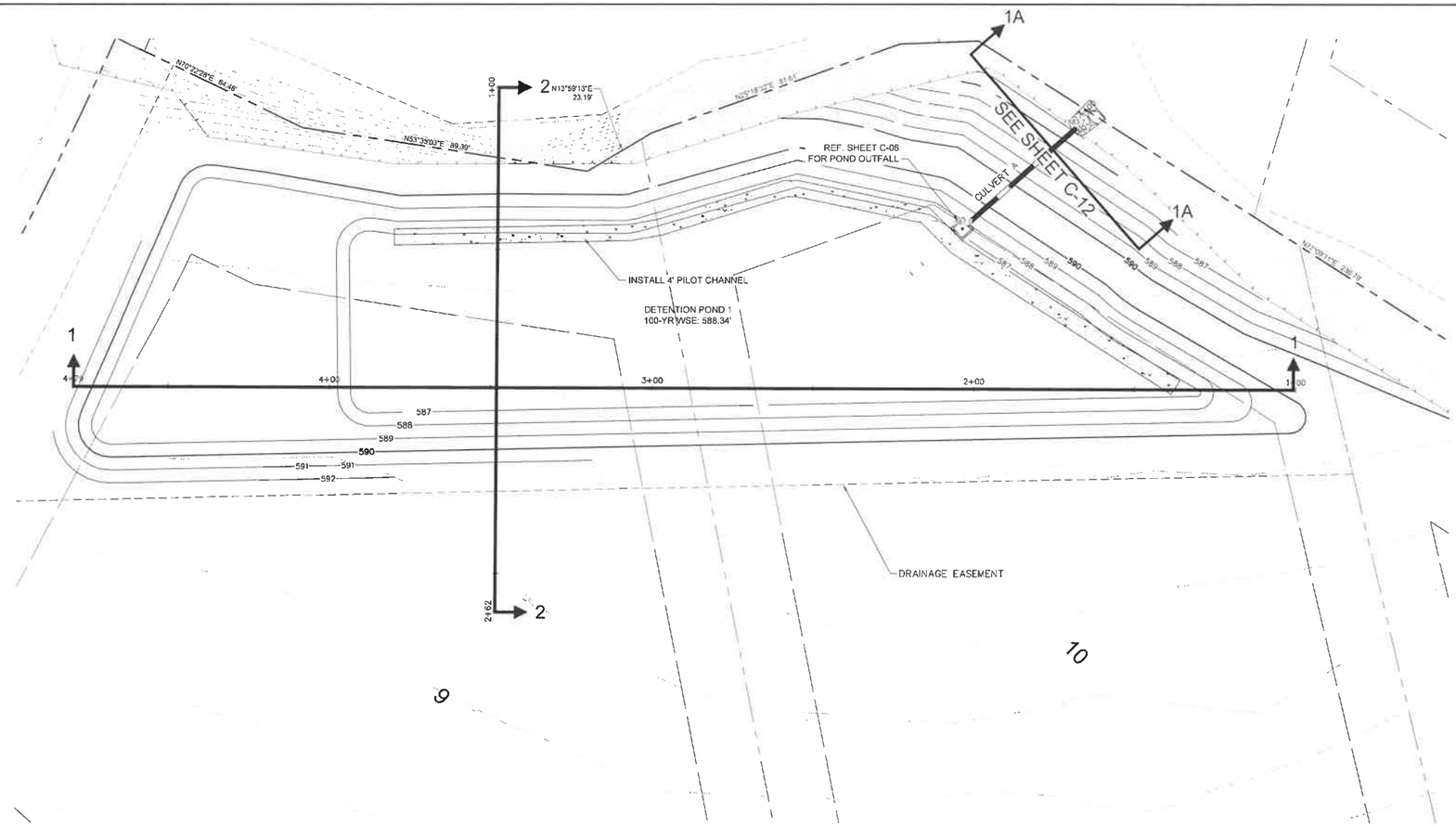
KHA PROJECT	068041015
DATE	JANUARY 2022
SCALE	AS SHOWN
DESIGNED BY:	CRA
DRAWN BY:	HCL
CHECKED BY:	SES

STORM PROFILES (2 OF 2)

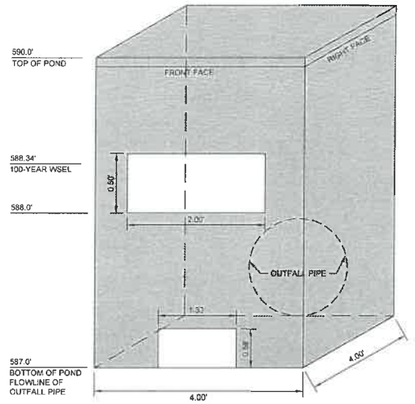
HENDRICK FARM

CITY OF LUCAS
COLLIN COUNTY, TEXAS

SHEET NUMBER
C-25



POND 1 OUTFALL STRUCTURE DETAIL



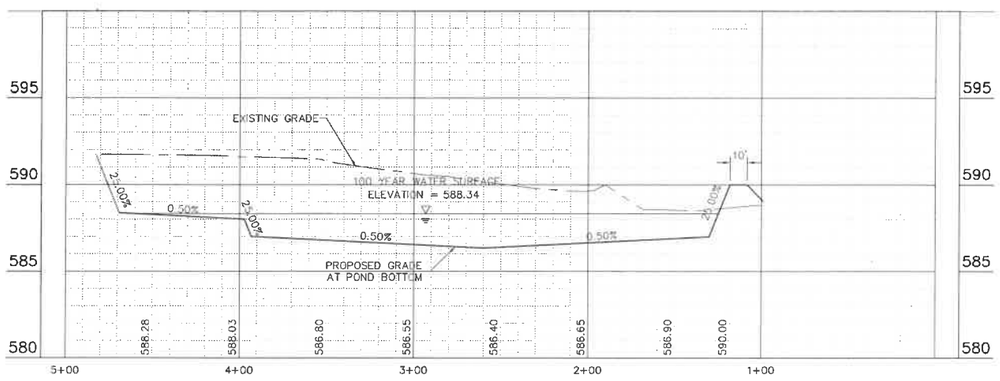
Detention Pond 1 - Summary Table

Elevation	Area (ac)	Volume (ac-ft)	Volume (ft^3)
587.0	0.30	0.00	0
588.0	0.44	0.37	16,046
589.0	0.52	0.85	36,978
590.0	0.60	1.41	61,357

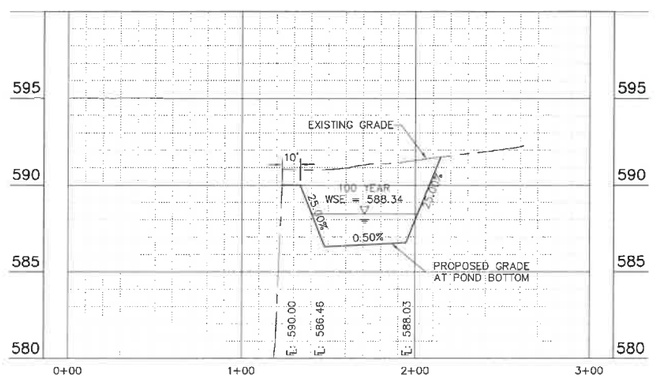
Detention Pond 1 - Water Suface Elevation Summary

Storm Event	Elevation	Volume
2-yr (MRM Calcs) =	587.70	0.26
10-yr (MRM Calcs) =	587.93	0.34
25-yr (MRM Calcs) =	588.10	0.42
100-yr (MRM Calcs) =	588.34	0.53

POND 1 – CROSS SECTION 1



POND 1 – CROSS SECTION 2



PROFILE SCALE
1" = 40' HORIZONTAL
1" = 4' VERTICAL

No.	REVISIONS	DATE	BY

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TEXAS REGISTERED ENGINEERING FIRM F-928

STATE OF TEXAS
SARAH E. SCOTT
113285
LICENSED
PROFESSIONAL ENGINEER
1/31/2022

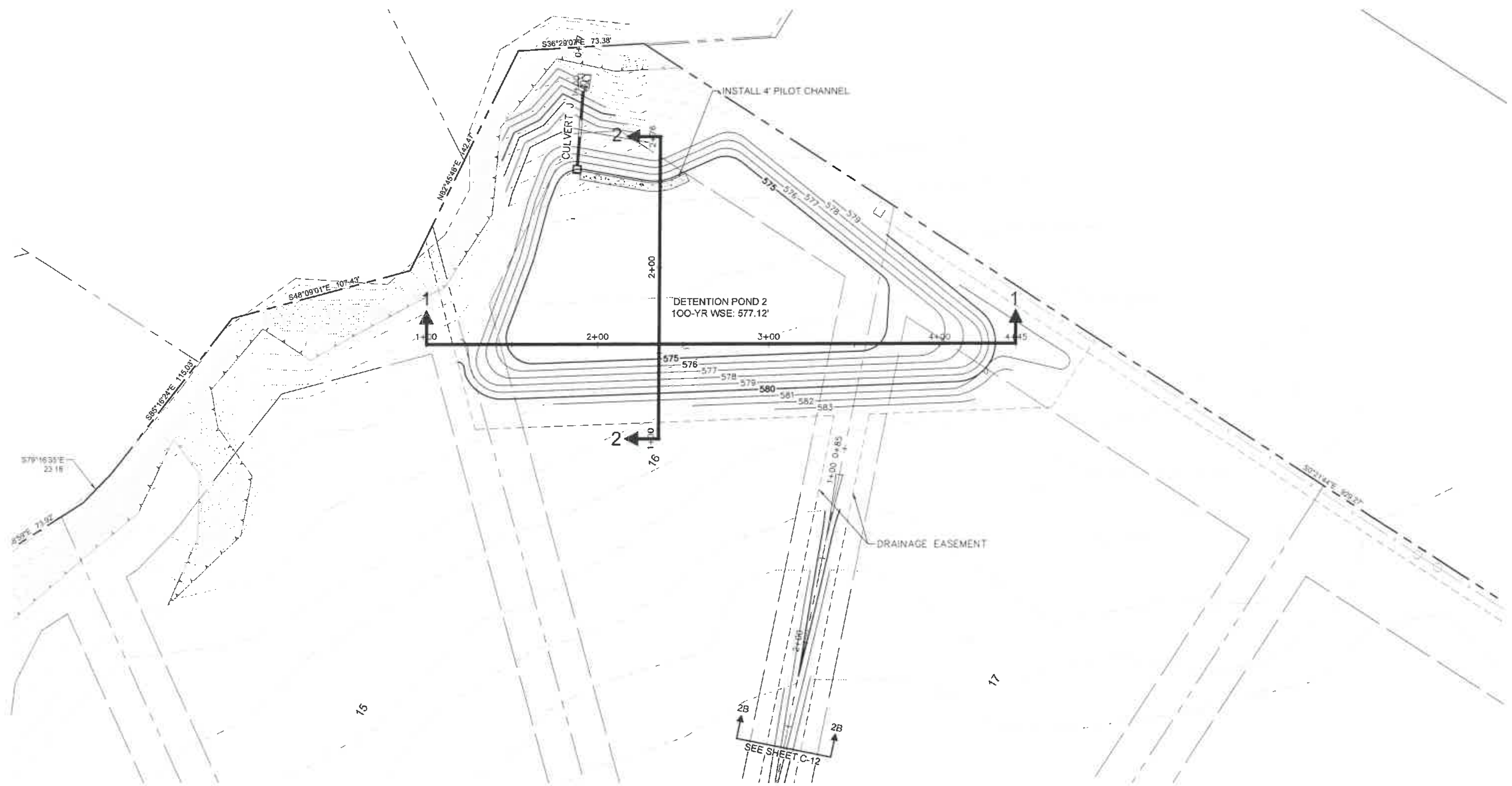
KHA PROJECT	064041015
DATE	JANUARY 2022
SCALE:	AS SHOWN
DESIGNED BY:	CRA
DRAWN BY:	CDH
CHECKED BY:	SES

DETENTION POND PLAN - POND 1

HENDRICK FARM

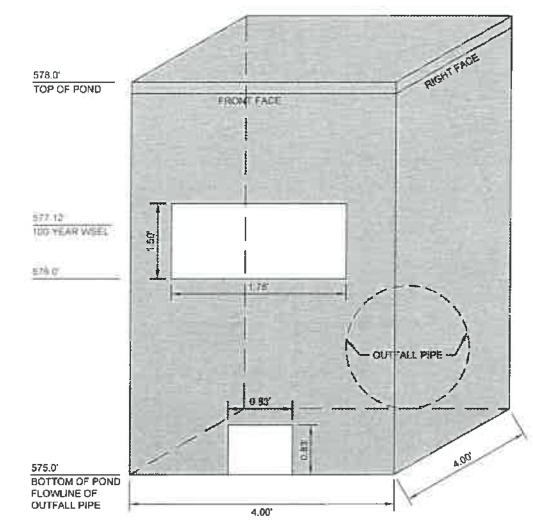
CITY OF LUCAS
COLLIN COUNTY, TEXAS

SHEET NUMBER
C-26



GRAPHIC SCALE 40'

POND 2 OUTFALL STRUCTURE DETAIL

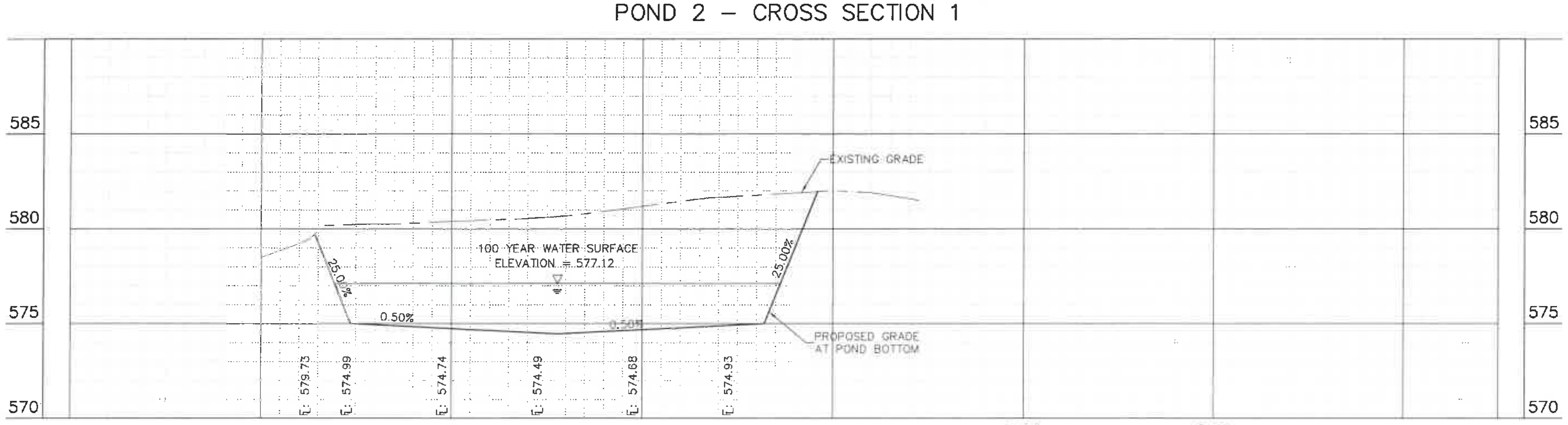


Detention Pond 2 - Summary Table			
Elevation	Area (ac)	Volume (ac-ft)	Volume (ft^3)
575.0	0.46	0.00	0
576.0	0.54	0.50	21,849
577.0	0.61	1.08	46,957
578.0	0.68	1.73	75,143

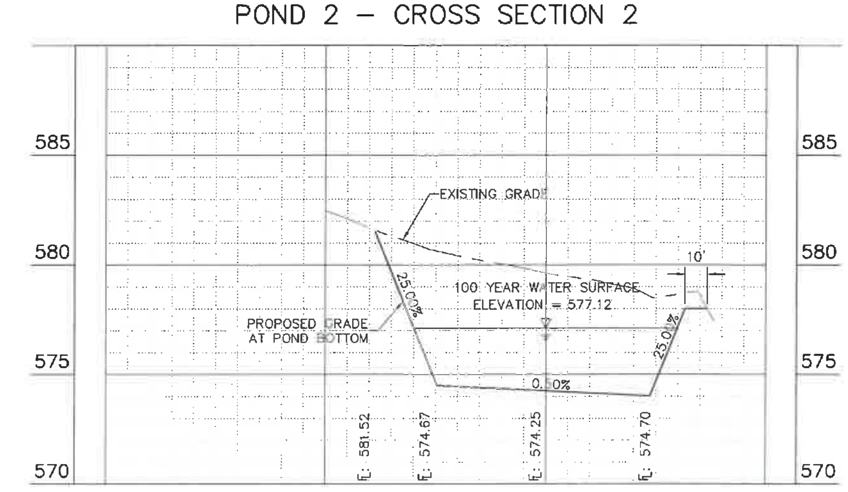
Detention Pond 2 - Water Suface Elevation Summary		
Storm Event	Elevation	Volume
2-yr (MRM Calcs) =	576.23	0.64
10-yr (MRM Calcs) =	576.58	0.83
25-yr (MRM Calcs) =	576.82	0.98
100-yr (MRM Calcs) =	577.12	1.15

PROFILE SCALE
1" = 40' HORIZONTAL
1" = 4' VERTICAL

POND 2 – CROSS SECTION 1



POND 2 – CROSS SECTION 2



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TEXAS REGISTERED ENGINEERING FIRM F-928

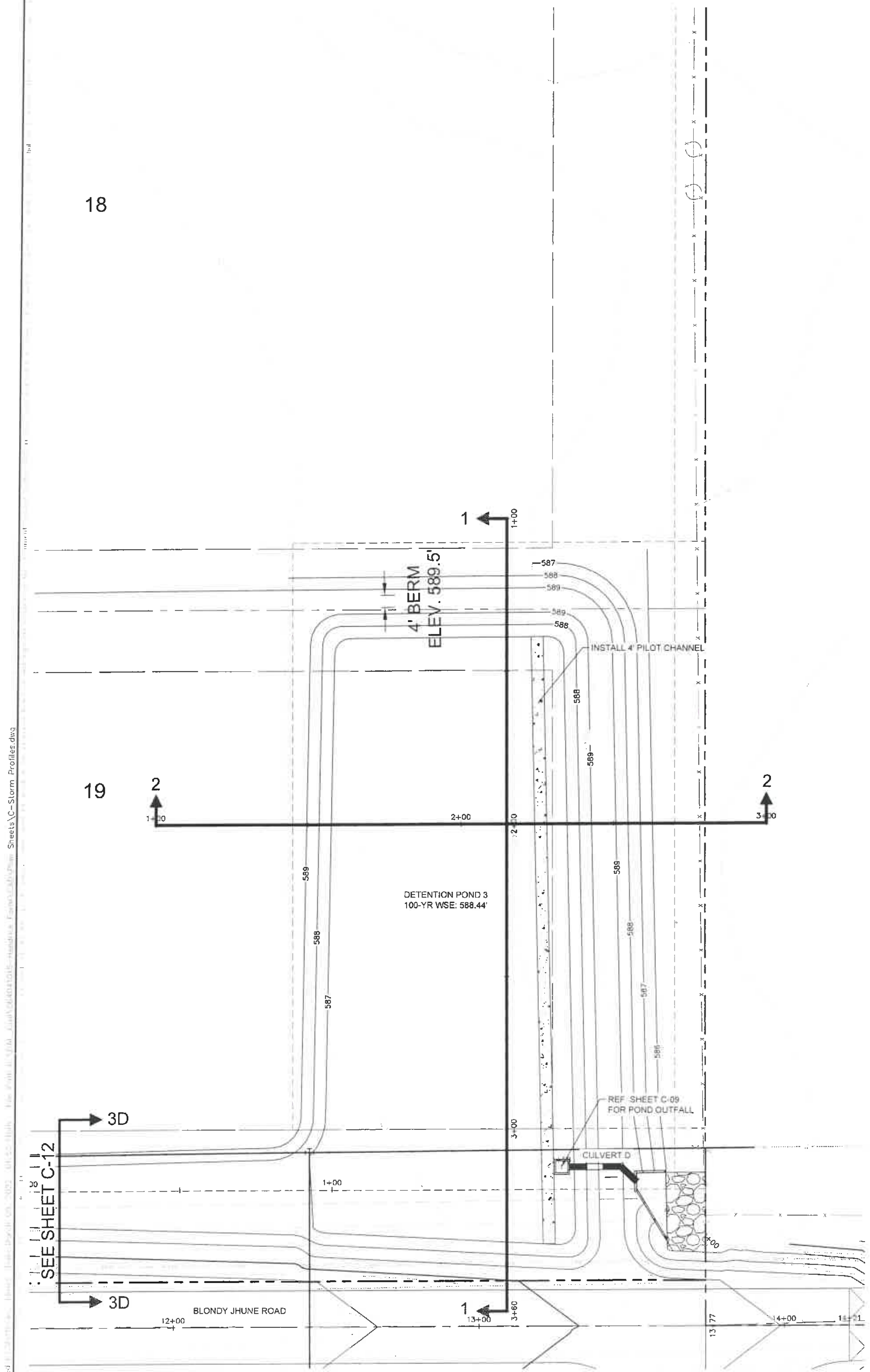
STATE OF TEXAS
SARAH E. SCOTT
113285
LICENSED PROFESSIONAL ENGINEER
1/31/2022

KHA PROJECT 064041015 | DATE JANUARY 2022 | SCALE: AS SHOWN | DESIGNED BY: CRA | DRAWN BY: CDH | CHECKED BY: SES

DETENTION POND PLAN - POND 2

HENDRICK FARM
CITY OF LUCAS
COLLIN COUNTY, TEXAS

SHEET NUMBER
C-27



N
W E
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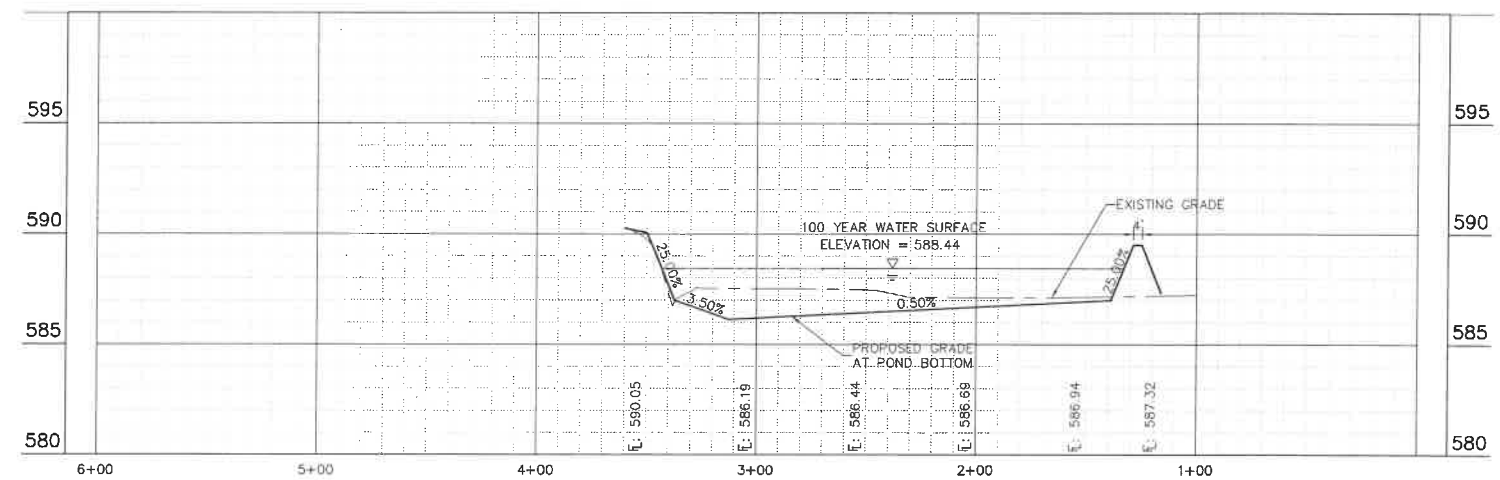
GRAPHIC SCALE 20'

POND 3 – CROSS SECTION 1



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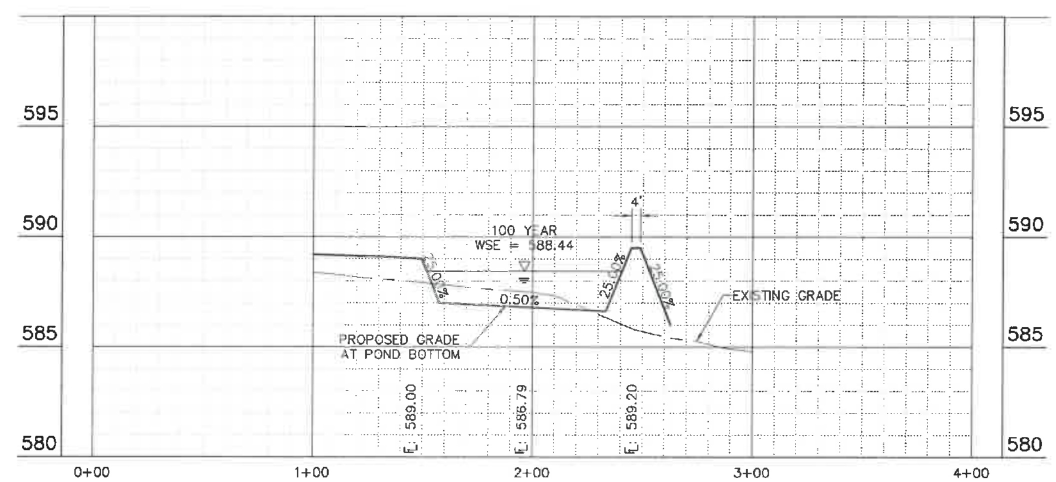
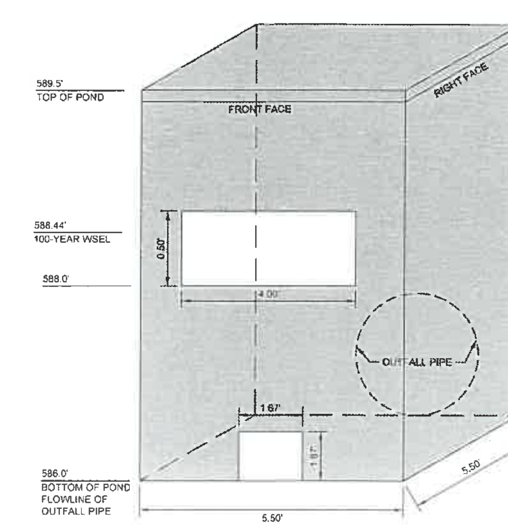


PROFILE SCALE
1" = 40' HORIZONTAL
1" = 4' VERTICAL

Detention Pond 3 - Summary Table			
Elevation	Area (ac)	Volume (ac-ft)	Volume (ft^3)
586.0	0.00	0.00	0
587.0	0.40	0.20	8,619
588.0	0.51	0.65	28,433
589.0	0.63	1.23	53,393

