BIRKHOFF, HENDRICKS & CARTER, L.L.P.
PROFESSIONAL ENGINEERS
TBPELS Engineering Firm 526
11910 Greenville Ave., Suite 600 Dallas, Texas 75243 Fax (214) 461-8390
Survey Firm 100318-00
Phone (214) 361-7900

MEMORANDUM

To: Mr. Kofi Addo, P.E. (Bowman Engineering, Inc.)
From: Joe R. Carter, P.E., CFM
Date: June 8, 2023
Subject: F. K. Homes Proposed Development – City of Wylie Wastewater System Analysis

The F. K. Homes Proposed Development is on a tract of approximately 15.4 acres, proposing 101 single family lots located south of County Line Road and just east of Jeanne Lane. This area is outside the City of Wylie wastewater system CCN area. The development proposes constructing a sanitary sewer to connect to an existing sanitary sewer in County Line Road approximately 230 feet northwest of the proposed street connection to County Line Road. The existing 8-inch sanitary sewer is stubbed out towards County Line Road. Flow from the existing 8-inch sanitary sewer is northwest to the existing Pheasant Creek Lift Station.

The City of Wylie provided pdf files of record drawings for the Lake Park Villas subdivision sanitary sewers, the Redwood Lift Station pumps, the 6-inch force main along FM 544 (Vinson Road), and for the Rush Creek Trunk Sewer, Rush Creek Lift Station and Rush Creek Force Main. The Wylie Wastewater System Master Plan Map and Capacity Calculation Spreadsheet and Wylie Wastewater Design criteria will be utilized to determine the fully developed flows sanitary sewer system within the wastewater system service area and compare the fully developed flows to the existing system capacities for both lift stations. The proposed F. K. Homes Development wastewater flows were added to determine the impacts to the existing sanitary sewer system.

Exhibit A is attached showing the existing sewers and lift station capacities and fully developed flows within the service area and fully developed flows with the proposed F. K. Homes Development included at five design points between the proposed connection in the Lake Park Villas development and the connection to the existing Pheasant Creek Lift Station.

The Wylie Wastewater System Master Capacity Calculation Spreadsheets are attached for the fully developed flows within the service area (Exhibit A-1) and for the fully developed flows within the service area with the F. K. Homes Development added (Exhibit A-2). Note that capacities are based on a Manning's "n" value of 0.013, per TCEQ and peak flows described in this memo and on Exhibit A are based on the calculated peak gravity flows for sanitary sewers and the Wylie Wastewater System Master Capacity Calculation Spreadsheets peak flows for lift stations. The peaking factor in the spreadsheet is based on the Babbit Formula (PF = 5/(P/1000)^2) in the Wylie Wastewater System Calculation Spreadsheet.

Existing System Capacities for Service Area

The results of the analysis of the existing sanitary sewers and lift station based on fully developed flows in the City of Wylie service area follows. Wylie design criteria for developments under 250 acres is 400 gal/ac. (I & I), 3.5 (people per unit), and peaking factor of 5. *The peaking factor is reduced for a population served greater than 1000 people based on the Babbit formula in the Wylie Wastewater Master Plan Calculation Spreadsheet.

Design Point A (US End Sanitary Sewer Line SS-B at Patrick Street Cul-de-Sac)

The proposed F. K. Homes development proposes to connect to SS-B an existing 8-inch sanitary sewer at the end of the Patrick Street cul-de-sac, located in the Lake Park Villas development. Line SS-B connects to Line SS-A and flows north towards the Pheasant Creek Lift Station. Both sanitary sewers are on a grade of 0.35% with a capacity of 0.462 MGD. Exhibit B-1 is the plan view of Lines SS-B and SS-A from the Lake Park

Villas record drawings. Exhibit B-2a is the profile of Line SS-B with the existing capacity, required capacity from Lake Park Villas and the required capacity including the proposed F.K. Homes development.

Approximately 9 acres and 9 lots from Lake Park Villas served by Line SS-B. The existing required capacity is (9 Ac. x 400 gpad) + (9 lots x 3.5 persons per lot x 95 gpd x 5.0 peaking factor) = 0.019 MGD
I & I Peak Design Flow

The capacity required for the proposed 15 acres and 101 lots from the F. K. Homes development is:
(15 Ac. x 400 gpad) + (101 lots x 3.5 persons per lot x 95 gpd x 5.0 peaking factor) = 0.174 MGD
I & I Peak Design Flow

The total required capacity for the Lake Park Villas development plus the F. K. Homes development is:
(24 Ac. x 400gpad) + (110 lots x 3.5 persons per lot x 95 gpd x 5.0 peaking factor) = 0.193 MGD
I & I Peak Design Flow

The existing 8-inch sanitary sewer Line SS-B has adequate capacity for Lake Park Villas and the proposed F. K. Homes development from the proposed connection point to Design Point A. Design Point B is at the downstream end the existing Line SS-A in Lake Park Villas just upstream of 10-inch Line K in Neva Drive.

Design Point B (DS End Sanitary Sewer Line SS-A at Connection to Line K – Neva Drive)

Design Point B is located at the downstream end of Line SS-A just upstream of 10-inch Line K in Neva Drive. Line SS-A is an 8-inch sanitary sewer with a grade of 0.35% and a capacity of 0.462 MGD. Exhibit B-2b is the profile of Line SS-A with the existing capacity, required capacity from Lake Park Villas and the required capacity including the proposed F.K. Homes development.

Approximately 33 acres and 164 lots from Lake Park Villas are served by Line SS-A and Line SS-B. The existing required capacity for Lake Park Villas is:

(33 Ac. x 400 gpad) + (164 lots x 3.5 persons per lot x 95 gpd x 5.0 peaking factor) = 0.286 MGD
I & I Peak Design Flow

The capacity required for the proposed 15 acres and 101 lots from the F. K. Homes development is:
(15 Ac. x 400 gpad) + (101 lots x 3.5 persons per lot x 95 gpd x 5.0 peaking factor) = 0.174 MGD
I & I Peak Design Flow

The total requird capacity for the Lake Park Vista development plus the Beaver Creek Road development is:
(48 Ac. x 400gpad) + (265 lots x 3.5 persons per lot x 95 gpd x 5.0 peaking factor) = 0.460 MGD
I & I Peak Design Flow

The existing 8-inch sanitary sewer Line SS-A has adequate capacity for Lake Park Villas and the proposed F. K. Homes development from Design Point A to Design Point B. Design Point C is the downstream end of the 10-inch sanitary sewer Line K.

Design Point C (Downstream End of Line K at Misty Way and Prairie Court)

Design Point C is located at the downstream end of the 10-inch sanitary sewer Line K at the intersection of Misty Way and Prairie Court in the Lake Park Villas development. Line K is a 10-inch sanitary sewer with a minimum grade of 0.30% and a capacity of 0.78 MGD. Exhibit B-3 shows the location of Design Points C, D and E and Exhibit 4 shows the profiles of Lines K and L with the existing capacity, required capacity from Lake Park Villas and the required capacity including the proposed F.K. Homes development.

Approximately 2 acres and 3 lots are added between Design Point B and Design Point C. The existing required capacity for Lake Park Villas is:

(35 Ac. x 400 gpad) + (167 lots x 3.5 persons per lot x 95 gpd x 5.0 peaking factor) = 0.292 MGD
I & I Peak Design Flow

The capacity required for the proposed 15 acres and 101 lots from the F. K. Homes development is:
(15 Ac. x 400 gpad) + (101 lots x 3.5 persons per lot x 95 gpd x 5.0 peaking factor) = 0.174 MGD
I & I Peak Design Flow

The total requird capacity for the Lake Park Vista development plus the F. K. Homes development is:
(50 Ac. x 400gpad) + (268 lots x 3.5 persons per lot x 95 gpd x 5.0 peaking factor) = 0.476 MGD
I & I Peak Design Flow

The existing 10-inch sanitary sewer Line K has adequate capacity for Lake Park Villas and the proposed F. K. Homes development from Design Point C to Design Point C. Design Point D is the downstream end of the 10-inch sanitary sewer Line L.

Design Point D (Downstream End Line L Just Upstream of the Pheasant Creek Lift Station)

The entire Lake Park Villas development of approximately 110-acres and includes approximately 375 units is conveyed by Line L. Line L is a 10-inch sanitary sewer with a minimum grade of 0.26% and a capacity of 0.722 MGD. Exhibit B-3 shows the location of Design Points C, D and E and Exhibit 4 shows the profiles of Lines K and L with the existing capacity, required capacity from Lake Park Villas and the required capacity including the proposed F.K. Homes development.

