

Received

MAR 15 2017

HNTB Corporation

CONTRACTOR: DeNucci Constructors

WILLIAMSON COUNTY, TEXAS

CHANGE ORDER NUMBER: 1

Received

MAR 10 2017

HNTB Corporation
Round Rock

RECEIVED

MAR 14 2017

BY: PST

2. Change Order Work Limits: Sta. SK1 1+70 to Sta. SK1 4+92.50
3. Type of Change (on federal-aid non-exempt projects): Minor (Major/Minor)
4. Reasons: 1A, 2E (3 Max. - In order of importance - Primary first)

Project: 1604-068

Roadway: Forest North Phase1

CSJ Number: _____

5. Describe the work being revised:

1A: Design Error or Omission. Incorrect PS&E. This Change Order revises drainage work along Broadmeade Ave., between Sherbrooke St. and Meadowheath Dr. in the Sherbrooke Zone. **2E: Miscellaneous difference in site conditions (unforeseeable)(Item 9).** Add new pay items to reimburse the contractor for removal of trees larger than what was called out in the original contract.

6. Work to be performed in accordance with Items: See attached
7. New or revised plan sheet(s) are attached and numbered: GN5,GN6,SK3,SK12,SK25,SK26,SK28
8. New Special Provisions/Specifications to the contract are attached: ☐ Yes ☒ No
9. New Special Provisions to Item N/A No. N/A, Special Specification Item N/A are attached.

Each signatory hereby warrants that each has the authority to execute this Change Order (CO).

The contractor must sign the Change Order and, by doing so, agrees to waive any and all claims for additional compensation due to any and all other expenses; additional changes for time, overhead and profit; or loss of compensation as a result of this change.

The following information must be provided

Time Ext. #: N/A Days added on this CO: 0

Amount added by this change order: \$31,806.00

THE CONTRACTOR

Date 3/8/17

By

Typed/Printed Name

Typed/Printed Title

PAUL T. DeNucci
MANAGER

RECOMMENDED FOR EXECUTION:

[Signature] 3/13/17
Project Manager Date

N/A
Design Engineer Date

[Signature] 3/14/2017
Program Manager Date

Design Engineer's Seal:

See attached plan sheets

County Commissioner Precinct 1 Date
☐ APPROVED ☐ REQUEST APPROVAL

County Commissioner Precinct 2 Date
☐ APPROVED ☐ REQUEST APPROVAL

County Commissioner Precinct 3 Date
☐ APPROVED ☐ REQUEST APPROVAL

County Commissioner Precinct 4 Date
☐ APPROVED ☐ REQUEST APPROVAL

[Signature] 03-12-2017
County Judge Date
☒ APPROVED

WILLIAMSON COUNTY, TEXAS

CHANGE ORDER NUMBER: 1

Project # 1604-068

TABLE A: Force Account Work and Materials Placed into Stock

	LABOR	HOURLY RATE			HOURLY RATE

TABLE B: Contract Items:

				ORIGINAL + PREVIOUSLY REVISED		ADD or (DEDUCT)	NEW		
ITEM	DESCRIPTION	UNIT	UNIT PRICE	QUANTITY	ITEM COST	QUANTITY	QUANTITY	ITEM COST	OVERRUN/ UNDERRUN
0110 6002	EXCAVATION (CHANNEL)	CY	\$10.00	2,980.00	\$29,800.00	(112.00)	2,868.00	\$28,680.00	(\$1,120.00)
0132 6003	EMBANKMENT (FINAL)(ORD COMP)(TY B)	CY	\$4.00	470.00	\$1,880.00	(6.00)	464.00	\$1,856.00	(\$24.00)
0464 6005	RC PIPE (CL III)(24 IN)	LF	\$65.00	1,375.00	\$89,375.00	(65.00)	1,310.00	\$85,150.00	(\$4,225.00)
0464 6007	RC PIPE (CL III)(30 IN)	LF	\$75.00	2,266.00	\$169,950.00	309.00	2,575.00	\$193,125.00	\$23,175.00
0465 6127	INLET (COMP)(PSL)(FG)(4FTX4FT-3FTX3FT)	EA	\$4,200.00	16.00	\$67,200.00	3.00	19.00	\$79,800.00	\$12,600.00
0467 6394	SET (TY II) (24 IN) (RCP) (6:1) (P)	EA	\$3,800.00	19.00	\$72,200.00	(4.00)	15.00	\$57,000.00	(\$15,200.00)
0467 6454	SET (TY II) (36 IN) (RCP) (6:1) (P)	EA	\$5,800.00	0.00	\$0.00	1.00	1.00	\$5,800.00	\$5,800.00
0752 6008	TREE REMOVAL (24" - 30" DIA)	EA	\$1,600.00	0.00	\$0.00	3.00	3.00	\$4,800.00	\$4,800.00
0752 6009	TREE REMOVAL (30" - 36" DIA)	EA	\$2,000.00	0.00	\$0.00	3.00	3.00	\$6,000.00	\$6,000.00
TOTALS					\$430,405.00			\$462,211.00	\$31,806.00

CHANGE ORDER REASON(S) CODE CHART

1. Design Error or Omission	1A. Incorrect PS&E 1B. Other
2. Differing Site Conditions (unforeseeable)	2A. Dispute resolution (expense caused by conditions and/or resulting delay) 2B. Unavailable material 2C. New development (conditions changing after PS&E completed) 2D. Environmental remediation 2E. Miscellaneous difference in site conditions (unforeseeable)(Item 9) 2F. Site conditions altered by an act of nature 2G. Unadjusted utility (unforeseeable) 2H. Unacquired Right-of-Way (unforeseeable) 2I. Additional safety needs (unforeseeable) 2J. Other
3. County Convenience	3A. Dispute resolution (not resulting from error in plans or differing site conditions) 3B. Public relations improvement 3C. Implementation of a Value Engineering finding 3D. Achievement of an early project completion 3E. Reduction of future maintenance 3F. Additional work desired by the County 3G. Compliance requirements of new laws and/or policies 3H. Cost savings opportunity discovered during construction 3I. Implementation of improved technology or better process 3J. Price adjustment on finished work (price reduced in exchange for acceptance) 3K. Addition of stock account or material supplied by state provision 3L. Revising safety work/measures desired by the County 3M. Other
4. Third Party Accommodation	4A. Failure of a third party to meet commitment 4B. Third party requested work 4C. Compliance requirements of new laws and/or policies (impacting third party) 4D. Other
5. Contractor Convenience	5A. Contractor exercises option to change the traffic control plan 5B. Contractor requested change in the sequence and/or method of work 5C. Payment for Partnering workshop 5D. Additional safety work/measures desired by the contractor 5E. Other
6. Untimely ROW/Utilities	6A. Right-of-Way not clear (third party responsibility for ROW) 6B. Right-of-Way not clear (County responsibility for ROW) 6C. Utilities not clear 6D. Other

Williamson County Road Bond Program

Forest North Phase 1 Williamson County Project No. 1604-068

Change Order No. 1

Reason for Change

This Change Order revises drainage work along Broadmeade Avenue, between Sherbrooke Street and Meadowheath Drive in the Sherbrooke Zone. The plans show 24-inch driveway pipes downstream from a 30-inch pipe. The downstream pipe must be at least the same size as the upstream pipe to maintain the capacity necessary to drain the stormwater. Increasing the pipe size required the ditch flowline to be lowered, resulting in a rip rap lined ditch needing edge protection, per the Williamson County Design criteria manual. As a cost savings solution, the County replaced the ditch with pipe and area inlets.