Detention Pond 3 - Water Suface Elevation Summary		
Storm Event	Elevation	Volume
2-yr (MRM Calcs) =	587.55	0.45
10-yr (MRM Calcs) =	587.95	0.63
25-yr (MRM Calcs) =	588.14	0.73
100-yr (MRM Calcs) =	588.44	0.91

POND 3 OUTFALL STRUCTURE DETAIL



No.	REVISIONS	DATE	BY

Kimley»Horn

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TEXAS REGISTERED ENGINEERING FIRM F-928

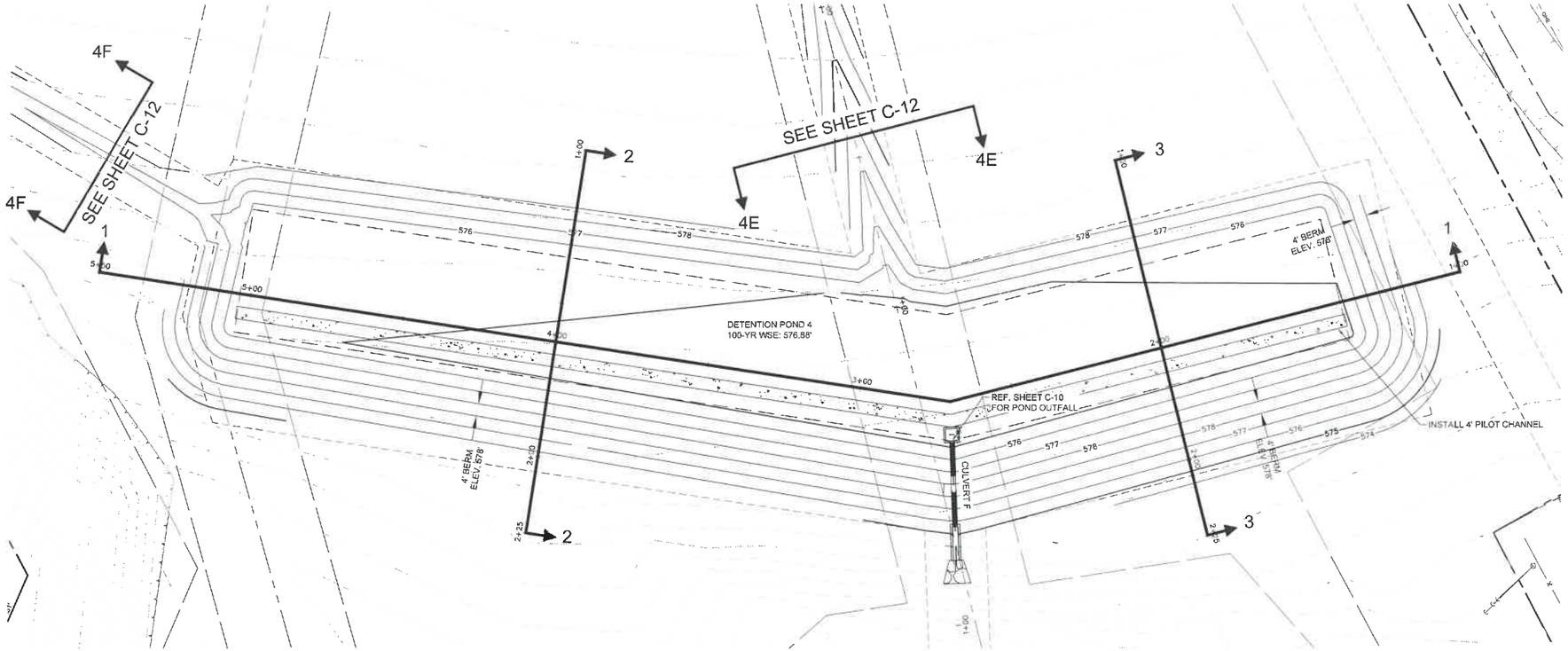
STATE OF TEXAS
SARAH E. SCOTT
113285
LICENSED
PROFESSIONAL ENGINEER
1/31/2022

KHA PROJECT 064041015
DATE JANUARY 2022
SCALE: AS SHOWN
DESIGNED BY: CRA
DRAWN BY: CDH
CHECKED BY: SES

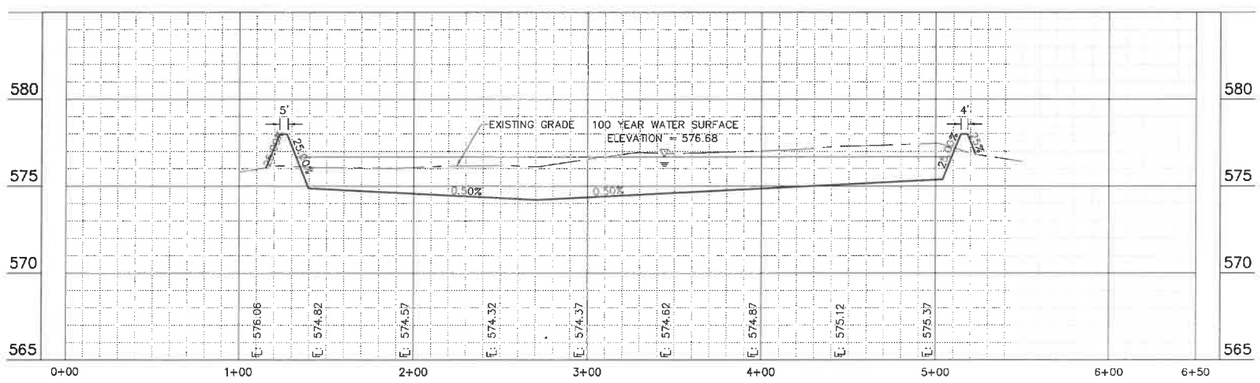
DETENTION POND PLAN - POND 3

HENDRICK FARM
CITY OF LUCAS
COLLIN COUNTY, TEXAS

SHEET NUMBER
C-28

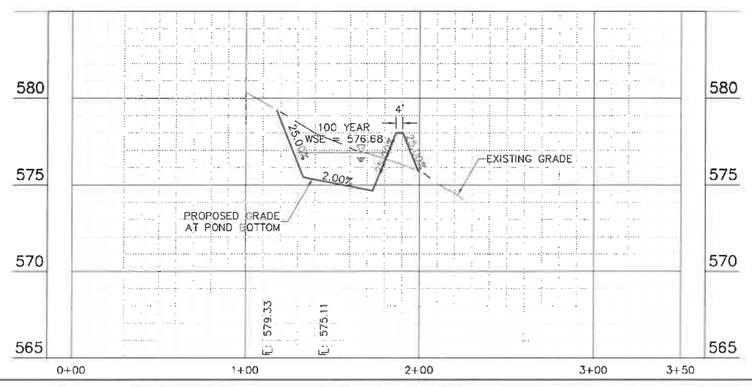


POND 4 – CROSS SECTION 1

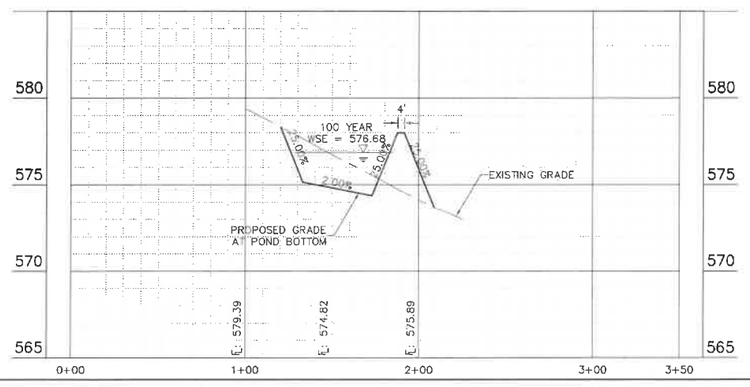


PROFILE SCALE
1" = 40' HORIZONTAL
1" = 4' VERTICAL

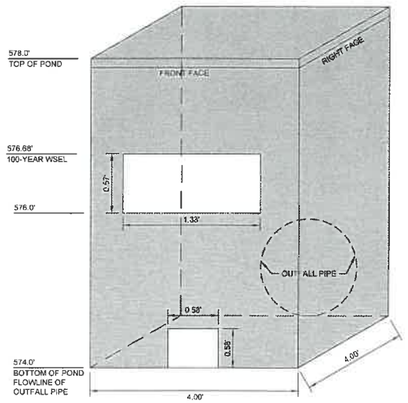
POND 4 – CROSS SECTION 2



POND 4 – CROSS SECTION 3



POND 4 OUTFALL STRUCTURE DETAIL



Detention Pond 4 - Summary Table

Elevation	Area (ac)	Volume (ac-ft)	Volume (ft^3)
574.0	0.00	0.00	0
575.0	0.23	0.12	5,112
576.0	0.50	0.49	21,167
577.0	0.60	1.04	45,216
578.0	0.70	1.69	73,621

Detention Pond 4 - Water Surface Elevation Summary

Storm Event	Elevation	Volume
2-yr (MRM Calcs) =	575.78	0.41
10-yr (MRM Calcs) =	576.23	0.61
25-yr (MRM Calcs) =	576.41	0.71
100-yr (MRM Calcs) =	576.68	0.86

No.	REVISIONS	DATE	BY

Kimley»Horn
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WWW.KIMLEY-HORN.COM
TEXAS REGISTERED ENGINEERING FIRM F-928

STATE OF TEXAS
SARAH E. SCOTT
113285
LICENSED
PROFESSIONAL ENGINEER
1/31/2022

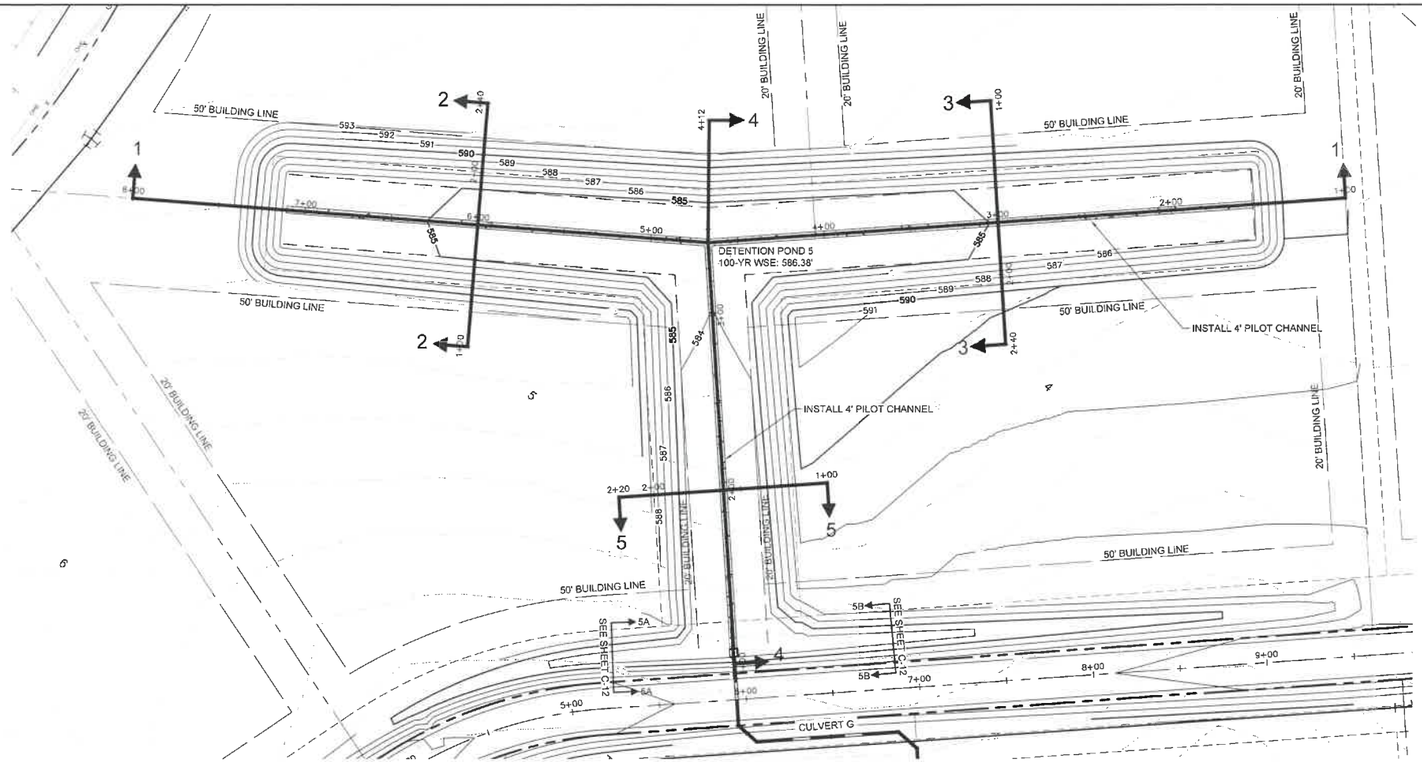
KHA PROJECT	068401015
DATE	JANUARY 2022
SCALE:	AS SHOWN
DESIGNED BY:	CRA
DRAWN BY:	CDH
CHECKED BY:	SES

DETENTION POND PLAN - POND 4

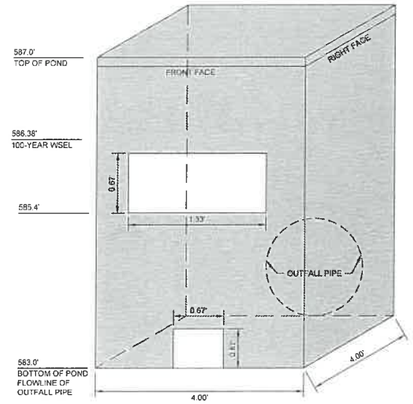
HENDRICK FARM

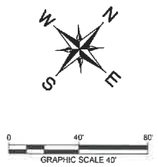
CITY OF LUCAS
COLLIN COUNTY, TEXAS

SHEET NUMBER
C-29



POND 5 OUTFALL STRUCTURE DETAIL





Detention Pond 5 - Summary Table

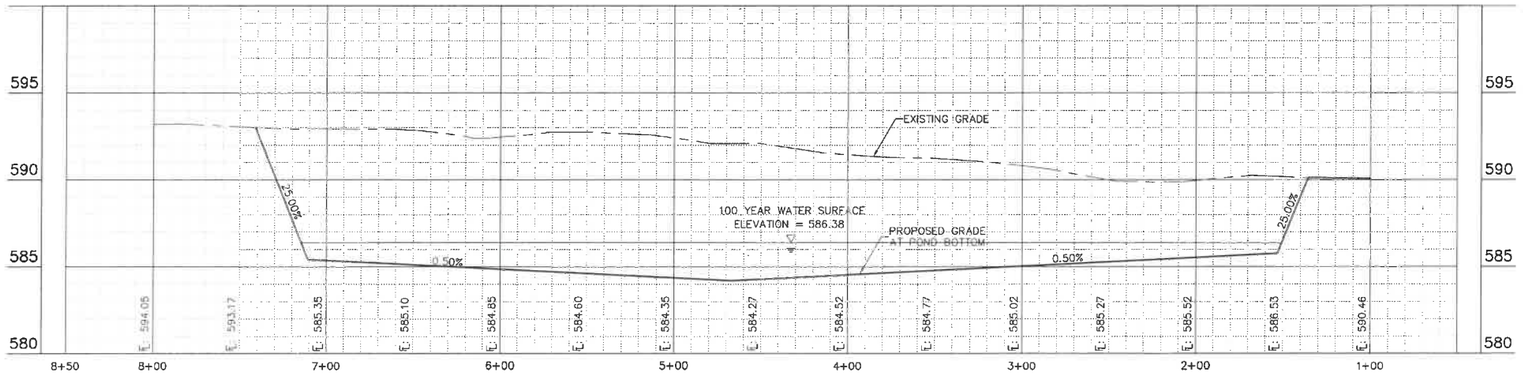
Elevation	Area (ac)	Volume (ac-ft)	Volume (ft^3)
583.0	0.00	0.00	0
584.0	0.22	0.11	4,590
585.0	0.69	0.56	24,241
586.0	1.18	1.49	64,921
587.0	1.49	2.83	123,093
588.0	2.59	4.86	211,915

Detention Pond 5 - Water Suface Elevation Summary

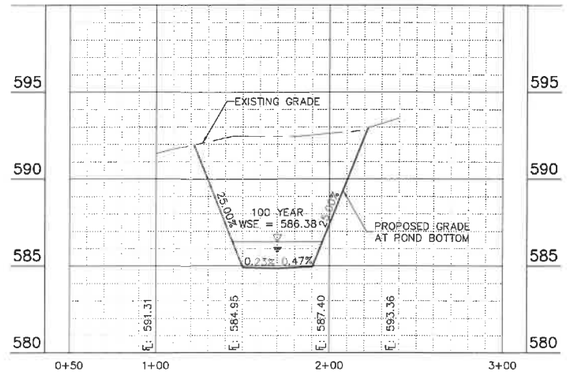
Storm Event	Elevation	Volume
5-yr (MRM Calcs) =	585.39	0.92
10-yr (MRM Calcs) =	585.84	1.34
25-yr (MRM Calcs) =	586.06	1.57
100-yr (MRM Calcs) =	586.38	1.99

PROFILE SCALE
1" = 40' HORIZONTAL
1" = 4' VERTICAL

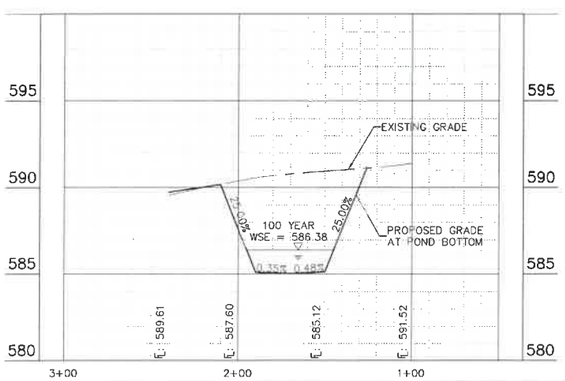
POND 5 – CROSS SECTION 1



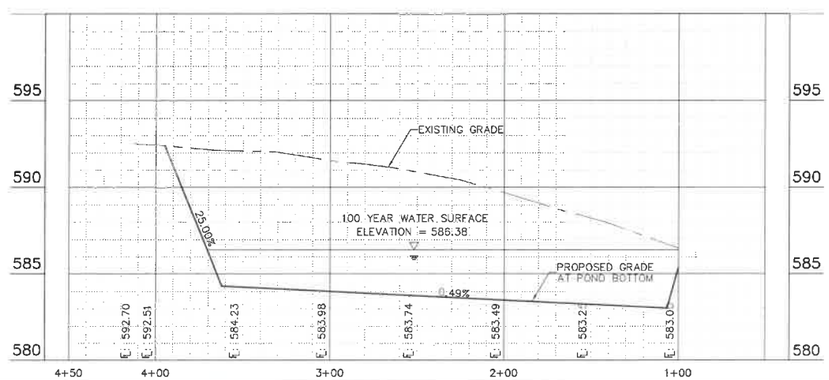
POND 5 – CROSS SECTION 2



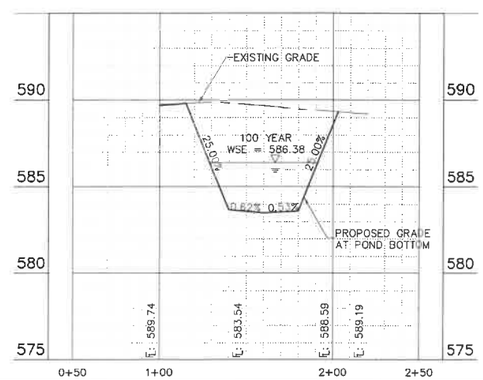
POND 5 – CROSS SECTION 3



POND 5 – CROSS SECTION 4



POND 5 – CROSS SECTION 5



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STATE OF TEXAS
SARAH E. SCOTT
113285
LICENSED
PROFESSIONAL ENGINEER
1/31/2022

No.	REVISIONS	DATE	BY

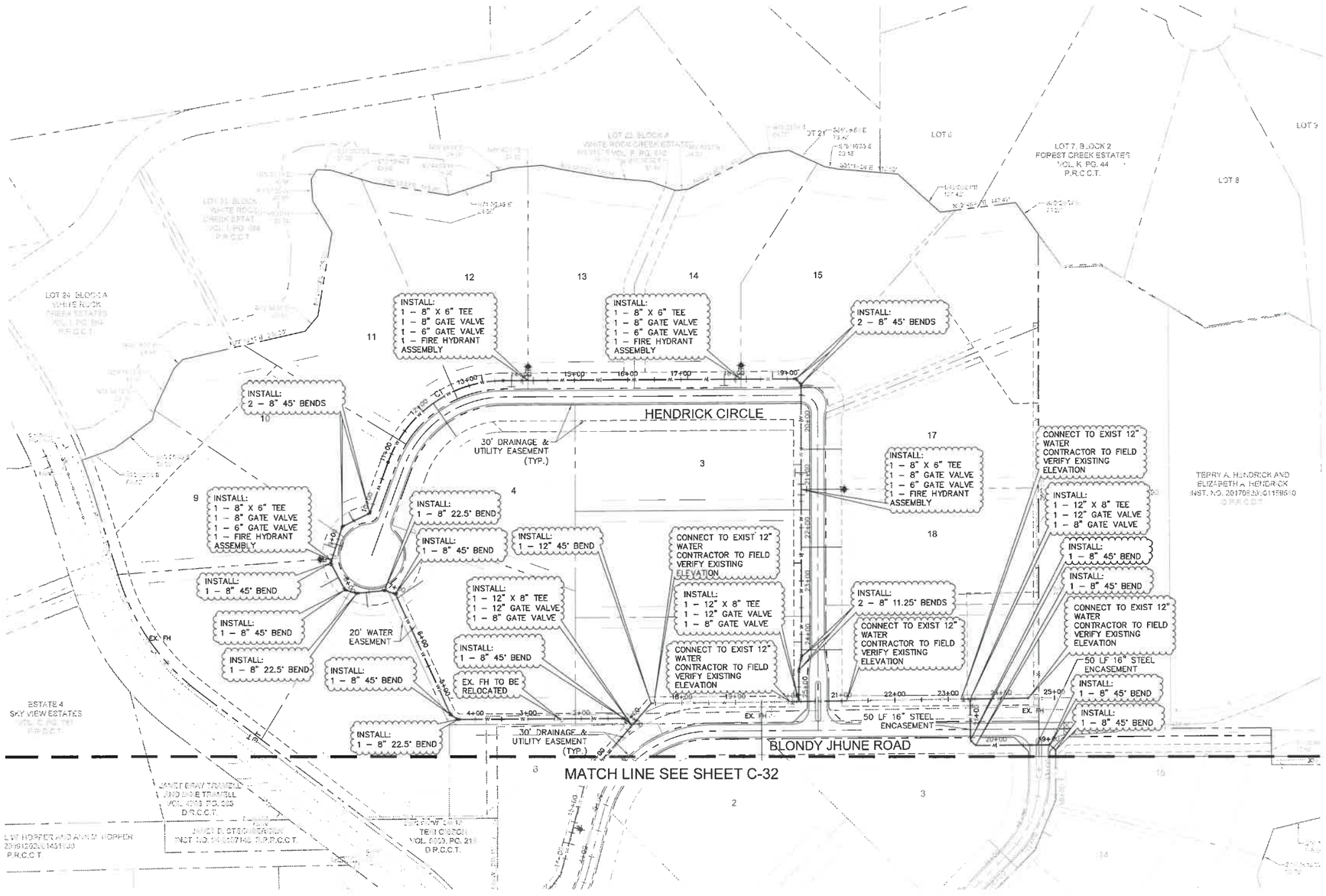
KHA PROJECT 094041015
DATE JANUARY 2022
SCALE: AS SHOWN
DESIGNED BY: CRA
DRAWN BY: CDH
CHECKED BY: SES

DETENTION POND PLAN - POND 5

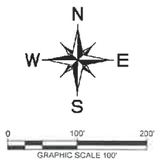
HENDRICK FARM

CITY OF LUCAS
COLLIN COUNTY, TEXAS

SHEET NUMBER
C-30



CURVE TABLE						
CURVE	RADIUS	LENGTH	CHORD BEARING	CHORD	DELTA	TANGENT
C1	230.90'	282.10'	N54°38'16"E	264.88'	70°00'00"	161.68'

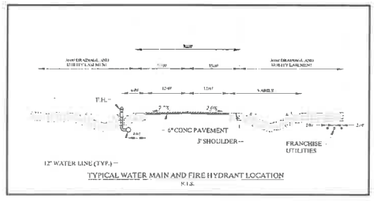


UTILITY LEGEND

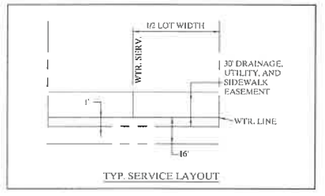
- PROPERTY LINE
- PROPOSED WATER LINE
- PROPOSED FIRE HYDRANT
- PROPOSED TAPPING SLEEVE & VALVE
- EXISTING OVERHEAD POWER LINE
- EXISTING WATER LINE
- EXISTING STORM SEWER LINE
- EXISTING POWER POLE
- EXISTING FIRE HYDRANT
- EXISTING WATER METER

WATER GENERAL NOTES

1. FIRE HYDRANTS, VALVES, FITTINGS, ETC. SHOWN AS A GRAPHICAL REPRESENTATION ONLY. CONTRACTOR TO LOCATE AND CONSTRUCT THESE IMPROVEMENTS BASED ON THE CURRENT CITY/JURISDICTIONAL DESIGN STANDARDS AND DETAILS. CONTRACTOR TO NOTIFY ENGINEER IF ANY DISCREPANCIES ARE DISCOVERED PRIOR TO BEGINNING CONSTRUCTION.
2. CONTRACTOR TO FIELD VERIFY LOCATION OF EXISTING UTILITIES PRIOR TO CONSTRUCTION.
3. FIRE HYDRANT ASSEMBLY INCLUDES ALL FITTINGS, TEES AND VALVES.
4. ALL FIRE HYDRANTS TO BE LOCATED AT LOT LINES.
5. ALL WATERLINES ARE 8" UNLESS OTHERWISE NOTED.
6. **ALL WATERLINE CURVES ARE CONCENTRIC AND PARALLEL TO THE STREET CENTERLINES UNLESS OTHERWISE NOTED.**
7. ADJUSTED SERVICES DUE TO CONFLICTS (I.E. MANHOLES, INLETS, TRENCH CONFLICTS OR NON-STANDARD PLACEMENT) = ★
8. PUBLIC IMPROVEMENTS WITHIN THE R.O.W. SHALL ADHERE TO THE CITY GENERAL NOTES WHEN IN CONTRADICTION TO PRIVATE NOTES THROUGHOUT THE PLANSET.
9. ALL FIRE HYDRANTS TO WATEROUS, PER CITY OF LUCAS REQUIREMENTS.
10. ALL BRASS TO BE FORD, PER CITY OF LUCAS REQUIREMENTS.
11. ALL SERVICES TO BE PVC, PER CITY OF LUCAS REQUIREMENTS.



TYPICAL WATER MAIN AND FIRE HYDRANT LOCATION
N.T.S.