The existing required capacity for all of Lake Park Villas is:

(110 Ac. x 400 gpad) + (375 lots x 3.5 persons per lot x 95 gpd x 4.90 peaking factor*) = 0.655 MGD
I & I Peak Design Flow * peaking factor for 1313 people

The capacity required for the proposed 15 acres and 101 lots from the F. K. Homes development is:
(15 Ac. x 400 gpad) + (101 lots x 3.5 persons per lot x 95 gpd x 5.0 peaking factor) = 0.174 MGD
I & I Peak Design Flow

The total requird capacity for the Lake Park Vista development plus the F. K. Homes development is:
(125 Ac. x 400gpad) + (476 lots x 3.5 persons per lot x 95 gpd x 4.71 peaking factor*) = 0.795 MGD
I & I Peak Design Flow * peaking factor for 1666 people

The existing 10-inch sanitary sewer Line L does not have adequate capacity to include the F.K. Homes development without surcharging the line, if the peak from the Lake Park Villas coincides with the peak from the proposed F.K. Homes development, and with an I & Iof 400 gpad. The hydraulic gradient required for 0.789 MGD is 0.32%. Adding the F.K. homes development results in a surcharge of approximately 0.83 feet on Line L at Design Point C under these conditions.

Design Point E (Pheasant Creek Lift Station and Force Main)

Based on the pump curve information provided by the City of Wylie the Pheasant Creek Lift Station has an existing firm rated capacity of 0.691 MGD. The area areas contributing flow to the Pheasant Creek Lift Station appear to be 60% to 70% fully developed based on Google Earth aerial photography. The fully developed peak flow from the Wylie Wastewater Master Plan Calculation Spreadsheet is 0.60 MGD without the proposed F. K. Homes development and the fully developed peak flow is 0.72 MGD including the proposed F. K. Homes development. The Pheasant Creek Lift Station does not need to be expanded unless area outside the Lake Park Villas development is added. The undeveloped property west of the Lake Park Villas development that is inside the Wylie Wastwater CCN would cause the The the proposed F. K. Homes development would require the Pheasant Creek Lift Station to have 20% more capacity at full development. Exhibit C is the Pheasant Creek Lift Station plan view with the existing firm rated capacity, required fully developed capacity in the current service area and required fully developed capacity including the proposed F. K. Homes development. Exhibit C-1 is the Pheasant Creek Lift Station pump and system curves.

Impacts on System Downstream of the Pheasant Creek Lift Station and Force Main

The scope of this analysis does not include detailed analysis downstream of the Pheasant Creek Lift Station and Force Main. The 8-inch Pheasant Creek Force Main connects to a 36" gravity sanitary sewer on a 0.12% grade. The capacity of the 36-inch gravity sanitary sewer is 14.93 MGD. Ultimately, the wastewater flows to the Muddy Creek Wastewater Treatment Plant (WWTP). The Muddy Creek WWTP is operated by the North Texas Municipal Water District (NTMWD) and is periodically expanded to treat wastewater flows from the Cities of Wylie and Murphy. Additional flow from the F. K. Homes development should be considered in allocating costs for future treatment plant expansions.

Summary

Our evaluation shows all the City of Wylie gravity sanitary sewers for Design Points A through D have adequate capacity to serve the Lake Park Villas development. The City of Wylie gravity sanitary sewers also have adequate capacity to serve both the Lake Park Villas development and the proposed F. K. Homes development at Design Points A, B, and C; however, adding the proposed F. K. Homes development causes a surcharge of 0.83 feet for Line L at Design Point C. The existing Pheasant Creek Lift Station capacity is 15% greater than required for the fully developed Lake Park Villas; however, adding the proposed F. K. Homes development will require the capcity to be increased from 0.69 MGD to 0.72 MGD at full development for both the Lake Park Villa and F.K. Homes developments.

Enclosures
cc: Mr. Timothy J. Porter, P.E., CFM (City of Wylie City Engineer)

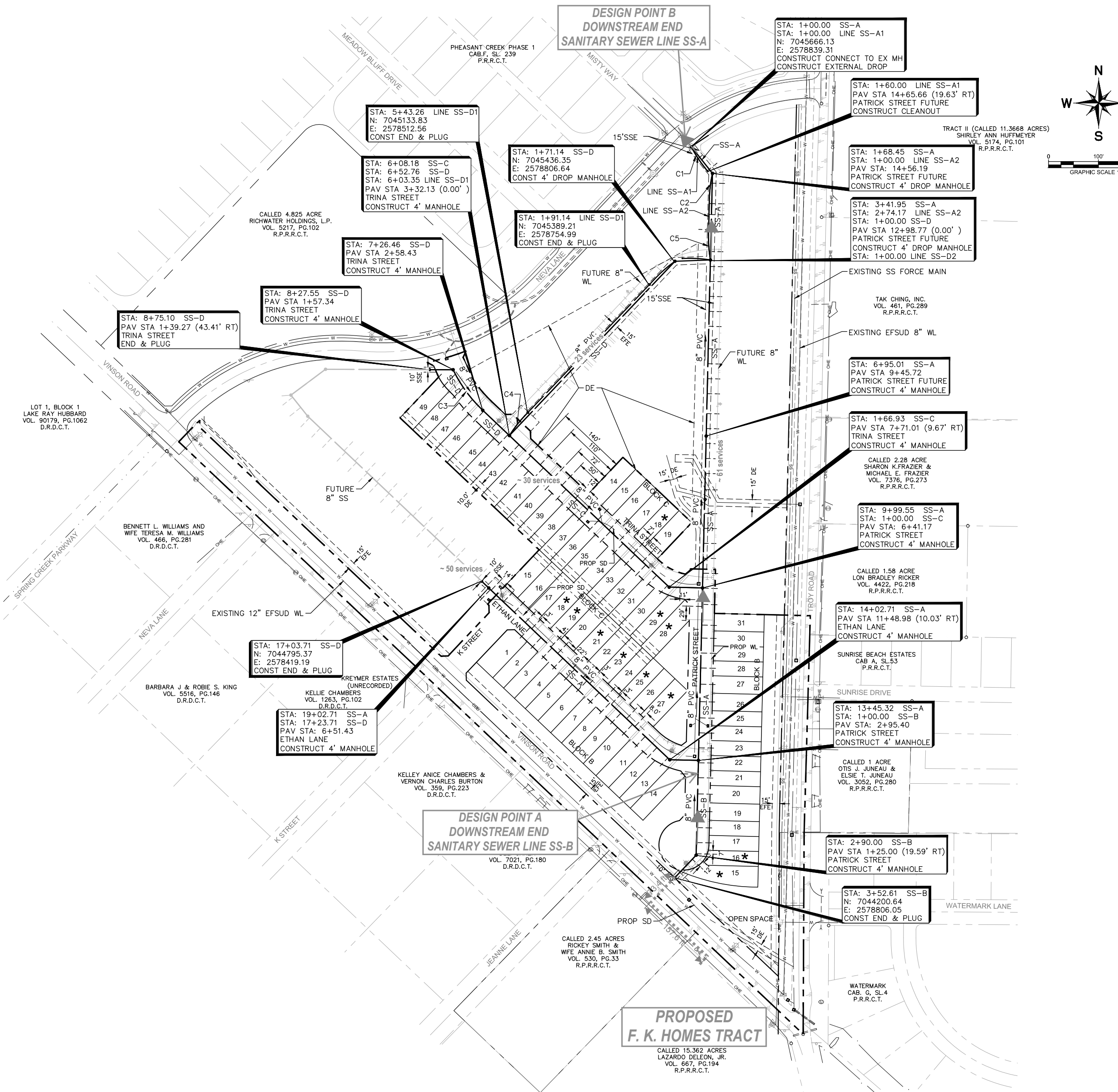

Rush Creek
Lift Station
FEM 544
-15 Ac.
-25 Ac.
Bozman Road
Westlake Drive
Troy
Willow Bend Way
Butler Drive
Creekside Lane
WYLIE
CCN
DESIGN POINT E
PHEASANT CREEK
LIFT STATION
QCAP = 0.691 MGD
QLPV = 0.60 MGD
QFKH = 0.72 MGD
AREA OC-1
95 Ac.
Vinson Road
Pheasant Creek
Lift Station
DESIGN
POINT D
10" LINE L
QCAP = 0.722 MGD
QLPV = 0.655 MGD
QFKH = 0.795 MGD
AREA OC-5
106 Ac.
DESIGN
POINT C
10" LINE K
QCAP = 0.780 MGD
QLPV = 0.292 MGD
QFKH = 0.476 MGD
WYLIE
CCN
DESIGN
POINT B
8" LINE SS-A
QCAP = 0.462 MGD
QLPV = 0.286 MGD
QFKH = 0.460 MGD
REDWOOD
LIFT STATION
NODE 500
8" LINE SS-B
QCAP = 0.462 MGD
QLPV = 0.02 MGD
QFKH = 0.193 MGD
DESIGN
POINT A
ROWLETT
F.K. HOMES RD DEVELOPMENT
Vinson Rd
EXHIBIT A