This Change order also adds new pay items to the contract to reimburse the Contractor for removal of trees larger than what was called out in the original contract.

Following is a summary of the items required for this change order.

ITEM	DESCRIPTION	QTY	UNIT
0467-6454	SET (TY II) (36 IN) (RCP) (6:1) (P)	1	EA
0752-6008	TREE REMOVAL (24" - 30" DIA)	3	EA
0752-6009	TREE REMOVAL (30" - 36" DIA)	3	EA

This Change Order results in a net increase of \$31,806.00 to the Contract amount, for an adjusted Contract total of \$3,588,465.50. The original Contract amount was \$3,556,659.50. Because of this and all Change Orders to-date, \$31,806.00 has been added to the Contract, resulting in a 0.9% net increase in the Contract cost. No additional days will be added to or deducted from the Contract as a result of this Change Order.

HNTB Corporation

James Klotz, P.E.

TXDOT BID ITEM	550 6001	552 6009	560 6001	644 6071	752 6005	752 6006	752 6007	1004 6002	701S D	701S E	701S T	WC9007
CIP ID NO	CHAIN LINK FENCE (INSTALL) (6')	GATE (SPECIAL)	MAILBOX INSTALL-S (TWG-POST) TY 1	RELOCATE SM RD SN SUP&AM TY TWT	TREE REMOVAL (4" - 12" DIA)	TREE REMOVAL (12" - 18" DIA)	TREE REMOVAL (18" - 24" DIA)	TREE PROTECTION	WIRE FENCE	WOOD FENCE	TEMPORARY FENCE, 6 FEET HIGH, CHAIN LINK	IRRIGATION SYSTEM CAPPING
	LF	EA	EA	EA	EA	EA	EA	AC	LF	LF	LF	EA
CIP BB1	15		3	2				0.4				
CIP BB2			3	2	1			0.7		169	250	
CIP BH1			1					0.4				
CIP BH2								0.5				
CIP SK1		1	2	2		1		0.3				
CIP SK2				1				0.2				
CIP SK3			1					0.1				
CIP SK4			3	2		3	1	0.4				
CIP SK5					3			0.3				
CIP SF1			2			2	1	0.6		200	244	
CIP SF2				1			2	0.4		250	250	
CIP SF3	0	0	0	0	0	0	0	0.0	0	0	0	0
CIP SF4								0.1				
CIP TI1					1			0.2				
CIP TI2								0.1				
CIP TI3		1						0.5	25			
CIP WW1			3	2		1		0.5		138	15	
CIP WW2								0.1		157		
CIP WW3				1				0.2				
CIP WW4								0.1				
PROJECT TOTAL	15	2	18	13	5	7	4	6.1	25	914	759	90

THE REMOVAL OF ALL ITEMS INDICATED TO BE REMOVED AND REPLACED SHALL BE CONSIDERED SUBSIDIARY TO THE REPLACEMENT ITEM UNLESS OTHERWISE INDICATED.

SHEET NO.
GN6 OF GN9

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TXDOT BID ITEM	100	110	132	160	164	164	168	169	400	402	432	432	432	459	464
	6002	6002	6003	WC02	WC05	WC10	WC01	6006	6006	6001	6002	6033	6029	6001	6003
CIP ID NO	PREPARING ROW	EXCAVATION (CHANNEL)	EMBANKMENT (FINAL)(ORD COMP)(TY B)	FURNISHING AND PLACING TOPSOIL (4")	SEEDING FOR EROSION CONTROL (TY 5) (PERM)	SEEDING FOR EROSION CONTROL (TY 10) (TEMP)	VEGETATIVE WATERING	SOIL RETENTION BLANKETS (CL 2) (TY F)	CUT & RESTORING PAV	TRENCH EXCAVATION PROTECTION	RIPRAP (CONC) (5 IN)	RIPRAP (STONE PROTECTION) (18 IN)	RIPRAP (STONE COMMON) (GROUT) (8 IN)	GABIONS (GALV)	RC PIPE (CL III) (18 IN)
	STA	CY	CY	SY	SY	SY	MG	SY	SY	LF	CY	CY	CY	CY	LF
CIP BB1	21	215	30	1395	1395	698	35	1395	82	567	3			10	258
CIP BB2	13	345	20	2270	2270	1135	57	2270	26	228				10	315
CIP BH1	8	120	20	1510	1510	755	38	1510	38	253	8	3		10	35
CIP BH2	7	580	5	2350	2350	1175	59	2350			68				
CIP SK1	8	153	39	1240	1240	620	31	1240	36	305			24		
CIP SK2	6	5	5	585	585	293	15	585	29	267					69
CIP SK3	4	35	20	400	400	200	10	400	45	162					
CIP SK4	12	115	75	1545	1545	773	39	1545	35	566					80
CIP SK5	8	85	30	1030	1030	515	26	1030		86					76
CIP SF1	12	155	20	2545	2545	1273	64	2545	68	618	1			10	89
CIP SF2	11	285	25	1485	1485	743	37	1485	94		2				126
CIP SF3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CIP SF4	3	35	5	355	355	178	9	355							46
CIP TI1	5	90	10	690	690	345	17	690	36	60				3	18
CIP TI2	2	25	5	270	270	135	7	270							189
CIP TI3	7	220	35	2390	2390	1195	60	2390	45	75					93
CIP WW1	11	275	75	1430	1430	715	36	1430	53		2			2	440
CIP WW2	2	10	10	495	495	248	12	495	33	125				6	30
CIP WW3	6	40	20	810	810	405	20	810	39	108					
CIP WW4	2	40	10	355	355	178	9	355		30					92
PROJECT TOTAL	148	2828	459	23150	23150	11575	579	23150	659	3450	84	3	24	51	1956