TYP. SERVICE LAYOUT

WARNING: CONTRACTOR TO VERIFY PRESENCE AND EXACT LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION.

CITY OF LUCAS WATER NOTES

1. FIRE HYDRANTS SHALL BE OF THE NATIONAL STANDARD TYPE.
2. A 3-FOOT (914 MM) CLEAR SPACE SHALL BE MAINTAINED AROUND THE CIRCUMFERENCE OF FIRE HYDRANTS EXCEPT AS OTHERWISE REQUIRED OR APPROVED.

BENCHMARKS

ELEVATIONS BASED ON CITY OF ALLEN GPS CONTROL

BM#1 (CITY OF ALLEN MONUMENT NO. 2) 3-1/2-INCH ALUMINUM DISC FOUND IN CONCRETE, LOCATED ±350 FEET EAST FROM THE INTERSECTION OF MAIN STREET AND RICHARDSON COURT, ±16 FEET FROM THE NORTHEAST CORNER OF A BRIDGE

ELEV= 647.13

BM#2 SQUARE WITH "X" CUT SET ON CONCRETE HEADWALL, EAST SIDE OF COUNTRY CLUB ROAD (F.M. NO. 1378), AT THE INTERSECTION OF COUNTRY CLUB ROAD AND ESTATES PARKWAY (F.M. NO. 2170).

ELEV= 587.52

BM#3 SQUARE WITH "X" CUT SET ON CONCRETE HEADWALL, EAST SIDE OF COUNTRY CLUB ROAD (F.M. NO. 1378) ±240 FEET NORTH FROM THE CENTERLINE INTERSECTION OF COUNTRY CLUB ROAD AND SKYVIEW DRIVE.

ELEV= 589.81

No.	REVISIONS	DATE	BY

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TEXAS REGISTERED ENGINEERING FIRM F-928

STATE OF TEXAS
SARAH E. SCOTT
113285
LICENSED
PROFESSIONAL ENGINEER
1/31/2022

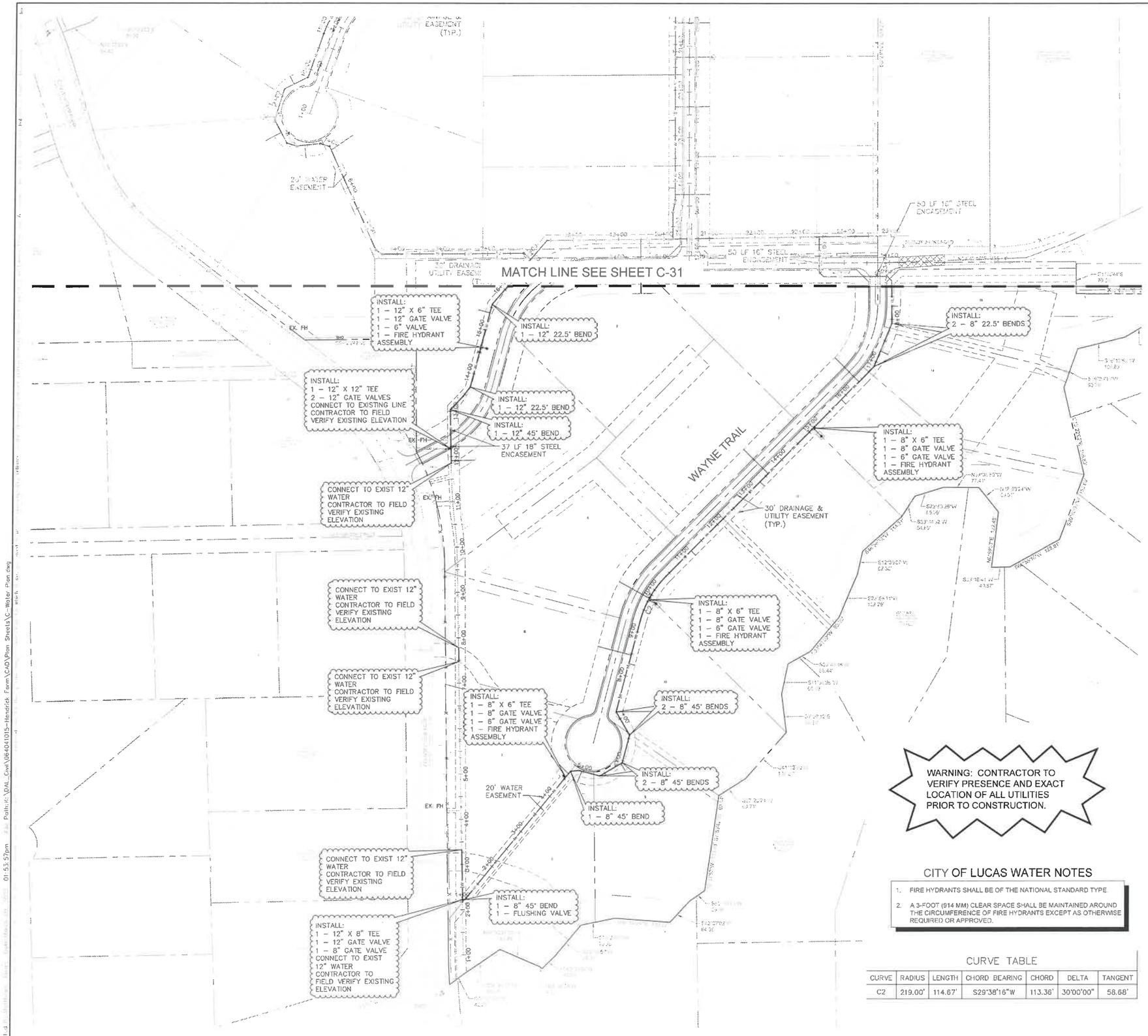
KHA PROJECT 054041015	DATE JANUARY 2022	SCALE: AS SHOWN	DESIGNED BY: CRA	DRAWN BY: MSM	CHECKED BY: SES

WATER PLAN (1 OF 2)

HENDRICK FARM

CITY OF LUCAS
COLLIN COUNTY, TEXAS

SHEET NUMBER
C-31



UTILITY LEGEND

- PROPERTY LINE
- PROPOSED WATER LINE
- PROPOSED FIRE HYDRANT
- PROPOSED TAPPING SLEEVE & VALVE
- EXISTING OVERHEAD POWER LINE
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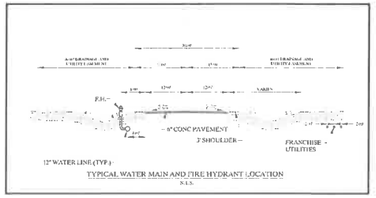
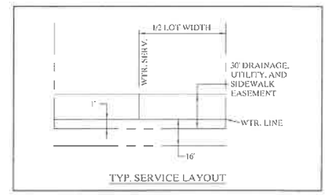


TYPICAL WATER MAIN AND FIRE HYDRANT LOCATION
N.T.S.



TYP. SERVICE LAYOUT

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2. A 3-FOOT (914 MM) CLEAR SPACE SHALL BE MAINTAINED AROUND THE CIRCUMFERENCE OF FIRE HYDRANTS EXCEPT AS OTHERWISE REQUIRED OR APPROVED.

CURVE TABLE

CURVE	RADIUS	LENGTH	CHORD BEARING	CHORD	DELTA	TANGENT
C2	219.00'	114.67'	S29°38'16"W	113.36'	30°00'00"	58.68'

BENCHMARKS

ELEVATIONS BASED ON CITY OF ALLEN GPS CONTROL

BM#1 (CITY OF ALLEN MONUMENT NO. 2) 3-1/2-INCH ALUMINUM DISC FOUND IN CONCRETE, LOCATED ±350 FEET EAST FROM THE INTERSECTION OF MAIN STREET AND RICHARDSON COURT, ±18 FEET FROM THE NORTHEAST CORNER OF A BRIDGE

ELEV= 647.13

BM#2 SQUARE WITH "X" CUT SET ON CONCRETE HEADWALL, EAST SIDE OF COUNTRY CLUB ROAD (F.M NO. 1378), AT THE INTERSECTION OF COUNTRY CLUB ROAD AND ESTATES PARKWAY (F.M. NO. 2170).

ELEV= 587.52

BM#3 SQUARE WITH "X" CUT SET ON CONCRETE HEADWALL, EAST SIDE OF COUNTRY CLUB ROAD (F.M. NO. 1378), ±240 FEET NORTH FROM THE CENTERLINE INTERSECTION OF COUNTRY CLUB ROAD AND SKYVIEW DRIVE.

ELEV= 589.81

No.	REVISIONS	DATE	BY

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TEXAS REGISTERED ENGINEERING FIRM F-928

STATE OF TEXAS
SARAH E. SCOTT
113285
LICENSED
PROFESSIONAL ENGINEER
1/31/2022

KHA PROJECT	064041015
DATE	JANUARY 2022
SCALE:	AS SHOWN
DESIGNED BY:	CRA
DRAWN BY:	MSM
CHECKED BY:	SES

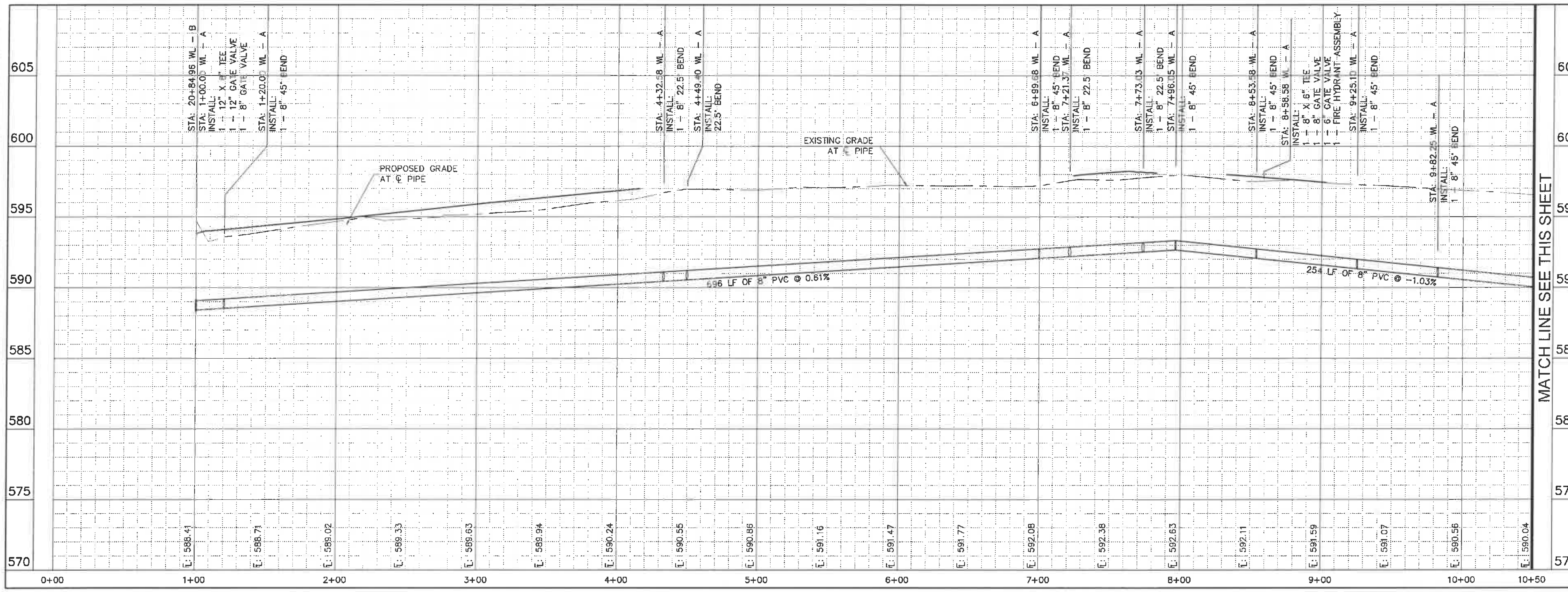
WATER PLAN (2 OF 2)

HENDRICK FARM

CITY OF LUCAS
COLLIN COUNTY, TEXAS

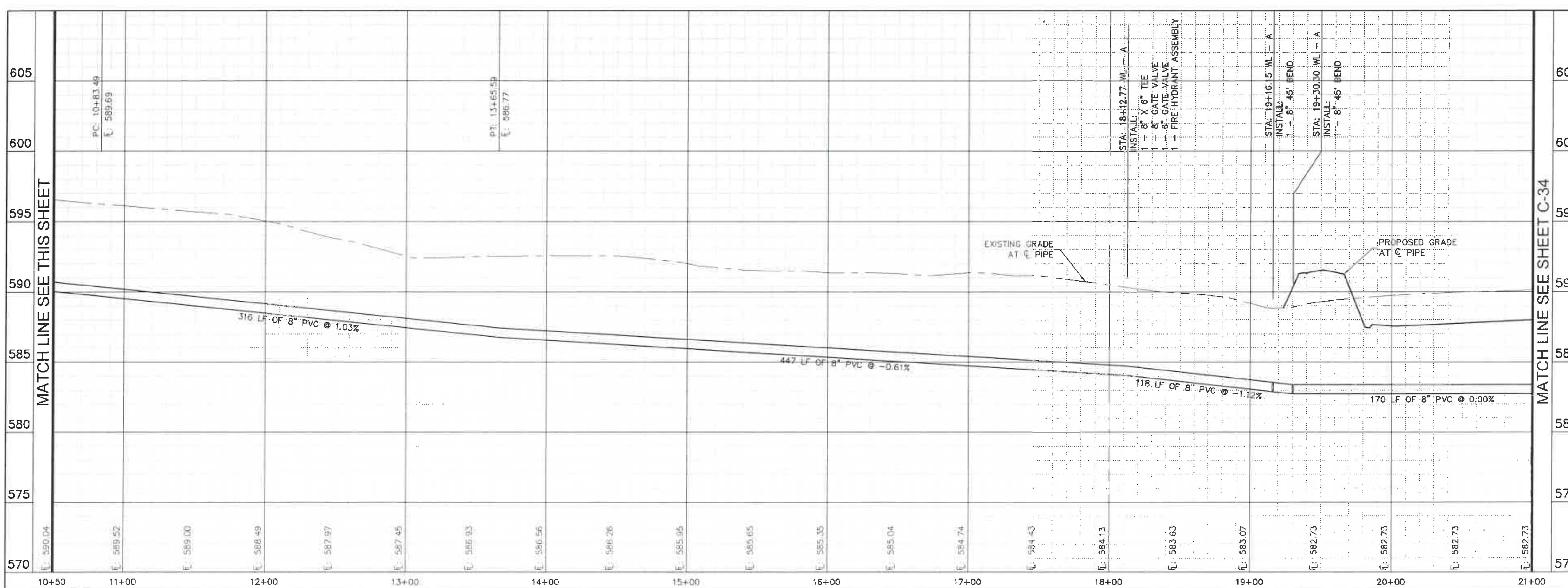
SHEET NUMBER
C-32

WL – A



PROFILE SCALE
1" = 40' HORIZONTAL
1" = 4' VERTICAL

WL – A



PROFILE SCALE
1" = 40' HORIZONTAL
1" = 4' VERTICAL

No.	REVISIONS	DATE	BY

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KHA PROJECT	064041015
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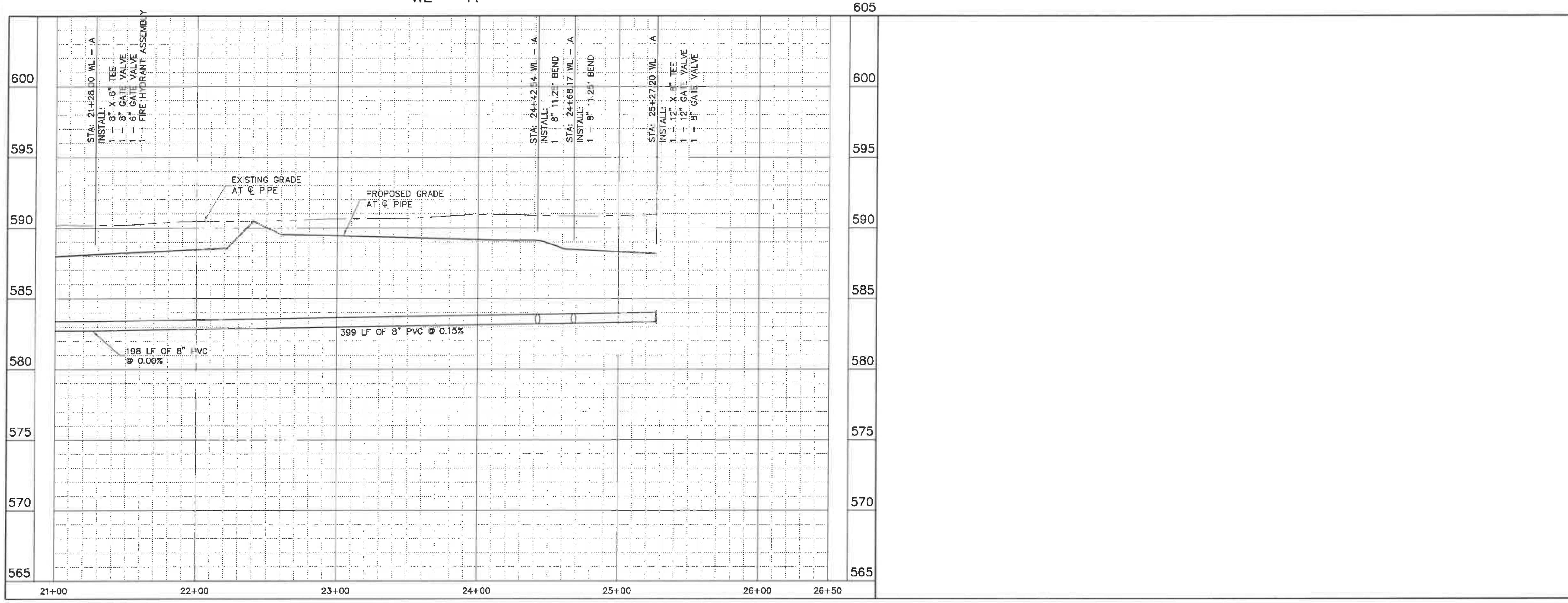
WATER PROFILES (1 OF 4)

HENDRICK FARM
CITY OF LUCAS
COLLIN COUNTY, TEXAS

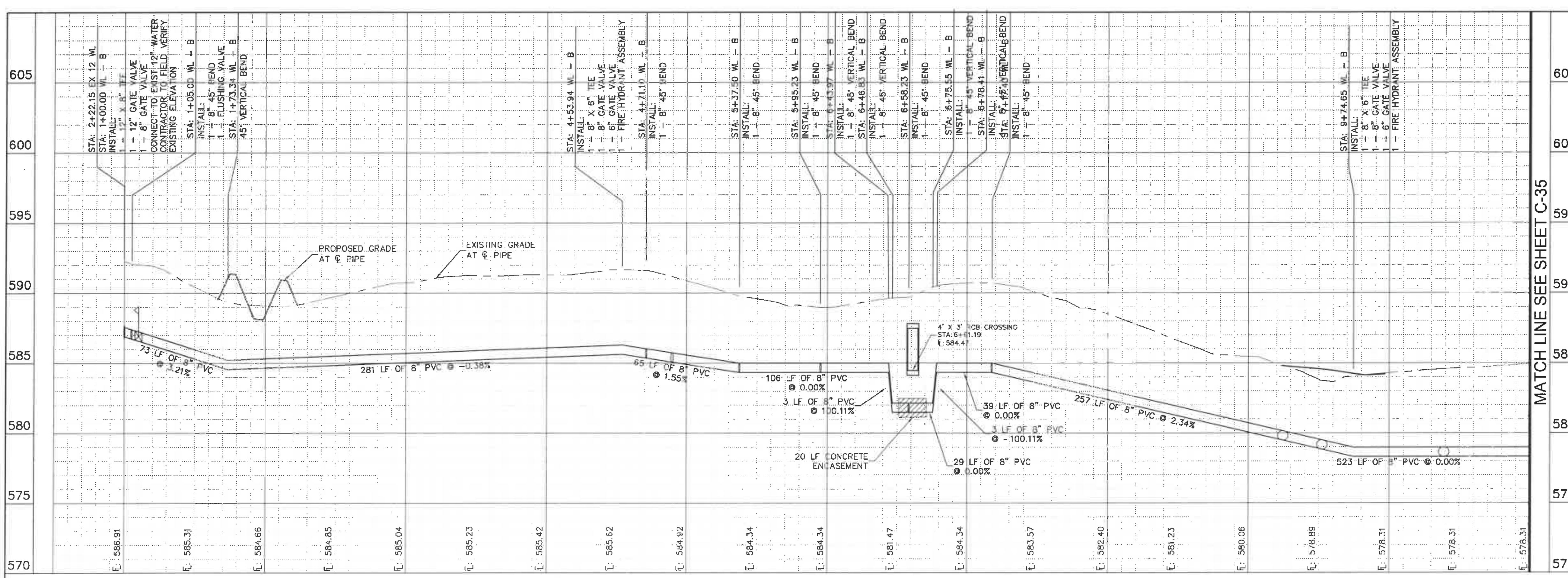
SHEET NUMBER
C-33

WL — A



PROFILE SCALE
1" = 40' HORIZONTAL
1" = 4' VERTICAL

WL — B



PROFILE SCALE
1" = 40' HORIZONTAL
1" = 4' VERTICAL

REVISIONS
No. | DATE | BY

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1/31/2022

KHA PROJECT 064041015
DATE JANUARY 2022
SCALE: AS SHOWN
DESIGNED BY: CRA
DRAWN BY: MSM
CHECKED BY: SES

WATER PROFILES (2 OF 4)

HENDRICK FARM

CITY OF LUCAS
COLLIN COUNTY, TEXAS

SHEET NUMBER
C-34

WL – B

PROFILE SCALE
1" = 40' HORIZONTAL
1" = 4' VERTICAL

EX 12 WL

PROFILE SCALE
1" = 40' HORIZONTAL
1" = 4' VERTICAL

No.	REVISIONS	DATE	BY

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STATE OF TEXAS
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1/31/2022

KHA PROJECT	064041015
DATE	JANUARY 2022
SCALE:	AS SHOWN
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DRAWN BY:	MSM
CHECKED BY:	SES

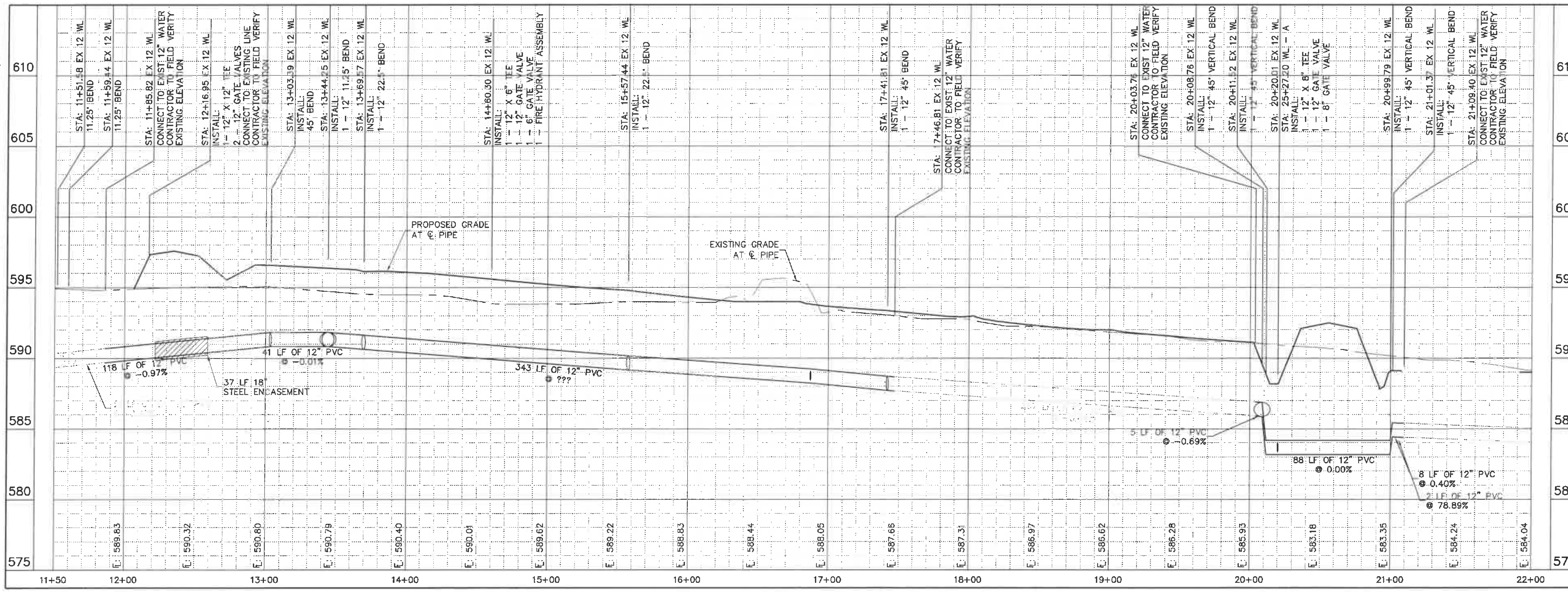
WATER PROFILES (3 OF 4)

HENDRICK FARM

CITY OF LUCAS
COLLIN COUNTY, TEXAS

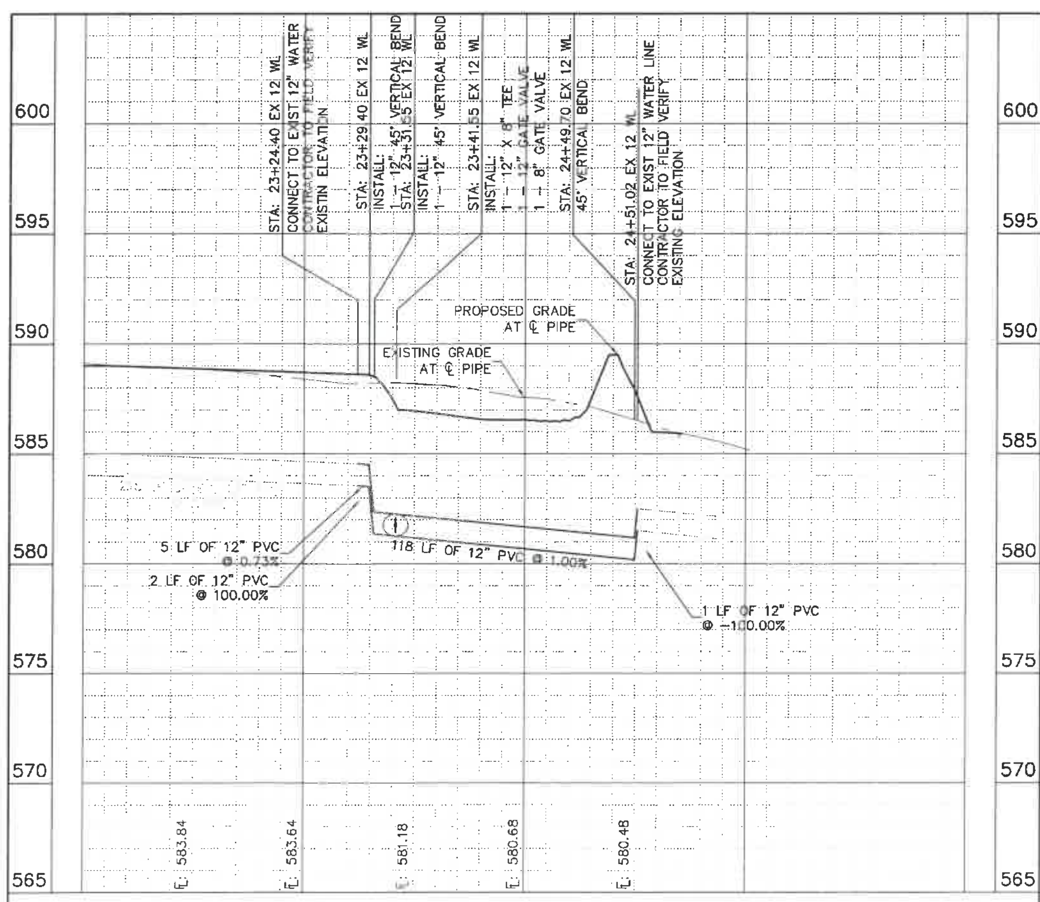
SHEET NUMBER
C-35

EX 12 WL



PROFILE SCALE
1" = 40' HORIZONTAL
1" = 4' VERTICAL

EX 12 WL



PROFILE SCALE
1" = 40' HORIZONTAL
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NO.	REVISIONS	DATE	BY

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STATE OF TEXAS
SARAH E. SCOTT
113285
LICENSED PROFESSIONAL ENGINEER
1/31/2022