Drainage Course	Areas to Junction	AREAS SERVED	NODE	Land Use Catagories and Associated Development Densities *																			Projected Flows										
				Low Density Residential		Medium Density Residential		High Density Residential		Downtown Historic District	Business Commercial Corridor	Commercial Retail	Neighborhood Services	School Public and Semi-Public	Heavy Industrial	Light Industrial	Parks and Open Space	Floodplain	Total Acreages	Total ESFU'S	Cumul. ESFU's	Inflow & Infiltration (GPAD)	Residential Qavg (GPD)	Non-Residential Qavg (GPD)	Cumulative Qavg with I & I (GPD)	Resident Peak Factor	Peak Factor **	Qpeak (Mgd)	Qpeak (CFS)		Req'd D (IN.)
				ESFU/AC= 1.00		ESFU/AC= 4.00		ESFU/AC= 15.00		ESFU/AC= 4.00	GALLONS/AC= 1600	GALLONS/AC= 1400	GALLONS/AC= 1200	GALLONS/AC= 1000	GALLONS/AC= 2400	GALLONS/AC= 2000	GALLONS/AC= 5	GALLONS/AC= 0.01								Max = 5					
				#AC	#ESFU	#AC	#ESFU	#AC	#ESFU	#ESFU	#AC	#AC	#AC	#AC	#AC	#AC	#AC	#AC				400										
No Service	OC-1	OC-1	400&500		0	95	361		0	0									95	361		38,000	101,170	0	139,170	4.93	4.93	0.54	0.83		8.7
	OC-2	OC-2	400&500	37	35	49	186		0	0									86	221		34,400	62,033	0	96,433	5.35	5.00	0.34	0.53		7.0
	OC-3	OC-3	400&500	5	5	4	15	0	0	0			0						9	20		3,600	5,591	0	9,191	8.00	5.00	0.03	0.05		2.1
	OC-4	OC-4	400&500		0	17	65	7	100	0									24	164		9,600	46,059	0	55,659	5.63	5.00	0.24	0.37		5.8
Pheasant Creek Lift Sta	**OC-2 to 4**																		**119**	**406**		**47,600**	**113,683**	**0**	**161,283**	**4.84**	**4.84**	**0.60**	**0.92**		**9.2**
Redwood Lift Station	**OC-5**	**OC-5**	**400&500**		**0**		**0**	**106**	**1,511**	**0**									**106**	**1,511**		**42,400**	**423,318**	**0**	**465,718**	**3.88**	**3.88**	**1.68**	**2.61**		**15.5**
Watermark Lift Station	**OC-6**	**OC-6**	**400&500**	**11**	**10**	**10**	**38**		**0**	**0**									**21**	**48**		**8,400**	**13,578**	**0**	**21,978**	**6.90**	**5.00**	**0.08**	**0.12**		**3.3**
																			460		**2,731**	**184,000**	**765,433**	**0**	**949,433**	**3.52**	**3.52**	**2.88**	**4.45**	**FM**	**20.2**

EXHIBIT A-1

Drainage Course	Areas to Junction	AREAS SERVED	NODE	Land Use Catagories and Associated Development Densities * Low Density Residential ESFU/AC= 1.00		Medium Density Residential ESFU/AC= 4.00		High Density Residential ESFU/AC= 15.00		Downtown Historic District ESFU/AC= 4.00		Business Commercial Corridor GALLONS/AC= 1600	Commercial Retail GALLONS/AC= 1400	Neighborhood Services GALLONS/AC= 1200	School Public and Semi-Public GALLONS/AC= 1000	Heavy Industrial GALLONS/AC= 2400	Light Industrial GALLONS/AC= 2000	Parks and Open Space GALLONS/AC= 5	Floodplain GALLONS/AC= 0.01	Total Acreages	Total ESFU'S	Cumul. ESFU's	Projected Flows Inflow & Infiltration (GPAD) 400	Residential Qavg (GPD)	Non-Residential Qavg (GPD)	Cumulative Qavg with I & I (GPD)	Resident Peak Factor	Peak Factor ** Max = 5	Qpeak (Mgd)	Qpeak (CFS)		Req'd D (IN.)
				#AC	#ESFU	#AC	#ESFU	#AC	#ESFU	#AC	#ESFU	#AC	#AC	#AC	#AC	#AC	#AC	#AC	#AC													
No Service	OC-1	OC-1	400&500		0	95	361		0		0									95	361		38,000	101,170	0	139,170	4.93	4.93	0.54	0.83		8.7
	OC-2	OC-2	400&500	37	35	49	186		0		0									86	221		34,400	62,033	0	96,433	5.35	5.00	0.34	0.53		7.0
	OC-3	OC-3	400&500	5	5	4	15	0	0		0			0						9	20		3,600	5,591	0	9,191	8.00	5.00	0.03	0.05		2.1
	OC-4	OC-4	400&500		0	17	65	7	100		0									24	164		9,600	46,059	0	55,659	5.63	5.00	0.24	0.37		5.8
Pheasant Creek Lift Sta	**OC-2 to 4**																			**119**	**406**		**47,600**	**113,683**	**0**	**161,283**	**4.84**	**4.84**	**0.60**	**0.92**		**9.2**
Add F. K. Homes				8.6	8	0	0	6.8	97											15	105		6,160	29,446	0	35,606	6.06	5.00	0.15	0.24		4.7
Pheasant Creek with F. K. Homes																				134	511		53,760	**143,129**	**0**	**196,889**	**4.66**	**4.66**	**0.72**	**1.12**		**10.1**
Redwood Lift Station	**OC-5**	**OC-5**	**400&500**		**0**		**0**	**106**	**1,511**		**0**									**106**	**1,511**		**42,400**	**423,318**	**0**	**465,718**	**3.88**	**3.88**	**1.68**	**2.61**		**15.5**
Add F. K. Homes				8.5	8	0	0	6.9	98											15	106		6,160	29,819	0	35,979	6.05	5.00	0.16	0.24		4.7
Redwood Lift Station with F.K. Homes																				121	1,617		48,560	**453,136**	**0**	**501,696**	**3.84**	**3.84**	**1.79**	**2.77**		**15.9**
Watermark Lift Station	**OC-6**	**OC-6**	**400&500**	**11**	**10**	**10**	**38**		**0**		**0**									**21**	**48**		**8,400**	**13,578**	**0**	**21,978**	**6.90**	**5.00**	**0.08**	**0.12**		**3.3**
																				747		**5,070**	**298,640**	**1,420,963**	**0**	**1,719,603**	**3.17**	**3.17**	**4.80**	**7.43**	**FM**	**26.1**

EXHIBIT A-2



CURVE TABLE

CURVE	RADIUS	LENGTH	CHORD BEARING	CHORD	DELTA	TANGENT
C1	250.00'	50.08'	S32°42'50"E	50.00'	11°28'42"	25.13'
C2	250.00'	50.08'	S7°06'39"W	50.00'	11°28'42"	25.13'
C3	280.00'	101.09'	N36°08'51"W	100.55'	20°41'12"	51.10'
C4	250.00'	50.08'	S37°46'16"W	50.00'	11°28'42"	25.13'
C5	250.00'	50.08'	S4°22'03"E	50.00'	11°28'42"	25.13'

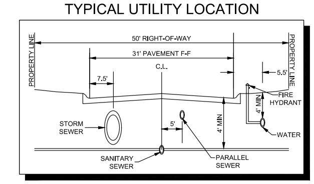
UTILITY LEGEND

- PROPERTY LINE
- PROPOSED SANITARY SEWER LINE
- PROPOSED WATER LINE
- PROPOSED SANITARY SEWER MANHOLE
- PROPOSED SANITARY SEWER CLEANOUT
- PROPOSED STORM CENTERLINE
- SANITARY SEWER FLOW DIRECTION
- PROPOSED FIRE HYDRANT
- PROPOSED TAPPING SLEEVE & VALVE
- IRRIGATION SLEEVE
- EXISTING OVERHEAD POWER LINE
- EXISTING WATER LINE
- EXISTING SANITARY SEWER LINE
- EXISTING STORM SEWER LINE
- EXISTING POWER POLE
- EXISTING FIRE HYDRANT
- EXISTING WATER METER
- EXISTING SANITARY SEWER MANHOLE

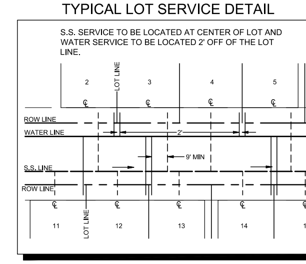
SEWER GENERAL NOTES

1. WATER AND SANITARY SEWER SEPARATION (VERTICAL AND HORIZONTAL) SHALL BE MAINTAINED IN ACCORDANCE WITH TCEQ REQUIREMENTS.
2. CONTRACTOR TO FIELD VERIFY LOCATION OF EXISTING UTILITIES PRIOR TO CONSTRUCTION.
3. ALL SANITARY SEWER LINES ARE 8" UNLESS OTHERWISE NOTED.
4. ADJUSTED SERVICES DUE TO CONFLICTS (I.E. MANHOLES, INLETS, TRENCH CONFLICTS OR NON-STANDARD PLACEMENT) = *

TYPICAL UTILITY LOCATION



TYPICAL LOT SERVICE DETAIL



RECORD DRAWING

THIS DRAWING HAS BEEN REVISED TO SHOW THOSE CHANGES DURING THE CONSTRUCTION PROCESS REPORTED BY THE CONTRACTOR TO KIMLEY-HORN AND ASSOCIATES, INC. AND CONSIDERED TO BE SIGNIFICANT. THIS DRAWING IS NOT GUARANTEED TO BE "AS BUILT" BUT IS BASED ON THE INFORMATION MADE AVAILABLE.