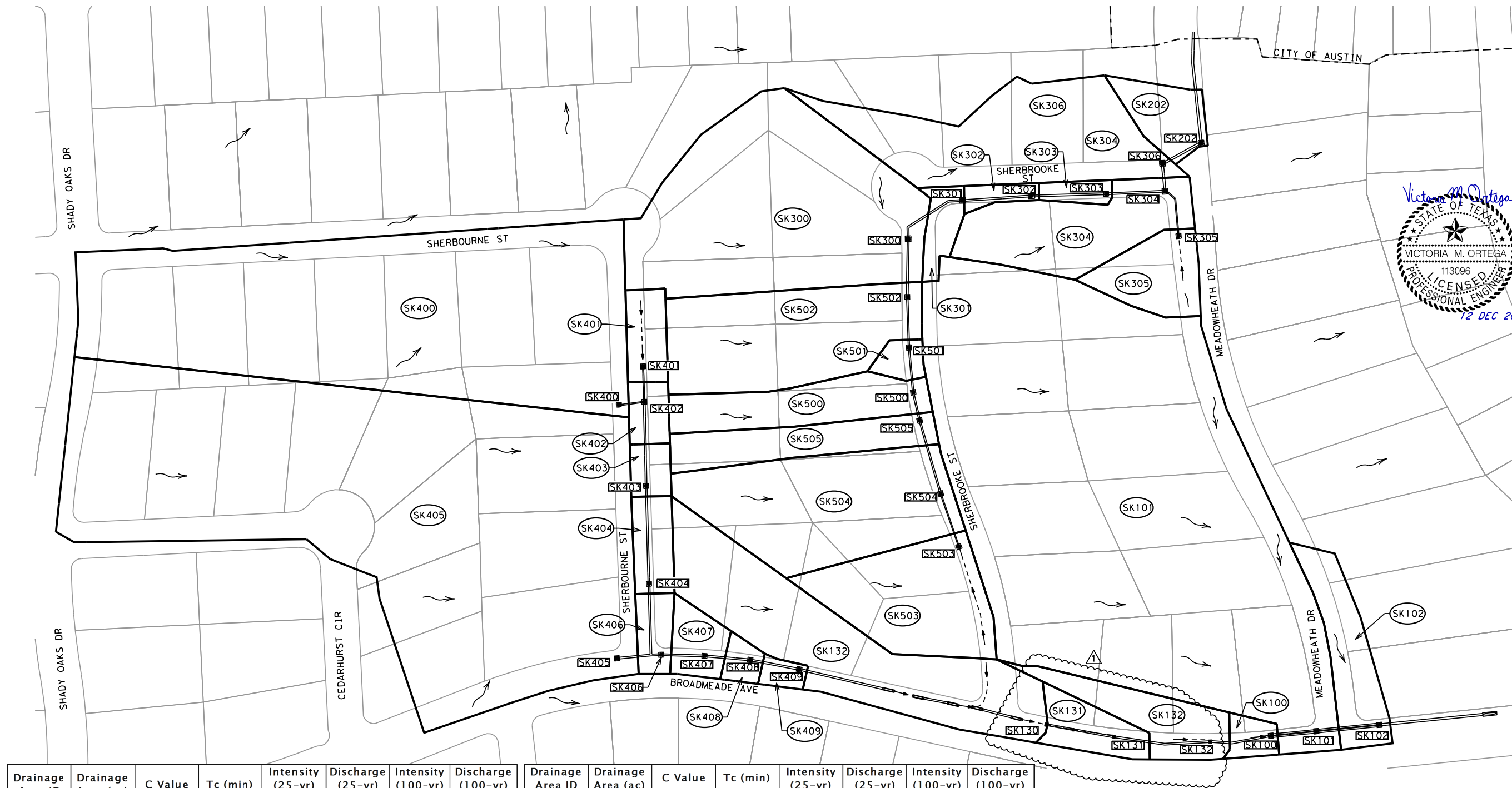
TXDOT BID ITEM	464 6005	464 6007	464 6008	465 6126	465 6127	465 6128	465 6134	465 6135	465 6137	465 6138	467 6323	467 6358	467 6359	467 6363
CIP ID NO	RC PIPE (CL III) (24 IN)	RC PIPE (CL III) (30 IN)	RC PIPE (CL III) (36 IN)	INLET (COMPL) (PSL) (FG) (3FTX3FT- 3FTX3FT)	INLET (COMPL) (PSL) (FG) (4FTX4FT- 3FTX3FT)	INLET (COMPL) (PSL) (FG) (4FTX4FT- 4FTX4FT)	INLET (COMPL) (PSL) (FG) (5FTX5FT- 3FTX3FT)	INLET (COMPL) (PSL) (FG) (5FTX5FT- 4FTX4FT)	INLET (COMPL) (PSL) (FG) (5FTX6FT- 3FTX3FT)	INLET (COMPL) (PSL) (FG) (5FTX6FT- 4FTX4FT)	SET (TY II) (12 IN) (RCP) (4: 1) (C)	SET (TY II) (18 IN) (RCP) (4: 1) (C)	SET (TY II) (18 IN) (RCP) (4: 1) (P)	SET (TY II) (18 IN) (RCP) (6: 1) (P)
	LF	LF	LF	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA
CIP BB1		405	150	2	5	2		1					8	
CIP BB2	57	173		1	2								23	
CIP BH1		64	261			3						4		
CIP BH2												4		
CIP SK1	288	309	145	1	3				2	1				
CIP SK2			251	2	2									
CIP SK3		378		1	2							1		
CIP SK4		719		9		1						2		
CIP SK5	271	79		6	1							6		
CIP SF1			598		4	1							10	
CIP SF2	269												6	
CIP SF3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CIP SF4													6	
CIP TI1	80	128		1		1							4	
CIP TI2				3										
CIP TI3		254		2									8	
CIP WW1						1								21
CIP WW2		66	174	1			1							
CIP WW3	367			3		1								
CIP WW4											2		2	1
PROJECT TOTAL	1332	2575	1579	31	19	10	1	1	2	1	2	17	67	22

NOTE:

THE REMOVAL OF ALL ITEMS INDICATED TO BE REMOVED AND REPLACED SHALL BE CONSIDERED SUBSIDIARY TO THE REPLACEMENT ITEM UNLESS OTHERWISE INDICATED.

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Drainage Area ID	Drainage Area (ac)	C Value	Tc (min)	Intensity (25-yr) (in/hr)	Discharge (25-yr) (cfs)	Intensity (100-yr) (in/hr)	Discharge (100-yr) (cfs)
SK100	1.96	0.5	28.9	5.00	5.39	6.55	8.03
SK101	5.86	0.5	31.9	4.73	15.23	6.21	22.76
SK102	0.39	0.5	10.0	8.19	1.76	10.40	2.53
SK130	1.31	0.5	23.6	5.58	4.02	7.27	5.43
SK131	0.22	0.5	10.0	8.19	0.97	10.40	1.30
SK132	0.35	0.5	10.0	8.19	1.57	10.40	2.07
SK202	0.23	0.5	10.0	8.19	1.04	10.40	1.49
SK300	2.01	0.5	21.4	5.86	6.50	7.63	9.61
SK301	0.12	0.5	10.0	8.19	0.56	10.40	0.81
SK302	0.07	0.5	10.0	8.19	0.30	10.40	0.43
SK303	0.07	0.5	10.0	8.19	0.31	10.40	0.45
SK304	0.677	0.5	10.0	8.19	3.05	10.40	4.40
SK305	0.32	0.5	10.0	8.19	1.44	10.40	2.07
SK306	1.13	0.5	25.8	5.32	3.30	6.95	4.90

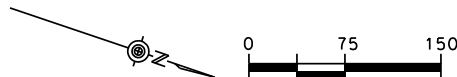
Drainage Area ID	Drainage Area (ac)	C Value	Tc (min)	Intensity (25-yr)	Discharge (25-yr)	Intensity (100-yr)	Discharge (100-yr)
SK400	3.73	0.5	29.4	4.95	10.15	6.50	15.14
SK401	0.17	0.5	10.0	8.19	0.75	10.40	1.09
SK402	0.11	0.5	10.0	8.19	0.51	10.40	0.73
SK403	0.10	0.5	10.0	8.19	0.35	10.40	0.62
SK404	0.18	0.5	10.0	8.19	0.63	10.40	1.14
SK405	5.80	0.5	31.0	4.80	15.32	6.31	22.87
SK406	0.13	0.5	10.0	8.19	0.58	10.40	0.84
SK407	0.16	0.5	10.0	8.19	0.73	10.40	1.06
SK408	0.07	0.5	10.0	8.19	0.31	10.40	0.45
SK409	0.05	0.5	10.0	8.19	0.25	10.40	0.35
SK500	0.47	0.5	10.0	8.19	2.11	10.40	3.04
SK501	0.08	0.5	10.0	8.19	0.35	10.40	0.51
SK502	1.03	0.5	10.0	8.19	4.64	10.40	6.69
SK503	0.75	0.5	10.0	8.19	3.36	10.40	4.84
SK504	1.16	0.5	17.6	6.46	4.13	8.35	6.07
SK505	0.40	0.5	10.0	8.19	1.82	10.40	2.63