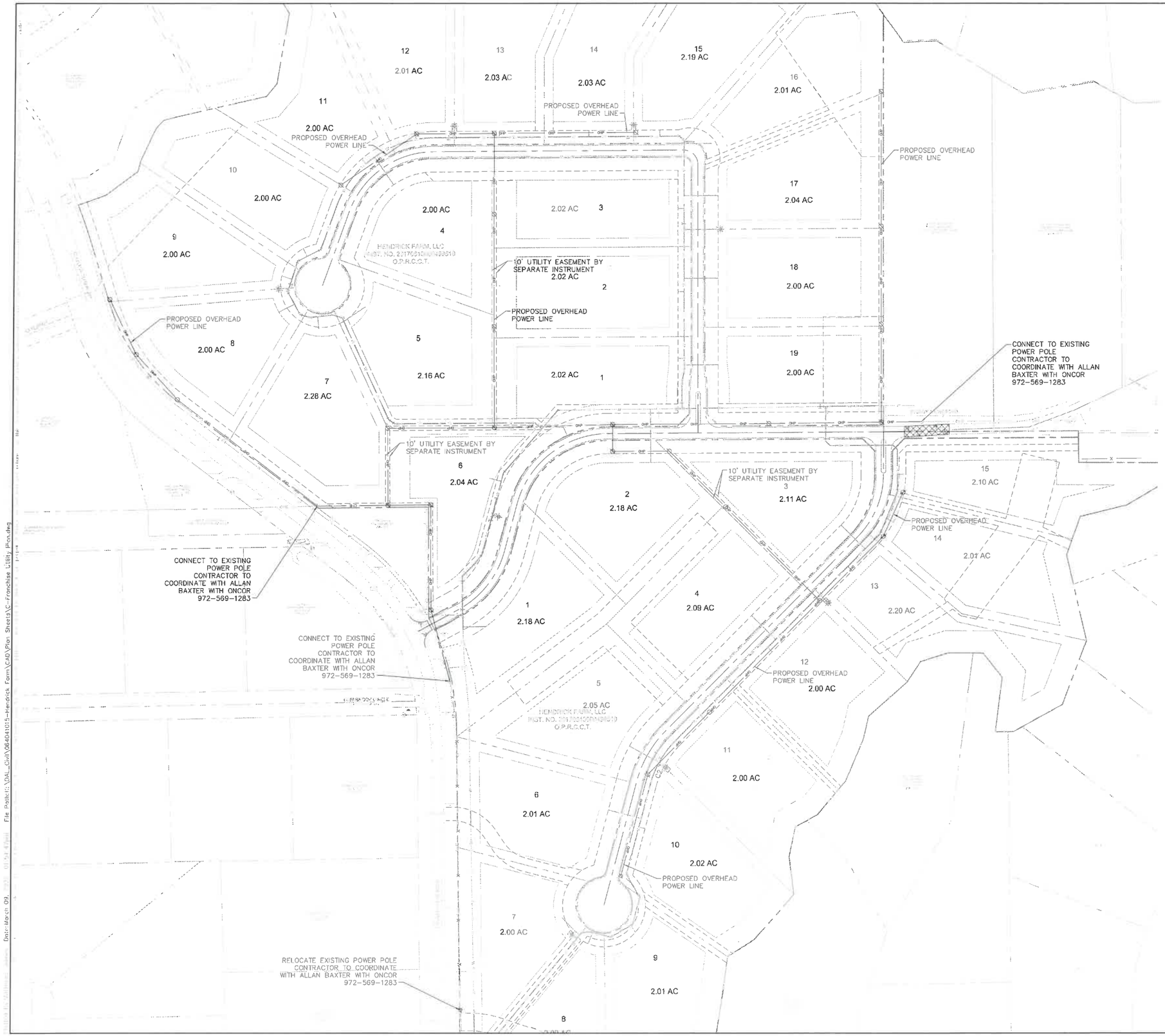
KHA PROJECT 064041015
DATE JANUARY 2022
SCALE: AS SHOWN
DESIGNED BY: CRA
DRAWN BY: MSM
CHECKED BY: SES

WATER PROFILES (4 OF 4)

HENDRICK FARM

CITY OF LUCAS
COLLIN COUNTY, TEXAS

SHEET NUMBER
C-36



UTILITY LEGEND

- PROPERTY LINE
- PROPOSED OVERHEAD POWER LINE
- PROPOSED POWER POLE
- PROPOSED WATER LINE
- PROPOSED FIRE HYDRANT
- PROPOSED TAPPING SLEEVE & VALVE
- EXISTING OVERHEAD POWER LINE
- EXISTING WATER LINE
- EXISTING STORM SEWER LINE
- EXISTING POWER POLE
- EXISTING FIRE HYDRANT
- EXISTING WATER METER

!!WARNING!!

EXISTING UTILITIES IN THE AREA. CONTRACTOR SHALL FIELD VERIFY THE LOCATION OF ALL EXISTING UTILITIES WITH THE PROVIDER PRIOR TO START OF CONSTRUCTION AND SHALL IMMEDIATELY NOTIFY THE ENGINEER OF ANY CONFLICTS DISCOVERED. CONTRACTOR IS RESPONSIBLE FOR COORDINATING UTILITY RELOCATION WHERE NECESSARY AND PROTECTING EXISTING UTILITIES (SHOWN OR NOT SHOWN). IF ANY EXISTING UTILITIES ARE DAMAGED, THE CONTRACTOR SHALL REPLACE THEM AT THEIR OWN EXPENSE.

No.	REVISIONS	DATE	BY

Kimley»Horn
© 2021 KIMLEY-HORN AND ASSOCIATES, INC.
13455 NOEL ROAD, SUITE 700, DALLAS, TX 75240
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TEXAS REGISTERED ENGINEERING FIRM F-928

STATE OF TEXAS
SARAH E. SCOTT
113285
LICENSED
PROFESSIONAL ENGINEER
1/31/2022

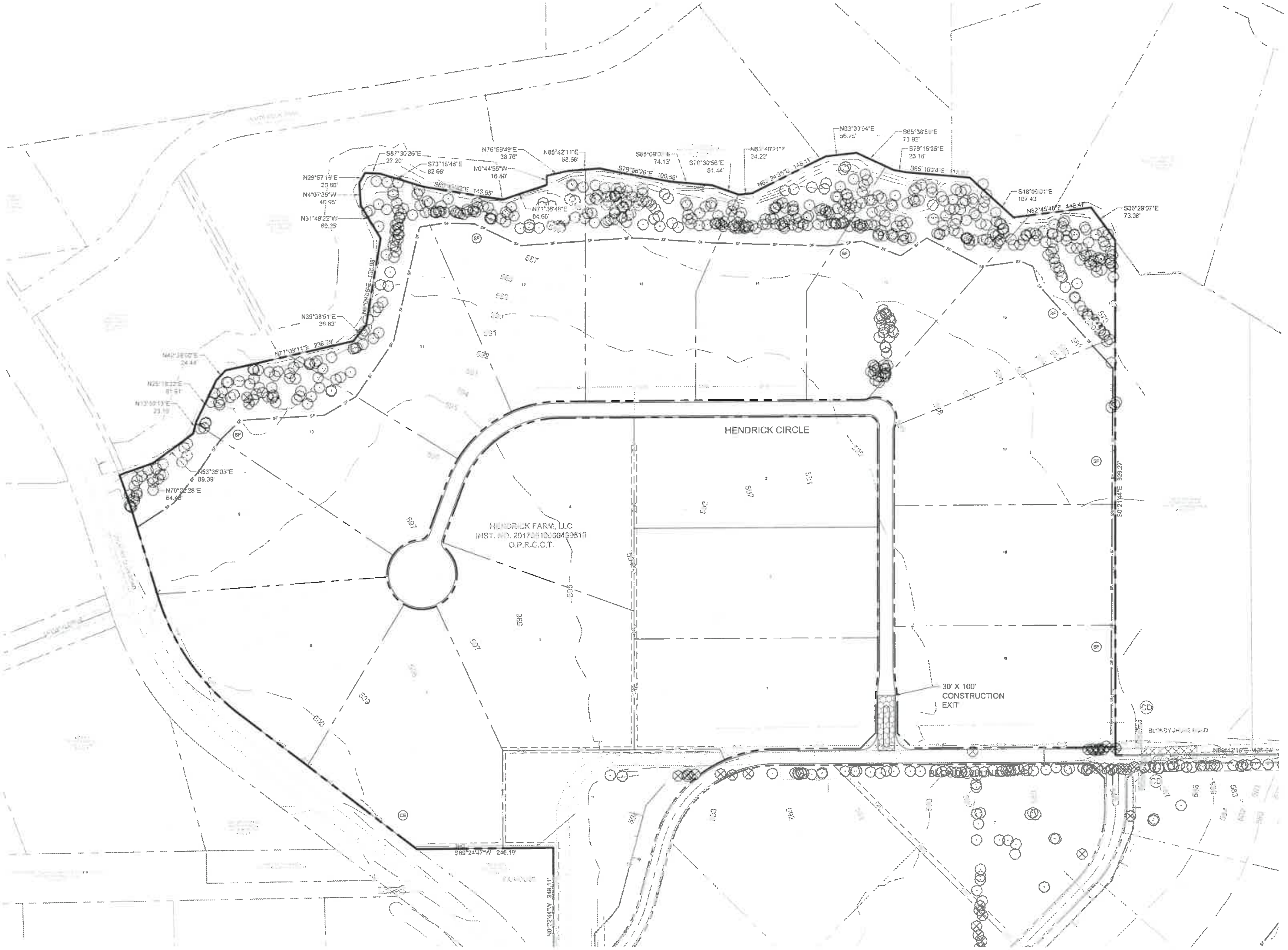
KHA PROJECT	064041015
DATE	JANUARY 2022
SCALE:	AS SHOWN
DESIGNED BY:	CRA
DRAWN BY:	
CHECKED BY:	SES

DRY UTILITY PLAN

HENDRICK FARM

CITY OF LUCAS
COLLIN COUNTY, TEXAS

SHEET NUMBER
C-37



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GRAPHIC SCALE 100'

EROSION CONTROL LEGEND

Symbol	Description
----	PROPOSED CONTOUR
— — —632— — —	EXISTING CONTOUR
— — — — —	HIGH POINT
—— < —— < ——	SWALE
(CX) —— CX ——	CURLEX
(SF) —— SF ——	SILT FENCE
(LD) ▬ ▬ ▬	LIMITS OF DISTURBANCE
(CE)	CONSTRUCTION ENTRANCE/EXIT
(IP)	INLET PROTECTION
(CD)	ROCK CHECK DAM

EROSION CONTROL SCHEDULE AND PHASING

THE PROJECT SHALL GENERALLY CONFORM TO THE FOLLOWING:

PHASE A – GRADING
1. CONSTRUCT TEMPORARY CONSTRUCTION ENTRANCE, SILT FENCE, DIKE, AND TREE PROTECTION FENCE ACCORDING TO THE APPROXIMATE LOCATION AND SHOWN ON GRADING AND EROSION CONTROL PLAN NOTES AND DETAIL SHEET.
2. BEGIN CLEARING AND GRADING OF SITE.
3. SEED AND REVEGETATE SLOPES WHERE SHOWN.

PHASE B – UTILITIES
1. KEEP ALL STORM WATER POLLUTION PREVENTION MEASURES IN PLACE.
2. INSTALL STORM DRAINS, SANITARY SEWER, AND WATER AS SPECIFIED ON PLAN SHEETS.

PHASE C – PAVING
1. KEEP ALL STORM WATER POLLUTION PREVENTION MEASURES IN PLACE. REMOVE AS NEEDED TO PAVE.
2. STABILIZE SUBGRADE.
3. PAVE STREETS AND SIDEWALKS AS SPECIFIED ON PLAN SHEETS.
4. RE-INSTALL ANY STORM WATER POLLUTION PREVENTION MEASURES REMOVED FOR PAVING OPERATIONS.

PHASE D – LANDSCAPING AND SOIL STABILIZATION.
1. REVEGETATE LOT AND PARKWAYS
2. LANDSCAPE CONTRACTOR SHALL REVEGETATE ALL AREAS RESERVED FOR LANDSCAPE VEGETATIVE COVERS.
3. REMOVE EROSION CONTROL DEVICES WHEN MINIMUM 70% GROUND COVER IS ESTABLISHED. VEGETATION MUST BE ESTABLISHED BEFORE STRUCTURAL CONTROLS REMOVED.

BMP MAINTENANCE SCHEDULE

TEMPORARY STONE CONSTRUCTION ENTRANCE/EXIT:

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

SILT FENCE:

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

STONE OVERFLOW STRUCTURE:

INSPECTIONS SHALL BE MADE WEEKLY AND AFTER RAIN STORM EVENTS TO ENSURE THAT THE FACILITY IS FUNCTIONING PROPERLY. SEDIMENT SHALL BE REMOVED FROM THE STORAGE AREA WHEN SEDIMENT DEPTH HAS BUILT UP TO ONE-HALF THE HEIGHT OF THE STONE OUTLET. REPAIR DISLODGED OR MISSING STONE RIP-RAP AND REPAIR ANY DOWNSTREAM EROSION.

ROCK CHECK DAM:

INSPECTIONS SHALL BE MADE WEEKLY AND AFTER ALL RAIN EVENTS TO ENSURE THAT THE DEVICE IS FUNCTIONING PROPERLY. REMOVE SEDIMENT FROM THE STORAGE AREA UPSTREAM OF THE DAM WHEN THE DEPTH OF SEDIMENT HAS BUILT UP TO ONE-HALF OF THE DAM HEIGHT. REPAIR DAMAGE TO THE CHANNEL IN THE VICINITY OF THE CHECK DAMS IMMEDIATELY TO PREVENT ADDITIONAL DAMAGE. REPLACE MISSING OR DISLODGED ROCK AS NEEDED TO MAINTAIN THE DESIGN HEIGHT AND CROSS SECTION OF THE CHECK DAM.

CURB INLET/GRATE INLET/WYE INLET:

INSPECTIONS SHALL BE MADE WEEKLY AND AFTER ALL RAIN EVENTS TO ENSURE THAT THE DEVICE IS FUNCTIONING PROPERLY. REMOVE SEDIMENT FROM THE STORAGE AREA SURROUNDING THE INLET/GRATE WHEN THE DEPTH OF SEDIMENT HAS BUILT UP TO ONE-HALF OF THE PROTECTION HEIGHT. DEVICE SHALL BE INSPECTED FOR GAPS AT BASE, AND SHALL BE REPLACED AS NEEDED.

STANDARD EROSION CONTROL GENERAL NOTES

1. EROSION CONTROL DEVICES SHOWN ON THIS PLAN SHALL BE INSTALLED PRIOR TO THE START OF LAND DISTURBING ACTIVITIES ON THE PROJECT.
2. ALL EROSION CONTROL DEVICES ARE TO BE INSTALLED IN ACCORDANCE WITH THE APPROVED PLANS AND SPECIFICATIONS FOR THIS PROJECT. CHANGES ARE TO BE APPROVED BEFORE CONSTRUCTION BY THE DESIGN ENGINEER AND THE CITY ENGINEERING DIVISION.
3. IF THE EROSION CONTROL PLAN AS APPROVED CANNOT CONTROL EROSION AND OFF-SITE SEDIMENTATION FROM THE PROJECT, THE EROSION CONTROL PLAN WILL BE REQUIRED TO BE REVISED AND/OR ADDITIONAL EROSION CONTROL DEVICES WILL BE REQUIRED ON SITE.
4. INSPECTIONS SHALL BE MADE WEEKLY AND AFTER RAIN STORM EVENTS TO INSURE THAT THE DEVICES ARE FUNCTIONING PROPERLY. WHEN SEDIMENT OR MUD HAS CLOGGED THE VOID SPACES BETWEEN STONES OR MUD IS BEING TRACKED ONTO A PUBLIC ROADWAY THE AGGREGATE PAD MUST BE WASHED DOWN OR REPLACED. RUNOFF FROM THE WASHDOWN OPERATION HALL NOT BE ALLOWED TO DRAIN DIRECTLY OFF SITE WITHOUT FIRST FLOWING THROUGH ANOTHER BMP TO CONTROL OFF SITE SEDIMENTATION. PERIODIC RE-GRADING OR THE ADDITION OF NEW STONE MAY BE REQUIRED TO MAINTAIN THE EFFICIENCY OF THE INSTALLATION.
5. CONTRACTOR SHALL BE RESPONSIBLE FOR SUBMITTAL OF N.O.I., N.O.T. AND ANY ADDITIONAL INFORMATION REQUIRED BY THE TCEQ CONTRACTOR SHALL COMPLY WITH ALL TCEQ STORMWATER POLLUTION PREVENTION REQUIREMENTS.
6. PUBLIC IMPROVEMENTS WITHIN THE R.O.W. SHALL ADHERE TO THE CITY GENERAL NOTES WHEN IN CONTRADICTION TO PRIVATE NOTES THROUGHOUT THE PLANSET.

SITE MAP GENERAL NOTES

1. CONTRACTOR IS SOLELY RESPONSIBLE FOR SELECTION, IMPLEMENTATION, MAINTENANCE, AND EFFECTIVENESS OF ALL SWPPP CONTROLS – CONTROLS SHOWN ON THIS SITE MAP ARE SUGGESTED CONTROLS ONLY.
2. CONTRACTOR SHALL RECORD INSTALLATION, MAINTENANCE OR MODIFICATION, AND REMOVAL DATES FOR EACH BMP EMPLOYED (WHETHER CALLED OUT ON ORIGINAL SWPPP OR NOT) DIRECTLY ON THE SITE MAP.
3. DRAINAGE PATTERNS ARE SHOWN ON THIS PLAN BY PROPOSED AND EXISTING CONTOURS, FLOW ARROWS AND/OR SLOPES.
4. TEMPORARY AND PERMANENT STABILIZATION PRACTICES AND BMP'S SHALL BE INSTALLED AT THE EARLIEST POSSIBLE TIME DURING THE CONSTRUCTION SEQUENCE. AS AN EXAMPLE, PERIMETER SILT FENCE SHALL BE INSTALLED BEFORE COMMENCEMENT OF ANY GRADING ACTIVITIES. OTHER BMP'S SHALL BE INSTALLED AS SOON AS PRACTICABLE AND SHALL BE MAINTAINED UNTIL FINAL SITE STABILIZATION IS ATTAINED. CONTRACTOR SHALL ALSO REFERENCE CIVIL AND LANDSCAPE PLANS SINCE PERMANENT STABILIZATION IS PROVIDED BY LANDSCAPING, THE BUILDING(S), AND SITE PAVING.
5. BMP'S HAVE BEEN LOCATED AS INDICATED ON THIS PLAN IN ACCORDANCE WITH GENERALLY ACCEPTED ENGINEERING PRACTICES IN ORDER TO MINIMIZE SEDIMENT TRANSFER. FOR EXAMPLE: SILT FENCES LOCATED AT TOE OF SLOPE AND INLET PROTECTION FOR INLETS RECEIVING SEDIMENT FROM SITE RUN-OFF.
6. SANITARY SEWER EFFLUENT IS DISPOSED OF VIA AN ONSITE SEWER SYSTEM CONNECTED TO A MUNICIPAL SEWER SYSTEM.

TREE PROTECTION NOTE

REFERENCE TREE SURVEY/COMSERVATION PLAN FOR PROTECTED TREES TO BE PRESERVED. ALL PROTECTED TREES TO REMAIN MUST HAVE TREE PROTECTION INSTALLED PER DETAILS SHOWN ON TREE SURVEY/CONSERVATION PLAN.

VEGETATIVE STABILIZATION REQUIREMENTS

TEMPORARY SEEDING

ALL DISTURBED AREAS WHICH WILL BE LEFT DORMANT FOR GREATER THAN 14 DAYS SHALL BE SEEDED WITH FAST- GERMINATING TEMPORARY VEGETATION IMMEDIATELY FOLLOWING GRADING OPERATIONS. SELECTION OF THE SEED WILL DEPEND ON THE TIME OF YEAR IT IS APPLIED (SEE DESCRIPTIONS IN TABLE 2). REFERENCE LANDSCAPE PLAN FOR PERMANENT STABILIZATION REQUIREMENTS. ALL TEMPORARY SEEDING MATERIALS SHALL BE APPROVED BY THE OWNER'S REPRESENTATIVE PRIOR TO APPLICATION.

TABLE 2
VEGETATION TABLE*

TEMPORARY SEEDING SPECIES	PLANTING RATE	PLANTING-DATES
CRIMSON CLOVER	7#/ACRE	8/15 – 11/30
MILLET, FOXTAIL	30#/ACRE	5/1 – 8/31
RYEGRASS, ANNUAL	30#/ACRE	8/15 – 9/30
SPRANGLETOP, GREEN	2.5#/ACRE	2/1 – 5/1
TALL FESCUE	7#-10#/1000 SF	9/1 – 10/15

*USE ONLY USDA CERTIFIED SEED.

SURFACE PREPARATION FOR TEMPORARY SEEDING

1. INSTALL EROSION STRUCTURES SUCH AS DIKES, DIVERSIONS, ETC. PRIOR TO SEEDING.

2. FURROW SLOPES STEEPER THAN 3:1 ON THE CONTOUR LINE BEFORE SEEDING.

3. ENSURE SEED BED IS PULVERIZED, LOOSE, AND UNIFORM.

APPLICATION

1. WHEN HYDROMULCHING IS USED, DO NOT MIX SEED AND FERTILIZER MORE THAN 30 MINUTES PRIOR TO APPLICATION.

2. APPLY SEED EVENLY USING PROPER EQUIPMENT AND WATER TO AID VEGETATION GROWTH.

3. EROSION CONTROL NETTING SHALL BE INSTALLED OVER FILL SLOPES WHICH HAVE BEEN BROUGHT TO FINAL GRADE AND HAVE BEEN SEEDED TO PROTECT AGAINST EROSION. MULCH (STRAW OR FIBER) SHALL BE USED ON RELATIVELY FLAT SLOPES.

BENCHMARKS

ELEVATIONS BASED ON CITY OF ALLEN GPS CONTROL

BM#1 (CITY OF ALLEN MONUMENT NO. 2) 3-1/2-INCH ALUMINUM DISC FOUND IN CONCRETE, LOCATED ±350 FEET EAST FROM THE INTERSECTION OF MAIN STREET AND RICHARDSON COURT, ±16 FEET FROM THE NORTHEAST CORNER OF A BRIDGE.

ELEV= 647.13

BM#2 SQUARE WITH "X" CUT SET ON CONCRETE HEADWALL, EAST SIDE OF COUNTRY CLUB ROAD (F.M. NO. 1378), AT THE INTERSECTION OF COUNTRY CLUB ROAD AND ESTATES PARKWAY (F.M. NO. 2170).

ELEV= 587.52

BM#3 SQUARE WITH "X" CUT SET ON CONCRETE HEADWALL, EAST SIDE OF COUNTRY CLUB ROAD (F.M. NO. 1378), ±240 FEET NORTH FROM THE CENTERLINE INTERSECTION OF COUNTRY CLUB ROAD AND SKYVIEW DRIVE.