DATE: 14 OCT 19 BY: JAY MARSH, P.E.

!!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.

EXHIBIT B-1

No.	REVISIONS	DATE	BY

Kimley»Horn
© 2018 KIMLEY-HORN AND ASSOCIATES, INC.
5750 GENESIS COURT, SUITE 200, FRISCO, TX 75034
PHONE: 972-335-3580 FAX: 972-335-3779
WWW.KIMLEY-HORN.COM
TEXAS REGISTERED ENGINEERING FIRM F-928

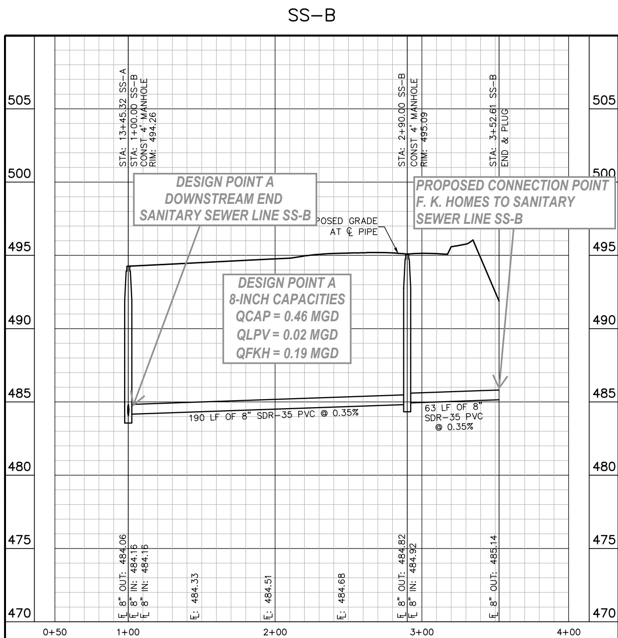
JAY E. MARSH 70773 REGISTERED PROFESSIONAL ENGINEER

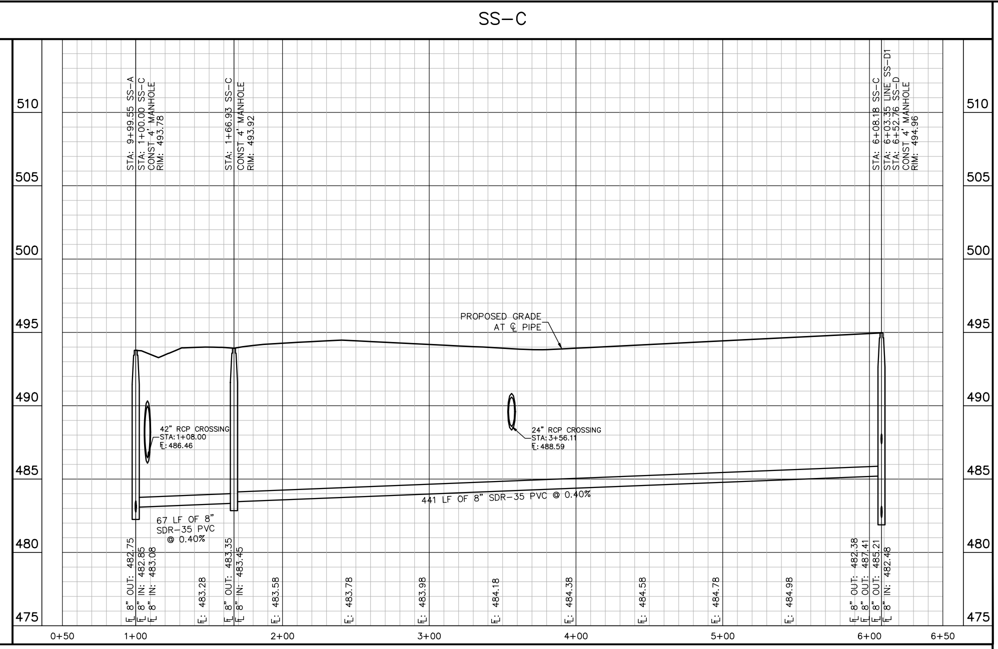
KHA PROJECT 63225200 | DATE APRIL 2018 | SCALE: AS SHOWN | DESIGNED BY: TMK | DRAWN BY: DFW | CHECKED BY: JEM

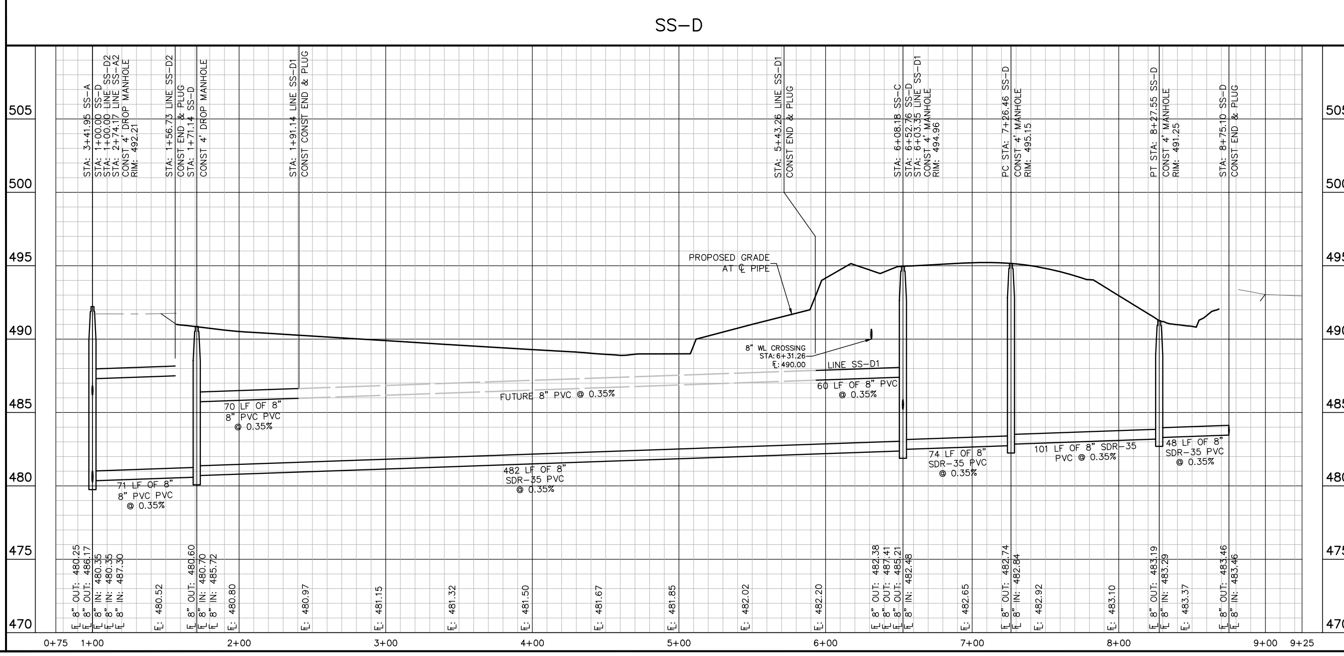
SANITARY SEWER PLAN

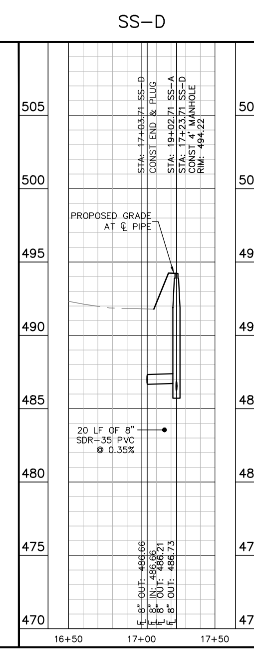
LAKE PARK VILLAS PHASE 1
CITY OF WYLIE
ROCKWALL COUNTY, TEXAS

SHEET NUMBER C-30









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

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

No.	REVISIONS	DATE	BY

Kimley»Horn

5750 GENESIS COURT, SUITE 200, FRISCO, TX 75034
PHONE: 972-335-3580 FAX: 972-335-3779
WWW.KIMLEY-HORN.COM
TEXAS REGISTERED ENGINEERING FIRM F-928

STATE OF TEXAS
JAY L. MARSH
70773
REGISTERED PROFESSIONAL ENGINEER

KHA PROJECT	63225200
DATE	APRIL 2018
SCALE:	AS SHOWN
DESIGNED BY:	TMK
DRAWN BY:	DFW
CHECKED BY:	JEM

SANITARY SEWER PROFILES - LINE SS-B, LINE SS-C & LINE SS-D

LAKE PARK VILLAS PHASE 1

CITY OF WYLIE
ROCKWALL COUNTY, TEXAS

RECORD DRAWING

THIS DRAWING HAS BEEN REVISED TO SHOW THOSE CHANGES DURING THE CONSTRUCTION PROCESS REPORTED BY THE CONTRACTOR TO KIMLEY-HORN AND ASSOCIATES, INC. AND CONSIDERED TO BE SIGNIFICANT. THIS DRAWING IS NOT GUARANTEED TO BE "AS BUILT" BUT IS BASED ON THE INFORMATION MADE AVAILABLE.