NOTE:

1. HYDROLOGY FOR THE ONSITE DRAINAGE BASINS WAS DEVELOPED USING THE RATIONAL METHOD DESCRIBED IN THE TXDOT HYDRAULIC MANUAL, MAY 2014, SECTION 13.
- C-VALUE: 0.50 FOR SF RESIDENTIAL
TC: KERBY-KIRPICH METHOD

LEGEND

- CITY OF AUSTIN LIMITS
- DRAINAGE AREA
- CHANNEL
- FLOW DIRECTION
- (X.XX) DRAINAGE AREA ID
- (X.XX) INLET ID



K FRIESE & ASSOCIATES, INC.
1120 S. CAPITAL OF TEXAS HWY, II-100, AUSTIN, TX 78746

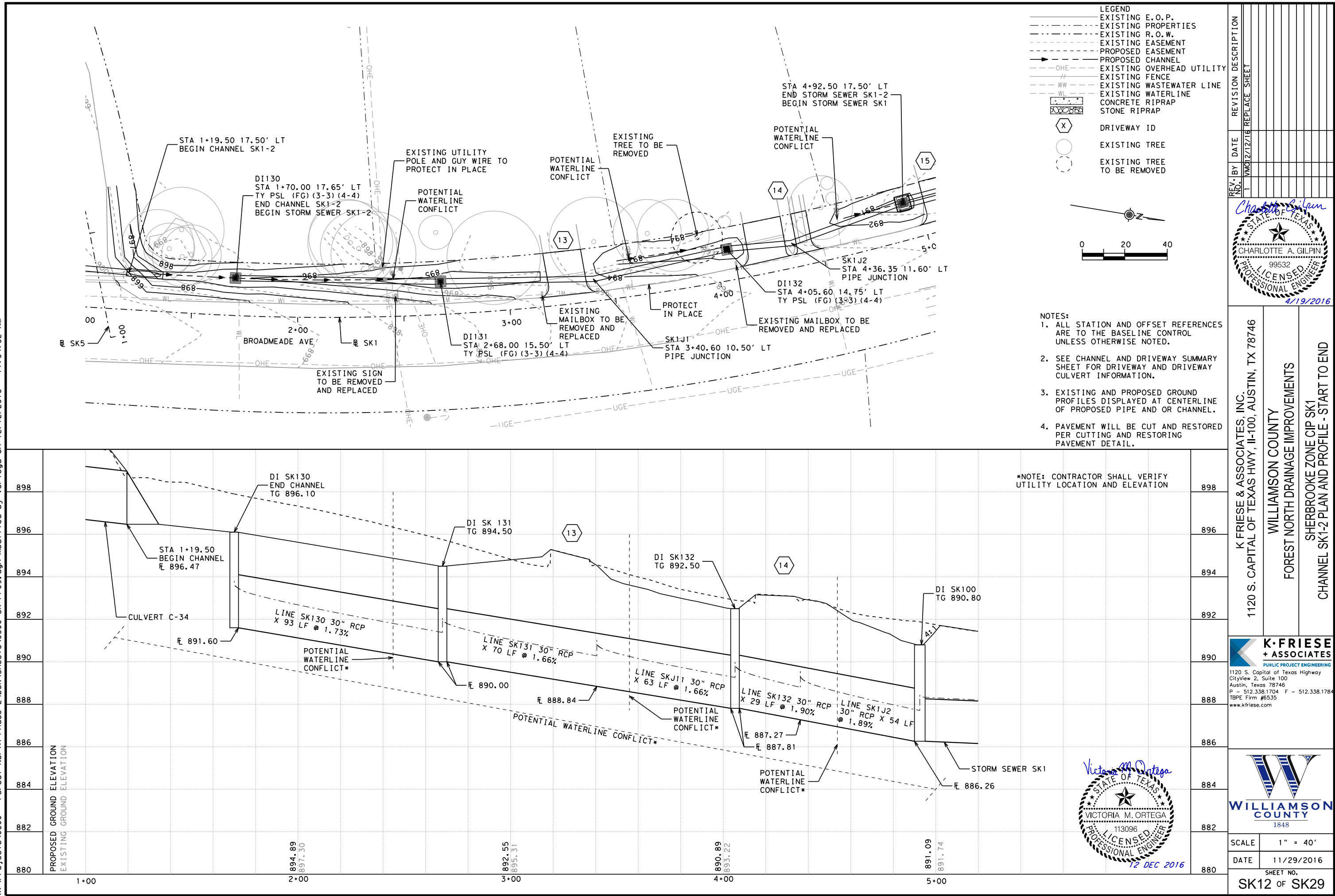
WILLIAMSON COUNTY
FOREST NORTH DRAINAGE IMPROVEMENTS
SHERBROOKE ZONE
DRAINAGE AREA MAP

K·FRIESE + ASSOCIATES
PUBLIC PROJECT ENGINEERING
1120 S. Capital of Texas Highway
CityView 2, Suite 100
Austin, Texas 78746
P - 512.338.1704 F - 512.338.1784
www.kfriesecom



SCALE 1" = 150'
DATE 11/29/2016
SHEET NO. SK3 OF SK29

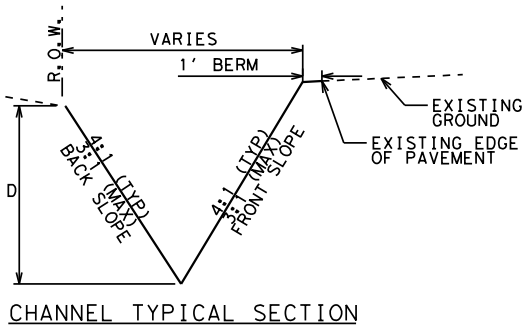
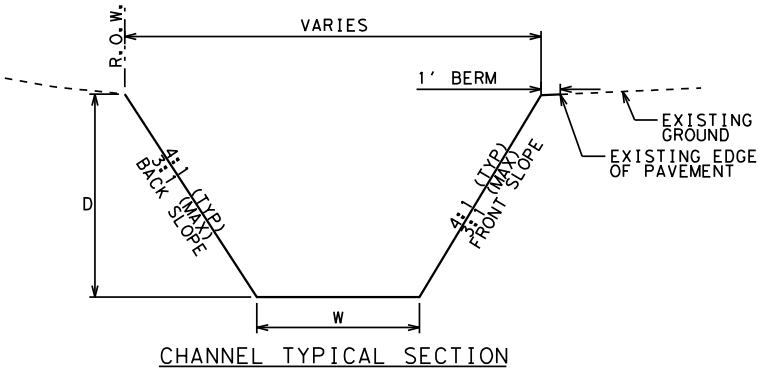
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Channel Hydraulics Summary