ELEV= 589.81

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STATE OF TEXAS
SARAH E. SCOTT
113285
LICENSED
PROFESSIONAL ENGINEER
1/31/2022

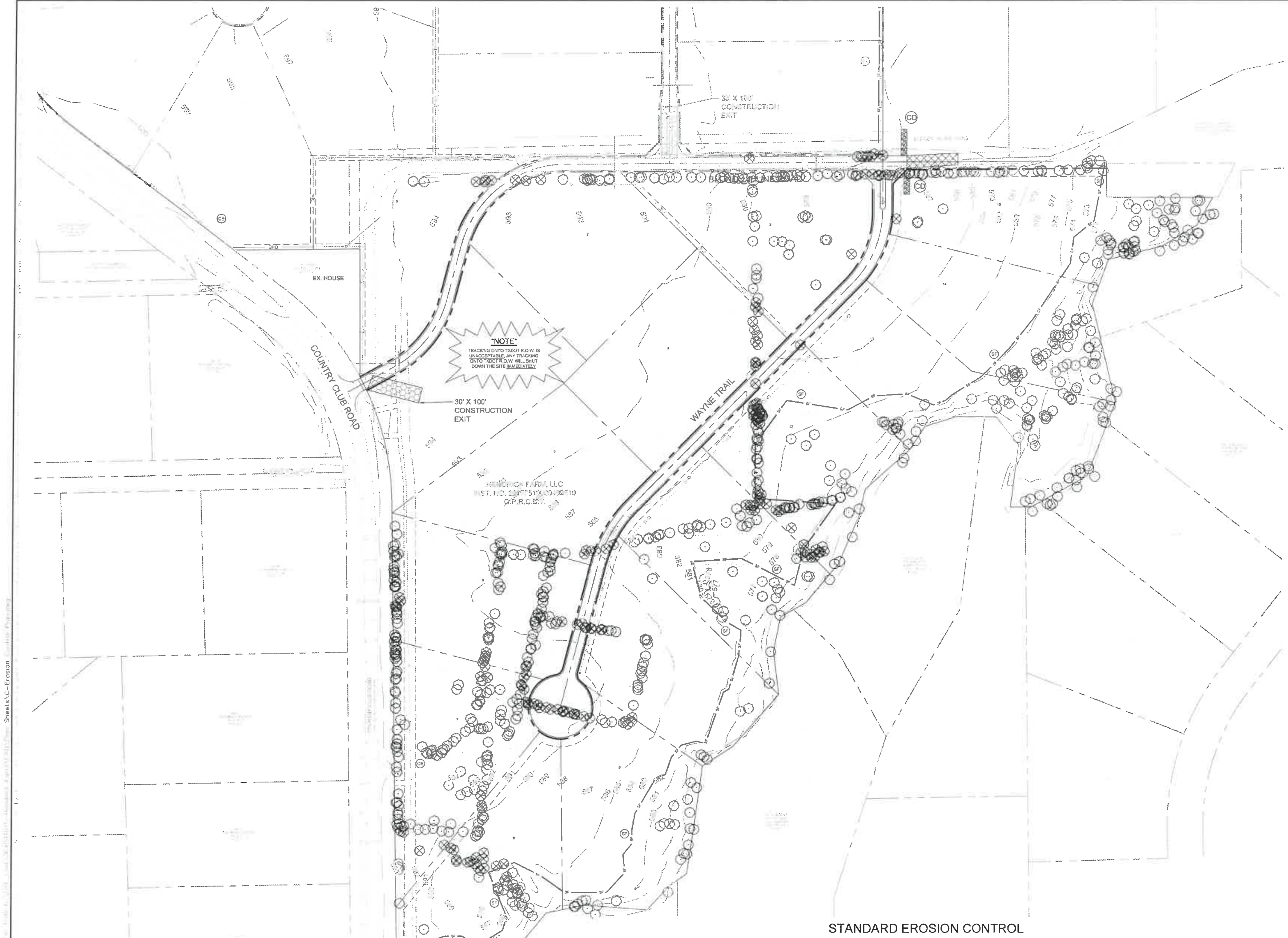
KHA PROJECT 064041015
DATE JANUARY 2022
SCALE: AS SHOWN
DESIGNED BY: CRA
DRAWN BY: MSM
CHECKED BY: SES

EROSION CONTROL PLAN (1 OF 2)

HENDRICK FARM

CITY OF LUCAS
COLLIN COUNTY, TEXAS

SHEET NUMBER
C-38



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0 100' 200'
GRAPHIC SCALE 100'

EROSION CONTROL LEGEND

	---------- ----------	PROPOSED CONTOUR
	— — — —632— — — —	EXISTING CONTOUR
	— — — — — — — —	HIGH POINT
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SF	—— SF ——	SILT FENCE
LD	▬ ▬ ▬ ▬	LIMITS OF DISTURBANCE
CE		CONSTRUCTION ENTRANCE/EXIT
IP		INLET PROTECTION
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PHASE B – UTILITIES
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VEGETATIVE STABILIZATION REQUIREMENTS

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*USE ONLY USDA CERTIFIED SEED.

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1. INSTALL EROSION STRUCTURES SUCH AS DIKES, DIVERSIONS, ETC. PRIOR TO SEEDING.

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APPLICATION

1. WHEN HYDROMULCHING IS USED, DO NOT MIX SEED AND FERTILIZER MORE THAN 30 MINUTES PRIOR TO APPLICATION.

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BENCHMARKS

ELEVATIONS BASED ON CITY OF ALLEN GPS CONTROL

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ELEV= 647.13

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ELEV= 587.52

BM#3 SQUARE WITH "X" CUT SET ON CONCRETE HEADWALL, EAST SIDE OF COUNTRY CLUB ROAD (F.M. NO. 1378), ±240 FEET NORTH FROM THE CENTERLINE INTERSECTION OF COUNTRY CLUB ROAD AND SKYVIEW DRIVE.

ELEV= 589.81

REVISIONS

No.		DATE	BY

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STATE OF TEXAS
SARAH E. SCOTT
113285
LICENSED PROFESSIONAL ENGINEER
1/31/2022

KHA PROJECT	064041015
DATE	JANUARY 2022
SCALE:	AS SHOWN
DESIGNED BY:	CRA
DRAWN BY:	MSM
CHECKED BY:	SES

EROSION CONTROL PLAN (2 OF 2)

HENDRICK FARM

CITY OF LUCAS
COLLIN COUNTY, TEXAS

SHEET NUMBER
C-39

SILT FENCE GENERAL NOTES

1. STEEL POSTS WHICH SUPPORT THE SILT FENCE SHALL BE INSTALLED ON A SLIGHT ANGLE TOWARD THE ANTICIPATED RUNOFF SOURCE. POST MUST BE SPACED NO A MINIMUM OF ONE FOOT

2. THE TOE OF THIS 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.

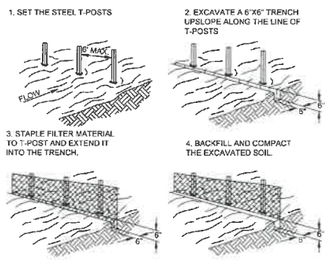
3. THE TRENCH MUST BE A MINIMUM OF 6 INCHES DEEP AND 6 INCHES WIDE TO ALLOW FOR THE SILT FENCE FABRIC TO BE LAID IN THE GROUND AND BACKFILLED WITH COMPACTED MATERIAL.

4. SILT FENCE SHOULD BE SECURELY FASTENED TO EACH STEEL SUPPORT POST OR TO WOVEN WIRE BY USING WIRE TIES OR STAPLES SPACED EVERY 24" AT TOP AND MID SECTION, WHICH IN TURN IS ATTACHED TO THE STEEL FENCE POST. THERE SHALL BE A 3 FOOT OVERLAP, SECURELY FASTENED WHERE ENDS OF FABRIC MEET

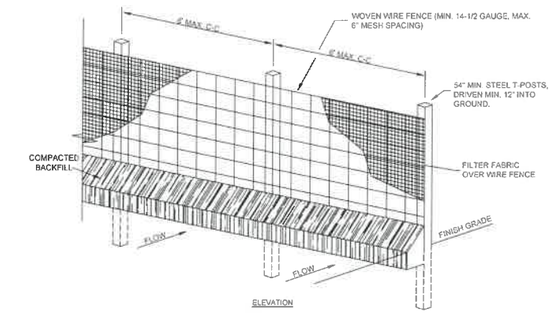
5. INSPECTION SHALL BE MADE EVERY TWO WEEKS AND AFTER EACH 1/2" RAINFALL. REPAIR OR REPLACEMENT SHALL BE MADE PROMPTLY AS NEEDED

6 SILT FENCE SHALL BE REMOVED WHEN THE SITE IS COMPLETELY STABILIZED SO AS NOT TO BLOCK OR IMPEDE STORM FLOW OR DRAINAGE

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



SHEET FLOW INSTALLATION
(PERSPECTIVE VIEW)

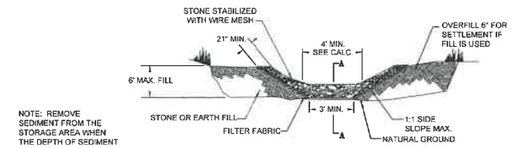


SEDIMENTATION/SILT FENCE WITH WIRE SUPPORT

N.T.S.

GENERAL NOTES

1. THE OWNER AND CONTRACTOR SHALL EACH SUBMIT A NOTICE OF INTENT (NOI) TO TCEQ AT LEAST 48 HOURS PRIOR TO COMMENCING CONSTRUCTION ACTIVITIES. OWNER AND CONTRACTOR ARE RESPONSIBLE FOR RETAINING PROOF THAT THE NOI WAS SUBMITTED TO TCEQ (PROOF MAY CONSIST OF CERTIFIED MAIL WITH RETURN RECEIPT).
2. TEXAS POLLUTANT DISCHARGE ELIMINATION SYSTEM (TPDES) CONSTRUCTION GENERAL PERMIT DATED MARCH 5, 2003 (FEDERAL REGISTER VOLUME 63, NUMBER 128), LANDSCAPE PLANS, GEOTECHNICAL INVESTIGATION, AND CIVIL ENGINEERING PLANS AND SPECIFICATIONS ARE HEREBY INCORPORATED INTO THIS SWPPP. CONTRACTOR SHALL OBTAIN AND KEEP A CURRENT COPY OF THESE DOCUMENTS AT THE CONSTRUCTION SITE.
3. ALL EROSION AND SEDIMENTATION CONTROLS MUST BE DESIGNED, INSTALLED AND MAINTAINED TO RETAIN SEDIMENT ON-SITE TO THE EXTENT PRACTICABLE.
4. ALL CONTROL MEASURES MUST BE SELECTED, INSTALLED, AND MAINTAINED IN ACCORDANCE WITH MANUFACTURERS SPECIFICATIONS AND GOOD ENGINEERING PRACTICES.
5. OFF-SITE ACCUMULATIONS OF SEDIMENT ESCAPING PROJECT SITE MUST BE REMOVED AT A FREQUENCY NECESSARY TO MINIMIZE OFF-SITE IMPACTS. FOR EXAMPLE, SEDIMENTATION WITHIN STREETS ADJACENT TO THE PROJECT SITE MUST BE REMOVED PRIOR TO RAINFALL EVENTS. ALL FINES IMPOSED FOR TRACKING ONTO PUBLIC ROADS SHALL BE PAID BY THE CONTRACTOR. IN ANY EVENT SILT SHALL ALWAYS BE REMOVED SUCH THAT PONDING IN A STREET IS PREVENTED.
6. CONTRACTOR MUST REMOVE SEDIMENT FROM ALL APPLICABLE CONTROLS WHEN DESIGN SILT STORAGE CAPACITY HAS BEEN REDUCED BY 50%, UNLESS OTHERWISE NOTED.
7. CONTRACTOR SHALL ENSURE THAT ALL LITTER, CONSTRUCTION DEBRIS, AND CONSTRUCTION CHEMICALS ARE PREVENTED FROM BECOMING POLLUTANT SOURCES.
8. OFF-SITE MATERIAL STORAGE AREAS USED SOLELY FOR THIS PROJECT, INCLUDING DIRT STOCKPILES AND BORROW AREAS (AS APPLICABLE), MUST BE PREVENTED FROM BECOMING POLLUTANT SOURCES BY INSTALLATION OF BMPS.
9. CONTRACTOR SHALL ENSURE THAT EXISTING VEGETATION IS PRESERVED WHERE ATTAINABLE.
10. DISTURBED PORTIONS OF SITE MUST BE STABILIZED. STABILIZATION PRACTICES MUST BE INITIATED WITHIN 14 DAYS IN PORTIONS OF THE SITE WHERE CONSTRUCTION HAS BEEN EITHER TEMPORARILY OR PERMANENTLY CEASED, UNLESS EXCEPTED WITHIN THE NPDES PERMIT.
11. CONTRACTOR MUST MAINTAIN RECORDS OF DATES IN THE SWPPP OF WHEN MAJOR GRADING ACTIVITIES OCCUR, WHEN CONSTRUCTION ACTIVITIES EITHER TEMPORARILY OR PERMANENTLY CEASE ON A PORTION OF THE SITE, AND WHEN STABILIZATION MEASURES ARE INITIATED.
12. CONTRACTOR SHALL ENSURE THAT SWPPP IS CONSISTENT WITH SEDIMENT AND EROSION SITE PLANS, STORM WATER PERMITS, AND STORM WATER MANAGEMENT PLANS APPROVED BY STATE OR LOCAL OFFICIALS. UPDATES TO SWPPP ARE REQUIRED UPON WRITTEN NOTICE TO PERMITTEE OF CHANGES APPLICABLE TO STORM WATER PERMITS, SEDIMENT AND EROSION CONTROL PLANS, OR STORM WATER MANAGEMENT PLANS BY SUCH OFFICIALS.
13. ALL EROSION AND SEDIMENTATION CONTROL MEASURES AND ANY OTHER PROTECTIVE MEASURES IDENTIFIED IN THE SWPPP MUST BE MAINTAINED IN EFFECTIVE OPERATING CONDITION. WHEN INSPECTIONS IDENTIFY CONTROLS OPERATING INEFFECTIVELY, THE CONTROLS SHALL BE MAINTAINED PRIOR TO THE NEXT RAINFALL EVENT OR AS NECESSARY TO MAINTAIN EFFECTIVENESS OF THE CONTROL, OR AS SOON AS PRACTICABLE.
14. CONTRACTOR SHALL INSPECT DISTURBED AREAS, MATERIAL STORAGE AREAS EXPOSED TO PRECIPITATION, STRUCTURAL CONTROL MEASURES, AND VEHICLE ENTRY AND EXIT AREAS AT LEAST ONCE EVERY 14 CALENDAR DAYS AND WITHIN 24 HOURS OF A STORM EVENT OF 0.5 INCHES OR GREATER.
15. CONTRACTOR SHALL INSPECT STABILIZED AREAS AND AREAS WHERE RUNOFF IS UNLIKELY DUE TO FROZEN OR ARID WEATHER CONDITIONS AT LEAST ONCE PER MONTH.
16. CONTRACTOR SHALL INSPECT ACCESSIBLE DISCHARGE LOCATIONS (OR NEARBY DOWNSTREAM LOCATIONS IF DISCHARGE POINT IS NOT ACCESSIBLE) IN ORDER TO ASCERTAIN WHETHER OR NOT EROSION CONTROL MEASURES ARE EFFECTIVE IN PREVENTING SIGNIFICANT IMPACTS TO RECEIVING WATERS.
17. STRUCTURAL BMP'S SHOULD NOT, TO THE DEGREE ATTAINABLE, BE PLACED WITHIN FLOODPLAINS.
18. BASED ON INSPECTION RESULTS, REVISIONS TO SWPPP MUST BE MADE WITHIN 7 CALENDAR DAYS OF THE INSPECTION. NEW OR MODIFIED CONTROL MEASURES MUST BE INSTALLED PRIOR TO THE NEXT RAINFALL EVENT, OR AS SOON AS PRACTICABLE.
19. REPORTS SUMMARIZING THE SCOPE OF ALL INSPECTIONS, INCLUDING NAME AND QUALIFICATIONS OF INSPECTOR, DATE OF INSPECTION, AND MAJOR OBSERVATIONS RELATING TO THE IMPLEMENTATION OF THE SWPPP (INCLUDING LOCATION OF DISCHARGES OF SEDIMENT OR OTHER POLLUTANTS, LOCATION OF CONTROLS THAT NEED TO BE MAINTAINED, LOCATIONS WHERE CONTROLS ARE INADEQUATE OR ARE OPERATING IMPROPERLY, AND LOCATIONS WHERE ADDITIONAL CONTROLS ARE NEEDED) MUST BE SIGNED BY THE INSPECTOR PER 30 TEXAS ADMINISTRATIVE CODE (TAC) SECTION 305.128, AND RETAINED WITHIN THE SWPPP FOR AT LEAST 3 YEARS FROM THE DATE THE SITE IS FINALLY STABILIZED. REPORTS THAT DO NOT IDENTIFY INCIDENTS OF NON-COMPLIANCE SHALL CONTAIN A CERTIFICATION STATING THAT THE SITE IS IN COMPLIANCE WITH THE SWPPP AND THE GENERAL PERMIT.
20. CONTRACTOR SHALL IDENTIFY ALL SOURCES OF NON-STORM WATER THAT WILL BE COMBINED WITH STORM WATER AT THE SITE (EXCEPT FIRE-FIGHTING ACTIVITIES) AND ENSURE IMPLEMENTATION OF APPROPRIATE POLLUTION PREVENTION MEASURES FOR NON-STORM WATER COMPONENT(S) OF DISCHARGE.
21. CONTRACTOR SHALL ENSURE THAT THE INDIVIDUAL SIGNING THE SWPPP MAKES THE CERTIFICATION UNDER PART VI.G.2.d OF THE GENERAL PERMIT. THIS CERTIFICATION MUST APPEAR WITHIN THE SWPPP.
22. CONTRACTOR SHALL SUBMIT A NOTICE OF TERMINATION (N.O.T.) TO TCEQ AND A COPY OF THE N.O.T. TO THE OPERATOR IF ANY MS4 RECEIVING DISCHARGE WITHIN THIRTY (30) DAYS AFTER FINAL STABILIZATION, OR ANOTHER OPERATOR HAS ASSUMED CONTROL, OR ALL SILT FENCES AND OTHER TEMPORARY EROSION CONTROL HAS BEEN REMOVED.

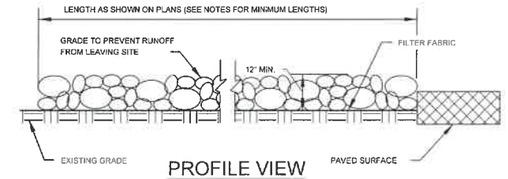


NOTE: REMOVE SEDIMENT FROM THE STORAGE AREA WHEN THE DEPTH OF SEDIMENT HAS BUILT UP TO ONE-HALF THE HEIGHT OF THE ROCK CHECK DAM. INSPECT THE DOWNSTREAM BASE OF THE STONE OUTLET AND THE DOWNSTREAM FLOW CHANNEL TO ENSURE THAT NO EXCESSIVE EROSION OR GUILLIES HAVE DEVELOPED AND REPAIR AS NECESSARY. THE SEDIMENT STORAGE AREA SHOULD DRAIN WITHIN 48 TO 72 HOURS AFTER A RAIN EVENT. THE FILTER STONE ON THE UPSTREAM FACE OF THE STONE OUTLET MAY REQUIRE CLEANING OR REPLACEMENT IF STANDING WATER REMAINS FOR LONGER PERIODS.

SECTION

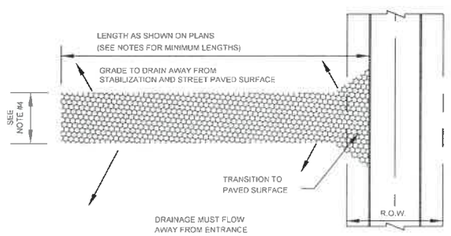
(RD) ROCK CHECK DAM

NTS



PROFILE VIEW

N.T.S.



PLAN VIEW

N.T.S.

(CE) STABILIZED CONSTRUCTION ENTRANCE

STABILIZED CONSTRUCTION ENTRANCE GENERAL NOTES:

1. STONE SHALL BE 6 TO 8 INCH DIAMETER CRUSHED ROCK. NO CRUSHED CONCRETE ALLOWED
2. LENGTH SHALL BE SHOWN ON PLANS, WITH A MINIMUM LENGTH OF 30 FEET FOR LOTS WHICH ARE LESS THAN 150 FEET FROM EDGE OF PAVEMENT. THE MINIMUM DEPTH IN ALL OTHER CASES SHALL BE 100 FEET
3. STONE LAYER 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

BENCHMARKS

ELEVATIONS BASED ON CITY OF ALLEN GPS CONTROL

BM#1 (CITY OF ALLEN MONUMENT NO. 2) 3-1/2-INCH ALUMINUM DISC FOUND IN CONCRETE, LOCATED ±350 FEET EAST FROM THE INTERSECTION OF MAIN STREET AND RICHARDSON COURT, ±16 FEET FROM THE NORTHEAST CORNER OF A BRIDGE.

ELEV= 647.13

BM#2 SQUARE WITH "X" CUT SET ON CONCRETE HEADWALL, EAST SIDE OF COUNTRY CLUB ROAD (F.M. NO. 1378), AT THE INTERSECTION OF COUNTRY CLUB ROAD AND ESTATES PARKWAY (F.M. NO. 2170).

ELEV= 587.52

BM#3 SQUARE WITH "X" CUT SET ON CONCRETE HEADWALL, EAST SIDE OF COUNTRY CLUB ROAD (F.M. NO. 1378), ±240 FEET NORTH FROM THE CENTERLINE INTERSECTION OF COUNTRY CLUB ROAD AND SKYVIEW DRIVE.

ELEV= 589.81

No.	REVISIONS	DATE	BY

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STATE OF TEXAS
SARAH E. SCOTT
113285
LICENSED
PROFESSIONAL ENGINEER
1/31/2022

K-H PROJECT	064041015
DATE	JANUARY 2022
SCALE	AS SHOWN
DESIGNED BY	CRA
DRAWN BY	WSM
CHECKED BY	SES

EROSION CONTROL PLAN DETAILS

HENDRICK FARM

CITY OF LUCAS
COLLIN COUNTY, TEXAS

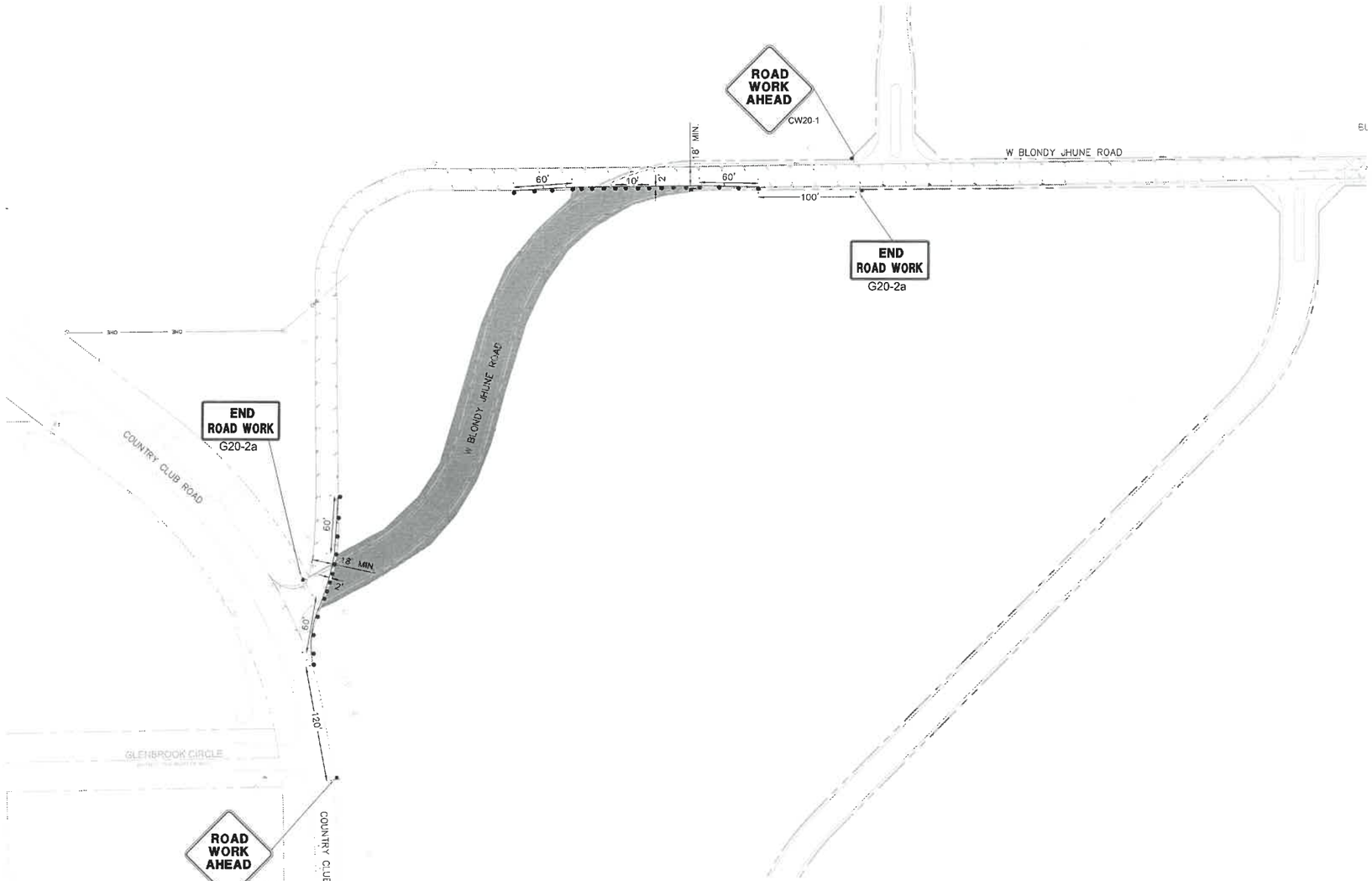
SHEET NUMBER
C-40

PHASE 1

NARROW LANES ON
W BLONDY JHUNE ROAD

LEGEND

- SIGN
- FLASHING ARROW BOARD
- TYPE 3 BARRICADE
- DIRECTION OF TRAVEL
- WORK AREA
- CENTER LANE DEVICES WITH OTLD



N
W E
S

0 100' 200'
GRAPHIC SCALE 100'

NOTES

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No.	REVISIONS	DATE	BY

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STATE OF TEXAS
SARAH E. SCOTT
113285
LICENSED
PROFESSIONAL ENGINEER
1/31/2022

KHA PROJECT 064041015		DESIGNED BY:	CRA
DATE	JANUARY 2022	DRAWN BY:	MSM
SCALE:	AS SHOWN	CHECKED BY:	SES

TRAFFIC CONTROL PLAN (1 OF 3)

HENDRICK FARM

CITY OF LUCAS
COLLIN COUNTY, TEXAS

SHEET NUMBER
C-41

PHASE 2

FULL LANE CLOSURES ON W BLONDY JHUNE ROAD WITH DETOUR

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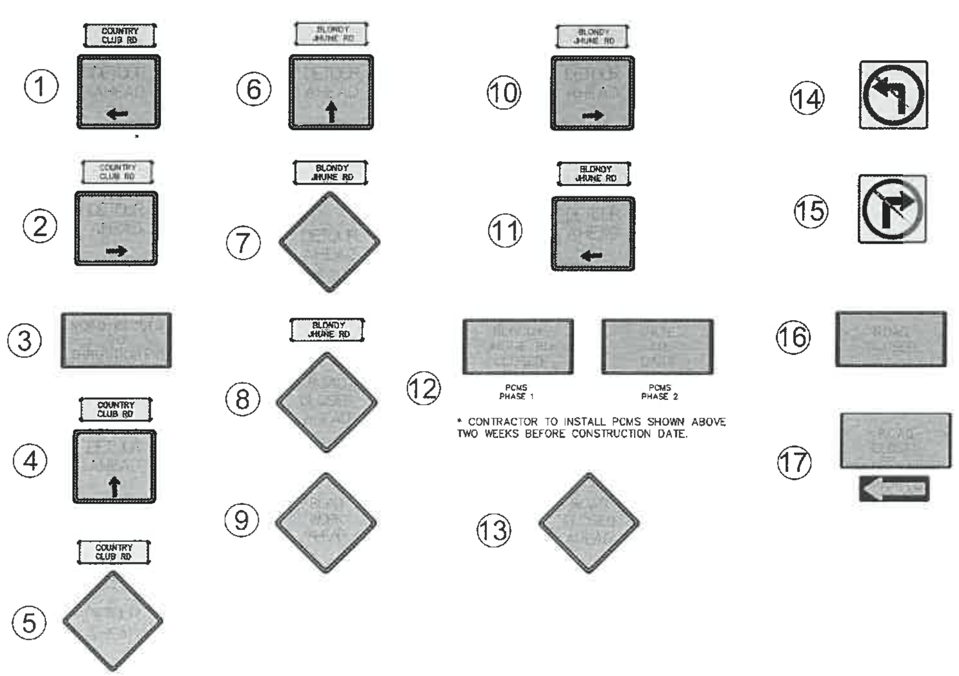
NOT TO SCALE



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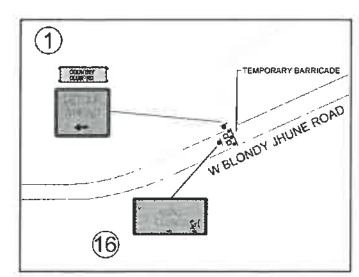

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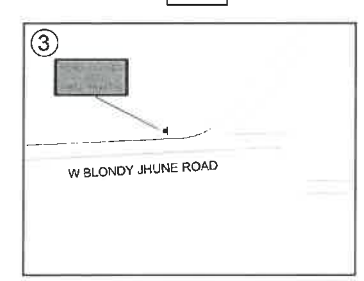

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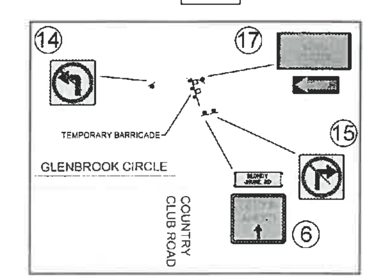

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9. CONTRACTOR TO ENSURE THAT TEMPORARY BARRICADES PROVIDES ADEQUATE STREET CLOSURE TO PREVENT MOTORISTS FROM ROUTING THROUGH PRIVATE PROPERTY AND LIMITS OF CONSTRUCTION.