DATE: 14 OCT 19 BY: JAY MARSH, P.E.

BENCHMARKS

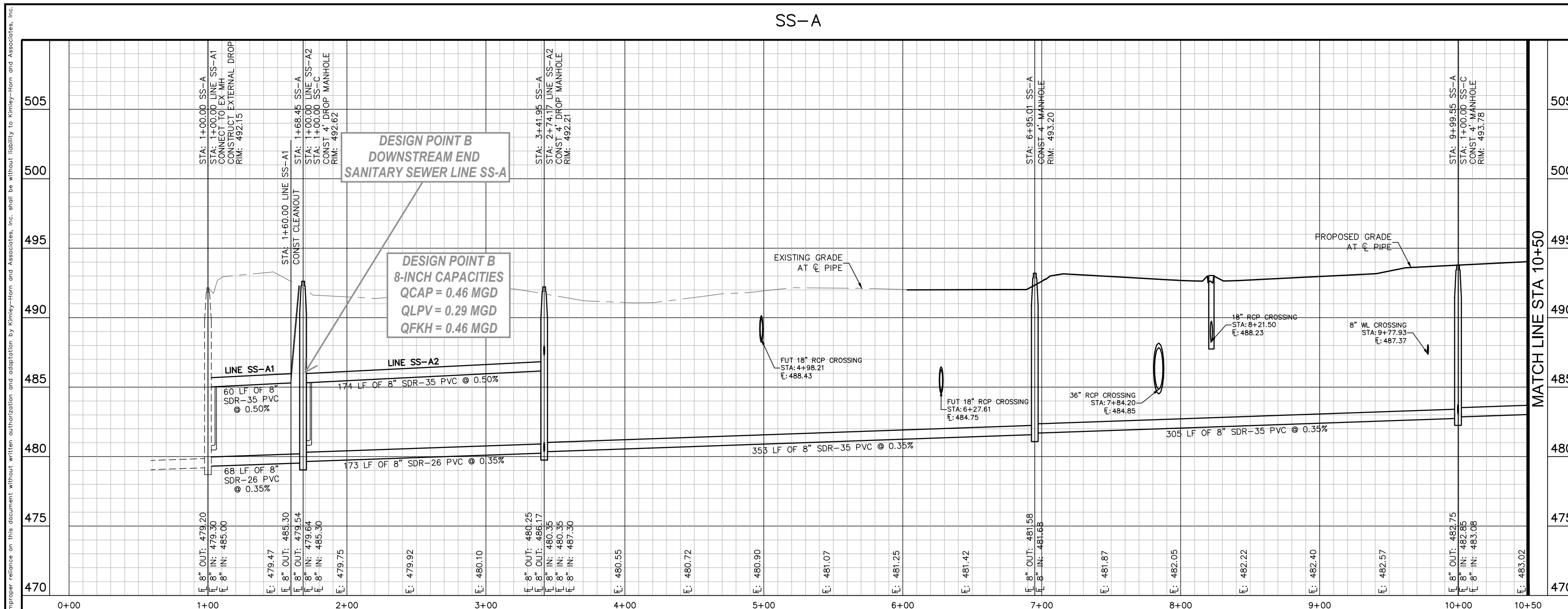
CITY OF WYLIE,TX CM 5
LOCATED NORTH OF THE NORTHEAST INTERSECTION OF TROY ROAD AND COUNTY ROAD 732.
ELEV= 454.277'

TBM #1 "X" SET ON CENTER RADIUS OF BACK OF CURB AT THE SOUTHEAST CORNER OF COUNTY LINE ROAD AND NEVA LANE.
ELEV= 493.89'

TBM #2 "X" SET ON START OF BACK OF CURB ON THE SOUTH RIGHT-OF-WAY LINE OF NEVA LANE AT THE SOUTHWEST CORNER OF TROY ROAD AND NEVA LANE.
ELEV = 493.11'

SHEET NUMBER
C-32

EXHIBIT B-2a



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

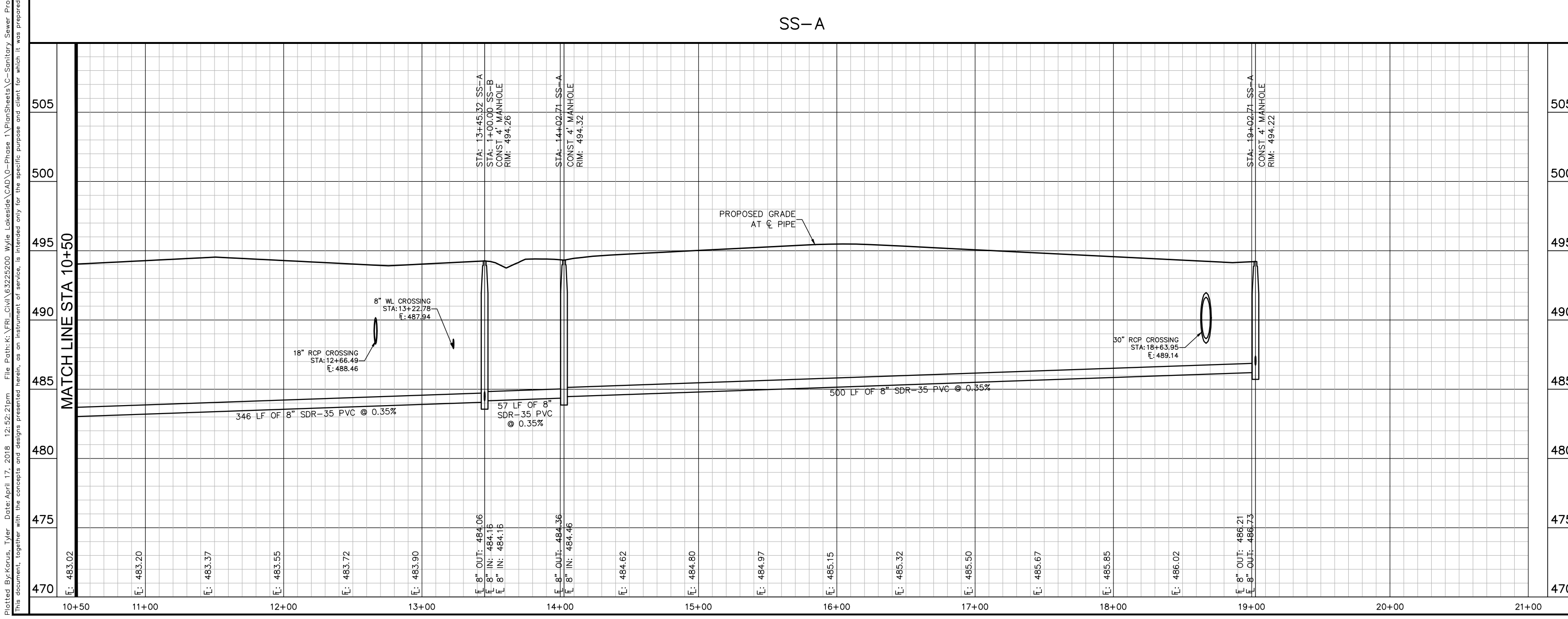


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EXHIBIT B-2b

No.	REVISIONS	DATE	BY

Kimley»Horn

5750 GENESIS COURT, SUITE 200, FRISCO, TX 75034
PHONE: 972-335-3580 FAX: 972-335-3779
WWW.KIMLEY-HORN.COM
TEXAS REGISTERED ENGINEERING FIRM F-928