CIP Project ID	Channel ID	Segment ID	Upstream			Downstream Station			Length	Longitudinal Slope	Roughness Coefficient	Bottom Width (W)	Depth (D)	Side Front	Side Back	Capacity	Lining Material	Q ₂₅	V ₂₅	d ₂₅		
			Station (sta)	Offset (ft)	Flowline (ft)	Station (sta)	Offset (ft)	Flowline (ft)													(ft)	(%)
SK1	SK1-2	1	1+19.50	17.50	LT	896.47	1+70.00	17.65	LT	896.10	50.50	0.73	0.040	N/A	1.9	6.0	4.0	54.6	GRASS	32.3	2.65	1.56
		1a	1+70.00	17.65	LT	896.10	2+68.00	17.65	LT	894.50	98.00	1.63	0.040	N/A	0.7	6.0	4.0	5.7	GRASS	1.0	1.50	0.36
		2	3+40.50	17.50	LT	891.86	4+12.00	17.60	LT	890.88	71.50	1.37	0.040	N/A	0.8	4.0	6.0	5.4	GRASS	1.6	1.40	0.47
		3	4+51.00	17.50	LT	889.80	4+92.50	17.50	LT	889.51	41.50	0.70	0.040	N/A	2.5	3.6	3.0	72.2	GRASS	22.8	2.63	1.62
SK2	SK2-1	1	2+45.13	15.97	LT	895.51	2+64.72	18.91	LT	895.43	19.59	0.41	0.040	N/A	0.5	4.0	6.0	1.2	GRASS	1.1	0.92	0.49
		2	2+82.28	19.37	LT	895.35	3+45.50	19.10	LT	895.04	63.22	0.49	0.040	3	0.5	4.0	6.0	4.9	GRASS	1.4	0.92	0.33
SK4	SK4-1	1	4+35.50	16.70	LT	898.90	4+93.28	16.00	LT	898.15	57.78	1.30	0.040	N/A	2.5	4.0	4.0	120.4	GRASS	27.7	3.34	1.44
		2	5+28.33	17.25	LT	898.02	5+77.70	18.80	LT	896.95	50.33	2.13	0.040	N/A	2.5	4.0	3.0	134.0	GRASS	27.7	4.13	1.38
	SK4-3	1	1+46.97	11.53	LT	907.25	2+40.00	11.50	LT	906.30	93.03	1.02	0.040	N/A	1.0	4.0	4.0	14.1	GRASS	0.8	1.26	0.40
SK5	SK5-3	1	2+07.51	18.00	LT	898.12	1+40.42	26.20	LT	896.95	72.17	1.62	0.040	N/A	1.3	4.0	4.0	23.5	GRASS	3.4	2.14	0.63
	SK5-2	1	2+33.01	16.87	LT	898.15	3+79.90	19.70	LT	897.45	141.16	0.50	0.040	3	1.0	4.0	4.0	13.4	GRASS	4.1	1.39	0.56

△



K FRIESE & ASSOCIATES, INC.
1120 S. CAPITAL OF TEXAS HWY, II-100, AUSTIN, TX 78746

WILLIAMSON COUNTY
FOREST NORTH DRAINAGE IMPROVEMENTS
SHERBROOKE ZONE
CHANNEL SUMMARY

K·FRIESE + ASSOCIATES
PUBLIC PROJECT ENGINEERING
1120 S. Capital of Texas Highway
CityView 2, Suite 100
Austin, Texas 78746
P - 512.338.1704 F - 512.338.1784
TBPE Firm #6535
www.kfriesee.com



SCALE

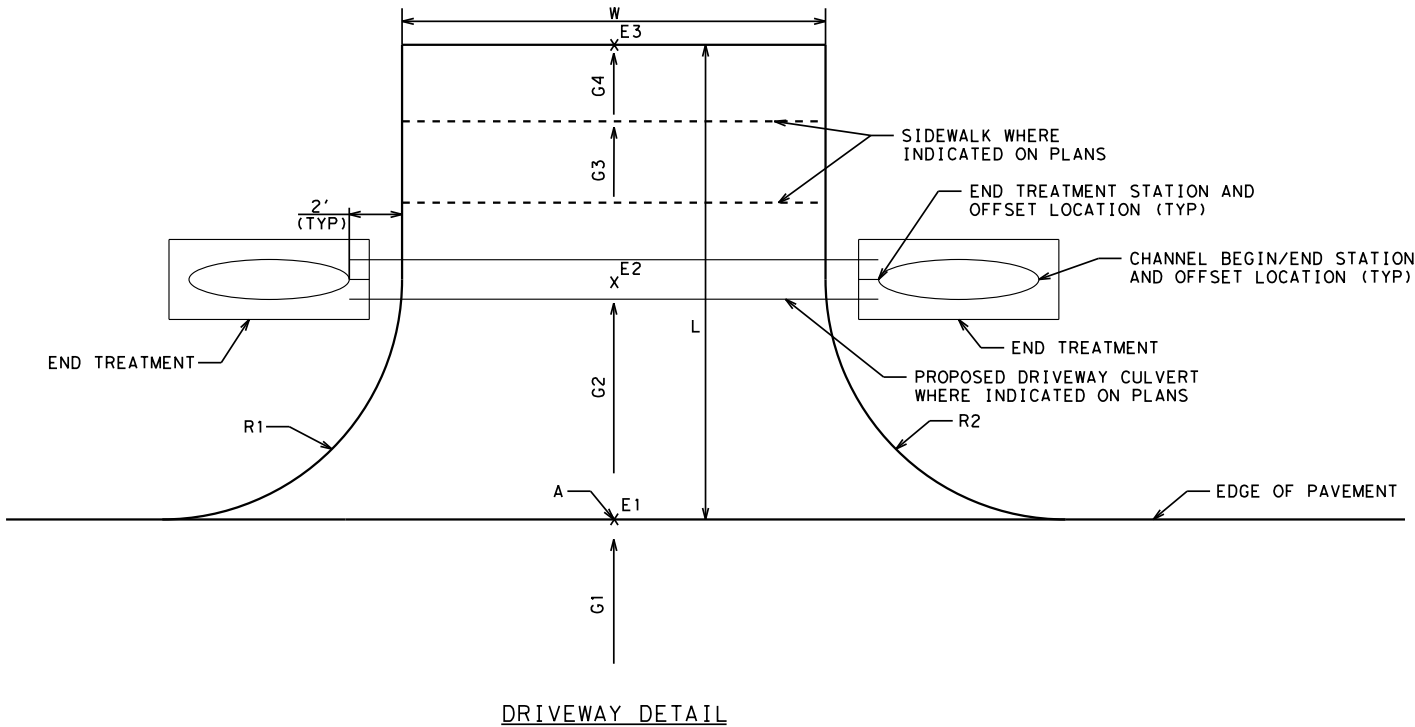
DATE 11/29/2016

SHEET NO.
SK25 OF SK29

X:\Projects\0300 - Forest North Phase 2\DCN\Sheets\0300*SK*HYD02.dgn modified by vortega on 12/12/2016 - 11:54:58 AM