10. ALL SIGNS ARE SIGN FOR GRAPHICAL REPRESENTATION ONLY. DISTANCE OF SIGNAGE PLACEMENT FROM TRAVELED WAY TO CONFORM TO CITY OF LUCAS, TXDOT AND MUTCD STANDARDS, WHERE APPLICABLE.

No.	REVISIONS	DATE	BY

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TEXAS REGISTERED ENGINEERING FIRM F-928

KHA PROJECT	DATE	SCALE:	DESIGNED BY:	DRAWN BY:	CHECKED BY:
064041015	JANUARY 2022	AS SHOWN	CRA	LML	SES

TRAFFIC CONTROL PLAN (2 OF 3)

HENDRICK FARM

CITY OF LUCAS
COLLIN COUNTY, TEXAS

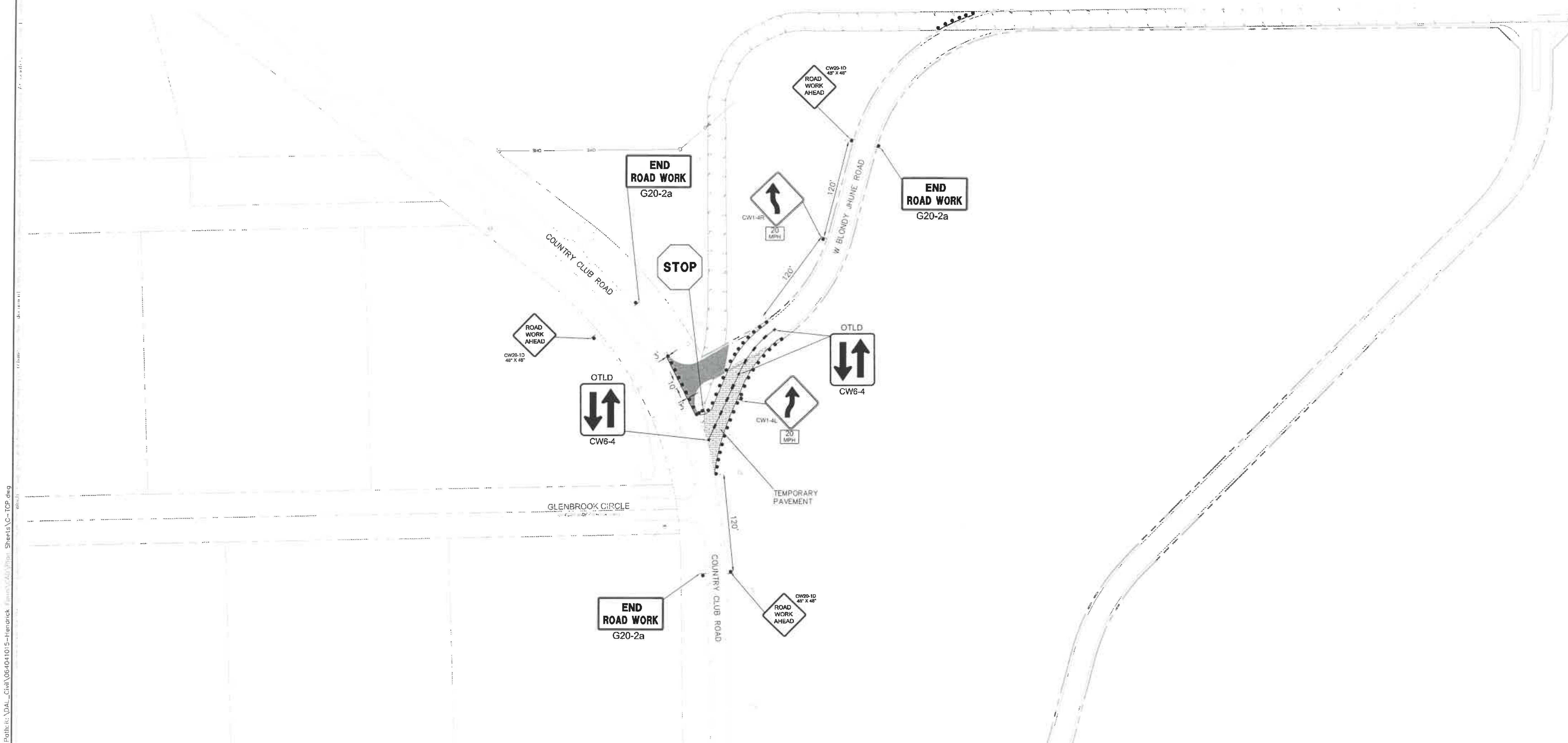
SHEET NUMBER
C-42

LEGEND

- SIGN
- FLASHING ARROW BOARD
- TYPE 3 BARRICADE
- DIRECTION OF TRAVEL
- WORK AREA
- CENTER LANE DEVICES WITH OTLD

PHASE 3

NARROW LANES ON ON COUNTRY CLUB ROAD



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TEXAS REGISTERED ENGINEERING FIRM F-928

STATE OF TEXAS
SARAH E. SCOTT
113285
LICENSED PROFESSIONAL ENGINEER
1/31/2022

KHA PROJECT 064041015	DATE JANUARY 2022
SCALE:	AS SHOWN
DESIGNED BY:	CRA
DRAWN BY:	MSM
CHECKED BY:	SES

TRAFFIC CONTROL PLAN (3 OF 3)

HENDRICK FARM
CITY OF LUCAS
COLLIN COUNTY, TEXAS

SHEET NUMBER
C-43

TABLE OF VARIABLE DIMENSIONS AND QUANTITIES FOR ONE HEADWALL ④

SLOPE	DIA OF PIPE, D	W	X	Y	L	Reinf (Lbs)	Conc (CY) ①	X and W (each add'l pipe)	Reinf (Lbs) (each add'l pipe)	Conc (CY) ① (each add'l pipe)
2:1	12"	4'- 7 1/2"	2'- 6"	2'-10"	3'- 3 1/4"	84	0.6	1'- 9"	20	0.2
	15"	5'- 5 3/4"	2'- 9 1/2"	3'- 4"	3'-10 1/4"	93	0.7	2'- 2"	24	0.3
	18"	6'- 4 1/4"	3'- 1"	3'-10"	4'- 5"	120	0.9	2'- 8"	32	[illegible]
	21"	7'- 2 3/4"	3'- 4 1/2"	4'- 4"	5'- 0"	137	1.1	3'- 1"	43	[illegible]
	24"	8'- 2 1/2"	3'- 9 1/2"	4'-10"	5'- 7"	159	1.3	3'- 7"	50	[illegible]
	27"	9'- 1"	4'- 1"	5'- 4"	6'- 2"	173	1.5	3'-11"	56	0.6
	30"	9'-11 1/2"	4'- 4 1/2"	5'-10"	6'- 8 3/4"	197	1.7	4'- 4"	65	0.8
	33"	10'-10"	4'- 8"	6'- 4"	7'- 3 3/4"	216	2.0	4'- 8"	71	0.9
	36"	11'- 8 1/4"	4'-11 1/2"	6'-10"	7'-10 3/4"	241	2.2	5'- 1"	81	1.0
	42"	13'- 5 1/4"	5'- 6 1/2"	7'-10"	9'- 0 1/2"	290	2.8	5'-10"	97	1.3
	48"	15'- 9"	6'- 1 1/2"	9'- 4"	10'- 9 1/4"	350	3.8	6'- 7"	117	1.7
	54"	17'- 5 3/4"	6'- 8 1/2"	10'- 4"	11'-11 1/4"	415	4.5	7'- 6"	151	2.1
	60"	19'- 2 3/4"	7'- 3 1/2"	11'- 4"	13'- 1"	469	[illegible]	8'- 3"	174	2.5
	66"	20'-11 1/2"	7'-10 1/2"	12'- 4"	14'- 3"	530	6.2	8'- 9"	194	2.9
	72"	22'- 8 1/2"	8'- 5 1/2"	13'- 4"	15'- 4 3/4"	587	7.1	9'- 4"	213	3.3
3:1	12"	6'- 3"	2'- 6"	4'- 3"	4'-11"	114	0.6	1'- 9"	22	[illegible]
	15"	7'- 5"	2'- 9 1/2"	5'- 0"	5'- 9 1/4"	133	1.1	2'- 2"	23	[illegible]
	18"	8'- 6 3/4"	3'- 1"	5'- 9"	6'- 7 3/4"	166	1.3	2'- 8"	37	[illegible]
	21"	9'- 8 1/4"	3'- 4 1/2"	6'- 6"	7'- 6"	189	1.6	3'- 1"	48	[illegible]
	24"	11'- 0"	3'- 9 1/2"	7'- 3"	8'- 4 1/2"	221	2.0	3'- 7"	58	[illegible]
	27"	12'- 2"	4'- 1"	8'- 0"	9'- 2 3/4"	245	2.3	3'-11"	67	[illegible]
	30"	13'- 4"	4'- 4 1/2"	8'- 9"	10'- 1 1/4"	287	2.7	4'- 4"	77	[illegible]
	33"	14'- 5 1/4"	4'- 8"	9'- 6"	10'-11 3/4"	310	3.1	4'- 8"	84	1.2
	36"	15'- 7 3/4"	4'-11 1/2"	10'- 3"	11'-10"	343	3.5	5'- 1"	96	1.4
	42"	17'-11 1/2"	5'- 6 1/2"	11'- 9"	13'- 6 3/4"	424	4.5	5'-10"	119	1.7
	48"	21'- 1 1/4"	6'- 1 1/2"	14'- 0"	16'- 2"	527	6.1	6'- 7"	146	2.3
	54"	23'- 5 1/2"	6'- 8 1/2"	15'- 6"	17'-10 3/4"	613	7.3	7'- 6"	186	2.9
	60"	25'- 9 1/2"	7'- 3 1/2"	17'- 0"	19'- 7 1/2"	707	8.7	8'- 3"	219	3.4
	66"	28'- 1"	7'-10 1/2"	18'- 6"	21'- 4 1/4"	797	10.1	8'- 9"	242	3.9
	72"	30'- 4 3/4"	8'- 5 1/2"	20'- 0"	23'- 1 1/4"	910	[illegible]	9'- 4"	272	4.4
4:1	12"	7'-10 3/4"	2'- 6"	5'- 8"	6'- 6 1/2"	144	[illegible]	1'- 9"	24	0.3
	15"	9'- 4"	2'- 9 1/2"	6'- 8"	7'- 8 1/2"	177	[illegible]	2'- 2"	32	0.4
	18"	10'- 9 1/2"	3'- 1"	7'- 8"	8'-10 1/4"	217	[illegible]	2'- 8"	42	0.5
	21"	12'- 2 3/4"	3'- 4 1/2"	8'- 8"	10'- 0"	254	[illegible]	3'- 1"	57	0.7
	24"	13'- 9 1/2"	3'- 9 1/2"	9'- 8"	11'- 2"	295	[illegible]	3'- 7"	67	0.9
	27"	15'- 3"	4'- 1"	10'- 8"	12'- 3 3/4"	328	[illegible]	3'-11"	77	1.0
	30"	16'- 8 1/4"	4'- 4 1/2"	11'- 8"	13'- 5 3/4"	379	[illegible]	4'- 4"	89	1.3
	33"	18'- 1 3/4"	4'- 8"	12'- 8"	14'- 7 1/2"	417	[illegible]	4'- 8"	101	1.4
	36"	19'- 7"	4'-11 1/2"	13'- 8"	15'- 9 1/4"	464	[illegible]	5'- 1"	115	1.7
	42"	22'- 5 1/4"	5'- 6 1/2"	15'- 8"	18'- 1"	575	[illegible]	5'-10"	141	2.1
	48"	26'- 6 1/4"	6'- 1 1/2"	18'- 8"	21'- 6 3/4"	720	[illegible]	6'- 7"	175	2.8
	54"	29'- 5"	6'- 8 1/2"	20'- 8"	23'-10 1/4"	863	[illegible]	7'- 6"	226	3.6
	60"	32'- 3 3/4"	7'- 3 1/2"	22'- 8"	26'- 2"	984	[illegible]	8'- 3"	264	4.3
	66"	35'- 2 1/2"	7'-10 1/2"	24'- 8"	28'- 5 3/4"	1126	14.5	8'- 9"	300	[illegible]
	72"	39'- 1 1/2"	8'- 5 1/2"	26'- 8"	30'- 9 1/2"	1383	17.1	9'- 4"	334	[illegible]
6:1	12"	11'- 2"	2'- 6"	8'- 6"	9'- 9 3/4"	220	1.9	1'- 9"	25	[illegible]
	15"	13'- 2 1/2"	2'- 9 1/2"	10'- 0"	11'- 6 1/2"	264	2.5	2'- 2"	37	[illegible]
	18"	15'- 2 1/2"	3'- 1"	11'- 6"	13'- 3 1/2"	326	3.2	2'- 8"	50	[illegible]
	21"	17'- 2 3/4"	3'- 4 1/2"	13'- 0"	15'- 0 1/4"	381	3.9	3'- 1"	69	[illegible]
	24"	19'- 4 1/2"	3'- 9 1/2"	14'- 6"	16'- 9"	447	4.8	3'- 7"	80	[illegible]
	27"	21'- 4 1/4"	4'- 1"	16'- 0"	18'- 5 3/4"	506	5.7	3'-11"	96	1.4
	30"	23'- 5 1/4"	4'- 4 1/2"	17'- 6"	20'- 2 1/2"	587	6.7	4'- 4"	110	1.7
	33"	25'- 5 1/2"	4'- 8"	19'- 0"	21'-11 1/4"	667	7.8	4'- 8"	127	2.0
	36"	27'- 5 3/4"	4'-11 1/2"	20'- 6"	23'- 8"	727	9.0	5'- 1"	144	2.3
	42"	31'- 6 1/4"	5'- 6 1/2"	23'- 6"	27'- 1 1/2"	914	11.5	5'-10"	179	3.0
	48"	37'- 3 1/2"	6'- 1 1/2"	28'- 0"	32'- 4"	1181	15.9	6'- 7"	231	4.0
	54"	41'- 4 1/4"	6'- 8 1/2"	31'- 0"	35'- 9 1/2"	1412	19.2	7'- 6"	300	5.0
	60"	45'- 4 3/4"	7'- 3 1/2"	34'- 0"	39'- 2"	1619	[illegible]	[illegible]	[illegible]	[illegible]

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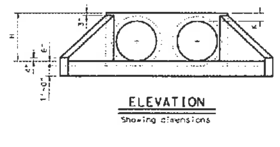


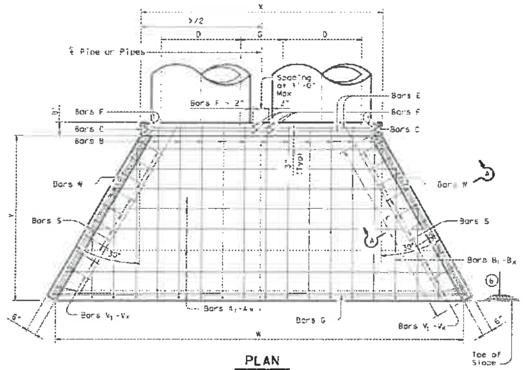
① Quantities shown are for concrete pipe and will increase slightly for metal pipe installations.
② For vehicle safety, curbs shall project no more than 3" above finished grade. Curb heights shall be reduced, if necessary, to meet these requirements. No changes will be made in quantities and no additional compensation will be allowed for this work.
③ Provide a 1'-0" footing as shown where required to maintain 4" Min cover for pipes.
④ Quantities shown are for one structure end only (one headwall).
⑤ Min Length = 6" + 3" × $\left(\frac{12 \times H - 7}{12 \times L}\right)$
Max Length = 12 × H − 3" × $\left(\frac{12 \times H - 7}{12 \times L}\right)$ − 1"
⑥ Lengths of wings based on SL:1 Slope along this line.

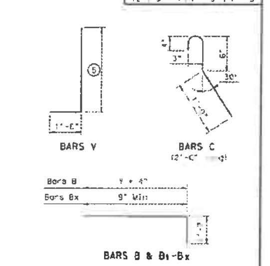
TABLE OF REINFORCING STEEL ④

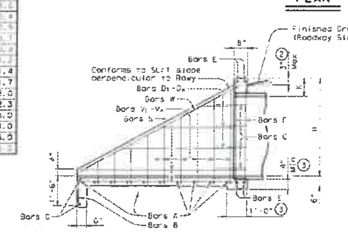
Bar	Size	Spa	No.
A	#4	1'-0"	-
B	#3	1'-6"	-
C	#4	1'-0"	-
D	#3	1'-0"	-
E	#5	-	4
F	#5	-	-
G	#3	-	2
S	#4	-	6
V	#4	1'-0"	-
W	#5	-	4

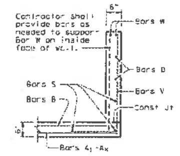
TABLE OF CONSTANT DIMENSIONS

DIA OF PIPE, D	G	K	H
12"	9"	1'- 0"	2'- 0"
15"	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"









GENERAL NOTES:
Designed according to AASHTO LRFD Specifications.
Reinforcing steel shall be placed with the center of the outside layer of bars 2" from the surface of the concrete.
All reinforcing steel shall be Grade 60.
All concrete shall be Class "C" and shall have a minimum compressive strength of 3600 psi.
No bridge rails of any type may be mounted directly to these culvert headwalls.

Texas Department of Transportation — Bridge Division Standard

CONCRETE HEADWALLS WITH FLARED WINGS FOR 0° SKEW PIPE CULVERTS

CH-FW-0

TABLE OF VARIABLE DIMENSIONS AND QUANTITIES FOR ONE HEADWALL ④

SLOPE	DIA OF PIPE, D	W	X	Y	L	Reinf (Lbs)	Conc (CY) ①	X and W (each add'l pipe)	Reinf (Lbs) (each add'l pipe)	Conc (CY) ① (each add'l pipe)
2:1	12"	7'- 7 1/4"	4'- 3"	2'-10"	5'- 8"	[illegible]	[illegible]	2'- 5 1/4"	26	0.3
	15"	8'-10 1/2"	4'- 7 1/4"	3'- 4"	6'- 8"	[illegible]	[illegible]	3'- 0 3/4"	32	0.4
	18"	10'- 1 1/4"	4'-11 1/2"	3'-10"	7'- 8"	[illegible]	[illegible]	3'- 9 1/4"	48	0.5
	21"	11'- 3 3/4"	5'- 3 1/4"	4'- 4"	8'- [illegible]	[illegible]	[illegible]	4'- 4 1/4"	54	0.6
	24"	12'- 6 1/2"	5'- 8"	4'-10"	9'- [illegible]	[illegible]	[illegible]	5'- 0 3/4"	67	0.8
	27"	13'- 9"	6'- 0 1/4"	5'- 4"	10'- [illegible]	[illegible]	[illegible]	5'- 6 1/2"	73	0.9
	30"	14'-11 3/4"	6'- 4 1/2"	5'-10"	11'- [illegible]	[illegible]	[illegible]	6'- 1 1/2"	86	1.1
	33"	16'- 3"	6'- 9 1/2"	6'- 4"	12'- [illegible]	[illegible]	[illegible]	6'- 7 1/4"	92	1.2
	36"	17'- 6 1/4"	7'- 2 1/4"	6'-10"	13'- [illegible]	[illegible]	[illegible]	7'- 2 1/4"	107	1.4
	42"	20'- 1"	8'- 0 1/4"	7'-10"	15'- [illegible]	[illegible]	[illegible]	8'- 3"	138	1.6
	48"	23'- 6"	8'-10 1/4"	9'- 4"	18'- 8"	468	5.4	9'- 3 1/4"	167	2.4
	54"	26'- 0 3/4"	9'- 6"	10'- 4"	20'- 8"	549	6.4	10'- 7 1/4"	198	3.0
	60"	28'- 7 1/2"	10'- 6"	11'- 4"	22'- 8"	620	7.5	11'- 8"	243	3.6
	66"	31'- 2 1/4"	11'- 3 1/4"	12'- 4"	24'- 8"	710	8.8	12'- 4 1/2"	269	4.0
	72"	33'- 8 3/4"	12'- 1 3/4"	13'- 4"	26'- 8"	789	10.1	13'- 2 1/2"	303	4.6
3:1	12"	10'- 1 1/4"	4'- 3"	4'- 3"	8'- 6"	159	1.3	2'- 5 1/4"	28	0.3
	15"	11'- 9 1/4"	4'- 7 1/4"	5'- 0"	10'- 0"	184	1.6	3'- 0 3/4"	37	0.5
	18"	13'- 5"	4'-11 1/2"	5'- 9"	11'- 6"	225	[illegible]	3'- 9 1/4"	55	0.6
	21"	15'- 0 1/4"	5'- 3 1/4"	6'- 6"	13'- 0"	254	[illegible]	4'- 4 1/4"	62	0.8
	24"	16'- 8 3/4"	5'- 8"	7'- 3"	14'- 6"	291	[illegible]	5'- 0 3/4"	77	1.0
	27"	18'- 4 1/2"	6'- 0 1/4"	8'- 0"	16'- 0"	329	[illegible]	5'- 6 1/2"	88	1.2
	30"	20'- 0 1/4"	6'- 4 1/2"	8'- 9"	17'- 6"	377	[illegible]	6'- 1 1/2"	103	1.4
	33"	21'- 8 3/4"	6'- 9 1/2"	9'- 6"	19'- 0"	413	[illegible]	6'- 7 1/4"	111	1.6
	36"	23'- 5 1/2"	7'- 2 1/4"	10'- 3"	20'- 6"	462	[illegible]	7'- 2 1/4"	126	1.9
	42"	26'-10 1/2"	8'- 0 1/4"	11'- 9"	23'- 6"	571	6.4	8'- 3"	168	2.4
	48"	31'- 7 1/4"	8'-10 1/4"	14'- 0"	28'- 0"	712	[illegible]	9'- 3 1/4"	210	3.2
	54"	35'- 0 1/4"	9'- 6"	15'- 6"	31'- 0"	830	10.5	10'- 7 1/4"	249	4.0
	60"	38'- 5 1/4"	10'- 6"	17'- 0"	34'- 0"	954	12.4	11'- 8"	306	4.8
	66"	41'-10 1/4"	11'- 3 1/4"	18'- 6"	37'- 0"	1092	14.5	12'- 4 1/2"	338	5.5
4:1	12"	12'- 6 3/4"	4'- 3"	5'- 8"	11'- 4"	203	[illegible]	2'- 5 1/4"	32	0.4
	15"	14'- 7 3/4"	4'- 7 1/4"	6'- 8"	13'- 4"	242	2.2	3'- 0 3/4"	43	0.6
	18"	16'- 8 1/4"	4'-11 1/2"	7'- 8"	15'- 4"	296	[illegible]	3'- 9 1/4"	61	0.8
	21"	18'- 9 1/4"	5'- 3 1/4"	8'- 8"	17'- 4"	343	[illegible]	4'- 4 1/4"	73	1.0
	24"	20'-10 1/4"	5'- 8"	9'- 8"	19'- 4"	394	[illegible]	5'- 0 3/4"	90	1.3
	27"	23'- 0"	6'- 0 1/4"	10'- 8"	21'- 4"	445	[illegible]	5'- 6 1/2"	103	1.5
	30"	25'- 1"	6'- 4 1/2"	11'- 8"	23'- 4"	510	[illegible]	6'- 1 1/2"	120	1.8
	33"	27'- 2 3/4"	6'- 9 1/2"	12'- 8"	25'- 4"	572	[illegible]	6'- 7 1/4"	134	2.0
	36"	29'- 4 1/2"	7'- 2 1/4"	13'- 8"	27'- 4"	631	[illegible]	7'- 2 1/4"	152	2.4
	42"	33'- 8"	8'- 0 1/4"	15'- 8"	31'- 4"	781	[illegible]	8'- 3"	198	3.0
	48"	39'- 8"	8'-10 1/4"	18'- 8"	37'- 4"	991	[illegible]	9'- 3 1/4"	255	4.0
6:1	12"	17'- 5 1/4"	4'- 3"	8'- 6"	17'- 0"	295	[illegible]	2'- 5 1/4"	38	0.5
	15"	20'- 5"	4'- 7 1/4"	10'- 0"	20'- 0"	367	[illegible]	3'- 0 3/4"	51	0.6
	18"	23'- 4 1/2"	4'-11 1/2"	11'- 6"	23'- 0"	445	[illegible]	3'- 9 1/4"	73	1.0
	21"	26'- 4"	5'- 3 1/4"	13'- 0"	26'- 0"	531	[illegible]	4'- 4 1/4"	89	1.3
	24"	29'- 3 1/2"	5'- 8"	14'- 6"	29'- 0"	605	[illegible]	5'- 0 3/4"	110	1.7
	27"	32'- 2 1/4"	6'- 0 1/4"	16'- 0"	32'- 0"	702	[illegible]	5'- 6 1/2"	129	2.0
	30"	35'- 2 1/4"	6'- 4 1/2"	17'- 6"	35'- 0"	801	[illegible]	6'- 1 1/2"	150	2.4
	33"	38'- 2 1/4"	6'- 9 1/2"	19'- 0"	38'- 0"	913	[illegible]	6'- 7 1/4"	170	2.8

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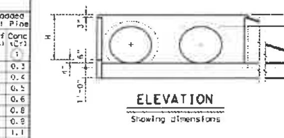


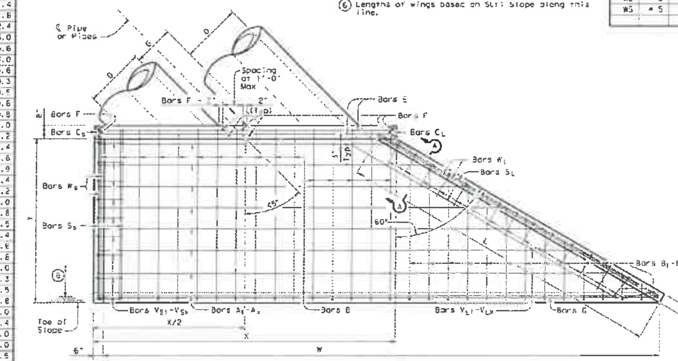
① Quantities shown are for concrete pipe and will increase slightly for metal pipe installations.
② For vehicle safety, curbs shall project no more than 3" above finished grade. Curb heights shall be reduced, if necessary, to meet these requirements. No changes will be made in quantities and no additional compensation will be allowed for this work.
③ Provide a 1'-0" footing as shown where required to maintain 4" Min cover for pipes.
④ Quantities shown are for one structure end only (one headwall).
⑤ Min Length = 6" + 3" × $\left(\frac{12 \times H - 7}{12 \times L}\right)$
Max Length = 12 × H − 3" × $\left(\frac{12 \times H - 7}{12 \times L}\right)$ − 1"
⑥ Lengths of wings based on SL:1 Slope along this line.