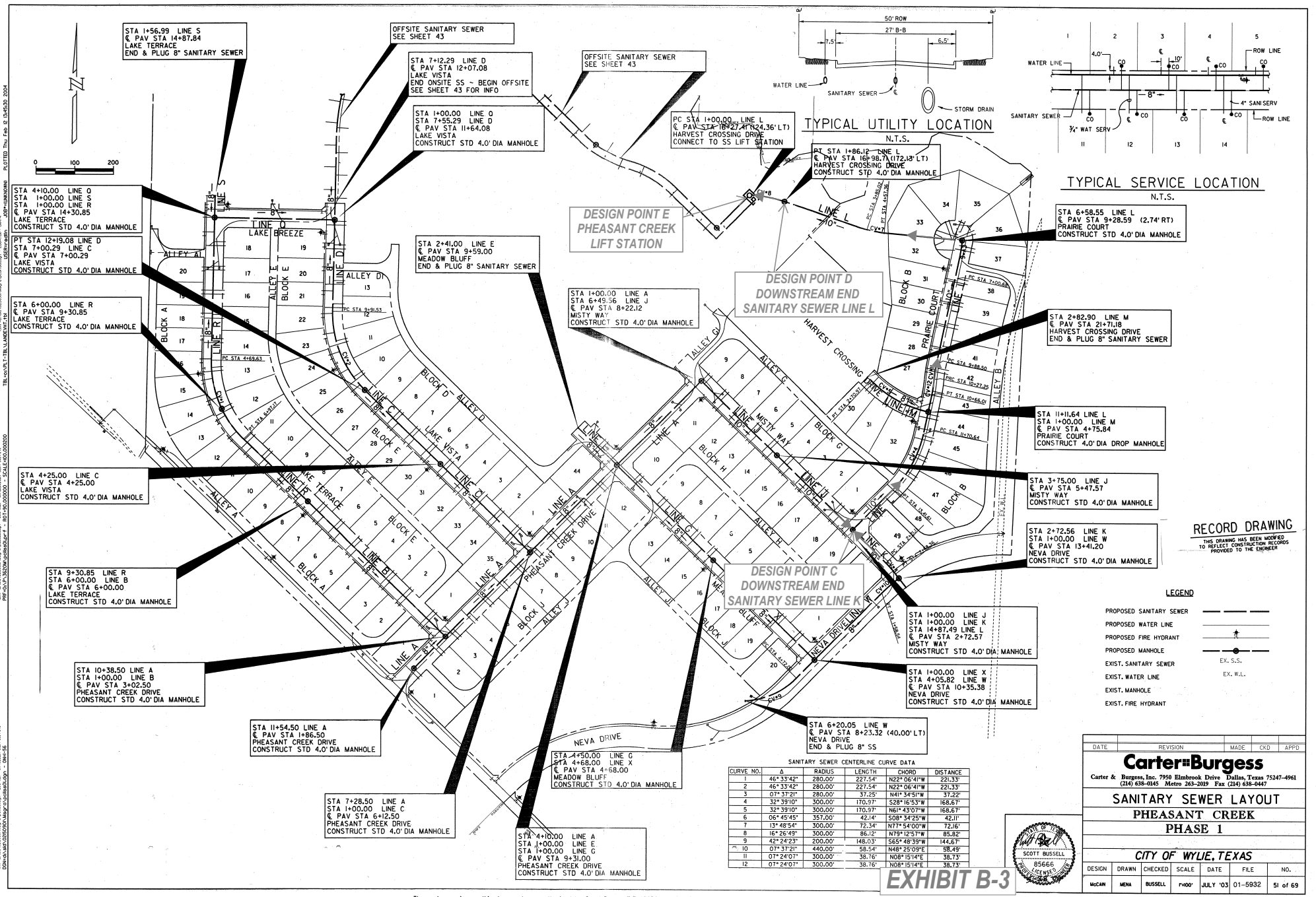
STATE OF TEXAS — JAY E. MARSH — 70773 — REGISTERED PROFESSIONAL ENGINEER

KHA PROJECT	DATE	SCALE:	DESIGNED BY:	DRAWN BY:	CHECKED BY:
63225200	APRIL 2018	AS SHOWN	TMK	DFW	JEM

SANITARY SEWER PROFILES - LINE SS-A

LAKE PARK VILLAS
PHASE 1
CITY OF WYLIE
ROCKWALL COUNTY, TEXAS

SHEET NUMBER
C-31



SANITARY SEWER CENTERLINE CURVE DATA

CURVE NO.	Δ	RADIUS	LENGTH	CHORD	DISTANCE
1	46° 33'42"	280.00'	227.54'	N22° 06'41"W	221.33'
2	46° 33'42"	280.00'	227.54'	N22° 06'41"W	221.33'
3	07° 37'21"	280.00'	37.25'	N41° 34'51"W	37.22'
4	32° 39'10"	300.00'	170.97'	S28° 16'53"W	168.67'
5	32° 39'10"	300.00'	170.97'	N61° 43'07"W	168.67'
6	06° 45'45"	357.00'	42.14'	S08° 34'25"W	42.11'
7	13° 48'54"	300.00'	72.34'	N77° 54'00"W	72.16'
8	16° 26'49"	300.00'	86.12'	N79° 12'57"W	85.82'
9	42° 24'23"	200.00'	148.03'	S65° 48'39"W	144.67'
10	07° 37'21"	440.00'	58.54'	N48° 25'09"E	58.49'
11	07° 24'07"	300.00'	38.76'	N08° 15'14"E	38.73'
12	07° 24'07"	300.00'	38.76'	N08° 15'14"E	38.73'

DATE	REVISION	MADE	CKD	APPD

Carter Burgess

Carter & Burgess, Inc. 7950 Elmbrook Drive Dallas, Texas 75247-4961
(214) 638-0145 Metro 263-2019 Fax (214) 638-0447