Driveway Culvert Summary

CIP Project ID	Driveway ID	Station (A)	Length (L)	Width (W)	Radius (R ₁)	Radius (R ₂)	Roadway Grade (G ₁)	Driveway Grade (G ₂)	Sidewalk Grade (G ₃)	Driveway Grade (G ₄)	Elevation			Sidewalk Area (sq)	Driveway Area (sq)	Number of Barrels	RCP (CL III) (18 IN) (lf)	RCP (CL III) (24 IN) (lf)	RCP (CL III) (30 IN) (lf)	Upstream				Downstream				Slope (ft/ft)	Roughness Coefficient (n)	Culvert Flows		
											(E ₁)	(E ₂)	(E ₃)							End Treatment (ea)	Station (sta)	Offset (ft)	Flowline (ft)	End Treatment (ea)	Station (sta)	Offset (ft)	Flowline (ft)			Q ₂₅ (cfs)	d ₂₅ (ft)	Capacity (cfs)
SK1	13	3+28.14	21	18	5	5	-2.55	-2.20	N/A	N/A	895.36	894.94	894.89		43																	
	14	4+22.72	19	18	5	2	-2.10	-1.38	N/A	3.70	893.44	893.23	893.51		40																	
	14A	4+43.71	19	7	2	5	-2.35	-3.79	N/A	4.27	893.14	892.79	893.08		17																	
	15	5+15.66	20	27	5	5	-3.64	-5.66	N/A	3.73	892.19	891.50	891.76		60																	
SK2	16	6+61.68	20	20	5	5	-1.93	1.32	N/A	N/A	890.42	890.60	890.69		47																	
	31	2+73.41	18	18	5	5	-1.87	-10.01	N/A	12.47	896.28	895.14	895.73		38																	
	30S	3+54.24	16	4	N/A	N/A	-0.74	N/A	N/A	N/A	896.50	895.74	895.75	6																		
	33	4+58.63	17	17	5	5	-3.09	-6.05	N/A	0.02	896.95	896.45	896.46		34																	
SK3	34	5+10.66	17	17	5	5	-1.23	-7.26	N/A	1.44	897.44	896.85	896.99		34																	
	26	1+27.77																														
	27	2+69.77	14	10	5	5	-0.25	-0.77	N/A	N/A	897.89	897.84	897.78		17																	
	28S	3+82.81	13	3	N/A	N/A	-3.62	N/A	N/A	N/A	896.94	896.30	896.56	5																		
SK4	29	4+19.73	13	24	5	5	-4.24	-12.45	N/A	6.64	896.71	895.92	896.29		36																	
	1	1+52.00																														
	2	2+62.93	15	19	5	10	-1.86	-4.63	N/A	N/A	908.67	908.33	907.98		37																	
	3	3+58.78	13	20	5	5	-2.66	-15.11	N/A	11.52	908.42	907.51	907.95		30																	
	4	3+89.36	13	9	5	5	-3.76	-1.07	N/A	7.02	908.26	907.59	907.88		15																	
	6	4+59.86	13	28	5	5	-2.91	-4.51	N/A	9.48	907.96	907.16	907.67		43																	
	7S	5+57.59	14	4	N/A	N/A	-1.29	N/A	N/A	N/A	907.69	907.09	907.10	6																		
	8	1+44.37	21	16	5	5	-1.81	-4.22	N/A	0.55	907.22	906.73	906.76		37																	
	9	2+15.35	19	11	5	5	-2.35	1.63	N/A	-3.75	906.54	906.72	906.42		24																	
	10	2+71.69	18	19	5	5	-2.79	-1.75	N/A	N/A	905.64	905.58	905.52		38																	
	11	3+34.80	18	18	5	5	-3.34	-8.20	N/A	N/A	904.58	904.22	904.22		39																	
SK5	12	5+12.17	23	21	5	5	-3.33	-1.21	N/A	N/A	901.82	901.71	901.57		54																	
	18	3+98.25	14	20	5	5	-0.66	1.72	N/A	N/A	898.92	899.05	899.14		33.0																	
	19S	4+66.72	19	4	N/A	N/A	-0.65	N/A	N/A	N/A	898.70	898.71	898.84	9																		
	20	4+98.34	19	21	5	5	-2.63	2.20	N/A	N/A	898.59	898.72	899.01		44																	
	21	5+27.66	19	12	5	5	-2.27	-4.37	N/A	5.79	898.60	898.31	898.83		26																	
	22S	5+74.78	18	4	N/A	N/A	-3.51	N/A	N/A	N/A	898.33	898.55	898.56	6																		
	23	6+19.21	15	11	5	10	-3.20	1.40	N/A	N/A	898.54	898.60	898.73		23																	
	24S	6+75.79	15	4	N/A	N/A	-1.18	N/A	N/A	N/A	898.73	898.88	898.80	5																		
SK5	25	7+55.82	16	20	5	5	0.44	2.26	N/A	N/A	898.75	898.89	899.11		38																	



DRIVEWAY DETAIL

REV. NO. 1
BY WMOI
DATE 2/12/16
DESCRIPTION REVISION CHANNEL SK1-2

Charlotte A. Gilpin
STATE OF TEXAS
LICENSED PROFESSIONAL ENGINEER
99532
4/19/2016

K FRIESE & ASSOCIATES, INC.
1120 S. CAPITAL OF TEXAS HWY, II-100, AUSTIN, TX 78746

WILLIAMSON COUNTY
FOREST NORTH DRAINAGE IMPROVEMENTS
SHERBROOKE ZONE
DRIVEWAY SUMMARY

K-FRIESE + ASSOCIATES
PUBLIC PROJECT ENGINEERING
1120 S. Capital of Texas Highway
CityView 2, Suite 100
Austin, Texas 78746
P - 512.338.1704 F - 512.338.1784
TBPE Firm #6535
www.kfriesecom

Victoria M. Ortega
STATE OF TEXAS
LICENSED PROFESSIONAL ENGINEER
113096
12 DEC 2016