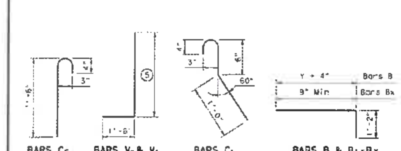
TABLE OF REINFORCING STEEL ④

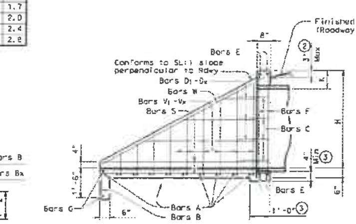
Bar	Size	Spa	No.
A	#4	1'-0"	-
B	#3	1'-6"	-
CL	#4	1'-0"	-
CS	#4	1'-0"	-
D	#3	1'-0"	-
E	#5	-	4
F	#5	-	-
G	#3	-	2
SL	#4	-	3
SS	#4	-	3
V	#4	1'-0"	-
WL	#5	-	2
WS	#5	-	2

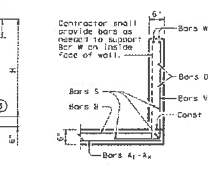
TABLE OF CONSTANT DIMENSIONS

DIA OF PIPE, D	G	K	H
12"	9"	1'- 0"	2'- 0"
15"	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"









GENERAL NOTES:
Designed according to AASHTO LRFD Specifications.
Reinforcing steel shall be placed with the center of the outside layer of bars 2" from the surface of the concrete.
All reinforcing steel shall be Grade 60.
All concrete shall be Class "C" and shall have a minimum compressive strength of 3600 psi.
No bridge rails of any type may be mounted directly to these culvert headwalls.

Texas Department of Transportation — Bridge Division Standard

CONCRETE HEADWALLS WITH FLARED WINGS FOR 45° SKEW PIPE CULVERTS

CH-FW-45

TABLE OF DIMENSIONS & REINFORCING STEEL (Wings for One Structure End)

Maximum Wingwall Height Hw	W	X	Y	Z	Bars J1 Size	Bars J1 Spa	Bars J2 Size	Bars J2 Spa	Reinf (Lb/Ft) ③	Conc (CY/Ft) ③
2'-6"	2'- 5"	1'- 0"	9"	7"	#4	1'-0"	#4	1'-0"	13.73	0.248
3'-0"	2'- 5"	1'- 0"	9"	7"	#4	1'-0"	#4	1'-0"	17.07	0.261
3'-6"	2'- 5"	1'- 0"	9"	7"	#4	1'-0"	#4	1'-0"	[illegible]	[illegible]
4'-0"	2'- 5"	1'- 0"	9"	7"	#4	1'-0"	#4	1'-0"	[illegible]	[illegible]
4'-6"	3'- 2"	1'- 6"	1'- 0"	7"	#4	1'-0"	#4	1'-0"	[illegible]	0.330
5'-0"	3'- 2"	1'- 6"	1'- 0"	7"	#4	1'-0"	#4	1'-0"	[illegible]	0.343
5'-6"	3'- 2"	1'- 6"	1'- 0"	7"	#4	1'-0"	#4	1'-0"	[illegible]	0.355
6'-0"	3'- 2"	1'- 6"	1'- 0"	7"	#4	1'-0"	#4	1'-0"	[illegible]	0.367
7'-0"	3'- 8"	1'- 9"	1'- 3"	7"	#4	1'-0"	#4	1'-0"	[illegible]	0.414
8'-0"	4'- 2"	2'- 0"	1'- 6"	8"	#5	1'-0"	#4	1'-0"	[illegible]	0.486
9'-0"	4'- 8"	2'- 3"	1'- 9"	8"	#4	6"	#4	6"	[illegible]	0.535
10'-0"	5'- 2"	2'- 6"	2'- 0"	8"	#5	6"	#4	6"	[illegible]	0.564
11'-0"	5'- 8"	2'- 9"	2'- 3"	8"	#6	6"	#5	6"	[illegible]	[illegible]
12'-0"	6'- 2"	3'- 0"	2'- 6"	9"	#7	6"	#5	6"	[illegible]	[illegible]
13'-0"	6'- 8"	3'- 3"	2'- 9"	11"	#7	6"	#5	6"	178.80	0.856
14'-0"	7'- 2"	3'- 6"	3'- 0"	1'- 0"	#6	6"	#5	6"	216.78	[illegible]
15'-0"	7'- 8"	4'- 0"	3'- 0"	1'- 1"	#9	6"	#6	6"	[illegible]	[illegible]
16'-0"	8'- 2"	4'- 6"	3'- 0"	1'- 3"	#9	6"	#6	6"	[illegible]	[illegible]

TABLE OF WINGWALL REINFORCING (2-Wings)

Bar	Size	No.	Spa
D	#5	-	1'-0"
E	#4	-	1'-0"
F	#4	-	1'-0"
G	#6	4	-
M	#4	4	-
P	#4	-	1'-0"
R	#5	6	-
V	#4	-	1'-0"

TABLE OF ESTIMATED CULVERT TOEWALL QUANTITIES

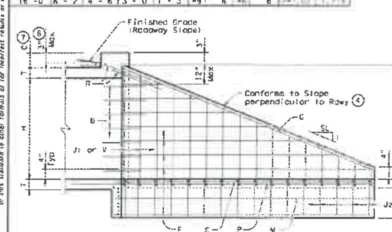
Bar	Size	No.	Spa
L	#4	-	1'-6"
Q	#4	1	-
Reinf (Lb/Ft)			2.45
Conc (CY/Ft)			0.037

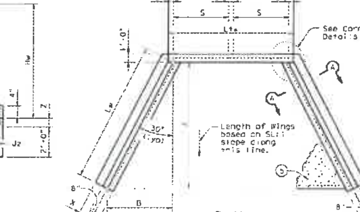
WING DIMENSION CALCULATIONS:

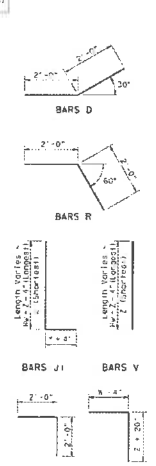
Formulas: (All values are in Feet)
Hw = H + T + C − 0.250'
A = (Hw − 0.333') (SL)
B = (A) Tangent (30°)
Lw = (A) ÷ Cosine (30°)
For Cast-in-place culverts:
Ltw = (N) (S) + (N + 1) (U)
For Precast culverts:
Ltw = (N) (2U + S) + (N − 1) (0.560')
Total Wingwall Area (Two Wings − S.F.) = (Hw + 0.333') (Lw)

Hw = Height of Wingwall
SL:1 = Side Slope Ratio (Horizontal:1 Vertical)
Lw = Length of Wingwall
Ltw = Culvert Toewall Length
N = Number of Culvert Spans

See applicable box culvert standard for H, S, T, and U values.

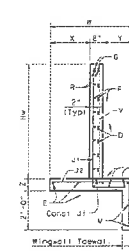


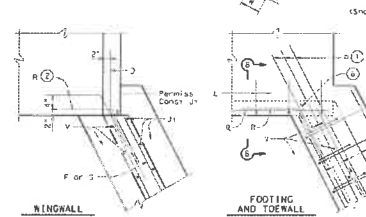


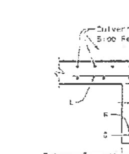


① Extend Bars P 3'-0" minimum into bottom slab of Box Culvert.
② Adjust to fit as necessary to maintain 1 1/4" clear cover and 4" minimum between bars.
③ Quantities shown are based on an average wing height for two wings (one structure end). To determine total quantities for two wings multiply the tabulated values by Lw.
④ Recommended values of Slope are: 2:1, 3:1, 4:1, & 6:1.
⑤ When shown elsewhere on the plans, a 5" deep concrete riprap shall be constructed. Payment for riprap shall be as required by Item 432, "Riprap". Unless otherwise shown on the plans or directed by the Engineer, the riprap shall have a 6" wide by 1'-6" deep reinforced concrete toewall along all edges adjacent to natural ground; the toewall shall be reinforced by extending typical riprap reinforcing into the toewall; construction joints or grooved joints, oriented in the direction of flow, shall extend across the full distance of the riprap, at intervals of approximately 20'. When such riprap is provided, the culvert toewall shown in SECTION B-B will not be required.
⑥ At Contractor's option, Culvert Toewall may be ended flush with Wingwall Toewall. Adjust reinforcing from that shown as necessary.
⑦ 0" min to 5'-0" max. Estimated curb heights are shown elsewhere in the plans. For structures with pedestrian rail, bicycle rail or curbs taller than 1'-0", refer to ECD standard. For structures with T6 bridge rail, refer to T6-CM standard. For structures with traffic rail, other than T6, refer to RAC standard.
⑧ For vehicle safety, curb heights and wall heights shall be reduced, if necessary, to provide a maximum 3" projection above finished grade. No changes will be made in quantities and no additional compensation will be allowed for this work.

GENERAL NOTES:
Designed according to AASHTO LRFD Specifications.
All reinforcing steel shall be Grade 60.
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.
All concrete shall be Class "C" and shall have a minimum compressive strength of 3600 psi.
All reinforcing bars shall be adjusted to provide a minimum of 1 1/4" clear cover.
When structure is founded on solid rock, depth of toewalls for culverts and wingwalls may be reduced or eliminated as directed by the Engineer.
See BCS sheet for additional dimensions and information.
The quantities for concrete and reinforcing steel resulting from the formulas given on this sheet are for Contractor's information only.







Texas Department of Transportation — Bridge Division Standard

CONCRETE WINGWALLS WITH FLARED WINGS FOR 0° SKEW BOX CULVERTS

FW-0

TABLE OF DIMENSIONS & REINFORCING STEEL (Wings for One Structure End)

Maximum Wingwall Height Hw	W	X	Y	Z	Bars J1 Size	Bars J1 Spa	Bars J2 Size	Bars J2 Spa	Reinf (Lb/Ft) ③	Conc (CY/Ft) ③
2'-6"	2'- 5"	1'- 0"	9	7"	#4	1'-0"	#4	1'-0"	[illegible]	[illegible]
3'-0"	2'- 5"	1'- 0"	9	7"	#4	1'-0"	#4	1'-0"	[illegible]	[illegible]
3'-6"	2'- 5"	1'- 0"	9	7"	#4	1'-0"	#4	1'-0"	[illegible]	[illegible]
4'-0"	2'- 5"	1'- 0"	9	7"	#4	1'-0"	#4	1'-0"	[illegible]	[illegible]
4'-6"	3'- 2"	1'- 6"	1'- 0	7"	#4	1'-0"	#4	1'-0"	[illegible]	[illegible]
5'-0"	3'- 2"	1'- 6"	1'- 0	7"	#4	1'-0"	#4	1'-0"	[illegible]	[illegible]
5'-6"	3'- 2"	1'- 6"	1'- 0	7"	#4	1'-0"	#4	1'-0"	[illegible]	[illegible]
6'-0"	3'- 2"	1'- 6"	1'- 0	7"	#4	1'-0"	#4	1'-0"	[illegible]	[illegible]
7'-0"	3'- 8"	1'- 9"	1'- 3	7"	#4	1'-0"	#4	1'-0"	[illegible]	[illegible]
8'-0"	4'- 2"	2'- 0"	1'- 6	8"	#5	1'-0"	#4	1'-0"	[illegible]	[illegible]
9'-0"	4'- 8"	2'- 3"	1'- 9	8"	#4	6"	#4	6"	[illegible]	[illegible]
10'-0"	5'- 2"	2'- 6"	2'- 0	8"	#5	6"	#4	6"	[illegible]	[illegible]
11'-0"	5'- 8"	2'- 9"	2'- 3	8"	#6	6"	#5	6"	[illegible]	[illegible]
12'-0"	6'- 2"	3'- 0"	2'- 6	9"	#7	6"	#5	6"	[illegible]	[illegible]
13'-0"	6'- 8"	3'- 3"	2'- 9	11"	#7	6	#5	6"	[illegible]	[illegible]
14'-0"	7'- 2"	3'- 6"	3'- 0	1'- 0"	#8	6"	#5	6"	[illegible]	[illegible]
15'-0"	7'- 8"	4'- 0"	3'- 0	1'- 1"	#9	6"	#6	6"	[illegible]	[illegible]
16'-0"	8'- 2"	4'- 6"	3'- 0	1'- 3"	#9	6"	#6	6"	[illegible]	[illegible]

TABLE OF WINGWALL REINFORCING (2-Wings)

Bar	Size	No.	Spa
D	#5	-	1'-0"
E	#4	-	1'-0"
F	#4	-	1'-0"
G	#6	4	-
M	#4	4	-
P	#4	-	1'-0"
R	#5	6	-
V	#4	-	1'-0"

TABLE OF ESTIMATED CULVERT TOEWALL QUANTITIES

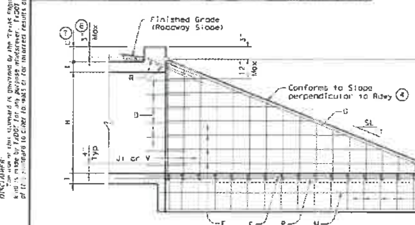
Bar	Size	No.	Spa
L	#4	-	1'-6"
Q	#4	1	-
Reinf (Lb/Ft)			2.45
Conc (CY/Ft)			0.037

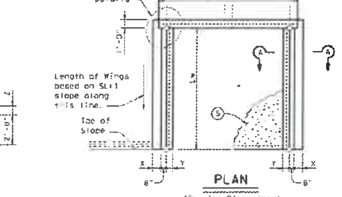
WING DIMENSION CALCULATIONS:

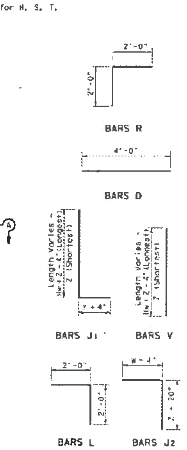
Formulas: (All values are in Feet)
Hw = H + T + C − 0.250'
Lw = (Hw − 0.333') (SL)
For Cast-in-place culverts:
Ltw = (N) (S) + (N + 1) (U)
For Precast culverts:
Ltw = (N) (2U + S) + (N − 1) (0.5')
Total Wingwall Area (Two Wings − S.F.) = (Hw + 0.333') (Lw)

Hw = Height of Wingwall
SL:1 = Side Slope Ratio (Horizontal:1 Vertical)
Lw = Length of Wingwall
Ltw = Culvert Toewall Length
N = Number of Culvert Spans

See applicable box culvert standard for H, S, T, and U values.

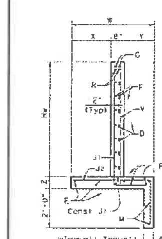


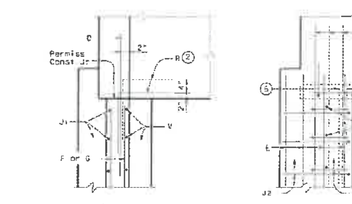


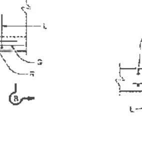


① Extend Bars P 3'-0" minimum into bottom slab of Box Culvert.
② Adjust to fit as necessary to maintain 1 1/4" clear cover and 4" minimum between bars.
③ Quantities shown are based on an average wing height for two wings (one structure end). To determine total quantities for two wings multiply the tabulated values by Lw.
④ Recommended values of Slope are: 2:1, 3:1, 4:1, & 6:1.
⑤ When shown elsewhere on the plans, a 5" deep concrete riprap shall be constructed. Payment for riprap shall be as required by Item 432, "Riprap". Unless otherwise shown on the plans or directed by the Engineer, the riprap shall have a 6" wide by 1'-6" deep reinforced concrete toewall along all edges adjacent to natural ground; the toewall shall be reinforced by extending typical riprap reinforcing into the toewall; construction joints or grooved joints, oriented in the direction of flow, shall extend across the full distance of the riprap, at intervals of approximately 20'. When such riprap is provided, the culvert toewall shown in SECTION B-B will not be required.
⑥ At Contractor's option, Culvert Toewall may be ended flush with Wingwall Toewall. Adjust reinforcing from that shown as necessary.
⑦ 0" min to 5'-0" max. Estimated curb heights are shown elsewhere in the plans. For structures with pedestrian rail, bicycle rail or curbs taller than 1'-0", refer to ECD standard. For structures with T6 bridge rail, refer to T6-CM standard. For structures with traffic rail, other than T6, refer to RAC standard.
⑧ For vehicle safety, curb heights and wall heights shall be reduced, if necessary, to provide a maximum 3" projection above finished grade. No changes will be made in quantities and no additional compensation will be allowed for this work.

GENERAL NOTES:
Designed according to AASHTO LRFD Specifications.
All reinforcing steel shall be Grade 60.
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.
All concrete shall be Class "C" and shall have a minimum compressive strength of 3600 psi.
All reinforcing bars shall be adjusted to provide a minimum of 1 1/4" clear cover.
When structure is founded on solid rock, depth of toewalls for culverts and wingwalls may be reduced or eliminated as directed by the Engineer.
See BCS sheet for additional dimensions and information.
The quantities for concrete and reinforcing steel resulting from the formulas given on this sheet are for Contractor's information only.







Texas Department of Transportation — Bridge Division Standard

CONCRETE WINGWALLS WITH STRAIGHT WINGS FOR 0° SKEW BOX CULVERTS

SW-0

Kimley»Horn

13455 NOEL ROAD, SUITE 700, DALLAS, TX 75240
PHONE: 972-770-1300
WWW.KIMLEY-HORN.COM
TEXAS REGISTERED ENGINEERING FIRM F-928

STATE OF TEXAS — SARAH E. SCOTT — 113285 — LICENSED PROFESSIONAL ENGINEER
1/31/2022

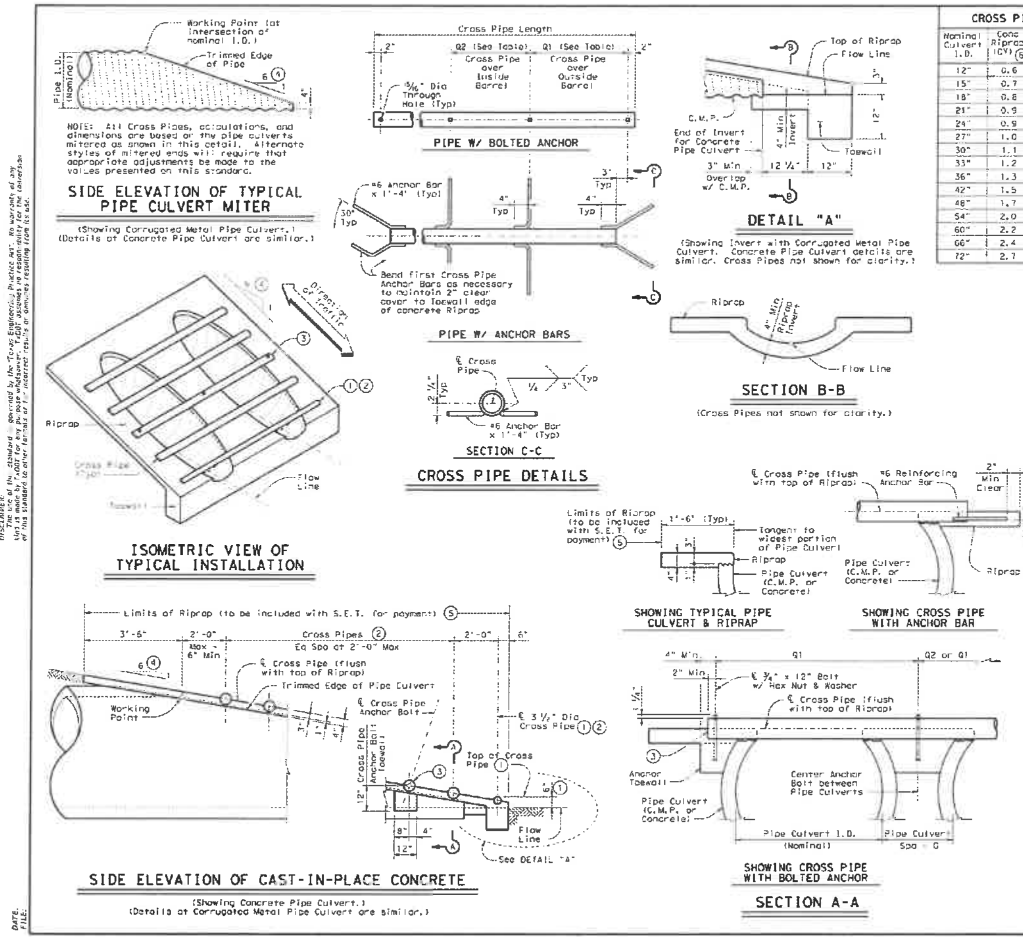
KHA PROJECT 064041015
DATE JANUARY 2022
SCALE: AS SHOWN
DESIGNED BY: CRA
DRAWN BY:

TXDOT CONSTRUCTION DETAILS (1 OF 2)

HENDRICK FARM

CITY OF LUCAS
COLLIN COUNTY, TEXAS

SHEET NUMBER
C-44


SIDE ELEVATION OF TYPICAL PIPE CULVERT MITER
(Showing Corrugated Metal Pipe Culvert.) (Details at Concrete Pipe Culvert are similar.)
NOTE: All Cross Pipes, calculations, and dimensions are based on the pipe culverts mitered as shown in this detail. Alternate styles of mitered ends will require that appropriate adjustments be made to the values presented on this standard.
ISOMETRIC VIEW OF TYPICAL INSTALLATION
PIPE W/ BOLTED ANCHOR
PIPE W/ ANCHOR BARS
SECTION C-C
CROSS PIPE DETAILS
DETAIL "A"
(Showing Invert with Corrugated Metal Pipe Culvert. Concrete Pipe Culvert details are similar. Cross Pipes not shown for clarity.)
SECTION B-B
(Cross Pipes not shown for clarity.)
SHOWING TYPICAL PIPE CULVERT & RIPRAP
SHOWING CROSS PIPE WITH ANCHOR BAR
SHOWING CROSS PIPE WITH BOLTED ANCHOR
SECTION A-A
SIDE ELEVATION OF CAST-IN-PLACE CONCRETE
(Showing Concrete Pipe Culvert.) (Details at Corrugated Metal Pipe Culvert are similar.)

CROSS PIPE LENGTHS, REQUIRED PIPE SIZES, & RIPRAP QUANTITIES ②

Nominal Culvert I.D.	Conc Riprap (CY) ⑥	Pipe Culvert Spa ~ G	Single Barrel ~ Q1	Multi-Barrel ~ Q1	Q2	Conditions for use of Cross Pipes	Cross Pipe Size
12"	0.6	9"	N/A	2'- 1"	1'- 9"	3 or more Pipe Culverts	3" Std (3.500" O.D.)
15"	0.7	11"	N/A	2'- 5"	2'- 2"		
18"	0.8	1'- 2"	N/A	2'-10"	2'- 8"		
21"	0.9	1'- 4"	N/A	3'- 2"	3'- 1"		
24"	0.9	1'- 7"	N/A	3'- 6"	3'- 7"		
27"	1.0	1'- 8"	N/A	3'-10"	3'-11"	3 or more Pipe Culverts	3 ½" Std (4.000" O.D.)
30"	1.1	1'-10"	N/A	4'- 2"	4'- 4"	2 or more Pipe Culverts	
33"	1.2	1'-11"	4'- 2"	4'- 5"	4'- 8"	All Pipe Culverts	
36"	1.3	2'- 1"	4'- 5"	4'- 9"	5'- 1"	All Pipe Culverts	4" Std (4.500" O.D.)
42"	1.5	2'- 4"	4'-11"	5'- 5"	5'-10"		
48"	1.7	2'- 7"	5'- 5"	6'- 0"	6'- 7"	All Pipe Culverts	5" Std (5.563" O.D.)
54"	2.0	3'- 0"	5'-11"	6'- 9"	7'- 6"		
60"	2.2	3'- 3"	6'- 5"	7'- 4"	8'- 3"		
66"	2.4	3'- 3"	6'-11"	7'-10"	8'- 9"		
72"	2.7	3'- 4"	7'- 5"	8'- 5"	9'- 4"		

① The proper installation of the first Cross Pipe is critical for vehicle safety. The top of the first Cross Pipe must be placed at no more than 6" above the flow line.

② Size of Cross Pipes, except the first bottom pipe, shall be as shown in the PIPE SIZE table. The first bottom pipe shall be 3 ½" Standard Pipe (4" O.D.).

③ The third Cross Pipe from the bottom of the Culvert shall always be installed using a bolted connection. Care shall be taken to ensure that Riprap concrete does not flow into the Cross Pipe so as to permit disassembly of the bolted connection to allow clearout access. At the Contractor's option, all other Cross Pipes may also be installed using the bolted connection details.

④ Match Cross Slope as shown elsewhere in the plans. Cross Slope of 6:1 or flatter is required for vehicle safety.

⑤ Riprap placed beyond the limits shown will be paid as Concrete Riprap in accordance with Item 432, "Riprap".

⑥ Quantities shown are for one end of one reinforced Concrete Pipe Culvert. For multiple pipe culverts or for Corrugated Metal Pipe Culverts, quantities will need to be adjusted. Riprap quantities are for Contractor's information only.

GENERAL NOTES:

Cross Pipes are designed for a traversing load of 10,000 pounds at yield as recommended by Research Report 280-2F, "Safety Treatment of Roadside Parallel-Drainage Structures", Texas Transportation Institute, March 1981.

Safety End Treatments shown herein are intended for use in those installations where out of control vehicles are likely to traverse the openings approximately perpendicular to the Cross Pipes.

Riprap and all necessary inverts shall be Concrete Riprap conforming to the requirements of Item 432, "Riprap".

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.

Payment for riprap and toewall is included in the Price Bid for each Safety End Treatment.

Cross Pipes shall conform to the requirements of ASTM A53 (Type E or S, Grade B), ASTM A500 (Grade B), or API 5LX52.

Bolts and nuts shall conform to ASTM A307.

All steel components, except concrete reinforcing, shall be galvanized after fabrication. Galvanizing damaged during transport or construction shall be repaired in accordance with the specifications.