SANITARY SEWER LAYOUT
PHEASANT CREEK
PHASE 1

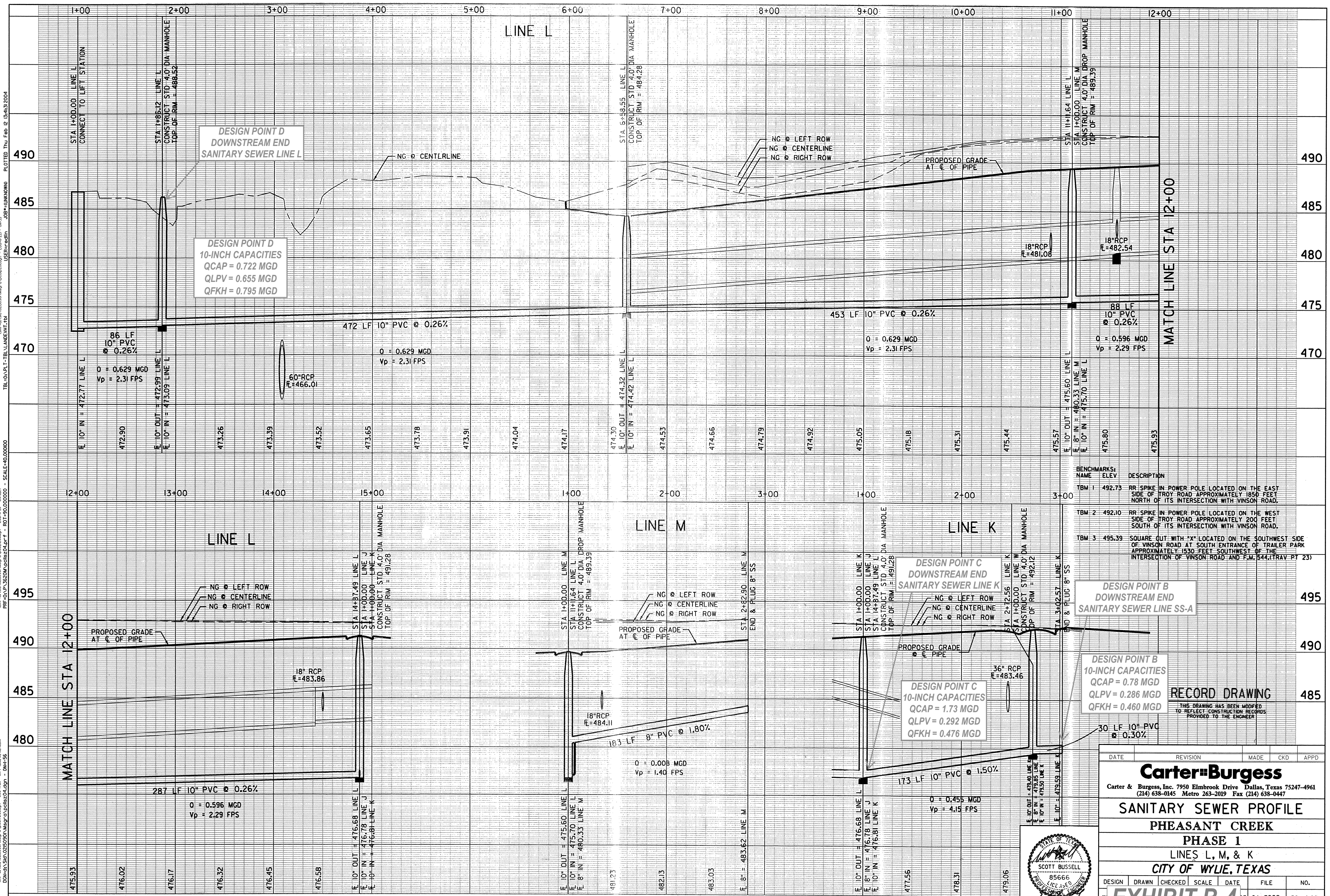
CITY OF WYLIE, TEXAS

DESIGN	DRAWN	CHECKED	SCALE	DATE	FILE	NO.
McCAIN	MENA	BUSSELL	1"=100'	JULY '03	01-5932	51 of 69

SCOTT BUSSELL 85666 LICENSED PROFESSIONAL ENGINEER

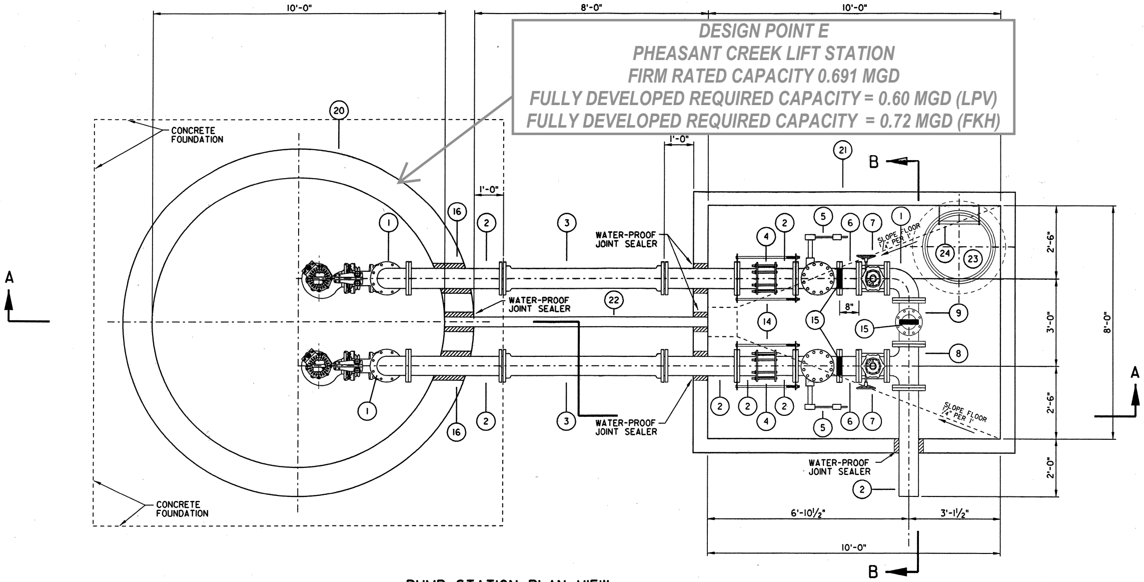
EXHIBIT B-3

PROJECT No. 02-1509-010

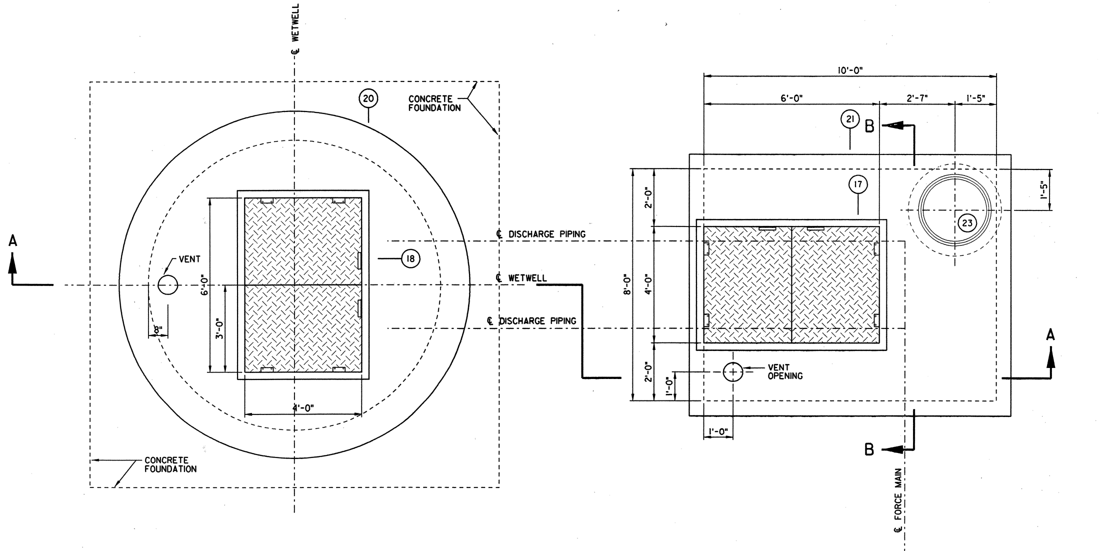


The seal appearing on this document was authorized by Scott Bussell, P.E. 85666, on JANUARY 23, 2004. Alteration of a sealed document without proper notification to the responsible engineer is an offense under the Texas Engineering Practice Act.

PROJECT No. 02-1509-010



PUMP STATION PLAN VIEW
SCALE 1" = 2'



ACCESS HATCH & VENT LOCATIONS
SCALE 1" = 2'

MATERIAL LIST

1. 8" D.I. FLANGED 90° BEND (SHORT RADIUS)
2. 8" D.I. FLANGED x PLAIN END PIPE (LENGTH AS REQUIRED)
3. 8" D.I. MECH JT x MECH JT PIPE WITH MEGA LUG THRUST RESTRAINTS (LENGTH AS REQUIRED)
4. 8" DRESSER COUPLING STYLE 38 OR APPROVED EQUAL
5. 8" FLANGED APCO SERIES 6100 CHECK VALVE OR APPROVED EQUAL WITH REPAIR KIT
6. 8" D.I. FLANGED PIPE (LENGTH AS REQUIRED)
7. 8" FLANGED ECCENTRIC PLUG VALVE WITH HANDWHEEL OPERATOR
8. 8" D.I. FLANGED TEE
9. 8" x 6" D.I. FLANGED TEE
10. 6" FLANGED ECCENTRIC PLUG VALVE WITH HANDWHEEL OPERATOR
11. 6" D.I. FLANGED PIPE (LENGTH AS REQUIRED)
12. 8" x 4" D.I. FLANGED ECCENTRIC REDUCER
13. 8" D.I. FLANGED x PLAIN END WALL PIPE (LENGTH AS REQUIRED)
14. THRUST RESTRAINT (SEE DETAIL)
15. ADJUSTABLE PIPE SUPPORT (3 REQUIRED)
16. LINK SEAL ADAPTER OR APPROVED EQUAL
17. 4' x 6' DOUBLE LEAF ALUMINUM HATCH. HATCH SHALL BE EQUIPPED WITH RECESSED PADLOCK HASP COVERED BY A HINGED LID & STAINLESS STEEL HARDWARE & SAFETY LATCHES. HATCH SHALL BE ODOR FREE TYPE AS MANUFACTURED BY U.S.F. FABRICATION, INC. OR APPROVED EQUAL.
18. 4' x 6' DOUBLE LEAF ALUMINUM HATCH. HATCH SHALL BE EQUIPPED WITH RECESSED PADLOCK HASP COVERED BY A HINGED LID & STAINLESS STEEL HARDWARE & SAFETY LATCHES. HATCH TO BE EQUIPPED WITH A FALL THRU SAFETY NET. HATCH SHALL BE ODOR FREE TYPE AS MANUFACTURED BY U.S.F. FABRICATION, INC. OR APPROVED EQUAL.
19. 6" ALUMINUM OR STAINLESS STEEL CAM & GROOVE FLANGED ADAPTER & 6" ALUMINUM CAM & GROOVE TYPE DC DUST CAP. "DIXON ANDREWS" OR APPROVED EQUAL
20. 10' INSIDE DIAMETER PRECAST WETWELL & LID - HYDRO CONDUIT OR APPROVED EQUAL
21. 8' x 10' x 7' DEEP (INSIDE DIMENSIONS) PRECAST VAULT & LID - BROOKS PRODUCTS OR APPROVED EQUAL
22. 4" D.I. DRAIN @ 2% MINIMUM SLOPE WITH 4" GAS TIGHT FLAP VALVE
23. 26" DIAMETER C.I. MANHOLE FRAME & COVER WITH VENTED LID, NEENAH MODEL R-1682 OR APPROVED EQUAL. LID MARKING PER CITY OF WYLIE REQUIREMENTS
24. ALUMINUM LADDER "HALLIDAY PRODUCTS" SERIES LID WITH SAFETY EXTENSION SERIES LIE OR APPROVED EQUAL