WILLIAMSON COUNTY
1848

SCALE

DATE 11/29/2016

SHEET NO. SK26 OF SK29

SHEET 65 OF 167

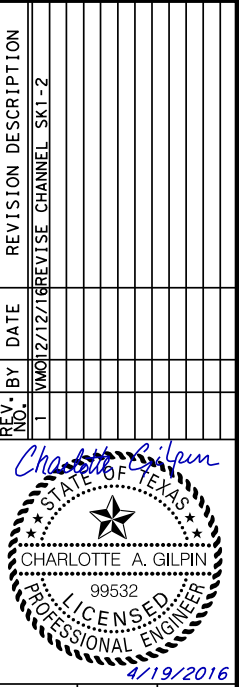
Link ID	Upstream				Downstream				Number of Barrels	Size	Length (ft)	Link Slope (%)	Roughness Coefficient (n)	Flows		Notes		
	Station (sta)	Offset (ft)	Flowline (ft)	HGL (ft)	Station (sta)	Offset (ft)	Flowline (ft)	HGL (ft)						Q25 (cfs)	Capacity (cfs)			
SK100	4+92.50	17.50	LT	886.26	888.39	5+56.50	17.50	LT	886.01	888.03	2	24" RCP	59	0.42	0.012	33.1	34.3	
SK101	5+56.50	17.50	LT	886.01	888.03	6+45.75	17.50	LT	885.31	887.05	2	24" RCP	85	0.83	0.012	48.0	48.1	
SK102	6+45.75	17.50	LT	885.95	886.27	7+92.50	17.50	LT	885.93	887.61	1	26" RCP	145	1.40	0.012	48.9	92.0	2
SK130	1+70.00	17.65	LT	891.60	893.67	2+68.00	15.50	LT	890.00	891.38	1	30" RCP	93	1.73	0.012	31.7	62.9	
SK131	2+68.00	15.50	LT	890.00	892.00	3+40.60	10.50	LT	888.84	890.28	1	30" RCP	70	1.66	0.012	32.2	61.5	
SK132	4+05.60	14.75	LT	887.81	889.91	4+36.35	11.60	LT	887.27	888.80	1	30" RCP	29	1.90	0.012	33.0	65.8	
SK1J1	3+40.60	10.50	LT	888.84	890.95	4+05.60	14.75	LT	887.81	889.26	1	30" RCP	63	1.66	0.012	32.2	61.5	
SK1J2	4+36.35	11.60	LT	887.27	889.45	4+92.50	17.50	LT	886.26	887.71	1	30" RCP	54	1.89	0.012	33.0	65.8	
SK503	3+79.90	19.70	LT	894.95	895.74	4+58.75	16.10	LT	894.62	895.37	1	18" RCP	76	0.44	0.012	3.4	8.1	
SK504	4+58.75	16.10	LT	894.12	895.37	5+63.50	16.50	LT	893.80	895.25	1	24" RCP	105	0.30	0.012	6.8	14.4	
SK505	5+63.50	16.50	LT	893.80	895.25	6+03.10	18.60	LT	893.69	895.19	1	24" RCP	38	0.30	0.012	8.1	14.4	
SK500	6+03.10	18.60	LT	893.69	895.19	6+65.00	17.80	LT	893.51	895.05	1	24" RCP	61	0.30	0.012	9.7	14.4	
SK501	6+65.00	17.80	LT	893.51	895.05	7+35.00	18.20	LT	893.31	894.94	1	24" RCP	68	0.30	0.012	10.0	14.4	
SK502	7+35.00	18.20	LT	892.81	894.94	8+16.97	15.65	LT	892.57	894.89	1	30" RCP	79	0.30	0.012	13.4	26.2	
SK300	8+16.97	15.65	LT	892.57	894.89	8+19.91	15.65	LT	892.53	894.82	1	30" RCP	15	0.30	0.012	19.1	26.2	
SK3J1	8+19.91	15.65	LT	892.53	894.82	1+43.52	16.50	RT	892.32	894.58	1	30" RCP	68	0.30	0.012	19.1	26.2	
SK3J2	1+43.52	16.50	RT	892.32	894.58	1+62.75	16.20	RT	892.27	894.45	1	30" RCP	18	0.30	0.012	19.1	26.2	
SK301	1+62.75	16.20	RT	892.27	894.45	2+59.25	14.25	RT	891.99	894.31	1	30" RCP	94	0.30	0.012	19.3	26.2	
SK302	2+59.25	14.25	RT	891.99	894.31	3+65.00	15.70	RT	891.49	894.13	1	30" RCP	103	0.49	0.012	19.4	33.6	
SK303	3+65.00	15.70	RT	891.49	894.13	4+47.90	15.70	RT	890.95	893.97	1	30" RCP	80	0.68	0.012	19.5	39.3	
SK305	3+45.50	19.10	LT	892.51	894.00	3+98.00	18.50	LT	892.09	893.98	1	18" RCP	52	0.83	0.012	1.6	11.1	
SK200	3+98.00	18.50	LT	892.09	893.98	4+47.90	15.70	RT	891.95	893.97	1	18" RCP	17	0.83	0.012	1.6	11.2	
SK304	4+47.90	15.70	RT	890.91	893.97	4+46.00	23.70	LT	890.80	893.83	1	36" RCP	36	0.30	0.012	22.7	42.6	
SK306	4+46.00	23.70	LT	890.80	893.83	4+72.00	26.00	RT	890.66	893.65	1	36" RCP	58	0.25	0.012	24.4	38.9	
SK202	4+72.00	26.00	RT	890.66	893.65	5+85.00	26.00	RT	890.44	893.42	1	36" RCP	111	0.20	0.012	25.0	34.8	
SK2J1	5+85.00	26.00	RT	890.44	893.42	6+29.70	31.25	RT	890.35	893.35	1	36" RCP	45	0.20	0.012	25.0	34.8	2
SK401	2+40.00	11.50	LT	903.80	904.21	2+90.00	11.50	LT	903.58	903.94	1	18" RCP	47	0.46	0.012	1.0	8.3	
SK400	2+93.25	24.30	RT	904.34	906.65	2+90.00	11.50	LT	903.58	904.48	1	18" RCP	33	2.31	0.012	10.2	18.6	
SK402	2+90.00	11.50	LT	902.58	903.91	4+08.08	10.00	LT	902.12	903.21	1	30" RCP	116	0.40	0.012	11.1	30.2	
SK403	4+08.08	10.00	LT	902.12	903.72	5+45.76	9.14	LT	901.58	903.68	1	30" RCP	135	0.40	0.012	11.3	30.2	
SK404	5+45.76	9.14	LT	901.58	903.68	1+64.51	0.00	RT	901.19	903.64	1	30" RCP	99	0.40	0.012	11.7	30.2	
SK405	1+16.40	0.00	RT	902.12	904.09	1+64.51	0.00	RT	901.19	902.10	1	30" RCP	47	2.02	0.012	15.3	68.0	
SKJ04	1+64.51	0.00	RT	901.19	903.64	1+22.66	17.00	LT	901.14	902.97	1	30" RCP	14	0.40	0.012	26.8	30.2	
SK406	1+22.66	17.00	LT	901.14	902.97	1+82.09	16.50	LT	900.72	902.30	1	30" RCP	58	0.73	0.012	27.1	40.8	
SK407	1+82.09	16.50	LT	900.72	902.57	2+45.15	17.40	LT	900.27	901.87	1	30" RCP	62	0.73	0.012	27.5	40.8	
SK408	2+45.15	17.40	LT	900.27	902.14	3+13.77	17.50	LT	899.78	901.38	1	30" RCP	68	0.73	0.012	27.6	40.8	
SK409	3+13.77	17.50	LT	899.78	901.61	4+35.50	16.70	LT	898.90	900.49	1	30" RCP	120	0.73	0.012	27.7	40.8	