Texas Department of Transportation — Bridge Division Standard

SAFETY END TREATMENT

FOR 12" DIA TO 72" DIA PIPE CULVERTS

TYPE II ~ PARALLEL DRAINAGE

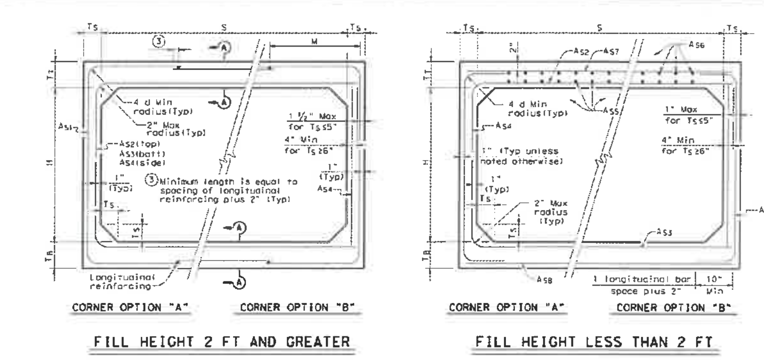
SETP-PD

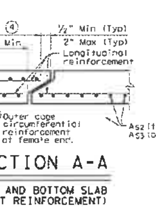
BOX DATA

S (ft)	H (ft)	T_T (in)	T_B (in)	T_S (in)	Fill Height (ft)	M (min) (in)	A_{S1}	A_{S2}	A_{S3}	A_{S4}	A_{S5}	A_{S6}	A_{S7}	A_{S8}	Lift Weight (Tons) ①
SECTION DIMENSIONS							REINFORCING (in²/ft) ②								
4	2	7.5	6	5	<2	-	0.18	0.27	0.15	0.12	0.18	0.18	0.18	0.14	4.5
4	2	5	5	5	2<3	38	0.13	0.19	0.17	0.12	-	-	-	-	3.6
4	2	5	5	5	3-5	38	0.13	0.13	0.13	0.12	-	-	-	-	3.6
4	2	5	5	5	10	38	0.12	0.12	0.12	0.12	-	-	-	-	3.6
4	2	5	5	5	15	38	0.14	0.16	0.16	0.12	-	-	-	-	3.6
4	2	5	5	5	20	38	0.18	0.20	0.21	0.12	-	-	-	-	3.6
4	2	5	5	5	25	38	0.23	0.25	0.25	0.12	-	-	-	-	3.6
4	2	5	5	5	30	38	0.28	0.30	0.30	0.12	-	-	-	-	3.6
4	3	7.5	6	5	<2	-	0.18	0.31	0.18	0.12	0.18	0.18	0.18	0.14	5.0
4	3	5	5	5	2<3	38	0.15	0.23	0.20	0.12	-	-	-	-	4.1
4	3	5	5	5	3-5	38	0.12	0.16	0.16	0.12	-	-	-	-	4.1
4	3	5	5	5	10	38	0.12	0.14	0.14	0.12	-	-	-	-	4.1
4	3	5	5	5	15	38	0.12	0.18	0.18	0.12	-	-	-	-	4.1
4	3	5	5	5	20	38	0.14	0.23	0.24	0.12	-	-	-	-	4.1
4	3	5	5	5	25	38	0.17	0.29	0.29	0.12	-	-	-	-	4.1
4	3	5	5	5	30	38	0.21	0.35	0.35	0.12	-	-	-	-	4.1
4	4	7.5	6	5	<2	-	0.18	0.33	0.20	0.12	0.18	0.18	0.18	0.14	5.5
4	4	5	5	5	2<3	38	0.12	0.26	0.23	0.12	-	-	-	-	4.6
4	4	5	5	5	3-5	38	0.12	0.18	0.18	0.12	-	-	-	-	4.6
4	4	5	5	5	10	38	0.12	0.15	0.15	0.12	-	-	-	-	4.6
4	4	5	5	5	15	38	0.12	0.19	0.20	0.12	-	-	-	-	4.6
4	4	5	5	5	20	38	0.12	0.25	0.25	0.12	-	-	-	-	4.6
4	4	5	5	5	25	38	0.14	0.31	0.31	0.12	-	-	-	-	4.6
4	4	5	5	5	30	38	0.17	0.37	0.37	0.12	-	-	-	-	4.6

① For Box Length = 8'-0"

② A_{s1} thru A_{s4}, A_{s7} and A_{s8} are minimum required areas of reinforcement per linear foot of box length. A_{s5} and A_{s6} are minimum required areas of reinforcement per linear foot of box width.





GENERAL NOTES:

Designs shown conform to ASTM C1577.

Refer to ASTM C1577 for information or details not shown.

All concrete shall be Class "H" Concrete with a minimum compressive strength of 5,000 psi.

See SCP-MD standard sheet for miscellaneous details and notes not shown.

In lieu of furnishing the designs shown on this sheet, the contractor may furnish an alternate design that is equal to or exceeds the box design for the design fill height in the table. Shop plans for alternate designs shall be submitted in accordance with Item "Precast Concrete Structural Members (Fabrication)".

HL93 LOADING

Texas Department of Transportation — Bridge Division Standard

SINGLE BOX CULVERTS

PRECAST

4'-0" SPAN

SCP-4

Kimley»Horn

13455 NOEL ROAD, SUITE 700, DALLAS, TX 75240

PHONE: 972-770-1300

WWW.KIMLEY-HORN.COM

SARAH E. SCOTT 113285 LICENSED PROFESSIONAL ENGINEER 1/31/2022

KHA PROJECT 064041015

DATE JANUARY 2022

SCALE: AS SHOWN

DESIGNED BY: CRA

TXDOT CONSTRUCTION DETAILS (2 OF 2)

HENDRICK FARM

CITY OF LUCAS

COLLIN COUNTY, TEXAS

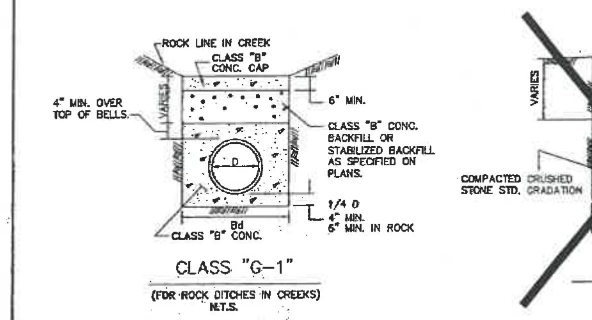
SHEET NUMBER

C-45

GENERAL NOTES FOR ALL THRUST BLOCKS:

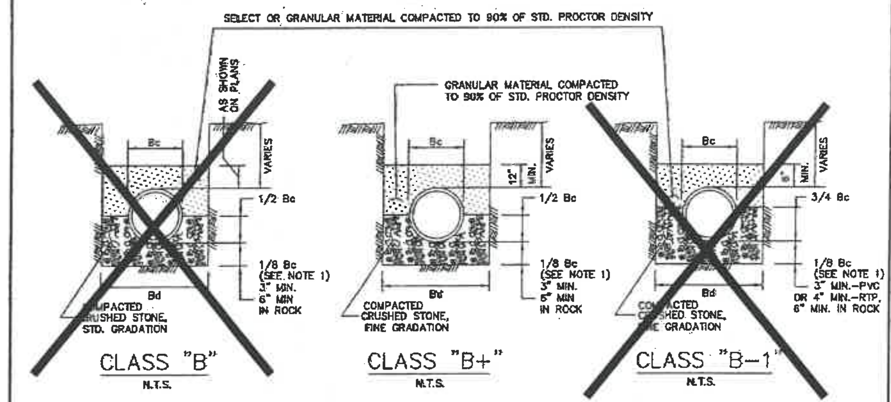
1. CONCRETE FOR BLOCKING SHALL BE CLASS "B".
2. ALL CALCULATIONS ARE BASED ON INTERNAL PRESSURE OF 200 PSI FOR DUCTILE IRON, P.V.C., AND 150 PSI FOR CONCRETE PIPE.
3. VOLUMES OF THRUST BLOCKS ARE NET VOLUMES OF CONCRETE TO BE FURNISHED. THE CORRESPONDING WEIGHT OF THE CONCRETE (CLASS "B") IS EQUAL TO 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



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

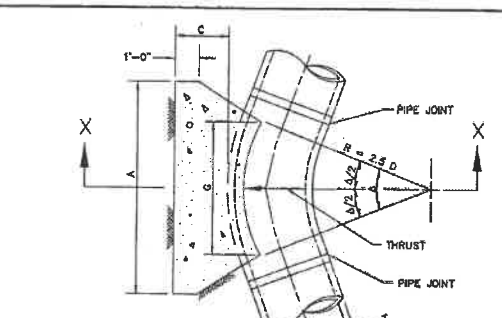
EMBEDMENT CLASS "G-1" & "H" — North Central Texas Council of Governments — STANDARD SPECIFICATION REFERENCE 504.5 — DATE OCT. '04 — STANDARD DRAWING NO. 3060



NOTES:
1. FOR MAINS 42" DIAMETER AND LARGER, 1/8 Bc SHALL BE TAKEN AS 6".
2. Bc = OUTSIDE DIAMETER OF PIPE
3. Bd = TRENCH WIDTH

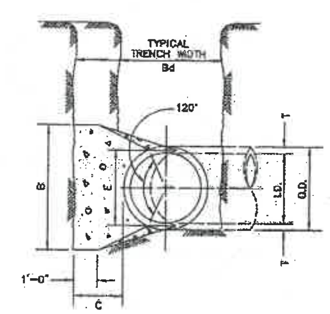
EMBEDMENT CLASS "B", "B+", & "B-1" — North Central Texas Council of Governments — STANDARD SPECIFICATION REFERENCE 504.5 — DATE OCT. '04 — STANDARD DRAWING NO. 3020

NOTE:
CONTRACTOR SHALL USE "B+" AND "G-1" EMBEDMENT AS APPLICABLE FOR WATER AND STORM SEWER CONSTRUCTION.



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	6.3	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°		EARTH			ROCK				Δ = 22.50°		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

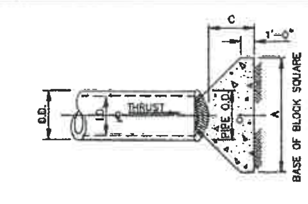
HORIZONTAL THRUST BLOCK AT PIPE BEND — North Central Texas Council of Governments — STANDARD SPECIFICATION REFERENCE 502.4 — DATE OCT. '04 — STANDARD DRAWING NO. 4010B

	Δ = 30°		EARTH			ROCK				Δ = 45°		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°		EARTH			ROCK				Δ = 90°		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	17.8	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	85.8	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

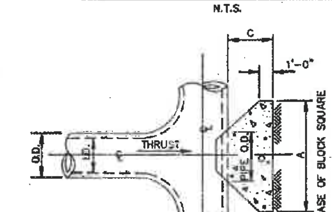
TABLES OF DIMENSIONS AND QUANTITIES

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.

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



PLAN OF TEE THRUST BLOCK
N.T.S.

			EARTH		ROCK	
I.D. (IN.)	THRUST (TONS)	C (FT.)	A (FT.)	VOL. (C.Y.)	A (FT.)	VOL. (C.Y.)
4,6,8	5.1	1.5	2.5	0.3	2.0	0.2
10,12	11.3	1.5	3.5	0.6	2.5	0.3
16,18	25.5	2.0	5.5	1.6	4.0	0.9
20	31.5	2.0	6.0	1.9	4.0	0.9
24	45.2	2.5	7.0	3.1	5.0	1.7
30	53.0	3.0	7.5	4.1	5.5	2.4
36	76.3	4.0	9.0	7.3	6.5	4.2
42	104.0	4.5	10.5	11.0	7.5	6.2
48	136.0	5.0	12.0	15.6	8.5	8.7
54	172.0	5.5	13.5	21.4	9.5	11.9
60	212.0	6.0	15.0	28.4	10.5	15.7
66	257.0	6.5	16.5	36.8	11.5	20.5
72	305.0	7.5	17.5	47.2	12.5	27.2
78	358.0	8.0	19.0	58.9	13.5	33.7
84	415.0	8.5	20.5	72.5	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

Kimley»Horn

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TEXAS REGISTERED ENGINEERING FIRM F-928

STATE OF TEXAS — SARAH E. SCOTT — 113285 — LICENSED PROFESSIONAL ENGINEER — 1/31/2022

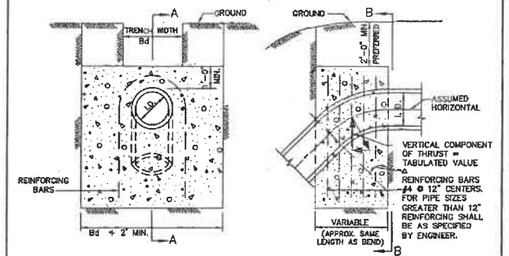
KHA PROJECT 064041015
DATE JANUARY 2022
SCALE: AS SHOWN
DESIGNED BY: CRA
DRAWN BY:

CONSTRUCTION DETAILS (1 OF 3)

HENDRICK FARM

CITY OF LUCAS
COLLIN COUNTY, TEXAS

SHEET NUMBER
C-46



ELEVATION "B-B"
N.T.S.

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

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

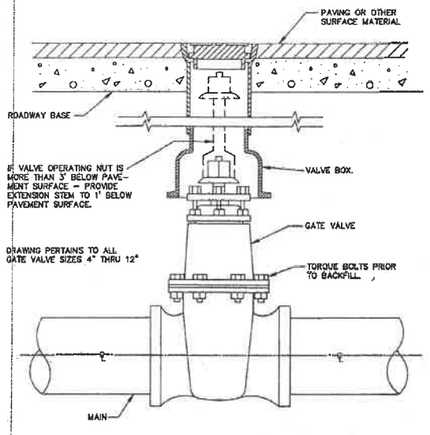
Δ	11.25°		22.50°		30°		45°		67.50°		90°		Δ
I.D. (IN.)	THRUST (TONS)	VOL. (C.Y.)	THRUST (TONS)	VOL. (C.Y.)	THRUST (TONS)	VOL. (C.Y.)	THRUST (TONS)	VOL. (C.Y.)	THRUST (TONS)	VOL. (C.Y.)	THRUST (TONS)	VOL. (C.Y.)	I.D. (IN.)
4,6,8	1.0	0.5	2.0	1.0	2.5	1.3	3.6	1.8	4.6	2.3	5.0	2.5	4,6,8
10,12	2.2	1.1	4.3	2.2	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	23.8	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	28.5	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

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.

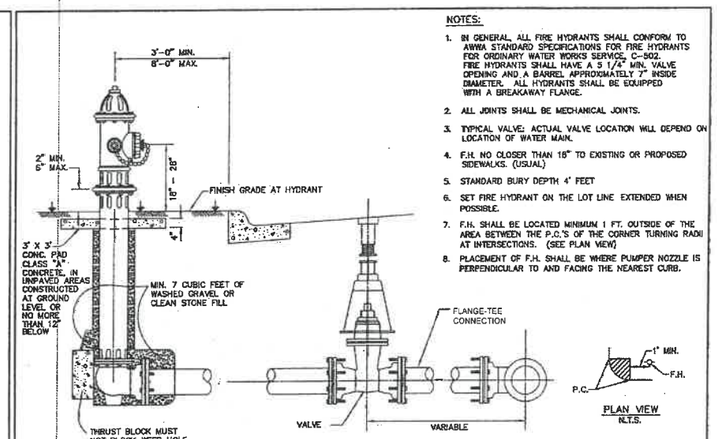


GATE VALVE BOX AND
EXTENSION STEM
N.T.S.

GATE VALVE 4" TO 12"
BOX & EXTENSION STEM

North Central Texas Council of Governments

STANDARD SPECIFICATION REFERENCE 502.6
DATE OCT. '04 STANDARD DRAWING NO. 4050



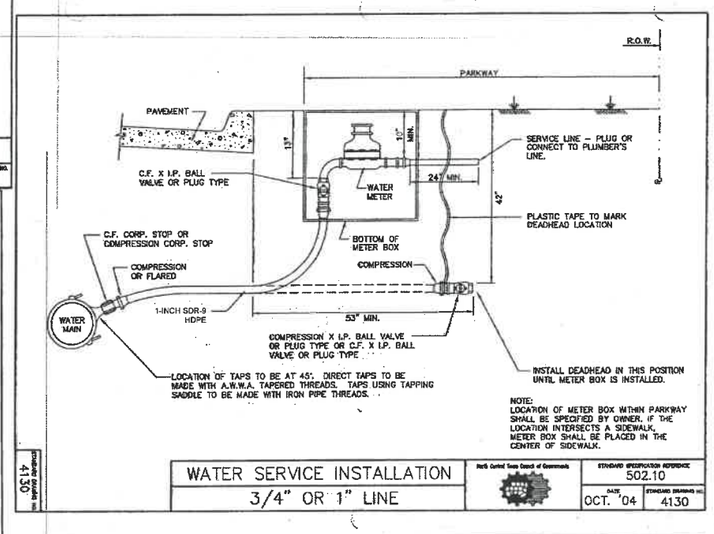
NOTES:

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.

FIRE HYDRANT
INSTALLATION

North Central Texas Council of Governments

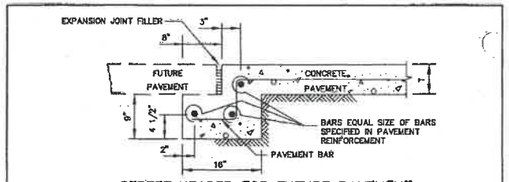
STANDARD SPECIFICATION REFERENCE 502.3
DATE OCT. '04 STANDARD DRAWING NO. 4120



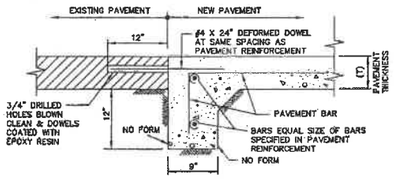
WATER SERVICE INSTALLATION
3/4" OR 1" LINE

North Central Texas Council of Governments

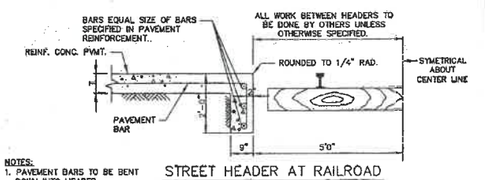
STANDARD SPECIFICATION REFERENCE 502.10
DATE OCT. '04 STANDARD DRAWING NO. 4130



STREET HEADER FOR FUTURE PAVEMENT
N.T.S.



STREET HEADER AT EXISTING PAVEMENT
N.T.S.



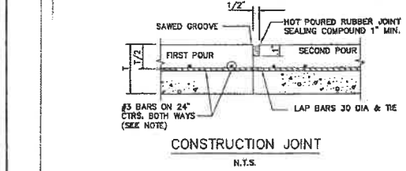
NOTES:
1. PAVEMENT BARS TO BE BENT DOWN INTO HEADER.
2. HEADER AND PAVEMENT TO BE MONOLITHIC.

STREET HEADER AT RAILROAD
N.T.S.

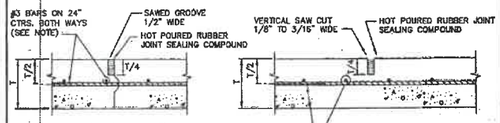
REINFORCED CONCRETE PAVEMENT
STREET HEADERS

North Central Texas Council of Governments

STANDARD SPECIFICATION REFERENCE 305.4
DATE OCT. '04 STANDARD DRAWING NO. 2070



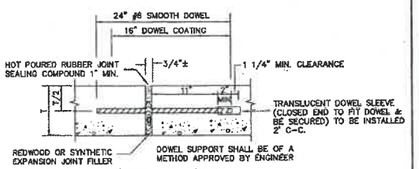
CONSTRUCTION JOINT
N.T.S.



KEYWAY JOINT
(FOR PAVEMENT THICKNESS > 8")
N.T.S.

SAWED CONTRACTION JOINT
N.T.S.

NOTE:
ALTERNATE REINFORCEMENT #4 BARS ON 30" CTRS. BOTH WAYS.

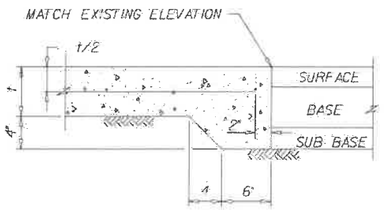


EXPANSION JOINT
(SPACED 600 FT. MAXIMUM; LOCATE AT STRUCTURES AND AT INTERSECTION P.C.'S & P.T.'S)
N.T.S.

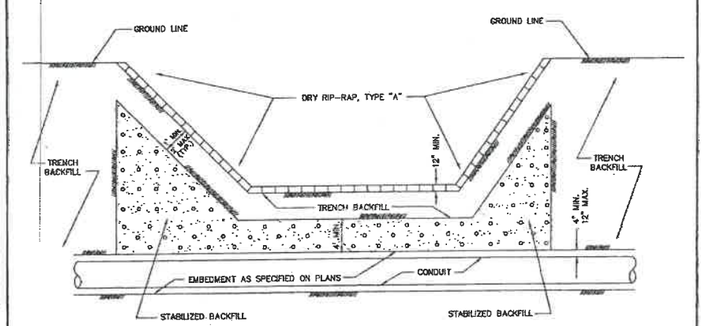
REINFORCED CONCRETE PAVEMENT
JOINTS

North Central Texas Council of Governments

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



CONCRETE TO ASPHALT
STANDARD PAVING HEADER



INFILTRATION PROTECTION
CONDUIT UNDER CHANNEL

North Central Texas Council of Governments

STANDARD SPECIFICATION REFERENCE 504, 803
DATE OCT. '04 STANDARD DRAWING NO. 3080

No.	REVISIONS	DATE	BY

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STATE OF TEXAS
SARAH E. SCOTT
113285
LICENSED
PROFESSIONAL ENGINEER
1/31/2022

KHA PROJECT 064011015
DATE JANUARY 2022
SCALE AS SHOWN
DESIGNED BY: CRA
DRAWN BY:
CHECKED BY: SES

CONSTRUCTION DETAILS (2 OF 3)

HENDRICK FARM

CITY OF LUCAS
COLLIN COUNTY, TEXAS

SHEET NUMBER
C-47

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.

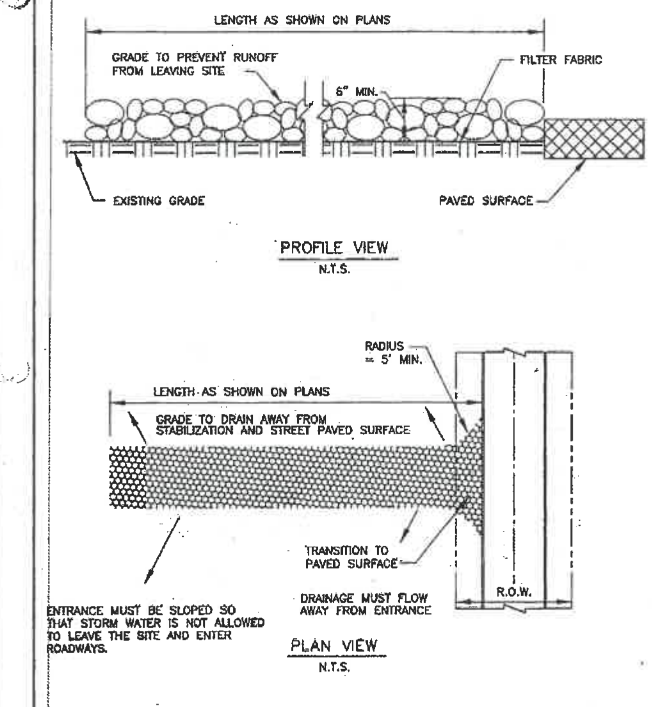
6. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PAVED SURFACES. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND. ALL SEDIMENT SPILLED, DROPPED, WASHED, OR TRACKED ONTO PAVED SURFACES MUST BE REMOVED IMMEDIATELY.

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 201.11	DATE OCT. '04	STANDARD DRAWING NO. 1070B



STABILIZED CONSTRUCTION ENTRANCE	North Central Texas Council of Governments	STANDARD SPECIFICATION REFERENCE 201.10	DATE OCT. '04	STANDARD DRAWING NO. 1070A

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.

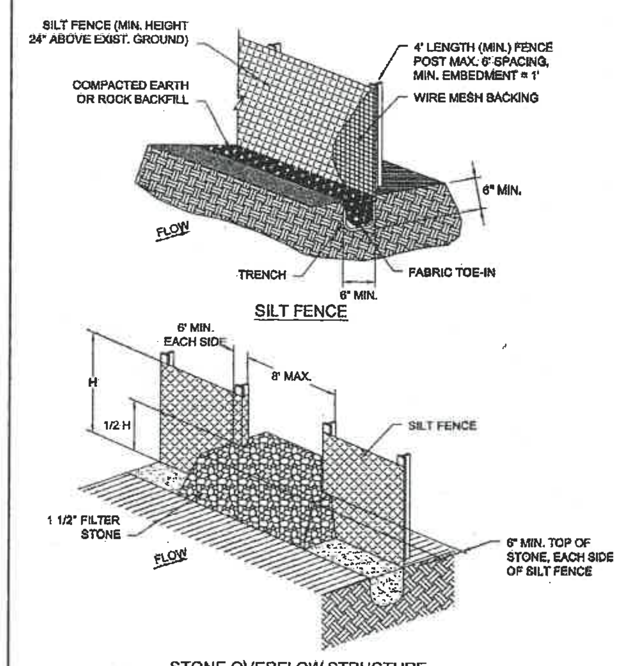
4. SILT FENCE SHOULD BE SECURELY FASTENED TO EACH SUPPORT POST OR TO WIRE BACKING, WHICH IN TURN IS ATTACHED TO THE FENCE POST. THERE SHALL BE A 3 FOOT OVERLAP, SECURELY FASTENED WHERE ENDS OF FABRIC MEET.

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

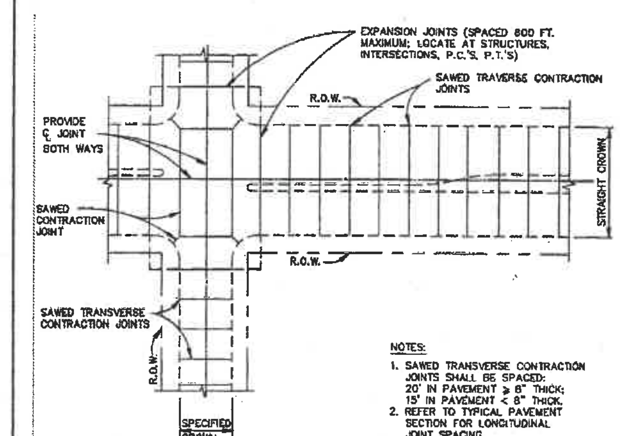
6. SILT FENCE SHALL BE REMOVED WHEN FINAL STABILIZATION IS ACHIEVED OR ANOTHER EROSION OR SEDIMENT CONTROL DEVICE IS EMPLOYED.

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 201.5	DATE OCT. '04	STANDARD DRAWING NO. 1020B



SILT FENCE	North Central Texas Council of Governments	STANDARD SPECIFICATION REFERENCE 201.5	DATE OCT. '04	STANDARD DRAWING NO. 1020A



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 OCT. '04	STANDARD DRAWING NO. 2060

Kimley»Horn

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SCALE: AS SHOWN
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DRAWN BY:

CONSTRUCTION DETAILS (3 OF 3)

HENDRICK FARM
CITY OF LUCAS
COLLIN COUNTY, TEXAS

SHEET NUMBER
C-48