NOTES
1. LIFT STATION SHALL BE DUPLEX WITH FLYGT, SUBMERSIBLE CP-3152-454 WITH MIX FLUSH VALVE OR APPROVED EQUAL. (2) 20 H.P. PUMPS WITH GUIDE RAIL SYSTEM & GRIP EYE SYSTEM, THREE PHASE, 460 VOLT POWER SUPPLY, LOCKING CONTROL PANEL, A NEMA 4X JUNCTION BOX, FLASHING LIGHT AND HORN ALARM SYSTEM.
2. PROVIDE CONCRETE WETWELL COVER WITH LOCKABLE ACCESS HATCH, DIMENSION AND LOCATION AS SHOWN ON THE PLANS UNLESS DETERMINED OTHERWISE BY PUMP MANUFACTURER.
3. LIFT STATION WETWELL AND VALVE VAULT
   A. REINFORCED CONCRETE PIPE (WETWELL) SHALL BE ASTM C-478 B-WALL THICKNESS (MINIMUM) WITH O-RING COMPRESSIVE JOINTS. TYPE II CEMENT.
   B. REINFORCED CONCRETE BOX (VALVE VAULT) SHALL BE ASTM C-789. TYPE II CEMENT.
   B. ALL SLAB CONCRETE SHALL BE CLASS "C" AND HAVE A MINIMUM COMPRESSIVE STRENGTH OF 4000 PSI AT 28 DAYS.
   C. ALL REINFORCING STEEL SHALL CONFORM TO ASTM A615, GRADE 60.
   D. ALL GROUT SHALL BE NON-SHRINK, HAVING MINIMUM COMPRESSIVE STRENGTH OF 5000 PSI AT 28 DAYS, COMPLYING WITH CORPS OF ENGINEERS CRD-C-621.
4. PIPING AND VALVES
   A. ALL PIPING AS SHOWN SHALL BE DUCTILE IRON, CLASS 50 PER AWWA C150/C151. FLANGES SHALL BE 125 LB., ANSI B-16.1. BOLTS AND NUTS SHALL CONFORM TO ASTM A316. GASKETS SHALL BE GRADE I RUBBER, RING TYPE.
   B. ALL ANNULAR SPACES BETWEEN DISCHARGE PIPING AND VALVE VAULT SHALL BE SEALED USING WATERPROOF JOINT SEALER.
5. STAINLESS STEEL SHALL BE TYPE 316 UNLESS SPECIFIED OTHERWISE.
6. THE FOUNDATION OF THE WETWELL SHALL REST ON UNDISTURBED SOIL. OVER EXCAVATION OF THE WETWELL SHALL BE FILLED WITH CLASS "D" CONCRETE TO THE ELEVATION SHOWN ON THE PLANS TO THE BOTTOM OF THE WETWELL FOUNDATION.
7. PROVIDE PIPE SUPPORTS IN LIFT STATION PER DRAWINGS.
8. ALL NUTS & BOLTS SHALL BE ASTM 316 STAINLESS STEEL.
9. CONTRACTOR TO COORDINATE THE CORRECT PLACEMENT & INSTALLATION OF LIFTING EYES ON THE WETWELL LID AND VALVE VAULT LID WITH THE MANUFACTURER.
10. ALL CONSTRUCTION SHALL BE PER CITY OF WYLIE'S SPECIFICATIONS.
11. BURIED DUCTILE IRON VALVES & FITTINGS SHALL BE ENCASED WITH POLYETHYLENE WRAP 8 MILS THICK.
12. ALL EXPOSED PIPING SHALL BE FLANGED D.I.P. CLASS 51.
13. ALL ALUMINUM ACCESS HATCHES SHALL BE LOCKABLE.
14. PUMPS SHALL BE LOCATED PER PUMP MFR. RECOMMENDATIONS.
15. ALL MECHANICAL JOINTS SHALL HAVE MEGA LUG THRUST RESTRAINTS.

RECORD DRAWING
THIS DRAWING HAS BEEN MODIFIED TO REFLECT CONSTRUCTION RECORDS PROVIDED TO THE ENGINEER

DATE	REVISION	MADE	CKD	APPD

Carter::Burgess
Carter & Burgess, Inc. 7950 Elmbrook Drive Dallas, Texas 75247-4961
(214) 638-0145 Metro 263-2019 Fax (214) 638-0447

SANITARY SEWER LIFT STATION
PHEASANT CREEK - PHASE 1
LIFT STATION PLAN, MATERIAL LIST, & MISCELLANEOUS NOTES
CITY OF WYLIE, TEXAS

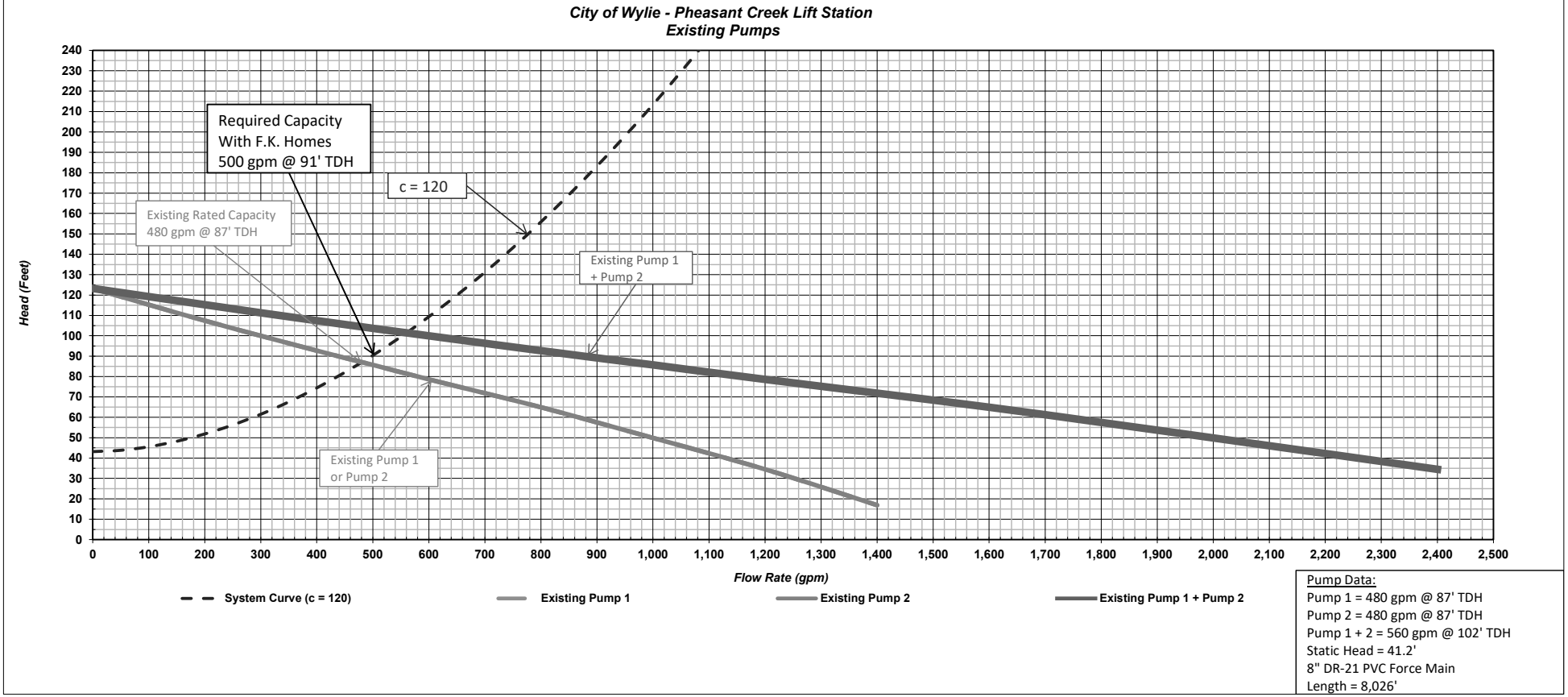
STATE OF TEXAS
TERRY L. FOYT
57636
REGISTERED PROFESSIONAL ENGINEER

EXHIBIT C

DESIGN	DR		E	NO.
C&B	C		932	67 of 69

The seal appearing on this document was authorized by Terry L. Foyt, P.E. 57636, on October 23, 2003. Alteration of a sealed document without proper notification to the responsible engineer is an offense under the Texas Engineering Practice Act.

PROJECT No. 02150901



Pump Data:
Pump 1 = 480 gpm @ 87' TDH
Pump 2 = 480 gpm @ 87' TDH
Pump 1 + 2 = 560 gpm @ 102' TDH
Static Head = 41.2'
8" DR-21 PVC Force Main
Length = 8,026'

EXHIBIT C-1