Inlet ID	Station (sta)	Chain	Offset (ft)		Description	Grate Perimeter (ft)	Grate Area (sf)	Clog Reduction Factor	Perimeter Reduction Factor	Inlet Elevation (ft)	Q ₂₅ (cfs)	Allowable Pondered (ft)	Pondered Elevation (ft)	Notes
SK100	4+92.50	SK1	17.50	LT	TY PSL(FG)(3-3)	12.67	5.50	0.50	0.50	890.80	0.38	0.90	890.87	
SK101	5+56.50	SK1	17.50	LT	TY PSL(FG)(4-4)	16.67	8.19	0.50	0.50	890.24	15.23	1.00	890.94	4-892.56
SK102	6+45.75	SK1	17.50	LT	TY PSL(FG)(3-3)	12.67	5.50	0.50	0.50	890.15	1.76	0.55	890.35	
SK130	1+70.00	SK1	17.65	LT	TY PSL(FG)(3-3)	12.67	5.50	0.50	0.50	896.10	4.02	2.00	896.45	
SK131	2+68.00	SK1	15.50	LT	TY PSL(FG)(3-3)	12.67	5.50	0.50	0.50	894.50	0.97	0.70	894.64	
SK132	4+05.60	SK1	14.75	LT	TY PSL(SFG)(3-3)	12.67	4.53	0.50	0.50	892.50	1.57	0.60	892.69	
SK202	4+72.00	SK2	26.00	RT	TY PSL(FG)(3-3)	12.67	5.50	0.50	0.50	896.00	1.04	0.50	896.14	
SK300	8+16.97	SK5	15.65	LT	TY PSL(FG)(3-3)	12.67	5.50	0.50	0.50	897.55	6.50	1.00	898.03	4-898.90
SK301	1+62.75	SK3	16.20	RT	TY PSL(FG)(3-3)	12.67	5.50	0.50	0.50	897.24	0.56	0.50	897.33	
SK302	2+59.25	SK3	14.25	RT	TY PSL(FG)(3-3)	12.67	5.50	0.50	0.50	896.60	0.30	0.50	896.66	
SK303	3+65.00	SK3	15.70	RT	TY PSL(FG)(3-3)	12.67	5.50	0.50	0.50	895.90	0.31	0.50	895.96	
SK304	4+47.90	SK3	15.70	RT	TY PSL(FG)(3-3)	12.67	5.50	0.50	0.50	894.95	3.05	0.40	895.24	
SK305	3+45.50	SK2	19.10	LT	TY PSL(FG)(3-3)	12.67	5.50	0.50	0.50	895.01	1.44	0.50	895.18	
SK306	4+46.00	SK3	23.70	LT	TY PSL(FG)(3-3)	12.67	5.50	0.50	0.50	895.25	3.30	1.00	895.56	4-897.16
SK400	2+93.25	SK4A	24.30	RT	TY PSL(FG)(3-3)	12.67	5.50	0.50	0.50	907.34	10.15	1.00	907.99	4-909.16
SK401	2+40.00	SK4A	11.50	LT	TY PSL(FG)(3-3)	12.67	5.50	0.50	0.50	906.30	0.75	1.00	906.41	
SK402	2+90.00	SK4A	11.50	LT	TY PSL(FG)(3-3)	12.67	5.50	0.50	0.50	907.20	0.51	1.00	907.29	
SK403	4+08.08	SK4A	10.00	LT	TY PSL(FG)(3-3)	12.67	5.50	0.50	0.50	907.50	0.43	0.50	907.58	
SK404	5+45.76	SK4A	9.14	LT	TY PSL(FG)(3-3)	12.67	5.50	0.50	0.50	906.60	0.79	0.50	906.72	
SK405	1+16.40	SK4-2	0.00	RT	TY PSL(FG)(4-4)	16.67	8.19	0.50	0.50	906.60	15.32	0.60	907.31	4-907.98
SK406	1+22.66	SK4B	17.00	LT	TY PSL(FG)(3-3)	12.67	5.50	0.50	0.50	906.15	0.58	0.50	906.25	
SK407	1+82.09	SK4B	16.50	LT	TY PSL(FG)(3-3)	12.67	5.50	0.50	0.50	905.75	0.73	0.50	905.86	
SK408	2+45.15	SK4B	17.40	LT	TY PSL(FG)(3-3)	12.67	5.50	0.50	0.50	905.50	0.31	0.50	905.56	
SK409	3+13.77	SK4B	17.50	LT	TY PSL(FG)(3-3)	12.67	5.50	0.50	0.50	903.95	0.25	0.50	904.00	
SK500	6+03.10	SK5	18.60	LT	TY PSL(FG)(3-3)	12.67	5.50	0.50	0.50	897.53	2.11	1.00	897.76	
SK501	6+65.00	SK5	17.80	LT	TY PSL(FG)(3-3)	12.67	5.50	0.50	0.50	897.80	0.35	0.50	897.87	
SK502	7+35.00	SK5	18.20	LT	TY PSL(FG)(3-3)	12.67	5.50	0.50	0.50	897.40	4.64	0.50	897.78	
SK503	3+79.90	SK5	19.70	LT	TY PSL(FG)(3-3)	12.67	5.50	0.50	0.50	897.45	3.36	0.50	897.76	
SK504	4+58.75	SK5	16.10	LT	TY PSL(FG)(3-3)	12.67	5.50	0.50	0.50	897.62	4.13	0.50	897.97	
SK505	5+63.50	SK5	16.50	LT	TY PSL(FG)(3-3)	12.67	5.50	0.50	0.50	897.69	1.82	0.50	897.90	

NOTES:

ANALYSIS PERFORMED USING GEOPAK DRAINAGE (2009 EDITION), WHICH PERFORMED HYDRAULIC COMPUTATIONS IN ACCORDANCE WITH FHWA HEC-22 GUIDELINES.

1. EXISTING STORM SEWER.
2. TAILWATER SET TO 25-YEAR WATER SURFACE ELEVATION FOR LAKE CREEK TRIBUTARY 2 OBTAINED FROM FEMA.
3. ALL TY PSL INLETS SHALL INCLUDE 1.5 FT CAST-IN-PLACE REINFORCED CONCRETE APRON PER DETAIL 'A' ON TYPE PSL DETAIL SHEET.
4. THE HEADWATER ELEVATION, AS NOTED, FOR THE EXISTING CULVERT WAS USED AS THE ALLOWABLE PONDED ELEVATION AT CORRESPONDING INLET.



K FRIESE & ASSOCIATES, INC.
1120 S. CAPITAL OF TEXAS HWY. 11-100. AUSTIN TX 78746

WILLIAMSON COUNTY
FOREST NORTH DRAINAGE IMPROVEMENTS

SHERBROOKE ZONE
STORM SEWER HYDRAULIC CALCULATIONS



SCALE

DATE	11/29/2016
------	------------

SHEET NO.
SK28 OF SK29

Ryan Rivera

From: paul@denucciconstructors.com
Sent: Monday, October 03, 2016 2:46 PM
To: Ryan Rivera
Subject: RE: 1604-068 Forest North_additional trees to be removed

30-36" 2000.00

Basically, it is \$400.00 every 6 "

Paul T. DeNucci
DeNucci Constructors, LLC
8310-1 Cap Tx Hwy N. Ste 275
Austin, Texas 78731
512-335-0600
512-342-0600 fax
512-658-3986 cell
paul@denucciconstructors.com
www.denucciconstructors.com

----- Original Message -----

Subject: RE: 1604-068 Forest North_additional trees to be removed
From: Ryan Rivera <rrivera@HNTB.com>
Date: Mon, October 03, 2016 2:39 pm
To: "paul@denucciconstructors.com" <paul@denucciconstructors.com>

Send me a quote for that size.

From: paul@denucciconstructors.com [<mailto:paul@denucciconstructors.com>]
Sent: Monday, October 03, 2016 2:38 PM
To: Ryan Rivera <rrivera@HNTB.com>
Subject: RE: 1604-068 Forest North_additional trees to be removed

Ryan - Got it. The first tree that is coming out at Tichester is 33" - how do you want us to bill that? It is larger than any bid item.

Paul T. DeNucci
DeNucci Constructors, LLC
8310-1 Cap Tx Hwy N. Ste 275
Austin, Texas 78731
512-335-0600
512-342-0600 fax
512-658-3986 cell
paul@denucciconstructors.com
www.denucciconstructors.com

----- Original Message -----

Subject: Re: 1604-068 Forest North_additional trees to be removed
From: Ryan Rivera <rrivera@HNTB.com>

Ryan Rivera

From: paul@denucciconstructors.com
Sent: Friday, December 30, 2016 1:56 PM
To: Ryan Rivera
Subject: Forest North 36" SET

Hi Ryan. The price for the 36" SET's will be:

6:1 \$5800.00. The one completed was a 6:1

4:1. \$5600.00

Thanks.

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